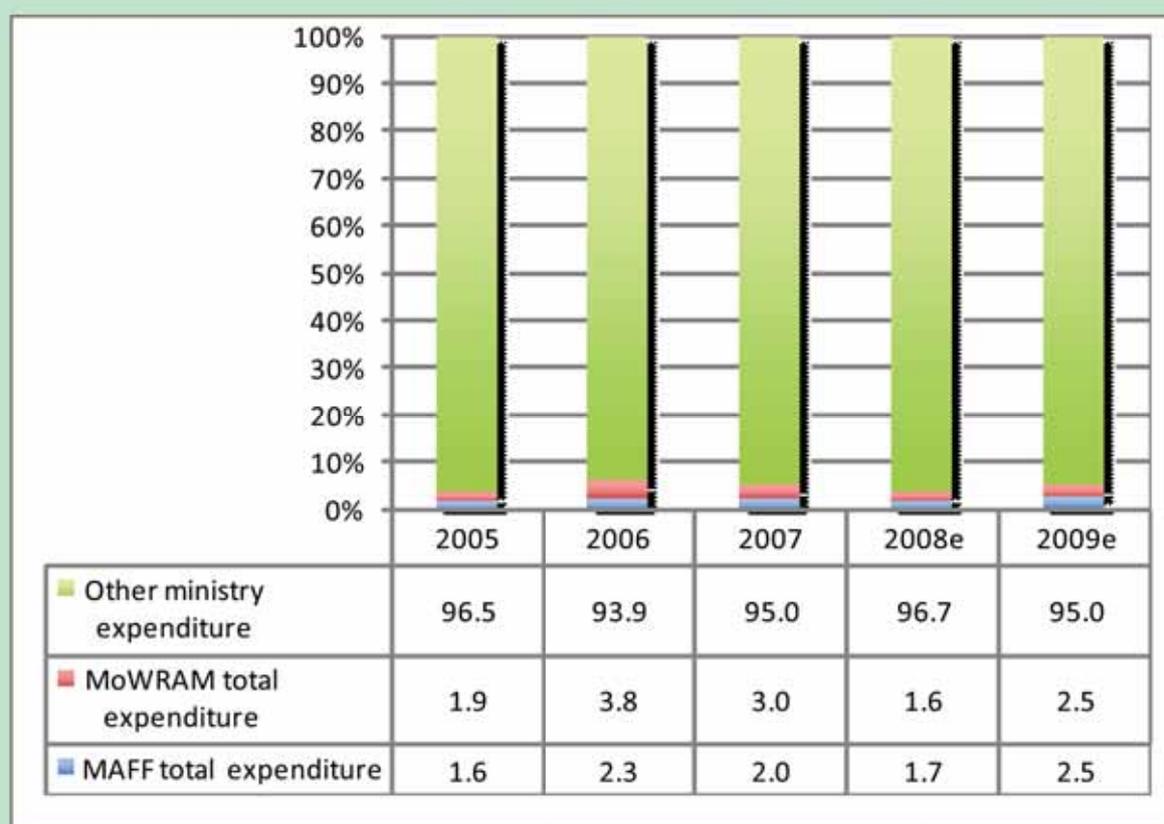


Agriculture Sector Financing and Services for Smallholder Farmers

Budget expenditure for Ministry of Agriculture, Forestry & Fishery
and Ministry of Water Resources & Meteorology 2005-2009



Ngo Sothath and Chan Sophal
Cambodian Economic Association (CEA)

In cooperation with
The NGO Forum on Cambodia and ActionAid Cambodia

Phnom Penh, Cambodia
September 2010

Agriculture Sector Financing and Services for Smallholder Farmers

Co-Authors: Ngo Sothath and Chan Sophal

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List of acronyms

A&W	Agriculture and Water
ABiC	Agri-Business Institute Cambodia
ACI	Agrifood Consulting International
ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
AFD	French Development Agency
AFF	Agriculture, Forestry and Fisheries
AQIP	Agriculture Quality Improvement Project
ASDP	Agriculture Sector Development Program (ADB)
ASSDP	Agriculture Sector Strategic Development Plan
BACDA	Bakhaeng Credit Development Association
CARDI	Cambodian Agricultural Research and Development Institute
CAS	Country Assistance Strategy (World Bank)
CDC	Council for the Development of Cambodia
CDRI	Cambodia Development Resource Institute
CEA	Cambodian Economic Association
CEDAC	Cambodian Center for Study and Development in Agriculture
CMDG	Cambodian Millennium Development Goal
CRDB	Cambodian Rehabilitation and Development Board (CDC)
CRS	Creditor Reporting System (OECD DAC)
CSES	Cambodia Socio-Economic Survey
CSP	Country Strategy Paper (EU)
CSP	Country Strategy and Program (ADB)
DAC	Development Assistance Committee (OECD)
DFID	Department for International Development (UK)
DPA	Development Partner in Action
ELC	Economic Land Concession
EU	European Union
FTA	Freestanding Technical Assistance
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
IPM	Integrated Pest Management
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
MAFF	Ministry of Agriculture, Forestry and Fisheries
MCC	Mennonite Central Committee
MEF	Ministry of Economy and Finance
MLMUPC	Ministry of Land Management, Urban Planning and Construction
MoP	Ministry of Planning
MoWRAM	Ministry of Water Resource and Meteorology
MRD	Ministry of Rural Development
NGO	Non-Governmental Organization
NIS	National Institute of Statistics
NSDP	National Strategic Development Plan
ODA	Official Development Assistance

OECD	Organisation for Economic Co-operation and Development
PER	Public Expenditure Review
PFM	Public Financial Management
PIP	Public Investment Program
RGC	Royal Government of Cambodia
SAW	Strategy for Agriculture and Water
SLPP	Smallholder Livestock Production Program
SME	Small and Medium-Sized Enterprise
SNEC	Supreme National Economic Council
SRI	System of Rice Intensification
TOFE	Table of Economic and Financial Operation
UK	United Kingdom
UN	United Nations
US	United States
VLA	Village Livestock Agent
VSF	Veterinarians Sans Frontières
WFP	World Food Programme
WVC	World Vision Cambodia

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The study attempts to contribute to the national discussion on the agriculture financing and development and effectiveness and coverage of agriculture extension services provided by the government, development partners and NGOs to smallholder farmers. Furthermore, the publication and dissemination of this report is made possible with support from the NGO Forum on Cambodia.

Executive summary

In 2007-2008, the world experienced a crisis of food security, resulting in insufficient access to food for millions of people. High food prices and a food supply shortage threatened millions of lives around the globe. The poor were seen as the most vulnerable to the crisis because they spend most of their income on food. It is believed that improving the productivity of staple crops on millions of the world's small farms will not only increase food supply but also improve food security and poverty reduction. Cambodia is not an exception. Although it is a country with a food surplus, millions of rural Cambodians are subsistent or semi-subsistent smallholder farmers, many of whom live in poverty.

This study aims to observe the extent to which the Royal Government of Cambodia (RGC) and its development partners, in particular, the Asian Development Bank (ADB), the World Bank and the European Union (EU), have given funds to assist smallholder farmers, and to track how much smallholder farmers in Cambodia benefit from such expenditure. Furthermore, the study intends to identify how smallholder farmers could best be supported to allow them to increase farm productivity.

In Cambodia, agriculture plays a significant role in contributing to economic growth. The National Strategic Development Plan (NSDP) 2006-2010 recognizes agriculture as the sector with the most potential for poverty reduction, and as a top priority for development. However, the NSDP does not allocate a significant amount in its budget to agriculture. The Agriculture Sector Strategic Development Plan (ASSDP) 2006-2010 and the Strategy for Agriculture and Water (SAW) 2006-2010 were formulated to guide the direction and distribution of resources for the sector. The ASSDP and the SAW are meant to address constraints faced by Cambodian farmers by improving agricultural productivity and food security, enhancing agricultural research and extension services for farmers and recognizing the importance of water to agriculture.

However, the importance of agriculture as a priority sector has not been reflected in the annual national budget. The proportion of the total budget (both recurrent and capital) combined for the two ministries that are most required to support agriculture, namely, the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of Water Resources and Meteorology (MoWRAM), has averaged about 7.5 percent over the period 2006-2010, but has been decreasing over the period. The recurrent budget shares for MAFF and MOWRAM has reduced from more than 3% in 2005 to only 2.5% in 2010. Such declining trend does not suggest that agriculture has been respected as priority as it was in the past period although its average share of 2.7 percent of total recurrent budget per annum over 2006-10 tends to match the NSDP costing.

The progress of Cambodia's agricultural development has arguably been constrained by under-expenditure of the allocated budget, which has left small farmers under-supported by limited public services. National expenditure was about US\$1.85 billion in 2009 in nominal terms, which is nearly twice that of 2006. Over this period of 2006-2009, the average share of expenditure for agriculture (both recurrent and capital expenditure) was about 4.8 percent per year. This actual total expenditure for agriculture captured only about 65 percent of the total budget allocations, which is low due primarily to the fact that MAFF and MoWRAM could only spend about 60 percent of their allocated capital budgets over 2006-09. Therefore, actual expenditure has actually been even lower than the already small budget allocations.

Agriculture should be properly resourced. Over the years 2006-2009, capital expenditure was US\$ 2.2 billion, compared to the US\$ 3.5 billion costed in the NSDP for the period 2006-2010.

This means that overall availability of resources undermines development progress. The finding confirms that an average share of 9 percent per year of capital expenditure was directed to agriculture during the period 2006-2009, even though MAFF and MoWRAM together managed to spend only 60 percent of their annual capital budget. On the other hand, the share of recurrent expenditure for agriculture (MAFF and MoWRAM) has been declining since 2006, falling short of NSDP targets while it is also considerably low given the fact that 72.3% of the population is employed in agriculture.

Sectoral policy for agriculture, reflected in both the ASSDP 2006-2010 and the SAW 2006-2010, demonstrates the agricultural subsectors that are most beneficial to farmers, for instance improving food security, productivity, diversification, research and extension services, access to agricultural inputs and markets and water and irrigation. The ASSDP committed 64 percent of its proposed budget to food security, productivity and diversification and 11 percent to agricultural research and extension services. The SAW allocated 29 percent of its total proposed budget to water, irrigation and land management.

Despite the existence of sectoral policies meant to guide resources to sector development priorities, the evidence from aid disbursements to Cambodia suggests that resource allocation does not necessarily follow. The flow of aid disbursements confirms that the ASSDP 2006-2010 is excessively financed by external assistance, whereas the SAW 2006-2010, which should have been properly funded by the aid flows that have been available to agriculture from 2006 to 2010, is not well financed. Meanwhile, the distribution of aid disbursements to subsectors and program areas does not align with sectoral policies. The average share allocated to food security, productivity and diversification was only 25 percent of total aid to agriculture, forestry and fisheries over the period 2007-2009 (which is 60 percent less than ASSDP commitments). Agricultural research and extension received only a 7 percent share over the same period. The institutional and legislative framework and forestry and fisheries reforms are largely funded by a bigger share of foreign aid.

In relation to the SAW 2006-2010, water resources, irrigation and land management receive most aid disbursements. This component of SAW received about half of all the external assistance for agriculture per year during the period 2007-2009. Although this appears much higher than the proposed share in the SAW 2006-10, the allocations tend to respond to the SAW costing for 2009-2013, whereby 44 percent of resources are committed to this program area. Furthermore, it reflects the fact that irrigation and water is one of the major constraining factors in Cambodia's agriculture production, as 80 percent of cropping areas are rain-fed. Nevertheless, much assistance has been diverted to institutional capacity building and management, which received nearly a quarter of agricultural aid during the period 2007-2009 instead of the 14 percent allocated in the SAW. This may constrain the disbursement of resources that directly benefit farmers.

Evidence on the distribution of agricultural aid by region confirms that a large proportion of aid has not been used to directly benefit targeted farmers. An average of 40 percent of agricultural aid over 2007-2009 was not allocated to any particular geographical region of Cambodia, but was instead classified as nationwide programming, allocated to activities relating to capacity building, technical assistance, reforms, workshops and so on. On the other hand, there is an indication that the distribution of aid to regions does not equate to the proportion of farmers in different regions. The Tonle Sap region attracts about 37 percent more aid compared to the Plains region, whereas the former has 27 percent fewer households.

Overall, aid disbursements to agriculture averaged about US\$ 70 million per year during the period 2007-2009, which was about 7.7 percent of total aid disbursements to Cambodia over the same period. It is worth noting that nearly half of agricultural aid is disbursed in the form of freestanding technical assistance. Loans accounted for 11 percent of agricultural aid in 2007, increasing to 38 percent in 2009, which signifies the RGC's willingness to borrow more for investment in the sector. Motivated by the global food crisis in 2007-2008, ADB started to play a more important role in agriculture in 2009. Its assistance rose sharply to nearly 20 percent of total aid to agriculture in 2009, and is likely to reach 23 percent in 2010.

The World Bank, guided by its Country Assistance Strategy (CAS) for 2005-2008, did not provide assistance to agriculture from 2006 to 2008 but made a significant contribution (15.5 percent of total agricultural aid) in 2009. While the World Bank is not bound to focus on agriculture by its CAS for 2009-2011, its intervention in 2009 clearly indicates its position in response to the global food crisis. However, unlike the ADB, there is no clear indication that the WB will continue to finance the sector. Support for agriculture from the EU has been small in relation to other donors, with no clear evidence of a strong reaction to the food security crisis, but has remained stable over the past few years.

Summary of public expenditure 2006-2009

Public expenditure	NSDP costing	National expenditure				
	2006-2010	2006	2007	2008	2009e	2006-2009
Total expenditure (US\$ million)	...	1,047	1,499	1,742	1,843	6,131
Total recurrent expenditure (US\$ million)	...	611	956	1,190	1,152	3,909
Total capital expenditure (US\$ million)	2,500	436	543	551	691	2,222
NSDP 2006-2010	Costing (%)	National expenditure				
	2006-2010	2006	2007	2008	2009e	2006-2009
Total agriculture (% of total expenditure)		6	5	3	5	4.8
Agriculture recurrent expenditure (% of total recurrent)	2.7	3.2	2.1	2.0	2.3	2.4
Agriculture capital expenditure (% of total capital)	10	10	10	6	9	9
RGC agriculture capital expenditure (% of agriculture capital)		47	36	52	49	46
Agriculture recurrent expenditure (% of total agriculture)		30	27	41	30	32
ASSDP 2006-2010	Costing (%)	Aid for MAFF (% of total aid)				
	2006-2010	2006	2007	2008	2009	2007-2009
Food security, productivity, diversification	64	...	8	32	29	25
Agricultural research and extension services	11	...	11	11	4	7
Market access for agricultural products	9	...	11	19	2	8
Institutional and legislative framework	9	...	25	15	39	30
Fisheries reform	3	...	15	5	11	10
Forestry reform	4	...	29	18	15	19
Total (US\$ million)	149	...	38	44	87	168
SAW 2006-2010	Costing (%)	Aid for agriculture (% of total aid)				
	2006-2010	2006	2007	2008	2009	2007-2009
Institutional capacity building and management	14	...	15	11	34	23
Food security	14	...	3	18	23	16
Agricultural and agri-business support	29	...	7	13	2	6
Water resources, irrigation and land management	29	...	68	50	38	49
Agriculture and water research, education and extension	14	...	7	8	4	6
Total (US\$ million)	350	...	61	62	98	221
Aid to agriculture by regions	% of households (2008)	Aid for agriculture (% of total aid)				
		2006	2007	2008	2009	2007-09
Plains	41	...	25	15	11	17
Tonle Sap	30	...	24	30	26	27
Coastal	7	...	8	4	4	6
Plateau/mountain	13	...	14	9	7	10
Nationwide		...	29	41	52	41
Total (US\$ million)	n/a	...	61	62	98	221

Note: e = estimate.

Agricultural extension services are most suitable and beneficial for smallholder farmers, many are poor. However, they are quite limited for farmers, and are dependent largely on assistance from donors and non-governmental organizations (NGOs). According to the Cambodia Socio-Economic Survey (CSES) 2007 (NIS, 2007), only 17 percent of villages across Cambodia are reached by extension services. The evidence from case studies of six districts of Kandal and Takeo provinces suggests agricultural personnel are concentrated at provincial level, leaving fewer at district level. District Offices of Agriculture do not have a budget for implementing agricultural extension services for farmers, but they do participate in some activities organized by the provincial level, and work as counterparts on donor and NGO projects. Evidence also shows that agricultural extension services are duplicated in large projects in some localities.

Despite progress in producing a substantial paddy surplus for export over the past five years, Cambodia's agriculture is still constrained by a number of factors, including low productivity, high dependency on rainfall, poor soil quality, limited access to high-yielding inputs and a high proportion of rural landless and land-poor households. Furthermore, food insecurity is still a major problem for many Cambodians, including farmers themselves. Aside from constraints relating to poor soil quality, all of these challenges were reflected and prioritized in national planning and the ASSDP and the SAW.

The findings suggest that the availability of resources for agriculture may not be small in absolute terms but that the sector has received a small share relative to other sectors, and has under-spent allocations. In relative terms, recurrent and capital expenditure for agriculture over the period 2006-2009 was below what was allocated in the NSDP 2006-2010. This owed mainly to under-expenditure of the capital budget by MAFF and MoWRAM. Improving spending in both ministries would increase the proportion of expenditure on agriculture. On the other hand, the command of resources among subsectors and program areas does not match the costing priorities of the ASSDP 2006-2010 and the SAW 2006-2010. Although farmers could benefit from more resources available for water and irrigation, other subsectors that stand to benefit farmers, such as improving food security, productivity and diversification, as well as research and extension services, receive much less of a share than they are entitled to. Furthermore, the findings indicate that a large proportion (more than 40%) of agricultural aid is used for nationwide programs.

1. INTRODUCTION



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1. Introduction

1.1 Background

Smallholder farmers feed the poor – including themselves – because they consume much of what they produce. It is believed that smallholders represent the best opportunity for redistributive wealth creation. Stabilizing smallholder economies, combined with small, stable increases in yields of staple crops on millions of the world’s small farms, will have a profound impact on poverty and food availability at the local and regional levels (ActionAid, 2009). Small-scale agriculture is critical in tackling hunger and poverty, and research shows that the returns to investment in agriculture are higher than in most other sectors: agriculture stimulates at least 2.5 times more growth for the poorest third of the population than investment in other sectors (World Bank, 2008a).

Approximately 80 percent of Cambodia’s population live in rural areas, and 71 percent depend primarily on agriculture (largely rice) and livestock for their livelihoods. Agricultural production and general rural economic growth remain far below their potential because of low productivity, high climatic vulnerability, constrained access to land, forests, fisheries and markets and lack of adequate infrastructure (such as roads, water supply, electricity and communications networks) (World Bank World Development Indicators, 2006).

There is potential to improve agricultural productivity and therefore production. Smallholder farmers can make a significant contribution to this end, and can contribute directly to both poverty reduction and economic growth. Nevertheless, government and development partners’ investment in and support to agriculture and smallholder farmers in Cambodia are still very limited. In a scenario of global food crisis, high food prices could further deprive the land poor and/or food-deficit households of access to food.

Over the past 20 years, as a result of well-documented World Bank and International Monetary Fund (IMF) liberalization programs, donor support to agriculture in many poor countries has all but dried up (Bretton Woods Project, 2008). Donor organizations have shifted their attention – and their money – away from agricultural development. Aid to agriculture declined from US\$8 billion to US\$3.4 billion between 1984 and 2004 (with bigger declines from multilateral institutions, especially the World Bank) (World Bank, 2008a). It has gone from 16.8 percent of all official development assistance (ODA) to 3.4 percent in just over two decades (OECD DAC CRS database, 2008). This is despite the fact that 75 percent of the world’s poor people live in rural areas and are mostly dependent on agriculture for their livelihoods (World Bank, 2008a).

Given that Cambodia is an aid-recipient country and that agricultural production makes up about one-third of the country economy, this study is meant to assess the pattern of financing to agriculture contributed by public expenditure and international aid. Thus, the study aims to:

1. Track how big a budget and how much aid the government and development partners have allocated and spent on agriculture in Cambodia in the past 5 years;
2. Assess how much support smallholder farmers in Cambodia have received from the RGC and development partners, particularly the World Bank, the Asian Development Bank (ADB) and the European Union (EU);
3. Assess the coverage of the agriculture extension services provided by the Government base on case studies in two provinces

1.2 Smallholder farmers in this study

In its analysis of the agrarian structure in Cambodia, Agrifood Consulting International (ACI, 2005) classified farms by size into three categories: small, medium and large. Small farms are those whose size is less than 3 hectares, medium-size farms are 3 to 10 ha and large farms are larger than 10 ha in size. By this definition of farm size, ACI's analysis, which is based on an Agri-Business Institute Cambodia (ABiC) survey from 2005, suggests that 94.3 percent of the farms in Cambodia are small, and that medium-size and large farms represent only about 5.6 and 0.8 percent of the total number of farms, respectively. This suggests that most farms in Cambodia are small and medium-size farms.

Based on the Cambodia Socio-Economic Survey (CSES) 2004, the World Bank (2007), on the other hand, found that 46 percent of rural households were landless and land poor (holding less than 0.5 ha per household). Similarly, a national representative survey conducted by the Cambodia Development Resource Institute (CDRI, 2008) shows that 45 percent of Cambodia's rural households are land poor, possessing 1 ha or less per household, with another 21 percent reported as landless. This further confirms that the agrarian structure in Cambodia is overwhelmingly characterized by small farms.

It is worth noting that the RGC started to grant large-scale economic land concessions (ELCs) to private sector investors in 1995, and in 2005 it issued a sub-decree on ELCs that allows investors to obtain large amounts of land (up to 10,000 ha) for agricultural production and agro-industry development. By April 2010, 87 ELCs had been granted, which cover more than 1 million ha of land (Ngo and Chan, 2010). However, the details of policy formulation in the **Agriculture Sector Strategic Development Plan** (ASSDP) 2006-2010 and the **Strategy for Agriculture and Water** (SAW) 2006-2010 indicate that national plans and strategies for agriculture are not meant to support large-scale agriculture, but to support typical farmers in Cambodia who are smallholding in nature. Therefore, smallholder farmers in this study simply mean all farmers across Cambodia, except when referring to large-scale farms operated by investors in the form of ELCs.

1.3 Methodology

For the purposes of this study¹, an extensive review of existing literature and policy documents of the RGC and its development partners (in particular the World Bank, ADB and the EU) has been undertaken. The review allows the study to observe the extent to which the RGC and development partners have given their attention to promoting agriculture in Cambodia, with a particular focus on the changing context brought about by the global food crisis. For in-depth comprehension of existing policies and ongoing initiatives, interviews were conducted with key relevant policy stakeholders at the national level, including representatives of the Ministry of Agriculture, Forestry and Fisheries (MAFF), the Ministry of Water Resources and Meteorology (MoWRAM), the World Bank, ADB, the EU and relevant non-governmental organizations (NGOs) active in the sector.

The study relies mainly on data available from the Ministry of Economy and Finance (MEF), MAFF and the National Institute of Statistics (NIS) for analysis of agriculture sector

¹ This study was conducted from January to July 2010 while field interviews in Kandal and Takeo Provinces were conducted during April, 2010.

performance, supported by data from other sources such as the CSES, the Food and Agriculture Organization (FAO) and the World Food Programme (WFP).

In an attempt to understand the implementation of existing policies formulated by the RGC and development partners, the study uses public expenditure through national budget and ODA as a proxy indicator. Therefore, the study analyses patterns and trends both of the allocated budget and of actual expenditure of the national budget in the agricultural sector. The allocated budget is the amount of resources allocated in the annual National Budget Law which is available for spending within each fiscal year. Actual expenditure is the total amount of the allocated budget spent in each fiscal year.

Patterns and trends of the national budget and expenditure are analyzed and measured against the commitments envisaged in national and sectoral policies, in particular the National Strategic Development Plan (NSDP) 2006-2010, the ASSDP 2006-2010 and the SAW 2006-2010.

The data source for analyzing the patterns and trends of the budget is the annual National Budget Law of Cambodia, approved by the National Assembly and the Senate each year. The analysis looks at the trends in budget allocation over the past five years. Allocated resources are not necessarily spent as they should be, and the study follows up trends in actual expenditure of these budgets. The main data source for expenditure analysis is the Table of Economic and Financial Operation (TOFE) produced by MEF. However, TOFE records only recurrent expenditure and the RGC's capital expenditure; it does not include capital expenditure financed by foreign assistance. The key data source used for capital expenditure analysis is the Budget Settlement Law available for 2004 to 2007; data for 2008 are based on the estimate of expenditure presented in the National Budget Law; and data for 2009 are an estimate figure obtained from the Public Investment Program (PIP).

In the national budget of Cambodia, donor-financed projects are considered investment projects and thus recorded under the capital budget. However, not all donors' projects are recorded in the budget. The Council for the Development of Cambodia's Aid Effectiveness Report (CDC, 2007) reveals that 21 percent of aid disbursements in 2005 were disbursed off-budget. Given this fact, the study chooses to analyze the flow of aid disbursements to agriculture based on the data available from CDC's online database² so as to capture more comprehensive data relating to aid flows to Cambodia, as well as specifically to agriculture. Because no single source for actual expenditure of foreign assistance is available, the study presumes aid disbursements as a proxy indicator for aid expenditure, and thus uses the CDC's ODA database as a specific source of aid disbursement data.

The analysis of aid disbursement flows aims to provide information on the distribution of foreign assistance at the sub-national level and across geographical areas of Cambodia. Furthermore, with the aim of observing the policies and actions of multilateral donor agencies in supporting the agriculture sector in the past, and especially in the aftermath of the 2007-2008 global food crisis, the study takes into account an analysis of the aid disbursements of particular agencies such as ADB, the World Bank and the EU.

To track the support that smallholder farmers have actually received from the RGC and development partners, and to obtain more insights into the challenges facing them, the study conducted fieldwork to track agricultural services in two provinces – Kandal and Takeo. Three districts per province, one commune per selected district and one village per selected commune

² www.cdc-crdb.gov.kh.

were then studied. Both provinces were purposively selected based on their highest coverage of agriculture extension services in Cambodia, according to initial interviews with MAFF officials. They are also among the largest paddy- and vegetable-producing provinces in the country according to MAFF agricultural statistics. The further selection of the three districts of each province followed suggestions from the respective provincial Departments of Agriculture, based on criteria to include areas with a relatively high level of agricultural extension services. Following the same selection procedure, communes were selected at the suggestion of the district Offices of Agriculture, and villages at the suggestion of the commune councils. Following this selection procedure, it can be assumed that the selected districts, communes and villages are those within closest reach of agricultural extension services. They are not intended to represent overall coverage of agricultural extension services either at the national level or within each locality.

Table 1.1: Sample sites of the field study

Provinces	Kandal			Takeo		
Districts	Sa-ang	Kien Svay	Muk Kampoul	Kiri Vong	Tram Kak	Prey Kabbas
Communes	Prey Ambel	Dei Edh	Bakhaeng	Kamnab	Trapaing Thom Cheung	Champa
Villages	Sampan Leu	Sdao Kanlaeng	Chambak Meas	Khmal	Peak Bang-oang	Champa
Village characteristics	Cash crop	Vegetables	Vegetables	Dry season rice	Wet and dry season rice	Wet season rice

Source: Field study in Kandal and Takeo provinces (April 2010).

The field study was conducted for eight days by two teams of three interviewers each. Each team was responsible for one province. The field study employed semi-structured questionnaires for interviews with stakeholders at the sub-national level, which included the Provincial Departments of Agriculture, District Offices of Agriculture, commune councils, village key informants (including village chiefs), contact farmers and NGOs active in the sample districts. During interviews with farmers, group and household interviews were used. In each village, there was one in-depth interview with a group of four to five farmers and two to three interviews with individual farming households that were contacted by the extension service. While group interviews were designed to collect farmers' consensus responses, household interviews helped to provide individual case studies and insightful anecdotes on the impact of extension services on farmers' livelihoods at the household level.

2. Profile of agriculture in Cambodia



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2. Profile of agriculture in Cambodia

2.1 Agriculture sector performance

Cambodia is an agrarian society, with 80 percent of the population living in rural areas, largely dependent on agriculture, forestry and fisheries as sources of income. Therefore, growth of the agriculture sector would have a large impact on the reduction of poverty, as 93 percent of the poor in Cambodia reside in rural areas (World Bank, 2006).

As illustrated in Table 2.1, the contribution of the agricultural sector to gross domestic product (GDP) has gradually declined over time, but the sector has still remained a significant contributor to the economy over the past decade. Despite the continued increasing contribution of the industry and services sectors to the overall economy, the contribution of agriculture remains considerably high. In 2000, agricultural production represented 36 percent of GDP, and this has remained fairly steady at around 30 to 32 percent since 2002. Value-added crops contributed about 15 percent of GDP during the period 2005-2007, and 18 percent in 2008.

Table 2.1: Share of agricultural production in Cambodia's GDP, 2000-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total nominal GDP (riel billion)	14,083	15,617	16,781	18,535	21,438	25,754	29,849	35,042	41,977
Total nominal GDP (US\$ billion)	3.7	4.0	4.3	4.7	5.3	6.3	7.3	8.6	10.2
AFF (% of total)	36	34	31	32	29	31	30	30	32
Crops (% of total)	16	15	13	15	14	16	15	16	18
Livestock and poultry (% of total)	6	5	5	5	4	5	5	4	4
Fisheries (% of total)	11	11	10	9	8	7	7	7	7
Forestry and logging (% of total)	4	3	3	3	3	3	3	3	3
Industry (% of total)	22	22	24	25	26	25	26	25	22
Services (% of total)	42	43	45	43	45	44	44	45	45

Note: AFF = Agriculture, forestry and fisheries.

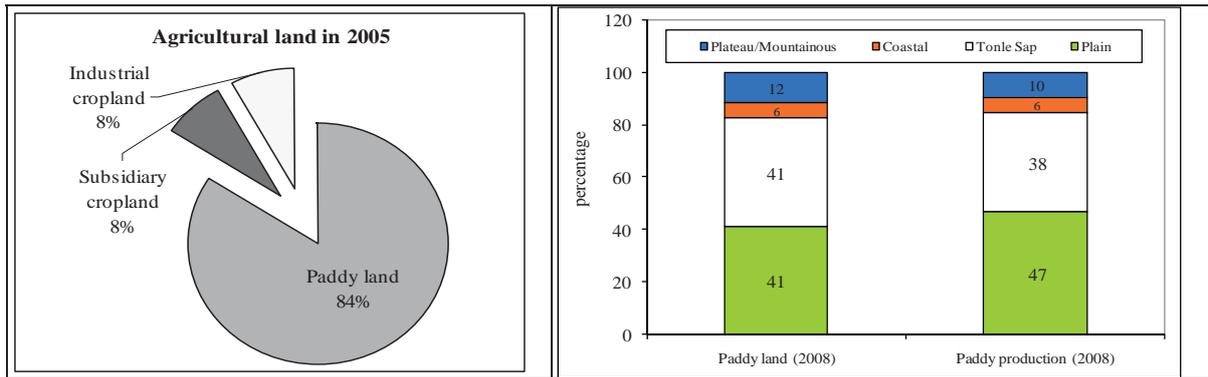
Source: National Accounts 2000-2008.

Crop production dominates the agriculture sector, and its share of total agricultural GDP has become more significant since 2003. Crop production represented 45 percent of total agricultural production in 2000, falling to about 40 percent in 2002. It thereafter started to rise, and has accounted for more than 50 percent of total agricultural production since 2005. The production of livestock and poultry contributes 16 percent of total agricultural GDP, averaging about 15 percent since 2003.

2.2 Agricultural land in Cambodia

Of Cambodia's total territory of about 18 million ha, 61 percent was under forest cover in 2005. Although Cambodia is regarded as an agrarian society, only 16 percent (2.87 million ha) of the country's territory is agricultural land. If this agricultural land was distributed equally among all households in Cambodia, this would mean that a household would hold about 1 ha each (0.92 ha per household or 1.09 ha per rural household).

Figure 2.1: Distribution of agricultural land in Cambodia, 2005 and 2008



Source: MAFF agricultural statistics and National Accounts 2000-2008.

Agricultural land largely consists of rice cropping areas. Of all agricultural land (2.87 million ha), 84 percent is under rice cultivation and the rest is shared equally between subsidiary and industrial crop production.

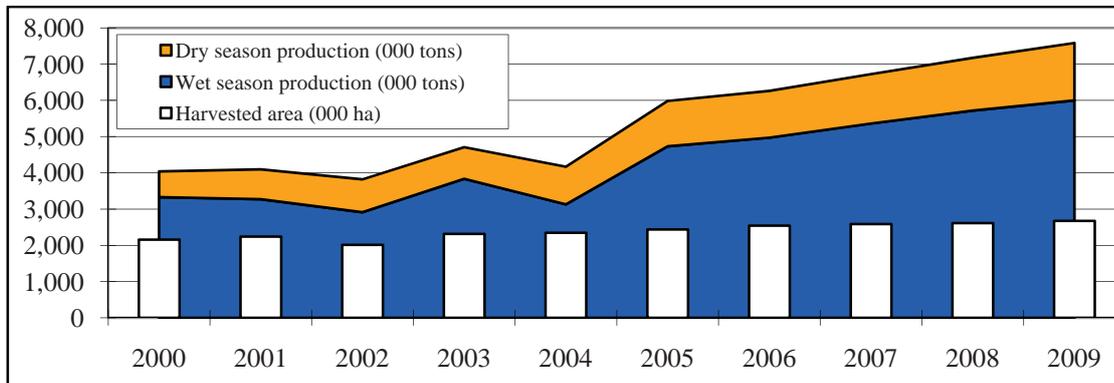
Among the four agro-ecological zones in Cambodia, paddy land is most concentrated in the Tonle Sap and Plains regions. Figure 2.1 shows that 82 percent of paddy areas are found in those regions (41 percent in each region). However, the Plains region holds 41 percent of total households in Cambodia. Therefore, the households in the region have a smaller share of land for paddy fields (0.93 ha per household). The distribution of paddy land per household in the Tonle Sap region is higher (1.26 ha per household), although a large proportion of total households reside in this particular region. It should be noted that land ownership is not equal at all, and that around 20 percent of rural households are landless.

2.3 Agricultural production

Rice

Cambodia started to produce a paddy surplus in 1995 (WFP Food Security Index), and production has continued to improve since then, although some years have been disrupted by floods and droughts. In 2005, rice production suddenly registered a 50 percent increase compared to 2004, and production has been increasing every year since. In 2009, the level of paddy production reached about 7.6 million tons, leaving a surplus of about 3.5 million tons.

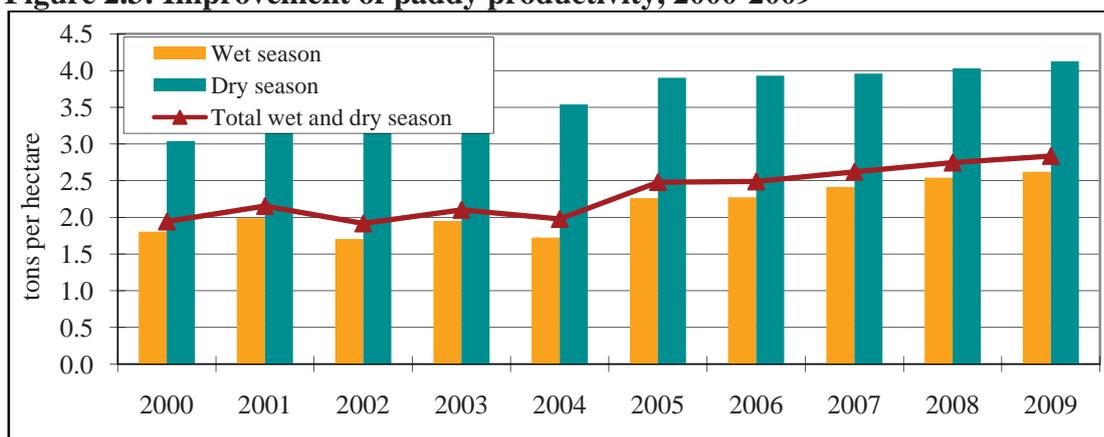
Figure 2.2: Evolution of agricultural land and production, 2000-2009



Source: NIS (2008) and MAFF agricultural statistics.

Figure 2.2 demonstrates that increased paddy production over the period 2005-2009 is explained partly by the expansion of cultivation areas, but also by improved productivity. Good weather/rainfall played a major role. An assessment by the World Bank Cambodia Country Office, in cooperation with MAFF and the Supreme National Economic Council (SNEC), in six major rice-producing provinces suggested that the dramatic increase in rice production in 2005 was explained largely by good rainfall and also to some extent by improved seeds, farming techniques, fertilizers and irrigation.

Figure 2.3: Improvement of paddy productivity, 2000-2009

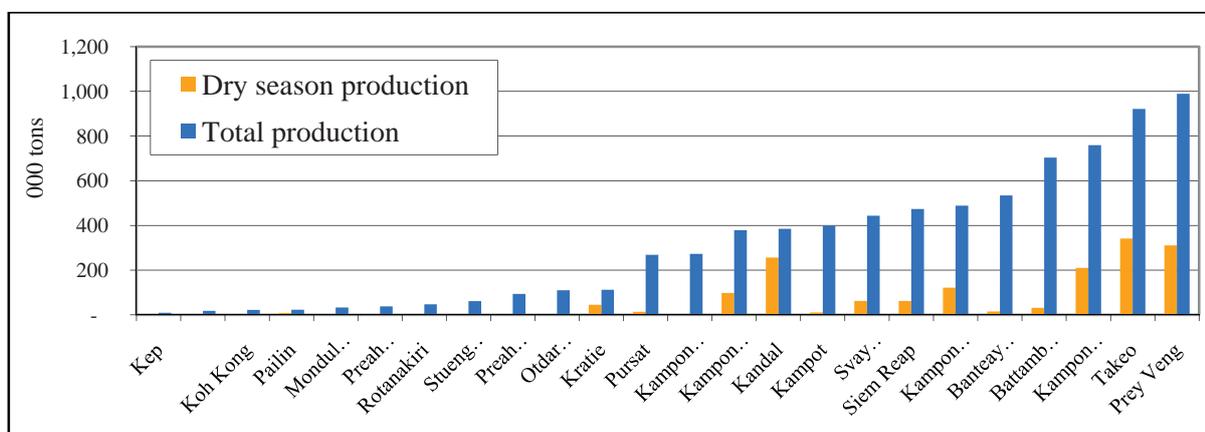


Source: NIS (2008) and MAFF agricultural statistics.

Figure 2.3 further illustrates productivity improvements in rice cultivation. Productivity has increased since 1994, and the increase became more significant in 2005. Figure 2.3 also indicates that increases in paddy yields in the wet season were higher than increases seen in the dry season over the period 2005-2009. The increase of paddy yields in the wet season was about 16 percent between 2005 and 2009, four times the increase of dry season yields.

Paddy production in nearly half of Cambodia’s provinces is not significant. The major paddy-producing provinces are located in the Plains and Tonle Sap regions. In 2009, production of paddy in these regions represented 84 percent of total production. Large paddy-producing provinces include Prey Veng, Takeo, Kampong Cham and Battambang. Paddy production in these four provinces amounted to 45 percent of the total production in 2009.

Figure 2.4: Distribution of paddy production by province, 2009



Source: NIS (2008) and MAFF agricultural statistics.

Dry season paddy cultivation covers 14 percent of the total area of rice-producing land, but represents 20 percent of total production. This is because dry season paddy harvests provide higher yields in relation to wet season paddy harvests. In the past, the yield of dry season paddy was twice that of the wet season. However, productivity of wet season paddy has improved in recent years. It increased to 2.8 tons per ha in 2009, compared to 4.2 tons per ha of dry season paddy. Major dry season rice-producing areas include Takeo, Prey Veng, Kandal and Kampong Cham. The production of dry season paddy in these provinces made up 70 percent of the total production of dry season paddy in 2009.

Subsidiary and industrial crops

Although paddy is the main food crop and dominates Cambodia's agricultural production, major subsidiary crops that supplement both food needs and monetary income include maize, sweet potatoes, mung beans, soybeans, peanuts and vegetables. Cambodia also produces industrial crops such as rubber, cassava and sugar cane.

Table 2.2: Production of subsidiary and industrial crops, 2000-2009

	Crop	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cultivated areas ('000 ha)											
1	Maize	71	80	80	93	91	91	109	142	163	206
2	Cassava	16	14	20	26	23	30	98	108	180	158
3	Soybean	33	32	33	53	85	119	75	77	74	96
4	Sesame	19	20	21	34	64	79	56	48	36	40
5	Mung beans	25	29	40	45	39	61	85	65	46	36
6	Vegetables	34	35	34	36	...	36	43	42	48	28
7	Peanuts	10	12	14	15	19	17	13	21	18	14
8	Sugar cane	8	8	9	10	7	6	8	10	13	11
9	Sweet potato	7	7	8	9	7	8	10	9	8	6
Production ('000 tons)											
1	Maize	157	186	149	315	257	248	366	523	612	876
2	Cassava	148	142	122	331	362	536	2,200	2,215	3,676	3,473
3	Soybean	28	25	39	63	110	179	100	118	108	137
4	Sesame	10	9	10	22	55	90	35	32	27	32
5	Mung bean	15	17	24	32	45	45	61	54	39	32
6	Vegetables	196	185	163	140	179	172	229	226	260	164
7	Peanut	7	9	10	18	22	23	18	31	25	19
8	Sugar cane	164	169	209	173	130	118	177	287	385	274
9	Sweet potato	28	26	32	35	35	39	48	38	40	42

Source: NIS (2008) and MAFF agricultural statistics.

Despite progress in the past three years, both the area for cultivation and the production of vegetables dropped significantly in 2009, even falling below the 2004 level. The drop in vegetable production does not signify good progress, as 70 percent of domestic vegetable consumption was supplied through imports (MAFF, 2005). Instead, it encourages more imports to meet the increasing demand of domestic consumption.

Production of cassava has increased since 2003, but the increase was dramatic in 2006 and 2008. Production in 2006 was four times higher than in 2005. The annual increase in cassava production was 66 percent in 2008, but in 2009 production fell 6 percent. On the other hand, maize production has increased in the past four years. In 2009, maize production was 876,000 tons, which is more than triple the amount produced in 2005.

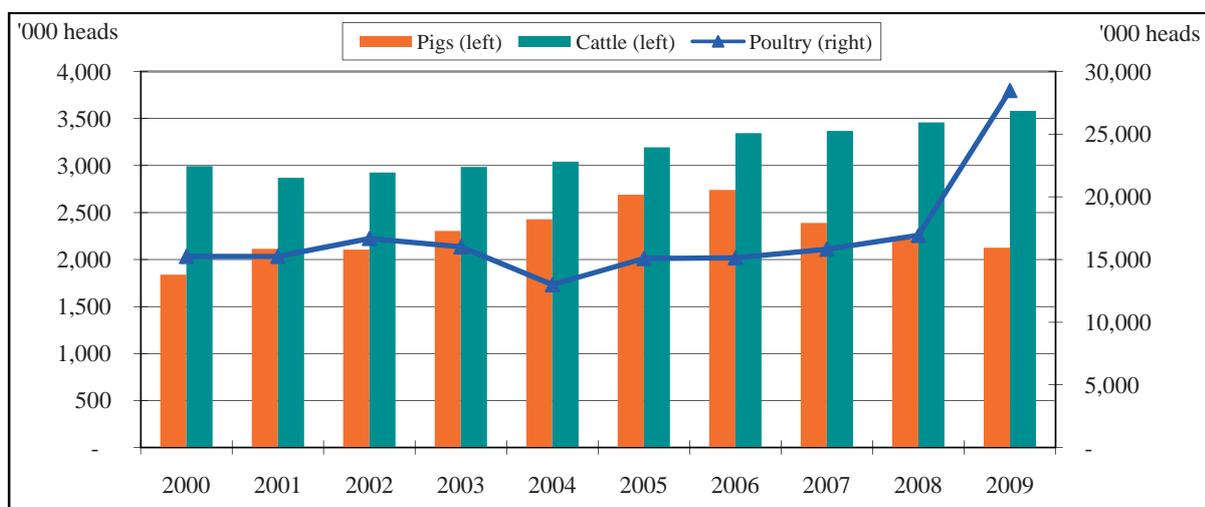
Having declined between 2003 and 2005, sugar cane production started to go up in 2006, 2007 and 2008, before falling again in 2009. The increased production after 2005 owed to the

introduction of sugar cane plantations in two ELCs in Koh Kong province. Annual production increased by about 50 percent during the period 2006-2008. In 2008, total production was 385,000 tons, more than three times production in 2005. Production fell by about 30 percent in 2009, with the reasons for the setback in sugar cane production unknown.

Livestock

The livestock sector plays a major role in the rural farming system of Cambodia, not only serving nutrition purposes but also providing draft power and enabling supplementary income generation. Livestock production in Cambodia is characterized largely by family-based farming, and accounted for 4.5 percent of GDP during the period 2004-2008.

Figure 2.5: Livestock production, 2000-2009



Source: NIS (2008) and MAFF agricultural statistics.

In general, there are no remarkable trends in livestock production in Cambodia, except for a rise in the production of poultry in 2009. This suggests that the pattern of livestock production has remained largely family based and traditional. Poultry production stood at about 28.5 million heads in 2009, which is 80 percent more than a year ago— an unprecedented increase over the past 20 years. On the contrary, the number of pigs produced has decreased in the past three years, declining from about 2.7 million heads in 2006 to about 2.1 million in 2009. The reason was that pig imports were more competitive and replaced domestic production.

2.4 Challenges in agriculture

Despite the progress made, there remain a number of challenges facing Cambodia's agriculture sector. Major challenges are in the areas of food security, productivity, access to land and land security, soil quality, dependence on natural and climatic factors (with the country become more susceptible to disasters such as floods and droughts as a result of climate change), lack of modernization (farming techniques and mechanization) and access to markets and credit. These challenges are connected and to some extent interrelated and deserve brief discussion.

Food security

Great achievements in agricultural production over the past five years are evidenced by the fact that the country produced a significant paddy surplus for export. Cambodia produced about 2 million tons of paddy surplus in 2005, and this rose to about 3.5 million tons in 2009, representing nearly half of total production.

Table 2.3 presents the distribution of food resources in Cambodia, taking into account the requirements of 143kg of milled rice per person per year, and that a kilogram of rice from the paddy equals 0.65kg of milled rice. Despite overall progress in producing a paddy surplus, the distribution of food resources differs among provinces, and about half of Cambodia's provinces either have food deficits or are more or less food sufficient. Excluding Phnom Penh, four provinces (Koh Kong, Preah Sihanouk, Kep and Pailin) have experienced food deficits over the past five years, whereas seven other provinces have been able to produce a little surplus.

It is notable that progress in paddy production, as well as the balance of food production, is explained largely by dividends reaped as a result of good rainfall during the past five years. As such, it can be suggested that food production remains vulnerable to natural factors, in particular rainfall. The food security situation is likely to be considerably worse in the event of floods or drought. For example, in 2004, when there was drought, Cambodia managed to produce a paddy surplus of 650,000 tons, but half of the country's provinces had a food deficit and only a few others were more or less self-sufficient.

Table 2.3: Balance of food production by province, 2004-2009

	Province	2004	2005	2006	2007	2008	2009
'000 tons of paddy							
1	Banteay Meanchey	139	189	229	202	235	309
2	Battambang	181	298	319	257	259	372
3	Kampong Cham	(17)	130	132	216	273	282
4	Kampong Chhnang	34	106	130	148	164	221
5	Kampong Speu	(96)	(2)	43	57	69	71
6	Kampong Thom	2	139	183	210	229	281
7	Kampot	12	118	132	138	146	213
8	Kandal	(44)	21	31	28	31	43
9	Koh Kong	(16)	(26)	(27)	(29)	(12)	(7)
10	Kratie	(29)	9	10	25	33	24
11	Monduliri	(4)	14	13	18	14	13
12	Phnom Penh	(231)	(284)	(296)	(310)	(304)	(298)
13	Preah Vihear	4	20	19	32	30	40
14	Prey Veng	215	546	476	623	613	649
15	Pursat	22	75	84	108	119	144
16	Ratanakiri	(2)	7	2	11	5	4
17	Siem Reap	56	85	113	92	93	202
18	Preah Sihanouk	(18)	(19)	(26)	(33)	(27)	(19)
19	Stung Treng	3	25	30	30	29	27
20	Svay Rieng	97	108	111	218	235	278
21	Takeo	347	476	478	495	515	611
22	Otdar Meanchey	13	45	58	45	24	47
23	Kep	(9)	(3)	(3)	(5)	(4)	(0)
24	Pailin	(7)	(2)	(1)	2	(7)	1
	Cambodia	650	2,076	2,240	2,578	2,763	3,507

Note: Red statistics are for provinces with a deficit food balance. Grey highlights indicate provinces that are just more or less sufficient despite their small surplus.

Source: NIS (2008) and MAFF agricultural statistics.

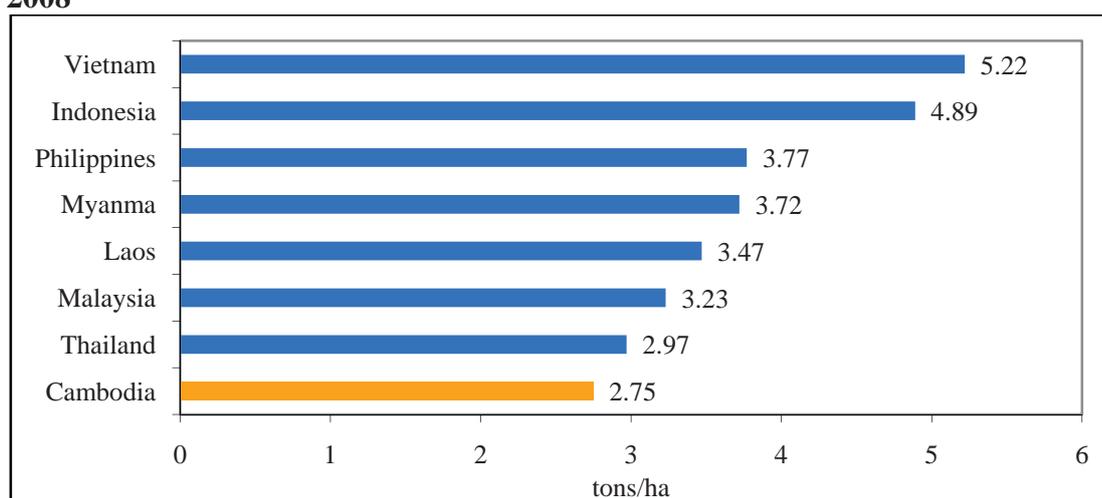
More significant than food security is food accessibility. The balance of food resources simply assumes that all paddy production is used for household consumption. Therefore, net paddy production³ is used to calculate the balance of food resources, whereas in reality not all paddy production will necessarily be kept or held for household consumption. Surplus-producing households may sell portions of their production to address the household's livelihood needs, such as servicing debt, buying other food items and non-food consumption (such as clothes, health expenses or social events like weddings or ceremonies). Consequently, some households may suffer a food deficit.

The majority of Cambodian farmers do not produce a paddy surplus and are thus likely to suffer from food insecurity. One national survey (CDRI, 2008) reveals that only 35 percent of Cambodian farm households produce a paddy surplus, and the rest produce less than enough for consumption needs or only just sufficient. While it could be argued that food surplus households could suffer from food insecurity because a portion of their production may be sold to raise money to address other household expenses, it could also be the case that food-deficit households may not necessarily suffer from food insecurity because they may rely on income from other sources to secure their food consumption needs for the year. Nevertheless, the evidence from a survey of 1,070 households in 15 typical villages across Cambodia (Chan and Ngo, 2010) suggested that 61 percent of surveyed households in rural villages would encounter food insecurity during August-October 2009.

Productivity

Progress in improving the productivity of Cambodia's paddy yields has been significant over the past 20 years. In 2009, the average yield of paddy was 2.84 tons per ha, compared to about 1.35 tons in 1990. However, paddy productivity in Cambodia remains low compared to other countries in the region with similar climatic conditions. Although the paddy yield in Cambodia was closest to that in Thailand in 2008, it was only about half the paddy yield in Vietnam.

Figure 2.6: Productivity of paddy in Cambodia compared to other countries in the region, 2008



Source: FAO agricultural statistics 2008.

Low productivity of paddy in Cambodia owes partly to poor soil quality and limited access to irrigation (paddy cultivation is largely rain-fed), but is also attributable to limited access to high-

³ The quantity of paddy left after subtracting 13 percent of total production for seed reserves and post-harvest loss.

quality inputs and the low skills levels of Cambodian farmers. These factors affecting agricultural development in Cambodia are explored further below.

Soil quality: One of the factors limiting productivity in paddy production is the fertility of soil. Half of Cambodia's agricultural land is classified as having poor quality soil (MAFF, 2005). This type of soil is usually sandy and has only small quantities of nutrients. Farmers have to incur higher production costs for paddy cultivation on this soil. For example, in relation to other soil types, farmers have to spend more on seeds because they have to keep the space between rows closer owing to low paddy establishment rates prevalent in soil of this type. Furthermore, in order to improve yields as much as possible, more money needs to be spent on fertilizers and water management. Therefore, more treatment and research and development are required to improve the soil fertility of this type of land, as well as to identify ways in which to use the land in a more diversified and intensive manner.

Limited coverage of irrigation: The limited coverage of irrigation systems in Cambodia restricts Cambodia's agricultural production to only one crop per year and makes production reliant on rainfall, leaving it susceptible to floods and droughts in particular. In 2005, it was estimated that only 20 percent of agricultural land was irrigated, leaving the other 80 percent dependent on rainfall, which is very unpredictable for wet season rice cultivation (MAFF, 2005). The irrigation available for this 20 percent of cropland is mainly supplementary during the wet season. Fully irrigated areas in the dry season represent only 7 to 8 percent of agricultural land (MAFF and MoWRAM, 2007).

Low inputs: Research and experimentation by the Cambodian Agricultural Research and Development Institute (CARDI) proves that seed selection, farming inputs and farming techniques have had a great impact on productivity. Its experiments suggest that correct seed selection assists farmers to increase rice yields by 18 percent, for example. Furthermore, it has demonstrated that land leveling could increase yields by 24 percent. Other farming techniques, including plowing and water management, would, for example, reduce biomass as well as labor costs for weeding, with an eventual impact on yields. CARDI's experiments also confirm that, although using fertilizers has positive effects on yields, its improper use may result in reductions of yields (CARDI, 2010).

The application of modern inputs and technology, such as the use of improved seeds, fertilizers and tractors, is limited in Cambodia's agricultural production. Agriculture Quality Improvement Project (AQIP), a registered seed distribution company in Cambodia, claims that sales of its seeds represent only 3 to 5 percent of the market share, with 10 to 20 percent of the market share taken up by seeds from Vietnamese producers and the rest supplied by a few small domestic distributors and made up of seeds that farmers keep from their previous harvest (interview with AQIP representative, 24 March 2010). The World Bank's World Development Indicators for 2006 show that fertilizer consumption in Cambodia was only 5kg per ha of arable land in 2004, whereas farmers in Vietnam and Thailand applied on average 350kg and 141kg of fertilizer per ha. What is more, only 11 tractors were available for 10,000 ha of Cambodia's arable land in 2005, compared to 247 and 261 tractors, respectively, in Vietnam and Thailand.

While these factors and others from CARDI's findings could have had a large potential impact on productivity, Cambodian farmers are mostly uninformed about new farming techniques and are therefore vulnerable to the misuse of new technologies such as chemical fertilizers and pesticides. The outreach of agricultural extension services to publicize and introduce these farming techniques and technology to farmers is very low. According to CSES 2007 figures,

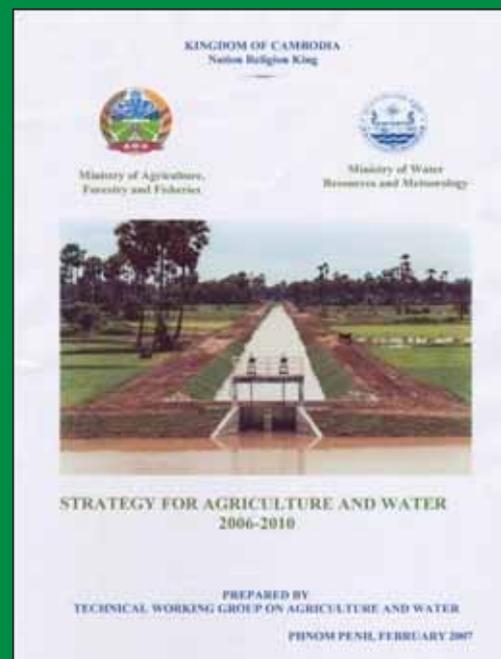
only 17 percent of villages in Cambodia were within reach of agricultural extension services (NIS, 2007).

Land access and land security: Land is a key factor of production, and almost half (around 46 percent) of rural households are landless (22 percent) and land poor, defined as owning land of less than half a hectare per household, according to the 2004 CSES (NIS, 2004). Despite this, more than 1 million ha of land (about 35 percent of current rice farming land) was granted as ELCs to investors, even though in many cases large-scale farms are less efficient than smallholder farmers. Furthermore, use of Cambodia's agricultural land is constrained by the fact that approximately 210,000 ha (about 1.16 percent of the country's total territory) is covered in landmines, rendering cultivation impossible (JBIC, 2001).

Landholding is not always secure, even if landholders have titles and certificates, and the poor are most vulnerable to land grabbing. Only 37 percent of the poorest quintile of households own land secured by documentation, compared to 63 percent in the richest quintile. Notably, only 16 percent of the poorest quintile of households own land which is secured by a title, compared to 29 percent in the richest quintile (MoP, 2006). This is a source of great vulnerability for poor households.

Access to markets and credits: Lack of processors and millers encourages unofficial exports of paddy to Vietnam and Thailand, and prevents the country from capturing market opportunities for value-added through rice milling. Rice millers have limited access to affordable credit and foreign markets, owing to their inability to produce consistent amounts of standardized varieties of milled rice and their lack of information about foreign market conditions.

3. Agricultural policies and programs in Cambodia



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3. Agricultural policies and programs in Cambodia

3.1 National strategies and plans

In 2004, the RGC set out its strategy for the Third Legislature of the National Assembly, and its aim to promote growth, employment, equity and efficiency, in the Rectangular Strategy, which served as the foundation for the formulation of national planning. In 2008, Phase II of the Rectangular Strategy was presented by the RGC as its strategy for the Fourth Legislature of the National Assembly. ‘Good governance’ is placed at the core of the strategy. The four angles of the strategy are called growth angles, which consist of: 1) Enhancement of the Agriculture Sector; 2) Continued Rehabilitation and Construction of Physical Infrastructure; 3) Private Sector Growth and Employment; and 4) Capacity Building and Human Resource Development.

The first growth angle of Phase II of the Rectangular Strategy consists of four components, which include; 1) improving agricultural productivity and diversification; 2) land reform and demining; 3) fisheries reform; and 4) forestry reform. Furthermore, the RGC identifies ‘water resources and irrigation system management’ as a priority in the second growth angle of Phase II (under the further rehabilitation and construction of physical infrastructure).

In 2004, Cambodia was characterized as a low-income country with prevalent poverty, with 35 percent of the population living in poverty and 20 percent experiencing hunger. As such the RGC announced as its first priority the eradication of poverty and hunger, in the NSDP 2006-2010. The livelihoods of the 90 percent of the poor and the 85 percent of Cambodians who reside in rural areas depend on subsistence agriculture (MAFF, 2005); this fact led the RGC to articulate enhancing agricultural production and productivity as its second priority for poverty reduction and economic growth. The RGC aims to increase the area for paddy, paddy production and productivity, the coverage of irrigated paddy production and the proportion of agricultural land owners with land titles. Table 3.1 illustrates the priorities and targets that the RGC wishes to accomplish over the period 2006-2010.

Table 3.1: RGC priorities and targets in the agriculture sector for 2010

	Indicator	2005	2010 target
1	Paddy production areas (million ha)	2.38	2.5
2	Paddy production (million tons)	4.17	5.5
3	Productivity of paddy (tons/ ha)	1.97	2.4
4	Irrigated paddy production areas (%)	20	25
5	Agricultural land with land titles (%)	12	24

Source: NSDP 2006-2010, MoP (2006).

In order to achieve the priority goals and targets set out in the NSDP 2006-2010, US\$3,500 million of public investment was needed over the five-year period. Of the total required, agriculture was allocated US\$350 million, which is about 10 percent (6 percent for seasonal crops and 4 percent for non-crops including land management) of the total required. Resources for the development of water resources and irrigation were not presented as a priority; therefore, this could not be identified in Table 5.2 of the NSDP 2006-2010 (MoP, 2006).

3.2 Sectoral strategies and plans

MAFF has used the ASSDP 2006-2010 as a policy instrument for the management of the sector. In line with MAFF’s vision to ensure the safe availability of food for all people as well as to

achieve the strategic goal of the NSDP 2006-2010, the ASSDP 2006-2010 identifies the following specific sectoral goals, the first five of which are related to agriculture:

1. Food security, productivity, diversification;
2. Improve and strengthen agricultural research and extension systems;
3. Market access for agricultural products;
4. Institutional and legislative development framework;
5. Land reform (land tenure and land market development and pro-poor land access);
6. Fisheries reform – sustainable access; and
7. Forestry reform (promote conservation and management of sustainable forests; ensure better management of protected forest areas).

The program-based costing of the ASSDP 2006-2010 reflects an indicative investment requirement of US\$153 million over 2006-2010, or about US\$30 million per year on average. Of this investment, 61 percent is planned for addressing Sectoral Goal 1 (food security, productivity, diversification) and about 11 percent is planned for agricultural research and extension services. The allocation of resources for fisheries reform (Sectoral Goal 6) and forestry reform (Sectoral Goal 7) is 2.6 percent and 4.1 percent of the total investment, respectively, the smallest amounts allocated to sectoral goals.

Table 3.2: Sectoral programming and costings in the ASSDP 2006-2010

Sectoral goal		Costing	
		US\$ million	%
1	Food security, productivity, diversification	95	61
2	Agricultural research and extension services	16	11
2.1	Research services	10	6
2.2	Extension services	6	4
3	Market access for agricultural products	14	9
4	Institutional and legislative framework	14	9
5	Land reform	95	3
6	Fisheries reform	4	3
7	Forestry reform	6	4
Total		154	100

Source: MAFF (2005).

Given the strong dependency of agriculture on water, the SAW 2006-2010 was formulated in order to enhance the efficient use and management of land and water for agricultural production. Furthermore, the SAW was designed to increase agricultural productivity, improve value chains in agri-businesses, strengthen institutional capacity and improve access to knowledge and technology. The SAW employs eight strategies and identifies five program areas for its implementation over 2006-2010. Full implementation of the five program areas over the five years of the SAW requires the investment of approximately US\$350 million.

Table 3.3: Five program areas of the SAW 2006-2010

Program area		Program cost	
		US\$ million	%
1	Institutional capacity building and management support programs for agriculture and water	50	14
2	Food security programs	50	14
3	Agricultural and agri-business support programs	100	29
4	Water resources, irrigation and land management programs	100	29
5	Agriculture and water research, education and extension programs	50	14
Total		350	100

Source: MAFF (2005).

In general, the agriculture sector has consistently been highly prioritized in efforts to stimulate economic growth and reduce poverty in Phases I and II of the Rectangular Strategy and in the NSDP 2006-2010. The importance of the agriculture sector is well recognized. Despite some crucial challenges, the sector is endowed with great potential to develop, and its development would yield enormous benefits to the large proportion of Cambodians who are living in rural areas and are mostly dependent on subsistence farming and rain-fed agriculture.

Policy responses are appropriate to constraints in agriculture. At the sectoral level, MAFF in particular manages to articulate sectoral goals that take into account key interconnected dimensions of agricultural development such as food security, productivity, diversification, research and extension, market development, institutional capacity and land reform. Moreover, the development of the SAW 2006-2010 reflects the RGC's strategic move towards integrative management of the sector by recognizing the significant role of water.

While access to land resources is a precondition for farming, the ASSDP 2006-2010 places priority on land reform to promote pro-poor land access and improve the security of land tenure. However, given that about half of all agricultural land has poor soil fertility, strategies and mechanisms for land improvement and national and sectoral plans do not adequately address the sustainable use of land. Furthermore, both national and sectoral plans lack cross-ministry/agency cooperation and do not specify the ministries or agencies (except in the case of irrigation, through the SAW 2006-2010) that would be responsible for implementation. For example, while the Ministry of Land Management, Urban Planning and Construction (MLMUPC) is responsible for land administration, the ASSDP commits to promoting pro-poor access to land and improving land tenure security without the ministry's involvement.

The priority actions presented in the ASSDP 2006-2010 are rational. Within each sectoral goal of the ASSDP, key constraints are analyzed and the solutions and actions to overcome them are presented. However, the ASSDP lacks specific timeframes for the implementation of each action, except to say that most, if not all, actions are supposed to be implemented from 2006 to 2010.

The ASSDP 2006-2010 provides specific costings. The costing figures are based on program identification and are classified by the prioritized sectoral goals. Also, the costing of the ASSDP matches the overall costing of the agriculture sector (crops and non-crops) in the NSDP 2006-2010. The large share of resources allocated to food security, productivity, diversification and research and extension reflects their significance in relation to the agriculture sector. Furthermore, the high proportion of resources available for Program Area 3 (agricultural and agri-business support programs) and Program Area 4 (water resources, irrigation and land management programs) of the SAW 2006-2010 addresses the resource gap in the sector and complements resource allocations in the ASSDP.

3.3 Strategies of development partners

It is recognized that many development partners in Cambodia contribute to the development of the agriculture sector. However, this paper briefly reviews only a few major players in the sector, namely ADB, the World Bank and the EU. Overall, during the past decade, ADB has presented clear support for agricultural development as part of its strategy to broaden Cambodia's economic growth and to reduce incidence of poverty, in particular in the Tonle Sap basin. The World Bank has centered its approach on improving governance, meaning its efforts to promote agricultural development have been rather indirect, through, for example, attempts to strengthen the overall framework for the management of land resources and to improve the security of land tenure and access to land. The EU's strategy towards Cambodia's development for the period

2007-2013 shifted from that of 2004-2006, and lacks either a geographical or a sectoral focus, excepting its commitment to supporting basic education and food security through its regional funding.

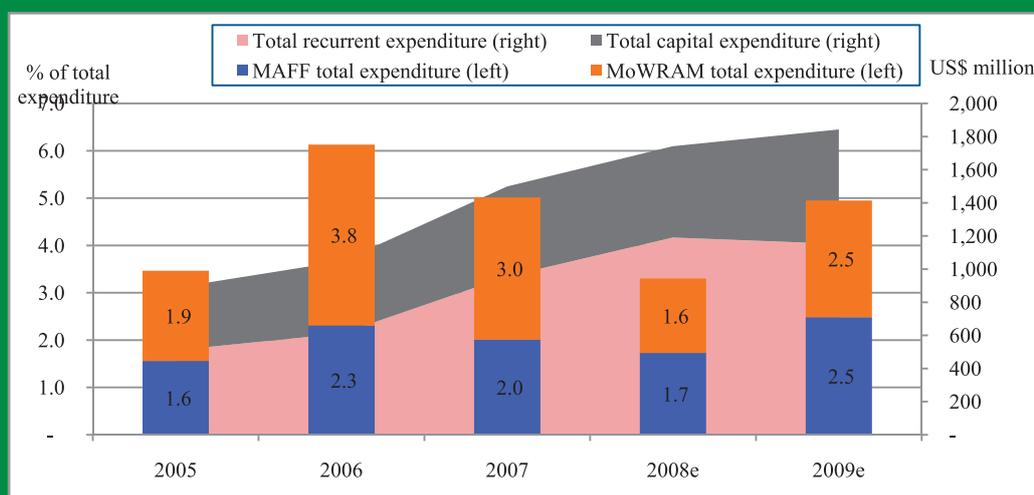
ADB's Country Strategy and Program (CSP) 2005-2009 for Cambodia is strategically focused (ADB, 2005). Choosing a geographical focus on the Tonle Sap basin is an effective strategy for targeting programs and assistance, since the region is characterized by high population and poverty rates and is rich in natural resources such as water, fisheries and flooded forests. Moreover, its strategies to broaden economic bases, enhance inclusive social development and foster good governance respond to key challenges in Cambodia's development. The approach to agricultural development through improving farmers' abilities, enhancing the market environment and strengthening institutional capacity is strategically complementary. However, although the CSP lists projects and programs by sector of intervention, it lacks provisions to commit resources over the strategy period.

The World Bank's Country Assistance Strategy (CAS) 2005-2008 identified governance as a core area impeding Cambodia's development (World Bank, 2005). Prevalent corruption and weak legal and judicial frameworks and enforcement result in high costs of doing business and hamper the development of the private sector in Cambodia. Therefore, the World Bank's approach through its CAS to remove these constraints, as well as providing support through investment, represents a robust attempt to bring about positive development outcomes. The CAS was further extended for 2009-2011 (World Bank, 2008b). The governance-focused strategy of the CAS has diverted the World Bank's direct support to agriculture since 2005, except in the area of land reform, which could contribute indirectly towards improving the livelihoods of the poor through securing their land, and thus encourage investment in productivity improvement and diversification.

In its Country Strategy Paper (CSP) 2004-2006 for Cambodia, the EU chose to concentrate its cooperation on social development (education and health) and also on the promotion of pro-poor economic development, focusing on improving rural livelihoods through agricultural development, in particular through small-scale irrigation, crop diversification, improved technologies and development of local SMEs. However, the CSP 2007-2013 appears rather general in terms of its sectoral focus. Apart from support to basic education, no specific sectors or areas of interest are identified for strategic support. The EU's commitment aims at supporting the NSDP in general. While this may be effective in terms of building trust in the government's leadership, the lack of sectoral focus within the context of weak costings and the prioritization of the NSDP may hamper the efficient and effective use of resources. Of note, the EU indicatively plans to support Cambodia over 2007-2013 with about \$195 million (€152 million).⁴ or about US\$ 28 million per annum.

⁴ Exchange rate from www.oanda.com as of 13 August 2010.

4. Agriculture financing



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4. Agriculture financing

4.1 National budget and expenditure

Every year, the RGC collects tax and non-tax revenue from various sources. Revenue collection plus grants and loans available from domestic and foreign sources is allocated to finance public expenditure, as reflected in the annual national budget. Expenditure in the national budget is classified as recurrent and capital. The recurrent budget is for short-term and repeated expenditures such as salaries, office supplies and maintenance, and the capital budget is used to finance longer-term investment projects.

In principle, allocations in the national budget should follow policy priorities, which means that resource allocation should be in favor of the priority sectors designated by national plans. The NSDP 2006-2010 recognized agriculture as a priority for poverty reduction and indicated that agriculture should benefit from 10 percent of total investment resources (or capital expenditure) and about 2.7 percent of total recurrent expenditures. Because agriculture is not clearly defined in the NSDP or the ASSDP 2006-2010, the analysis presents the patterns and trends of resource allocation and expenditure for MAFF and MoWRAM both separately and in combination, and assumes that budget/expenditure for agriculture includes MAFF and MoWRAM.⁵

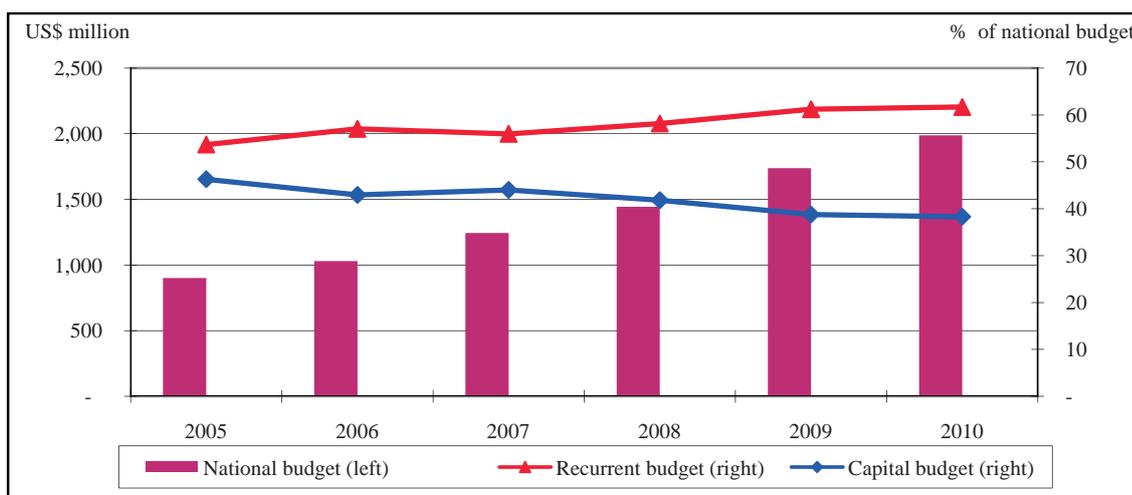
The evidence suggests that farmers are left underserved by public expenditure. Annual expenditure by MAFF and MoWRAM was about 4.8 percent (2 percent for MAFF) per year during the period 2006-2009, although both ministries were allocated 7.5 percent (4 percent for MAFF) of the total budget per year over the same period. This means the sector seriously suffered from under-expenditure in both ministries, which is more clearly explained by the under-expenditure of MAFF's capital budget. MAFF in particular spent only around 38 percent of its capital budget per year from 2006 to 2009, whereas the average capital expenditure per year for agriculture (MAFF and MoWRAM) during the same period accounted for about 9 percent of total capital expenditure. On the other hand, the combined recurrent expenditure for both MAFF and MoWRAM over the same period averaged about 2.4 percent of total recurrent expenditure (MAFF's expenditure was 1.8 percent), clearly too little to serve the 70 percent of the population that is primarily employed in agriculture.

National budget

In absolute terms, there have been more and more resources available to finance public expenditure during the past half decade, which reflects the country's high economic growth over the period. The national budget remained at about US\$ 900 million from 2001 to 2005. It has increased substantially since 2005, at a growth rate of 24 percent per year. The budget reached about US\$ 2,000 million in 2010, more than double that in 2005. Notably, the recurrent budget has increased more rapidly than the capital budget, representing a larger proportion in the national budget during 2006-2010. In 2010, the recurrent budget accounted for US\$ 1,226 million, 62 percent of the total national budget compared to 54 percent in 2005 and 50 percent in 2000.

⁵ The budget for the Ministry of Rural Development (MRD) is not included in the analysis because the NSDP dedicates a separate line of resources for rural development (10 percent of investment and 1.3 percent of recurrent expenditure), which is clearly independent from that dedicated to agriculture (MoP, 2006). The NSDP 2006-2010 clearly indicates that the share of resources for irrigation is included under rural development, but it does not specifically suggest how much it shares. Therefore, this analysis assumes that agriculture covers MAFF and MoWRAM, and tries to present both independently. Also, the resource allocation to agriculture is used as the basis for the purpose of analysis, ignoring the role of irrigation in rural development.

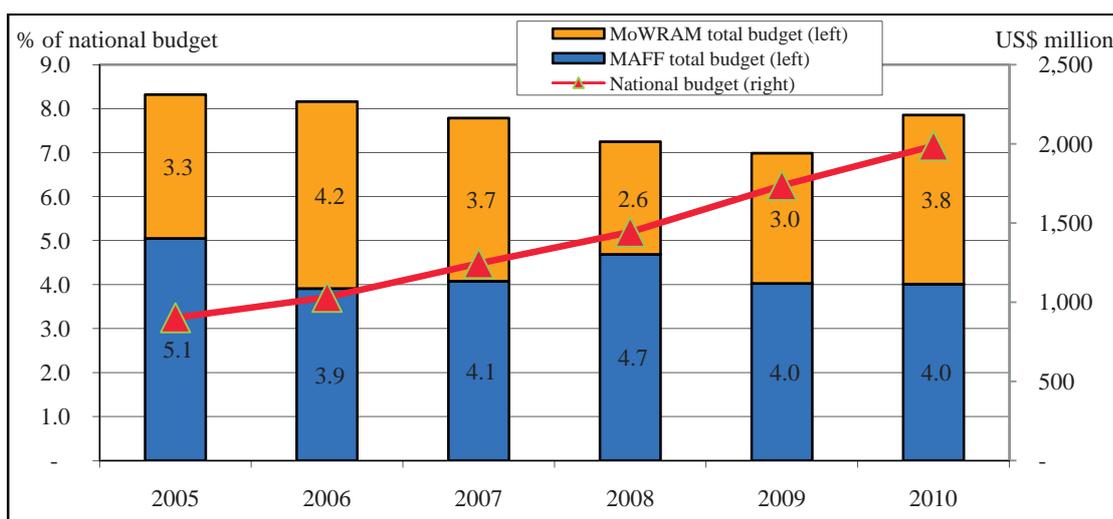
Figure 4.1: Availability of resources for public expenditure, 2005-2010



Source: National Budget Laws 2005-2010

Figure 4.2 presents the aggregate allocation of total resources (include recurrent and capital budgets) for MAFF and MoWRAM. Overall, MAFF has a higher budget (about 4 percent of the total national budget) than MoWRAM, and the resource availability for both ministries declined from more than 8 percent of the national budget in 2006 to 7 percent in 2009, before rising to nearly 8 percent in 2010. During the period 2006-2010, the share of the budget allocation for agriculture has averaged about 7.5 percent per year. Figure 4.2 indicates that the reduction of the budget for agriculture from 2006 to 2010 is explained by the variation of the budget allocation to MoWRAM. However, although the MAFF budget remained at about 4 percent from 2006 to 2010, it received on average 5.5 percent of the national budget during the period 2000-2005, which was a relative increase of 35 percent.

Figure 4.2: Public resources available for MAFF and MoWRAM, 2005-2010

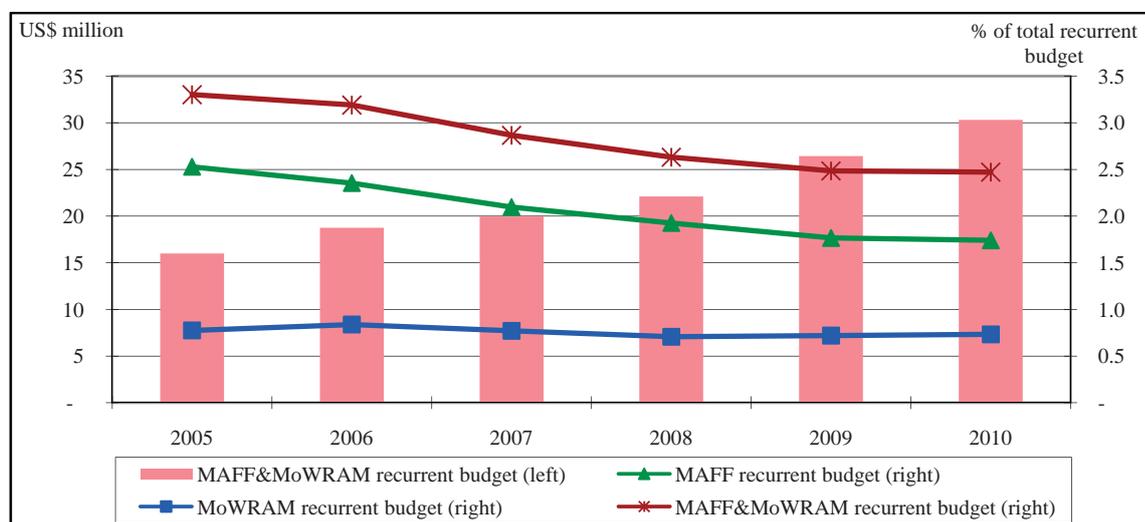


Source: National Budget Laws 2005-2010

Trends relating to recurrent budget allocations do not reflect the commitments made in the NSDP 2006-2010. Figure 4.3 indicates that the nominal recurrent budget for MAFF and MoWRAM has been increasing since 2005, but its share of the total recurrent budget has actually declined over the same period. On average, the recurrent budget for MAFF and

MoWRAM from 2006 to 2010 was about 2.7 percent, responding to commitments in the NSDP, falling from 3.3 percent of the total recurrent budget in 2005 to only 2.5 percent in 2009 and 2010. This suggests that agriculture has been at a disadvantage in relation to other sectors in terms of the allocated budget, despite being recognized as a priority in the NSDP.

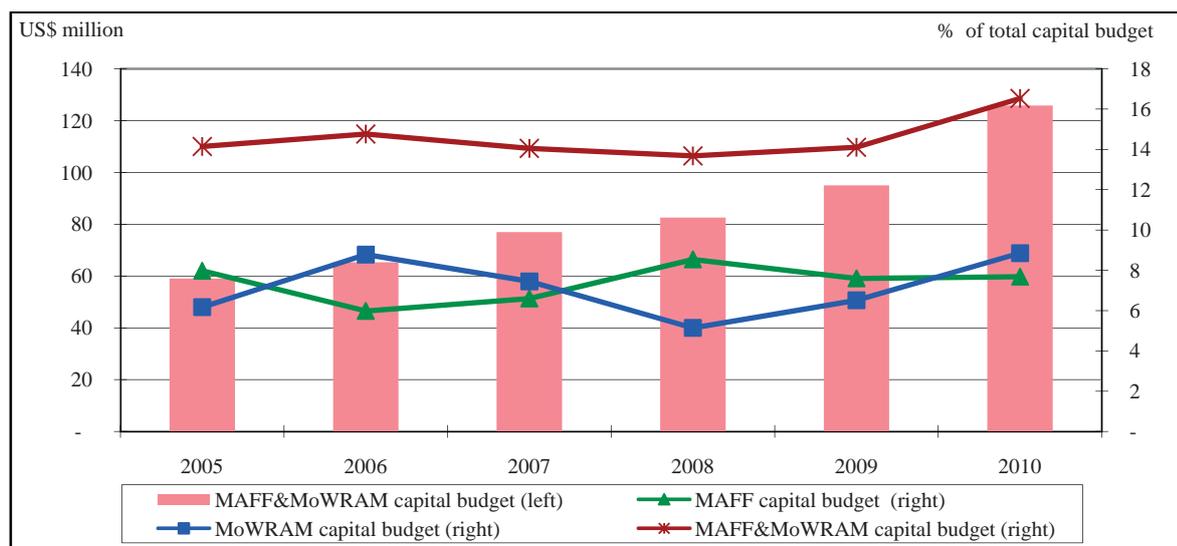
Figure 4.3: Trend of recurrent budget allocation for MAFF and MoWRAM, 2005-2010



Source: National Budget Laws 2005-2010

The falling recurrent budget available for agriculture is explained mainly by the reduction of MAFF’s recurrent budget. The allocated recurrent budget for MAFF declined from 2.5 percent of the total recurrent budget in 2005 to 1.7 percent in 2010. This trend matches the budget share for MAFF and MoWRAM, whereas the recurrent budget for MoWRAM has more or less remained stable, at 0.7 percent of the total recurrent budget, over the past half decade.

Figure 4.4: Trend of capital budget allocation for MAFF and MoWRAM, 2005-2010



Source: National Budget Laws 2005-2010

Resource allocation to finance capital expenditure for agriculture appears proportionally higher than the allocated amount committed in the NSDP 2006-2010, but there is no clear evidence of

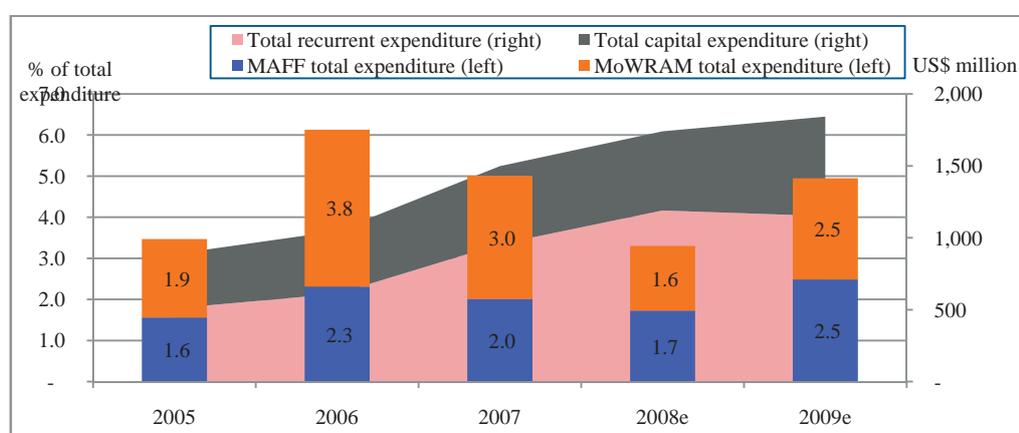
prioritized budget commitments for MAFF and MoWRAM. Figure 4.4 shows that the investment budget available for MAFF and MoWRAM is US\$ 126 million in 2010, which is double that of 2005, but the capital budget for MAFF and MoWRAM has been stable at about 14 percent of the total capital budget since 2006 (which is 40 percent, exceeding the commitment in the NSDP). Despite this, the allocated budget for MAFF and MoWRAM is not as stable as the overall allocation for MAFF and MoWRAM, and no clear trend can be identified. The allocation for both ministries has fluctuated, with the ministries competing for funding.

Overall, allocated resources for public expenditure on agriculture have been declining in the past half decade. The budget for both MAFF and MoWRAM together fell from more than 8 percent of the total national budget in 2005 to 7 percent in 2009, although it increased to nearly 8 percent in 2010. The investment budget for MAFF and MoWRAM from 2006 to 2010 appears stable and surpasses the allocated share in the NSDP 2006-2010 by 40 percent. On the other hand, the share of the recurrent budget (which is financed by the state budget) for both ministries tends to match NSDP commitments, but has been decreasing since 2006, which does not portray agriculture as a priority vis-à-vis the pre-NSDP period.

Actual expenditure

Because allocated resources are not necessarily spent as budgeted, this section presents the trends in expenditure of both recurrent and capital budgets for MAFF and MoWRAM in relation to total expenditure.

Figure 4.5: Budget expenditure, 2005-2009



Source: National Budget Laws 2005-2009, Budget Settlement Laws 2005-2007 and TOFE 2005-2009.

Figure 4.5 indicates that total public expenditure was nearly US\$ 1,850 million in 2009, which was double that of 2005. Of this amount, capital expenditure is responsible for 37 percent of the total, with the rest recurrent expenditure. Despite such increases, the proportion of expenditure for MAFF and MoWRAM declined from 6.1 percent in 2006 to 3.3 percent in 2008, although it increased to 5 percent in 2009. On average, expenditure for MAFF and MoWRAM was less than 5 (4.8) percent per year between 2006 and 2009, compared to its budget share of about 7.5 percent during the same period. This means that not all the allocated resources for MAFF and MoWRAM were spent. Figure 4.5 continues to demonstrate that MAFF had a much bigger gap in expenditure. While its budget accounted for about 4 percent of the total budget, it spent about 2 percent of total expenditure during 2006-2009.

Table 4.1 shows the trend of recurrent expenditure for MAFF and MoWRAM. In this case, both ministries usually manage to spend their allocated budget in each fiscal year, although total recurrent expenditure varies a great deal. This suggests that in some cases ministries under-spent and in others they over-spent. Total recurrent expenditure for both ministries in 2007 and 2008 was 37 percent and 42 percent, respectively, above the planned budget.

Table 4.1: Recurrent expenditure for MAFF and MoWRAM, 2005-2009

	2005	2006	2007	2008	2009p
Total recurrent expenditure (US\$ million)	510	611	956	1,190	1,152
% of total recurrent expenditure					
MAFF recurrent expenditure	2.4	2.4	1.6	1.4	1.8
MoWRAM recurrent expenditure	0.7	0.8	0.6	0.6	0.6
MAFF and MoWRAM recurrent expenditure	3.1	3.2	2.1	2.0	2.3
% of allocated budget					
Total recurrent expenditure	105	104	137	142	108
MAFF recurrent expenditure	100	105	102	106	108
MoWRAM recurrent expenditure	95	99	99	113	88
MAFF and MoWRAM recurrent expenditure	99	103	101	108	102

Note: p = provisional.

Source: National Budget Laws 2005-2009, Budget Settlement Laws 2005-2007 and TOFE 2005-2009.

MAFF and MoWRAM spent on average only 2.4 percent of total recurrent expenditure during the period 2006-2009, compared to 3.1 percent in 2005 and the 2.7 percent committed in the NSDP 2006-2010. This suggests that agriculture was not given priority from 2006 to 2009 because actual public expenditure fell far short of figures in NSDP's policy priorities and costings, falling even further than the level that it was at before the NSDP.

Table 4.2 indicates that MoWRAM spent more as capital expenditure than MAFF. Since 2006, although the level of expenditure has been fluctuating for some years, MAFF and MoWRAM, respectively, spent about 3 and 6 percent of total capital expenditure per year. Therefore, about 9 percent (or US\$ 50 million) of total capital resources was spent on agriculture (MAFF and MoWRAM) per year from 2006, but this varied from one year to another. The total capital expenditure for MAFF and MoWRAM was about 10 percent in 2006 and 2007, declining to 6.1 percent in 2008, but this was estimated go up to more than 9 percent in 2009. This means agriculture has still been inadequately financed if compared to the costing figures in the NSDP.

Table 4.2: Capital expenditure for MAFF and MoWRAM, 2005-2009

	2005	2006	2007	2008e	2009e
Total capital expenditure (US\$ million)	377	436	543	551	691
% of total capital expenditure					
MAFF capital expenditure	0.4	2.2	2.8	2.4	3.7
MoWRAM capital expenditure	3.5	8.0	7.3	3.8	5.6
MAFF and MoWRAM capital expenditure	4.0	10.3	10.1	6.1	9.3
% of allocated budget					
MAFF capital expenditure	5	37	42	25	50
MoWRAM capital expenditure	52	90	97	67	88
MAFF and MoWRAM capital expenditure	25	69	71	41	68

Note: e = estimate.

Source: National Budget Laws 2005-2009, Budget Settlement Laws 2005-2007 and PIP 2009-2011.

Table 4.2 also illustrates that inadequate financing for agricultural investment has been complicated by under-expenditure by MAFF, and to a lesser extent by MoWRAM. Table 4.2 shows that MAFF has spent not even half of its capital budget since 2006. It managed to spend only about 38 percent of its annual capital budget during the period 2006-2009. However, MAFF has improved problems of under-expenditure from 2004 and 2005, when only 2 percent and 4 percent of MAFF's capital budget was spent, respectively. MoWRAM could spend only 34 and 53 percent of its budget in these two years, but this improved in the following years. Therefore, only about 60 percent of the capital expenditure budget for MAFF and MoWRAM has been spent since 2006.

Anecdotal information suggests that incidences of under-expenditure could be explained by delays in project implementation, especially when financed by external assistance. A review of ADB's Northwest Irrigation Sector Project, executed by MoWRAM, reveals that project implementation has been very slow. The project was supposed to be complete by June 2010, but as of mid-2009 only about US\$ 5 million had been spent out of its total budget of US\$ 30 million. The delay arguably resulted from the nature of the project, its procurement processes and staffing issues. No specific irrigation sites were identified before starting the project, meaning a great deal of time was dedicated to feasibility studies. This was complicated by high compensation/resettlement costs in feasible sites. Furthermore, the procurement process required lengthy biddings processes for sub-projects, and a number of ADB's consultants were changed at the request of MoWRAM, which also changed its staffing on the project.

While investment resources are financed largely by foreign aid, the RGC also uses its own funds to finance investment projects on its own, or in cooperation with donors across sectors. Table 4.3 shows that the RGC has been able to contribute about US\$ 165 million per year since 2006. In 2009, the contribution was about US\$ 250 million, more than twice that in 2006. This amount reflects the estimation of US\$ 155 million per year (or US\$ 775 million over 2006-2010) in the NSDP 2006-2010. These contributions accounted for 25 percent of total capital expenditure in 2006, increasing to 36 percent in 2009, which suggests that the RGC's role in public investment has improved, but that it is still reliant on international aid. The figures also imply that the RGC has been able to generate more resources to finance investment expenditure despite increased recurrent expenditure.

Table 4.3: RGC capital expenditure, 2005-2009

	2005	2006	2007	2008	2009
RGC capital expenditure (US\$ million)	101	110	133	171	249
% of RGC capital expenditure					
MAFF government capital	1.6	1.5	1.0	0.8	0.4
MoWRAM government capital	11	18	14	16	15
MAFF and MoWRAM govt capital	12	19	15	17	15
%					
RGC capital/total capital expenditure	27	25	24	31	36
RGC MAFF capital/total MAFF capital	100	17	9	11	3
RGC MoWRAM capital/total MoWRAM capital	79	55	46	64	71
RGC MAFF and MoWRAM capital/total MAFF and MoWRAM capital	82	47	36	52	49

Source: Budget Settlement Laws 2005-2007 and PIP 2009-2011.

In relation to other sectors, a rather large share of the RGC's investment has been directed to the agriculture sector, although MAFF itself appears to have received comparatively little, receiving

less over time. Over the period 2006-2009, the RGC allocated about 16.5 percent of its capital expenditure to agriculture, with MoWRAM the main recipient of this investment. It received about 15.5 percent of the RGC's total investment expenditure, whereas MAFF received only about 1 percent per year on average during the period 2006-2010. It is worth noting that the trend of allocations to MAFF has been declining during this period. In 2009, MAFF received only a 0.4 percent share of the RGC's capital expenditure, three times less than that in 2006 (1.5 percent). This means the RGC as well as donors have been more interested in investing in irrigation (which is the responsibility of MoWRAM) than in other subsectors of agriculture.

The RGC prioritizes investing in irrigation through MoWRAM but finances few other investments in agriculture. Table 4.3 further illustrates that the RGC was able to finance about 30 percent of total capital expenditure in Cambodia during the period 2006-2009, with the remaining 70 percent financed by foreign aid. However, the RGC plays a more significant role in financing capital expenditure in MoWRAM. About 60 percent of total capital expenditure for MoWRAM over the past four years has come from the RGC. However, the RGC pays little attention to financing MAFF capital expenditure. About 90 percent of capital expenditure through MAFF was funded by foreign assistance from 2006 to 2009.

4.2 Official development assistance

There is evidence suggesting that not all donors' aid disbursements are included in the documents relating to the national budget. CDC's Aid Effectiveness Report (CDC, 2007) reveals that 21 percent of aid disbursements in 2005 were not found on the national budget and are considered off-budget expenditure. Therefore, analyzing ODA data available in the CDC database should provide a more comprehensive picture of foreign financing for development in Cambodia.

Overall, the total aid disbursement to the agriculture sector was about US\$ 211 million, or 7.7 percent of total aid disbursements to Cambodia, over the period 2007-2009. Notably, ADB's role in agricultural financing has become increasingly significant, especially in the aftermath of the global food crisis, accounting for about 20 percent of total disbursements to the sector. The World Bank began to contribute to the development of the agriculture sector only in 2009, well after the global food crisis. On the other hand, the EU's interventions in agriculture have been relatively small, but have tended to have been more stable, which is an indication of its firm and consistent support to the sector.

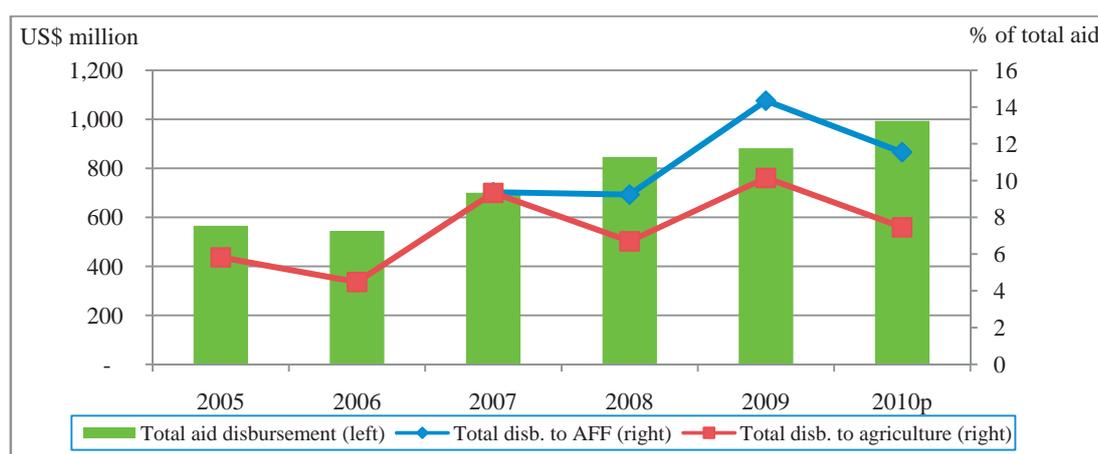
A closer look into aid disbursement by subsectors of agriculture as well as by program areas of the SAW 2006-2010 reveals that actual use of the external assistance does not reflect the commitment of sector policies and strategies. Some subsectors and programs that are meant to benefit farmers tend to be largely under-funded, whereas other subsectors or programs are over-funded. Also, subsectors and program areas of agriculture suffer from fluctuating aid disbursements, explained by the nature of donors' project-based support. Furthermore, a large proportion of agricultural aid is allocated to nationwide projects/programs, leaving less available for distribution across geographical regions.

Overview of aid disbursement

Since the early 1990s, following the Paris Peace Accords, Cambodia has received aid from the donor community to finance its rehabilitation and development. In 2010, it is expected that the total aid disbursement from development partners to Cambodia will reach about US\$ 1 billion, double 2006 disbursements. In relation to Cambodia's national budget, this suggests that the proportion of annual official aid to Cambodia has remained at more than half if compared with the total annual national budget since 2006.

Because agriculture is not well defined and sometimes mixed together with forestry and fisheries, this analysis focuses both on aid disbursements to agriculture, which include livestock and irrigation (but not forestry and fisheries) and on disbursements to agriculture, forestry and fisheries. As shown in Figure 4.6, aid disbursements to agriculture, forestry and fisheries accounted for 9 percent of all disbursements in 2007 and 2008, increasing to 14 percent in 2009. However, when forestry and fisheries are excluded, aid disbursements to agriculture accounted for about 7.7 percent of all aid disbursements between 2006 and 2009. Notably, the share of aid allocated to agriculture has improved since 2007, and is now about 8.5 percent of total aid disbursements per year.

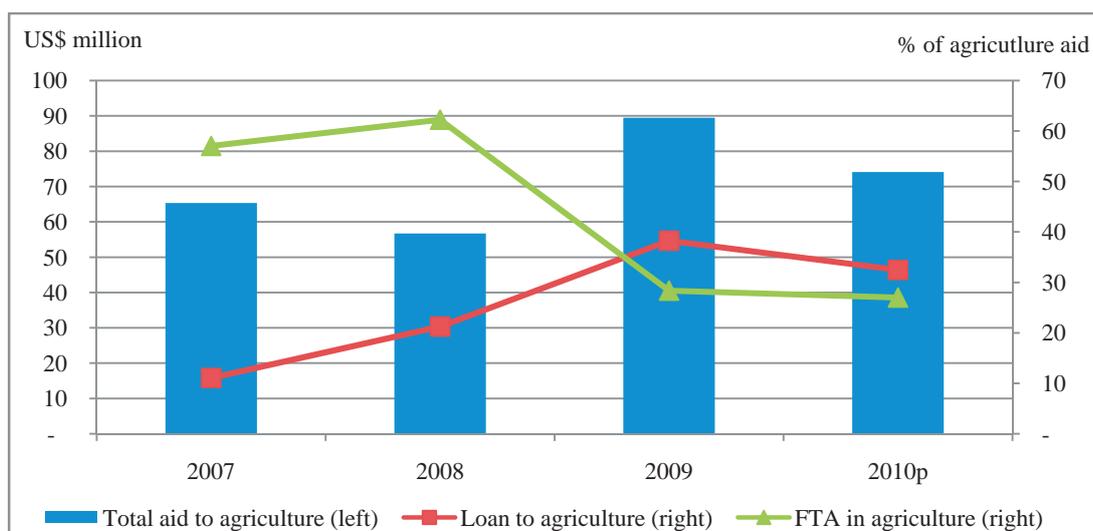
Figure 4.6: ODA disbursements to Cambodia, 2005-2010



Note: p = planned.

Source: CDC/CRDB (2007) and CDC/CRDB ODA database.

According to the CDC's ODA database, the significance attached to supporting agriculture among donors shifted in 2009. For instance, Japan, the UK, Australia and WFP were major donors of the sector in the past, but ADB, the World Bank, South Korea and the US have recently been more interested in investing in the sector and became major funders of the sector in 2009. Assistance from ADB and the World Bank represented 19.5 percent and 15.5 percent of total agricultural aid in 2009, respectively, followed by Japan (15 percent), South Korea (13 percent) and the UK (12 percent). The US did not support agriculture but contributed 6.4 percent of agricultural aid in 2009 and is likely to increase aid significantly in the forthcoming years, with more than US\$ 100 million committed to improving food security and boosting agricultural development in Cambodia over the next three years (The Cambodia Daily, 2010).

Figure 4.7: Characteristics of external assistance to agriculture, 2007-2010

Note: p = planned.

Source: CDC/CRDB ODA database.

Of the aid flows to the agriculture sector, the proportion of freestanding technical assistance (FTA) in agriculture was high in 2007 and 2008 (57 percent and 62 percent, respectively), but declined to 28 percent in 2009, possibly remaining unchanged in 2010. In contrast, loans to agriculture increased over the period 2007-2009. In 2007, loans accounted for 11 percent of all agricultural aid, increasing to 21 percent in 2008 and 38 percent in 2009.

Contributions of ADB, the World Bank and the EU to agriculture

Table 4.4 illustrates the significance of ADB, World Bank and EU support to Cambodia and the agriculture sector. In relation to the World Bank and the EU, ADB is the largest donor to agriculture in terms of its share of aid disbursements to Cambodia. ADB's aid accounted for 17 percent of total aid in 2008 and 10 percent in 2009, possibly rising to about 15 percent in 2010.

ADB's support to agriculture became more significant recently, which clearly indicates its response and positioning in relation to the global food crisis. Though guided by its CSP 2005-2009 to boost economic growth and reduce poverty through broadening Cambodia's economic bases and prioritizing agriculture, the distribution of ADB aid to agriculture remains somehow conservative, representing roughly 6 to 8 percent of its total aid disbursements to Cambodia. Its contribution shifted very significantly in 2009 following the global food crisis in 2007-2008. Table 4.4 shows that, in relation to other donors, ADB's assistance represented 5.8 percent and 7.7 percent, respectively, of total aid to agriculture in 2007 and 2008. In 2008, ADB's contribution to the sector rose to 19.5 percent, around three times the size of its past contributions. ADB was ranked the largest donor to the agriculture sector in 2009. Based on its commitment to support Cambodia's development, ADB's aid disbursements to agriculture may further increase to 23 percent in 2010, which is nearly a quarter of the total projected aid to agriculture.

Despite its increasing role in agriculture, ADB's assistance to the sector is largely in the form of loans. Table 4.5 indicates that ADB's loans to agriculture have averaged about 80 percent of its total assistance to the sector, and it is likely that the proportion of its spending on agriculture in the form of loans will remain high.

Table 4.4: Involvement of the World Bank, ADB and the EU in agriculture, 2005-2009

	2005	2006	2007	2008	2009	2010p
(US\$ million)						
Total aid disbursements	565	545	700	847	882	993
Total disbursements to AFF	...	...	66	78	127	115
Total disbursements to agriculture	33	24	65	57	89	74
% of total aid disbursement						
ADB total aid disbursements	15.8	11.4	9.9	17.2	10.1	15.1
World Bank total aid disbursements	6.7	4.9	6.8	5.2	6.8	12.4
EU total aid disbursements	4.2	6.5	6.3	5.6	5.7	6.2
% of total aid to AFF						
ADB disbursements to AFF	...	...	6.1	18.5	16.7	23.8
World Bank disbursements to AFF	...	...	0.0	1.5	11.0	3.8
EU disbursements to AFF	...	...	5.2	3.4	15.5	12.1
% of total aid to agriculture						
ADB disbursements to agriculture	1.9	1.5	5.8	7.7	19.5	23.3
World Bank disbursements to agriculture	9.5	0.0	0.0	2.0	15.6	5.9
EU disbursements to agriculture	15.8	13.7	2.1	3.3	2.0	2.1

Note: p = planned.

Source: CDC/CRDB (2007) and CDC/CRDB ODA database.

The contribution of the World Bank to agriculture was 9.5 percent in 2005 but nothing in 2006 and 2007. In 2008, the World Bank's support to the agriculture was reported to be 2 percent, all of which was spent on projects that were related to Avian Flu.⁶ These projects were more responsive to emerging circumstances rather than reflecting the World Bank's support to agricultural development. The World Bank's lack of contribution to agriculture reflects its CAS 2005-2008, in which it sees its role as concentrating on improving governance, leaving agriculture to other donors, ADB in particular.

The World Bank has decided to extend its CAS to 2009-2011, given its perceived continuing relevance and through consultation with stakeholders. Aid disbursements to agriculture represent about 15.6 percent of total disbursements to the sector. This proportion is largely explained by a short-term US\$ 13 million project (the Smallholder Agriculture and Social Protection Support Operation), which aims to address the weaknesses of existing mechanisms to support smallholder agricultural production and also social protection systems that became a major concern during the early food price crisis. This reflects the World Bank's interest in supporting the agriculture sector in the wake of the global food crisis.

Table 4.4 illustrates that the World Bank's commitment to agriculture is likely to drop to just about 6 percent of the sector's total aid disbursements. This implies that the World Bank's intervention in agriculture was a quick reaction to the food crisis phenomenon and does not represent a clear vision to support agricultural development. Nevertheless, the World Bank is currently commissioning a Public Expenditure Review (PER) in agriculture, which could mean that the World Bank is considering becoming a partner in supporting agriculture and is exploring the best ways possible to advance the sector.

The EU's support to agriculture has been relatively small, but has remained stable. From 2007 to 2009, the EU allocated only about 3 to 4 percent of its total aid disbursements to agriculture. In

⁶ Avian and Human Influenza Control and Preparedness Emergency Projects.

other words, in relation to other development partners, its contribution to agriculture accounted for about 2 to 3 percent of total sector disbursements during the period 2007 to 2009, estimated to be about 2 percent in 2010. This confirms that, despite its small contribution, the EU's support is predictable and consistent and reflects its firm support for farmers. Interestingly, none of the EU's aid is in the form of loans: the record of its aid disbursements in CDC's ODA database suggests that all of its assistance over the past three years has been in the form of free-standing technical assistance.

Table 4.5 shows that, of total aid disbursements to Cambodia each year, about 30 percent is in the form of loans and the rest is grants. Since 2006, the loan element as a proportion of total aid to Cambodia has increased annually (25 percent in 2006 to 33 percent in 2009), even though ADB and the World Bank have provided more grants than loans to Cambodia since 2005. In 2005, 95 percent of ADB's assistance to Cambodia was provided as concessional loans. This has reduced every year, dropping to 68 percent in 2009. Similarly, concessional loans from the World Bank represented 90 percent of its aid disbursements to Cambodia in 2005, declining to about 38 percent in 2009.

Table 4.5: Profile of loans for the agriculture sector in Cambodia, 2005-2010

	2005	2006	2007	2008	2009	2010p
Loans to Cambodia						
Loan total (% of total aid disbursements)	30.3	25.0	31.1	32.4	32.9	34.3
ADB loan total (% of ADB total disbursements)	94.6	88.1	81.8	73.4	68.3	80.4
World Bank loan total (% of World Bank total disbursements)	90.0	75.4	46.4	44.8	37.8	30.4
Loans to AFF						
Loan to AFF (% of total disbursements to AFF)	...	...	11.0	17.6	28.7	27.3
ADB loan (% of ADB disbursements to AFF)	...	...	76.9	34.9	88.2	68.4
World Bank loan (% of World Bank disbursements to AFF)	...	...	n/a	n/a	38.0	0.0
Loans to agriculture						
Loan to agriculture (% of agricultural aid)	14.4	1.0	11.1	21.2	38.3	32.5
ADB loan (% of ADB aid to agriculture)	79.0	63.3	81.1	75.9	94.4	65.9
World Bank loan (% of World Bank aid to agriculture)	...	...	n/a	n/a	38.0	0.0

Note: p = planned.

Source: CDC/CRDB ODA database.

Matching the quantity of loans in total aid to Cambodia, the ratio of loans in the form of agricultural aid has also increased since 2006, and at a much faster rate. Borrowing for agricultural financing dropped from 14 percent of agricultural aid in 2005 to only 1 percent in 2006; it then increased to 11 percent in the following year and accounted for 34 percent in 2009. This means that the RGC was willing to borrow credit from the international community to invest in agriculture. As indicated in Table 4.7, the main destination of this investment appears to be Program Area 4 of the SAW 2006-2010 (water resources, irrigation and land management). This program area absorbed half of aid disbursements to agriculture in 2007-2009. Otherwise, the major sources of borrowing are ADB (39 percent), South Korea (29 percent) and the International Fund for Agricultural Development (IFAD) (27 percent).

Nearly half of total aid disbursements to agriculture during 2007-2009 was in the form of free-standing technical assistance. There is some indication that technical assistance is declining. It

represented 28 percent of agricultural aid in 2009, and is likely to remain at 27 percent in 2010. During the period 2007-2009, the UK was the largest source of technical assistance. UK technical assistance accounts for one-third of total technical assistance in agriculture, followed by Japan (25 percent) and Australia (21 percent).

Aid disbursements by subsectors and agro-ecological regions

In order to develop agriculture, forestry and fisheries in a robust manner, the ASSDP 2006-2010 was formulated and is regarded as a strategic instrument to guide programs and resources to the priorities and subsectors of agriculture, forestry and fisheries, under the leadership of MAFF. Furthermore, the SAW 2006-2010 was developed to respond to the significance of the water sector in supporting agriculture, thus integrating these concerns into its policy framework to guide the sector over this period. In an attempt to understand financing behavior to the agriculture sector over recent years, this section analyses the patterns and trends of aid disbursements against the priorities of agriculture as laid out in the subsectors and program/functional areas of the ASSDP and the SAW. It also presents the geographical distribution of foreign assistance in agricultural finance in Cambodia.

Given complications regarding data availability, this section does not include Subsector 5 (land reform) in the disaggregated analysis of external financing for the ASSDP 2006-2010. Table 4.6 shows that implementation of the ASSDP should not be constrained by availability of resources. Total ODA disbursements to agriculture between 2007 and 2009 were US\$168 million, which exceeded the US\$150 million for 2006-2010. This shows that subsectors that are by nature meant to benefit farmers, such as those relating to food security, productivity, diversification and research and extension services, are considerably under-funded.

While available resources appear to surpass the costings, under-funding for some subsectors is clearly the result of poor coordination of and command over resources between different priorities. As a proportion of total aid disbursement, Table 4.6 indicates that the distribution of aid to some subsectors from 2007 to 2009 was lower than the levels suggested in the ASSDP 2006-2010, whereas others were over-funded. Subsectors that are supposed to benefit farmers appear under-funded. The allocation of aid to support food security, productivity and diversification during the period 2007-2009 represents only 25 percent of total agricultural aid, which is not even half of the commitments in the ASSDP (64 percent). What is more, agricultural research and extension services received 7 percent over the same period, compared to 11 percent committed in the ASSDP.

Table 4.6: Aid disbursement by ASSDP subsector, 2007-2010

	ASSDP 2006-2010 subsector	ASSDP 2006- 2010	Aid for MAFF				
			2007	2008	2009	2010p	2007- 2009
US\$ million							
1	Food security, productivity, diversification	95	3	14	25	28	42
2	Agricultural research and extension services	16	4	5	3	8	12
3	Market access for agricultural products	14	4	8	2	1	14
4	Institutional and legislative framework	14	9	7	34	7	50
6	Fisheries reform – sustainable access	4	5	2	10	15	17
7	Forestry reform	6	11	8	13	12	32
	Total	149	38	44	87	70	168
% of total							
1	Food security, productivity, diversification	64	8	32	29	40	25
2	Agricultural research and extension services	11	11	11	4	11	7
3	Market access for agricultural products	9	11	19	2	1	8
4	Institutional and legislative framework	9	25	15	39	10	30
6	Fisheries reform – sustainable access	3	15	5	11	21	10
7	Forestry reform	4	29	18	15	17	19
	Total	100	100	100	100	100	100

Note: p = planned.

Source: CDC/CRDB ODA database.

The institutional and legislative framework and fisheries and forestry reform have been largely over-funded by foreign assistance. Forestry reform was the most over-funded in relation to other subsectors of the ASSDP 2006-2010. The volume of foreign aid disbursed to this subsector was nearly 19 percent of the total, or 4.5 times as much the level (4 percent) committed by the ASSDP. Disbursements to fisheries reform, on the other hand, account for 10 percent of total disbursements to agriculture, forestry and fisheries during 2007-2009, which is nearly four times more than its commitment (3 percent) in the ASSDP. Disbursements to the institutional and legislative framework subsector from 2007 to 2009 were 30 percent, which is three times as much as its costing (9 percent) in the ASSDP.

While aid disbursement is not aligned with sector policy, the flow of disbursements by subsector has been unstable from year to year. This could be explained simply by the nature of project-based financing. In some years, the figure could vary, owing to some projects being ongoing and the completion of other big projects. This varying flow of financing indicates that the provision of agricultural services has been unpredictable for farmers.

As with the ASSDP 2006-2010, there seem to be sufficient resources for the implementation of the SAW 2006-2010. According to the SAW, US\$ 350 million was allocated to finance its five program areas, which have set targets. In absolute terms, the volume of funds contributed through foreign assistance should not undermine implementation. Between 2007 and 2009, total foreign aid disbursed to the agriculture and water (A&W) subsector was US\$ 211 million, or US\$70 million per year. Disbursement to the sector for 2010 is projected to be US\$ 74 million. This gives a robust estimation of the availability of foreign assistance to finance A&W as more or less matching the allocations in the ASSDP and the SAW.

However, tracking disaggregate aid disbursement in relation to the priority program areas of the SAW 2006-2010 reveals that the pattern of aid distributions to finance the SAW is not dissimilar from that disaggregated by subsectors of the ASSDP 2006-2010. Except the disbursement to water resources and irrigation, program areas that are likely to provide more direct benefits to

farmers are under-funded, for instance food security and research and extension. Table 4.7 further demonstrates that aid disbursements do not follow the costing figures presented in the SAW. In other words, the SAW was not active and was not used as a basis for coordinating or directing financial resources among donors.

Table 4.7 illustrates that food security programs tend to receive the amounts costed in the SAW 2006-2010. However, instead of the 29 percent of total financing under the SAW that should have been committed to agricultural and agri-business support programs, actual allocation of foreign assistance to this program was only 6 percent, only about one-fifth of the planned figure. Similarly, A&W research, education and extension programs received only 6 percent of planned funding over 2007-2009, less than half of the SAW allocation (14 percent). Of all program areas of the SAW, these two programs are the most under-funded.

Table 4.7: Aid disbursement by SAW program area, 2007-2010

	SAW program area	SAW 2006- 2010	Aid for agriculture				
			2007	2008	2009	2010p	2007- 2009
US\$ million							
1	Institutional capacity building and management support	50	9	7	34	7	50
2	Food security	50	2	11	22	22	35
3	Agricultural and agri-business support	100	4	8	2	1	14
4	Water resources, irrigation and land management	100	41	31	37	42	109
5	A&W research, education and extension	50	4	5	3	8	12
	Total	350	61	62	98	80	221
% of total							
1	Institutional capacity building and management support	14	15	11	34	9	23
2	Food security	14	3	18	23	28	16
3	Agricultural and agri-business support	29	7	13	2	1	6
4	Water resources, irrigation and land management	29	68	50	38	53	49
5	A&W research, education, and extension	14	7	8	4	10	6
	Total	100	100	100	100	100	100

Note: p = planned.

Source: CDC/CRDB ODA database.

It is worth noting that Table 4.7 demonstrates that the subsector of the SAW 2006-2010 relating to water resources, irrigation and land management received almost half of the total disbursements to A&W. This allocation is by far the largest in relation to other program areas, and is much higher than the 29 percent committed in the SAW. However, because access to irrigation and water is of major importance for Cambodia's agriculture (where 80 percent of cropping areas in low-lying areas are rain-fed), the supply of more resources to these programs is not necessarily bad for Cambodian farmers. The significance of the sector is reflected in the priorities of the SAW 2009-2013, which dedicates 44 percent of costing figures to water resources, irrigation and land management.

However, the institutional capacity building and management support program is excessively over-funded. According to the SAW 2006-2010, this program area should absorb 14 percent of total SAW financing, but it received 23 percent during the period 2007-2009, which is nearly a quarter of external financing for the A&W sector. Given the nature of this particular program,

the allocation is very high, especially when looking at the costing figures contained in the SAW 2009-2013, which suggests that the program area should receive just 6 percent of the total costing.

In order to obtain further insights about the geographical differences in foreign aid disbursements, analysis focuses on its distribution among four agro-ecological zones: the Plains, Tonle Sap, Coastal and Plateau/Mountain regions. Without the existence of benchmarks for geographical regions, the share of paddy land and households residing in these regions will indicatively be used as proxy benchmarks for the purposes of useful comparison. However, it is important to note that not all aid is distributed exclusively among these four regions, and often it is classified as ‘nationwide.’ For example, overall agricultural policies and reform programs at the national level are meant to generate benefits to farmers in the long run and should benefit farmers across the country, although not directly.

As shown in Table 4.8, the proportion of aid disbursements for A&W declined over the period 2007-2009 for all agro-ecological zones, except the Tonle Sap region, where the disbursement fluctuated between 24 and 30 percent of total aid to agriculture.

Table 4.8 clearly shows that more than 50 percent of aid disbursements to agriculture in 2009 was categorized as ‘nationwide,’ which is nearly double the level of 2007. This suggests that donors concentrated primarily on policy and reform programs at the national level, with assistance to this area increasing during the period 2007-2009. Although it can be argued that this aid will benefit farmers indirectly and in the long run, direct and indirect as well as short- and long-term benefits should be taken into account and balanced so as not to undermine other goals.

Table 4.8: Distribution of agricultural aid by agro-ecological regions, 2007-2010

Agro-ecological region	Households (2008)	Paddy land (2008)	Aid for agriculture				
			2007	2008	2009	2010p	2007-2009
% of total							
Plains	41	41	25	15	11	18	17
Tonle Sap	30	41	24	30	26	40	27
Coastal	7	6	8	4	4	6	6
Plateau/Mountain	13	12	14	9	7	11	10
Nationwide	n/a	n/a	29	41	52	24	41
Aid to agriculture (US\$ million)			65	57	89	74	211

Note: p = planned.

Source: NIS, MAFF and CDC/CRDB ODA database.

A similar proportion of aid disbursements was allocated to the Plains and Tonle Sap in 2007, and the larger allocations in relation to other regions reflect the concentration of households residing in both regions (41 percent and 30 percent of all households, respectively), and also the significance of agriculture, with 41 percent of all paddy land found in these regions. However, Table 4.8 also confirms that the distribution of agricultural aid is not proportional to the number of households in each region. The Plains region is home to about 40 percent of Cambodian households, which is 27 percent more than that of Tonle Sap region, but it received only 17 percent of agricultural aid over the period 2007-2009, which is 37 percent less than that available to the Tonle Sap region. Furthermore, aid distribution to the Plains region declined over this period.

5. Agricultural services for farmers: evidence from case studies



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5. Agricultural services for farmers: evidence from case studies

5.1 Overview of agricultural extension services at provincial level

This chapter attempts to showcase the facts about agricultural service support for farmers in two particular provinces (Kandal and Takeo), tracking the coverage and the benefits of agricultural services for farmers to the extent that is possible. Kandal province was selected because it is important with regard to the country's vegetable production, which is potentially linked to markets in Phnom Penh. The case study on extension services to vegetable farmers may shed light on why Cambodian farms cannot produce enough vegetables at competitive prices to meet domestic demand. Takeo province was chosen for its relatively successful rice production, and to attempt to find evidence of this being attributable to extension services.

Both provinces have similarities in terms of the number of districts/municipalities and the number of agriculture personnel, but there are differences with regard to population size, number of farm households and the availability of agricultural land. While there is 2.3 times more agricultural land in Takeo than in Kandal, the number of farm households in Kandal is nearly 40 percent greater than in Takeo. This suggests that the number of farm households per unit of agricultural land is much smaller in Kandal, which is generally the case in areas of vegetable farming.

At the sub-national level, agricultural personnel are highly concentrated at the provincial level. In both cases (Kandal and Takeo), nearly 70 percent of all agricultural personnel in each province are stationed in the provincial Department of Agriculture. The other 30 percent work in the districts and municipalities. Table 5.1 suggests that the majority of extension personnel are at the district level, with three or four staff per district studied in Takeo and Kandal, respectively. Of all extension personnel in each province, about 75 percent are working in the district Office of Agriculture. The other 25 percent are at the provincial level, made up of about eight to ten members of the total personnel of the provincial Department of Agriculture.

Table 5.1: Administration and personnel in agriculture in Kandal and Takeo provinces

Administrative	Kandal	Takeo
Districts/municipalities	11	10
Communes/sangkats	147	100
Villages	1,083	1,115
% of contact villages	50	60
Households	258,393	175,607
% of farm households	80	85
Agricultural/farm land (ha)	118,586	275,000
Personnel		
Personnel working in agriculture in the province	196	183
Personnel of provincial Department of Agriculture	137	124
Extension personnel in the province	55	38
Extension personnel in provincial Department of Agriculture	13	10
Extension personnel in districts	42	28
Extension personnel per district	4	3
Farm households/extension personnel	4,922	5,331
Farm land (ha)/extension personnel	2,823	9,821

Source: Field study in Kandal and Takeo provinces (April 2010).

Table 5.1 shows that, in both provinces, every extension service worker at the district level is supposed to provide support to on average 5,000 farm households. However, divided by the number of villages in each province, a district extension worker in Kandal is meant to provide support to 27 villages, whereas in Takeo this is 40 villages. This means that an extension worker in Takeo bears a larger responsibility to provide services to farmers, which should mean that a higher proportion of villages in Kandal can be reached by extension services. However, only about 50 percent of villages in Kandal are estimated to have received extension services, compared to 60 percent in Takeo (according to the provincial Department of Agriculture in both provinces). This implies that the coverage of extension services is not explained simply by the availability of extension workers, but may be subject to other factors, such as the volume of budgetary allocations and external assistance from donors and NGOs.

Interviews at the district level reveal that district Offices of Agriculture do not receive a budget package from the state budget for executing activities, and thus are reliant almost entirely on assistance from donor projects and NGOs. All six district Offices of Agriculture covered by the field study reported that, except for salaries, office supplies (purchased and supplied by the Department of Agriculture) and support to buy about 10 to 15 liters of gasoline per month, they do not have set budgets for field activities, or for other costs, such as gasoline for field activities. Agricultural services or activities are organized and managed by the provincial Department of Agriculture and district personnel assist with implementation. District personnel also work as counterparts in donor and NGO projects to provide services to farmers, and usually are provided with supplemental incomes from the projects.

Table 5.2: Availability of agricultural services at provincial level

		Service providers*									
Takeo province		JICA	VSF	CEDAC	Oxfam	CCK	WVC	HEK	Rachana	ASDP	IPM
	District/ municipality										
1	Angkor Borei										
2	Bati	x		x				x		x	
3	Bourei Cholsar					x					x
4	Doun Kaev										
5	Kaoh Andaet					x	x	x	x	x	x
6	Kiri Vong	x	x			x				x	x
7	Prey Kabbas	x			x					x	
8	Samraong	x	x	x							
9	Tram Kak	x	x	x						x	
10	Treang								x		x
		Service providers*									
Kandal province		VVOB	WVC	AFD	Caritas	IPM	ACIAR	CAP	DPA		
	District/ municipality										
1	Kandal Stueng	x			x						
2	Kien Svay	x						x			
3	Ksach Kandal		x								
4	Koh Thom										
5	Leuk Daek		x								
6	Lvea Em				x						
7	Muk Kampoul								x		
8	Ang Snuol										
9	Ponhea Leu	x									
10	Sa-ang			x		x	x				
11	Ta Khmao										

* includes government, donors and NGO projects.

Source: Field study in Kandal and Takeo provinces (April 2010).

Based on data obtained from interviews with provincial Departments of Agriculture, Table 5.2 confirms that there are more agricultural services available to farmers in Takeo than in Kandal province. These services are mainly funded by donors and NGOs. Also, it illustrates that these services seem to duplicate one another in the same districts. Duplication at the district level does not necessarily mean that services are targeting the same communes or villages, but the evidence from this study, as shown in Table 5.7 and Table 5.8, confirms that services are duplicated even at the village level. For instance, Sampan Leu village in Sa-ang district is the target of five projects, including the Integrated Pest Management (IPM) project.

5.2 Availability of agricultural extension services at district level

Table 5.3 presents the coverage of agricultural extension services in six districts in Kandal and Takeo. It indicates that the coverage of extension services is better in all three districts of Takeo. All villages in Prey Kabbas district, and 96 percent and 70 percent, respectively, of villages in Kiri Vong and Tram Kak districts have been supplied with extension services. Notably, all these three districts of Takeo have been supported by ADB's Agriculture Sector Development Project (ASDP) over the past five years (2006-2010), together with support from IPM in Kiri Vong and the Cambodian Center for Study and Development in Agriculture (CEDAC) in Tram Kak. The coverage of extension services in Kandal province appears more varied from one district to another, with Sa-ang district having the largest coverage. Nearly 90 percent of its villages have received extension services, compared to 43 percent of villages in Muk Kampoul district and 11 percent in Kien Svay district.

The number of contact farmers per village is reported to be about 20 to 30 per extension services training and the adoption rate appears low, with the majority found to have adopted only some of the lessons and advice provided by the extension services. As reported by district Offices of Agriculture, the adoption rate is roughly 40 to 50 percent of contact farmers.

Table 5.3: Coverage of agricultural extension services in studied districts

	Kandal			Takeo		
	Sa-ang	Kien Svay	Muk Kampoul	Kiri Vong	Tram Kak	Prey Kabbas
District Office staff	4	5	4	11	10	8
Extension staff	4	5	4	2	6	4
Communes	16	12	9	12	15	13
Villages	119	46	47	114	244	110
Farm households	35,056	28,716	12,772	18,827	27,700	19,201
Village extension agents	30	46	20	30	90	60
% of villages with extension agent	25	100	43	26	37	55
Farm households/extension staff	8,764	5,743	3,193	9,414	4,617	4,800
Farm land (ha)/extension staff	5,430	2,175	6,161	20,935	6,217	6,042
% of contact villages	88	11	43	96	70	100
Contact farmers/village	20-25	30	25-30	20-30	20-25	20-30
% adoption rate	45	30-40	40-50	20	40-50	80

Source: Field study in Kandal and Takeo provinces (April 2010).

The coverage of extension services is also evidenced by the availability of extension agents at the village level. As illustrated in Table 5.3, more than 40 percent of villages in both provinces have extension agents, ranging from 25 percent in Sa-ang district (Kandal), to 55 percent in Prey Kabbas (Takeo), to 100 percent in Kien Svay district (Kandal). The existence of extension agents

in all villages in Kien Svay is explained by the fact that the number of villages in the district is rather small, and agents have just recently been trained by provincial and district officials for one day to become extension agents (interview with district Office of Agriculture, April 2010).

Concerns were also expressed about the capacity of the village extension agents. It was reported that usually these extension agents are the village livestock agents (VLAs). They are then further trained to become village extension agents in their locality. While 'livestock' could cover poultry, pigs and cattle, among others, 'agricultural extension' embraces many more aspects of agricultural production, such as rice, land preparation, water management, fertilizer use and production of different varieties of vegetables, which require another range of skills. Therefore, it is doubtful whether extension agents who are also VLAs have the required sets of skills to be able to provide good advice to farmers.

Table 5.4: Coverage of extension services at commune and village levels

	Kandal			Takeo		
	Sa-ang	Kien Svay	Muk Kampoul	Kiri Vong	Tram Kak	Prey Kabbas
Commune	Prey Ambel	Dei Edh	Bakhaeng	Kamnab	Trapaing Thom Cheung	Champa
Farm households	4,009	2,590	1,288	653	1,781	1,577
Villages	9	3	3	6	11	9
Contact villages	9	3	3	6	11	9
Villages with extension agents	9	2	3	0	9	9
Councilors in charge of extension	0	3	1	0	0	1
% of contact households	10	20	40	70	25	83
% adoption rate	40-45	80	35-40	70	25	27
Village	Sampan Leu	Sdao Kanlaeng	Chambak Meas	Khmal	Peak Bang-oang	Champa
Farm households	515	300	328	103	285	174
% of contact farmers in village	79	70	15	32	30	23
% adoption rate	50	29	80	79	35	100
Extension in past 5 years	No change	No change	Better	Better	Better	Better

Source: Field study in Kandal and Takeo provinces (April 2010).

At the commune level, it is estimated that about 40 percent of farm households of studied communes have received extension services, with a wide variation among communes. More than 80 percent of farm households in Champa commune (Prey Kabbas district) have received extension services, but only 10 percent in Prey Ambel commune (Sa-ang district). In the understanding of the commune councils, of those farm households, about 45 percent have adopted the extension advice for their farming practices.

As shown in Table 5.4, all villages in six studied communes are covered by the extension services, although not all of them have village extension agents. On average, about 40 percent of households have been contacted by representatives of extension services. The normal rate ranges from 15 percent to 32 percent per village, but there are high outliers in Sampan Leu (Sa-ang district) and Sdao Kanlaeng (Kien Svay district) villages, with 79 percent and 70 percent of households contacted, respectively. High contact rates in these two villages could stem from the duplication of services provided by different projects in the village (see Table 5.7 and Table 5.8).

It is important to note that the extent of extension services is reported to have improved in the rest of villages, but has remain unchanged over the past five years in Sampan Leu (Sa-ang district) and Sdao Kanlaeng (Kien Svay district) villages. This suggests that, while extension services could be expanded to reach more villages, they also remain available to farmers in villages that were contacted in the past five years.

At the village level, the adoption rate of new agricultural practices from extension services is on average 60 percent. The rate appears a bit higher than the estimation at the district and commune levels, but the rates should be in conformity. The adoption rate is highest in Champa village (Prey Kabbas district). Village key informants agreed that all contact farmers in that village use the extension service advice in their farming activities. The adoption rate is much lower in villages in Kandal– 30 percent and 50 percent, respectively, in Sdao Kanlaeng village (Kien Svay district) and Sampan Leu village (Sa-ang district).

Many different types of agricultural extension services are provided to farmers in each village. Except in the case of Khmal village in Kiri Vong district, contact farmers tend to receive more than 10 types of extension advice, ranging from rice farming to land improvement, as indicated in Table 5.5. While these services could be useful, farmers may also feel overwhelmed by the amount of services, especially when their capacity is limited.

Table 5.5: Types of extension services received by farmers

	District	Kandal			Takeo		
		Sa-ang	Kien Svay	Muk Kampoul	Kiri Vong	Tram Kak	Prey Kabbas
	Village	Sampa n Leu	Sdao Kanlaeng	Chambak Meas	Khmal	Peak Bang-oang	Champa
	Extension service						
1	Rice farming	1	1	0	1	1	1
2	Cash crop farming	1	1	0	0	1	1
3	Vegetable farming	1	1	1	0	1	1
4	Livestock raising	1	1	1	0	1	1
5	Fish culture	0	1	1	0	1	1
6	Seed selection	1	1	1	0	1	1
7	System of Rice Intensification (SRI)	0	1	0	0	1	1
8	Integrated farming	0	0	1	0	0	1
9	Chemical fertilizer use	1	1	1	0	1	1
10	Organic farming	1	1	1	0	1	1
11	Compost making	1	1	1	0	1	1
12	Water management	0	1	1	1	1	1
13	Pest control	1	1	1	1	0	1
14	Post harvest techniques	1	0	1	0	1	1
15	Land improvement	1	n/a	1	n/a	1	1

Note: 1 = yes, 0 = no.

Source: Field study in Kandal and Takeo provinces (April 2010).

The evidence from farmers confirms that, despite all these extension courses, farmers have gained little understanding from them. They suggested that trainers provide clearer explanations, with experiments during the training and field demonstrations after the training. Furthermore, farmers suggested that the extension service courses be provided to them every year, in particular just before the start of the crop season, so that their knowledge is fresh and they can remember

how to apply the training on their farms. All of these suggestions are indications of the limited capacity of farmers, and demonstrate the need to have more extension agents at the village level.

The findings of a survey of 270 households in nine villages across Cambodia (Mokoro, 2010) reveal that about two-thirds of the respondents found that the extension courses they attended were difficult to understand and about half of them found that there was not enough training provided. Around 40 percent of the respondents complained that the extension services lacked experiments or field demonstrations, which means the extension services were in many instances delivered only in theory and without field trials to demonstrate how agricultural advice works in practice.

5.3 Sources of agricultural extension services

Table 5.6 illustrates the coverage of agricultural services in two districts of Takeo province (Kiri Vong and Tram Kak). The proportion of villages that have had access to agricultural services such as extension services is high in these two districts, 96 percent in Kiri Vong and 70 percent in Tram Kak. These services are mainly from donor and NGO projects. The number of villages covered by each project working in the different districts is presented in Table 5.2, indicating the duplication of projects in some of the same villages. In theory, this should mean on average three projects operational in every village of both districts.

Table 5.6: Coverage of agricultural services in Kiri Vong and Tram Kak districts (Takeo province)

	Kiri Vong district	Tram Kak district	Prey Kabbas
Villages	114	244	110
% of contact villages	96	70	100
Contact farmers per course/ village	20-30	20-25	20-25
Coverage of projects by donors and NGOs			
ASDP	108	135	78
SLPP		184	
MCC		25	
VSF		28	
CEDAC	28	227	
IPM	88		
CCK	18		
Soil Nutrient Management Project	76		

Source: Field study in Kandal and Takeo provinces (April 2010).

Furthermore, Table 5.7 and Table 5.8 continue to reveal the coverage of agricultural services at the village level across six villages in Kandal and Takeo provinces. Both tables show that assistance from NGO and donor projects is a predominant feature of extension services for farmers. Services provided by the RGC in this area are reportedly rare.

Table 5.7: Distribution of extension services in three communes of Kandal province

	Village	Service provider*										
		Agricam	KOSAN	Accor	DMC	IPM	VVOB	ACAP	AOG	DPA	CEDAC	RGC
Sa-ang/Prey Ambel commune												
1	Traeuy Troeng											
2	Preaek Ta Lai											
3	Sampan Leu	x	x	x	x	x						
4	Sampan Kraom		x									
5	Anlong Ta Sek Leu		x									
6	Anlong Ta Sek Kraom											
7	Koun Chrae											
8	Preaek Kralanh					x						
9	Peam Prachum					x						
Kien Svay/Dei Edh commune												
1	Popeal Khae							x	x			x
2	Dei Edth Kaoh Phos							x	x			x
3	Sdao Kanlaeng					x	x	x	x			x
Muk Kampoul/Bak Khaeng commune												
1	Bak Khaeng Leu									x		
2	Kdei Chas									x		
3	Chambak Meas									x	x	

* includes government, donors and NGO projects.

Source: Field study in Kandal and Takeo provinces (April 2010).

Duplication of agricultural extension services appears common in all studied villages, with the RGC, donors and NGOs providing their services to farmers in the same villages. As reported by the commune councils and key informants from the villages, all villages in Dei Edh commune of Kien Svay district, for instance, received extension services from more than one agency or organization. For example, there are five agencies working in Sdao Kanlaeng village. Village key informants further confirmed that the projects generally provide similar services, although there are some different or complementary elements.

As in villages in Kandal province, duplication of agricultural services in the same village is also commonly found in studied villages in Takeo province. For example, although CEDAC provided services to all villages of Trapaing Thom Cheung in Takeo's Tram Kak district, many of those villages also received interventions through ADB's five-year project (ASDP 2006-2010) and also from an NGO called Veterinarians Sans Frontières (VSF). Although the agency or project may provide different extension services in those villages, there is still demand for better coordination for more concentrated services, rather than services being designed without coordination with other service providers.

Table 5.8: Distribution of extension services in three communes of Takeo province

	Village	Service provider*						
		CEDAC	Oxfam	Lusina	VSF	IPM	ASDP	RGC
Kiri Vong/ Kamnab commune								
1	Kamnab							x
2	Krangol					x		x
3	Daeum Slaeng							x
4	Khmal					x	x	x
5	Pou Sangkae					x		x
6	Chamkar Tieb							x
Tram Kak/Trapaing Thom Cheung commune								
1	Peak Bang-oang	x			x		x	
2	Prey Khvav	x						
3	Trapeang Svay	x						
4	Ta Suon	x						
5	Prey Kduoch	x			x		x	
6	Prey Ta Lei	x						
7	Samrang	x					x	
8	Angk Trav	x			x		x	
9	Pou Doh	x					x	
10	Prey Sbat	x			x			
11	Prey Dak Por	x					x	
Prey Kabbas/ Champa commune								
1	Ponsang			x				
2	Ruessei Thmei			x				
3	Chroy							
4	Chumpu Proek			x		x		
5	Champa	x				x		
6	Samraong		x					
7	Danghet							
8	Chek		x			x		
9	Roneam Pech							

* includes government, donors and NGO projects.

Source: Field study in Kandal and Takeo provinces (April 2010).

Although the presence of more than one project in the same village may be complementary in some circumstances, many service areas overlap. For example, IPM started working in Sampan Leu village (Sa-ang district) in 2005 and has continued until the present. Agricam joined in 2009. Mr. Taing Seng Hun, a 51-year-old farmer in the village, stated that most extension advices provided by Agricam are similar to IPM's, although Agricam services include posting of the price of vegetables at Ta Khmao, Chbar Ampov and Doeumkor markets on the village's information board.

5.4 Benefits and challenges of agricultural extension services

Agricultural extension services, such as those on fertilizer use and land and water management, are meant to assist farmers to address problems encountered in their farming cycle, such as pests, and also to improve their farming techniques so that their farms can generate better returns through reduced costs, diversification, more intensified farming, better farm integration and better yields, for example. The other intended benefit of extension services is to improve sustainability in soil use and safety in crop cultivation and production.

Table 5.9: Perceptions of effects of agricultural extension services on farmers' livelihoods

	District	Kandal			Takeo			Average score
		Sa-ang	Kien Svay	Muk Kampoul	Kiri Vong	Tram Kak	Prey Kabbas	
	Village	Sampan Leu	Sdao Kanlaeng	Chambak Meas	Khmal	Peak Bang-oang	Champa	
1	Rural road improvement	3	...	...	4	4	4	3.8
2	Irrigation system	4	...	3	4	3	4	3.6
3	Price of agricultural commodities	3	3	3	4	3	2	3.0
4	Good weather/ rainfall	...	...	...	2	3	4	3.0
5	Farmers' skills	2	3	3	4	3	2	2.8
6	Seeds/inputs	...	2	...	3	4	2	2.8
7	Overseas remittances	...	...	...	2	2	3	2.3
8	Domestic remittances	...	3	...	1	2	2	2.0

Note: 1 = no effect, 4 = very effective.

Source: Field study in Kandal and Takeo provinces (April 2010).

The adoption of agricultural advice results in positive impacts on the livelihoods of farmers, according to the perceptions of farmers. As shown in Table 5.9, agricultural inputs/seeds and farmers' skills are rated moderately high by farmers, along with other factors such as rural road improvement, irrigation systems and good weather/rainfall. This suggests that extension services have a positive impact on local livelihoods.

In general, key informants in studied villages agreed that extension advices do help reduce farming costs, improve yields and reduce the damage caused by insects or pests. However, the benefits may vary from farmer to farmer or from one village to another. For example, farmers in Chambak Meas village (Muk Kampoul district) agreed that natural fertilizers and insecticides help reduce production costs but do not necessarily increase yields.

Box 5.1: Extension advice reduces costs on pesticide

Mr. Khean Khorn, aged 40, is a farmer in Chambak Meas village of Bakhaeng commune. He grows lettuce on his 360m² plot and he was trained by a local organization called Bakhaeng Credit Development Association (BACDA) in making natural fertilizers and insecticide. Using his old farming method of chemical fertilizers and insecticide, he spent about 500,000 riel on production costs and harvested 800kg. When applying natural fertilizers and insecticide, he spent less on production costs (300,000 riel) but saw a yield of only 700kg. When the price of lettuce is about 1,500 to 2,000 riel per kg, he saves only a small amount when using natural fertilizers and insecticide.

Source: Field study in Kandal and Takeo provinces (April 2010).

Single pieces of agricultural extension advice do not address all problems but, when combined with other advice, they help farmers to increase profitability. For instance, while natural fertilizers or insecticides may be more effective and less costly, they may not generate better yields for farmers. However, yields can be improved through applying other pieces of advice from agricultural extension services, such as seed selection, land preparation and other techniques, as illustrated in Box 5.2.

Box 5.2: Farming techniques increase returns, although rotating farming is not yet possible

Mrs. Ly Reaksmei, a 28-year-old household head with two children, is a farmer in Sdao Kanlaeng village, Dei Edh commune, Kien Svay district. Her main sources of livelihood are rice farming and vegetable cultivation. She owns 1.11 ha of land, and 0.11 ha of it is her vegetable garden. She attended IPM's extension courses and applied them in cucumber cultivation. She said she learned a lot from IPM, estimating that she applies about 70 to 80 percent of it on her 0.11 ha plot.

She found that the advice worked for her cucumber cultivation. The farm yields about 2,400kg (1.8 million riel), compared to 1,600kg (1.2 million riel) using her traditional farming methods. This represents a 50 percent yield increase. Furthermore, with IPM's method, she spends less on production costs. Production now costs her about 200,000 riel per crop season, whereas the traditional method cost her twice as much. Mrs. Ly Reaksmei explains that she still uses chemical insecticide. She cannot rely fully on natural insecticide, as she was trained to by IPM, because it takes a week to produce it.

Mrs. Ly Reaksmei also stated that she learned about rotational farming but has not applied it yet, as she finds the market price for other crops is low and can be volatile. So far, she is continuing with only cucumber cultivation since the price for cucumbers has been good and more stable.

Source: Field study in Kandal and Takeo provinces (April 2010).

Integrated farming is a feature of modern farming techniques. It allows farmers to use their land more efficiently, as they can grow more varieties together on the same land at the same time. As further explained in Box 5.3, this type of farming has proved successful in improving the livelihoods of farmers in Sampan Leu village (Sa-ang district), by providing them with increased income from additional vegetables grown alongside the main crop, sugarcane.

Integrated farming improves the efficiency of land use, thus yielding high returns and keeping more land open for agriculture. The case presented in Box 5.3 implies that, without integrated farming methods, farmers might have abandoned the land if they felt they gained nothing from it. These methods allow farmers to use the land for different crops and other purposes.

Box 5.3: Integrated farming improves a farmer's livelihood through increased income from other sources

Mr. Taing Seng Hun, aged 51, lives in Sampan Leu village, Sa-ang district, Kandal province. He has practiced sugarcane farming for 20 years, but the income that he earned from was usually just enough to cover incurred expenses and only rarely could he save money. When he made a loss in some years, he became indebted to his relatives. However, he has found that his standard of living has been better in the past four to five years since he learned new farming techniques from IPM and recently from an NGO called Agricam.

He attended the extension course run by IPM in 2005. He learned about farming techniques, reducing chemical fertilizers, pesticide use, integrated farming, seed selection, crop rotation and how to choose farming seasons. He learned, for example, that one season is good for a particular crop and about the crops that generate better prices. The farming techniques that he learned included the production of broccoli, cabbage, cucumbers and tomatoes, among others. Agricam started working in his village in 2009. Mr. Taing Seng Hun also attended courses provided by Agricam and he found that these were similar to those of IPM, but that every two weeks Agricam staff also collected information on the price of vegetables from Ta Khmao market, Chbar Ampov market and Doeumkor market and posted it on the board by the road to the *chamkar* (farms).

Using farming techniques introduced by IPM and Agricam, Mr. Taing Seng Hun has experienced an increased income resulting from improved yields and more (diversified) crops on the same land. Before training, he had farmed sugarcane on 0.40 ha and 0.30 ha plots as a mono crop. Since training on integrated farming, using different crops on the same plot of land, he has started to cultivate other vegetables between rows of sugarcanes. The income earned from these vegetables can be used to cover expenses for the sugarcane plantation, including harvesting expenses.

Having applied the agricultural skills offered by the extension services, Mr. Taing Seng Hun has noticed that his 0.40 and 0.30 ha plots have generated revenue of about 19 to 20 million riel in the past four to five years, compared to about 12 million riel before then. He has also observed a reduction in his farm production costs of about 40 to 50 percent through applying new farming techniques, and now he uses less chemical fertilizer and pesticide. He has found that agricultural extension services have helped his family a great deal. Together with income from his 3.5 ha of dry season rice, his family can save about US\$ 2,000 to 3,000 per year. With these savings, they can afford to send their children to university in Phnom Penh, something that he thought he would never able to do.

Source: Field study in Kandal and Takeo provinces (April 2010).

The evidence from the perceptions of key informants indicates the positive effects of agricultural extension services on improving yields. Based on reports from contact farmers, farmers find that farm productivity increases by on average 30 percent owing to extension advice, and that this increase is higher in villages with irrigation systems (40 percent). Case studies from the field study show similar results. A household in Kiri Vong district of Takeo applied extension advice on her five plots and experienced yield increases ranging from 28 to 43 percent for each plot.

Box 5.4: Extension advice improves paddy yields

Mrs. Yim Hi, a 29-year-old housewife with three children, lives in Khmal village, Kamnab commune, Kiri Vong district of Takeo province. Her main sources of income are dry season rice farming and livestock raising. She has attended extension service training provided by the RGC and has also had extension advice from other farmers and from a Vietnamese company. The extension advice included techniques in rice farming, vegetable gardening, seed selection, livestock rearing (pigs and cattle), organic farming, compost making and pest control. When practicing farming these days, she has found that the extension advice on rice farming and livestock raising has proved the most useful, and she thinks that learning about techniques in water management would also be useful for her.

She has observed that the extension advice has not reduced production costs but is very beneficial for improving yields and to some extent helps reduce damage caused by pests. She has applied parts of the extension advice on her five plots of land where she grows rice in the dry season, and all plots have produced higher yields. The increase in yield among her five plots ranges from 28 to 43 percent.

Source: Field study in Kandal and Takeo provinces (April 2010).

The presence of an extension agent in the village is of great use to farmers as, although extension courses are provided to farmers, many of them reported that they gain little understanding from these, requesting that the courses be provided to them on an annual basis or more often so that they can better remember the techniques. Mrs. Ly Reaksmei (Box 5.5) could better identify the type of crop disease in her garden through practice, with assistance from the village extension agent. With correct advice from the agent, she could purchase the right poison to address the disease more effectively.

Box 5.5: Village extension agent is a point of contact for farmers

Mrs. Ly Reaksmei, a farmer in Sdao Kanlaeng village, Dei Edh commune, had problems with insect management in the garden. In the past, whenever there was damage in her garden by insects, she went to the market and asked the seller to give advice about insecticides. The seller then prepared a package of five to six different insecticides, which cost about 100,000 riel. Despite the high cost, sometimes they did not even work.

These days, whenever there is problem in the garden, Mrs. Ly Reaksmei consults with the village extension agent. The extension agent comes to see the garden and tells her about the type of problem or disease, prescribing just one type of poison or insecticide. With the specific poison or insecticide, costing only about 5,000 to 10,000 riel, the problem can be solved. This reduces production costs with regard to poison or insecticide, and also helps farmers to be able to practically identify types of crop disease.

Source: Field study in Kandal and Takeo provinces (April 2010).

Despite all these benefits, not all farmers contacted have adopted the extension service advice in their farming practices. According to interviews with many farmers and key informants in visited villages, they have little new understanding as a result of training and lack capital/inputs. Some farmers do not trust the advice and have concerns about possible losses if they are not successful, preferring to follow their traditional methods. A lack of water to supply the farm also hampers the adoption of new techniques. Adopting natural pesticide/insecticides and other organic methods can take up more time for farmers, meaning they prefer to use chemical methods. Another factor is reluctance among farmers to adopt the advice if it is not demonstrated successfully by other farmers first. In some cases, adoption of the extension advice does not

necessarily improve yields, although production costs are reduced, as illustrated in Box 5.1. In some cases, farmers reported that some who receive training do not even have land. Therefore, adopting the techniques is not possible unless they can rent land for farming.

Farmers in the studied villages encounter a number of common problems. The most challenging ones are threats from pests and insects and the volatility of agricultural commodity prices. People across the communities studied find that soil has been degraded, availability of water for agriculture is inadequate and production costs have increased, including labor costs.

In summary, evidence suggests that the coverage of agricultural services is quite wide for smallholder farmers in districts of Takeo and one district of Kandal. The percentage of villages with access to services in these districts ranges from 70 to 100 percent. The evidence from six villages in both provinces shows that adoption rates for new agricultural methods and techniques vary a great deal from one village to another, but on average the rate is about 60 percent, which is moderately high, although most adopt only part of the extension advice.

The availability of agricultural services for smallholder farmers is attributed predominantly to assistance from donors and NGOs: RGC services are minimal. About 70 percent of agricultural personnel in each province are working at the provincial level, with the other 30 percent spread among different districts. While the number of extension personnel is limited, no funding for agricultural services from the RGC is made available for the district level.

Duplication of agricultural services provided by the government, donors and NGOs is common in villages, and there are also indications that services do not reach all households in need of extension advice within the same village. Although such duplication is not necessarily bad for farmers, it is not an indication of efficiency or of a fair distribution of resources/public services, as farmers in other parts of the country are still underserved.

Agricultural services have proved beneficial for smallholder farmers, but there are still constraints hindering the adoption of new methods and techniques. Among other factors influencing livelihood improvement, agricultural extension services in particular are rated highly in terms of contributing to a better standard of living. Advice has improved farm yields and/or reduced farming costs. Nevertheless, the adoption of such advice appears low in some places owing to poor quality of service delivery, a lack of field demonstrations or experiments and a lack of capital/inputs, among other reasons.

Despite all the benefits that farmers can receive through the agricultural extension services, farmers also face a number of challenges in their farming practices. Farmers' complaints are mainly about extension services and the functioning of irrigation systems. In the former case, farmers complain mainly about the timing, quality and method of the training. They find that the training is conducted in a way that is difficult to understand, and that the trainings are too short and not comprehensive enough. Farmers complained that the extension services lack experiments or field demonstrations. This implies that the services often just explain the theory and are not followed by field trials to demonstrate the practice.

For issues related to irrigation, farmers encounter major problems, such as lack of water in the irrigation system, of distribution canals (both secondary and tertiary canals) and of water diversion systems. Lack of water in the irrigation system was cited as a problem by 85 percent of farm households. Another 48 percent and 39 percent, respectively, complained about the lack of distribution systems and the lack of water diversion systems in existing irrigation schemes. This suggests that irrigation schemes are not often complemented by secondary and tertiary canals,

and that inadequate availability of water in the main canals is quite common. Farmers also cited poor water management in the irrigation system and a lack of maintenance. All of this suggests that farmers are still facing considerable challenges in their agricultural practices, and underlines weaknesses in public expenditure/services in the agricultural sector.

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6. Conclusions and recommendations

6.1 Conclusions

In conclusion, the findings suggest that the RGC's agriculture policies, the ASSDP and the SAW, come out in favor of smallholder farmers, in the sense that they address the challenges faced by farmers, who are mostly smallholders. However, public expenditure to support the agriculture sector has been low and has even shown a declining trend in relative terms over the past four years. On average, total public expenditure (recurrent and capital) by MAFF and MoWRAM accounted for about 4.8 percent of annual total expenditure (recurrent and capital) during 2006 to 2009 – declining from about 6 percent in 2006 to about 3 percent in 2008 – and is estimated at roughly 5 percent for 2009.

The ASSDP 2006-2010 and the SAW 2006-2010 target smallholder farmers, as they respond to the issues and challenges facing them and Cambodia's agriculture sector as a whole. Such plans and policies are aimed at promoting food security, productivity, diversification, research and extension, water resources, irrigation and land management. The ASSDP and the SAW both allocate larger proportions of their proposed budgets to these sets of issues. For instance, the ASSDP allocates 61 percent of its total costing to support food security, agriculture productivity and diversification. Among five sub-sectors in the SAW, nearly 30 percent of total costing is directed towards the sub-sector of water resources, irrigation and land management. However, the policy formulation process seems not to have been fully evident based, as there appears to have been no comprehensive assessment of farmers' challenges and needs.

Agriculture, especially MAFF, has experienced under-financing, which has been more apparent over the past four years (2006-2009). Despite the sector's prioritization for development, recurrent expenditure (MAFF and MoWRAM) has been very low – only about 3 percent of the annual total government recurrent expenditure since 2006. What is more, although the allocation from the capital budget to the sector has been higher even than the share allocated to the NSDP 2006-2010, agriculture repeatedly suffered from great under-expenditure in 2004 and 2005 (only 15 and 25 percent respectively of the combined budget for MAFF and MoWRAM was spent in both years). This phenomenon of under-expenditure in agriculture continued over the years 2006-2009, albeit with some improvements. On average, only about 60 percent of the sector's allocated capital budget was spent each year during 2006-2009.

Overall, both the ASSDP 2006-2010 and the SAW 2006-2010 are not likely to suffer from resource availability, especially from ODA, but the command over resource allocations among sub-sectors is an issue. In relation to the ASSDP costing, the findings suggest that significant resources have been diverted away from sub-sectors that are meant to benefit smallholder farmers. During the period 2007-2009, aid disbursements to food security, productivity and diversification represented about 55 percent of total aid disbursed to agriculture, which is still below costing level. Moreover, the share of disbursements to agricultural research and extension has not been even half of its costing. In contrast, the share of disbursements to the institutional and legislative framework was twice its costing in the ASSDP. Fisheries and forestry received aid disbursements of more than twice and nearly three times their costing, respectively.

In relation to SAW 2006-2010 costing, food security, agricultural and agri-business support, and A&W research, education and extension are underfunded, but a large chunk of resources is channeled to finance capital expenditure in water resources and irrigation. While this latter component is supposed to account for only 29 percent of total SAW costing, it actually received

nearly half (49 percent) of total disbursements under the SAW 2006-2010, or a jump by 73 percent. However, this is not bad since, irrigation is much needed by farmers. The question is whether irrigation schemes are operational and effective.

Disbursements of agricultural aid have not been carried out as planned between geographical zones and other functions. The Plains region received about 25 percent of total disbursements to agriculture in 2007, a similar share to Tonle Sap region, but this declined to 15 percent in 2008 and 11 percent in 2009, even though 41 percent of agricultural land is located in this region. More importantly, donors tend to concentrate more on policy and reform programs at the national level: more than 50 percent of aid disbursements to agriculture in 2009 were attributed as nationwide disbursements, nearly double the level of 2007. This disbursement pattern limits agricultural services to farmers. Moreover, nearly 50 percent of agricultural aid came in the form of technical assistance in 2007 and 2008. Although aid to agriculture has increased recently, the composition of loans has increased considerably, from 11 percent in 2007 to 38 percent of total agricultural aid in 2009.

ADB plays a major role in agricultural financing. Its support to agriculture became more obvious and significant in 2009 in the aftermath of the global food crisis of 2007-2008. Its disbursements to agriculture make up 19.5 percent of the sector's total disbursement, increasing from about 6 percent in 2007, and possibly reaching 23 percent in 2010. The World Bank did not concentrate on agriculture in 2007 and 2008, except for some projects related to Avian Flu but, in a similar way to ADB, the food crisis encouraged it to support agriculture. In 2009, the World Bank's support to agriculture represented 15.6 percent of disbursements to the sector, but this is likely to reduce to only 6 percent in 2010. On the other hand, contributions of the EU to agriculture have been relatively small – about 2 to 3 percent of the sector disbursement – but the assistance has remained stable.

The outreach of agricultural extension services for smallholder farmers is found to vary considerably in six studied districts of Kandal and Takeo provinces. The percentage of villages receiving agricultural services in these districts ranges from 70 to 100 percent, compared to 17 percent nationally, according to the 2007 CSES (NIS, 2007). Therefore, these districts are regarded as the best districts in Cambodia for smallholder farmers to receive support in the form of agricultural extension services. Moreover, the average adoption rate of new techniques and methods among farmers in the six villages of the study is moderately high (about 60 percent), but the rate varies a great deal from one village to another. While the adoption rate in one village in Kandal province is about 30 percent, all farmers in another village of Takeo apply most aspects of the advice they have learned from extension courses.

RGC-provided agricultural extension services for smallholder farmers are minimal. Services are made available predominantly through assistance from donors and NGOs. The majority of agricultural personnel in both provinces are working at the provincial level, with 30 percent in district Offices of Agriculture, which have no annual budget to deliver agricultural services to farmers but work as counterparts on donor and NGO projects. Moreover, the efficiency of donor and NGO projects is undermined by lack of coordination. Different donor and NGO projects are found in the same locality, meaning they often provide overlapping services to farmers. Duplication of agricultural services is common in all six villages covered by the study. Although such duplication is not necessarily bad for those contact farmers, it can indicate inefficiency and an unfair distribution of public resources or services, with farmers in other parts of the country remaining underserved.

The large coverage of agricultural extension services and the benefits reported in the study sites are not without limitations. Some of the farmers interviewed complained that the extension trainings were difficult to understand, since courses were too short and not focused – too many subjects are introduced per course. Farmers were further complicated by the lack of field demonstrations, because courses were mainly conducted in theory, which the farmers found too abstract and difficult to understand. Moreover, lack of water supply/irrigation and capital/inputs was among the critical challenges that prevented farmers from applying their acquired knowledge.

6.2 Recommendations

In order to improve agricultural financing and its impact on food security and poverty reduction, the following actions are worth taking into consideration:

1. Both the RGC and the donor community should undertake a specific review to identify challenges that have resulted in under-expenditure, especially capital expenditure in MAFF and MoWRAM. This would help bring more expenditure to agriculture and farmers should stand to benefit from this.
2. Despite the importance of agriculture, the government's resource allocation to this sector has been inadequate, prolonging dependence on donor resources. In order to improve many rural livelihoods and also to be less vulnerable to donors' exit, the RGC should increase spending to the sector, both recurrent and capital specifically to agriculture research, education and extension by also considering the efficiency and effectiveness on the use of the public resources.
3. The RGC and MAFF should consider decentralizing agricultural services to the district level, along with providing or building more capacity at district level. There should be a budget for the District Offices of Agriculture to increase outreach for farmers. This may require further in-depth assessment of the current distribution and functioning of agricultural personnel at all levels – central and sub-national.
4. Donors should balance their commitment and the distribution of their assistance by taking into account the distribution of benefits relating to agriculture across geographical regions. The donor community should reduce its assistance to nationwide programs and target aid more towards smallholder farmers.
5. Improvements should be made in the coordination of resource allocation among subsectors and program areas to ensure that resources are directed towards priorities of sectoral plans or strategies and aligned with the sector costing. This should be made possible by introducing a sector-wide approach to the A&W sector, where the SAW could be used as a basis for coordination and resource allocation.
6. The coordination of agricultural projects should be improved at provincial and district levels so that agricultural services can be spread geographically and to ensure that duplication of services is minimized. This should be feasible through regular meetings facilitated by the directors of Provincial Departments of Agriculture and chiefs of District Offices of Agriculture.

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Address: #9-11, Street 476, Sangkat Toul Tom Pong I,
Khan Chamcar Morn, Phnom Penh, Cambodia.

P.O. Box 2295

Tel: (855-23) 214 429

Fax: (855-23) 994 063

E-mail: ngoforum@ngoforum.org.kh

Website: www.ngoforum.org.kh