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Small research and development activity

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## **Philippines policy linkages scoping study**

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# 1 Acknowledgments

Policy scoping studies such as this one undertaken for the Philippines provide relevant information that could help development partners identify, formulate and implement projects to improve technology adoption by farmers' for their immediate and maximum advantage.

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Likewise, the Team wishes to thank numerous people that helped rectify the findings of the study. Special thanks to the discussants of the report when this was presented in a workshop held in Makati, Philippines last June 2007: Dr. Cielito Habito, former Socio-Economic Planning Secretary of the Philippines and currently a Professor of Economics in the Ateneo de Manila University; Father Francis Lucas, a full-fledge community organizer currently holding key positions in various social and community organizations including the presidency of the Bayanihan Broadcasting Corporation; and Ms. Dulce Gozon, Chair of the National Onion Growers' Association, Fruits and Vegetables Committee of the National Agriculture and Fishery Council, and National Marketing Umbrella. The Team appreciates valuable information, advise and/or comments from Dr. Emil Javier, Dr. Cristina C. David, Dr. Pons Intal, Dr. Rolly Dee, Dr. Eliseo Ponce and a number of other policy advisers. Our thanks also to Dr. Yolanda Garcia for providing additional inputs on the fishery sector of the report.

We hope that this report will lead to subsequent studies particularly in areas that relate to project development and for which specific policy scoping studies might be relevant.

## 2 Executive summary

The agriculture sector remains an important pillar in the development of the Philippine economy. In the past decades, however, the sector's growth performance has been weak that led to the erosion of its revealed comparative advantage especially vis-à-vis the other Asian countries. Low and declining productivity levels in almost all commodities have primarily accounted for the poor performance of the agriculture sector. Other factors that have exacerbated the gradual erosion of yield growth include the degradation of natural resources, the country's geographical diversity that accounts for the differential capacity of the regions to respond to opportunities including the implementation of projects or the adoption of new technologies, high incidence of unemployment and under employment, rapid population growth and high incidence of poverty and hunger. Overcoming these problems that hinder productivity growth has not been easy despite the institution of well-formulated policy reforms supposedly to get the agriculture sector back on track towards steady growth and development. The policy environment remained constricted rather than broad-based such that:

- public investment in commodity development (especially through R&D), extension, infrastructure, and human capacity development remained low and misallocated
- property rights and regulatory systems remained poorly defined and weakly implemented
- more innovative rural financing schemes continued to be lacking especially those that cater to small farmers
- archaic price and market policies were maintained that perpetuated monopolistic and oligopolistic systems
- continued lack of transparency and accountability that eroded confidence in government's ability to do business and provide services.

It has affected the implementation even of well-meaning programs and projects, some of which have fallen short of their expected goals and, hence, of pushing the agriculture sector to develop appropriately.

The relatively low uptake of projects, including those of ACIAR's, is partly attributed to policy and institutional bottlenecks that slowdown the dissemination of benefits. The ACIAR Philippines program began in 1983 with a number of projects dedicated to research on soil management issues – nutrient management, erosion control, rice cropping systems, biological nitrogen fixation, and tree establishment on degraded land. In time, the areas of focus have expanded, so that over the past 23 years, the scope of ACIAR's work in the Philippines has covered the broad ambit of agricultural and primary industry livelihoods, including: animal sciences, crop sciences, fisheries, forestry, land and water resources, on-farm systems, postharvest technology, and public policy and agricultural and natural resource economics. To date, ACIAR projects in the Philippines number about 130 separate activities with total funding support exceeding \$ 50 million. In real terms, annual expenditure has ranged from a high of \$3.6 million (in real terms) in 1993-94 to a low of \$1.3 million in 1998-99 to \$2.9million in 2006-07.

Uptake of ACIAR research has not been satisfactory. Of the number of projects reviewed that were conducted or with some activities conducted in the Philippines, only very few indicated some uptake but which are based on assumptions. Most of the projects had little or no uptake at all.

A recent ACIAR Adoption Study (ACIAR 2004) identified six factors inhibiting the uptake of new technology and practical research:

- bureaucratic barriers to further development and implementation of project results
- shortage of essential facilities and/or equipment and/or expertise to use it
- limited number of field trials and demonstrations to provide visible proof of the effectiveness of the new approach
- competition from cheaper alternatives
- time lag – where the results from implementing research are not immediately apparent
- no existing domestic market and/or poor infrastructure to support industry development.

Combined, these six factors suggest that ACIAR research undertaken in the Philippines has been stifled by two issues. Firstly, the research itself has not been taken up – in essence, the hurdles to adoption, including bureaucratic constraints, risk factors associated with adopting, and others, exceed the real or perceived benefit of the research. At the same time, the benefits of the research have been reduced through the lack of markets or market access as well as high transportation costs and increased competition.

The emerging perceptions suggest policy is a barrier to achieving the benefits of research. As such, there may be value for ACIAR to look into identifying areas where policy change may occur and to position the research portfolio to take advantage of such changes. The relevance of future policy research lies not only on its ability to make farm incomes rise but also to ensure that this environment becomes stable by empowering the LGUs and other development partners to take on the greater role of defining a more people centered development objectives and achieving them.

The study points to policy research activities in two possible areas, one to do with activities to bring about policy reform on a broad front, another to do with policy analysis relating to particular technical project areas. Tackling policy reform on a wide front seems to be a high priority in the Philippines, and possibly in other developing countries. Whether ACIAR could usefully support activities in this sphere would depend on several considerations, two of which pertain to:

- the size of the policy reform agenda (settling priorities may become difficult if the agenda is very large)
- the little comparative advantage that Australians may derive from sound policy analysis, except perhaps when these are drawn on relevant Australian experience.

Australian support, for instance, could be useful particularly in areas that relate to project development and for which specific policy scoping studies might be relevant. Australia's experience (both good and bad) in agricultural policy reforms over the past 30 years, which have had quite significant adjustments, may be helpful to the Philippines. Such policy reforms have been helped by two special features in its policy environment: (1) the creation of the Productivity Commission (formerly the Industry Commission), which is an independent, economy-wide, transparent advisory agency that conducts public inquiries on industry assistance and regulation for over 30 years; and (2) the National Competition Policy, which derives from an agreement by all Australian governments to review and test all regulations in terms of the public interest.

Of the list of areas where policy scoping maybe useful to ensure success, further development of the high-value crops should be stressed. This is not only because of their strong export potential but also because of their strong forward linkages to the agribusiness sector. The potentials of the aquaculture industry should be sustainably

exploited to boost households' incomes, especially among the small fisherfolk. A particular aspect of private sector participation that needs to be strengthened pertains to the promotion of a more efficient distribution of agricultural products. In this regard, policies have to be rectified to enable a more vigorous development of the transport system, especially the maritime/shipping industry that could facilitate the integration of development efforts not only across the country's numerous island regions but also with other countries.

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## 3 Introduction

The successful implementation of any program or project depends to a significant extent on the policy and regulatory environment. This is very much the case in the agriculture sector where trade barriers, regulations, subsidies, protection, and weak property rights hinder potentially sound programs and projects from yielding results. The Philippines is no exception; widespread policy distortions are a source of concern among development partners, including ACIAR. A recent study (Cuthbertson, Brillantes, Coutts, Ocenar and Tumanut 2006) on the impact of devolution on agricultural extension delivery in the Philippines concluded that certain aspects of the policy environment, such as the pervasive role of government in rice marketing and widespread insecurity of land tenure, tend to overwhelm the potential effectiveness of extension services no matter how well delivered.

This study noted that rather than focus on matters dealing with the organization of delivery of extension advice, policymakers would be more effective if they would address policy-related factors inhibiting farmers' capacity to demand information from extension services and other sources. These factors may include more secure property rights, wider choices between farm activities and distribution methods, and improved services regarding infrastructure, finance and information. Similarly, a recent study of the Philippines' rice industry policy and performance concluded that the low productivity growth and associated continuing low incomes reflect a weak uptake by Philippines farmers of known and available technology (Balisacan, Sebastian and Associates 2006). This slow adoption, in turn, is related to low investment, weak governance, rice market policies, and weak property rights with a related limited access to credit.

A review of the performance of ACIAR's portfolio in the Philippines (see Chapter 2) suggests that adoption rates for ACIAR projects are no better than the generally slow adoption indicated above and lower than that for ACIAR's total portfolio. While it is possible that the farmers' apparent lack of interest in the products of ACIAR activities is because these products themselves are not very interesting, the fact that uptake and adoption generally are low suggests a deeper problem. Technologies that have demonstrated capacity to improve yields and incomes should be interesting to farmers. The explanation likely lies in the environment in which farmers operate rather than in the technologies or the farmers themselves.

This report is the product of one of several Policy Linkage Studies commissioned by ACIAR and its development partners to establish the need for policy research to improve project uptakes and adoption. It was conducted by teams from the Southeast Asian Regional Centre for Graduate Study and Research in Agriculture (SEARCA) in the Philippines and the Australian Centre for International Economics (CIE). Work commenced in late 2006 with the preparation of a working paper which was discussed at a workshop held in June 2007. This final report takes into account the substantial contributions from partners in that workshop. For details of the workshop see Appendix 1.

## 4 Objectives of the Study and Organizing Framework

The challenge for ACIAR and its development partners in the Philippines is to improve the success of projects and strengthen their rates of adoption. In view of this challenge, the study aims to achieve two major objectives:

- design and carry out projects that will produce information or technologies with good uptake in the existing institutional, policy, and physical environments
- design and conduct projects aimed at modifying the institutional and policy environment so as to empower farmer demand for productivity enhancing technologies and so facilitate adoption of new ideas and of the relatively large body of productivity enhancing techniques and material already in existence.

In carrying out these objectives, the following framework of analysis is used to identify areas where policy research and project development will be necessary to help spur agriculture and economic growth in the Philippines (Figure 1).

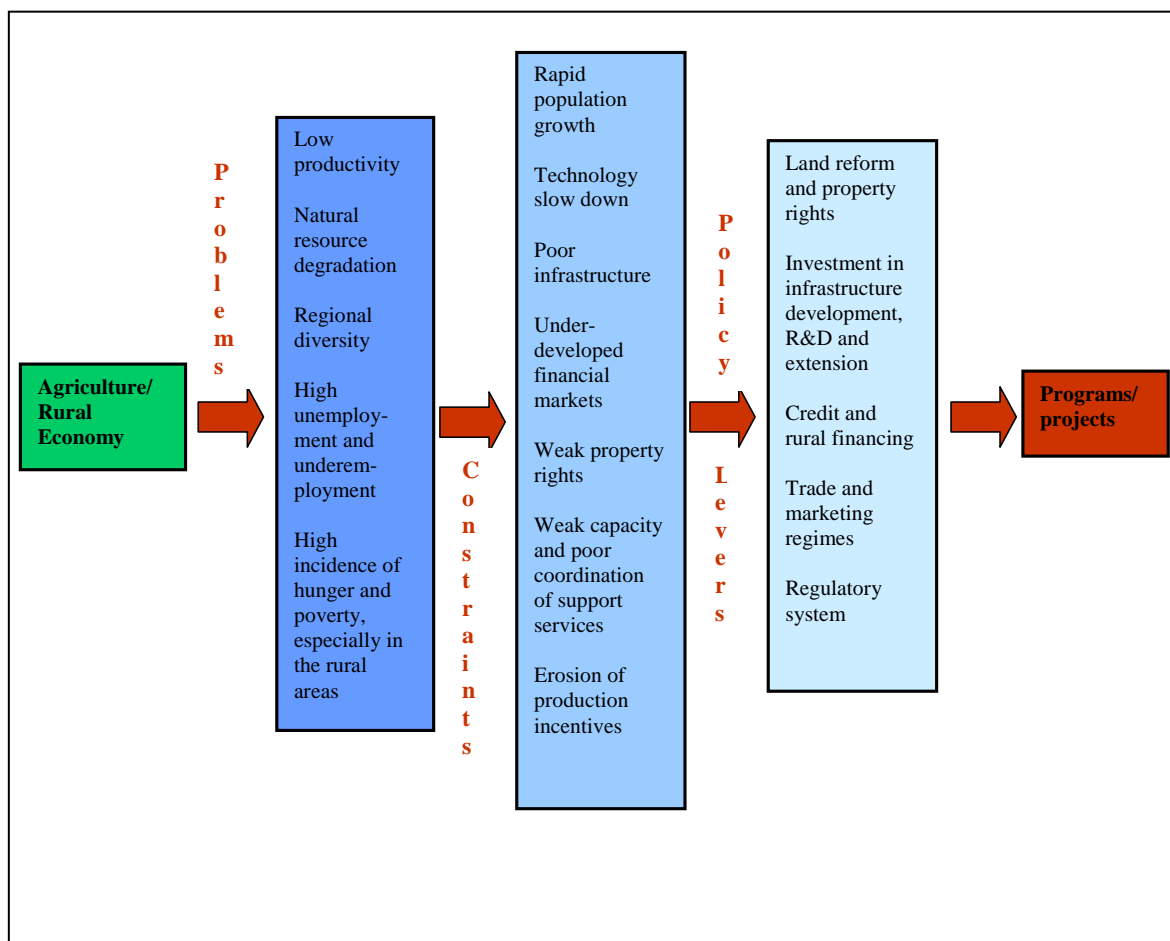


Figure 1. Organizing Framework of the Study



## 5 The Philippine Agriculture Sector

Despite the continued slow-down in its growth rate (Figure 2), the agriculture sector has remained an important pillar of the Philippine economy primarily because of its strong forward and backward linkages with the rest of the economy. About 37% of the labor force (45% of the male labor force and 25% of the female) is engaged directly or indirectly in the agriculture sector. This percentage share to total employment has gone down from about 60% in the 1960s. But what is more disturbing is that agricultural labor productivity had been also on the descent, and at a much faster rate than that of total labor productivity especially from 2000 to 2005 (Table 1). This trend can be attributed to the slow capital formation in agriculture as well as to the slow labor absorption in the non-agricultural sector. The latter can be traced from the slow diversification of rural incomes outside of the farm, which has hindered the stimuli for growth in the non-farm sector and held up more rapid improvement of welfare especially in the countryside.

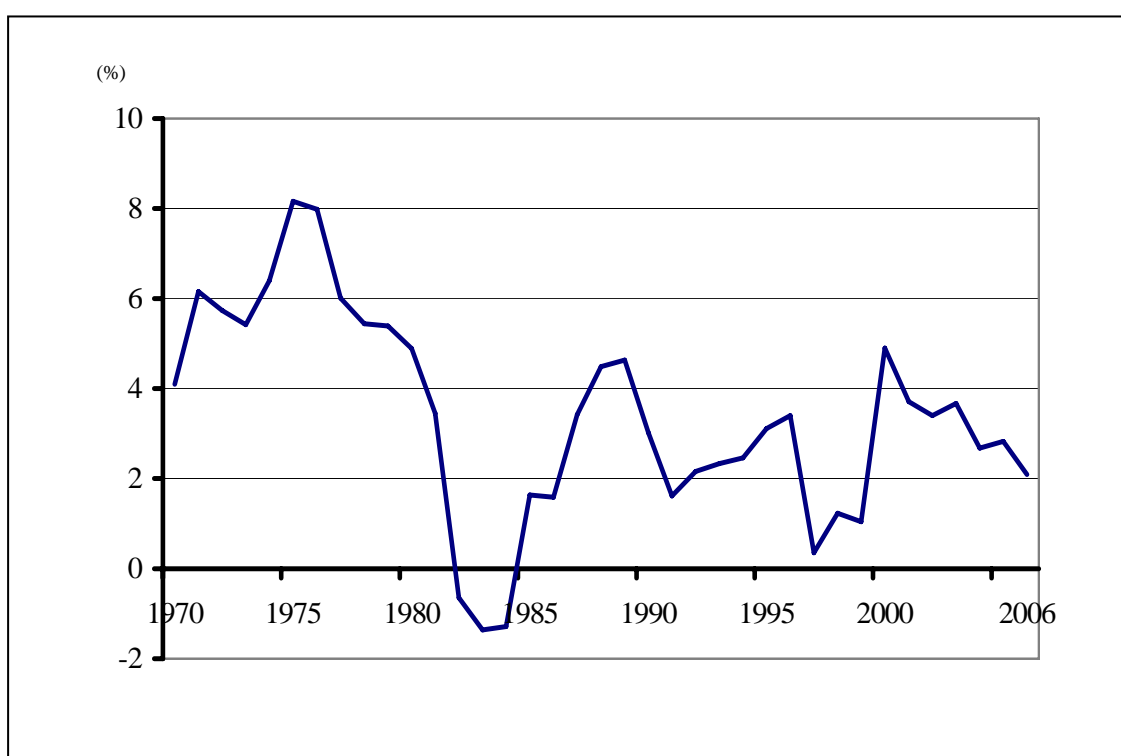


Figure 2. Growth rates of agriculture, gross value added, 1970-2006

### Performance of Agriculture by Sub-sectors

The crops sub-sector continues to dominate Philippine agriculture. In the past 45 years, however, its average growth in gross value added has decreased by more than one-half, from 3.9% in the 1960s to 1.9% in 2000-2005 (Table 2). The completion of the green revolution era in the early 1980s affected productivity growth rates, particularly of rice and corn, the country's staple commodities. The rate of yield growth in these commodities has never again reached the levels attained in the 1970s, a period coinciding with the implementation of the Government's *Masagana 99* program. The rise in production from the 1990s, although relatively slow, came from the strong growth in high value crops for exports, particularly mango, banana, and pineapple.

Table 1. Labor productivity growth (%), 1981-2005

Year	Labor Productivity growth	
	Agriculture	All Sectors
1981-1985	-3.4	-5.45
1985-1990	1.7	2.06
1990-1995	-0.6	-0.48
1995-2000	3.9	2.33
2000-2005	0.48	0.98

Notes: Labor productivity in agriculture refers to the ratio of gross value added in agriculture to total agricultural employment.  
Total labor productivity refers to the ratio of GDP to total employment.

Source: Calculated based on data from the ADB's Key Indicators in Developing Countries of Asia and the Pacific

Table 2. Average growth rates of GVA in agriculture by commodity (%), 1960-2005

	1960-70	1970-80	1980-90	1990-00	2000-05
Total	4.2	3.9	1.0	1.6	3.3
Crops	3.9	6.8	0.6	1.2	1.9
Livestock & poultry	3.2	3.0	4.7	4.9	3.1
Fishery	6.9	4.5	2.4	1.5	6.9
Forestry	5.1	-4.4	-7.0	-15.7	-5.3

Source: National Statistical and Coordination Board

The performance of the forestry sector has continued to decline over time. Currently, it barely accounts 1% of total GVA in agriculture. The fishery sub-sector's production growth, on the other hand, grew at 6.9% per annum between 2000-2005, an upturn from the declining trend in the past four decades. This was attributed to the strong growth in aquaculture production, averaging 10.4% per year, which moderated the decreasing growth from the municipal and commercial fisheries. Aquaculture production increases came from the use of improved seed strains for various farmed species and intensification of culture systems, through intensive stocking rate and supplemental feeding (Ahmed, Dey and Garcia, 2007) in ponds, pens and cages that are currently employed in inland, coastal and open waters. On the contrary, continuous harvesting of fish and other marine products from capture fishery had severely depleted the fish stock and degraded the natural habitat in most of the country's water bodies.

Among the agriculture sub-sectors, the aquaculture industry has perhaps the greatest potential to boost the sector's growth and open up many opportunities for entrepreneurship, especially among small-scale fisherfolk who dominate the industry. Aquaculture is largely practiced in freshwater ponds and cages (tilapia), brackishwater ponds (milkfish and shrimp), and open coastal water (seaweeds, mussel and oyster). Its rapid increase came as a result of the development of breeding and culture techniques as well as markets for the farmed species. Added to these are the low cost integrated fish-farm systems that could help boost income and quality of nutrition especially among the rural poor.

Note, however, that further intensification of these production systems should proceed with great caution because of the environmental problems that could likely ensue. Water pollution and disease problems are now apparent in some areas because of improper and unsustainable management practices. This initial rapid growth of aquaculture in part reflects access to common property seed, stock and food. As these supplies become exhausted, for aquaculture to continue to grow there will be a need for investment in both stock and fish food to put them on a commercial and sustainable basis.

It is only in livestock and poultry production where a steady growth was achieved over the past 45 years, averaging 3% per annum or higher. This came primarily from productivity gains as livestock growers increasingly adopted new technologies embedded in imported breeds, veterinary medicines, and feed ingredients. This happens even among backyard growers that practice mixed crop-animal systems that continue to dominate animal production (Sombilla 2005). The hog industry, which accounts for three-fourths of the total livestock production in terms of volume, contributed substantially to the strong performance of the sub-sector. Poultry, particularly chicken, similarly exhibited accelerated production, especially during periods when prices of pork and beef are high because of limited supply.

The Philippine agriculture sector posted an average GVA growth of 3.3% in 2000-2005, a relatively good start at the turn of the century. In 2006, agriculture recorded a 3.88 % growth despite the adverse effects of several strong typhoons that took place in the last four months of that year. Except for poultry, all the sub-sectors registered output gains, with fishery still as the top gainer. But this rebound has not been enough to raise the sector's revealed comparative advantage (RCA) vis-à-vis that of the neighboring Asian countries. Table 3 shows the declining comparative advantage of agriculture as a whole and all major agricultural export crops.

### ***Key Challenges to Improving Agricultural Sector Performance***

Low and declining productivity levels in almost all commodities have primarily accounted for the poor performance of the agriculture sector. Other factors that have exacerbated the gradual erosion of yield growth are given below.

#### ***Degradation of natural resources***

The slow down in technology development has been accompanied by the rapid rate of natural resource degradation. Out of the 4.2 million hectares of wetland rice soil resources, for example, only 2.3 million hectares are now suitable and moderately suitable for wetlands rice production. The remaining 1.9 million hectares are considered marginal and unsuitable. Excessive soil erosion has endangered productive capacity of about 45.6% of the total arable and permanent croplands on the three major islands of the country, 17.3% and 28.3% of which are suffering from severe and moderate soil erosion, respectively (Concepcion, online). The erosion rate intensifies especially in cultivated upland areas (Coxhead and Shively 2005), as shown in Table 4. In addition, there is loss of soil nutrients because of land use intensification through the excessive and improper application of fertilizers and other inputs (Pingali et al. 1990; Cassman and Pingali 1995; Desai and Gandhi 1989).

The conversion of timberlands into marginal upland agriculture, commercial agriculture, and non-timber plantations has resulted in the dwindling of the country's tropical forests, including mangroves and watershed areas, from 21 million hectares in 1900 to only 7.2 million hectares in 2005 based on the latest official records of the Department of Environment and Natural Resources-Forest Management Bureau (DENR-FMB). Moreover, population in the uplands has been rapidly growing and both legal and illegal logging activities have proliferated. The destruction of forests, mangroves and watershed

areas has had disastrous effects on the unique and rich Philippine biodiversity—with many endemic species pushed to the brink of extinction.

Table 3. Revealed comparative advantage of major agricultural commodities, Philippines, 1960-2004<sup>a</sup>

Sector/sub-sector	1960	1970	1980	1990	2000	2004
<i>Agriculture<sup>b</sup></i>	3.0	2.6	2.9	1.6	0.6	0.8
Coconut	115.5	145.0	224.1	212.4	71.4	97.1
Sugar <sup>c</sup>	17.6	21.4	12.1	3.8	0.9	1.3
Banana	-	-	3.0	23.4	10.7	14.3
Pineapple						
Canned	-	-	82.2	70.2	26.5	28.9
Fresh	-	-	48.9	54.6	9.5	8.4

Notes: Except for 1960 and 2004, all are three-year averages with the middle year shown.  
<sup>a</sup> Estimated as the ratio of the share of a commodity group in a country's exports to that commodity group's share in world exports.  
<sup>b</sup> Includes fisheries.  
<sup>c</sup> Sugar has been historically exported to the US typically at a premium price (i.e., higher than world prices). Hence a value greater than unity in this case does not reveal a comparative advantage. However, the sharp declining trend may still be interpreted as a rapid deterioration in comparative advantage.

Source: Estimated using data from FAOSTAT (David et al., forthcoming)

Table 4. Estimated total soil loss for land uses and slopes (million tons/year)

Land Use	Slope Category (%)		
	18-30	30+	Total
Rice	15.8	5.3	21.0
Corn with fallow	217.3	240.2	457.3
Other agriculture	14.8	4.8	19.6
Non-agriculture (fallow)	-	-	7.9
<b>All uses</b>	-	-	<b>505.9</b>

Source: Rola (2004).

Similarly, coastal zone development, expanding aquaculture, and destructive fishing have caused serious threats to the country's coastal resources, especially to coral reefs (over 90% at high risk) and sea grasses. Only 4-5% of the coral reefs remain in excellent condition (BFAR 2007). Half of the sea grass beds have either been lost or severely degraded, and beaches and near shore areas are under increasing pressures from rapid population growth and uncontrolled development. Finally, due to over fishing in many areas, fisheries catch per unit of effort (CPUE) has been declining steadily. By 1994, CPUE from commercial and municipal fisheries were only 12% and 4% of their 1948 figures, respectively (Israel and Banzon, 1996). Furthermore, mangroves have become the most threatened habitat not only in the Philippines but in Southeast Asia. Table 5 shows the status of mangrove cover in Southeast Asia.

Table 5. Change in mangrove cover in Southeast Asia

Country	Early Estimates		Recent Estimates		Percent Decline
	Year	Area (km <sup>2</sup> )	Year	Area (km <sup>2</sup> )	
Indonesia	1980	42,540	2000	29,300	31
Malaysia	1980	7,300	1995	5,721	22
<b>Philippines</b>	<b>1920</b>	<b>4,500</b>	<b>1990</b>	<b>1,325</b>	<b>71</b>
Singapore	1983	18	1990	6	67
Thailand	1961	3,724	1993	1,687	55
Vietnam	1945	4,000	1995	1,520	62
TOTAL		62,082		39,559	36
Source: White (2007)					

### ***Geographical/Regional diversity***

The diversity of the Philippines in terms of its geography, ecology, natural resource endowments, economy, ethnicity, and culture explains the differential capacity across regions to respond to opportunities including the implementation of projects or the adoption of new technologies (Hill, et al. 2007). It also explains the difficulty of policing the effective implementation of regulatory and licensing instruments aimed at curbing the excessive use of natural resources that are geographically sprawled across the regions. Subsequently, the regions also differ in the availability of complementary local inputs, including transport facilities (ports, airports, and feeder roads), a business-friendly environment, local institutional quality, and entrepreneurial talent.

### ***High incidence of unemployment and underemployment***

The country's unemployment trend generally mirrors the pattern of its economic growth (Figure 3). Rising during periods of crises and declining when output accelerated, unemployment peaked in 2005 at around 12% of the labour force. The unemployment rate is currently down to about 7.5%, which, however, is not an indication of an improving climate in the labor force. The underemployment rate is now at 21.5%, indicating the rise people wanting to have additional work. It is more pervasive in the rural areas where "farm work is irregular and seasonal and off farm employment opportunities are few and far between (Herrin and Pernia 2003). The industrial sector has failed to absorb much of the rural labor surpluses. Most of them have been absorbed by the service sector.

### ***Rapid population growth and high incidence of poverty and hunger***

The Philippine population continues to grow at the rate of more than 2%. This rapid growth rate has been one of the reasons for its much slower per capita income growth and poverty reduction compared with other Asian countries (Balisacan, Sebastian and Associates 2006). Figure 4 shows the uneven reduction of poverty incidence across regions between 1983 and 2003. Reduction was relatively slow in many regions and actually rose in some (e.g. Autonomous Region for Muslim Mindanao (ARMM)). Current poverty incidence averages 26% of total population, varying significantly across regions (e.g., poverty estimate for the two poorest regions, Western Mindanao and the Autonomous Region in Muslim Mindanao (ARMM), both in Southern Philippines, was more than 10 times that for the National Capital Region (Balisacan 2007b). Moreover, Filipinos are far from being more food secure now than a decade or two ago. They are definitely less food-secure than the Thais, Vietnamese, and Chinese.

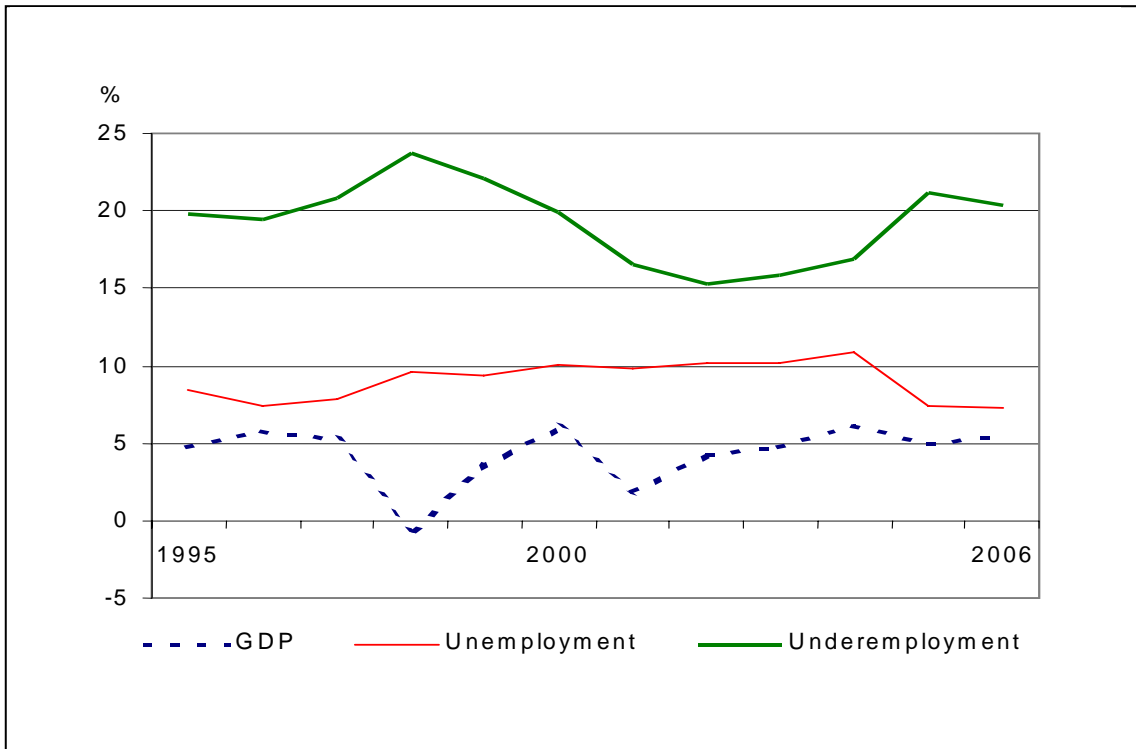


Figure 3. Rates of employment, underemployment and GDP growth

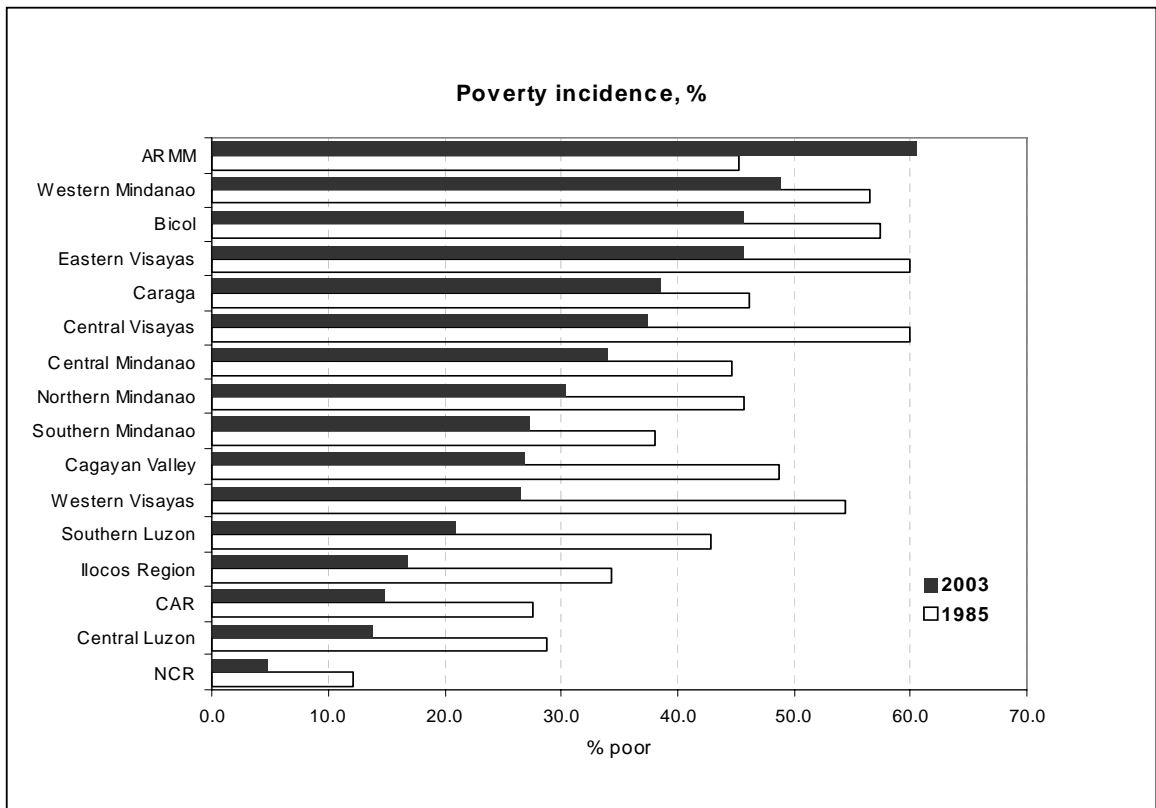


Figure 4. Varying rates of poverty reduction across regions in the Philippines

Population pressure (accompanied by weak property rights) also accounts for the exhaustion of the lucrative frontiers in the lowlands and the increasing degradation of the uplands and the coastal areas where people migrate for survival.

### 5.1.1 Constraints to Overcoming the Problems

#### *Slow development of new technologies*

One key reason that has kept agricultural production from rising at a steady trend has been the slow adoption of new and appropriate technologies to boost productivity, especially in farmers' fields, and farm management approaches to help shield farmers from risks brought about by extreme environmental changes. In rice, numerous technologies have been developed, introduced, and adopted by the small producers to increase yield, but the maximum yield potential is yet to be attained. Table 6 shows potential gaps in rice that still have to be overcome by modern science and technology.

Similarly, while the use of modern technologies in the livestock sector and aquaculture sub-sectors has contributed to their relatively remarkable performance especially in the recent past, the demand for new technologies continues. This is especially true for livestock because of the pressure to overcome emerging production problems like the foot and mouth disease as well as problems related to animal-borne diseases like the avian influenza, which endanger not only the biodiversity of the species but human health, as well.

Table 6. Potential gaps in yield and their sources

Farm condition	Grain yield (t/ha/season)					
	Wet season			Dry season		
	Hybrid rice	Certified seeds	Good seeds	Hybrid rice	Certified seeds	Good seeds
Maximum attainable yield (limited only by climate and variety)	9.20	8.00	7.20	11.50	10.00	9.00
Yield with best nutrient and cultural management practices (limited by lodging)	7.36	6.40	5.76	9.20	8.00	7.20
Yield when there are macronutrient (NPK) and water problems	5.52	4.80	4.32	6.90	6.00	5.40
Yield when there are micronutrient (zinc, sulfur, etc), pests, and management problems (crop establishment, land preparation, etc)	3.68	3.20	2.88	4.60	4.00	3.60

Notes: Maximum attainable yield is based on inherent weather, hydrological (i.e., flooding) and soil (texture) conditions in the area. It fluctuates from year to year by + or - 10%.  
 There is a 15% increase in using hybrid seeds compared with inbred certified seeds.  
 There is a 10% decrease in using good seeds compared with inbred certified seeds.

Source: Sebastian et al. (2006)

### Poor infrastructure

The Philippines is crucially deficient in infrastructure, and this is holding back the process of efficient regional integration (Llanto 2007). Poor transport infrastructure raises distribution costs, affecting both farmers and consumers. For example, vehicle operating costs are higher by at least 50% on bad roads and nearly double on very bad roads (CRC 2000). Road density averages 0.26 km per km<sup>2</sup> and varies sharply across regions from a mere 0.15 km per km<sup>2</sup> in the Cordillera Autonomous Region to 5.72 km per km<sup>2</sup> in Manila and its surrounding cities and provinces or to 0.54 km per km<sup>2</sup> in the Ilocos Region. The picture, however, is quite different in the other sub-sectors. The significant improvements in the domestic shipping, civil aviation, and cellular telecommunications services, which were deregulated during the Ramos administration, have noticeable benefits for consumers.

An important infrastructure support to agriculture is irrigation. David (1999) and Inocencio and Barker (2006) report an alarming indication of decreasing efficiency in the planning and implementation of the National Irrigation Systems (NIS) and Communal Irrigation Systems (CIS). Table 7 validates this observation. It shows that the actual total area irrigated by the systems is less than 50% of the potential irrigable area. The estimated potentially irrigable agricultural lands in the Philippines total 3.2 million hectares. The utilization surface of national and communal irrigation systems is becoming limited also because of watershed degradation. On the other hand, the country has abundant shallow groundwater resources, with an estimated 5.1 million hectares of shallow well area (Rola 2004).

Table 7. Irrigation service area, Philippines, 2003-05

ITEM	2003	2004	2005
Service area in million hectares	1.40	1.40	1.41
Service area to total potential irrigable area (%)	44.66	44.84	45.20
Source: National Statistical Coordination Board			

### Undeveloped financial market

Credit that facilitates investment in modern technologies and human capital remains inaccessible to the majority of farmers, especially the poor farm households. Figure 5 shows the significant decline of the share of agricultural loans to total loans over the period 1980-2005. Of the total agricultural loans, only 35% are production loans. The rest are channeled to other agriculture-related activities. Smallholder agriculture especially those devoted to rice and corn production, as well as to crops with long-gestation period, has not obtained substantial funding from private commercial and thrift banks. Strong reliance on informal sources of financing has continued although some observations indicate a shift to formal sources in recent years (ACPC 2002). Inconsistent policies, which include credit allocation, loan targeting, credit subsidies and directed sector loans, have rendered the rural credit system ineffective as banking institutions suffered from inefficient resource allocation and low returns to their lending operations. Moreover, the directed credit programs have discouraged savings mobilization and promoted overdependence on government-supplied funds, resulting in poor repayment.



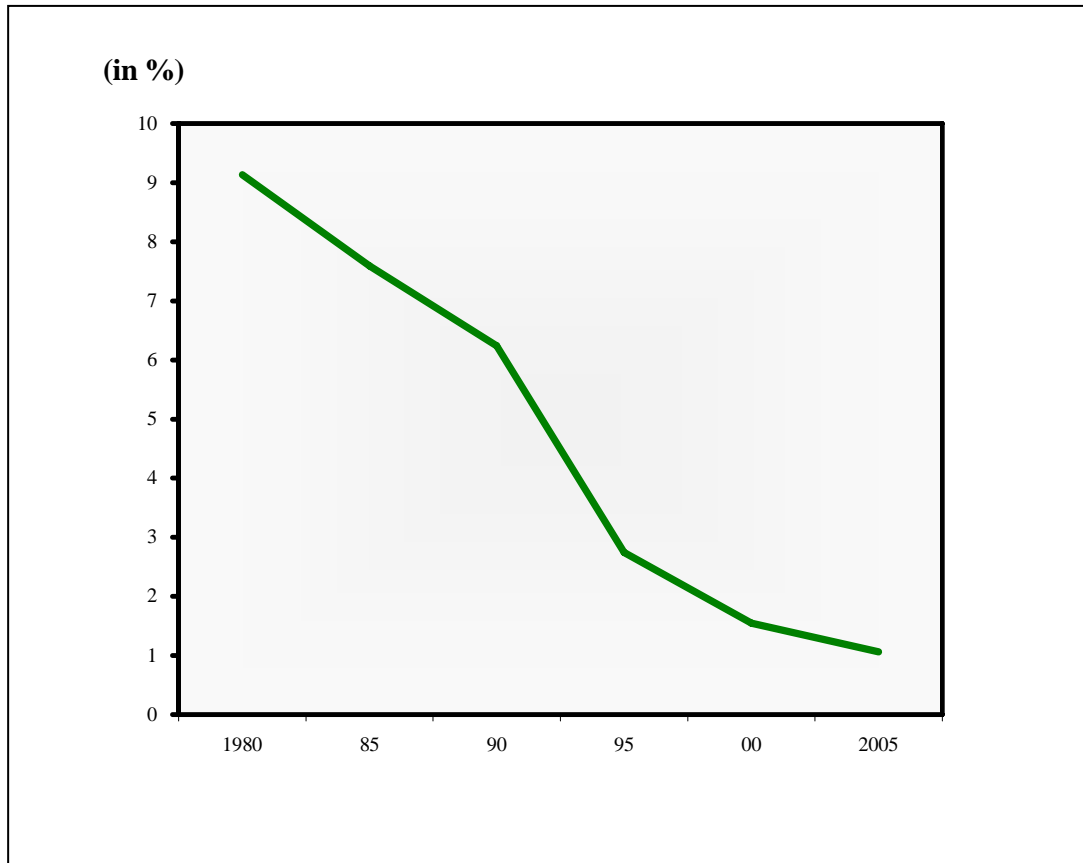


Figure 5. Ratio of agricultural loans to total loans

Small farms, low incomes and uncertain tenure mean that many farmers are simply not good prospects for commercial banks. The loan quota mandated under Presidential Decree 717 (Providing an Agrarian Reform Credit and Financing System for Agrarian Reform Beneficiaries through Banking Institutions or what is commonly known as the Agri-Agra Law) does nothing to address the fundamental issue.

### **Poor coordination and weak capacity of agriculture related institutions**

The continuing over-centralization, fragmentation and overlapping of functions and activities; inflexible commodity-based organizational structure; and highly politicized, bloated and unstable national bureaucracy have contributed to the apparent lack of strategic focus of programs and projects in agriculture. Even the devolution of national government agencies to the local government units (LGUs), with the aim of steering more rapid growth in the countryside, seemed far from being achieved because of institutional rigidities brought about by the non-congruence of the mandate of national government agencies and the goals of the LGUs (Cabanilla 2006). Key government agencies apparently responsible for overseeing the development of the agriculture sector are not up to the job. It also affects implementation of regulatory and licensing/taxation instruments as well as other policy reforms that help facilitate sector growth.

### **Economic and other external factors**

On top of the above-mentioned constraints is the distortion of incentives to improve agricultural production due to distortion in commodity prices and misallocation of scarce resources away from the more productive economic activities. The country's participation in the World Trade Organization (WTO) has not really opened up its market to world trade. Protection of sensitive agricultural products (rice, sugar, corn, pork and chicken) continues, contributing to high domestic prices, which do not benefit small farmers who

produce mainly for subsistence but instead penalize consumers (Inocencio and David 2000). Quantitative restrictions practiced were replaced by high binding tariffs, and the administration of minimum access volume resulted in rent-seeking activities and high bureaucratic costs that have likewise affected the conduct of a more efficient product market. Table 8 shows the estimates of nominal rates of assistance of agricultural commodities from 1960-64 to 2000-2004. It estimates clearly shows how some import-competing commodities have been highly protected at the expense of the export crops, including small high-value crops. They also explain the eroding trend of the country's terms of trade.

Table 8. Trends in nominal rate of direct assistance of major agricultural commodities, Philippines, 1960 - 2004 (in percent)

<b>Commodity</b>	<b>1960-64</b>	<b>1965-69</b>	<b>1970-74</b>	<b>1975-79</b>	<b>1980-84</b>	<b>1985-89</b>	<b>1990-94</b>	<b>1995-99</b>	<b>2000-04</b>
<b>Rice</b>	6	-1	-10	-18	-16	14	21	53	51
<b>Corn</b>	19	38	14	24	20	60	63	79	55
<b>Sugar (weighted ave.)</b>	18	121	-12	2	60	13	49	97	79
<b>Domestic use</b>	4	78	-39	-29	14	112	45	99	75
<b>Export</b>	28	154	16	17	89	161	77	90	130
<b>Coconut</b>									
<b>Copra</b>	-12	-20	-25	-17	-27	-21	-15	-8	-14
<b>Coconut oil</b>	-3	-18	-21	-8	-17	-4	7	1	6
<b>Beef</b>	60	-16	-47	-18	-2	-8	26	15	-17
<b>Pork</b>	-30	14	3	-6	36	51	25	21	-8
<b>Chicken</b>	-	67	29	28	38	43	57	42	52
<b>Others</b>	10	10	32	32	16	17	10	5	5
Source: David et al. (2007)									

## 6 The Policy Environment for Improving Agriculture Performance

A variety of policy and institutional instruments have been implemented supposedly to help overcome the problems of and constraints to production growth and get the agriculture sector on a steady track of development. Many of them have failed or have been short of achieving their objectives for various reasons. The key ones deemed critical to underpinning sustained growth and poverty reduction are discussed in this section, including measures to rectify their effectiveness.

### 6.1.1 Key reform areas

#### *Land reform and property rights policy*

Cognizant of the critical role of land ownership among farmers, the Philippine government embarked on a series of programs to redistribute lands so that farmers would have greater access to other inputs like credit and technology. The Land Reform Program that started with the promulgation of PD 27 under the Marcos regime and followed by the Comprehensive Agrarian Reform Program (CARP) under the Aquino government and which is now into its 35th year, is the key government instrument for land and property rights reform particularly in the rural areas. It encompasses about 8.06 million hectares or around 83% of total agricultural lands. Of these, 4.32 million hectares (around 54%) are private lands, government lands and resettlement areas, all falling under the jurisdiction of the Department of Agrarian Reform (DAR). The remaining 3.74 million hectares consist of public agricultural lands, including public alienable and disposable lands and some forest lands falling under the auspices of the Department of Environment and Natural Resources (DENR). Table 9 shows the accomplishments of CARP over the past 27 years.

Table 9. Accomplishments of land distribution by agency, 1972-2005

	Scope (ha)	Accomplishment (ha)	% Accomplished
Total CARP	8,199,768	6,638,104	81
DAR	4,428,357	3,701,037	84
DENR (Public land)	3,771,411	2,937,067	78
Total DAR			
Private land	3,093,251	2,065,273	67
Public land	1,335,106	1,635,764	123
Source: Planning Service, Department of Agrarian Reform			

To date, about 81% of the target area for redistribution has been covered. However, a large number of farmers still fail to derive the benefits of full rights to use the land they till due to a number of problems that beset program implementation. One of the major problems relates to the restricted development of private markets for agricultural lands due to the prohibition on acquired lands from being traded, except to heirs of the farmer-beneficiaries or to government, for a period of 10 years<sup>1</sup> and the need to secure the consent of the primary mortgage, which is in favor of the government, to secure the payment of the acquisition cost. These liens on the land disallow financial institutions from owning and foreclosing lands secured by emancipation patents (EPs) or certificates of land ownership awards (CLOAs). Such policy diminishes the collateral value of agricultural lands, exacerbates the farmers' lack of access to credit, and reduces

<sup>1</sup> This constraint on land use is part of the provision of Republic Act 6657.

incentives for farmers to invest on land and production improvements (Gordoncillo 2006). Other problems include the lack of standardized valuation of lands, non-cooperative landowners that demand payments higher than the estimated land market values, evasion of property coverage through subdivision to non-cultivators, and of the incentives created to shift properties to non-agricultural uses.

Studies so far undertaken on the impact of CARP indicate mixed effects in terms of improving the economic status of the agrarian reform beneficiaries (Reyes 2002; Geron 1994; Otsuka 1991; Casuga 1994; Briones 2004). Its full impact remains to be seen and this hinges on the facilitation of land transfer and improvement of the tenancy regulation that restricts non-owners' access to land, the subsequent lowering of the high transaction costs of enforcing property/land rights, encouragement of private investments in the development of the lands, and the provision of support services that will enhance opportunities for agribusiness development.

### **Public investment policies in agriculture**

Public expenditure in agriculture has declined from its high level in the 1970s and early 1980s. By the 1990s, agriculture spending was about 8% of total government expenditures (David 2003). The 1997 Asian financial crisis exacerbated the situation and rendered many countries unable to reverse the eroding trend in agricultural investments, especially in irrigation and other productivity enhancing support services. More recent estimates show this ratio further down to about 3% (Table 10).

Table 10. Expenditures on Agriculture, 2003-2005

<b>Item</b>	<b>2003</b>	<b>2004<sup>r</sup></b>	<b>2005<sup>p</sup></b>
National Government (million pesos)	825,113	867,010	918,619
Agriculture (million pesos)	32,932	28,462	25,939
Agriculture to National Government Ratio (%)	3.99	3.28	2.82
r = revised data p = preliminary data Source: DBM, Philippines			

Further analysis of agricultural expenditure indicates the disproportionate allocation on rice while non-rice commodities, particularly exportable crops, received a relatively low budgetary support (David 2003). Agricultural expenditure increases in the recent past showed a marked shift from productivity enhancing activities to price subsidies and compensation payment to landowners affected by the land reform movement, explaining the additional financial support's limited impact on agricultural productivity growth (Tolentino 2002).

Studies have found that investments in agricultural research, infrastructure (e.g., roads, irrigation, and postharvest facilities), and extension and education hold the greatest potential to promote agricultural growth and poverty reduction especially in developing countries, including the Philippines (Fan and Rao 2003). Public investments that boost agricultural productivity continue to be warranted.

### **Investment in R&D**

Government support to research and development remains low at 0.4% of the gross value added in agriculture while the respective averages in developing and developed countries are at 1% and 2-3%, respectively. Research intensity ratio (RIR) is lowest in the country at 0.23% compared with Thailand's 0.69% and Malaysia's 0.58% (Pray and Fuiglie 2001).

Advanced agricultural science and technology still offers an opportunity, largely untapped, to sustainably boost yields, increase food supply, and enhance incomes. More advanced technologies such as agricultural biotechnology have to be explored to enable the development of varieties able to resist virulent pests and diseases or to overcome constraints posed by the growing scarcity of natural resources like land and water. Efforts to develop this new science, however, have been hindered by regulatory, ethical, biosafety, and intellectual property rights issues. Moreover, underfunding of biotechnology R&D, inadequacy of facilities and infrastructure support, and shortage of skilled local researchers have constrained the R&D sector from development of fermentation-based technologies for agricultural applications (Halos 2000). The full benefit of modern biotechnology research is yet to be exploited in the Philippines not only in rice but also in other commodities particularly high value crops with export potential, as well as in animals and fisheries.

Environmentally friendly management practices (e.g., integrated pest management, integrated nutrient management, integrated farming systems), including the development of animal and fish feeds that do not harm the environment, should continue to be placed high in the research agenda. Organic farming for crops, animals, and aquaculture should be further developed and promoted, along with the expansion of the markets of products from these systems, which command relatively higher prices.

Participatory research has to be intensified. Technologies that are to be developed should not only provide the appropriate solutions to farmers' problems but should also match their skills and capacity to use them.

#### *Investment in institutional development including extension*

The success of R&D does not end with the development of technologies. These technologies have to reach and be adopted by the proper clientele. The extension service, however, has always been relegated to a second priority in terms of budget allocation and human resource development. Strengthening of the LGU's organizational capacity to improve the quality of agricultural extension has not been given the attention it needs (Ponce 2006). There is practically no budget for institutional development to address extension skills development among LGU personnel, extension facilities development, and improvement of organizational management.

Reform in the national extension program involves the need to strengthen its structure and management to make it more client-responsive. For example, MAOs (Municipal Agricultural Officers) are expected to cater to the needs of the agricultural and aquaculture farmers including fishermen and foresters. Since most MAOs are BS Agriculture graduates, this severely compromises their ability to address issues pertaining to fisheries and forestry. Also, the extension program should develop and nurture the research-extension linkage to ensure smooth flow of data and information from research to extension and vice versa. It should be able to bring about the dynamic linkages of the different actors in the production-to-marketing continuum and provide the needed support services along the value chain. It should strengthen the use of information and communication technologies (ICT) to improve the quality and timeliness of information and communication support, increase the quality and extent of the dialogue among various stakeholders, and bring about better-quality training. There is also the need to strengthen skills and capabilities of extension personnel to match local demand for their services and more importantly to be able to properly and successfully disseminate technologies, most of which are very knowledge intensive.

An extension service revamped along these lines would be more effective for some farmers but not all. There would still be the problem that poor farmers operating small parcels of land with uncertain tenure have weak capacity to take advantage of extension services no matter how well they are delivered.

### *Investment in infrastructure and postharvest facilities*

The proper construction and maintenance of roads, harbors, and ports are a key factor in the nation's spatial dynamics that would invariably benefit farmers and consumers from lower logistics costs (Hill et al. 2007). A recent study by Sombilla et al. (2006) shows that markets are regionally integrated but the transmission of information between regions was far from fully efficient partly due to poor infrastructure. Further development of infrastructure facilities is greatly warranted. But investment allocation for infrastructure, whether coming from the government coffers or outside assistance, and the development of these facilities should be accompanied with competent governance.

Infrastructure development plans, particularly those for roads, should be properly consolidated with a view to identifying gaps in service provision. The deregulation of domestic shipping, civil aviation, and cellular telecommunications services has resulted in noticeable benefits for consumers. More effective regulatory policies have to be put in place to sustain incentives to continue the development and maintenance of the facilities toward the provision of efficient services.

On the other hand, investment in irrigation facilities has to be focused away from the construction of huge national systems but rather directed to small systems that benefit rainfed areas or traditionally lower-potential areas that could probably draw higher rates of return. Abundant shallow groundwater resources should be tapped cautiously for the development of small-scale irrigation systems such as small water impounding projects (SWIPs), small farm reservoir (SFRs), and shallow tubewells (STWs). These efforts have started in 2000 but only a small part of the government's budget has so far been allocated for their development.

### ***Credit and rural financing policy***

The termination of subsidized credit programs and the shift to market-based rural finance have started to unlock vast opportunities for sustainable rural finance (Llanto 2006). This shift has motivated greater private sector (rural banks, Land Bank, and credit-lending NGOs) participation in rural and microfinance markets that could provide greater access to financing by small farmers. Effective policies have to be put in place to ensure further strengthening of the rural credit market to service the small and poor farm households. Formulation of such policies should be preceded by research that would carefully examine the rural financial markets, especially the barriers to strengthening rural finance; understand the behavior of economic agents involved in rural financing and the factors that influence such behavior; investigate the roles played by various institutions in rural financial markets; and determine the capacity needed to strengthen rural financial institutions for rural financial services.

### ***Improving the efficiency of the agriculture distribution system***

The development of a well-functioning and efficient product market is one key factor that promotes productivity growth and enhances the competitive capacity of the sector. The current marketing system in the Philippines has been described as an hourglass with the producers on top, consumers at the bottom and the market intermediaries crowding in the neck (Congress of the Philippines 1997). It is complicated, unwieldy, and chaotic with too many layers impeding the smooth flow of agricultural commodities. This and the poor infrastructure result in high marketing costs, and, hence, high retail prices of products (Intal and Ranit 2004). A recent study by Dawe et al. (2004), comparing the gross marketing margins between the farm and wholesale markets of rice between the Philippines and Thailand, shows that those in the Philippines (PhP 3.67/kg of dry paddy) are more than four times higher than Thailand's (PhP 0.85/kg). The reasons put forward for the difference include the dominant role of the National Food Authority seasonality of production, lack of openness to trade, poor road infrastructure making transportation costs

high, lack of mechanization as result of weak growth in non-farm job, inefficient financial system resulting in high interest rates and inadequate services to the market players.

Government intervention in marketing and importation of some commodities have contributed to the inefficiency of the marketing system. A case in point is its participation in grains marketing, through the National Food Authority, which has been oftentimes justified as necessary to even out supply and promote more stable rice prices for the benefit of the producers and consumers alike. The NFA's performance in domestic procurement and distribution of rice, however, has not been effective in achieving its objectives (Sombilla et al. 2006). The price control policy that goes with procurement and distribution responsibilities of the government through NFA has barely made an impact in defending either the floor or ceiling prices (Roumasset 2000). Neither has NFA been effective in executing its role as the key importer of rice to fill up domestic demand especially during the lean months after the rice harvesting seasons (Sombilla et al. 2006).

Greater privatization is the key to promoting efficiency in the agricultural distribution system. To encourage greater private sector involvement, several issues need to be examined. For example, indicators of traders' behavior and performance have to be developed to guard against the possible move toward a monopsonistic or monopolistic market and instead to foster a competitive environment. There is a need to compare price margins and to conduct a more intensive analysis of market price integration and the impacts of international price shocks on the domestic economy, as well as studies on alternative institutional approaches and regulatory refinements. Export market studies that would identify product niches will help the private sector in developing strategies on promoting agri-based products. The provision of efficient port technologies and postharvest facilities will help reduce cost and reduce product spoilage.

### ***Improvement of the regulatory system***

The mismanagement of the various policy levers intended to effect change toward sustained agricultural growth reflects years of political instability which have yielded a weak regulatory framework that lacks cohesion, coordination between national agencies and between the various tiers of government, and a clear division of responsibilities (Hill et al. 2007). The legal and regulatory environment should be properly formulated and implemented toward congruency across commodities and sectors. This will ease the risk perceptions that may hinder private investment and balance private profit seeking behavior with public concerns and interests. Key of these regulatory policies are those that promote intellectual property rights (IPR), reduce the high cost of maintaining patents, and promote efficiency in the use of water and other natural resources. Those for the shipping and maritime industry are worth special mention especially in the light of the increasing role of Mindanao and other island provinces as the country's food basket.

Transparency and accountability must be exercised in all undertakings. Focus should be made on building confidence in the government's capability to do business and provide services. As such, government personnel must be equipped with skills necessary to extend new technologies and promote value-adding activities that develop new products and enhance non-farm employment in the context of smallholder agriculture.

Decentralization has to function effectively. The central government should carry on the functions of stabilization and distribution, while the local governments should be mainly responsible for performing the allocation role or the provision of public goods and services. Privatization and contracting should be increasingly resorted to where appropriate to facilitate research and technology transfer, market and trade, and investment primarily in the poor and marginal areas.

### 6.1.2 Concluding Remarks

Development efforts, no matter how well they are formulated, will have difficulty achieving their objectives under a policy environment that constricts rather than enables benefits to be broadly based. Low and misallocated public investment in commodity development (especially through R&D), extension, infrastructure, and human capacity development; poorly defined and weak implementation of property rights and regulatory systems; archaic price and market policies that perpetuate monopolistic and oligopolistic systems, among others, have affected the implementation even of well-meaning programs and projects, some of which have fallen short of their expected goals and, hence, of pushing the agriculture sector to develop appropriately.

The experience of ACIAR-funded projects in the Philippines is described in the next chapter. The relatively low uptake of projects is partly attributed to policy and institutional bottlenecks that slowdown the dissemination of benefits.



## 7 ACIAR's Experience in the Philippines

ACIAR has had and continues to have a strong development relationship with the Philippines. Beginning in 1983, ACIAR has funded over 130 separate activities, with total financial support over the 23 years exceeding \$50 million (in constant 2006-07 \$), over 95% of which are direct bilateral activities (Figure 6). At present there are 21 active bilateral projects, with a total commitment of \$11.1 million and annual bilateral program expenditure of \$2.9 million in 2006-07. Through time, ACIAR expenditure in the Philippines has increased, with a near tripling of nominal expenditure from 1998-99 levels. In part, this pattern reflects the cyclical nature of aid projects, in which a number of projects are completed at the same time and lags in funding new activities lead to a series of peaks and troughs of funding levels (Figure 5).

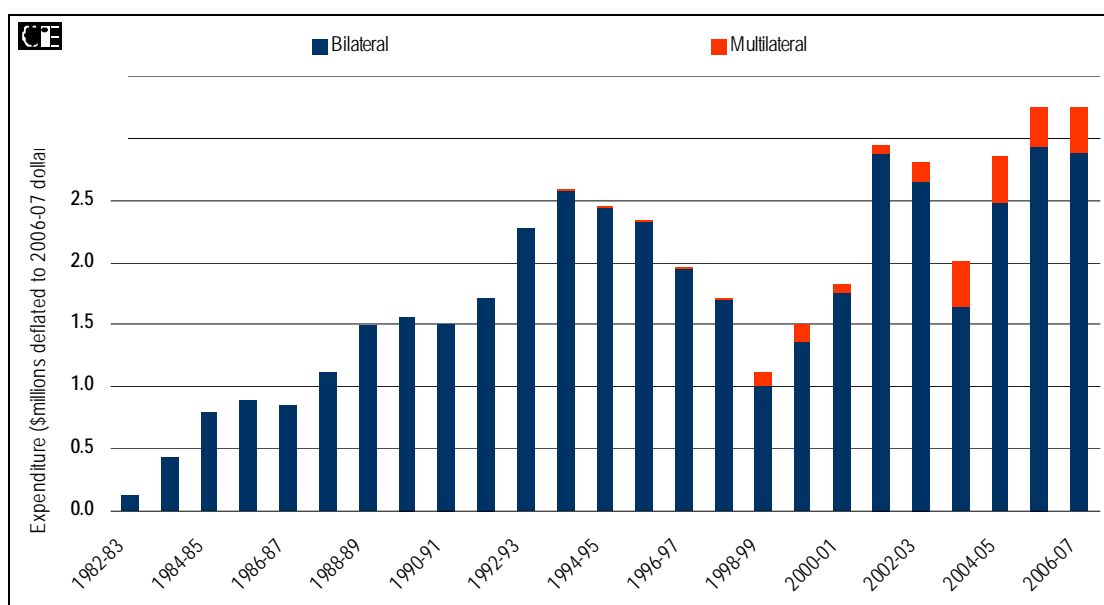
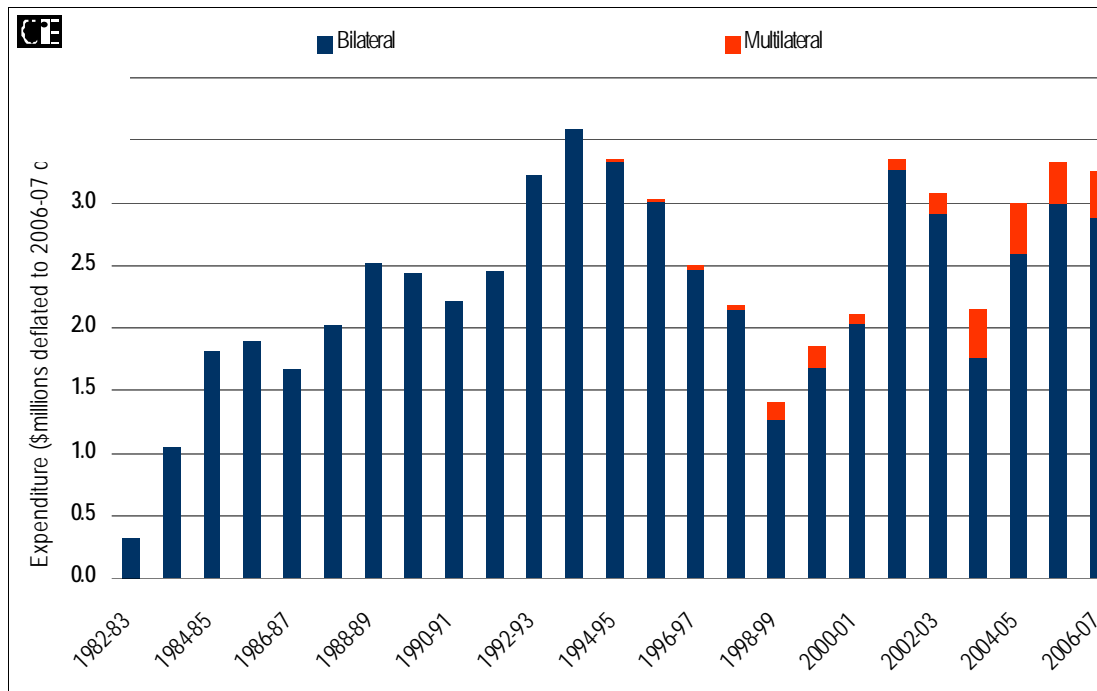


Figure 6. ACIAR Philippines' annual program expenditure

In real terms, annual expenditure has ranged from a high of \$3.6 million (in real terms) in 1993-94 to a low of \$1.3 million in 1998-99 to \$2.9 million in 2006-07 (Figure 7).

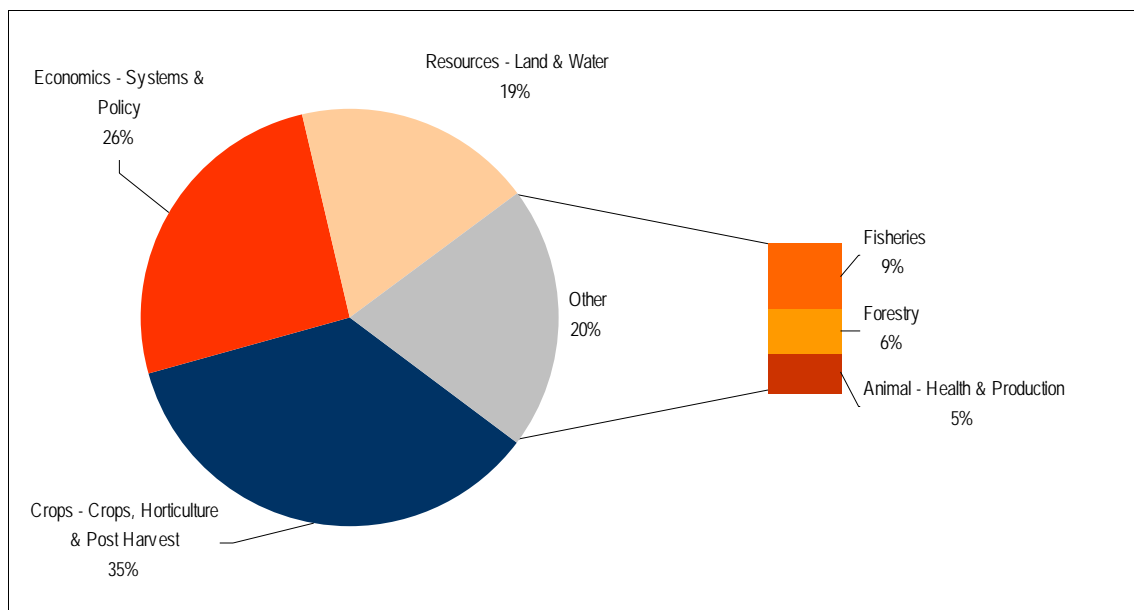
The ACIAR Philippines program began with a number of projects dedicated to research on soil management issues – nutrient management, erosion control, rice cropping systems, biological nitrogen fixation, and tree establishment on degraded land. In time, the areas of focus have expanded, so that over the past 23 years, the scope of ACIAR's work in the Philippines has covered the broad ambit of agricultural and primary industry livelihoods, including: animal sciences, crop sciences, fisheries, forestry, land and water resources, on-farm systems, postharvest technology, and public policy and agricultural and natural resource economics.

Over the course of ACIAR's involvement in the Philippines, expenditure on Crops and Economics account for over 60% of total expenditure. At the other end of the spectrum, the three smallest program areas, animals, forestry and fisheries account for approximately 20% of expenditure (Figure 8).



Data source: ACIAR (2007)

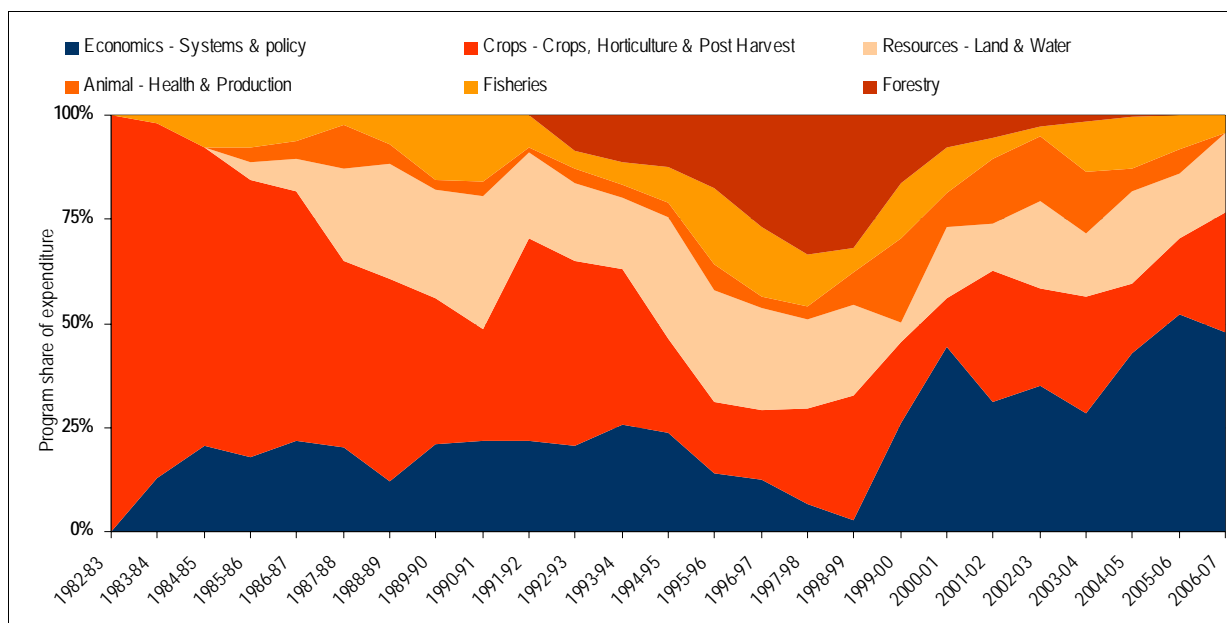
Figure 7. ACIAR Philippines' annual program expenditure (in 2006-07 \$)



Data source: ACIAR (2007)

Figure 8. ACIAR expenditure by program area

However, high-level aggregations mask the mix of expenditure through time. Historically, crops expenditure has been relatively significant, particularly during the early years of the program. More recently, Economics has increased and now accounts for 50% of all funds spent (Figure 9).



Data source: ACIAR (2007)

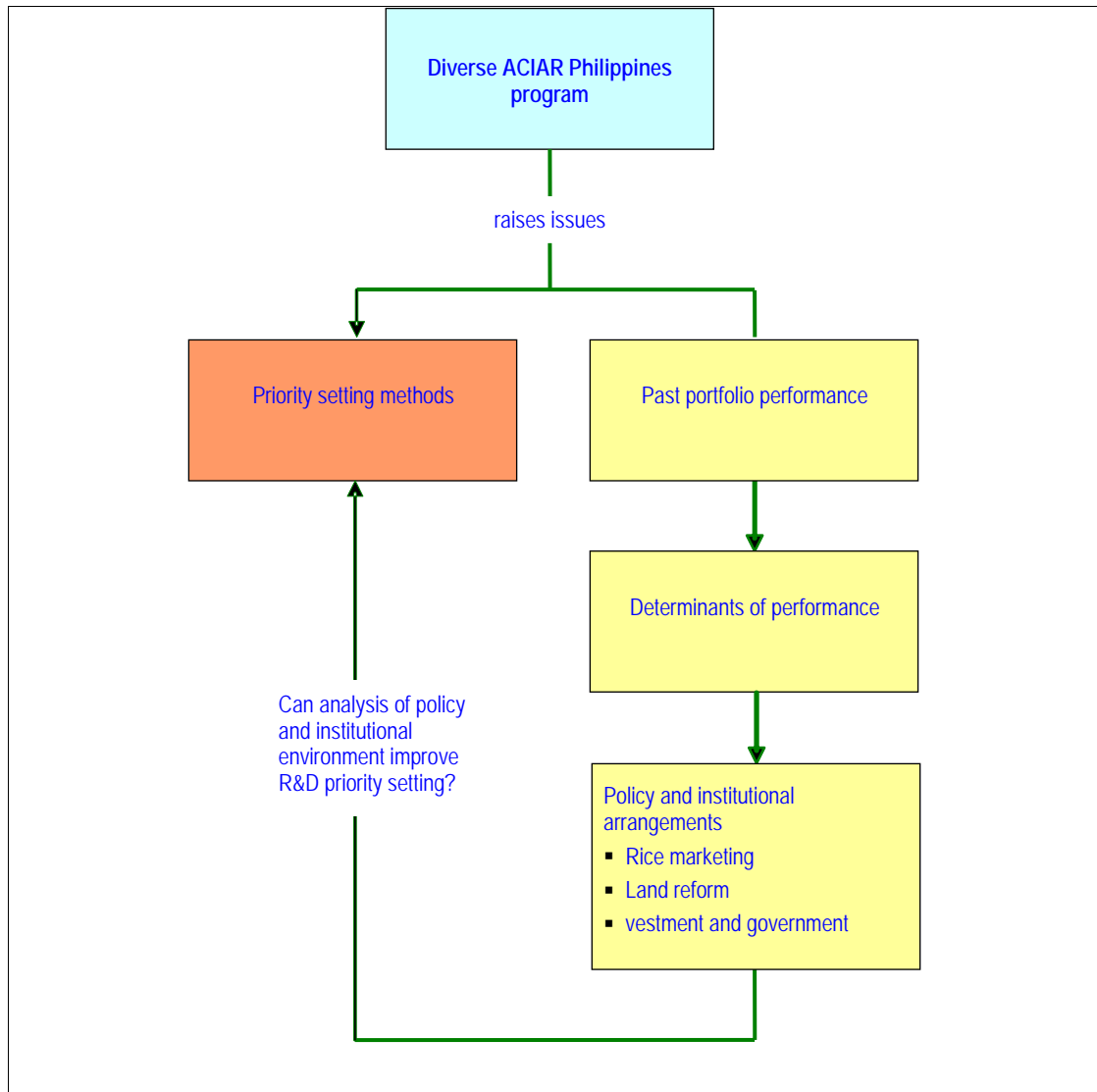
Figure 9. Program expenditure through time

The changing nature of the Philippine portfolio is in line with ACIAR programs elsewhere. For example, the ACIAR China program has similar expenditure levels and a similar number of current research activities. From the start of the China program in 1984, the major areas of research support have included management of agriculture water, forestry activities, integrated pest management, livestock production and disease control, grain management and storage, and citrus improvements.

The main message flowing from ACIAR’s past work in the Philippines is that the program has been diverse over the 25 years of involvement. Such diversity invites a review of past approaches to priority setting with a view to drawing lessons for contemporary priority settings. Figure 10 summarizes this approach.

### Current Thematic Priorities

In March 2006, ACIAR Philippines conducted a country consultation to develop new research priorities as well as to continue investing in research opportunities that will further enhance farmer uptake of the results of past and current projects. This is in line with an approach within ACIAR to increase the number of existing and future project activities that improve the impact of earlier projects, and follows on from the consultations held in March 2002.



Data source: CIE (2006)

Figure 10. Determining the make-up of the ACIAR Program

The country consultation identified broad ACIAR development goals in the Philippines, as follows:

- research to underpin both the development and implementation of policies that increase the efficiency of agricultural production and marketing
- market expansion for Philippine agricultural products and services, taking into account the impacts of trade liberalization
- improved agricultural productivity to raise rural incomes by responding to market opportunities with higher quality commodities produced at a competitive cost
- development and marketing of higher-value aquaculture, fruit, livestock products, and processed foods
- maintenance of strong links to research and development expertise in Manila and Los Baños.

As of May 2007, there were 21 active bilateral ACIAR projects and 4 active multi-lateral projects in the Philippines. For 2005-06, priority areas for research in line with the outcome of the Country Consultation were in agricultural economics, marketing and policy; postharvest technology; fisheries; and land and water resources management.

It is important to note that the current range of projects being undertaken and proposed to be undertaken in the future is in line with the historic trends. That is, funding has been provided across a broad spectrum of research areas. These range from assisting vegetable growers in Mindanao to providing assistance for the better management of water catchment areas to helping identify markets for small holder tree farmers. The spread of research activities is not limited to purely research areas. Research has been undertaken across the supply chain, from farm level activities such as bamboo productivity and herbicide strategies to broader research such as seasonal climate forecasts and higher level supply chain activities. Overtime, research activities have also been geographically dispersed, with activities taking place across the entire archipelago, but recent years have seen a definite drift to the southern areas.

### **Portfolio Performance**

The nature of ACIAR projects and the operating environment are such that once research has been funded, it is difficult to judge the impact of the research in the Philippines. There are two main reasons for this:

- research has been undertaken in a changing environment, changing incentives and the viability of past research findings
- impacts take a long time to work through.

#### *Uptake of ACIAR research*

Reports on uptake of ACIAR research can be found in the following:

- Adoption of ACIAR project outputs Series
- ACIAR Impact Assessment Series (previously the Economic Assessment Series)
- the ACIAR Working Paper Series.

A review of these documents indicates limited uptake of ACIAR research.

#### *Adoption of ACIAR project outputs*

One body of work available is the three *Adoption of ACIAR project output* studies for projects completed in 1999-2000, 2000-2001, and 2001-2002, respectively. In all, these three studies review the research impact and uptake of 31 ACIAR projects. Of the 31 projects, six involved some level of activity in the Philippines (Table 11). The reviews were undertaken three years after completion of the last stage of the research activity.

Table 11. Adoption of ACIAR project outputs in the Philippines, 1999 to 2002

Project categorized by type	Additional countries project undertaken in	Level of uptake <sup>a</sup>
<b>New technologies, practical approaches</b>		
Development of improved mud crab culture systems in the <i>Philippines</i> and Australia		3
Manufacture of low-cost wood cement composites in the <i>Philippines</i> using plantation-grown Australian species		3
New leucaenas for Southeast Asian, Pacific and Australian agriculture	Papua New Guinea, Vietnam, Kenya	1
Tree production technologies for the <i>Philippines</i> and tropical Australia		2
<b>Scientific knowledge/understanding (pure science)</b>		
Control of bacterial wilt by agricultural biotechnology	Indonesia, Taiwan, Vietnam	3
<b>Knowledge, models and frameworks to aid policy- and decision- making</b>		
Computer-assisted learning as a tool to improve grain storage pest management in key ASEAN countries	Indonesia, Vietnam	2
<p><sup>a</sup> The following classification for the level of uptake is used by ACIAR:</p> <p>1 – demonstrated and considerable use of results by the next and final user – <i>measurable adoption</i>;</p> <p>2 – demonstrated and considerable use of the results by the next user but only limited uptake by the final user – <i>limited adoption</i>; and</p> <p>3 – some use of results by the next user but only limited uptake by the final user – <i>no adoption</i>.</p> <p>4 – no uptake by either next or final users (note – no projects in the Philippines or elsewhere scored on this criteria).</p> <p>Source: ACIAR (2004, 2005, 2006)</p>		

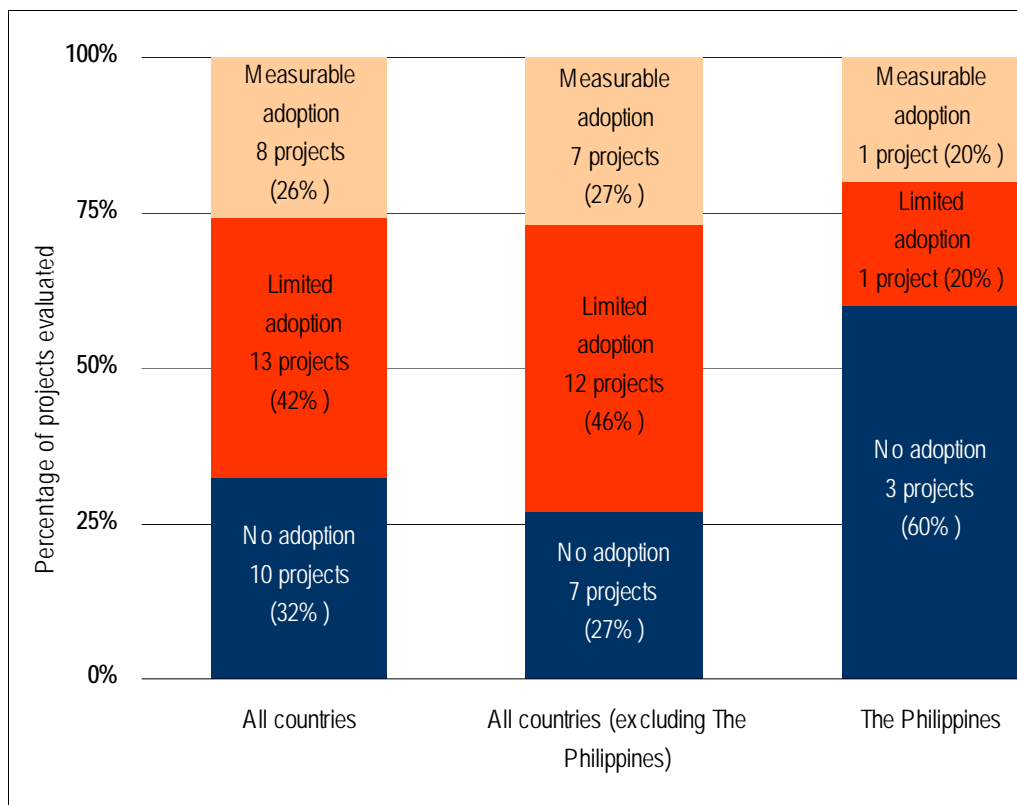
Of the six Philippine projects identified in Table 11, *Computer-assisted learning as a tool to improve grain storage pest management in key ASEAN countries* had a minor Philippines component, having mostly involved the training of staff at the Post-harvest Technology Institute in Vietnam.

Comparing the five remaining projects reviewed against the experiences in the Philippines provides insights into the performance of the adoption of ACIAR research in the Philippines relative to other countries (Figure 11).

While these studies do not suggest a highly successful adoption of ACIAR funded research in the Philippines, neither do they suggest an environment in which research is never used. It must be recognized that these results are based on only a limited data set of 31 projects, and only 5 in the Philippines. The three-year gap between final activity and assessment period may be too short to allow for full recognition of the adoption.

#### *Impact Assessment Series*

The second body of research available on the impact of ACIAR research is the *Impact and Economic Assessment Series*. Of the 55 reviews, two are projects undertaken in the Philippines and elsewhere:



Data source: ACIAR (2004, 2005, 2006)

Figure 11. Adoption rates for projects in the Philippines

- Control of Newcastle Disease in Village Chickens undertaken in Malaysia, Thailand, the Philippines, Indonesia, Myanmar, Sri Lanka, Vietnam and several African countries (Impact Assessment Series 1)
- Reducing Fish Losses Due to Epizootic Ulcerative Syndrome undertaken in Australia, Indonesia and the Philippines (Impact Assessment Series 7).

Neither of these reports provides much information on the impact of ACIAR research in the Philippines, primarily due to the multi-country focus of the projects assessed.

The first study found that despite the success of ACIAR trials, widespread vaccination of chickens had not developed in the Philippines. Supplies of the Newcastle Disease vaccine were not selling, and overall supply subsequently had effectively stopped.

The second report found no identifiable data on the uptake rate of the control and prevention techniques established as part of the project. In fact, the analysis surmised that the uptake of the ACIAR-funded research was unlikely to be immediate, and that a gradual uptake rate was more likely.

One recommendation from the *Reducing Fish Losses* study was that ACIAR could achieve a higher leverage from funds in the Philippines and elsewhere if a greater emphasis was placed on increasing rates of adoption.

### *Working Paper Series*

The final body of research available on the impact of ACIAR research relates to two studies:

- Assessment of twenty-five ACIAR supported projects in the Department of Agriculture of the Philippines (Working Paper Series 42)
- Impact Assessment of twenty-one ACIAR supported projects at the University of the Philippines Los Baños 1983-1995 (Working Paper Series 43).

The review of the Department of Agriculture of the Philippines determined that the outcome of ACIAR projects was mixed. It identified a number of successful activities such as research into forage and grain storage. There were also a number of research activities that failed to contribute significantly for a number of reasons. For some activities, there was a lack of skills to be able to use the new technology developed (Philippine's Computable General Equilibrium model), resource and bureaucratic constraints (chicken disease research), and limited integration into provincial extension activities due to a lack of follow-up activities. Overall, the outcome of Working Paper 42 suggests that only a minority of ACIAR activities with the Department of Agriculture had significant impacts and adoption by broader groups outside of trial and implementation sites.

For projects undertaken at the University of the Philippines Los Baños, it was determined that the research expenditure of \$12 million yielded a total benefits of \$132 million. However, as the study identifies, a large number of assumptions on the uptake of research had to be made because many of the projects evaluated at that time were still very much in progress. The *Impact Analysis Studies and the Adoption Studies* would suggest that the uptake of research in the Philippines is not high. Reducing the presumed adoption rates would correspondingly reduce the level of benefits obtained.

### *Impact Assessment Results*

Lessons learned from research projects that had a successful impact despite the policy environment will help guide the future size and composition of ACIAR's Philippine portfolio. Unfortunately, the picture from the ex-post work is inconclusive. There is not enough evidence to indicate which kinds of projects do well or which do not. Even making a performance statement on the overall portfolio is difficult.

A recent ACIAR Adoption Study (ACIAR 2004) identified six factors inhibiting the uptake of new technology and practical research:

- bureaucratic barriers to further development and implementation of project results
- shortage of essential facilities and/or equipment and/or expertise to use it
- limited number of field trials and demonstrations to provide visible proof of the effectiveness of the new approach
- competition from cheaper alternatives
- time lag – where the results from implementing research are not immediately apparent
- no existing domestic market and/or poor infrastructure to support industry development.

Combined, these six factors suggest that ACIAR research undertaken in the Philippines has been stifled by two issues. Firstly, the research itself has not been taken up – in essence, the hurdles to adoption, including bureaucratic constraints, risk factors associated with adopting, and others, exceed the real or perceived benefit of the research.



At the same time, the benefits of the research have been reduced through the lack of markets or market access as well as high transportation costs and increased competition.

### **Concluding Remarks**

The information available on which to judge the ACIAR Philippines program is limited. As such, it is problematic to draw to strong a conclusion from the findings. However, using the few information sources available, initial findings suggest that the uptake of ACIAR-funded research in the Philippines is low. While these findings are based on limited data, they do raise a number of questions as to why this is so.

Firstly, to what extent does the policy and institutional environment inhibit both the incentives and capacity of farmers to adopt research output? And, had the true impact of the institutional environment been known, would the ACIAR portfolio have been any different?

The emerging perceptions suggest policy is a barrier to achieving the benefits of research. As such, there may be value for ACIAR to look into identifying areas where policy change may occur and to position the research portfolio to take advantage of such changes. As can be noted in the workshop (Appendix 1) that was conducted to culminate the study, participants seemed to be in general agreement that:

- the analysis of the policy environment in Chapter 3 was sound
- the distorted policy environment explained much of the poor uptake of new technology by small mainly grain based farmers
- the substance of this analysis and its implications had been around for 20 years
- change has been difficult largely because interest groups are made up of people who benefited from policies but which are not in the national interest.

The relevance of future policy research lies not only on its ability to make farm incomes rise but also to ensure that this environment becomes stable by empowering the LGUs and other development partners to take on the greater role of defining a more people centered development objectives and achieving them.

## 8 Conclusions and Implications for Policy Research

Under an environment of limited information on the institutional failings, the question looms: can ACIAR and its Philippines partners do any better than the current compositional mix of projects; by identifying areas where policy change may occur and adjusting the research portfolio to take advantage of such changes. Figure 11 presents a framework that can help identify policy studies to ensure a more successful achievement of research and project development objectives.

The focal concern of the framework is the household or family unit. The welfare of these people is primary objective of development initiatives, not tons of rice or numbers of livestock. The framework then points to a full set of opportunities, broader than growing a single crop and could very well cover farm systems or family systems, that are available for all members of the family. But accessing those opportunities are not always straightforward and often marred by various constraints despite the presence of well-meaning policy reforms.

Indeed, it can be seen that Philippines agricultural policy does not stand up very well to the standards suggested by Figure 12.

- Much policy is commodity specific and is not directed at a farm system much less a family system.
- Policies such as restricting land sales inhibit people from leaving agriculture – as well as making borrowing and farm consolidation unnecessarily difficult.
- Inefficient regulation inhibits investment in both farm and non-farm activities.
- Vast expenditures on explicit and implicit subsidies encourage people to stay in farming even at modest incomes and small scale inefficient methods of operation.
- The same direction of funds to subsidies makes it difficult to fund research and development and infrastructure.
- Policies aimed at food security, production targets and the like, foster subsistence agriculture rather than a modern commercial agriculture.

If so little of the benefits of the large agricultural budget actually end up with farmers, why is it that programs which perform so poorly stay in place for years after years? The answer it seems is that there are indeed many beneficiaries of farm programs, it just so happens that not many of them are farmers and virtually none are poor farmers.

In the context of this study the end point of Figure 12 points to policy research activities in two possible areas, one to do with activities to bring about policy reform on a broad front, another to do with policy analysis relating to particular technical project areas.

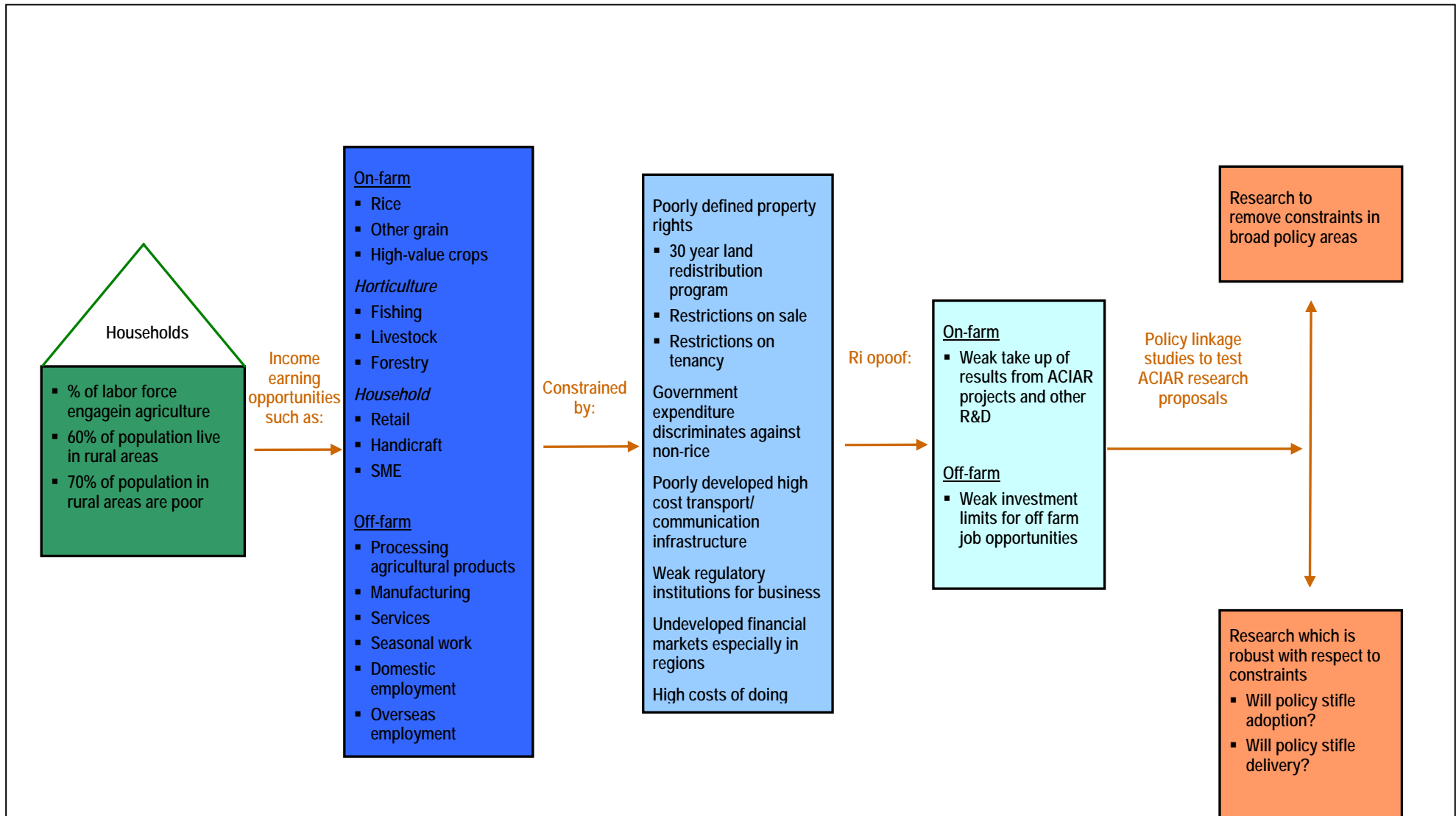


Figure 12. A framework for identifying policy research

Tackling policy reform on a wide front seems to be a high priority in the Philippines, and possibly in other developing countries. Whether ACIAR could usefully support activities in this sphere would depend on several considerations, two of which pertain to:

- the size of the policy reform agenda (settling priorities may become difficult if the agenda is very large)
- the little comparative advantage that Australians may derive from sound policy analysis, except perhaps when these are drawn on relevant Australian experience.

Australian support, for instance, could be useful particularly in areas that relate to project development and for which specific policy scoping studies might be relevant. Australia's experience (both good and bad) in agricultural policy reforms over the past 30 years, which have had quite significant adjustments, may be helpful to the Philippines. Such policy reforms have been helped by two special features in its policy environment: (1) the creation of the Productivity Commission (formerly the Industry Commission), which is an independent, economy-wide, transparent advisory agency that conducts public inquiries on industry assistance and regulation for over 30 years; and (2) the National Competition Policy, which derives from an agreement by all Australian governments to review and test all regulations in terms of the public interest.

Table 12 lists some areas where further policy scoping may be useful. Of the various areas mentioned, further development of the high-value crops should be stressed. This is not only because of their strong export potential but also because of their strong forward linkages to the agribusiness sector. The potentials of the aquaculture industry should be sustainably exploited to boost households' incomes, as it has done in the last five years, especially for the small fisherfolk who dominate the industry and also the agriculture sector as a whole. This is a rapidly growing area of activity which offers considerable scope for helping low income and resource poor people. While to some extent aquaculture can be conducted in self contained areas with few common property or externality issues, there are two important policy issues which could limit growth. One is the reliance on freely harvested seed stock from natural sources. The second is the reliance on natural sources for fish food. In both cases supplies are limited and in the second case there is a potential conflict between the use of such food for human consumption and fish production. A project that is tackling these issues is being mounted in Vietnam and the conduct of parallel projects in each country offers scope to learn about factors affecting adoption.

The need to enhance good governance and rectify various reforms that increase the "cost of doing business" in the country and impedes greater private sector participation cannot be overemphasized. A particular aspect of private sector participation that needs to be strengthened pertains to the promotion of a more efficient distribution of agricultural products. In this regard, policies have to be rectified to enable a more vigorous development of the transport system, especially the maritime/shipping industry that could facilitate the integration of development efforts not only across the country's numerous island regions but also with other countries.

Table 12: Areas for research to strengthen the current policy environment

Policy	Issue	Possible Areas for Policy Research
A. Land Reform and Property Rights	<ul style="list-style-type: none"> <li>• Development of the land markets to facilitate land access and improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Framework to help resolve impending issues on land distribution/acquisition (including tenurial issues) and enhance the economic benefit of the program.</li> <li>• New forms of engagement (legal and business arrangements that go beyond land rental) between farmer-beneficiaries and agribusiness combines.</li> </ul>
B. Research and Development	<ul style="list-style-type: none"> <li>• Development of a more responsive research agenda</li> <li>• Facilitate technology commercialization</li> <li>• Natural resources conservation, especially soil and water</li> </ul>	<ul style="list-style-type: none"> <li>• Technology assessment to determine factors accounting for the low uptake.</li> <li>• Schemes to encourage/enhance partnerships between ACIAR and other s (especially with the private sector) for the conduct of more location-specific research</li> <li>• Evaluation of the usefulness of technologies, especially indigenous technologies and technologies currently used by farmers</li> <li>• Research on more sustainable soil and water management (e.g., constraints studies, water delivery schemes, indigenous soil conservation schemes, cost effective means of extraction of common property resources like fisheries and forest)</li> <li>• Market-based instruments to promote natural resource conservation (e.g., framework for determining payment for economic services/appropriate level and structure of user fees; user rights vs. cost of enforcement)</li> </ul>
C. Aquaculture and fisheries	<ul style="list-style-type: none"> <li>• Depletion of seed stock</li> <li>• Harvesting of non-commercial fish for fish food</li> <li>• Management of common property resources</li> </ul>	<ul style="list-style-type: none"> <li>• Regulatory arrangements for commercial hatcheries</li> <li>• Regulation to control harvesting</li> <li>• Alternative sources of fish food</li> </ul>
D. Extension	<ul style="list-style-type: none"> <li>• Weak extension service, hence, depriving farmers from promptly getting new technologies</li> </ul>	<ul style="list-style-type: none"> <li>• Innovative approaches to knowledge management.</li> <li>• Studies on more appropriate and client-responsive extension service schemes (e.g., extension</li> </ul>

Policy	Issue	Possible Areas for Policy Research
		<p>strategies consistent with the nature of technologies, small farmers' participation in the supply-chain)</p> <ul style="list-style-type: none"> <li>• Training needs assessment for LGU staff and development of more appropriate performance indicators</li> </ul>
E. Marketing/ product distribution system	<ul style="list-style-type: none"> <li>• Government intervention</li> <li>• Transport and infrastructure</li> <li>• Transport handling and incentives</li> <li>• High cost of investment credit</li> </ul>	<ul style="list-style-type: none"> <li>• Price/Market integration analysis</li> <li>• Policy models with well articulated agricultural distribution</li> <li>• Export market studies toward identification of possible market niches</li> <li>• Assessing the potentials of product branding</li> <li>• Schemes for greater private sector participation to lower cost investment credit</li> </ul>
F. Strengthening public- private sector partnership	<ul style="list-style-type: none"> <li>• Restrictive regulations/policies</li> <li>• IPR</li> <li>• Public service role versus business for profit</li> </ul>	<ul style="list-style-type: none"> <li>• Research on strengthening IPR, standard setting, information dissemination and exchange, regulatory policies</li> <li>• Studies that identify areas where partnership can be effective: definition of respective roles of public versus private sector responsibilities</li> <li>• Rectifying current regulatory systems (e.g., in shipping industry)</li> </ul>

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## 10 Appendixes

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### 10.1 Appendix 1: CIE–SEARCA-ACIAR Policy Scoping Workshop

*Rural Development Initiatives and the Philippine Policy Environment:  
What is the Real Score?*

1 June 2007

The Peninsula Manila Hotel, Makati City, Metro Manila

The CIE-SEARCA-ACIAR study on Philippine Policy Scoping culminated in a workshop titled *Rural Development Initiatives and the Philippine Policy Environment: What is the Real Score?* The workshop primarily aimed at soliciting reactions and comments in relation to the need for policy research to:

design and carry out projects that will produce information or technologies with good uptake in the existing institutional policy and physical environment; and

design and conduct projects aimed at modifying the institutional and policy environment in order to empower farmer demand for productivity enhancing technologies, thereby facilitating the adoption of new ideas and the relatively large body of productivity enhancing techniques and material already in existence.

The workshop participants represented the various Philippine government offices, the academe, and research institutions, and the private sector including the nongovernment organizations. The discussants were Dr. Cielito Habito, former Socio-Economic Planning Secretary of the Philippines and currently a Professor of Economics in the Ateneo de Manila University; Father Francis Lucas, a full-fledge community organizer currently holding key positions in various social and community organizations including the presidency of the Bayanihan Broadcasting Corporation; and Ms. Dulce Gozon, Chair of the National Onion Growers' Association, Fruits and Vegetables Committee of the National Agriculture and Fishery Council, and National Marketing Umbrella.

The following comments/reactions gathered from the workshop validates the study's argument that the policy environment explains much of the poor uptake of new technology by small farmers:

Problems in the agriculture sector have been there in the past 20 years even if well-defined policy reforms have been put in place.

There is a need for all sectors to join efforts to get agriculture moving, but the role of each should be properly defined. Investments in infrastructure, which would help expand the farmers' earning options, should not be the sole responsibility of the government. The private sector should take on the initiative to underwrite, for example, the establishment and maintenance of postharvest facilities.

Research should: (a) be people-centered (farming systems approach, focus on high-value crops-enterprise development); (b) be mindful of peoples' culture and diversity; and (c) consider the client-researcher-technology loop. Effective solutions need not be expensive nor sophisticated (e.g., farm-to-market road vs. horses, extension workers vs. peer mentoring, diversified organic farming vs. "modern" technologies).

The primary need is to rethink the Philippines' current agricultural programs particularly because the Philippine topography is not suited for grains production. The following ideas were suggested in revising the agricultural plan: ; (a) focus on other commodities that have higher market potentials (e.g., pineapple, banana, aquaculture); (b) try other modalities that would involved a more integrated and holistic agro-industrial plan in order to improve the competitiveness of Philippine agricultural commodities; (c) develop a people-centered agricultural plan; and (d) recognize the limited capacity and highly politicized nature of the Department of Agriculture. On the other hand, some local government units (LGUs) have been successful at implementing agricultural programs.

In relation to the comment above, the Department of Agriculture's leadership may be best exercised through "steering" not "rowing" (i.e., standards setting, technical support to LGUs, etc.). Local governments can be expected to better implement the agricultural programs because of their proximity to the problems; some even have award-winning local agriculture initiatives.

- The advances in communication technology should be taken advantage of. Scientists and lawmakers often have different, even opposing, views. Effective communication strategies should be employed to articulate to policymakers the critical need for policy reforms to hasten and deepen the adoption of technologies and other research results.

For farmers, the success of any development endeavor is not measured in terms of how much increases in production are achieved. Rather, it is the extent to which farmer's welfare and incomes are improved. As long as farmers find the market conducive such that it gives them the right price for their produce, they will take it upon themselves to invest in productivity-enhancing activities.