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MSS Discussion Paper No. 30

AGRICULTURAL DIVERSIFICATION AND RURAL INDUSTRIALIZATION AS A STRATEGY FOR RURAL INCOME GROWTH AND POVERTY REDUCTION IN INDOCHINA AND MYANMAR

by
Francesco Goletti

Markets and Structural Studies Division

International Food Policy Research Institute
2033 K Street N.W.
Washington, D.C. 20006
Tel. (202)-862-5600 and Fax (202)-467-4439

June 1999

Contact: Carolyn Roper
Tel. (202) 862-8148 or Fax: (202) 467-4439

Paper prepared for the Symposium on "Food Policy in Indochina and Myanmar: The Effects of Globalization" co-sponsored by International Food Policy Research Institute and the Ministry of Agriculture and Rural Development, Hanoi, March 1-2, 1999.

CONTENTS

1. INTRODUCTION 1

2. CONCEPTS AND RATIONALE 4
CONCEPT OF DIVERSIFICATION 4
RATIONALE FOR DIVERSIFICATION 6

3. SIGNIFICANCE FOR IMR 10
STRUCTURAL FEATURES OF IMR AND THEIR RELEVANCE TO DIVERSIFICATION 13

4. EVIDENCE OF DIVERSIFICATION IN THE IMR 24
TRENDS IN AREAS AND PRODUCTION OF CROPS AND MEAT PRODUCTION 31
AGRICULTURAL EXPORTS 33

5. FUTURE CHALLENGES AND GUIDING PRINCIPLES 40

REFERENCES 47

TABLES

Table 1–Labor force and urban population 14
Table 2–Changes to agricultural labor force in Indonesia and Thailand 15
Table 3–GNP per capita, share of agricultural GDP, and productivity of agricultural labor 16
Table 4–International poverty comparisons (percent) 17
Table 5–Share of agricultural exports in 1996 18
Table 6–Rice indicators 20
Table 7–Rice cultivation intensity 20
Table 8–Key indicators of infrastructure 22
Table 9–Average share of agriculture subsectors over the period 1989-95 (percent) 25
Table 10–Growth of different agricultural subsectors 26
Table 11–Contribution of food processing to Gross Domestic Product 29
Table 12–Land use and deforestation rates 31
Table 13–Growth of cultivated area of different crops (1989-1996) 32
Table 14–Growth of production of different crops (1989-1996) 33
Table 15–Meat production growth 33
Table 16–Growth of major agricultural exports over the period 1989-96 37

FIGURES

Figure 1–Structure of agricultural GDP 27
Figure 2a–Structure of export value 38
Figure 2b–Structure of export value 39

1. INTRODUCTION

During the 1980s, several Southeast Asian countries enthusiastically embraced agricultural diversification and rural industrialization as a strategy for rural development (see APO 1991, APO 1994, Barghouti et al. 1992, IFPRI 1992). This was partly in response to structural changes accompanying the long-term contraction of agriculture in the economy. In the context of Asian rice economies, the green revolution resulted in self-sufficiency in cereal food staples in many countries; the movement of Indonesia from the largest rice importer in the 1970s to self-sufficiency in the late 1980s was the most glaring example. The success of the green revolution, however, lowered real prices of cereals and induced the need to divert land and labor resources to non-cereal activities in order to prevent further declines in prices and income in rural areas. The production effects of increasing rice productivity were achieved during a period of rapid growth of the economies in Southeast and East Asia; rising income and urbanization in the most dynamic Asian economies stimulated a shift in food demand patterns towards higher income elasticity food products such as fruits and vegetables, pulses, and animal products. Agricultural diversification was seen as a desirable response to these supply and demand changes and was explicitly incorporated into many countries' agricultural policy and rural development strategy. Moreover, links between agricultural diversification and rural industrialization were highlighted by the relatively greater importance of postharvest activities such as storage, transportation, processing, and marketing involved in non-cereal products. Agrofood based rural industries were recognized as providing not only higher value products and income to rural areas, but also employment to a still large rural non-farm population that could not be absorbed quickly by the rapidly expanding industrial and service urban

sectors. This strategy was pursued by countries as diverse as Taiwan and Malaysia in the 1960s, and Thailand, Philippines, and Indonesia in the 1970s and 1980s.

The purpose of this paper is to understand to what extent such a strategy is appropriate for the low income rice-based countries of the Indochina-Myanmar Region[1] (IMR). On the one hand, the arguments in favor of agricultural diversification and agrofood based rural industrialization seem even more pressing than for the lower-middle income countries of Southeast Asia. The predominantly agrarian structure of these economies makes the need to increase income in rural areas more urgent, given the extreme difficulties that the urban and industrial sector will face to absorb a growing rural labor force in the medium term. With 80 percent or more of the population in rural areas in countries which have mostly reached rice self-sufficiency and boast a high potential for exportable rice surplus, the acceleration of growth and income in rural areas in the future will have to come from non-rice agricultural commodities and rural non-farm activities. On the other hand, successful diversification requires a commercialized agricultural system, adequate infrastructure development, and well functioning rural institutions, all conditions barely present in the IMR. An alternative view would stress the need for rice intensification in the IMR where the potential for rice is still high, poverty and food insecurity are pervasive in rural areas, and world rice markets are more dynamic than in the previous two decades.

In order to provide some insight into this issue, the rest of the paper is organized as follows. First, the concept of diversification is examined more in detail

[1] In this paper IMR includes Cambodia, Laos, Viet Nam (traditionally referred to as Indochina) and Myanmar.

together with the arguments presented in the literature as rationale for adopting diversification as a strategy for rural development. Then, a conceptual framework linking diversification, policy, and market development is presented, drawing on previous work at IFPRI. The framework provides a theoretical argument for the importance of diversification to countries at low level of development such as those in the IMR. The next two sections look at the empirical evidence from the IMR, considering first the structural features of the region and then trends in agricultural diversification and rural industrialization. The final section signals the future challenges for policy.

2. CONCEPTS AND RATIONALE

This section poses two questions: i) what is meant by agricultural diversification and ii) why was a strategy to promote agricultural diversification and rural industrialization desirable for low-middle income Southeast economies in the past two decades?

CONCEPT OF DIVERSIFICATION

From a narrow point of view, agricultural diversification implies increasing the variety of agricultural commodities produced at the farm level. From this point of view, Southeast Asia was remarkably successful in agricultural diversification in the nineteenth and early twentieth centuries (Hayami, 1992) when in response to growing demand from the West for tropical products, new lands were cultivated with cash crops such as sugar, coffee, tea, and rubber. Agricultural diversification in this narrow sense may also be the response of subsistence farmers to reduce risks arising from climatic, biotic, or seasonal factors. The latter is the typical response of subsistence farmers in Africa (see Ruthemberg 1976, Delgado 1997, and IFPRI 1998) and subsistence farmers in non-irrigated Asia.

A broader point of view suggests that agricultural diversification is a process accompanying economic growth, characterized by a gradual movement out of subsistence food crops (mostly rice in Southeast Asia) to a diversified market-oriented production system, triggered by improved rural infrastructure, rapid technological change in agricultural production, particularly food staple

production, and diversification in food demand patterns (see Rosegrant and Hazell 1999).

From this broader view, agricultural diversification entails more than merely growing crops other than rice. It involves the entire rural economy and entails broadening the income sources of rural households. As such, it is linked to increasing commercialization and to the structural transformation of the economy where the agricultural share of GDP contracts. The process involves not only cropping but also new marketing and agrofood based industrial activities that affect the overall rural economy. Effective diversification will require key investments in infrastructure and institutional changes to promote the private sector, particularly in rural areas. Eventually, the process of structural transformation of agriculture will lead to the exit of a significant proportion of the rural work force from agriculture, though not necessarily from rural areas. Thus, rural income diversification encompasses both agricultural diversification and the stimulation of rural non-farm sources of income (see Goletti and Rich 1998).

Diversification can occur at the micro, regional, and macro level (see Taylor 1994). At the micro level, the individual household diversifies in order to strengthen and broaden its sources of farm and non-farm income. That may involve both horizontal diversification toward new agricultural commodities or vertical diversification into non-farm activities such as marketing, storage, and processing. At the regional level, regions pursue agricultural activities in which they have comparative advantage. For both households and regions, diversification may involve specialization, as for example rainfed rice farmers becoming specialized coffee producers. At the macro level, diversification implies the structural change from agriculture into non-farm activities, either in rural or urban areas, or in rural towns (see Otsuka 1998).

Diversification is a process accompanying the structural transformation of agriculture rather than an objective of agricultural development (see Kasryno, et al. 1992). It is what individual producers, rural households and enterprises, regions, and nations do to pursue their various objectives in response to changed market and technological conditions. The objective of a well diversified agricultural system is to gain sufficient flexibility to adjust to the changed conditions smoothly (see Taylor 1992).

RATIONALE FOR DIVERSIFICATION

If diversification is a process of adjustment of the rural economy to the changed market and technological conditions that accompany economic development, why should policy be involved in such process? It could be argued that policy might help to minimize the costs and stresses of the rural economy during this process of adjustment. Five reasons have been proposed relating to Southeast Asian economies in the aftermath of the green revolution.

1. *Success of modern rice technology*

Over the past three decades the spread of high yielding varieties of rice in Asia has resulted in increased rice self-sufficiency within the continent. Productivity growth has been accompanied by declining real prices of rice and lower incentives for farmers to cultivate rice (see Pingali et al. 1997). Increasingly, rice has been perceived as an income maintenance and food security crop, rather than as an income-augmenting crop. The further increase in rice yields would benefit consumers more than farmers (see Dillon 1992). Faced with the options of subsidizing rice farmers, letting rice farmers income decline, and developing policies to enhance alternative sources of income through additional agricultural

practices and non-farm activities, most government have embraced the latter option (see Taylor 1992).

2. *Contraction of agricultural sector*

Rapid economic growth in Southeast and East Asian countries was accompanied by a declining share of the agricultural sector. Such a process of growth, however, was not smoothly mirrored by a corresponding decline in the share of agricultural labor force (see Rosegrant and Hazell 1999). The gap between agricultural and non-agricultural income has increased, thus penalizing many of the rural population engaged in agriculture. The active labor force is so large in rural Asia that most countries are unable to absorb this labor in other productive activities in the short run. The adjustment process is therefore painful (see Timmer 1992) for the rural population and could result in social tension and rural disturbances. In order to smooth this transition process, government have looked at alternative ways of creating productive employment in rural areas. China has been particularly successful with rural town and village enterprises (see Huang 1997), where non-farm activities have been developed in rural areas thus helping retain the labor force and benefitting farmer population. Moreover, rural industrialization is often based on agrofood industry, processing of agricultural commodities and therefore closely linked to a variety of agricultural activities besides rice production.

3. *A changed pattern of demand*

The changed pattern of demand induced by urbanization and rapid growth in Asian economies is well documented (see Huang and Bouis 1996, Kumar 1998, Lin 1998). The changed pattern has resulted in a shift away from staple foods towards fruits, vegetables and animal products characterized by higher income

elasticity of demand and value added. During this process, governments have emphasized the role of policy to promote the production shift from rice monoculture to a more diversified production system able to exploit new market opportunities.

The change in the source of demand is also important. In the context of a globalized economy, international demand for a varied range of agricultural commodities and products is growing. Owing to a relatively more open international system and the pursuit of liberalized policies in a number of countries, new opportunities have arisen for integrating small farmers within the international economy. Competitiveness of agricultural and agroindustrial products requires investments in infrastructure and development of marketing systems and human resources, all activities that are considered part of diversification policy.

4. *Reduction of risk*

A more globalized trade system offers new opportunities but also presents several challenges. Unless the various participants to the system are able to adapt to new changes, their economic survival is in danger. Price shocks, rapid changes in demand, and accelerated change in technology provide strong incentives for a country to diversify. Excessive dependence on only one tradable commodity could create painful adjustment when favorable conditions end. Farmers in Thailand have been extremely skillful in adapting to various changes in international demand (for example in shifting from cassava-feed to cassava-starch exports). Less flexible economies such as Viet Nam and Myanmar have benefitted greatly from expanded rice exports given their strong comparative advantage. But unless alternative sources of export earnings are found, vulnerability to world demand and supply is likely to be reduced through

inefficient mechanisms such as trade restrictions (for example, quotas) or stabilization funds.

5. *Environmental concerns*

The current rice monoculture in several Asian countries is increasingly perceived as a threat to the environment, through pressure on scarce water resources, excessive use of chemicals, and loss of genetic diversity (see Rosegrant and Hazell 1999 for a review). Agricultural diversification offers one approach to stem further environmental degradation through an economically sound multi-commodity production system. Crop rotations based on legumes, intercropping, and relay cropping could help to reduce the need for nitrogen fertilizer whose manufacture requires much non-renewable fossil fuel energy. Through diversification into livestock, farmers can often make rather efficient use of forages, crops residues, and manure, thus improving soil organic matter, tilth, and other dimensions of soil fertility (see Taylor 1992).

3. SIGNIFICANCE FOR IMR

The arguments presented in the previous section in favor of policies to promote agricultural diversification seem less convincing in the context of the low income economies of the IMR. First, the success of modern rice technology is mostly limited to the irrigated areas of Viet Nam and Myanmar. A large part of non-irrigated IMR has yet to see the adoption of high yielding varieties as the next section will show. Moreover, rice farmers both in the Mekong River Delta and in the fertile irrigated areas of Myanmar have benefitted from favorable world demand over the past decade and from liberalization of domestic markets. Rice farmers in high potential areas of these regions have not seen income falling, but rather the opposite over the past decade. Second, the contraction of the agricultural sector seems limited to Viet Nam over the past decade (from about 47 percent in 1985 to about 27 percent in 1998). In the rest of the region, agriculture still represents the major share of the economy accounting for about 50 percent of GDP. In Myanmar, the share of agriculture actually increased from 40 percent in 1985/86 to nearly 54 percent in 1994/95 (see Thein and Soe 1998). Third, the changed pattern of demand has indeed characterized the major cities, but given the low rate of urbanization in the region, the shift in demand has been modest. Rice is still the main staple, with a consumption per capita and an income elasticity of demand which are among the highest in the world. Fourth, though a risk reduction strategy which attempts to reduce vulnerability to world markets through a more diversified mix is desirable, it is not very clear to what extent is policy necessary to do that. Indeed, farmers and traders have been more successful at identifying lucrative opportunities than economists and governments, and the IMR is no exception to the rule. Finally, environmental problems in the region exist and are increasingly recognized as

serious, but it is doubtful whether they are associated with rice. Rather, the exploitation of common resources such as forest margins for inappropriate logging and fuel needs, and water in the Mekong river basin for energy development seem to be much more serious problems.

Given this background, what is the significance of a strategy for diversification in the IMR? The question is pertinent, in light of the enormous number of tasks, investments, and commitment required to support such a strategy. The answer to the question lies in the link between the degree of market development and the degree of agricultural transformation (see Delgado and Siamwalla 1997). Cases in which agricultural input, factor, and output markets work reasonably well are very different from those in which the commercialization of family agriculture is still at very early stage and many markets are missing.

Where markets are reasonably developed, price signals are transmitted throughout the economy, and most farmers and rural enterprises will be able to respond to those signals. Diversification in this case becomes the outcome of pursuing objectives of profit maximization under uncertainty. Policies to specifically promote change in farm level mixes or rural income arise primarily because of the existence of prior distortions, such as subsidization of specific inputs (water and fertilizers in the case of rice) or outputs (such as sugar or oilseeds). In this case, the issue is not one of "picking the winners", but rather one of liberalizing markets, making diversification the outcome rather than the objective of policy (see Delgado and Siamwalla 1997). This case may be similar to the development stage of several southeast Asian economies in the 1980s where a relatively well developed market system was in place and in some well developed regions of the IMR, such as the Mekong River Delta, where there is evidence of farmers and rural non-farm sector moving towards diversification with minimum policy intervention (see Xuan 1997).

Where markets do not work well, or are absent (such as in the case of land or credit markets), smallholder farmers and rural enterprises do not have access to the same technology, information, assets, input supplies, and market outlets. Under these conditions, smallholder households and small-scale enterprises are subject to significant transaction costs for producing and selling the same output mix (see Akerlof 1970, Lopez, 1984, de Janvry et al. 1991). Transaction costs include marketing costs (storage, transportation, handling, packaging) and intangibles such as searching, monitoring and enforcing (Hoff et al. 1993, Jaffee and Morton 1995), bargaining, lags in production, and vary by products, type of agent in the marketing chain, and individual agent within a category of agents. This case is similar to the present situation in most of the IMR.

Most high value-added products in agriculture are characterized by a high ratio of transaction costs to final value, and include such commodities as animal and horticultural products, which are prime candidates for diversification. Since these products tend to have high-income elasticities, they also tend to offer better prospects for long-term growth. Due to high transaction costs and lower assets, poor households and small-scale enterprises will have more difficulty than wealthier ones in engaging in the production of these products.

Policies for growth and poverty reduction should then focus on reducing high transaction cost barriers separating the poor from markets and increasing access to information and assets for improving the adjustment of agricultural output and non-farm income mix to major changes in relative prices. Sectoral policies, infrastructure provision and institutional development will play a central role in such a strategy, and will have important commodity-specific attributes, especially when dealing with high value-added commodities that typically have high transaction costs (see Delgado and Siamwalla 1997). These policies are of strategic significance for growth in those countries with a large share of

agriculture in GDP and exports, and with large regions or sectors of the economy characterized by a low level of commercialization and poorly functioning markets.

STRUCTURAL FEATURES OF IMR AND THEIR RELEVANCE TO DIVERSIFICATION

The previous section has argued that it is in the strategic interest to diversify of those countries where agriculture is still a large share of the economy, farming is only partially commercialized, and some major agricultural markets for goods or factors do not work well owing to high transaction costs. This section explore the extent to which the IMR region falls within this type of environment. The following discussion highlights some structural features of the region that provide an empirical basis for the arguments in favor of a diversification strategy of the IMR.

The four countries in the IMR, together with Thailand and Yunnan, China are part of the Greater Mekong Subregion. The six countries share a common border, natural resources, and a long history, and in spite of numerous obstacles to economic cooperation (see Than 1997), they have the potential to develop on the basis of economic complementarity, geographical proximity and cultural affinity. The different commodity structure of their exports, however, suggests a conceptual difference between the more agricultural countries in the IMR and the more industrialized ones such as Thailand and Yunnan. The conceptual difference can be related to several structural features.

1. *The countries in the region are essentially rural societies and are likely to remain so in the medium term.*

More than 70 percent of the labor force is engaged in agriculture and around 80 percent of the population lives in rural areas (Table 1). To put these figures in perspective, it is worthwhile to look Indonesia and Thailand, two rice economies that have matured to the lower-middle income group. These two economies grew at a remarkable growth rate of nearly 7 percent per year from 1970 to 1990, yet the share of the labor force engaged in agriculture has declined by only 11-16 percent during this period (Table 2). That suggests that the four countries in the IMR will continue to remain characterized by a rural economy in the medium term and that a long-term growth strategy for the region will necessarily have to take into account the growth of rural areas.

Table 1–Labor force and urban population

	Labor force in agriculture in 1990	Urban population in 1996
	(percent of total)	
Cambodia	74	21
Laos	78	21
Myanmar	73	26
Viet Nam	71	19

Source: WDI 1998

Table 2–Changes to agricultural labor force in Indonesia and Thailand

	Labor force in agriculture in 1970	Labor force in agriculture in 1990	Percentage change in agricultural labor force from 1970 to 1990
	(percent of total)		
Indonesia	66	55	11
Thailand	80	64	16

Source: WDI 1998

2. *The countries in the region are characterized by low per capita income, a large share of agriculture in the economy, and a low level of agricultural labor productivity.*

The countries in the region belong to the low-income group as defined by the World Bank. Their per capita income is below $750 and agriculture remains a large component of the economy. Among the four countries, Viet Nam has moved the furthest in the structural transformation of its economy accompanied by a declining share of agriculture. However, the share of agriculture was still over 27 percent of GDP in 1996, while the share of agricultural labor remained virtually constant over the period 1990-96 at 71 percent. In all the countries of the IMR, the share of agricultural labor is larger than the share of agriculture in GDP which indicates low agricultural labor productivity. Table 3 shows that in 1990 productivity of agricultural labor ranged between 53 and 78 percent of total labor productivity. Given an already low per capita income in these countries, the low productivity of agricultural labor is closely related to widespread poverty. This low productivity is reflected in rural incomes which are substantially lower

than urban incomes and in a consumption basket wich is oriented towards food. In the absence of an urban service and industrial sector able to absorb excess rural labor rapidly, it becomes important to maximize the labor-absorptive capacity of the rural sector by adding intensive farm activities to traditional agricultural production and rural-based industries (see Hayami 1991).

Table 3–GNP per capita, share of agricultural GDP, and productivity of agricultural labor

	GNP per capita in 1996	Share of Agriculture in GDP in 1990	Productivity of agricultural labor as a share of total labor productivity in 1990
	(US$/capita)	(percent)	
Cambodia	300	56	76
Laos	400	61	78
Myanmar	na	57	78
Viet Nam	290	37	52

Source: Based on WDI 1998
Note: na: not available in WDI, even though it is classified as low-income (less than $750 per capita) by the World Bank.

3. *Poverty in the region is affecting a large share of the population and is concentrated in rural areas.*

The consequence of a large share of agricultural labor coupled with low agricultural labor productivity is widespread poverty in these countries. Household surveys conducted by national organizations and cosponsored by international organizations (World Bank, UNDP, and ADB) in Cambodia, Laos,

and Viet Nam point to an incidence of poverty of over 40 percent, most of which is located in rural areas (see Table 4). Not only are over 85 percent of the poor located in rural areas, but the highest poverty rate is found in households headed by farmers (see World Bank 1997). That implies that policies to reduce poverty must be targeted to agricultural households if they are to achieve any major reduction in poverty. This will involve, among other things, improving access to information, credit, land, and markets so that different and more profitable output mixes can benefit the poor.

Table 4–International poverty comparisons (percent)

	Urban poverty	Rural Poverty	Total poverty
Cambodia	24.2	43.1	39.0
Laos	23.9	53.0	46.1
Viet Nam	19.6	46.5	41.2

Source: World Bank 1997

4. *Agricultural exports are an important component of total exports.*

The share of agricultural exports in total export value ranges from 30 percent in Viet Nam to over 70 percent in Cambodia and Myanmar (see Table 5). Cambodia, Laos, and Myanmar, all have large forest areas that are being rapidly depleted and a large share of forestry exports, ranging between 23 and 61 percent of total exports. However, even if only crops and livestock are considered, their share in total exports ranges from 14 percent in Cambodia to 24 percent in Viet Nam. Exports provide the link between farmers and international markets that is one of the main avenues through which

diversification can contribute to commercialization of agriculture and income growth.

Table 5–Share of agricultural exports in 1996

	Total exports	Share of crops and livestock products exports	Share of fish and fishery products exports	Share of forestry products exports
	(US$million)		(percent)	
Cambodia	300	13.7	4.6	60.6
Laos	326	17.1	0.0	29.1
Myanmar	881	37.3	10.3	23.3
Viet Nam	7,255	23.7	6.9	0.8

Source: FAO agrostat

5. *The four countries in the IMR are "rice-economies". Rice is the main staple food of the population, occupies the biggest share of cropped area, and provides a major source of income to the majority of the rural population. The spread of modern rice technology in uneven within the region.*

The rice-based culture of the IMR is highlighted by the overwhelming share of total cropped area devoted to rice, ranging between 72 percent in Laos and Myanmar to 90 percent in Cambodia. The contribution of rice to the total calorie intake is also high, ranging from 67 percent in Viet Nam to 76 percent in Laos and Myanmar (see Table 6).

On the production and marketing side, however, the countries exhibit considerable differences. While Viet Nam and Myanmar have produced rice surplus during the past 10 years, Laos and Cambodia have been on the verge of self-sufficiency, but both have had to import rice. In the case of Cambodia this is a reflection of political turmoil and civil unrest over the course of the war which left a dismal legacy of a large share of productive rice land infested by land mines. As the process of reclaiming rice land from mine fields continues, Cambodia is expected to generate an exportable rice surplus in the near future. In the case of Myanmar, the potential for rice is extremely high, given a vast land surplus (see Thein and Soe 1998). The current government has already undertaken considerable investment in irrigation and land expansion. In contrast to Viet Nam, the rice export performance of Myanmar has been quite unstable, owing to a procurement and price policy that has penalized farmers and a poorly functioning marketing system.

The intensity of rice cultivation varies considerably across countries and within regions of each country (see Table 7). In Cambodia and Laos rice yields are amongst the lowest in Asia (see Bourdet 1995, IMF 1997). Irrigated rice and fertilizer use is also very low. In Myanmar the situation is slightly better, even though yields have been stagnant for a long period (see Thein and Soe 1998), which indicates high potential both for land expansion and intensification. Viet Nam boasts the most intensive rice cultivation in the region; however, aggregate figures mask the presence of vast tracts of rainfed, low-yield rice particularly in the mountainous areas where a large share of the poor live (see IFPRI 1996).

Table 6–Rice indicators

	Rice cultivated area as share of total cultivated area in 1996	Gross Rice Paddy Production per capita	Rice contribution to total calories
	(percent)	(kg of rice per capita)	(percent)
Cambodia	90	308	76
Laos	72	291	73
Myanmar	72	400	76
Viet Nam	82	350	67

Source: FAO agrostat

Table 7–Rice cultivation intensity

	Rice paddy yield	Percentage of rice cultivated area that is irrigated	Area under HYV	Use of urea
	(kg of paddy per hectare)		(percent)	(kg per ha)
Cambodia	1638	11	11	20
Laos	2561	5	2	66
Myanmar	3015	51	54	35
Viet Nam	3504	40-85	80	165-185

Source: FAO agrostat, Sombilla 1999, IFPRI 1996.
Note: The two numbers reported for Viet Nam refer to Mekong river delta and Red river delta.

6. *A low level of infrastructure development.*

The development of a diversified agricultural system and rural industry an adequate infrastructure. The IMR is poorly endowed with both roads, communication, and power infrastructure as shown in Table 8. The magnitude of investment necessary to bring infrastructure to an adequate level of development is huge. Even though both governments and donors are considering this area an high priority, it will take several years before the infrastructure is brought to such a level. A master plan consisting of about 100 projects in seven priority sectors was submitted by the Asian Development Bank and endorsed by the participating countries. The plan call for a $9 billion investment in priority projects in transport and telecommunications alone for the Greater Mekong Subregion. The magnitude of the infrastructure needs sends three important messages to policy makers in the region. First, there is a need to prioritize areas and sectors for investment, trying to maximize growth potential and reduce poverty, while at the same time conserving valuable resources which are often allocated to ambitious, even though sometimes not sound, rural industrialization projects. Second, unless private sector participation (domestic and multinational) is secured for such an ambitious plan, implementation will be considerably delayed. Third, the need to create a stable macro economic environment in which growth potential can be realized is critical to the generation of domestic saving. Unless such stability is introduced, domestic savings to finance the investment will not be available (because of low deposit rates) and both foreign investors and international financial institutions will not be interested in contributing.

Table 8–Key indicators of infrastructure

	Paved road per million persons in 1991	Production of electricity in 1994	Consumption of electricity in 1994	Population with access to electricity	Number of telephone mainlines per 1000 people in 1996
		(kWh/person)		(% of total population)	
Cambodia	..	19	19	10	1
Laos	516	197	64	12	6
Myanmar	210	81	81	10	4
Viet Nam	200	166	166	35	16

Source: Than (1997, WDI 1998), ADB 1997

7. *Even though the region has adopted market-oriented policies since the late 1980s, various controls still persist in the economy and the agricultural sector.*

In spite of a diversity of experiences, since the late 1980s the four countries have embraced a market oriented approach (see Rana and Hamid 1995). All the four countries share a past of strong ideological commitment to central planning. The process of transition has been a gradual one, usually beginning in the agricultural sector with the industrial sector following more slowly. To date, agriculture has generally benefitted from this opening to the market, but the process of liberalization is far from complete. Various controls still remain, often related to external trade (for example rice in Viet Nam and Myanmar); barriers to entry of small and medium enterprises and differential access to critical factor markets such as land and credit; poorly developed market institutions such as farmers and traders associations, often restricted in their autonomy, and largely unreliable marketing information and quality control systems; and the presence

of large businesses controlled by state owned enterprises favored on the basis of non-economic criteria. The presence of policy-induced distortions aggravates the structural deficiencies of the economies, making more difficult to diversify successfully.

4. EVIDENCE OF DIVERSIFICATION IN THE IMR

The extent of diversification in the four countries of IMR depends on the structural features mentioned above, but also on the particular features of each country, including different resource endowments (such as land and human capital), levels of development, and policies. This section presents some evidence of diversification in the agricultural sector focusing on trends in value added, cultivated area and production of major agricultural commodities, and exports. Because of a lack of data, only partial evidence on trends in the non-farm economy in Viet Nam is provided.

At the subsectoral level, agricultural diversification in the IMR has followed two different patterns. Viet Nam and Myanmar have a very large crop subsector and a quite small forestry subsector, with animal products (livestock and fishery) ranging from between 15 and 30 percent of agricultural GDP (see Table 9 and Figure 1). In contrast, in Cambodia and Laos the relative importance of livestock, fishery and forestry is higher. This is partly a result of different resource endowments within the various countries - Cambodia and Laos are far less dense than Myanmar and Viet Nam - and partly a reflection of a more intensive rice production system.

Table 9–Average share of agriculture subsectors over the period 1989-95 (percent)

	Crops	Forestry	Livestock[5]	Fishery
Cambodia[1]	55.2	7.8	28.3	7.6
Laos[2]	51.6	9.4	39.	
Myanmar[3]	81.3	3.3	15.4	
Viet Nam[4]	69.3	0.8	20.0	9.0

Source: Based on data from the IMF, ADB, and Vietnamese MARD.
Note: 1. Data for Cambodia is for the 1992-96 period. 2. Laos data is for 1991/96. 3. Data for Myanmar are for 1990-95 period. 4. Viet Nam data are for 1989-95 period. 5. For Laos and Myanmar, livestock growth rate include livestock and fishery.

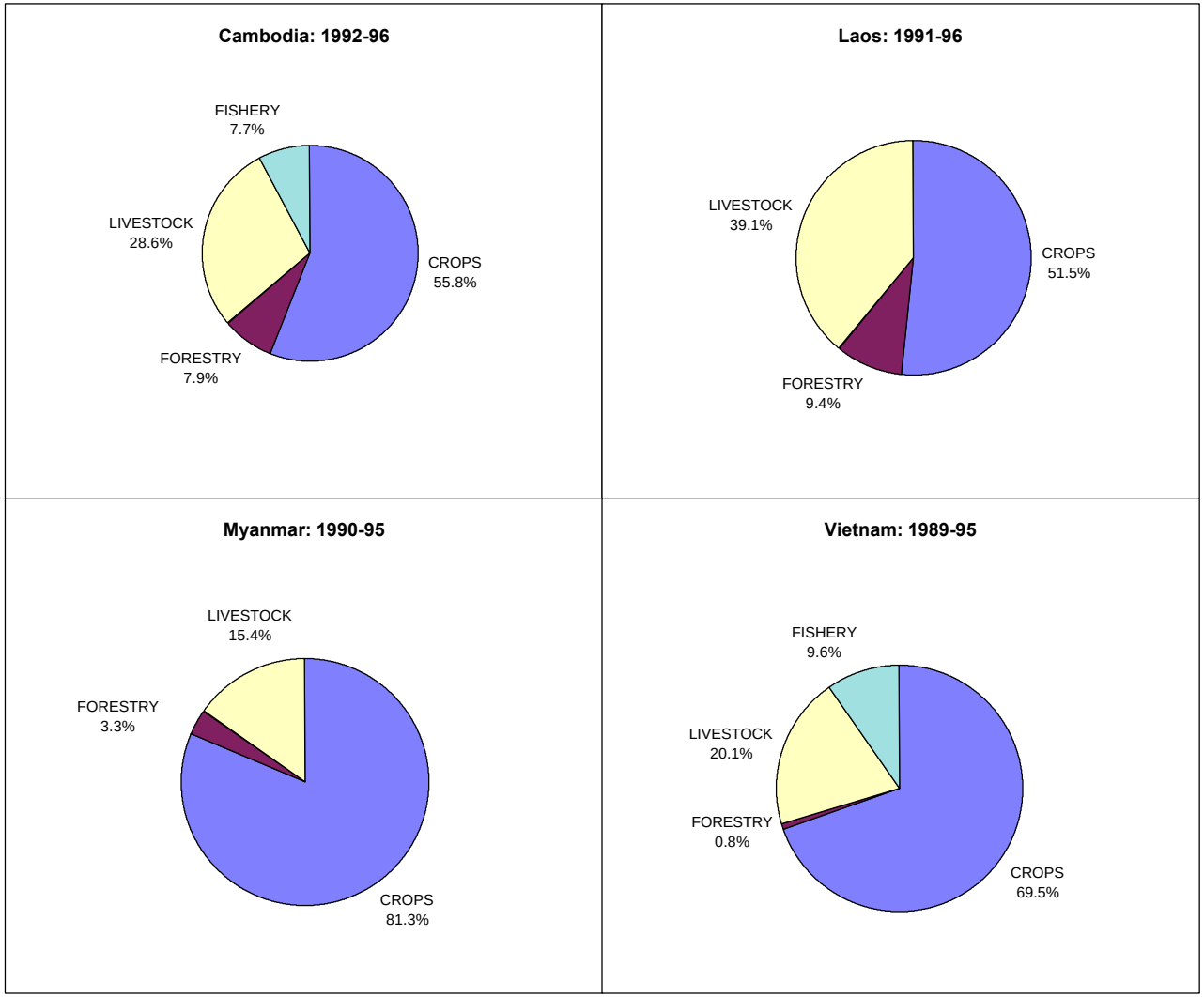
In the period between 1989 and 1996, GDP growth has been sustained, ranging from 4 percent annually in the case of Cambodia to 8.7 percent for Viet Nam (see Table 10). Growth performance has been generally higher than during the previous decade, as the result of transition toward a market economy. The value of agriculture has generally lagged behind that of other sectors, even though in the case of Cambodia, Laos, and Myanmar the gap between total GDP growth and agricultural GDP was small, an indication of the high share of agriculture in GDP. In the case of Viet Nam, growth in the non-agricultural sector has been strong, suggesting that the structural transformation of the economy is proceeding at more rapid pace than in the rest of the IMR.

Table 10–Growth of different agricultural subsectors

	Total	Agricultural	Crops	Forestry	Livestock[6]	Fishery
Cambodia[1]	4.0	3.3	2.7	-11.9	5.1	-0.6
Laos[2]	4.7	4.5	-1.8	30.4	4.9	
Myanmar[3]	5.9	5.5	6.6	-4.8	5.3	
Vietnam[4]	8.7	5.8	6.0	2.1	6.2	9.4

Source: Based on data from IMF, ADB, and Viet Nam MARD
Note: 1. Data for Cambodia is for the 1992-96 period. 2. Laos data is for 1991/96. 3. Data for Myanmar are for 1990-95 period. 4. Viet Nam data are for 1989-95 period. 5. Agricultural GDP includes crops, forestry, and livestock/fishery products. 6. For Laos and Myanmar, livestock growth rate include livestock and fishery.

Figure 1–Structure of agricultural GDP



Much industrial growth in developing countries is linked to agriculture. Food processing activities account for a large share of the rapid growth of industry. On average, in high income countries, processing of food, beverages and tobacco, accounts for 13 percent of value added from manufacturing activities, whereas it accounts for 30 percent in developing countries (see World Bank 1995). In developing countries, agroindustrial products are the major products exported, frequently accounting for half of exports (see Austin 1992).

Evidence for the food processing sector in Viet Nam seems to confirm these general statements. The food processing sector is a large and rapidly growing industry in the Vietnamese economy. In 1997, the value added in the food processing sector was estimated at about US$ 2.0 billion. As shown in Table 11, this represents about 8.8 percent of GDP and 35.5 percent of industrial value added. Furthermore, the contribution of food processing to GDP appears to be growing. In 1991, food processing represented just 6.7 percent of GDP, but over the period 1991-1997, value added in food processing has grown 14.0 percent annually, while GDP has grown only 8.9 percent annually. Furthermore, growth in the food processing has even outpaced, by a small margin, the industrial sector in general (see Minot 1998).

Table 11–Contribution of food processing to Gross Domestic Product

Year	Gross Domestic Product	Industrial value added	Food processing value added	Food processing as pct of GDP	Food processing as pct of industry
	(billion dong at 1989 prices)				
1991	31,286	6,042	2,100	6.7%	34.8%
1992	33,991	6,921	2,346	6.9%	33.9%
1993	36,735	7,766	2,602	7.1%	33.5%
1994	39,982	8,771	2,994	7.5%	34.1%
1995	43,797	9,998	3,460	7.9%	34.6%
1996	47,888	11,448	4,000	8.4%	34.9%
1997	52,198	12,960	4,600	8.8%	35.5%
Annual growth	8.9%	13.6%	14.0%		

Source: Data provided by DSI, Ministry of Planning and Investment.

Looking at the composition of GDP growth (see Table 9), the most interesting common feature is strong growth of the livestock subsector. With the exception of Myanmar, the livestock subsector has grown more rapidly than the crop subsector. The performance of the forestry subsector, on the other hand is uneven across countries, with Laos showing strong growth, Viet Nam a stagnant situation, and Cambodia and Myanmar decline.

Different land use and deforestation patterns in the region over the past decade suggest a partial explanation. Cambodia, Laos, and Myanmar have large forest areas (see Table 12) and relatively more agricultural land than Viet Nam. Over the past decade, however, Viet Nam, Myanmar, and Cambodia have exploited their forestry resources more intensively than Laos, as evidenced by higher

deforestation rates. The result is a lower stock of forestry resources available for productive activities. From the data presented, however, it unclear whether the current process of exploitation of forestry in these countries is sustainable. Viet Nam has recently embarked upon an ambitious reforestation project. In Laos and Cambodia, the concern is that current logging activities and concessions to foreign companies have been implemented without due attention to the sustainability of operations (see IMF 1997, 1998).

Forestry products could be an important source of commercialization and diversification, particularly for those populations living at the forest margins. Linkages with the construction, wood product, and paper industries could be established to contribute to rural industrialization. The feasibility and profitability of these enterprises, however, depends on well defined property rights. For example, during the 1980s, massive deforestation and conversion into food crop fields took place in the Northern Mountains region of Viet Nam owing to population pressure, coupled with food shortages and the absence of forest protection activities by the state (see Otsuka 1998). Deforestation, however, was followed by reforestation in the 1990s, as the rights to use forest land were distributed to individual farmers.

Table 12–Land use and deforestation rates

	Agricultural land share of total land in 1994	Agricultural land per agricultural population in 1994	Forest and wood area share of total land in 1994	Deforestation rate in 1980-90
	(percent)	(ha per capita)	(percent)	(percent)
Cambodia	30.1	0.57	69.3	1.0
Laos	6.9	0.26	54.3	0.9
Myanmar	15.8	0.33	49.3	1.3
Viet Nam	21.5	0.13	29.5	1.5

Source. FAO agrostat, ADB 1997

TRENDS IN AREAS AND PRODUCTION OF CROPS AND MEAT PRODUCTION

There is some evidence that diversification is occurring in Viet Nam, Myanmar, and Laos, while in Cambodia it is still too early to assess given the country's recent return to relative stability, and its process of reclaiming land for rice cultivation and restoring rubber plantations that were left to deteriorate during the long period of civil unrest. In spite of strong growth of rice in Viet Nam and Myanmar, cash crops such as coffee, rubber and pulses have grown even more (Tables 13 and 14). This is also the case for fruits and vegetables in Laos and rubber in Cambodia. Within rice production itself, there has been diversification in terms of increasing crop intensity that has boosted production in Myanmar and Viet Nam. In Laos, yield growth has accelerated, but the simultaneous decline in area has been unable to bring about strong production growth. In the case of Myanmar and Laos, diversification towards pulses and fruits and vegetables

seems to be more the result of response to changing relative prices than to explicit sectoral policy. In Viet Nam, on the other hand, diversification towards coffee and rubber were the result of a more active policy effort. This effort was highly successful leading to buoyant export growth and improvement of the livelihood of small farmers in the central highlands, one of the country's poorest region. This deliberate effort was also applied to sugarcane. In this case, however, despite soaring production, doubts have been expressed about its sustainability, in view of the high cost of subsidizing an import substitution strategy in a commodity for which Viet Nam might not have a comparable advantage (see Goletti and Rich 1998).

Common to all countries is a strong growth of meat production (see Table 15), focused primarily on pig meat and poultry. There is no evidence of an active government role in this sector. Growth was the response to a strong increase in demand in peri-urban areas rather than a structural shift toward the development of a broad-based commercial livestock sector (see Goletti and Rich 1998).

Table 13–Growth of cultivated area of different crops (1989-1996)

	Paddy	Fruits and Vegetables	Pulses	Rubber	Coffee	Sugarcane
Cambodia	1.28	-2.71	-0.12	5.56	5.01	1.89
Laos	-1.24	11.24	-0.67		4.75	-2.99
Myanmar	3.71	2.43	18.93	3.78	1.57	4.37
Viet Nam	2.33	3.73	1.66	5.08	20.05	9.08

Source: FAO Agrostat

Table 14–Growth of production of different crops (1989-1996)

	Paddy	Fruits and Vegetables	Pulses	Rubber	Coffee	Sugarcane
Cambodia	3.51	-0.45	3.42	6.58	6.16	-2.88
Laos	0.44	6.25	1.72	na	9.23	-5.86
Myanmar	5.04	3.14	19.74	9.43	-0.20	5.14
Viet Nam	5.14	4.13	2.51	17.36	27.84	11.72

Source: FAO, Agrostat

Table 15–Meat production growth

	Pig Meat	Poultry Meat	Total Meat
Cambodia	4.6	3.9	4.8
Laos	4.2	6.0	5.0
Myanmar	4.6	7.0	4.1
Viet Nam	6.5	2.0	5.1

Source: FAO, Agrostat

AGRICULTURAL EXPORTS

The value of exports in all four countries grew considerably between 1989 and 1996 and its composition changed (see figure 2). In all four cases, it grew more than 150 percent over this period, and in Cambodia it climbed nearly 350 percent. However a closer look at the composition of exports reveals divergent underlying economic structures. While Cambodia and Laos continue to rely on exports of low value products with limited diversification, Myanmar and Vietnam have taken substantial steps toward diversifying their export base toward higher value added goods such as fishery products, tree crops and fruits and vegetables.

In Cambodia over this period, the most dramatic shift is from a dependence on rubber exports, which accounted for 60 percent of export value[2] in 1989/91 (Table 16), to forestry products, which accounted for 77 percent of value in 1994/96. In terms of value-added, this represents a horizontal rather than a vertical shift. The ending of war in 1991 precipitated the change. Forests once again became accessible as they were no longer conflict zones. In fact, the value of total exports grew 170 percent between 1991 and 1992 alone, and this growth is entirely accounted for by forestry, which increased nearly 600 percent, and fishery, which grew from nearly zero to $14.5 million over the same interval. In absolute terms, rubber exports remained roughly constant. It seems likely that the stock of rubber trees was depleted as insufficient attention was devoted to their care and replanting. This trend towards reliance on forestry products does not appear sustainable as producers of forest products generally practice slash-and-burn forestry with little regard for replanting.

Growth in other areas is more promising. Fishery product and rice exports both increased, though the latter remains almost insignificant, accounting for .1 percent of exports in 1994/96. Fishery, however, grew from .4 percent of exports between 1989 and 1991 to 7.3 percent in 1994/6, and contributed $15 million to the economy in 1994/96. The abundance of fresh water fish within Cambodia indicates that this is an area with high potential for future growth.

In Laos, the composition of exports is very similar to Cambodia though the shifts are not so dramatic. Laos has traditionally relied on forestry exports, and the share of forestry in total export value climbed in recent years, from 42 percent in 1989/91 to 60 percent in 1994/96. Other more productive sectors of the economy have grown too, though their increase is masked by the growth of

[2] Total export value refers to exports of agricultural products, fishery and forestry only.

forestry exports. Laos has diversified its export base into livestock, tree crops (coffee, tea and cocoa) and very tentatively, fishery products. Livestock production, to which Laos is particularly well suited because of its land surplus, grew nearly 80 percent in absolute terms between 1989/91 and 1994/96. Moreover, in 1993, it began to export pigmeat, which has contributed about $3.5 m per year since, and represents a considerable step forward because of the marketing structure involved. Though the share of the tree crops in total agricultural exports fell by nearly half over this seven year period, in absolute terms its value grew about 30 percent. Finally, in 1995, Laos began to export fishery products albeit in tiny quantities.

Over the last seven years, Myanmar's economy has undergone considerable diversification. The share of low value products shrunk, notably forestry which diminished from about 47 percent of export value in 1989/91 to 25 percent in 1994/96. At the same time, several high-value and sustainable areas grew substantially, particularly fishery products, pulses and fruits and vegetables. Exports of fruits and vegetables grew the most, by 200 percent in absolute terms. This is a promising sign because of their high value-added and labor intensity. Rice and tree crop production also grew but relatively less. However, rice exports have been extremely variable, partly due to heavy flooding and partly due to an unstable macro-economic and political environment whose unclear policy and price signals tend to slow down the growth potential. However, the fact that exports grew and diversified against such an unstable backdrop suggests considerable room for further growth under a clearer set of policy incentives.

In Vietnam, the most agriculturally developed of these economies, we see further diversification but also some signs of stagnation in high value areas. Over the 1989/91 to 1994/96 period, the share of low-value forestry declined considerably

in both absolute and relative terms. Rice export shrank slightly. At the same time, exports of tree crops and fishery products expanded significantly, by 300 percent and 160 percent respectively in absolute terms. Exports of fruits and vegetables grew at a steady rate, but more slowly. This relative stagnation hints at an insufficiently developed post-harvesting marketing structure to permit higher growth. Livestock exports, particularly of pigmeat, fell considerably with the closure of Soviet Bloc markets. Vietnam has been unable to find marketing outlets for its livestock products in developed countries due to the poor quality of meat and low sanitary standards (see Goletti and Rich 1998).

Table 16–Growth of major agricultural exports over the period 1989-96

	Total Merchandise	Total Agricultural	Fishery Products	Forestry Products	Rice	Coffee, Tea, Cocoa	Fruits and Vegetables	Rubber	Pulses
Cambodia	21.8	-3.2	116.7	84.2	n/a	n/a	n/a	-0.8	n/a
Laos	19.8	10.2	n/a	22.7	n/a	4.3	n/a	n/a	n/a
Myanmar	13.2	20.1	23.8	2.9	3.2	35.7	31.9	65.1	32.8
Viet Nam	20.2	15.1	22.3	0.7	11.2	28.6	8.1	17.2	-3.7

Source: FAO agrostat

Figure 2a–Structure of export value

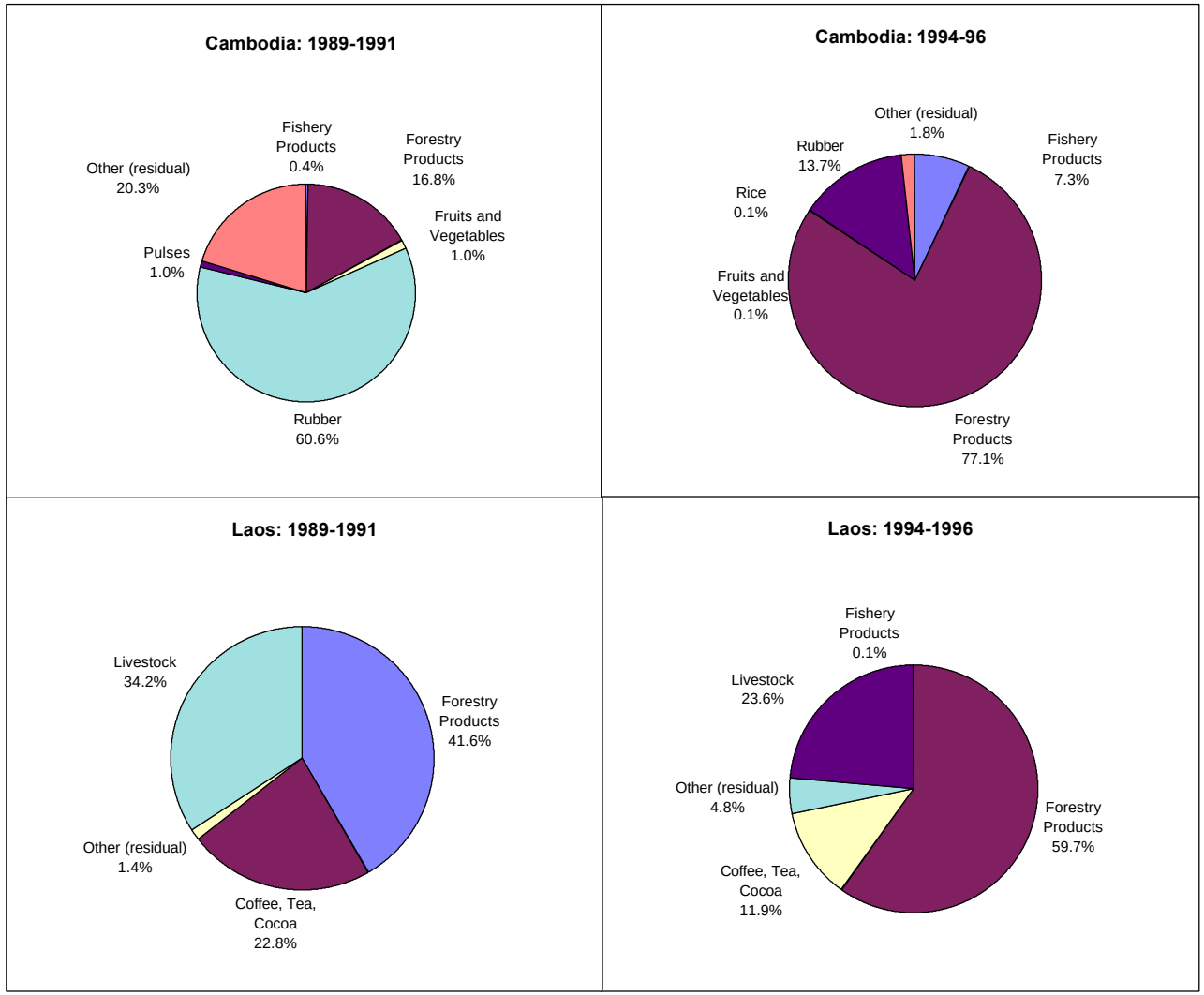
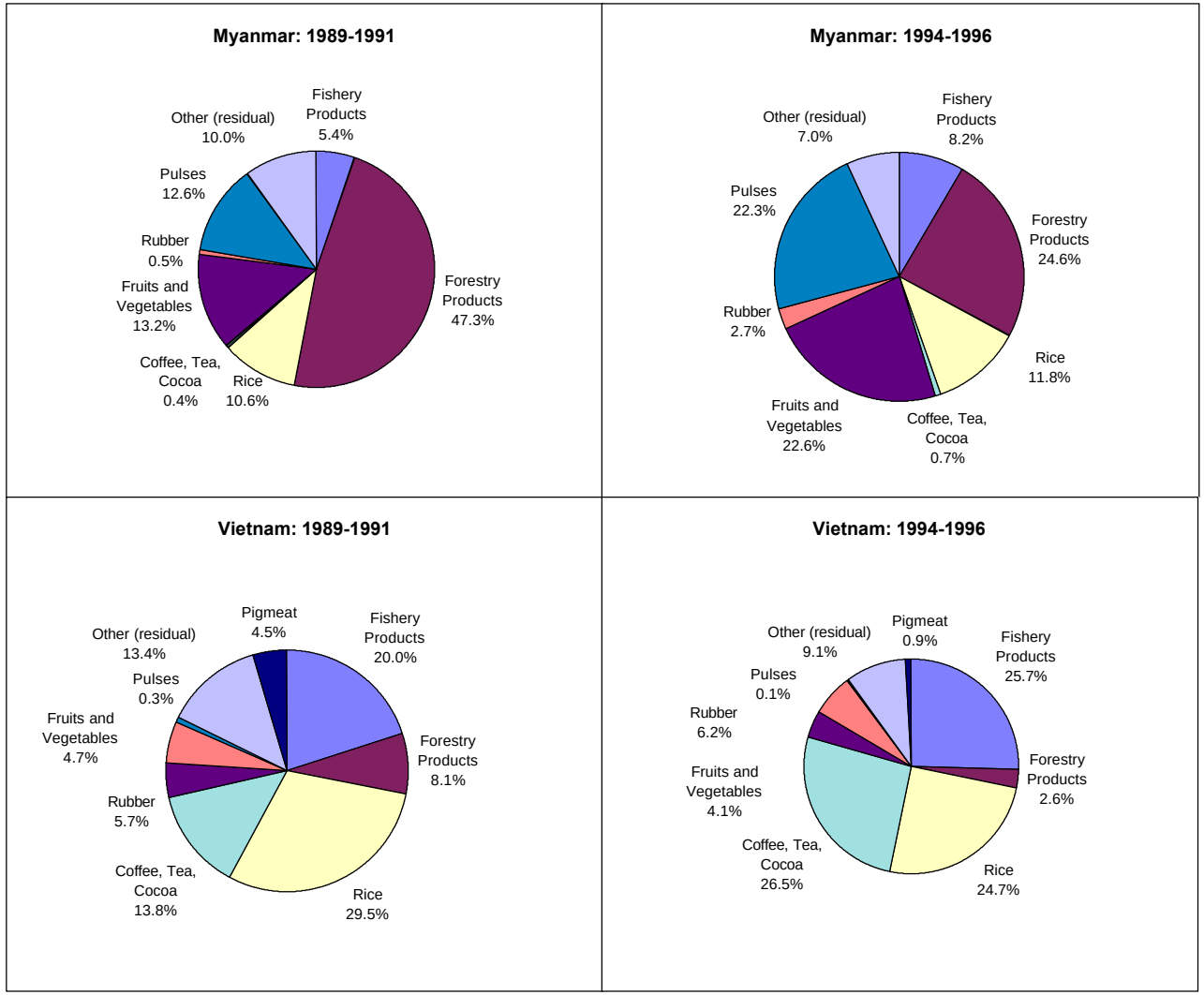


Figure 2b–Structure of export value



5. FUTURE CHALLENGES AND GUIDING PRINCIPLES

Agricultural diversification and rural industrialization as a strategy for rural income growth and poverty reduction in the IMR has several and complex dimensions, requires enormous resources, and will take time. The constraints facing the region are staggering: the presence of a large population in rural areas characterized by widespread poverty, a low productivity of agricultural labor, a low level of urbanization and infrastructure development, poorly integrated markets, poorly functioning factor markets such as land and credit, and an underdeveloped rural industrial organization characterized by small and medium enterprises poorly linked with the world markets. The constraints are aggravated by a still incomplete process of liberalization in the transition from a centrally controlled economy to a market system.

Each country in the region will pursue a different strategy, depending on its level of development and resource endowment. Viet Nam and Myanmar seem better poised to undertake the process of diversification given their relative success with rice production. In the case of Cambodia, the reclamation of land from mines will initially imply an increase in rice production to reach self-sufficiency and possibly a small exportable surplus. In the meantime, it could exploit its comparative advantage in fishery and forestry production. In the case of Laos, where rice production is largely self-subsistence, slash-and-burn cultivation is common practice in some parts of the country, and agriculture has low levels of commercialization, diversification will have to rely upon the development of the livestock sector, sustainable use of forestry resources, and support for the incipient commercialization of horticultural products.

Given the challenges ahead and the limited resources available a process of setting priorities is necessary. Obviously this process will require participation of key actors in each country: farmers, the non-farm private sector, enterprises, and government. The process will greatly benefit from the information provided by detailed research. Even at this stage, however, it is possible to suggest some guiding principles for this process.

1. *Efforts to sustain growth of rice production and productivity, particularly for high-potential areas, are a condition for successful diversification.*

Diversification in the region should not imply the abandonment of an active support to increase rice productivity, particularly in those parts of the region that have a high potential and comparative advantage in rice production. Rice is and will continue to be the main staple of the population, providing income to the majority of agricultural households and, in the case of three of the countries in the region rice is already (in Viet Nam and Myanmar) or is likely to become (in Cambodia) an important agricultural export. As rice productivity grows, however, the emphasis will shift from an almost complete focus on rice in agricultural policy (as reflected in resources allocated to research, extension, and irrigation) to a more balanced approach. Increase in rice production in IMR provides the basic condition for significant diversification of agricultural production to be profitable (see Hayami 1992). Within the IMR and each country of the region there will be high potential areas for rice production expansion and rice intensification. In order to solve the trade-off between food security and the development of high value-added agricultural commodities or agroindustrial activities, market integration between high-potential areas for rice and areas more suitable for non-rice activities will have to be promoted as a condition for successful diversification.

2. *In the process of identification of candidates for agricultural diversification, priority should be given to those subsectors that have broad linkages with the rural economy, are likely to absorb a large labor force, and show the prospect of a growing domestic and international demand.*

While traditional cash crops such as coffee and rubber make an important contribution to the income of the population living in the specific areas where they are grown, their impact on total agricultural income, employment, and rural industrialization is likely to remain small. That is not to say that they should not be pursued. The successful case of coffee in central Viet Nam had important poverty reduction effects that should not be minimized. The success of rice, on the other hand, has much more relevance from a macro level. By involving a large share of the rural population in terms of labor and income, its growth was a powerful engine of growth and poverty reduction. Similarly, sectors such as livestock, fishery, horticultural products, pulses, agroforestry, and roots starch processing cover more broadly different subregions within the IMR and are becoming candidates for a more supportive government role. That does not imply a strategy of picking the commodity with the highest potential and subsidizing production. The strategy is rather to assess the feasibility of these sectors based on economic and technical criteria and to promote investments or mechanisms to lower the transactions costs for smallholder farmers and small-scale enterprises to be involved in such activities. Improved infrastructure, appropriate research and extension, access to land and credit markets, information, support to institutional building (market information systems, standards and grades, trade associations) are all different ways to lower transaction costs. It is a different approach than trying to actively subsidize a subsector (for example sugar) through trade protection, building of large factories that face procurement of raw materials bottlenecks and are not labor intensive.

3. *The process of market liberalization remains to be completed. Trade restrictions and policy-induced barriers to trade still limit the diversification into high value-added products demanded by world markets, thus aggravating existing structural deficiencies.*

Though the IMR countries have made considerable progress towards a market economy since the late 1980s in all the IMR, several restrictions remain that are constraining the further development of agriculture and the rural economy. For example, in the case of Viet Nam, the rice export and sugar import quota represent costs to society in the order of hundreds of millions of dollars (see Goletti 1998). Agriculture and agroindustry in the IMR have great potential to exploit the opportunities offered by international markets, but this requires a flexible marketing system, implying the need to improve access to trade not only of a few agents, such as state owned enterprises, but also of the private sector. Restricting trade to few agents inhibits the development of, a competitive marketing system, blocking trade opportunities. As such, it will aggravate the high transaction costs that limit diversification into high value-added products, by adding policy induced costs to structural deficiencies (lack of adequate infrastructure, poorly functioning marketing institutions, etc.).

4. *Successful diversification will require a progressive shift of agricultural policy from a production focus to a post-production focus.*

A large proportion of the resources devoted to meeting the demand for agricultural products in developing countries has been spent to improve production technology and productivity. Much less attention has been devoted to the chain through which agricultural commodities and products reach the final consumers within the country and abroad. This neglect is particularly serious

given the enormous value added produced along the marketing chain between producers and consumers. Moreover, if the marketing chain does not function properly, investment in production becomes more costly and more risky and ends up being wasted. Postharvest losses, inadequate handling and transportation facilities are responsible for the wastage of inputs and the expensive investments needed to produce these commodities. This is particularly true in the case of perishables such as fruits, vegetables, and roots and tubers. Moreover, an efficient postharvest chain can be environmentally friendly by avoiding unnecessary production (not required by final consumers) that utilize scarce water resources and require heavy application of chemicals toxic to the health and the soil. When food resources are threatened, as in the case of fish stocks, inefficiency and loss in the distribution chain can exacerbate an already difficult situation (FAO 1996).

5. *The development of small and medium scale rural enterprises is consistent with an efficient industrial organization supporting successful diversification.*

Successful diversification will imply not only a shift in the agricultural output mix, but also the growing importance of rural non-farm activities such as agrofood industry. The linkages between agricultural production and the rest of the economy are in fact enhanced through agroindustry's role in the provision of inputs and procurement of raw materials. For labor productivity in agriculture and rural areas to increase, new job opportunities have to be created. As the challenge of creating productive employment is enormous given the size of the rural population, there is no way the challenge can be met only by state owned enterprises or large commercial enterprises. A large pool of expertise and human resources are available already in the IMR for small and medium enterprises to emerge in a more dynamic and sustainable way. One such a pool

is the vast number of micro-enterprises, usually family-based that exist in rural area of the IMR (see Minot 1996). The development of micro-enterprises into small and medium enterprises in rural IMR is currently hampered by several constraints related to the access to credit, distorted land markets, limited business and technical knowledge, confused legislation, and lack of participation at the local level. In the case of Viet Nam, for example, small and medium scale enterprises constitute over three quarters of the food processing industry. Sometimes the present of small and medium enterprise is considered inefficient on the basis of economies of scale in agroindustrial activities. However, technical arguments based on economies of scale do not take into account the agrarian structure and the infrastructure development of the economy. In the presence of an agrarian structure characterized by smallholder farmers and a poor level of infrastructure, procurement of raw materials for large enterprises is too costly. Under-capacity utilization of large agrofood factories in developing countries is a common experience that nullifies economies of scale. The development of small and medium scale enterprises in the case of rice and starch in Viet Nam is an example of how transaction costs involved in the procurement of raw materials are minimized through intraindustry trade in semiprocessed goods transferred along the marketing chain from small-scale to large-scale enterprises (see IFPRI 1996 and Goletti, Rich, and Wheatley 1998).

6 *Diversification will depend not only on huge investments in physical infrastructure (the hardware), but also on capacity building, research and extension, and institutions (the software).*

Inevitably, the development of a well diversified rural economy will require massive investment in physical infrastructure, such a roads, electrification, irrigation systems, ports, communication systems (the hardware). However, most of these investments are expensive, take a long time to be implemented,

and risk being inadequate, environmentally damaging, and unsustainable, especially when carried out without adequate study and evaluation by policy makers, researchers, and representatives of civil society. In the presence of limited resources, it would be more appropriate to shift investment emphasis to capacity building, research, extension, policy and project analysis (the software). These types of investments are not only less expensive, but also have the potential to identify more suitable and less expensive investment options. The complexity of agricultural diversification and rural industrialization strategy in IMR entails policies and measures that affect not only agriculture but several other aspects of rural society including infrastructure, credit, health, education, and rural institutions. Within the context of a market economy, rural development is not directed from above as in the former centrally managed system. The state, however, still has an important role to play in providing public goods in which the private sector does not have incentive to invest and in facilitating the creation of market institutions such as voluntary business associations. That will entail an enormous amount of information gathering, processing, and evaluation. Currently, in the IMR countries this information function is provided by many line ministries, often in an uncoordinated manner and sometimes without appropriate technical expertise. Policy design and implementation are often conducted without adequate monitoring of markets and without the support of analytical methods that could improve the decision and implementation process. Policy units have already started to organize this complex information. Much more work, however, remains to be done, both in terms of expanding the current staff and in upgrading the capacity for policy analysis.

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