Government policy and farmers' decision making: the agricultural diversification programme for the Chao Phraya river basin (1993 – 1995) revisited

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Abstract: *The paper is based on a long-term research study (1994-2000) of the rice diversification policy of the Ministry of Agriculture and Cooperatives, which had begun in 1993. The policy still continues, from now on to be implemented in modified form, under a work plan for restructuring agricultural production. The underlying research study which has just been completed (and is to be published shortly), covers an in-depth empirical analysis of the implementation of the policy in six provinces of the Central Plain (Ayutthaya, Angthong, Suphanburi and Lopburi) and the Central North (Phitsanulok and Kamphaengphet). So the Chao Phraya Basin in its entirety (not only the Delta), as the agricultural heartland of the Thai economy, is at the focus of this paper. As a large part of the same area has also become the industrial core of Thailand, the paper also contributes to the discussion of rural-urban interaction and transition processes.*

Extending time frame and scope of the study permitted the researcher to cover a large number of social and economic factors, as well as the effects of the economic downturn of 1997. The paper deals with agricultural development policy in response to changing external development factors, and the response of farmers who are making their decisions in different agro-economic settings, and with different degrees of non-agricultural work opportunities in the vicinity.

The diversification policy was launched in response to a dual problem -- the low world market price of rice, and the competition of the urban-industrial sector for the national water resources. So the policy was designed to encourage farmers to adopt permanent crops or other alternatives to rice, so as to obtain higher incomes and, at the same time, consume much less water than by growing rice only.

Due to the relatively long observation period covered, the case studies discussed in this study illustrate the unexpected changes that occurred after the diversification project was first piloted in 1993 and then extended nationwide, with a very large five-year budget (65,000 million Baht) in 1995. Only a few years after the launching of the

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programme, rice prices reached an unprecedented level (in 1997/1998), and there was also more than enough water for second rice. Thus both factors made rice the most profitable option again for a few years.

The long-term sustainability of the diversification policy also depends on other influences such as availability and constraints of farm resources, opportunity of off-farm work in the context of industrial development in the region, and the dynamic changes of the national economic structure, from agriculture to industry/services based. Due to the relatively long observation period (with several rounds of fact finding in the six provinces), it is now possible to discuss the effectiveness of the diversification policy in an overall development context. Based on empirical evidence from the project implementation in six provinces, the "lessons learnt" have been elaborated and turned into a discussion on the sustainable continuation and modification of the policy.

The emphasis of the paper is on the conceptual questions arising from agricultural planning and policy making: To what extent is a government policy able to influence farmers' decision-making? How far is commercial agriculture determined by world market prices and international competitiveness? Farmers, as this study clearly shows, make rational decisions that are based on a careful evaluation of the risks and gains involved in their agricultural enterprise. Having evaluated their own socio-economic conditions (family labour in particular), farmers are responding to market signals (farm gate prices for their products), but increasingly they also make use of non-agricultural opportunities, and, last but not least, signals that come through the agricultural extension services of the government. These include, as the focus of this paper, the opportunities offered by the diversification policy - i.e. credit facilities and prospects for alternative crops (such as fruit trees).

The paper will be organized into four sections dealing with the conceptual framework of farmers' decision-making in an increasingly complex world, the diversification policy of the Thai Government in the context of Thailand's long-term economic and social development trends, a summary of the findings from the empirical study, and the lessons learnt for further policy formulation and implementation.

The main recommendation arising from the empirical research is to refine the diversification policy to a flexible and participatory agricultural extension approach, which should be adaptive to changes in the local conditions, especially to the reactions and emerging needs of the target groups. This requires a structure that allows decentralized and democratic decision making. This style of the approach, however, also requires technical support and training for the officials, to develop their social competence for a participatory style of leadership and two-way communication in their daily work. Summing up, the long-term analysis of the diversification policy results is a principally positive assessment of the government's approach, with an emphasis on those critical areas where the approach needs to be further modified and fine-tuned.

1 Introduction

The theme of the conference includes aspects of historical development but also the dynamics and challenges of the Chao Phraya Delta, as experienced at the present time and, by implication, as they might be projected into the future. As the economic heartland of the country, the whole river basin has usually experienced those socio-economic changes first that, later on, spread around the rest of the country. Eighty percent of the central plains, in the southern part of the Chao Phraya river basin, consist of fertile agricultural land. This constitutes the proverbial 'rice bowl' of Thailand, where more than half of the irrigated areas of the whole country are concentrated, where much of the rice surplus is harvested. Rice still is one of the major export commodities but far behind electronics and garments. The 'rice bowl' also includes the largest metropolitan agglomeration, which is Thailand's centre of gravity in terms of population concentration, political and economic power. So the same 'rice bowl' accounts for the bulk of the modern industrial and service outputs in the entire country. Managing the competition for resources - land, water, infrastructure investment - is one of the major challenges for the Chao Phraya Delta now and in the near future. This paper is meant to contribute a view of a specific form of resource management to the discussion - one in which the farmers are the local decision-makers in an enabling framework set by national government policy.

1.1 Objectives and organization of the paper

The main objective is to present the agricultural restructuring policy under the Seventh and Eighth Plans in a longer-term perspective, although there is a certain emphasis on its first phase, the diversification pilot project of 1993/1994. The conceptualization and implementation of this policy coincided with the most drastic changes of the economy of the last 50 years, the 'boom and bust' years before and after July 1997. Therefore, it would be interesting to examine how the farmers as risk-takers and decision-makers, and as recipients of this policy, responded to it, especially as they were simultaneously exposed to changes that were not influenced by the government policy. As the policy was designed to be participatory and its implementation was supposed to be decentralized, the analysis is on farmers as decision-makers, and the emphasis is on the significant local variations in farming systems.

The paper is organized into three major parts that are further divided into six sections:

1. The introduction begins with a view of 'Thailand in transition' to set the scene for a brief discussion about agricultural development policies and in particular, in section 2, the shifting styles of agricultural extension policies and practices in Thailand. In section 3, this first part includes a summary of the agricultural diversification and restructuring programme of the Thai Government, which began in 1993.
2. Against this background, section 4 of the paper presents a profile of the approach and the main findings of an empirical study, which is the main source of information for this paper. Initially, the focus of the study was on the beginning of launching the policy in 1994 and

1995, but it turned into a larger, long-term study which has only recently reached the stage of final completion (Siriluck, 2000).

3. The last two sections present a discussion of the empirical findings on farmers' decision-making in response to government policy and other determinants, especially market signals, along with a view at the changes in implementing the full-scale national agricultural restructuring programme that had begun in 1994, and finally, conclusions and policy perspectives.

1.2 The Thai economy in transition

The title of this section intentionally alludes to that of the remarkable book published not very long before the economic crisis of 1997. The title, *The Thai Economy in Transition,* is the theme of two dozen contributions by an all-Thai team of scholars. Edited by the Australian economist Peter G. Warr [3] (1993), who also wrote the comprehensive introduction, the volume provides an excellent overview of the long-term changes of the socio-economic and political setting in this country. It would be beyond the scope of the paper to go into greater detail as to the general long-term trends, but it may be useful to briefly recall the more recent events, before and after 1997, as they have affected those farmers who had been studied as the target group of the diversification policy.

The downturn in the economy since July 1997 has profoundly influenced Thai society at large, and the re-orientation period is not over yet. The “boom and bust” scenario has been analyzed by many, but perhaps the most popular reference is the bestseller by Pasuk and Baker (1998). The main features of economic growth and change in the 1980s and the accelerated growth during the early 1990s were foreign investments in industries (notably from East Asia), growing domestic investment capability, a transformation of the economic structure, but with it also increasing inequality. The political economy and the social dimension of the unprecedented growth in Southeast Asia has been analyzed by Muscat (1994) and Rigg (1997), among many other scholars.

Thailand as a target for foreign investments was particularly suitable because of the combination of relative political stability and a relatively cheap and docile labour force. The total inflow of the last three years before the downturn was greater than the total foreign investment in Thailand over the thirty years before, but the upsurge in local investment was even larger. The key characteristics of the Thai economy changed in a very short period. In 1980, three-fifths of exports originated from agriculture, but by 1995, over four-fifths came form manufacturing. Over just one decade, the urban population doubled and the average per capita income doubled. In these fifteen years, the economy’s main export emphasis moved from crops, to services, to labour-intensive manufacturing, and to medium-tech manufacturing.

[3] A new edition of the book that updates the analysis to the year 2000 is expected to be published in 2001 (personal communication with Peter G. Warr).

Unlike the benefits of the boom which were rather unequally distributed, the impact of the burst of the bubble economy was indiscriminate. Urban income and employment have shrunk, and millions of people were estimated to have lost their jobs, although this was less acute among farmers. The rural 'shock-absorber' still works to some extent perhaps, because the agricultural sector is so large and because the bonds of family and community remain. On the other hand, the rural economy is so much intertwined with the urban one, that there has been a heavy rural impact from the urban economic crisis too. The lost urban jobs must have resulted in decreasing remittances to the families in the village back home, and the unemployed urban migrants seeking work in the village, where there is not much of an economic basis for more people anyway.

1.3 Decentralization as an important political dimension

Three major legislative events have pushed the political debate about decentralization into a situation of rapid and drastic changes - the new Constitution (1997), preceded by the local government legislation (*Tambon Act,* 1994, followed by several "organic laws"), as well as the participatory style of preparing the Eighth National Plan (1997-2001). For at least three years now, decentralization has become one of the hottest political issues in Thailand, with far-reaching implications and strong impacts on areas as different as development of basic democracy, local government capacity, fiscal reform, and - closer to the subject of this paper - content, style and operations of agricultural extension programmes.

Essentially, government line agencies from the central ministerial level down to the de-concentrated provincial and district levels, are going through considerable changes as the political, administrative and fiscal reforms are empowering the 'grass-root' level, in the form of some 7,000 newly created local authorities (*Tambon Administrative Organization* and many new small municipalities). Content and style of decision-making are shifting towards real participation, while local capacity for filling in the constitutional rights and replacing the top-down traditional patterns remains severely limited. It will take many years until the current situation of "incomplete", or perhaps "incongruent", decentralization eventually turns into a truly functional system of distributed authority and responsibility, which would then reflect the spirit of the Constitution (Kammeier, 2000).

2 Agricultural policy, with a focus on agricultural extension practices in Thailand

This section begins with a broad review of agricultural development in the rice-growing areas, including a sketch of the major irrigation improvements in the Chao Phraya basin which facilitated the modern highly intensive export production of rice. The second part of this section features the shifts and changes in agricultural extension approaches and the increasing attention to decentralized participatory decision-making. The critical constraints that emerged at the beginning of the 1990s are then shown as the background of the agricultural restructuring policy which was supposed to include a strong element of decentralized local decision-making.

2.1 Critical dimensions of agricultural development

"There is rice in the field and fish in the water", the famous statement ascribed to King Ramkamhaeng (13th century) was a valid description of the agricultural abundance so characteristic of long periods of Thai society. This was based on the right combination of rainfall, soils, temperatures and topography in large parts of the country. Such favourable conditions made Thailand an agrarian land the economic structure of which was dominated by the agriculture sector until only thirty or forty years ago.

The history of Thailand shows a number of significant changes in agricultural development which were certainly not just induced by market signals, but by deliberate policies, and the formation of agricultural and rural development policy is well documented (for example, Judd, 1989).

For a long time, up to the 1960s, agriculture provided both the highest share of GDP and national export earnings. In the course of national development, the contribution of the agriculture sector to the GDP began to decrease, still reached about 50% in 1951, but it has come down to a mere 12% (in 1997). The industrial sector has been developed rapidly to surpass agriculture in 1975, while the service sector increased more gradually to its current dominating position. The labour force employed in these two sectors has been increasing gradually too, but not reaching the size of the agricultural labour force. The discrepancy of GDP share and share of labour force in agriculture indicates an unbalanced condition with enormous gaps between the industrial-urban and the agricultural-rural sectors, as well as the strong external influences on any agricultural development policy. As a consequence of the ongoing structural change in the national economy, the competition for resource utilization, i.e. land, water and human resources, is manifest and increasing. Especially for the agriculture sector, this results in increasing scarcity and higher costs of these resources.

The continuing existence of the 'rice bowl' is linked to the farmers' ability to make a living, which largely depends on the rice price. Thailand as an open economy is exposed to considerable fluctuations of agricultural products according to the world market price. Over the past 25 years, rice prices have fluctuated between 2 and 7 Baht per kg (Figures 1 and 2), and such fluctuations significantly affect farmers' income and the regional economy. In the early 1990s, when the rice price was only 2.5-2.6 Baht per kg, the farmers could hardly exist, as the farm-gate price barely covered the input costs. This was one of the strongest reasons for launching the diversification programme in 1993, along with a critical water shortage, which had emerged as a new constraint in agriculture. However, only a few years later, rice prices reached an unprecedented high level (in 1997/1998, largely because of the new exchange rate of the Baht against the Dollar), and there was also more than enough water for second rice. Thus both factors made rice the most profitable option again for the last few years.

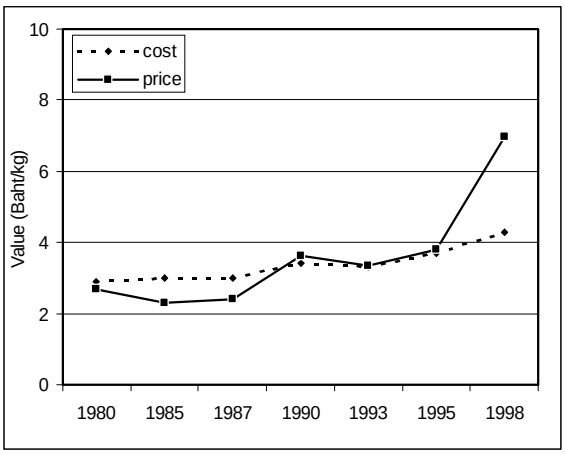


Figure 1: Comparison of cost of production and price of major rice, 1980 - 1998

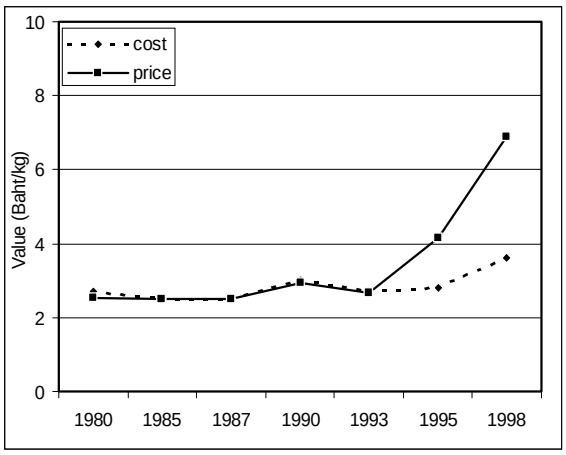


Figure 2: Comparison of cost of production and price of second rice, 1980 - 1998

Source (both figures): OAE, various statistical yearbooks

2.2 Irrigation development and changes in rice cultivation practices in the Chao Phraya River Basin since the 1960s

It appears to be necessary to provide a sketch of the great economic importance of the Chao Phraya river basin and the considerable changes in the rice cultivation system over the past half century, as a background to the circumstances under which the diversification pilot project was designed and launched in 1993, as a test for the agricultural restructuring policy.

The Chao Phraya river system, including all its tributaries, covers a very large area, which includes about 160,000 sq km (or nearly one third of Thailand's land area). However, the 22 provinces that are fully or partially included in the Chao Phraya basin, comprise more than 50 percent of all irrigated areas in Thailand, the bulk of which is in the Central Region. Figure 3 shows an orientation map.

As a subsistence crop, rice has been grown in the 'rice bowl' area for a long time. The most common rice growing system in the plains in former times was broadcasting for a single crop, relying on rainfall or natural inundation from the annual flooding of the major rivers, and using a variety of locally suitable rice strains. The present rice-growing practices in the central plains differ very significantly from those only thirty years ago, even though, at first sight, the appearance of the traditional rice-bowl landscape may not have changed so much.

It was only since the mid-1960s and particularly in the latter half of the 1970s, that rice culture in the central plains changed remarkably by the widespread introduction of double cropping, high-yield varieties, improvements in the traditional broadcasting methods and transplanting, all of which has expanded greatly since that time. Such changes in rice culture also reflected an increase in intensity which was made possible by increasing mechanization

and the extension of irrigation facilities over the last fifty years. The first very large-scale irrigation works after the Rangsit drainage and irrigation scheme north of Bangkok (around 1910), was the Greater Chao Phraya Irrigation Project which commenced in 1952, followed by a number of related improvement projects and, later on, the Phitsanulok system which was completed in 1986.

Although extensive areas have been consolidated through redesign and re-allotment of plots, not enough attention has been paid to on-farm development as many areas still suffer from improper control (irrigation and drainage) at plot level, with impact on the level of yield (OSTROM, 1996). The Royal Irrigation Department (RID) keeps statistics about the developments in the major irrigation areas throughout the country, especially those twelve projects initiated and operated by the Department. The RID statistics provide interesting background information on to the relatively new irrigation project 3 (the Phitsanulok system in the lower north) and projects 7 and 8 (in the central plains) where the six study areas are located.

The change in cultivated areas under second rice, field crops, and sugar cane in project 3 was very dynamic. From 1985/86 to 1989/90, the cultivated area of second rice increased by about 200%, while it was rather stable in the older project areas 7&8 (only 10% increase). The expansion of the second-rice area was large (and fluctuating in response to market prices), it was particularly large in sugar cane with cultivated area in crop year 1995/96 being 35 times (!) larger than that in 1985/86. Field crops increased in cultivated area, and fruit trees increased in a very significant way, especially in the central plain.

As a preliminary interpretation of the RID statistics, one might conclude that the expansion effect of irrigation improvements was felt very strongly in the area of project 3, because the ten years observed coincided with the period of time right after the opening of all-year irrigation. In contrast, the changes in the older areas (projects 7 and 8) where irrigation had been available before 1985, reflected the changes in market opportunities for the various cash crops that could be grown (or not) during the dry season.

2.3 Stages of agricultural extension services: Relating international experiences to Thailand

The major policy in the early years of agricultural extension organizations in most developing countries was to increase crop yields and animal production. After some time, more attention began to be paid to improving production efficiency, and after that, to environmental issues, and finally, to the institutional framework for delivering extension services. Such long-term changes reflect the steadily increasing experience with extension services, the availability of resources, the adoption of technical innovations, and marketing mechanisms. Box 1 shows how the system changes over time have been conceptualized for developing countries.

FIGURE 3: THE CHAO PHRAYA RIVER BASIN WITH THE SURVEY SITES (*AMPHOE)* IN SIX PROVINCES

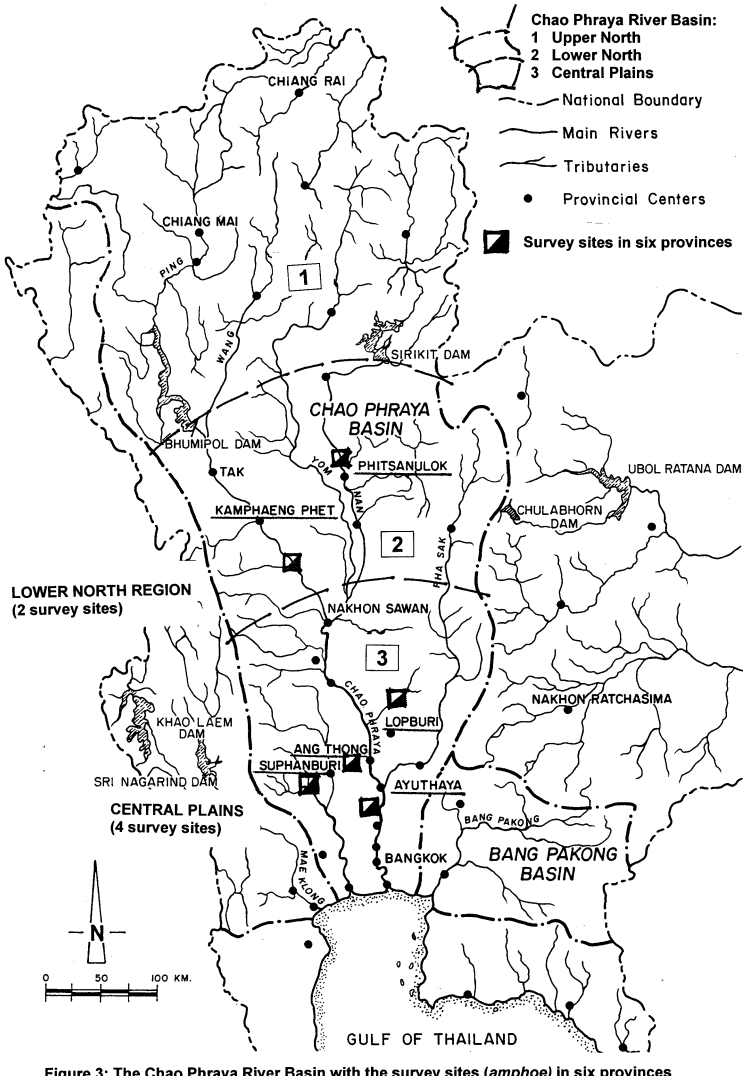


Figure 3: The Chao Phraya River Basin with the survey sites (*amphoe*) in six provinces

It is interesting perhaps to relate the generalized international pattern to that of Thailand, which seems to have followed the international pattern with a delay of some ten years, while it is now catching up rapidly (Box 2), especially in conjunction with the policies for decentralization and public participation under the new Constitution. In this interpretation of the recent introduction of Farmers Centres at *tambon* level, Thailand would have reached the stage of emphasizing the institutional stage. The changes in agricultural development policy and extension style are so fast that there are considerable contradictions between the principles of 'sustainable agriculture' and export-focused production.

Box 1: Four periods of shifting emphases in international agricultural development

Agricultural research and development has become increasingly diverse, with a growing number of disciplines engaged. Based on international comparative research, four stages can be defined for developing countries (summarized by Pretty, 1995, from several sources):

1. **Production stage** (roughly 1950-75), in which the pioneer disciplines were breeding and genetics, and farmers were seen as recipients of technology.
2. **Economic stage** (roughly 1975-85), in which Farming Systems Research was pioneered by economists and agronomists, and farmers were seen as sources of information for technology design.
3. **Ecological stage** (roughly 1985 – 95), in which anthropology, agro-ecology and geography are pioneers, and farmers contribute their indigenous knowledge, and are seen as victims and causes of unsustainable development.
4. **Institutional stage** (roughly 1995 onwards), in which the pioneering disciplines are management specialists / scientists, training specialists and educators, in which farmers are full collaborators in research and extension; and where alliances are developed between different institutions.

Box 2: Shifts in the orientation of agricultural extension and development in Thailand

Reflecting the principal changes in orientation in other countries (as outlined in Box 1), but with a delay of some 10 years, the shifts in the orientation of the Thai agricultural research, extension and development may be interpreted as follows:

1. **Production stage** (roughly 1960 – 1980s): Thai farmers as recipients of technology provided through extension services by the Rice and Horticulture Departments. Large-scale dissemination of technology with adoption of the Train and Visit (T&V) model; spread of the green revolution and intensified farming from about 1975 through the 1980s.
2. **Economic stage** (roughly late 1980s – 1990): This stage started by the introduction of the alternative systems which were adopted under the influence of Farming System Research since the mid-1980s. Alternatives offered to the farmers however are designed by the extension officers, but based on the farmers' conditions.
3. **Ecological stage** (beginning in the 1990s): Following the call for sustainable development, agricultural development policy began to use "sustainable agriculture" terminology since the Sixth Plan (late 1980s). Promotion of sustainable agriculture is in the form of encouraging farmers to practice natural farming, organic farming, integrated farming and agro-forestry. Target - 20% of total agricultural land (25 million rai) to be under sustainable agriculture by the end of the Eighth Plan (2000). Conflicting goals - sustainable agriculture vs export production; and little real effort for implementation; difficult to implement for extension officers.
4. **Institutional stage** (just beginning, from 1999 onwards): Farmer's institute is established to serve the people-centred approach, farmers are supposed to fully collaborate in extension while support is provided by the DOAE. However, this approach is still in an early stage and not yet fully developed. (Also refer to Table 1: Changes in farmers' participation)

Reconciling the principles of sustainable development and production promotion is difficult indeed, and it seems to lead to problems of understanding and some confusion among the extension officers as an amusing play on words related by one of the extension officers illustrates.[4]

2.4 Degrees of farmers' participation in decision-making

Similar to the changes in extension approaches, the increasing involvement of farmers as decision-makers, rather than recipients of expert advice from extension officers, shows how Thailand's experience follows that of patterns in other countries. The “Farmer-Centre Approach”, which is complementary to the “Alternatives System”, lets farmers and *tambol* extension officers play much greater roles in local-level planning and implementation, while the upper-tier officers' role shifts from advisor to facilitator. This reflects the objectives of the Eighth Plan, while it is also consistent with the core of planning management processes, which is being promoted worldwide by the concept of Local Agenda 21. Apart from its focus on the environmental cause, this would encompass full involvement of local people in developing and implementing strategies, including contributing in design, information exchange and sharing in decision making.

Pretty (1995) has described seven degrees of participation, i.e.
1. Passive participation
2. Participation in information giving
3. Participation by consultation
4. Participation for material incentives
5. Functional participation
6. Interactive participation
7. Self-mobilization

The summary in Table 1 (next page) relates such changes to the emerging new styles of extension services in Thailand. The design of the agricultural restructuring policy (perhaps more than its actual implementation) aims to include elements of Pretty's advanced stages of participation, and the new concept of *tambon*-level Farmer Centres (since 1999) would definitely require truly functional or interactive participation. So far, there are only a few pilot centres of this kind, and it is therefore too early to assess their viability and effectiveness.

[4] Reconciling the conflicting goals of the government, for example, increased food production and environmental protection, almost amounts to squaring a circle. So it is difficult for for the extension officers, especially those who work at the *tambon* level to encourage sustainable agriculture (such as the King's model of a sulf-sufficient rural economy), while at the same time promoting export-oriented production of cash crops. One of the *tambon* extension officers in Supanburi said that the sustainable agriculture concept, which is translated as “*Kaset Yang Yuen*” , turned the officers into “*Kaset Yuen Ngong*” ("confused agricultural officer"). He used the word “Kaset” to mean “agriculture” in the first phrase, while in the latter it means “agricultural extension officer”. Similarly he used the word “yuen” also in two meanings. The former is mixed with “yang” which means sustainable or standstill, while the latter is mixed with “ngong”, which means standing and confused.

Table 1: Participation levels associated with the changing extension system in Thailand

Type of extension	Time period	Participation characteristics (using Pretty's typology of seven stages of participation)
Transfer of Technology	Until 1977	Modern technology based on research results is introduced to farmers without farm trials. So technology belongs to external professionals and is announced without listening to people's response. This is characteristic of *passive participation*.
Transfer of Technology with the T&V model	1977 – 1990	With the newly introduced resource of Tambol extension officers, it became possible to conduct structured surveys nationwide. However, farmers only answered the questions without having any influence; and most of the findings were never to be shared or checked for accuracy. This is typical of *participation in information giving*.
Alternatives approach	1990s	With the approach of offering alternatives, extension officers began listen to farmers. Both problems and solutions are defined in accordance to farmers' needs and local conditions. This is in line with *participation by consultation*.
Extension style used in the agricultural restructuring programme	Since 1993	For the first time, the diversification pilot project (and later on, the restructuring programme) coupled low-interest credit with diversification. The extension approach used here includes elements of *participation for material incentives*, apart from the alternatives approach that had been introduced before.
Farmer-centre approach	Since 1999	The establishment of farmers' institutions incorporated with the Tambol Administration Organization (TAO) aims at encouraging farmers to carry out joint analysis leading to action plans, while these groups have control over decisions and maintaining the agricultural practices in the form of "Farmers' Field School". This seems to resemble the model of *functional* and *interactive participation*.

Source: Interpretative table designed by Siriluck (2000), linking the extension stages in Thailand with the seven participation stages described by Pretty (1995).

3 The national agricultural restructuring programme

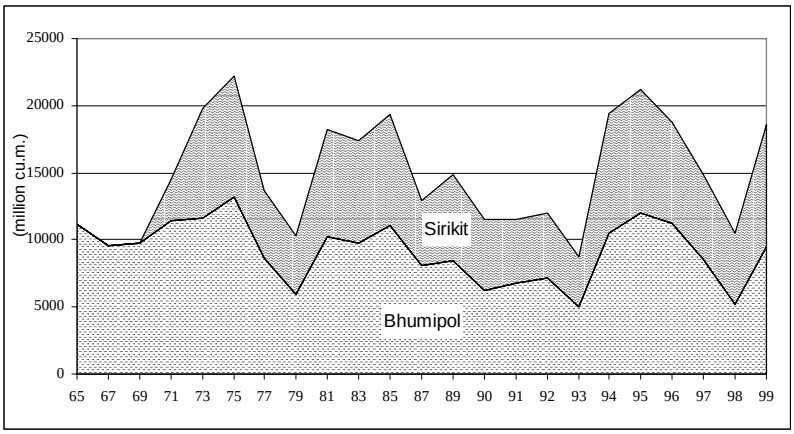
Thailand had reached the 'land frontier' some 25 years ago, when it was no longer possible to accommodate increasing population pressure and agricultural production needs by opening up new farm land (as is well known, very much at the price of reducing the forest cover of the upland areas). What was new at the end of the 1980s, however, was that the country was reaching a 'water resources frontier', realizing that the seemingly abundant water resources are in fact limited and need to be allocated among the competing objectives

of rural and urban development. Team Consulting Engineers (1993) concluded that Thailand had to act on the critical competition between agriculture, industries and urban domestic consumption. Thailand is only one of several developing countries in the wet tropics where the water frontier is being reached, because of the increasing demand from urban-industrial uses in conjunction with agricultural use of finite water resources. So an elaborate water management plan was recommended (Binnie and Partners, 1997) in which the agriculture sector would have to play a significant role.

For the first time in crop year 1993/1994, reservoir water for agriculture had to be limited in an unprecedented way. The two large dams (Bhumipol and Sirikit) that had been supplying irrigation water to the central plain since the 1960s and 1970s, reached exceptionally low levels (Figure 4). The graph in Figure 4 also shows the fluctuation cycle of water resources in those reservoirs, and by implication, the ups and downs of the rainfall regime.

The two causes of the water shortage in 1993 were the periodically experienced low rainfall intensity for three years (1990-1993), and, at the same time, the demand for electricity generation and water supply for the metropolitan region, which had been growing tremendously due to the expansion of industrial development and settlement. This forced the Royal Irrigation Department (RID) to reverse its 40-year policy of water use for agriculture.

FIGURE 4: AVAILABILITY OF WATER IN THE BHUMIPOL AND SIRIKIT RESERVOIRS, 1965-1999



Source : RID

3.1 The background of the national agricultural restructuring programme

Under such conditions, any agriculture development policy would have to deal simultaneously with several critical problems, i.e. periodic shortages of water for agriculture (which was due to reduced rainfall and poor distribution of water), declining land resources and high competition in the world market for rice (and other commodities). Thus a policy for "Agriculture Restructuring for the Chao Phraya River Basin" was set up in 1993, in the framework of a “Work Plan for Restructuring Agricultural Production” which was formulated as the most important policy thrust in line with the Seventh National Plan (1992 – 1996). Following the principal guideline of utilizing the national resources and meeting the market demand, the operational plan for this area emphasizes the promotion of crop diversification

in order to mitigate against the risk of the low rice price and to consume less water for cultivation.

The main strategy implied in the crop diversification in the Chao Phraya Basin was twofold, i.e.

(i) as a minor strategy component, to substitute the second rice crop with other crops (such as vegetables or flowers), and

(ii) as the major strategy thrust, to permanently replace rice cultivation with other forms of land use, notably fruit trees, but also animal husbandry or aquaculture.

The minor strategy component of substituting for the second rice crop in the dry season does not change the land use pattern. Rice is still cultivated in the wet season while other crops are grown in the dry season. In comparison, the major strategy thrust is to permanently replace rice cultivation with other forms of land use. The emphasis of this study is on this second component of the diversification policy, because it is more complex and requires much more far-reaching decisions by the farmers than the first component.

It was the first time that the Thai Government allocated a large budget in the form of credit support to farmers who wanted to diversify. Despite the incentive of low interest rate and long-term credit, taking the loan still involved the farmers' own decision-making and risk-taking. This is especially true for small-scale farmers who have limited farm resources of land, labour and capital. These farmers will not accept the alternatives offered by the extension officers if unless the market opportunities for the fruits, flowers or fish are better than for rice. So a number of factors and their possible combinations determine whether a small farm is able to effectively participate in the diversification programme. The main reference document would be the proposal of the Department of Agricultural Extension (DOAE, 1994).

3.2 The diversification pilot project in rice-farming areas of the Chao Phraya river basin, 1993

Under the Seventh National Plan, crop diversification was strongly promoted in order to respond to the risks caused by natural disasters and price fluctuation, in the framework of restructuring agricultural production. The target crops were rice and cassava, but also coffee and pepper, all of which tended to give low returns, and the main instruments for making diversification attractive and effective were credit support as well as local extension services. The water shortage of the early 1990s gave rise to the somewhat urgent additional objective of saving water as part of the diversification strategy, but no target figures were given for how much water was to be saved.

Originally, the diversification programme was supposed to cover all 22 provinces of the river basin (see Figure 3 above) from the beginning in 1993, but due to budget limitations for the first year, it was decided to begin with a pilot project in four provinces, i.e. Lopburi, Angthong, Suphan Buri and Ayutthaya. The selection was based on good accessibility (from the national agricultural planning headquarters) rather than these provinces' representativeness

of the different agro-ecological zones in the river basin. The pilot project was under the authority of the Department of Agricultural Extension (DOAE), which had a budget of 29 million Baht [5] for the initial one-year operations.

The pilot project operations covered one district each in the three provinces of Ayuthaya, Supanburi and Lopburi, and two districts in one province (Angthong). Each of the districts had a target area of 500 rai, but the first-year operations covered 2,355 rai belonging to 517 farms. The project performance thus exceeded the target figure of 2,000 rai, while underspending on the budget available - just under 25 million Baht were spent on credit that was actually supplied to farmers (DOAE, 1994).

When a much larger budget (of over 65,000 million Baht) became available a year later (1994), the crop diversification out of rice in the Chao Phraya River Basin was integrated into the main work plan for a national project called *Restructuring Agricultural Production.* This programme aimed to support farmers in diversifying out of the major cash crops which had been facing serious problems of price fluctuation. First of all, rice, but also, to a lesser extent, cassava, were the main target as they are the major crops with the largest number of farmers affected. The programme design also included pepper and coffee as less important, but regionally important, cash crops, although they were later dropped from the project implementation. Within this larger national framework, crop diversification out of rice was then not limited to the irrigated areas anymore (as in the pilot project), but also covered rice cultivation in rainfed areas.

The 'jump' from a pilot project worth 29 million Baht which was limited to four provinces and rice as the single target crop, to a very important national policy worth 65,000 million Baht (for a five-year period) was enormous. A simple arithmetic comparison of the size of the pilot project with that of the full-scale programme would show this: The pilot project had provided approximately 7.25 million Baht per province (for one year and one *amphoe* only), but the full-scale programme would allocate an average of 171 million for each year per province - an increase by a factor of 23. Surprisingly, however, this 'jump' was made without an in-depth evaluation of the pilot project, which had been designed to test the national strategy for a one-year period. Apart from that, this very large and complex national programme was launched without a detailed framework for monitoring and evaluation, although it would have been obvious that the different crops (rice and cassava) needed to be evaluated separately, and ideally, at least each province would have to be monitored and evaluated. [6]

The main features of the design of the diversification pilot project are outlined in Box 3. They are similar to those of the much larger national agricultural restructuring programme which began in 1994. The procedures that are summarized in Box 3 have been applied since 1993,

[5] Reportedly, this budget came from the proceeds of the former rice export premium.

[6] This has made it virtually impossible for the author of the study presented in this paper to obtain any detailed data on the performance of the restructuring programme after 1995. This is unfortunate because it is now not possible to compare the detailed analysis of the baseline survey data (as outlined in this paper) with the actual implementation of the programme in the same provinces, or other areas, over the past five years.

although they may have been adapted along with increasing experience (in this respect, refer to the handbook published by the Ministry of Agriculture and Cooperatives, 1998).

Box 3: Main features of implementing the diversification pilot project: Design from the top, and recognition of local farm resource constraints

The project package was designed at the top level of the vertically organized bureaucracy. For the central plain, orchard cultivation was targeted as the most appropriate crop for substituting rice, because of soil suitability, market demand, and lower water consumption. The project design aimed at the conversion of small plots (3 - 5 rai) from rice to orchard, in combination with a special long-term, low-interest credit line (15 years, and only 5% p.a.). To bridge the first 3-4 years with no returns from the young fruit trees, intercropping with vegetables or flowers was recommended, apart from the possibility of raising fish in the irrigation ditches of the newly created orchard plots (for supplementary income).

In implementing the programme, the Department of Agricultural Extension (DOAE) as the lead agency cooperated closely with the Royal Irrigation Department (RID) and the Bank of Agriculture and Agricultural Cooperatives (BAAC) as well as several other agencies.

Provincial targets and information transmission: Budgets and target areas in each province were identified at the level of central-government Departments, and provincial-level offices were instructed accordingly to implement the programme. They had to find farmers who would be interested to join the project so as to prepare definite area and credit targets for each *tambon*. The *tambon* extension officers were given the task of encouraging farmers to diversify. They together with the BAAC branch officers held meetings with farmers, explaining the project objectives, outlining the benefits that farmers might receive, and setting out the conditions for receiving the credit, repayment rates and so on.

Local farm plans: Farmers who were ready to join the project had to work on a relatively detailed farm plan together with the *tambon* extension officers (land use, land holding status, labour available, proposed diversification pattern, budget estimate for the diversification activities). These farm plans were compiled at the *tambon* level, submitted to the agricultural district officers, and forwarded to the BAAC district branch. After screening the applications, the farmers were visited for in-depth investigation, before loans were approved.

Budget approval at the highest level: Approved farm plans were compiled at the district level and processed at provincial level, within the target figures given for land areas and credit for each province. DOAE and BAAC operated through their own channels for credit supply and input support (fruit tree saplings, e.g.) to be prepared at the central level.

Local distribution of support: After approval, credits and material inputs were allocated to the provincial level. Flows of information and distribution at farm level was organized through the district and *tambon* officers. This process also included a stepwise disbursement of loan funds to farmers, in line with implementing the individual farm plan.

4 Research approach and findings

The original rationale for undertaking this study was to describe the diversification project and its first-year implementation as an example of the decentralization policy of the Thai Government (Siriluck, 2000). Decentralization had already been very prominent during the Seventh National Plan (1992-1996), but it is even more pronounced in the present Eighth

Plan (1997-2001). The agricultural diversification policy thus has to be seen in the changing framework of policy planning and implementation at the various levels, especially at the provincial and local levels. The focus was on agricultural planning procedures and experiences, as one of the centrally important forms of government intervention at the local and regional levels.

4.1 Research methodology

The Department of Agricultural Extension (DOAE) was very supportive of the researcher's plans for conducting empirical field research into the innovative diversification project, because the results of the field survey were expected to contribute to DOAE's own efforts for project monitoring and evaluation. So the field surveys were designed as baseline surveys, using the classical approach of comparing carefully selected project target groups with similarly structured control groups from the same study areas.

The methodology included a number of preparatory steps, before the sampling was decided upon in a statistically reliable manner. Methods such as RRA (rapid rural appraisal) were used before going into elaborate interviews with more than 300 farmers. Later on, all areas were revisited, using methods like focus group meetings and PRA (participatory rural appraisal) for updating the information obtained from the initial survey. The first pilot project areas in the four provinces in the Central Region that had been selected by the DOAE were surveyed twice, in the first crop year (1993/1994) and a year after that. They were Ayutthaya, Angthong, Suphan Buri and Lopburi, with those one to two *amphoe* each, where the test programme was carried out by the DOAE. When the full-scale national programme had begun in crop year 1994/1995, two more provinces in the lower north were added, Kamphaeng Phet and Phitsanulok, using essentially the same approach as in the four central provinces. The basic framework was a quota sample of 30 farmers in a 'project group' in each province, in comparison with an equally carefully selected sample of about 20 farmers in a 'non-project group'. In this way, the study in six selected provinces was reasonably representative of the various agro-ecological and socio-economic conditions in the Chao Phraya basin, although obviously, DOAE might have been able to conduct more such surveys in other provinces, using the same model.

The Annex of this paper provides some supplementary information on the field research that was conducted in the form of structured interview surveys in 1994, 1995, and later on, in the form of focus group meetings and interviews with DOAE officers at all levels, from 1996 to 1999 (refer to Table A-1 for an overview of the quota sample). The analysis of the survey data consisted of descriptive statistics, specific statistical tests of some of the crucial factors for understanding the farmers' attitudes and behaviour with regard to the diversification project, and qualitative discussion of the results, in comparison with the published policy documents and statistics.

Understanding the effects of public sector policies on farmers is not possible without adopting a holistic approach where the individual farmer is at the centre of a farming system, which is part of the entire agricultural system (Chudleigh, 1984; Siriluck, 1993). The farming systems approach was used as a conceptual basis for setting up the survey and analysis

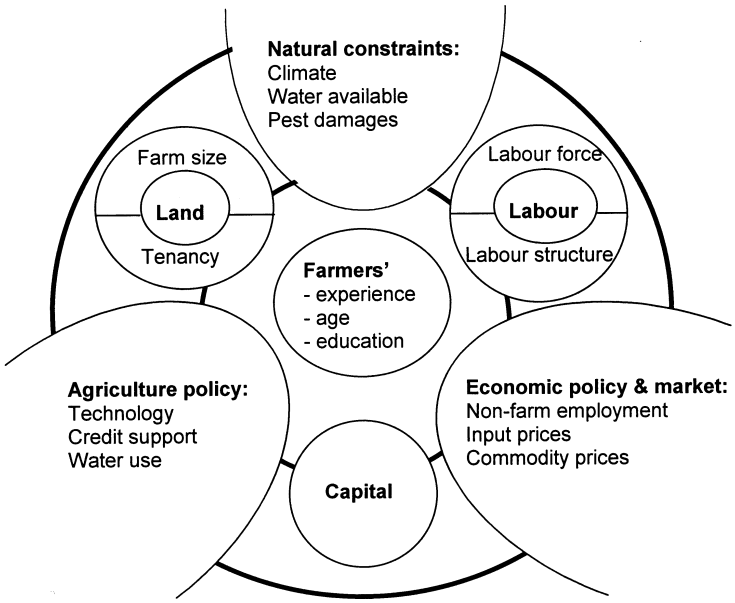
methodology because it was only in this way that the farmers' situation vis-à-vis the alternatives offered by the diversification project could be understood. The methodology included exploratory reconnaissance trips, talks with key informants at all levels, 'rapid-appraisal' meetings with farmers, and in-depth interviews based on structured and open questions, apart from reviewing all relevant statistics and other published materials.

Figure 5 shows a conceptual diagram of the basic framework for the determinants of farmers' decision-making. All farming decisions are based on constraints and opportunities that lie within the farmer's personality and family (at the centre of the graph), the farm resources of capital, labour and land (shown in the intermediate circle), and the farmer's response to market signals and other determinants that are shown in the outer circle of exogenous factors.

Although the field surveys in 1994 and 1995 were only conducted in rice-growing irrigated areas, the principal framework of the approach was such that it could be adapted to any other areas under the agricultural restructuring policy. The aim was to conduct a systematic empirical study into the various factors that are involved in the implementation of the agricultural restructuring policy, and to fully understand the farmers' actual decisions. In the long run, it would even be possible to expand the method into a multi-criteria model, which would eventually lend itself to predicting farmers' behaviour under various farming system conditions, simulating the expected effects of alternative restructuring scenarios. In this way, the initial research effort could have been utilized in monitoring and adjusting the national policy, through systematic feedback from the actual local implementation experience.

The farmer (at the centre), surrounded by endogenous factors (concerning the farm, inner circle) and exogenous factors (natural environment, national and international policies and market) determining the farmer's decisions (based on Siriluck, 2000)

FIGURE 5: A CONCEPTUAL DIAGRAM OF THE FARMING SYSTEM



4.2 Assessment of project planning and implementation

In view of the objectives of participatory project implementation, as intended under the national plans, the first question to be asked when assessing the style of project planning and implementation would be: Did the field officers administer an agency blueprint plan, or did they facilitate farmers' decision-making? Despite the national promotion of more decentralization, planning and implementation of the project were in the typical bureaucratic manner, with decision-making and budget control still from the top and down the line of the individual agency. As the package had been designed and set out in the form of a 'blueprint' from the top, it was not easy to change and adapt at the bottom of the pyramid. So the *tambon* extension officers who were working at the grass roots level acted more or less as postmen, transferring the message they had received from above to the farmers. This is in contrast with the promotion of active plan formulation at the provincial and district level, responding more directly to farmers' needs as stated in the Seventh Plan. So the local diversification pilot plans did not come from a bottom-up approach, and the farmers basically adopted the package offered by the DOAE. However, the recruitment of farmers for the diversification project brought in a new element in the extension approach, where farmers had to make their own decisions in response to the alternatives offered, rather than just receiving technology transferred to them. [7]

4.3 Baseline research findings

The questionnaires yielded a rich amount of detailed information which would have been impossible to gather through a more broad-brush RRA-type approach. [8] The survey sites in four, and then six, provinces included from four to ten *tambon* each, and almost each of them represented a different microcosm of farming conditions. The farmers' and their household members' demographic data, their educational and experience backgrounds, and their individual resource base - land ownership and size, labour structure, capital, and access to non-farm work - provided a range of basic conditions for the decisions they were expected to make. The decisions were, first of all, whether or not to join the attractive credit-supported package of converting some plots of their land into orchards, and to add fish raising to their rice-farming operations. The second stage of decision-making concerned the mix of new farm enterprises to be added, for example which fruit trees, or which flowers and vegetables. All such details turned out to be very relevant to the success or failure of each farmer over the years after the baseline survey.

[7] Dr. Pote Chumsri, then the director of the Agro-Business Promotion Division of the DOAE, who played a leading role in initiating this project, was proud to say that this was the first project in Thailand, which was established in response to the real problems that farmers faced (personal communication at the beginning of the pilot project).

[8] This confirms the views of the FAO experts (Norman et al., 1995) and other researchers who underlined the importance of structured interviews (in addition to other methods) as a means of obtaining the quantitative and detailed information that is needed for agricultural policy research.

The first part of the analysis focused on the structure of the household income as derived from many different farm and non-farm sources. Figure A-1 (Annex) visualizes the systematic of the analysis, and Table 2 presents a summary of results. The point here is to show the ranges of incomes from different sources, rather than the actual amounts. Expectedly, the household incomes varied considerably, depending on land resources, crops grown and other variables. As all respondents have irrigated land with the possibility of growing a second crop after rice, the average extent of non-farm income was somewhat smaller than the figures from national statistics (at an average of about 50%). However, wherever farmers were in easy reach of industrial plants such as in Ayutthaya, the income from the factory work and other off-farm employment of at least one household member, was reflected in a relatively large proportion (of up to 50%) of total household income.

The decisions these farmers had made, in many ways reflected the constraints they had, but this was not obvious when the interviews were conducted, because so many different factors must be considered. It was only after careful analysis that the initially intended differentiation of farmers, in or outside the project, turned out to be misleading, because there were those farmers in both groups, who had to be seen as a distinctly different third group - i.e. those who had already invested in alternatives to growing rice only. So the sample of 310 farmers was re-shuffled into three groups as shown in Table 3. The emphasis here is on 'innovators', i.e. those who had either previously diversified their farm operations on their own, or they had joined the project, being attracted by the low-interest loan (see Table A-2 for further details). It is almost equally important to understand the 'non-innovators' or 'non-diversifiers', because their conditions would provide the reasons for not being able, or not wanting, to change from the farming operations they already have.

The analysis on the basis of those three groups included a statistical test of those factors that could be used as variables in a possible future model for predicting farmers' attitudes towards farm restructuring options. Tables A-3 and A-4 (Annex) provide more details on this interesting point. In summary, the interpretation of the three groups showed that the resource constraints of the 'non-diversifiers' were such that they did not really have the options that the other two groups had. The decisive factors are land tenure (not enough owned, and too much rented land, which is difficult to use as collateral); and labour constraints (which would not allow to go for the more labour-intensive fruit-tree option). Instead, those households had already decided on the most suitable way of increasing their meager farm incomes - outside work; so the analysis showed that they had a greater extent of off-farm employment than those in the two groups of 'innovators'. The reasons given for not adopting any diversification clearly reflected those resource constraints (Table A-5).

Table 2: Ranges of income from main components of total farm household income

Principal component of total farm household income (total = 100)		Sub-systems (Farm income = 100) (Non-farm inc. = 100)		Main categories of each sub-system (Farm income = 100) (Non-farm income = 100)	
A. Farm Income (gross margin)	40-75	A.1 Crops	82-95	A.1.1 Rice	38-95
				A.1.2 Other crops (sugar, vegetable, fruits, flowers)	0-55
		A.2 Fish	0-7	(commercial scale, home consumption)	
		A.3 Livestock	0-16	(poultry, pigs, cattle)	
B. Non-farm income (gross income)	25-60	B.1 On-farm	3-45	B.1.1Home industries	0-40
				B.1.2 Petty trading & services	0-5
		B.2 Off-farm	55-97	B.2.1 Gov't employment (full-time)	3-45
				B.2.2 Agric employment (part-time)	5-8
				B.2.3 Non-agric employment (full or part-time)	20-55
				B.2.4 Remittances	5-45

Source: Data from 310 households in six provinces, field surveys 1994, 1995; Percentages in relation to total household income, farm and non-farm income

TABLE 3: FORMATION OF THREE NEW GROUPS FOR FURTHER STATISTICAL AND QUALITATIVE ANALYSIS

Separating both project/non-project groups into 'old innovators' (diversified before the project), policy adopters (with project support), and non-diversifiers (in the non-project group)	**A. Project group: 182**	**B. Non-project group: 128**	Total 310
	157 farmers joined the project 25 had diversified earlier but also joined the project	45 had started to diversify 83 would / could not do it, for various reasons	
	1. Project-support group: 157	**2. Self-support group: 70**	**3. Non-diversifiers: 83**	**Total 310**

Note: Only after evaluating the survey results, it turned out that farmers who had already diversified on their own are an important group. So further analysis was on the basis of a re-shuffled grouping

TABLE 4: AN INTERPRETATIVE SUMMARY OF THE FARM RESOURCES OF THE THREE GROUPS

Farm resources	**Group 1: Self-support**	**Group 2: Project-support**	**Group 3: Non-diversifiers**
Labour	Sufficient	Sufficient	Partly employed outside the farm
Land	Sufficient	Sufficient	Limited: partly rented
Capital	Sufficient	Not sufficient. Therefore, credit support required	The land /labour constraints are so strong that even the low interest rate of credit does not act as incentive

Source: Interpretation of survey findings, 1994 - 1996

4.4 Follow-up survey results

The two main reasons for launching the diversification project in 1993 had been the exceedingly low rice prices, that were hardly above the production costs (see Figures 1 and 2); and the acute water shortage. A year after the first survey, the water shortage had become a non-issue, as it rained so much more that there was enough water for agriculture and industries. However, the rice price was

only slowly going up. So the survey results for the two northern provinces were essentially similar to those for the central provinces, except for those differences that could be traced to location relative to non-farm jobs, land consolidation and land tenure patterns, and soil suitability. Also, for those farmers that were interviewed for the second time, the baseline conditions had not changed much in just one year; so the survey results of 1995 in the first four provinces largely confirmed those of 1994. However, a only one year later, in 1996, and especially after the economic downturn of 1997, things had changed considerably, and the focus group surveys that were held then in all survey sites (in 1998 and 1999), added new insights.

Those farmers who had planted fruit trees in 1993 and 1994 had several years of experience now, including the first few years of harvesting and marketing the alternative crops. That was a happy and successful experience for some, and some had turned more plots into orchards, but - many farmers had given up on diversification. They had stopped maintaining their orchards and some had even converted the land back to rice. This was unexpected, but understandable: First of all, the seasonal water shortage had not occurred since 1993, so it was not an issue anymore, even though the level was critically low again in 1998 (see Figure 4 above). However, there was no pressure from the industrial sector as the demand had gone down with the economic crisis. Second, and more important, rice prices had reached an unprecedented high level in 1997. So it was as attractive as never before to grow rice (refer to Figures 1 and 2 above), even though the production costs had gone up too.

It is most unfortunate that it was not possible to quantify exactly how many farmers had continued or stopped the alternatives for which they had taken out a loan (and still had to pay back), and how many of them had actually reverted back to rice (Table 5 and Table A-6, Annex). One of the reasons for this is that the extension officers did not dare to face the farmers who were disappointed and in debt for what they saw as a costly and painful adventure that had been so highly recommended to them. So it was not possible to contact all those farmers who had been interviewed several years before, without any support by the extension officers. Unfortunately, the apparent lack of systematic and detailed monitoring did not only apply to the six survey sites of this study, but to all provinces that had now gone into the full-scale restructuring programme.

TABLE 5: THE CONDITIONS AFTER FIVE TO SIX YEARS OF PROGRAMME IMPLEMENTATION, 1998 / 1999
Focus group discussions in six provinces, including several specific case studies

1. Self-support group	**2. Project support group**	**3. Non-diversifiers**
70 farmers initially	157 adopters initially	83 farmers initially
After 1997:	After 1997:	After 1997:
Some farmers stopped growing fruit trees and converted some of their land back to rice	Many farmers in this group stopped growing fruit trees, and several of them converted the land back to rice	Some farmers may have gone for some farm restructuring, and some may have left farming altogether

Note: No detailed figures are available to confirm such conjectures after the focus group interviews of 1998 and 1999, as there has not been any systematic monitoring of the three groups by DOAE

As it was not possible to re-survey all those farmers that had been interviewed at the beginning, a meaningful alternative was to identify several farmers in each site whose experience would be interesting enough to study in more detail. The in-depth interviews that were conducted in 1998 provided the material for some exemplary case studies that provided further evidence of the farmers' rational decision-making.

Expectedly, the farmers' motives for diversifying are the same as the objectives of the project - manage within limited land and water resources, and achieve better and more stable income from the farm. All case-study farmers stated that unstable and low price of rice, coupled with higher income expectation is the main reason for their interest in the project, while better income distribution and no need of searching for off-farm work were stated in addition by some of them. Therefore, whole-farm analysis was done to compare the traditional and alternative systems. This was not on economic analysis criteria only, but also on farm resources utilization in a time series. Results show that returns from diversification in the first few years was lower than rice anyway. The break-even was found from year 4 onwards. With a long-term perspective, the selected farmers studied in this way were able to rely on cultivation on their own land and stopped renting a part of their land after 2 – 3 years of diversification. The detailed analysis of such cases showed that the managerial capacity among project-support and self-support farmers does not differ, but the 'non-diversifiers' had valid reasons for not wanting to join the project.

5 Farmers as decision-makers, policy shifts, and lessons learnt

The many variations among the local conditions of farmers (and based on those, their behaviour and their attitudes towards the diversification project) are caused by exogenous natural factors like climate and topography, or man made ones, such as agricultural land reform, irrigation system, opportunities from industrial development and others. As the mix of these factors varies considerably even within the same province or the same *amphoe,* the implementation of a national policy such as agricultural restructuring, must be adapted to local conditions.

So the conceptual questions arising for further agricultural planning and policy making are: To what extent is a government policy able to influence farmers' decision-making ? How far is commercial agriculture determined by world market prices and international competitiveness ? Do local extension officers have the ability, and the authority, to modify a national policy in such a way that they actually enable farmers to make the best decisions ? Farmers, as this study clearly shows, make rational decisions that are based on their own careful evaluation of the risks and gains involved in their agricultural enterprise. Having evaluated their own socio-economic conditions (family labour constraints in particular), farmers are responding to market signals (farm gate prices for their products), but increasingly they also make use of non-agricultural opportunities, and, last but not least, signals that come through the agricultural extension services of the government. These include the opportunities offered by the diversification policy - i.e. credit facilities and marketing prospects for alternative crops (such as fruit trees).

5.1 Farmers' attitudes in relation to the diversification pilot project

The survey results clearly show that marketing problems are perceived by most farmers as the main obstacles to successful and profitable farm operations. Natural hazards such as the flooding of 1995, and pest damages, were perceived as problems of secondary importance. Low prices for farm products, the main point mentioned again and again as the main point among marketing problems, seriously affects the entire farm economy. As rice continues to be the main crop in all areas surveyed, low farm gate prices and related aspects of marketing are primarily perceived in relation to rice. However, as experienced in those areas where farmers have already begun to diversify, marketing and price problems were also felt with regard to other crops such as fruits and flowers, where better storage facilities and grading procedures would be needed to achieve better farm gate prices.

Changing external factors such as the formation of the rice price and its share for the producers, is well beyond the capacity of the farmers themselves. Therefore, many farmers have resorted to other means of their being totally dependent on low rice prices which is the dominant problem, in conjunction with the problem of seasonal water shortages. The survey results reflect the great variety of agricultural land uses and farming practices, especially in the non-rice sectors, where farmers in some areas have been surprisingly innovative and sharp in responding to opportunities and incentives offered by government (such as in Suphan Buri). The survey results also show the great range of sources of household income (as summarized in Table 2 above), where the income from non-farm sources in some places, and at least at certain times of the year, exceeds the income from crops and other farm sub-systems. The findings from the survey do not seem to confirm the figures from the national statistics on the very large extent of the non-farming proportion of farm household income, presumably because farmers in irrigated areas are better off than those in rainfed areas. Nevertheless, the figures for 1994/95 (i.e., a year after when the main diversification investments had been done in the central region areas) show that some 25 to 40 (and more) percent of the household income was from non-farm sources. This would indicate the transition, in these households, from full-time farming as the main source of income to mixed patterns, with a large extent of part-time farming.

It would appear that useful diversification experiences are found among two types of farm households, i.e. not only among the 'innovators' among the farmers, but also those who had increasingly utilized non-farm income options. In a way, both of these groups exhibit responses to the challenges of change, away from being totally dependent on rice farming. So their experiences include changing farm practices, such as introducing new crops and new varieties of seeds, or managing seasonal labour constraints, as well as resorting to non-farm opportunities. Table 6 provides a broad summary of the survey findings from 1993 to 2000.

Government support would be needed particularly with regard to those key factors that are beyond the farmers' control, such as farm gate prices and water availability. Therefore, the diversification pilot project, and later on, the agricultural restructuring programme, were formulated and implemented in order to help farmers to adjust to the two core problems, by offering additional options and real alternatives. The pilot project for diversification out of rice initially only offered fruit trees and some other alternatives to growing rice. It thus provided an initial and partial solution to the government's core problem, i.e. untenable competition for limited water resources, and a perspective for the farmers' core problem, i.e. better and more diverse sources of farm income. However, the project did not provide much of a solution to the related core problems of the farmers, i.e. those related to marketing, including more information, better quality, and higher farm gate prices.

5.2 Longer-term policy implementation and monitoring

The remarks on the performance of the restructuring policy over the past five years must be tentative, because the data and documents available do not permit any in-depth assessment at this stage.

As stated before, the launch of the large national programme does not seem to have used a detailed evaluation of the pilot project. Also the water conservation aspect of the pilot project was not pursued in any way as part of the national programme. Both these points are indicative of a style of swift policy changes in the government, which appear to be dominated by international development fashions, specific conditions (such as the water shortage in 1993), and ideas that are championed by influential personalities in the agencies. Once they have been transferred to other positions, and as soon as the emergency is over (although the long-term threat may still be there, such as in the case of the 'water frontier'), the policy is changed, dropped or not properly monitored.

Further examples to be referred to in this context, is the attention given to strategic-planning methods and techniques (such as the popular SWOT analysis) which seems to be coming and going with the promoters of such ideas instead of staying in place for consolidation and systematic testing.

TABLE 6: A BROAD SUMMARY OF THE SURVEY FINDINGS ON THE DIVERSIFICATION PILOT PROJECT / AGRICULTURE RESTRUCTURING POLICY -- FARMERS' RESPONSE TO POLICY AND MARKET SIGNALS

Time period	**Crop year 1993/1994 (Survey in 4 provinces)**	**Crop year 1994/1995 (Survey in 6 provinces)**	**1997- 2000 (Policy review)**
Agriculture Policy	Four pilot provinces (of 22 provinces in the Chao Phraya Basin) selected for **experiments with diversification out of rice** (in irrigated areas) Main objectives: (1) Water conservation, (2) Promotion of alternatives to low rice price	The diversification project becomes part of the more general **national agriculture restructuring programme** for major crops: - Rice (irrigated / non-irrigated areas) - Cassava (upland areas) - Pepper and Coffee (hardly implemented because of price recovery after introduction of policy)	Agriculture restructuring policy continuing but apparently not very successful. This is difficult to verify because of unavailable data, and unclear monitoring system. Adoption rates low because of - market price recovery - water availability
Farmers' responses (sample groups in 6 provinces)	**Project Group:** Farmers in pilot provinces responded well to diversification policy, despite the expenditure and risks involved in land conversion; some farmers had begun to diversify prior to the project, but also joined the project, attracted by its opportunities **Non-Project Group:** (a) Diversification into fruit and flower production in response to market demand and farmers' own initiatives prior to the project (b) To some extent, non-adoption for good reasons	**Self-support** and **project- support groups** of farmers continued to diversify, depending on a mix of factors such as own ability to take initiate and risk, and credit support offered by government	Many farmers (numbers hard to verify) have abandoned fruit trees and other options under the diversification project, and reverted back to rice, in response to rice price recovery and water availability, but other farmers continued on a more diversified basis.
Lessons to be learnt	Very different local conditions of individual farmers even within the same province. These have not been sufficiently addressed by the 'blueprint policy' although credit support offered for diversification was initially successful and advice given in the target districts was supposed to be area-specific.	Increasingly evident local differences based on a mix of factors, such as own ability and experience, non-farm income opportunities in the vicinity, and quality of local implementation of the restructuring policy by the extension officers.	It is difficult to generalize on the chances of success for such policies at national or provincial levels, because decision-making factors are highly localised. Further decentralized policy implementation and monitoring to be carefully adapted to local conditions.

One of the most important sources of information is the evaluation report for the Budget Bureau, which was written by researchers based at Chulalongkorn University (Chula Unisearch, 1996). In addition, there are evaluations of the implementing agencies, i.e. OAE

and BAAC, for their own areas of responsibility. All of these evaluation reports present highly aggregated statistics (that given for the macro-regions only), but no detailed information as to programme performance by province, or by agro-ecological zone, and not even separated for rice and cassava. This is a serious shortcoming, which does not only make it impossible to relate the detailed survey results presented here to the general nation-wide policy experience, but it also makes any real feedback into policy adjustment impossible.

The Chula Unisearch Report is critical of the low achievement rates of the programme (p. 10) which is evident from the following figures for 1994: Of the 6,500 million Baht available for credit, only 3,000 million were approved and disbursed, based on farm plans submitted for just over 1 million rai. Similarly, the figures for 1995 show that the size of the programme had grown into considerable proportions -- 95,203 farmers received credit support for farm plans on a total area of 662,350 rai, but 122,243 had applied.

The report also states for 1995 (p. 75) that while the area targets were met at a rate of 66%, the credit disbursement targets were met at a very low rate of 16% only. The main problem that prevented higher disbursement rates was given as the farmers' inability to provide land for collateral. This was traced to the prevailing land tenure pattern with high rates of rented land or land without appropriate title documents.

The documentation in hand appears to be focused on specific aspects such as loan repayment patterns, but not on the core questions to be covered by objective-oriented monitoring reports, such as the degree of restructuring achievements, and the effectiveness of the farmers' projects.

These are just a few preliminary examples from the analysis that is still being completed on the basis of the officially available documentation. It should be obvious that this kind of highly aggregated statistics are not suitable for monitoring and evaluating a policy of the calibre of the agricultural restructuring programme. For any such policy to be successful, there needs to be a consistent implementation and monitoring system that stays in place over a long period of time, apart from being detailed enough to capture the important local variations (van den Ban and Hawkins, 1996).

6 Conclusions

Some concluding remarks can be made at this stage. Conclusions on the basis of the field surveys in conjunction with a more general assessment of decentralized agricultural planning and implementation are on rather firm grounds of data and comparative interpretation, but those related to the national agricultural restructuring programme are not. So there is a 'missing link' between evidence from detailed empirical research and general programme monitoring, which should not be left unattended on the part of the Ministry of Agriculture and its agencies.

The diversification pilot project shows that Thailand is advancing as far as farmers' participation in extension work is concerned, although progress is more limited than desirable and targeted under the last two National Plans.

The empirical study has shown that farmers act in a rational way, making decisions that are consistent with their own constraints and opportunities in a farming system framework. The 'discovery' of the third group of farmers, the self-support innovators, is particularly relevant in this context. At the same time, this part of the analysis proves the importance of detailed and well-structured field research methods in order to gain real insight and to support policy formulation.

So the main recommendation arising from the empirical study is not to turn the diversification policy into a rigid programme, which would be difficult to change and adapt over time. The agricultural extension approach should be flexible in its reactions to changes in the local situation, and especially to the reactions and emerging needs of the target groups. This requires a structure that allows decentralized and democratic decision making. This style of the approach however requires technical support for the officials so they can have the social competence and be able to practice a participatory style of leadership and two-way communication in their daily work. Furthermore support has to be on agricultural technology as part of the recommended packages for diversification, which are new for both extension officers and farmers.

With regard to the transition from pilot project to full-scale programme, the conclusion is that there was no sufficient evaluation of the lessons that could have been learnt from the pilot sites. Apart from this, the local officers seem to have lost interest in the pilot project as soon as the much larger national programme was in sight.

The longer-term observation shows that the two most pressing needs of 1993, low rice price and acute water shortage, were temporary, but it would have been very difficult indeed to predict the changes that happened afterwards. Moreover, it would have been impossible to foresee the crisis of 1997 and its specific impact on agriculture, which was the fortuitous increase of rice prices due to exchange rate adjustment.

Many farmers did gain from the diversification project because they had the right combination of experience and farm resources so they could do it on their own or with project support. On the other hand, however, many farmers who had experimented with fruit trees without being confident as to their skills and labour resources to handle the new crop, paid a high price of being in debt from the loan that still has to be paid back. At the same time, they gained from the windfall profit of high rice prices in 1997/1998.

In retrospect, the extension officers may not have been as efficient as they should to handle such a project. In combination with the unpredictable change in rice prices, this resulted in a difficult 'loss of face' vis-à-vis the farmers who do not trust such officers anymore.

The monitoring system of the national programme seems to be insufficient, and it is impossible to trace the long-term changes among the farmers' groups that had been surveyed at the beginning. Moreover, the monitoring system, as well as the documentation of programme implementation, appear to be inadequate as a basis for assessing the long-term performance of this large programme.

ANNEX:

SUPPLEMENTARY INFORMATION

Objectives of the Study (Siriluck, 2000)

The overriding objective of the study is to determine the opportunities and constraints of government-induced agricultural restructuring in a decentralized regional planning context. The related specific objectives are:

1. To describe and assess the framework of policy planning and implementation at the various levels, especially at the provincial and local levels, following the decentralization framework of the 7th and 8th National Plans. The emphasis is on agricultural planning procedures and experiences, as one of the centrally important forms of government intervention at the local and regional levels.

2. The focus of the study is on the agricultural diversification programme and the related planning and implementation practice in the Central Plain. This includes attention to the differences of programme implementation in selected provinces and localities within the same province.

3. In turning empirical evidence into "lessons learnt", the study then aims at generalizing them into recommendations for further development of the agricultural restructuring programme, to support realistic national policy making.

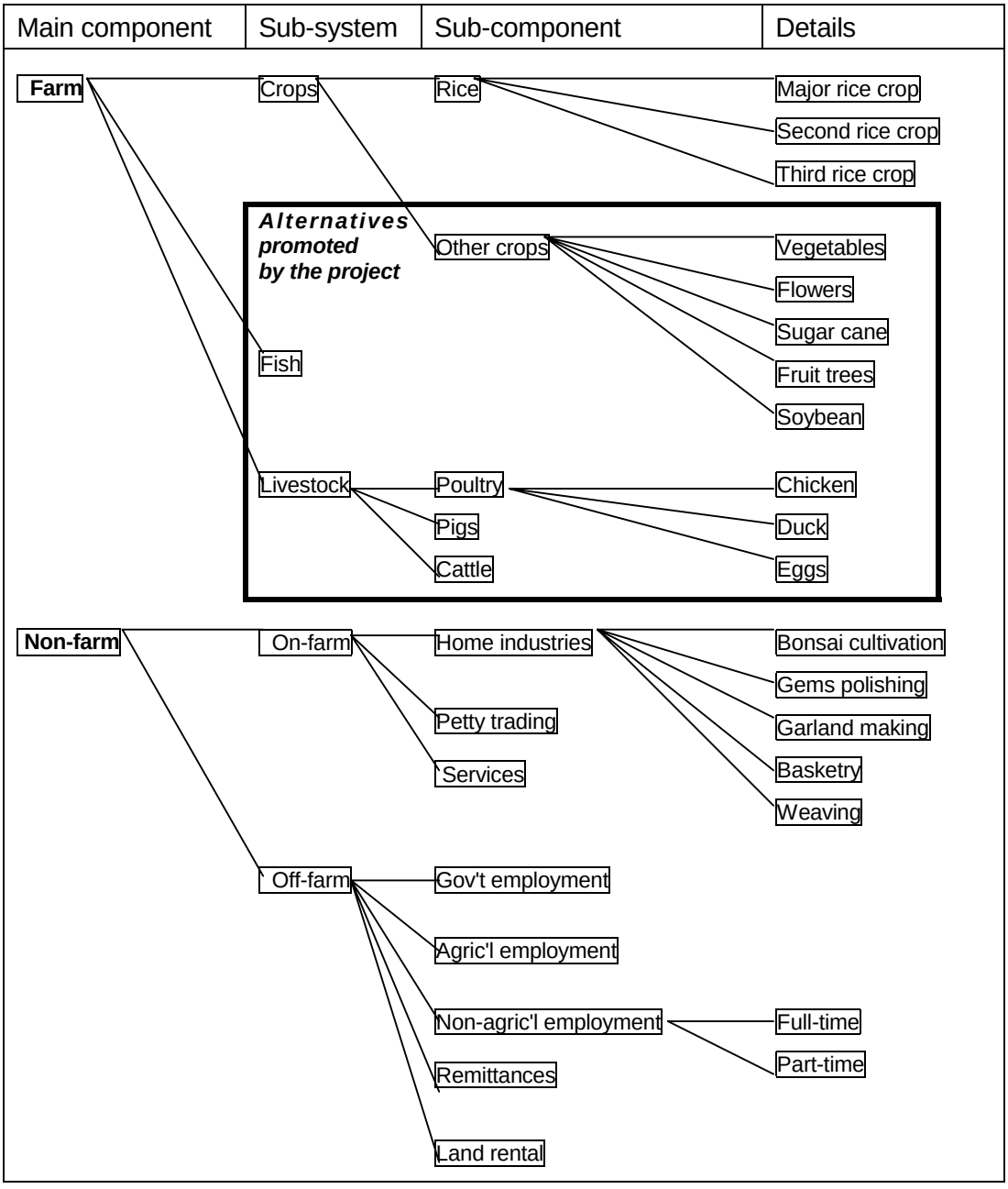
The six provinces selected represent distinctly different agro-ecological conditions, but more so, different conditions as far as exogenous factors are concerned, such as off-farm employment opportunities. The six provinces studied are reasonably representative of the conditions in the 'rice bowl' of Thailand, i.e. the Central Plain (Ayuthaya, Angthong, Supanburi, Lopburi) and the Central North (Kampaengphet, Phitsanulok).

TABLE A-1: QUOTA SAMPLES SELECTED FOR THE BASELINE SURVEYS IN SIX PROVINCES, 1994 AND 1995

Two baseline surveys	Provinces	**Project Group**	**Non-project group**	Total
1994, covering the first year of the pilot project in four provinces, crop year 1993/94 (Repeat survey of the same respondents in 1995)	Lopburi	32	21	53
	Angthong	30	20	50
	Ayuthaya	30	20	50
	Supanburi	30	26	56
	Subtotal	122	87	209
1995, covering the first year of the national restructuring project, selecting two provinces in the lower north	Phitsanulok	30	21	51
	Kampaengphet	30	20	50
	Total	182	128	310

Note: The original sample design aimed at a comparison between the project-group farmers with those in a control group, the 'non-project group'

FIGURE A-1: COMPONENTS OF FARM HOUSEHOLD INCOME AND THE MAIN ALTERNATIVES TO 'RICE ONLY' PROMOTED BY THE DIVERSIFICATION PROJECT (SMALL INSET BOX)



Note: The systematic shown in this figure is based on the guidelines for farm income analysis issued and published annually by the Office of Agricultural Economics (for example, OAE, 1998)

TABLE A-2 : THREE GROUPS OF FARMERS: 'INNOVATORS' VS. 'NON-INNOVATORS' BY PROVINCE

Groups		Definition	Number of households							
			Provinces						Total	
			L	A	Ay	S	P	K	No.	%
'Innova-tors'	1. Self-support group	Farmers who initiated diversification independently	9	12	8	23	7	11	70	22.6
	2. Project-support group	Farmers who diversified with the help from the project (credits and advisory services)	26	26	27	24	29	25	157	50.6
'Non-innova-tors'	3. Non-diversifying group	Farmers who did not take any initiative towards diversification (although the Projects were available in the district)	18	12	15	9	15	14	83	26.8
Total	All respondents by province		53	50	50	56	51	50	310	100

Central Region: Pilot provinces in 1993/94
L – Lopburi, A – Angthong
Ay – Ayuthaya S – Supanburi

Northern Region: Provinces joining in 1994/95
P – Phitsanulok
K - Kampaengphet

TABLE A-3: LAND TENURE STATUS BY GROUP

Land tenure status	Group 1 70 self-support farmers	Group 2 157 project-support farmers	Group 3 83 non-diversifying farmers
Proportion of land owned (as percentage of total farmland)	80	64	47
Proportion of land rented (as percentage of total farmland)	15	25	44
Others (rented out and wasteland)	5	11	9

TABLE A-4: LABOUR STRUCTURE AND LABOUR FORCE BY GROUP

Labour structure	Group 1 Self-support farmers	Group 2 Project-support farmers	Group 3 Non-diversifying farmers
(a) Full-time farming	51%	47%	35%
(c) Farming with part-time employment	13%	12%	28%
(d) Others (outside work and not working)	36%	41%	37%
Labour force (persons per household)	2.6	2.5	2.5

TABLE A-5: REASONS FOR NOT ADOPTING DIVERSIFICATION AS OFFERED BY THE PROJECT (GROUP 3)

Reasons	Percentage (multiple choice)
Land constraints	54
Labour constraint s	34
Preference for existing system	23
Capital constraints	14

TABLE A-6: SUMMARY RESULTS OF FOCUS GROUP INTERVIEWS CONDUCTED IN 1996-1999

Reasons for giving up on fruit trees and converting the land back to rice (1995 - 1996):
- Flood damage in August 1995, affecting all study areas, and destroying the new orchards of some farmers who then gave up
- Labour constraints proved too heavy, so it was not possible to maintain the new orchards
- Back to sugar cane in 1997, because the price was attractive again
- The Kiew Savoy variety of mango is too difficult to cultivate for farmers without specific experience
- Fruit tree seedlings provided by the extension service were not good

Focus group interviews (1997-1999):
- Fruit prices dropped from 1997 (economic crisis - market demand shrinking)
- Good rice price, but low orchard price
- Stocks for fruit trees unavailable in some localities due to increasing demand
- Kiew Savoy continues to be disappointing in yields and too demanding in maintenance
- Labour constraints increasing, as orchards had grown and needed more attention
- Blaming the extension officers for luring the farmers into a costly 'adventure', ending up in debt

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