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Annual Development Review 2010-11

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Annual Development Review 2010-11

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List of Acronyms

2SLS	Two Stage Least Squares
ACFTA	ASEAN-China Free Trade Area
ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
AWPB	Annual Work Plan and Budget
CARD	Council for Agriculture and Rural Development
CDC	Council for the Development of Cambodia
CDRI	Cambodia Development Resource Institute
CI	Certificate of Identity
CICP	Cambodia Institute for Cooperation and Peace
CIDA	Canadian International Development Agency
CMDGs	Cambodia Millenium Development Goals
CRDB	Cambodian Rehabilitation and Development Board
CSES	Cambodia Socio-Economic Survey
CSF	Commune/*Sangkat* Fund
D&D	Deconcentration and Decentralisation
DCE	Discrete Choice Experiment
DFGG	Demand for Good Governance project
DIF	District Initiative Fund
DO	District Ombudsman
DTIS	Diagnostic Trade Integration Study
EBA	Everything But Arms
EDC	Electricité du Cambodge
EHP	Early Harvest Programme
EIC	Economic Institute of Cambodia
EPS	Employment Permit System
ExCom	Executive Committee
FDI	Foreign Direct Investment
FGDs	Focus Group Discussions
FWUC	Farmer Water User Communities
GHI	Global Hunger Index
GMS	Greater Mekong Sub-region
GNI	Gross National Income
GSP	General System of Tariff Preference
ILO	International Labour Office

IOM	International Organisation for Migration
ITS	Industrial Trainee System
IWRM	Integrated Water Resources Management Approach
MAFF	Ministry of Agriculture, Forestry and Fisheries
MEF	Ministry of Economy and Finance
MFI	Micro-finance Institutions
MFN	Most Favoured Nation
MoEYS	Ministry of Education, Youth and Sports
MoLVT	Ministry of Labour and Vocational Training
MoSALVY	Ministry of Social Affairs, Labour, Vocational Training and Youth Rehabilitation
MoU	Memorandum of Understanding
MOWRAM	Ministry of Water Resources and Meteorology
MTOSB	Manpower Training and Overseas Sending Board
NAA	National AIDS Authority
NCDD	Committee for Democratic Development
NPIC	National Polytechnic Institute of Cambodia
NP-SNDD	National Programme for Sub-National Democratic Development
NRMLP	Natural Resource Management and Livelihood Programme
NSPD	National Strategic Development Plan
NSPS	National Social Protection Strategy
ODA	Official Development Assistance
OLS	Ordinary Least Squares
OWSO	One Window Service Office
PCA	Principal Component Analysis
PDEF	Provincial Departments of Economy and Finance
PDOWRAM	Provincial Departments of Water Resources and Meteorology
PDS	Poverty Dynamics Study
PEM	Public Expenditure Management
PFMRP	Public Financial Management Reform Programme
PICM	Participatory Integrated Catchment Management
PRDC	Provincial/Municipal Rural Development committee
Pro-JTWG	Provincial Joint Technical Working Group
PSM	Propensity Score Matching
RGC	Royal Government of Cambodia
RTCs	Regional Training Centres
SEZ	Special Economic Zone
SNAs	Sub-national Administrations
SPACE	Strengthening Performance, Accountability and Civic Engagement
Trade SWAp	Trade Sector-Wide Approach

UNECE	United Nations Economic Commission for Europe
UXO	Unexploded Ordnance
WDR	World Development Report
WRMRCDP	Water Resources Management Research Capacity Development Programme
WTO	World Trade Organisation

Introduction

This new edition of CDRI's Annual Development Review for 2010-11 is released at the fifth annual Cambodia Outlook Conference, a partnership between CDRI and ANZ Royal Bank, in Phnom Penh on 16 March 2011. The 2011 Outlook Conference, on the theme *Driving High Growth and Sustainable Development for Cambodia: Opportunities and Challenges,* again brings together leaders from government, the private sector, research and civil society organisations, and the international development community to consider Cambodia's achievements and its future. The opening keynote address of the conference is again delivered by Samdech Akka Moha Sena Padei Techo Hun Sen, Prime Minister of Cambodia.

The Outlook Conference and the new edition of the Annual Development Review come at a time when Cambodia has moved beyond the severe impact of the global financial crisis and economic downturn of 2008-9 and the successful remedial measures that were taken, with some painful but useful lessons learnt. A broadening export-led recovery is under way in 2010-11, with garment exports and tourism growing strongly, agriculture and particularly rice production, milling and export, and rubber production, also growing, but construction growth remaining flat. Trade trends in general are also promising with Cambodia's trade with China, South Korea and Vietnam increasing significantly in 2010.

Cambodia's macro-economic position is also promising with GDP growth of 5.5 percent achieved in 2010, and GDP growth of 6 percent for 2011 projected by Cambodia's Ministry of Economy and Finance (MEF), the World Bank and ADB, and 6.8 percent by the IMF. Inflation is running at around 4 percent. International reserves have risen modestly and remain high. Credit growth has recovered from 6.5 percent at the end of 2009 to more than 20 percent in late 2010. The MEF currently predicts 2011 growth in agriculture of 4.7 percent, industry 8.3 percent and services 6.1 percent, with domestic revenue projected to increase to 13.5 percent of GDP and total expenditure to reach 18.9 percent of GDP. The Cambodian government is now focusing on strategies for the diversification of the economy, including increased exports of rice and rubber, the creation of new industrial sectors such as vehicle assembly and electrical appliances and other light industry, and further reforms to improve trade facilitation and the investment climate.

However, while GDP growth is relatively high and there has been progress in poverty reduction, poverty incidence remains high and inequality has increased. As a result of the setback of the crisis and downturn, the poverty rate remains at approximately 27 percent but is higher in some regions of Cambodia. Progress towards achievement of the Cambodia Millennium development Goals (CMDGs) is also uneven with poverty reduction goals only partially on track, reduction in child mortality and reduction in

HIV/AIDS, malaria, dengue and TB achieved, strong performance on ODA and ICT goals, a lagging behind on primary education, literacy rates and gender equality, and weak performance on maternal mortality, natural resource protection and land management.

Cambodia learned some important lessons from the crisis for sustaining growth and development. First, the economic growth of the past decade would not be sustainable unless the economy changed. Second, with a focused growth strategy to increase competitiveness and diversify the economy Cambodia can achieve sustainable growth. And third, Cambodia is well positioned to benefit from three important opportunities —harnessing the benefits of regional integration; managing natural resources in a sustainable way; and investing in its future through agriculture, infrastructure, education and higher savings.

CDRI's recent research identifies some key factors that will enable a high more inclusive growth and sustainable development scenario for Cambodia to be achieved. They include:

- A stable, well managed macro-economic environment that enables and promotes economic diversification, competitiveness and productivity, and domestic consumption;
- A stronger enabling environment for private sector development and investment, including anti-corruption measures and improved 'rule of law' to provide certainty for local and international investors, and a strategic investment by government, development partners and the private sector, in human resource development, particularly in tertiary and vocational education and training to meet labour market needs;
- The strengthening of key export-oriented sectors such as agriculture and rural development, tourism, construction, energy and infrastructure, along with trade facilitation and investment;
- Effective implementation of government policies in the National Strategic Development Plan 2009-13 to achieve high sustainable paddy growth, and the 2010 Policy on Rice Production and Export Promotion and its key success factors - rural infrastructure, paddy productivity, crop diversification, access to credit, extension services, vocational education and training, more effective and transparent administration of economic and social land concessions that promotes pro-poor economic development and productive land use;
- Hard and soft infrastructure for 'connectivity' in the GMS, ASEAN and East Asia (ASEAN, China, Korea and Japan) with imperatives for Cambodia in railways, roads, energy generation and related cross-border regulatory and institutional strengthening and capacity building;
- The strategic integration of Cambodia's economy and its key trade and investment relationships in the Greater Mekong Sub-region (GMS), ASEAN, the broader ASEAN, China, Korea and Japan region, and targeted international markets.

This 2010-11 Annual Development Review is the sixth annual review produced by CDRI on major development issues for Cambodia, and addresses several of the issues raised above. It provides research-based analysis of some specific issues and findings in CDRI's research over the past year – industrial policy and economic diversification; labour migration; assessing the impact of China on poverty reduction; transient and chronic poverty; income growth and social protection; one window service delivery in sub-national governance reform; accountability and public financial management; land tenure and paddy rice productivity; local water resource and irrigation management, incentives in the retention of health workers; and, the impact of 'catastrophic' health payments for health shocks and crises on the poor and vulnerable.

The English language version of the review is accompanied by Khmer language summaries of each chapter contained in a separate volume to broaden the review's audience and accessibility. We hope that the annual Cambodia Outlook Conference, along with the Annual Development Review and its associated Khmer language summary materials, will contribute to the broader dissemination of quality development policy research on issues critical to Cambodia's future, and be useful resources for the development policies of the Royal Government of Cambodia and its international development partners and national stakeholders. These publications, along with the proceedings of the 2011 Cambodia Outlook Conference, are all available as free of charge downloads from the CDRI website at www.cdri.org.kh.

Larry Strange
Executive Director CDRI
March 2011

Section One
Economy, Trade and Regional Cooperation

-I-

A Review of Cambodian Industrial Policy

By Tong Kimsun[1]

1. INDUSTRIAL STRUCTURE

Industry in Cambodia experienced strong growth in the early 1960s, driven by manufacturing for which new factories were built. However, during the Khmer Rouge rule (1975–79), the whole sector became unproductive; most manufacturing was destroyed, and people were evacuated from Phnom Penh and forced to work in rice fields in the countryside. In the 1980s, some manufacturing was resumed with assistance from the Soviet Union and Vietnam. All factories were owned by the state. Industrial products were produced for local consumption or traded with the Communist bloc.

In the late 1980s, Cambodia began freeing its economy and opened trade to other countries in the region and the world, especially Thailand. Cambodia's reintegration into the regional and international community was sealed when it joined the Association of Southeast Asian Nations (ASEAN) in 1999, and the World Trade Organisation (WTO) in 2003. Membership of the WTO is expected to provide the country with larger markets, but it has to compete on the world market, especially in manufacturing—a challenge for Cambodian industry.

Industrial growth over the last decade has been faster than that of agriculture or services. From 1998 to 2008 it grew about 14.2 percent per year, compared to services at 9.9 percent and agriculture at 4.2 percent. Year on year, industry experienced large fluctuations in the 2000s and registered a negative growth rate in 2009. Its share of GDP has doubled, from 13.5 percent in 1998 to 27.5 percent in 2008. It employed only 6.8 percent of the country's labour force in 1995 and 15.4 percent in 2007. The main industries are manufacturing, construction, electricity, gas and water and mining. In 2008, manufacturing accounted for 72.8 percent of industrial output, followed by construction (23.7 percent), electricity, gas and water (2 percent) and mining (1.5 percent).

1 Tong Kimsun is a research fellow at CDRI. The author would like to thank Dr. Rebecca F. Catalla and CDRI external editor for their comments on an earlier draft.

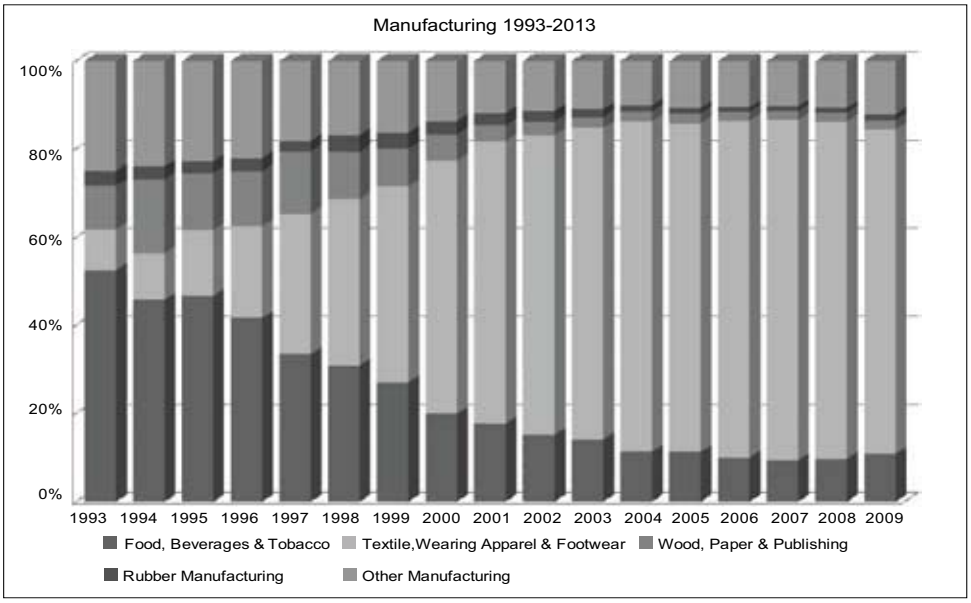
Table 1: Structure of Cambodian Industry (at 2000 prices, billion riels)

	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Mining	20.1	26.6	33.5	37.4	47.0	55.5	68.9	87.0	100.9	108.7	125.9	151.1
Manufacturing	1445.5	1730.6	2254.8	2597.5	2971.7	3337.4	3926.7	4308.6	5059.8	5509.3	5681.1	4799.9
Food, beverages & tobacco	446.4	467.6	449.4	460.7	448.9	469.8	445.2	485.4	501.6	517.3	547.8	580.7
Textile, apparel & footwear	547.5	771.2	1297.1	1665.7	2021.4	2360.3	2946.8	3216.8	3873.1	4260.8	4354.6	3962.7
Wood, paper & publishing	153.6	146.5	132.4	93.6	93.8	80.4	83.8	92.2	99.9	104.8	110.1	115.6
Rubber manufacturing	54.8	62.9	69.2	69.7	69.2	62.4	57.0	51.9	53.6	58.8	64.2	70.3
Other manufacturing	243.2	282.4	306.7	307.8	338.4	364.4	393.9	462.3	531.6	567.6	604.5	651.4
Electricity, gas & water	50.8	54.4	58.1	69.5	75.5	82.3	91.5	103.0	135.5	151.2	164.1	178.0
Construction	419.6	534.6	731.6	718.3	912.8	1014.4	1147.9	1401.1	1681.2	1794.7	1898.8	1993.7
Industry	1936.1	2346.2	3078.0	3422.7	4006.9	4489.6	5235.1	5899.7	6977.5	7563.9	7869.8	7122.7

Source: MEF 2010

The garment sector accounted for the largest share of manufacturing—representing 66 percent for the period 1998–2008 (an average of 10.5 percent of Cambodia's GDP). This subsector has been the most robust in the industrial sector, with an annual growth rate of 34.7 percent during the same period, and has become a major source of employment and foreign exchange earnings. Its share of total exports ranged from 70–80 percent in the years prior to the onset of the global financial crisis in the United States—Cambodia's top destination for its garments—in 2008. The sector employs more than 352,000 mostly rural women, or about 4 percent of the total workforce and 38 percent of the total employed in manufacturing in 2007. In total, an estimated 1.7 million people depend on the garment industry directly or indirectly (Tong 2010c).

Figure 1: Structure of the Manufacturing Sector, 1993-2009



Source: MEF 2010

The development of Cambodia's garment sector is mainly due to preferential access to certain markets, such as the most favoured nation tariff (5–30 percent) provided by the European Union and generalised system of preferences rates of around 12 percent granted by the United States. Such preferential treatments have attracted foreign investors (Tong 2010a). Despite the expiry of the preferential quota under the Multi-Fibre Agreement in January 2005, Cambodia's garment industry experienced robust growth for the subsequent four years, reaching USD2.8 billion in 2008. This implies that Cambodia has a strong comparative advantage in the garment industry (Cuyver *et al.* 2008).

The global financial crisis hit Cambodia's garment sector severely. Since the fourth quarter of 2008 there has been a significant reduction in the number of factories and their production, as well as their subcontracting with local small and medium textile establishments (Siang 2009). The number of operating factories fell to 262 in May 2009 from a peak of 310 in September 2008. Cambodia's total garment exports declined

continuously between November 2008 and May 2009. Approximately 62,000 workers (about 18 percent of the total) were laid off between September 2008 and May 2009. Total wages dropped from USD29.28 million in September 2008 to USD22.64 million in May 2009.

Construction, the second largest subsector of industry, is one of the four pillars of Cambodia's economy—its share of GDP averaged 5.6 percent during 1998–2008. During the same period, its growth fluctuated sharply: negative in 1998 (-15.7 percent) due to the political instability in 1997 and the Asian financial crisis in 1997–98 and again in 2001 (-1.8 percent). Thereafter, it recorded an annual growth of 18.7 percent for the period of 2002–06 before decelerating to 6.7 percent in 2007 and 5.8 percent in 2008. Construction is closely related to real estate. Most construction projects have been in commercial and residential real estate, which is predominantly foreign-financed—implying that the sector is vulnerable to external shocks. The significant decline in 2007 and 2008 is a sign of overheating (rising prices of labour and construction materials) and concerns about a real estate bubble (World Bank 2009). The global financial crisis burst the bubble in the real estate market, which directly reduced construction and demand in general. With the global tightening in liquidity, foreign investors have suspended or cancelled investments in Cambodia. For example, a large number of big construction projects financed by South Korean companies have been cancelled or scaled back due to the depreciation of the won and a liquidity crunch in parent companies. Consequently, construction was expected to decline by 5.7 percent by the end of 2009 (Jalilian *et al.* 2009).

2. CURRENT SITUATION OF INDUSTRIAL SECTOR

2.1 Garments and Textiles

The number of garment factories increased from only seven in 1994 to 310 in September 2008. Firms employed an average of about 1000 workers during 2004–09 (Table 2). A large number of poorly educated workers, especially rural women, have entered the labour market. Garment workers' employment and remittances to their home areas have helped to reduce poverty.

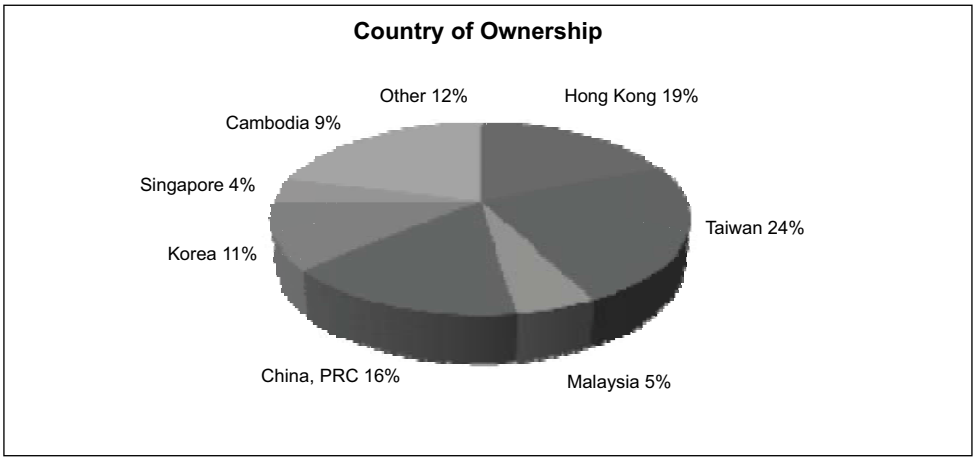
Table 2: Cambodian Garment Factories

	1995	1997	1999	2000	2002	2003	2004	2005	2006	2007	2008
Number of factories	20	67	152	190	188	197	206	230	305	288	285
Number of Cambodians employed ('000)	18.7	51.6	96.6	122.6	210.4	234	246	270	317	348	327
Average employees per factory	935	770	636	645	1119	1188	1194	1174	1039	1208	1147

Source: Natsuda (2009)

Over 90 percent of the garment sector was established by foreign investors from Taiwan, Hong Kong, China, Korea, Malaysia and Singapore (Figure 2). Natsuda *et al.* (2009) argue that foreign-owned garment factories can enter and leave a country very rapidly; for example, almost all East Asian companies left Mauritius—one of sub-Saharan Africa's most important garment producers—after the end of the Multi-Fibre Agreement. The garment sector is likely to remain vulnerable because production, export and management decisions are made in distant offices (ADB 2004). Nonetheless, Cambodia has continued to increase its exports of textiles and garments.

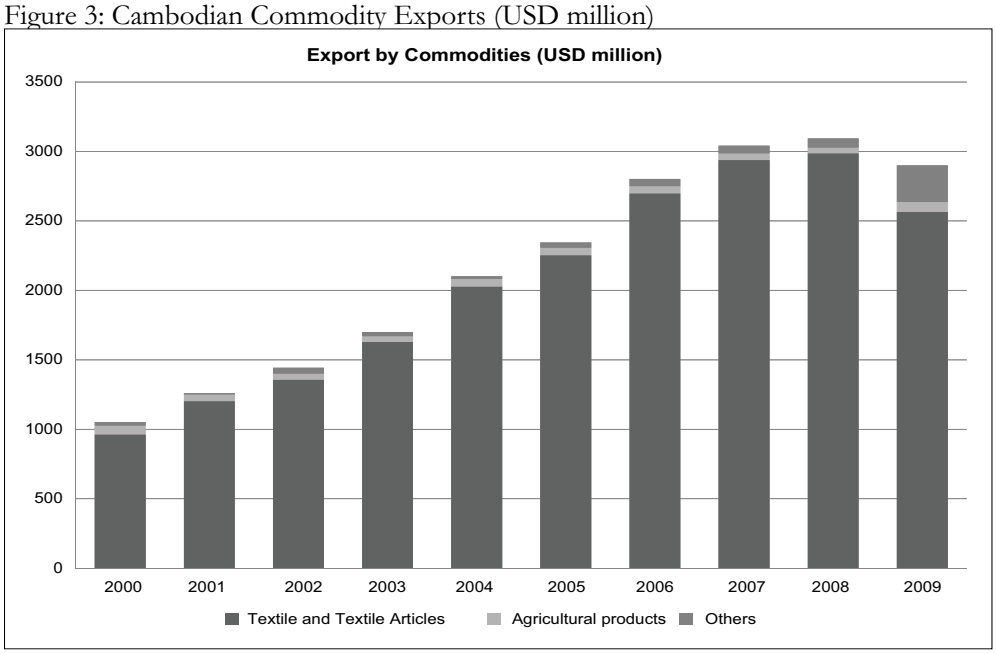
Figure 2: Ownership of Garment Factories, by Country



Source: GMAC (May 2010)

According to the Ministry of Commerce, the value of garment and textile exports has tripled, from USD962 million in 2000 to USD2938 million in 2008 (Figure 3). However, Cambodia's garment and textile exports dropped 14 percent to USD2565 million in 2009, largely due to the global financial crisis. Until the end of Multi-Fibre Agreement quotas on 1 January 2005, the rapid expansion of garments and textiles was mainly due to the generalised system of preferences and most favoured nation status. Since removal of the quota, the sector has depended on its strong comparative advantages of cheap and abundant labour and tax incentives (import tax exemption and a holiday from profits tax).

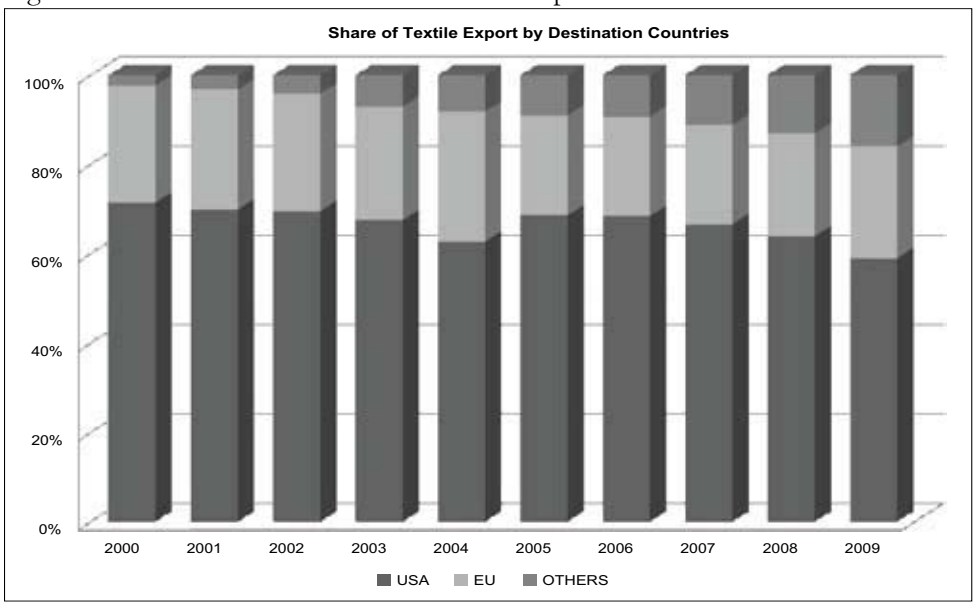
Figure 3: Cambodian Commodity Exports (USD million)



Source: Ministry of Commerce (2010)

Figure 4 shows the destinations of Cambodia's garment and textile exports for 2000–09. The top destination is the US, accounting for more than 60 percent over 2000–08 and 59 percent in 2009, compared to approximately 25 percent for the European Union. The concentration on the US market is one aspect of the industry's serious vulnerability to external shocks (Jalilian *et al.* 2009).

Figure 4: Destinations of Cambodian Textile Exports



Source: Ministry of Commerce (2010)

Although the Cambodian garment industry has developed rapidly since the late 1990s, it has also faced both domestic challenges and external competitors such as China, India, Bangladesh, Vietnam and Indonesia. Poor governance has been a major obstacle to further development. The study by the Economic Institute of Cambodia (EIC 2007) noted that unofficial costs in the garment industry were about 4 percent of total production costs. Second, the complicated bureaucracy is highly likely to reduce industrial competitiveness. To export, companies operating in Cambodia require an average of eight documents, 10 signatures and 43 days—the longest among its competitors (World Bank 2006). Third, garment factories in Cambodia mainly focus on "cut, make and trim"—the lowest end of the garment value chain—while most of the raw materials and accessories are imported from China, Hong Kong and Taiwan. Thus, the lack of support from the government and investment in textiles is another challenge (EIC 2007). Fourth, the garment sector has long been plagued by the high cost of utilities, especially electricity, which is produced by fuel-consuming generators with very limited capacity (Saing 2009). Werner International (cited in USAID 2007) reveals that the average cost of electricity in Cambodia is double that in China, India, Pakistan and Indonesia. Fifth, Cambodian industry's labour productivity is lower than that of all ASEAN countries (APO 2009). Improving manufacturing labour productivity by training the current low-skilled workforce and introducing modern sewing equipment is needed to keep the sector competitive.

2.2. Construction and Mining

Construction materials, such as simple bricks, are manufactured locally. As the expansion of urban areas and industrial estates continues, the demand for construction materials will increase. In order to translate this into domestic income and employment, production capabilities need to be boosted for construction materials including secondary products, such as concrete pipes, slabs and panels and galvanised iron sheets and more sophisticated bricks and tiles. Construction materials are bulky and heavy and therefore suitable for import substitution.

Highly bureaucratic licensing in construction may also reduce the competitiveness of the sector. It is estimated that it takes approximately 710 days to get all the construction permits required to complete a project compared with 200 days in Vietnam and 150 in Thailand (UNDP 2009) Construction companies in Cambodia claim they often need to pay unofficial charges to shorten times for regulatory approval. Building standards seem relatively lax. Foreign construction firms claim they often employ construction standards from their own countries, and projects are not perceived to be monitored effectively by authorities. This lack of regulation could lead to poor quality and dangerous construction.

Cambodia's mineral resources remain largely unexplored. To attract domestic and foreign mining companies, the Law of Minerals Management and Mining was promulgated on 13 July 2001. Under the country's mineral exploration policy, investors are granted an exploration licence by the Council for the Development of Cambodia (CDC) for a period of two to six years and then prepare a feasibility study in a designated area; the Ministry of Industry, Mines and Energy provides assistance

with technical recommendations. Following a successful exploration, investors and companies are required to submit a master project plan for mine development. If it is successful, the CDC grants a mining licence. Royalties and surface rentals are levied on mined minerals.

Over the past few years, foreign companies from Australia, China, South Korea, Thailand and the US have participated in Cambodian mineral exploration—both land-based minerals and offshore oil and gas. More recently, the government has promoted and facilitated investment in mining due to the discovery of important minerals including chromium, bauxite, copper, gold, iron ore, nickel, gemstones, limestone, tungsten and oil and gas. As a result, mining has shifted from small-scale digging by local communities to full-scale extraction by large companies. The government has awarded exploration licences for more than 100 different sites, and the process seems to be accelerating.

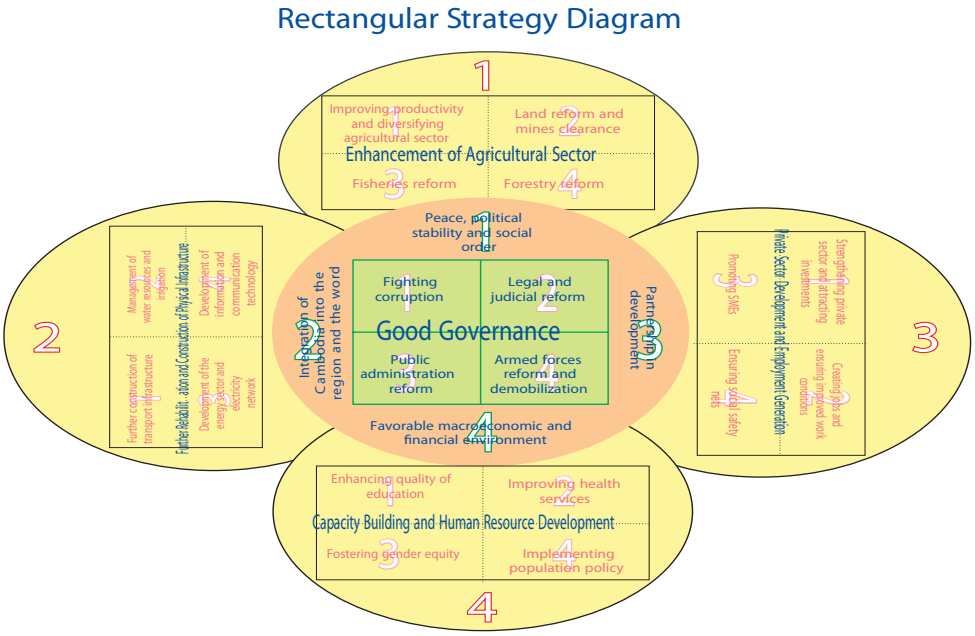
Mining contributed just 0.41 percent to the country's GDP in 2006 (the latest year for which data are available), 0.02 percentage points more than in 2005. It employed an estimated 19,000 workers in 2005 and 20,000 in 2006, accounting for only 0.2 percent and 0.3 percent of total employment, respectively (IMF 2008).

3. INDUSTRIAL POLICY FRAMEWORK

3.1. General Industrial Policies

The government has produced many development plans: the Socio-Economic Development Plan 1996–2000, Socio-Economic Development Plan 2001–05, Public Investment Programme 1996–98, National Poverty Reduction Strategy 2003–05, Cambodia Millennium Development Goals, National Strategic Development Plan (NSPD) 2006–10. The NSPD (2006–10) elaborates on the goals and policy priorities laid out in the Rectangular Strategy, which covers many aspects of economic growth including governance, enhancement of agriculture, private sector growth and employment, rehabilitation and construction of physical infrastructure and capacity building and human resource development. The NSDP (2006–10) incorporates various policy documents in order to provide the framework for growth, employment, equity and efficiency in reducing poverty and achieving sustainable development.

Figure 5: Rectangular Strategy



Source: RGC (2009)

The government's industrial development action plan (1998–2003 cited in RGC 2002) had two goals: supporting the development of export-oriented industries and the development of import-substitution of selected consumer goods. These goals were to be achieved by promoting: (1) labour-intensive industries such as garments, toys and footwear, (2) natural resource-based industries such as fish and meat processing, cement and tiles and bricks, (3) small and medium enterprises, (4) agro-industries by strengthening the legal framework for longer term land management, providing tax incentives for facilities to process agricultural products, (5) technology transfer and upgrading the quality of industrial products, (6) establishment of industrial zones by developing infrastructure, improving service quality and encouraging investments, and (7) culture- and nature-based tourism.

A World Bank (2009) report reveals that Cambodia has many types of industrial policy instruments such as export quotas for labour standard, tax holidays, exemption of import duties and VAT for imported inputs used for manufactured exports, investment promotion, export promotion, special economic zones, export market access fund, government-private sector forum, value chain interventions, and economic land concession. The report also highlights that most instruments lack accountability and coordination, and incentives are poorly targeted. Hence, a priority is to make existing instruments more transparent and accountable.

Special Economic Zones

The special economic zone (SEZ) scheme was introduced in 2005 by Sub-Decree No. 148 on the Establishment and Management of Special Economic Zones

(including export processing zones and free trade zones) to attract industries that are no longer viable in Thailand, Malaysia, Taiwan or Japan. The SEZs provide a one-stop service via the SEZ administration office, whose members are representatives from the Cambodian SEZ Board, Customs and Excise Department, CamControl, the Ministry of Commerce and the Ministry of Labour and Vocational Training. So far, the government has approved a total of 21 SEZs located along the borders with Thailand and Vietnam (Koh Kong, Poipet, Savet, Phnom Den) and at Sihanoukville and Phnom Penh. Of these, six zones have begun operations. All zone developers and zone investors are provided incentives as summarised in Table 3.

Table 3: Incentives for SEZ Developers and Investors

Beneficiary	**Incentives**
Zone Developer	• Exemption from profit tax for a maximum of nine years. • Imports of equipment and construction materials for infrastructure construction in the zone are exempted from import duties and other taxes. • Customs duty exemption on the import of machinery, equipment for constructing the road connecting the town to the zone, and other public services infrastructure. • Temporary import of means of transport and machinery for the construction of infrastructure. • Land concession from the state for establishing the SEZ along the border or in isolated regions.
Zone Investors	• The same incentives on customs duty and tax as other qualified investment projects. • The zone investor entitled to incentive 1 on value added tax (VAT) at the rate of 0 percent shall record the amount of tax exemption for its every import. The said record shall be disregarded if the production outputs are re-exported. In case the production outputs are imported into the domestic market, the zone investor shall refund the amount of VAT as recorded in comparison with the quantity of export.
Common	• The right to transfer all the income the investment and salaries received in the zone to banks located in other countries after payment of tax. • Investment guarantees as stated in Article 8, Article 9 and Article 10 of the Law on Investment and other relevant regulations. • Non-discriminatory treatment of foreigners, no nationalisation and no price fixing.

Trade Policy

In the late 1980s, Cambodia began market liberalisation. The state monopoly of foreign trade was abolished in 1987, and the foreign investment law was promulgated in 1989, enabling private companies to engage in foreign trade. In the early 1990s, trade policies were greatly liberalised, largely removing restrictions on firms and individuals engaging in international trade, and most quantitative restrictions and licensing of imports were eliminated. In the late 1990s, there was a more deliberate phase of positive steps towards a highly liberal trade regime. As a member of the Association of South-East Asian Nations (ASEAN), Cambodia is a member of the ASEAN Free Trade Area and committed to reducing most tariffs on trade with other ASEAN members. A further tariff reduction and structural reform were implemented after Cambodia became a full member of the WTO in 2003. Table 4 summarises the main policy changes in foreign trade policy.

Table 4: Evolution of Trade Policy

Year	Policy
1960s	Exported agricultural products, largely rice, rubber and corn
1970s	Virtual collapse of foreign trade
1980s	- New trading system to control the level and composition of trade through quantitative restriction and state owned trading bodies. Tariffs and trade taxes apply merely for revenue purposes. - Market-oriented liberalisation in the late 1980s; state monopoly of foreign trade abolished. - Foreign Investment law promulgated in 1989 enabled private companies to engage in foreign trade.
1990-93	From 1993 restrictions limiting the ability of firms and individuals to engage in international trade were largely removed
1994	All quantitative restrictions on trade were eliminated
1996	Cambodia gained MFN status from the US
1997	Cambodia gained GPS status; IF programme to promote the integration of least developing countries into the global economy commenced
1999	Cambodia became member of ASEAN; committed to gradual reduction in most tariff rates by 2010 for trade with ASEAN members
2000	Application for membership of WTO led to rationalisation of the tariff structure
2003	Cambodia's accession to WTO
2005	US and EU export market quotas expired
2008	Quantitative restriction on imports of textiles and apparel from China expired

Source: RGC (2002) cited in UNDP (2004)

Foreign Direct Investment Policy

As part of trade liberalisation, the government also opened the investment regime to attract foreign investment. The National Assembly passed the Law on Investment in 1994 and amended it in 2003. The main objectives of the amendment were to limit discretion, improve transparency and reduce administrative burden.

It provided more incentives to foreign investors, as follows:

- The tax exemption period is composed of a trigger period, priority period, and three years. The maximum trigger period is the first year of profit or three years after the qualified investment project earns its first revenue, whichever is sooner; and priority period is specified in the Financial Management Law
- 100 percent duty exemption on imported inputs and capital goods if exporting 80 percent of production or located in special promotion zone
- 100 percent exemption from export tax
- Renewable land leases of up to 99 years.

The Law on Investment offers more incentives than other countries in the region and is much more open to foreign investors (Table 5).

Table 5: Comparison of Foreign Investment Laws in the Region

Country	Income tax incentives	Profit tax rate	Import tariff
Cambodia	Up to 6-year holiday	20 percent	Full exemption on inputs and capital goods if exporting 80 percent of product, or located in special zone
Laos	Available, but unspecified	20–35 percent	1 percent duty on machinery and spare parts; re-exported raw materials and intermediate components fully exempt
Myanmar	3-year holiday, may be extended if in state interest	30 percent	Exemption or relief on raw machinery, parts components; 3-year exemption or relief on raw materials
Thailand	3–8 year holiday	30 percent	Up to full exemption on machinery and five years on raw materials and essential materials
Vietnam	1–4 year holiday, plus extension at 50 percent	10–20 percent	Machinery, raw materials, parts and components used for export fully exempt

Source: Hing (2003)

4. CONCLUSION

Cambodia tried to reconstruct its economy through socialist policy in the early 1980s. However, by the late 1980s the country had replaced its centrally planned economy with a market economy and started to gradually liberalise in order to attract foreign investors. This resulted in Cambodia offering foreign investors more incentives than other countries in the region. Since being granted Most Favoured Nation (MFN) status in 1996 and awarded the General System of Tariff Preference (GSP) in 1997, the garment sector has been the most robust industry and has become a major source of employment and foreign exchange earnings.

It was anticipated that Cambodia's reintegration into the regional and international community (ASEAN in 1999 and WTO in 2003) would provide the country with larger markets as well as challenge Cambodian industry. Di Maio (2008) highlights the new WTO rules that restrict the use of both selective subsidies and safeguards – specifically, that export subsidies (including Export Processing Zone) and subsidies for the use of domestic (rather than imported) inputs are prohibited, and local content requirements and quantitative restriction on imports are also illegal. The new WTO agreements enable members to use safeguards to protect themselves only in two cases: (1) when import can destabilise their balance of payment; (2) when foreign competition threatens a specific industry due to import surge or unfair trading practice. For this reason, Cambodia's industrial policy must be different from those of other countries i.e. the East Asian Tigers (South Korea, Hong Kong, Singapore and Taiwan) or ASEAN4 (Malaysia, Thailand, Indonesia and the Philippines) in the past. Similar to ASEAN4, Cambodia has relied heavily on FDI-led growth strategy but has removed its tariffs, import restrictions and localisation requirements faster than ASEAN4. Industrial policy should reflect the fact that Cambodia's liberalisation has happened very quickly. Identifying appropriate policies should be the key question for the Ministry of Industry, Mines and Energy and the Cambodian government to consider. That is also the question we would like to address at a later stage.

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-II-

Assessing China's Impact on Poverty Reduction in the Greater Mekong Sub-region: The Case of Cambodia

By Ouch Chandarany, Saing Chan Hang and Phann Dalis[1]

1. INTRODUCTION

1.1. Background

Over the last three decades, China has witnessed dramatic economic transformation, rapid development and greater involvement in regional and global economic and political affairs. These remarkable achievements have become the subject of intense debate, which includes seeing China as both economic threat and opportunity.

Countries in the Greater Mekong Sub-region (GMS) constitute a highly dynamic region with great potential for development, which given its geographical proximity to China, could become a strategic market space and provide institutional arrangements for strengthening China's regional integration. China could also be the gateway and market destination for GMS countries and thus reduce their export dependency on the international market. By connecting with GMS countries, China has built considerable trade and investment relations and provided support through various forms of official development assistance (ODA), but especially physical infrastructure development.

Cambodia considers China a promising development partner that can help to expedite the country's development and reduce the gap with other Asian countries.[2] The weight of China's presence is being increasingly felt in the country, thus drawing attention to its contributions and impacts. In discussing these issues, China's increasing role and its impacts within Cambodia should be studied.

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2 H.E Keat Chhon, Cambodia's deputy prime minister and minister of Economy and Finance, in an exclusive interview with China Daily on September 18, 2010 http://www.cdeclips.com/en/business/fullstory.html?id=51941 (accessed 25 September 2010)

1.2. Research Objectives

This research is one of a series of GMS country studies conducted under the auspices of the GMS-Development Analysis Network with support from the Rockefeller Foundation to assess the potential impacts of China's economic rise on the poor in Cambodia, Vietnam, Laos and Thailand. This particular study examines the case of Cambodia and analyses the impacts through three critical components: i) trade, ii) investment, and iii) development assistance. The poverty implications of Cambodia-China trade relations are analysed mainly by looking at the role of China's trade in labour-intensive products and through a case study on the garment sector. The poverty effect of China's ODA is reviewed through case studies on two transportation projects, the restoration of a road and the building of a new bridge.

This paper aims to inform policymakers on the impacts of China's investment, ODA and trade so as to consider ways of mitigating the negative and promoting the positive impacts for poverty reduction and development of the country. Section 2 presents a brief overview of policy on Cambodia-China trade and investment relations and development assistance relations. Section 3 analyses the trends in trade between Cambodia and China, explains the analytical framework on trade impact, and investigates the impact of China's trade with Cambodia and the possible contribution to poverty reduction in Cambodia. Section 4 looks at the trends of China's investment in Cambodia over the past decade, describes a case study on the garment sector and discusses its findings and poverty implications in terms of employment generation, skill development and remittance. Section 5 is similarly structured to Sections 3 and 4 and presents the findings from two case studies on China-funded transportation projects in Cambodia and the potential impacts on the local populace. Section 6 discusses the main findings and policy implications.

2. OVERVIEW OF CAMBODIA-CHINA TRADE AND INVESTMENT RELATIONS

2.1. Policy Framework

Many policy and legal reforms to promote trade and investment have been put in place to boost economic growth and contribute to poverty reduction in the country. The government's Rectangular Strategy emphasises the need to attract foreign direct investment (FDI) and mainstream trade development as integral to the country's poverty reduction efforts. Initiatives such as the Diagnostic Trade Integration Study (DTIS) and Trade Sector-Wide Approach (Trade SWAp) are key instruments for the implementation of Cambodia's trade sector development strategy. Since Cambodia's reintegration in ASEAN and WTO, as well as several bilateral deals, the government has overhauled the legal framework, procedures and institutional structures in line with international standards including the implementation of harmonised customs nomenclature, computerised customs system, and a Single Window Office for customs.

Cambodia-China Trade and Investment Relations

Economic and trade relations between Cambodia and China have expanded in recent years. In 1996, Cambodia and China signed an agreement on trade, investment promotion and protection; and in 2000 they set up an economic and trade cooperation committee.[3]

On 27-29 June 2008, the Embassy of China in Cambodia, the Ministry of Commerce of Cambodia and the Council for the Development of Cambodia jointly celebrated the fiftieth anniversary of Sino-Cambodian trade and economic cooperation. They organised a large-scale exhibition, involving China's state-owned and private enterprises, local business and Chinese community groups in Cambodia, to build high-level communication opportunities, expand investment and trade, and encourage joint ventures.

An important milestone in the development of economic and trade relations was the November 2002 signing of a framework agreement in Phnom Penh by ASEAN and China to establish the ASEAN-China Free Trade Area (ACFTA), scheduled to be fully operational by 2010 for the original ASEAN members (Singapore, Thailand, Malaysia, Indonesia, Brunei and Philippines) and by 2015 for the newer members (Laos, Cambodia, Myanmar and Vietnam). This framework enhances trade and investment cooperation and reduces trade barriers between ASEAN and China, covering trade in goods and services, investment, expansion of cooperation in areas such as trade facilitation, technology transfer, human resources development and sub-regional development projects (including the ASEAN Mekong River Basin Development Cooperation[4]). An important arrangement in the framework agreement is the "Early Harvest Programme (EHP)", which took effect from 2004 to 2006 for ASEAN-5 and came into effect in 2010 for the new members and the Philippines. Cambodia is expected to gain economic benefits and opportunities as well as challenges from ACFTA along with the EHP. A number of studies have examined the prospects for ACFTA as a whole. However, little information and research are available for the case of Cambodia.

The GMS cooperation programme (Cambodia, Laos, Myanmar, Thailand, Vietnam and Yunnan province of China), which was established by the Asian Development Bank (ADB) in 1992, is another important economic and trade relation between Cambodia and China. The GMS agenda has concentrated on "hardware" in the form of physical infrastructure, especially cross-border infrastructure, to improve connections and communication across the region. In addition, the GMS programme has made efforts to address complementary "software" issues, including the facilitation of cross-border trade and investment, to support economic integration in the GMS. These complement many of the liberalisation measures pursued as part of ASEAN - AFTA membership.

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3 http://www.mfa.gov.cn/eng/wjb/zzjg/yzs/gjlb/2696/ (accessed 26 May 2010)

4 The Development of the Singapore-Kunming Rail Link and the Bangkok-Kunming Highway

China plays an active role in the GMS both as a beneficiary and a contributor to the GMS programme. Aiming to create more economic opportunities and growth in its southern provinces of Yunnan and Guangxi, and encourage increasing Chinese investment in the GMS countries, China provides financial and human resource development support to the GMS programme and its members. Cambodia also benefits from involvement in the GMS project development in various sectors, including environment, tourism, energy and human resource development.

Cambodia-China Foreign Aid Relations

China began to provide aid to Cambodia in the mid-1950s. In recent years, China and Cambodia have seen expanding cooperation in culture, tourism and agriculture, including exchange visits between the parliaments, armies, press, and health officials of the two countries.[5] China's foreign aid to Cambodia is considered as an essential channel to promote trade and investment between the two countries.

China's ODA has gained popularity in Cambodia due to the lesser burden of certain political pressure and economic conditions compared to those imposed by other countries (Phou Sambath ND). As a result of its own experience with foreign assistance, the Chinese government put in place a formal foreign aid policy for recipient countries, including Cambodia (Chin & Frolic 2007). Not wanting to replicate what it perceives to be the ill behaviour of international donors, China created eight principles to guide the allocation of its ODA so as not to place any undue pressure on the receiving countries (Chin & Frolic 2007):

- Ensure equality and mutual benefits for both donor and recipient countries
- Respect sovereignty and do not impose conditions
- Give interest-free or low-interest loans in the name of the poor helping the poor
- Encourage recipient countries to develop independently and be less-reliant on foreign countries
- Support and endorse projects that require little investment and can be quickly accomplished
- Allocate quality equipment and materials at market prices
- Deliver effective technical assistance
- Pay experts affordable fees according to local market.

In turn, Cambodia's government is highly committed to using all the international aid it receives effectively with transparency and accountability, strengthening the role of key persons and relevance in programme planning and implementation, and undertaking assessment of the impact of the NSDP (Chan Sophal *et al.* 2008).

5 http://www.mfa.gov.cn/eng/wjb/zzjg/yzs/gjlb/2696/ (accessed 26 May 2010)

3. CHINA'S TRADE AND ITS IMPACTS

3.1. Magnitude and Changes

Cambodian-Chinese economic relations made significant progress in the mid 1990s, during which a number of Chinese investors flocked to the Cambodian garment industry to tap the benefits from Cambodia's special preferential treatment, namely the Most Favoured Nation status (MFN) provided by the EU and the Generalised System of Preference (GSP) by the US government.

Deepening trade relations between Cambodia and China, i.e. ACFTA-EHP, have significantly changed bilateral trade patterns between the two countries during the last decade. In general, total trade (import plus export) between the two countries expanded considerably at an average annual growth rate of 23.1 percent from 2001 to 2008. However, Cambodia's export value to China over the same period remained small, averaging around USD36.34 million, while its trade balance with China had been widening substantially since the early 2000s, jumping from -USD146 million in 2001 to -USD1,057 million in 2008.

Table 1: Cambodia's Top 10 Products Exported to China 2000-2008

SITC Rev.3	Production description	Value in million USD					Share (%)				
		2000	2002	2004	2006	2008	2000	2002	2004	2006	2008
23	Crude/ synthetic rubber	5.4	7.5	2.5	8.7	11.5	9.1	30.9	8.5	25.8	31.6
24	Cork and wood	1.6	1.1	10.1	12.1	10.6	2.7	4.4	33.6	35.8	29.2
84	Apparel/ clothing/ accessories	2.5	0.1	0.8	3	10.3	4.2	0.2	2.5	9.0	28.4
00	Textile fibres	-	-	0.1	0.7	1.2	-	-	0.3	2.2	3.3
26	Textile yarn/ fabric/art.	-	0.2	9.1	7	0.6	0.0	0.6	30.6	20.9	1.7
03	Fish, live/ fresh/chilled/ frozen	0.5	1.1	0.5	0.6	0.5	0.8	4.4	1.7	1.8	1.3
65	Crustaceans molluscs	0.6	0.2	0.8	0.4	0.4	1.0	0.9	2.6	1.1	1.0
85	Footwear	-	0.1	-	0.1	0.4	-	0.2	0.1	0.4	1.0
82	Furniture/ furnishings	-	-	-	-	0.3	-	0.1	0.1	-	0.9
89	Misc manufactures	-	-	-	0.2	0.2	-	-	0.1	0.5	0.4
	Others	48.7	14.1	5.9	0.9	0.4	82.1	58.3	19.9	2.7	1.2
	Total	59.3	24.2	29.9	33.7	36.4	100.0	100.0	100.0	100.0	100.0

Source: UN Commodity Trade, 2009

Note: Author's ranking based on commodity export values in 2008

Before examining trade patterns in detail, it is important to identify Cambodia's top ten exports to China during the last decade. In 2008, three major export products, namely crude and synthetic rubber, cork and wood[6] (SITC 24), and textiles and clothing accessories, contributed almost 89 percent of the total exports to China (Table 1).

The massive drop in total export in the early 2000s resulted primarily from a 71 percent fall in export of cork and wood manufactures[7] (SITC 63) from USD48.64 million in 2000 to USD14.05 million in 2002. This stemmed mainly from the government's cancellation of 40 percent of all forest concessions, equivalent to almost half the original area under concession, as well as the government's moratorium on logging in concession areas and log transportation in January 2002. These anti-logging measures were introduced after the government's realisation of the extremely negative consequences of logging and investors' inability to fulfil their contractual obligations (WB 2004:19,76). The reduction of wood export also reflects the government's changing attitude towards environmental conservation and natural resources preservation.

Table 2: Cambodia's Top 10 Products Imported from China in 2008

SITC Rev.3	Product description	Value in million USD					Share (%)				
		2000	2002	2004	2006	2008	2000	2002	2004	2006	2008
65	Textile yarn/ fabric/art.	76.0	146.4	286.0	434.1	550.1	46.3	58.2	63.3	62.2	50.2
76	Telecomm equipment	11.4	5.9	11.0	23.1	59.7	6.9	2.3	2.4	3.3	5.4
66	Non-metal mineral manuf.	4.3	9.2	16.1	28.4	50.2	2.6	3.7	3.6	4.1	4.6
84	Apparel/ clothing/ accessories	8.2	8.2	11.9	30	48.4	5.0	3.2	2.6	4.3	4.4
71	Power generating equipment	4.3	8.1	11.6	17.0	47.4	2.6	3.2	2.6	2.4	4.3
77	Electrical equipment	1.3	2.5	2.7	11.2	37.0	0.8	1.0	0.6	1.6	3.4
67	Iron and steel	12.9	6.8	15.2	13.7	36.8	7.9	2.7	3.4	2.0	3.4
69	Metal manufactures	4.9	14.8	10.7	9.5	29.6	3.0	5.9	2.4	1.4	2.7
72	Industry special machine	6.5	11.4	7.7	21.6	29.1	3.9	4.6	1.7	3.1	2.7
74	Industrial equipment	1.5	2.5	4.7	17.1	28.0	0.9	1.0	1.0	2.5	2.6
	Others	32.8	35.3	73.9	91.8	176.4	20.0	14.0	16.4	13.2	16.1
	Total	**164.1**	**251.1**	**451.7**	**697.5**	**1093.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: UN Commodity Trade, 2009

6 Using SITC Rev. 3, cork and wood includes cork natural/raw/waste, fuel wood/wood charcoal, wood chips/ articles, wood in rough/squared and wood simply worked, i.e. wood railway sleepers, soft wood shaped/grooved and hardwood sawn.

7 Using SITC Rev. 3, cork and wood manufactures (SITC 63) include corks and stoppers, veneer sheets, particle board (wood), plywood, fireboard and wood simply shaped.

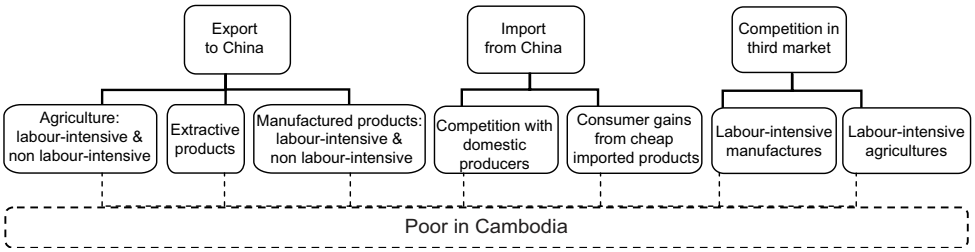
Despite the nosedive of total exports to China in the early 2000s, a reverse trend became evident as export gradually rebounded in 2008, though the figure remained below that for the year 2000. Several traditional export products, namely crude and synthetic rubber, apparel and clothing accessories, fish products, footwear and furniture, grew moderately during this period as more opportunities were opened up for Cambodian products to enter the Chinese market.

The pace of growth of the total import from China has been far more rapid than the growth of export. The average year-on-year growth of import between 2001 and 2008 was around 27.2 percent. Among the top ten products, textile yarn/fabric/articles ranked top and constituted about 50.3 percent of total import from China in 2008 (Table 2). It should be noted that the first ranked product was imported mainly for domestic production and re-exported to third markets such as Japan, Canada, the EU and America (GMAC 2006 cited in USAID 2007:8).

On the whole, stronger trade relations between Cambodia and China, particularly through ACFTA-EHP, have provided wider opportunities for increasing bilateral trade volumes of traditional commodities such as wood, fish, telecommunication equipment, textile yarns and fabrics, electrical machinery, iron and steel, metal and non-metal manufactures and several other new varieties of agricultural and manufactured products. However, the immense negative trade balance during the last decade begs the question whether, and if so, to what extent has Cambodia gained from trade with China. Section 3.3 attempts to shed some light on these questions.

3.2. Methodologies and Analytical Framework

Figure 1: Analytical Framework for China's Impact on Poverty Reduction in Cambodia



Source: Adapted from Jenkins and Edwards (2004)

For the analysis of the likely effects of China's trade on poverty reduction in Cambodia, the study adopts Jenkins and Edwards's (2004) framework by applying trade data at 3-digit level. The likely effects can be examined at three levels. Level 1 includes three dimensions: export to China, import from China, and export to the third market. Level 2 covers the scale of labour-intensive export to China, the scale of competing import from China and pro-poor consumer goods, and the scale of labour-intensive export to the third market. The last level focuses on likely poverty effects through examining possible changes in employment in labour-intensive export to China, rising import competition from China, and the level of labour-intensive product competition in the third market. Figure 1 outlines the framework for the analysis.

3.3. Findings[8]

Export to China

Table 3 presents the significant changes in the structure of Cambodian export to China during the last two decades. Between the early 1990s and 2000, all product groups, except for other labour-intensive manufactures and forestry (data is not available for 1992) and other labour-intensive textiles and garments, show a marked decline in export shares. The tremendous drop in export share of labour-intensive agriculture implies significant losses in export earnings and possibly employment in the sector.

Table 3: Share of Export to Total Export to China 1992-2008 at 3-digit Level

P. Groups	Recode of products	1992 (%)	2000 (%)	2007 (%)	2008 (%)
1	Labour-intensive agriculture	51.38	9.11	21.8	29.63
2	Other agriculture products	14.46	2.16	4.43	8.43
3	Forestry		2.73	47.06	27.42
4	Minerals & petroleum			0.02	0.32
5	Labour-intensive textiles & garments	3.26	4.21	19.34	28.19
6	Other labour-intensive manufactures		81.77	3.69	5.57
7	Other manufactured products	30.9	0.02	3.67	0.43
	Total	100.0	100.0	100.0	100.0

Source: UN Commodity Trade, 2009

The trends of those product groups showed a plausible turnaround from 2000 to 2008, with considerable increase in export shares of labour-intensive agriculture and textiles and garments. However, export shares of other labour-intensive manufactures plummeted giving a mixed picture of whether this might imply reduction in export earnings and employment in the sectors concerned.

Investigation of the detailed 3-digit level breakdown of products in each of the above product groups reveals more interesting findings (Table 3). The tremendous drop in export of labour-intensive agricultural products stemmed primarily from export shares of fruits and nuts, fresh or dried (SITC 057) sliding from 16.8 percent in 1992 to 9.1 percent in 2000 and natural rubber/ latex (SITC 231) declining from 34.5 percent in 1992 to nil in 2000. The significant dip in natural rubber export resulted from substantial reduction in the cultivated tapping area from 50,891 ha in 1992 to 29,119 ha in 2002 as large numbers of old (25-30 years) unproductive rubber trees were felled (MAFF 2010[9]). It should be noted that there was no rice export of any type during this period.

8 The section is adapted from Jenkins and Edwards (2004), where products are classified into groups in terms of their level of labour-intensiveness for export to China and pro-poor consumption categories for import from China in order to capture likely effect of bilateral trade on poverty reduction in Cambodia.

9 Link to MAFF's statistics webpage: http://www.maff.gov.kh/eng/statistics/rubber.html#a2

Between 2000 and 2008, the increase in natural rubber export was the sole factor behind the surge in export share of labour-intensive agriculture (Table 4). In addition, two rice categories – rice, glazed or polished (SITC 0422) and rice milled unbroken (SITC 04231) – were exported in 2005 and 2008, but the scale was negligible at around USD200 to USD300. Export of natural rubber picked up noticeably due to the government's rubber tree replanting programme that started in 1993 and the harvesting expansion of both private and smallholder rubber plantations to a total plantation area of 108,656 ha in 2008, around 31.58 percent of which was matured for tapping (rubber trees are ready for tapping five years after planting) (GDRP 2009).

Table 4: Detailed Breakdown of Share of Export to Total Export to China 1992-2008

SITC 3	Product categories	1992(%)	2000(%)	2007(%)	2008(%)
001	Live animals except fish		0.352	2.012	6.223
034	Fish live/fresh/chilled/frozen		0.78	1.623	1.25
036	Crustaceans molluscs etc		1.025	0.672	0.945
231	Natural rubber/latex/etc	34.551	9.099	21.569	29.606
247	Wood in rough/squared		0.568	31.605	13.027
248	Wood simply worked		2.167	15.452	13.669
292	Crude vegetable materials	14.455		0.08	0.016
634	Veneer/plywood/etc		79.439	0.051	
635	Wood manufactures nes		2.329	0.043	0.226
657	Special yarns/fabrics		-	0.02	0.046
661	Leather manufactures		-	0.001	0.005
841	Men/boys wear, woven		4.185	1.154	5.074
845	Articles of apparel nes		-	4.623	17.022
846	Clothing accessories		0.021	0.003	0.004
848	Headgear/non-textile clothing		-	0.001	0.001
893	Articles nes of plastics		0.001	0.036	0.058
899	Misc manufacture articles nes		0.001	0.135	0.33

Source: UN Commodity Trade, 2009

The effect of natural rubber export on employment, and poverty reduction in particular, could be significant. A study by SOFRACO in 2005 estimated that the total workforce in the sector in 2002 was around 26,300, and UNDP's estimation in 2007 put the figure at 40,000. In his study on the export competitiveness of the Cambodian rubber sector, Saing (2009a) indicates that the nominal daily wage of rubber labourers in 2008 was KHR15,000 equivalent to KHR9,814.8 at 2006 prices, which is far above the 2007 national rural poverty line (daily food and non-food consumption estimated by the World Bank) of KHR2,367 equivalent to KHR2,203.9 at 2006 prices.[10]

10 Author's calculation using consumer price index (CPI 2006=100) data compiled by the National Institute of Statistics of Cambodia

Employment effect in the sector could be even more significant as a large proportion of Cambodian natural rubber is either formally or informally exported to Vietnam, where it is processed and a certain proportion re-exported to China. Despite the low rubber price compared with prices in Singapore and Malaysia, Cambodian rubber producers prefer the Vietnamese market because of its acceptance of low-grade natural rubber and the low transportation costs (Saing 2009a:13).

The export share of labour-intensive textiles and garments continued to rise between 1992 and 2008 due to increases in exports of textile yarn, cotton fabrics/woven, man-made woven fabrics, woven textile fabrics, knit/crochet fabric, tulle/lace/embroiders, special yarn/fabrics (SITC 651-657) and men/boys wear, women/girls woven clothing, and a few others (SITC 841-848) (see Table 4). Unavailability of data and lack of research on the number of garment factories that produce to export to the Chinese market makes it difficult to capture the employment and poverty effects of the rise in this sector's export. However, there may have been implications for poverty reduction as the current monthly minimum wage in the sector is USD50 (approximately USD2.27 per working day at 2008 prices), higher than the 2007 Phnom Penh national poverty line of KHR3,092 (USD0.76 per day).[11]

Import from China (producer side)

Agricultural products constituted only a small proportion of total import from China between 1992 and 2008 (Table 5). Thus, it appears that agricultural import from China posed no significant threat or created no fierce competition to domestic agricultural producers. Of the various agricultural imports from China, most are imported on an irregular basis, which means a product appears in one year but not in another. Those products include several kinds of fresh/ chilled/preserved fish (SITC 034 & 035), rice in husk and rice milled unbroken (SITC 0421 & 04231), tapioca/sago (SITC 05645), dried vegetables (SITC 05619), melons/papaws (SITC 05791), prepared pineapples (SITC 05893) and apricots/cherries (SITC 05895).

Some other products are regularly imported, but are not of Cambodian specialisation. Those products include frozen vegetables (SITC 05459), fresh apples (SITC 0574), dried grapes (SITC 05752), fresh pears/quince (SITC 05792) and cooked pasta (SITC 09891). These imports are complementary to domestic production.

Although small in import magnitude, other products could potentially compete with domestic producers given their constant rise in import value to the Cambodian market and China's leading role among low-cost producers in the region. Those products include prepared/ preserved pork (SITC 0175), onions/shallots (SITC 05451), garlic/ leeks (SITC 05452), dried or preserved mushrooms/truffles (SITC 05613 & 05674), fruit jams (SITC 0581), nuts/seeds (SITC 0581), preserved fruit/nuts (SITC 05896), natural honey (SITC 0616), sugar confectionery (SITC 06229), animal feed (SITC 08199), soy sauce (SITC 09841) and sauces/mixed seasonings (SITC 09849).

11 Adjusting for inflation using CPI constructed by the national institute of statistics: real daily wage=2.27/1.51=1.50 USD at 2006 prices (CPI_{2008}=151); daily per capita consumption=0.76/1.07=0.71 USD at 2006 prices (CPI_{2007}=107)

Table 5: Share of Import to Total Import from China 1992-2008 at 3-digit Level

P. Groups	Recode of product	1992 (%)	2000 (%)	2007 (%)	2008 (%)
1	Labour-intensive agriculture	1.95	0.3	0.29	0.25
2	Other agriculture products	0.08	4.8	1.03	0.82
3	Forestry		-	0.01	0.01
4	Minerals & petroleum		0.44	0.73	1.66
5	Labour-intensive textiles & garments	0.06	51.33	60.22	54.63
6	Other labour-intensive manufactures	6.42	7.6	3.19	3.66
7	Other manufactured products	91.48	35.54	34.49	38.74
	Total	100.0	100.0	100.0	100.0

Source: UN Commodity Trade, 2009

Since the mid 1990s, textiles and garments import have grown rapidly – accounting for approximately half of the total import from China in 2008 – due to the dramatic expansion of the sector in the domestic economy since the mid-1990s. Of the total number of factories in the industry, around 20.7 percent are owned by Hong Kong investors, and 13.1 percent are Chinese (GMAC 2006 cited in USAID 2007:8). These Chinese factories, almost all of which are export-oriented, tend to source inputs from their parent firms in China and Hong Kong[12]; therefore, a rising share of import of such products poses no grave peril for domestic producers, but it does limit the development of domestic backward linkages.

The import share of other labour-intensive manufactures to total import from China was insignificant, declining from 7.6 percent in 2000 to 3.6 percent in 2008. Given the absence or meagre scale of such production activities in Cambodia, no grave concern or severe effect is likely to emanate from this import.

Import from China (consumer side)

Table 6 shows a mild rise in import share of pro-poor consumer goods between 1992 and 2000, which then dropped slightly to around 5.5 percent in 2008. It appears that consumer gain is somehow insignificant given such declining share.

12 A survey of 70 factories of the total 238 export-oriented members of the Garment Manufacturers Association in Cambodia (GMAC) by the Economic Institute of Cambodia (EIC) in February 2005 indicates that 79 percent of the total number of factories in the sample import fabric from China and 14 percent from Hong Kong, while 71 percent import textile accessories from China and 24 percent from Hong Kong (USAID 2005:13).

Table 6: Share of Poor Consumers' Goods Imported from China 1992-2008

Recode of product	1992 (%)	2000 (%)	2007 (%)	2008 (%)
Pro-poor consumer goods	2.27	9.55	4.82	5.49
Other product groups	97.73	90.45	95.18	94.51

Source: UN Commodity Trade, 2009

Pro-poor consumer product categories in terms of their shares to total import from China, including agriculture, also contributed just a minor share (Table 7). Live animals and fish/shellfish had tiny shares, rice was imported occasionally, and the share of vegetables declined between 2000 and 2008. These are essential products commonly consumed by Cambodian middle and low-income households, the poor in particular.

Table 7: Shares of Pro-poor Products Imported from China 1992-2008

SITC 3	Product categories	1992 (%)	2000 (%)	2007 (%)	2008 (%)
1	Live animals except fish				0.0095
37	Fish/shellfish prep/pres		0.002	0.021	0.049
42	Rice		0.008	-	-
48	Cereals etc flour/starch		0.013	0.094	0.337
54	Vegetables, fresh/chilled/frozen		0.001	0.013	0.001
56	Vegetable roots/tubers prep/ pres	0.013	0.144	0.095	0.032
57	Fruit/nuts fresh/dried		0.077	0.016	0.054
61	Sugar/molasses/honey	1.84	0.005	0.012	-
62	Sugar confectionery	0.095	0.023	0.102	0.096
81	Animal feed		0.026	0.001	0.006
98	Edible products n.e.s.		0.318	0.091	0.042
111	Beverage non-alcohol n.e.s.	0.663	0.107	0.037	0.067
269	Worn clothing etc			0.004	0.009
841	Men/boys wear woven		0.009	0.008	0.05
842	Women/girls clothing woven		0.097	0.001	-
843	Men/boys wear knit/crochet		0.27	0.07	0.652
844	Women/girls wear knit/crochet		0.129	0.165	0.733
845	Articles of apparel n.e.s.		3.188	2.448	2.034
846	Clothing accessories		0.78	0.959	0.845
848	Headgear/non-text clothing	0.065	0.506	0.19	0.116
851	Footwear	0.171	3.902	0.488	0.422

Source: UN Commodity Trade, 2009

In contrast, shares of animal feed, edible products and non-alcoholic beverages increased slightly, and the new import of worn clothing emerged in 2007 and 2008. Clothing categories such as men/boys wear, women/girls wear, articles of apparel and clothing accessories, which were the main products in the group, marked a mild rise

in import shares between 2000 and 2008. Consumer gain appears to be insignificant due to the concentration of major shares of import from China in garment and textile articles for domestic export-oriented production and in other chemicals and agriculture and industrial machinery.

Export to the third market

In examining the competition between Cambodia and China in the third market it is important to investigate similarities in the export structures between the two countries. To do so, we employed the method used in the studies by Jenkins and Edwards (2004) and Okamoto (2005). Spearman correlation ranking was applied to check the correlation between the share of Cambodia's SITC 3-digit export to its total export to world and the share of China's 3-digit export to its total export to world. The closer the value is to 1, which would indicate identical export structures, the greater the likelihood that China and Cambodia will be competitors in the third market.

Table 8 indicates a low export similarity between China and Cambodia for all products, which is statistically significant at 1 percent for 2001-2007 and at 5 percent for 2008. By product group classification, the structure of Cambodia's agriculture export showed no similarity with that of China, but there is a rising trend of similarity in the structure of manufactures export, which is statistically significant at 5 percent in 1995 and at 1 percent for 1998-2008. This suggests a growing competition from China in manufactured products in the third market.

Table 8: Export Similarity between China and Cambodia 1992 and 2008

Year	Agriculture†	p-value	Manufactures†	p-value	All Exports†	p-value
1992	-0.1125	0.66	0.1293	0.24	-0.0618	0.54
1995	-0.0455	0.84	0.2287	0.02**	0.0756	0.4
1998	0.0614	0.8	0.326	0.00***	0.1079	0.24
2001	-0.0818	0.69	0.3593	0.00***	0.2642	0.00***
2004	-0.0557	0.77	0.4731	0.00***	0.2388	0.00***
2007	-0.1921	0.32	0.4646	0.00***	0.2501	0.00***
2008	-0.1504	0.48	0.4685	0.00***	0.1771	0.03**

Source: Author's calculation based on data from UN Commodity Trade 2009
Note: Level of significance: *: at 10 percent; **: at 5 percent; *** at 1 percent
†: Spearman correlation ranking between export shares of Cambodia and China

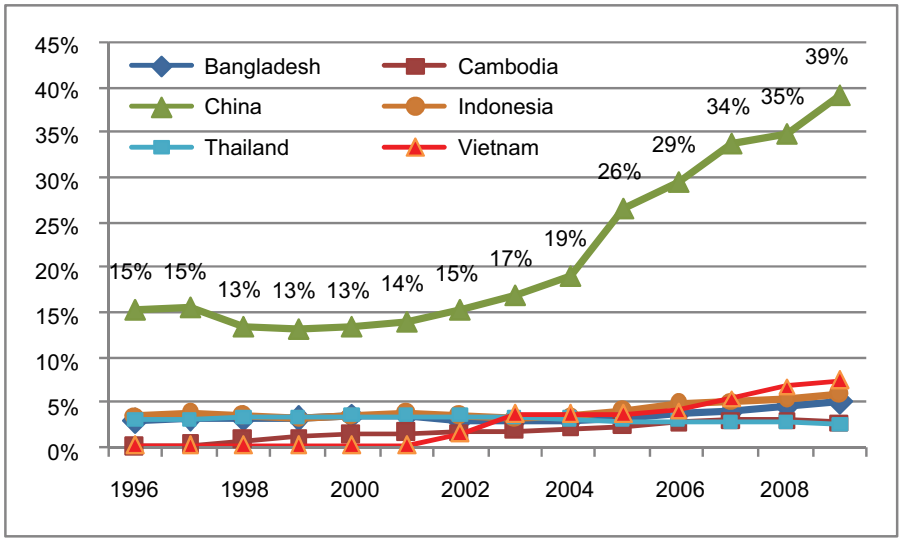
As Cambodia's manufactures export is concentrated mainly in textiles and garments, the two countries are likely competitors in these products in the third markets. Marked correlation coefficients of both countries' export structure in manufactured products could be due to their strong similarities in garment and textile export structure as Cambodia has a narrow manufacturing base. Since the industry's beginnings in the mid-1990s, Cambodia's garment products have traditionally been destined for three major markets: the US (around 70 percent), the EU (23 percent) and Canada (5 percent) (MoC 2009 in Saing 2009b:2). It is thus useful to examine the level of competition between the two countries in the US and EU markets.

Competition in the US market

Figure 2 shows substantial growth in China's market share of the US garment market during the last decade, which was considerably high from the early 2000s to 2008, marking potential threat to countries specialising in these products, i.e. Bangladesh, Cambodia, Indonesia, Thailand and Vietnam. Despite the two shocks – hike in energy prices and global economic recession – between late 2007 and 2009, the Chinese market share expanded significantly, while Cambodia's share slowed. During the same period, the rising shares of Vietnam and Bangladesh put further downward pressure on Cambodia's garment producers.

The UN Commodity Trade data for 1990-2008 reveal that Cambodia's top 12 garment exports to the US market included jerseys, women trousers, men trousers, women outerwear, women underwear, T-shirts, men knitted shirt, women blouses, men underwear, apparel necessary knit, baby garments and men suits in order of ranking (SITC 84). Given the increasing export value of Cambodia's top 12 products, the rising share of Chinese overall garment export to the US does not seem to pose any serious concern to Cambodian products.

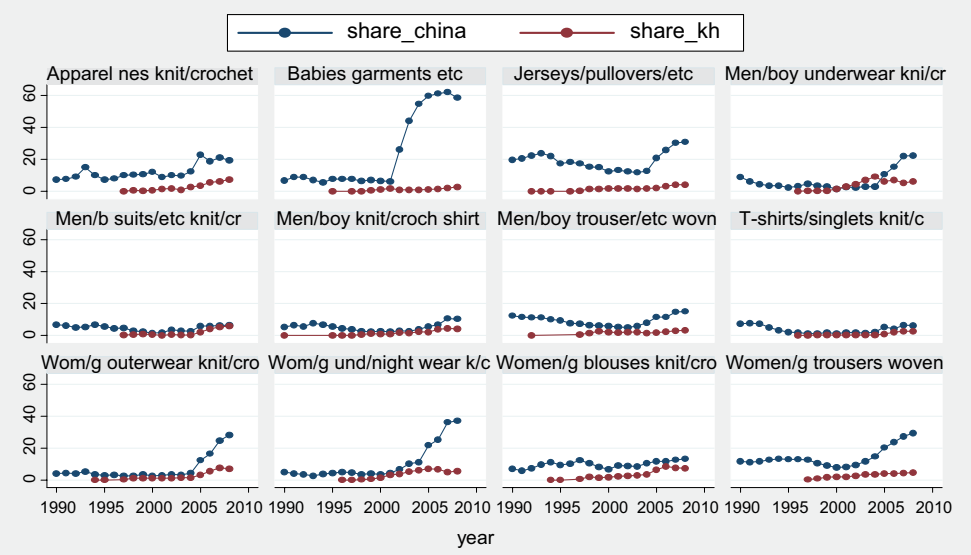
Figure 2: Market Shares of Asian Garments in the US Market (SITC 841-848)



Source: USITC, 2010

However, deeper examination of the relationship between the two countries' market shares at 4-digit level reveals a clearer picture of the likely competition. Figure 3 shows that given China's increasing US market shares, Cambodia could face potential threat from Chinese producers in certain garment products, namely baby garments, jersey/pullovers, men/boys underwear knit/crochet, men/boys trousers, women/girls outerwear, women/girls under/night wear, women/girls blouses knit/crochet and women/girls trousers. Yet owing to China's declining share in other products, the country could also grab new opportunities, such as in apparel knit/crochet.

Figure 3: Shares of Cambodia's Top 12 Garment Products in the US Market 1990-2008[13]



Source: UN Commodity Trade, 2009

Competition in the EU market

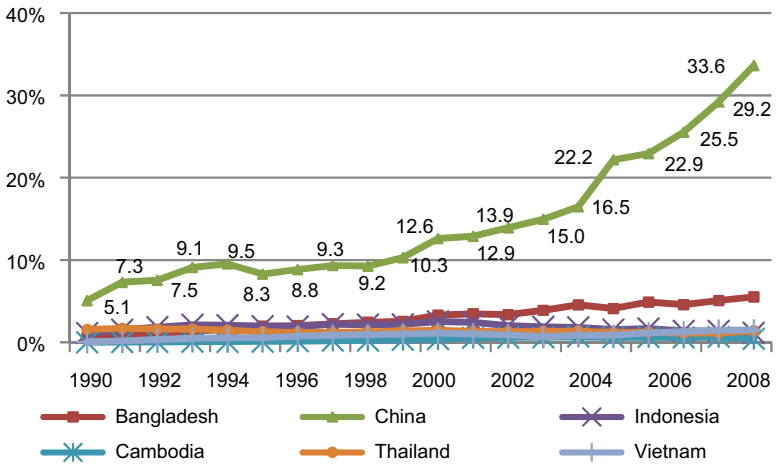
The substantial growth in China's EU garment market share during the last decade is depicted in Figure 4. Its high growth between 2000 and 2008 indicates potential threat to countries specialising in similar products, i.e. Bangladesh, Cambodia, Indonesia, Thailand and Vietnam. Again, despite the dual shocks from late 2007 to 2009, China's market share grew considerably while Cambodia's share slumped. That said, given Cambodia's minimal EU garment market shares of 0.01 to 1.0 percent, from 1990 to 2008, China's and Bangladesh's surging market shares appear unlikely to have any negative effect on Cambodia.

The UN commodity trade data for 1990-2008 indicate some similarities between the structure of Cambodia's top 12 garment exports to the EU and that to the US market. Cambodia tends to focus more on men/boys trousers, women/girls trousers, men/boys shirts, jerseys/pullovers, men/boys knit/crochet shirts and men/boys suits and less on women/girls outerwear and coats, apparel knit/crochet, T-shirts and women/girls blouses.

Against the increasing export value of Cambodia's top 12 products, it appears that the rising share of Chinese overall garment export to the EU poses no threat to Cambodian products. The outlook for China's rising market shares classified at 4-digit level is more telling. Chinese market shares of each of the top 12 grew rapidly, which could potentially harm Cambodian products. Nevertheless, as the Cambodian market share of each of the 12 products is minimal, negative effect appears unlikely.

13 All products are Cambodia's top 12 garment exports to the US (SITC 84) based on export value in 2008

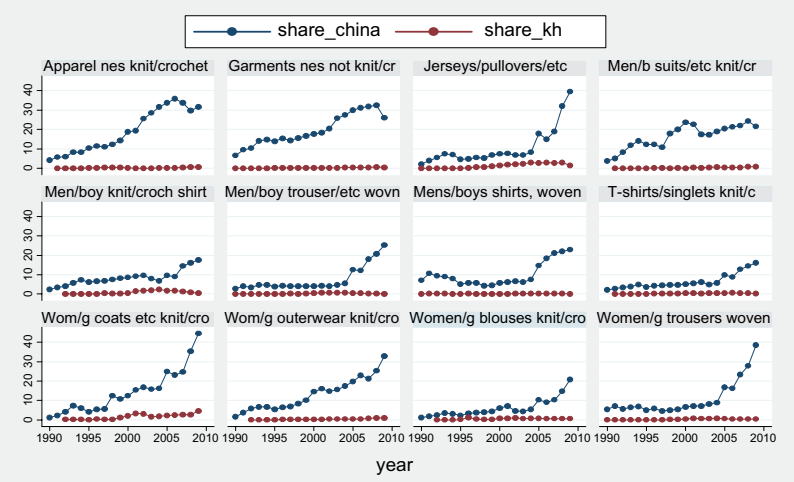
Figure 4: Market Shares of Asian Garments in the EU[14] Market (SITC 841-848)



Source: UN Commodity Trade, 2010

Overall, by examining Cambodia's market shares of key garment exports in the third markets, namely the US and the EU, the study postulates that China's export could pose potential threat to a certain number of Cambodian garment products in the US market, but no possible harm to Cambodian garments in the EU market. However, it is important to consider whether Cambodia could compete against China in the US and EU markets as a substantial share of the industry belongs to China (13.1 percent) and Hong Kong (20.7 percent), compared to Cambodia's minor ownership (8.6 percent) (GMAC 2006 cited in USAID 2007:8).

Figure 5: Shares of Cambodia's Top 12 Garment Products in the EU Market 1990-2009



Source: UN Commodity Trade, 2009

14 EU12 includes Austria, Belgium, Denmark, Spain, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands and Portugal.

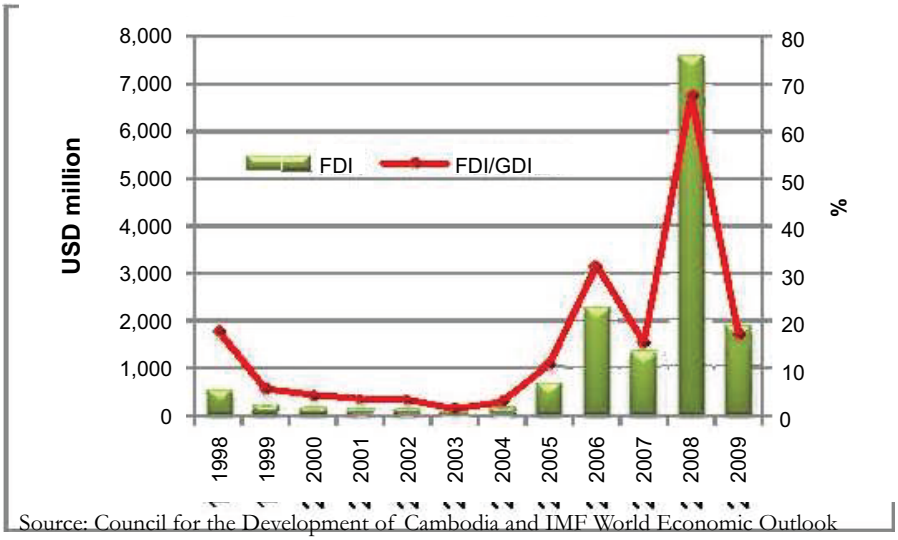
4. CHINA'S INVESTMENT AND ITS IMPACTS

4.1. Magnitude and Changes

FDI is a significant element in the country's economy given Cambodia's low domestic savings, In terms of fixed assets approval from 1998 to 2008, FDI, which was mostly concentrated in the tourism, construction and garment sectors, on average accounted for 15 percent of GDP and 56 percent of total investment approvals (Figure 6). The NIS Statistical Yearbook 2008 records that, on average, 60 percent of total fixed asset approvals were implemented during 1994-2007.

China is a major investor in Cambodia. Of the top twelve investors in Cambodia from 1998-2009, China ranks first with about 45.6 percent of total FDI, followed by South Korea at 17.6 percent and the United States at 9.5 percent (Figure 6). The average scale of China's investment is around USD25 million, lower than Russia's USD62 million, the United States' USD37.2 million and South Korea's USD30.9 million.

Figure 6: Foreign Direct Investment (Total Fixed Asset Approvals) in Cambodia, (USD million and % GDP)



Source: Council for the Development of Cambodia and IMF World Economic Outlook Database (April 2010)

Chinese investment is mainly concentrated in natural resource sectors such as petroleum, mining and energy (including hydropower plants), and the tourism and garment sectors. During 1998-2009, China's FDI inflow made up 99.8 percent of the total amount of FDI in the petroleum sector, 91.7 percent of that in mining and 83.5 percent in energy. Chinese FDI in tourism (60.7 percent), garments (40.1 percent), other industries (38.1 percent) and agriculture (25.6 percent) was also significant, compared to total FDI inflow to the respective sectors (CDC 2009).

Table 9: Top 12 Investors in Cambodia during 1998-2009

Country	No. of Project	Fixed Assets Approval (USD million)	Average Investment Value (USD million)	% of Total FDI
China	278	6940.9	25.0	45.6
S. Korea	87	2686.1	30.9	17.6
United States	39	1452.5	37.2	9.5
Thailand	43	596.1	13.9	3.9
Malaysia	51	534.6	10.5	3.5
Vietnam	33	447.0	13.5	2.9
Taiwan	117	436.2	3.7	2.9
Russia	7	434.0	62.0	2.8
Singapore	46	403.8	8.8	2.7
Hong Kong	47	171.6	3.7	1.1
Japan	15	135.4	9.0	0.9
France	15	114.8	7.7	0.8

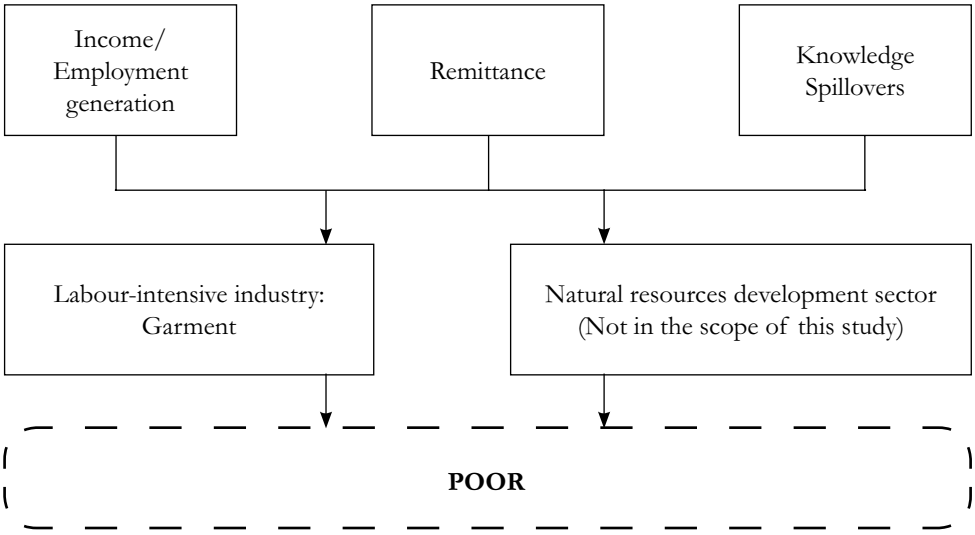
Source: Council for the Development of Cambodia

The scale of China's investment in the country has gradually expanded from small-scale manufacturing companies, particularly in the garment sector, to medium and large size resource development companies which have invested substantially in natural resources, agriculture, construction, and hydropower plants. Wu and Chen (2001) emphasise that the emergence of China's overseas investment is prompted by factors such as political motivation, market seeking and the desire to take advantage of lower labour cost and the availability and price of natural resources. That physical and human infrastructure, together with the macroeconomic climate and institutional structure of the host country play decisive roles in China's investment are also evident in Cambodia.

4.2. Methodologies and Analytical Framework

In assessing the poverty effects of FDI, it is important to distinguish between its direct and indirect impacts. FDI's direct contribution is mainly channelled through employment and its indirect benefits are transmitted through backward and forward linkages, spill-over and demonstration effects (Figure 7). In addition, the poverty effect of FDI can be captured through the labour-intensiveness of the economic sectors that ordinarily employ low-skilled and poor workers.

Figure 7: Analytical Framework of China's Investment in Cambodia



Given its high level of labour-intensiveness and the extent of Chinese ownership, the garment sector was chosen for case study so as to examine the poverty-reducing effect of China's FDI in greater depth. The case study attempts to identify the potential effects of FDI on poverty reduction through three dimensions: i) opportunities for increased earnings of the rural poor through employment; ii) remittance; and iii) spill-over effect on skill development of the rural poor and technology transfer to local enterprises. It should be noted that there has been significant Chinese investment in the natural resource sector; however, as it is beyond the scope of this study, it will be left for future discussion.

4.3. Case Study

4.3.1. Overview of Garment Sector

The garment sector, accounting for around 10.5 percent of GDP, has contributed markedly to economic growth in the past decade. According to the Economic Institute of Cambodia, the garment sector has added an estimated 2 percent annually to GDP since 1995, though recently it has been showing a reverse trend. The sector emerged in response to US trade preferences. The US-Cambodian Trade Agreement on Textiles and Apparel (1999-2004), linking market access (increasing quota) to labour standards, was signed in 1998-99. For the EU market, a three-and-a-half year EU-Cambodian textile agreement was set up in 1999, which provided duty and quota free access for Cambodian garment products, subject to rules of origin requirements being met. In 2001 EU also introduced its "Everything But Arms (EBA)" initiative, which allows quota and duty-free access on all Cambodian exports to the EU market.

The industry is largely engaged in the "cut, make, and trim" phase of the value chain. Almost all inputs for the sector are imported. Otherwise, the producing firm is supplied with materials by its customers, and is paid a processing fee. More than 90 percent

of the garment factories in Cambodia are foreign-owned, resulting in a significant repatriation of the profits. Direct contributions to the government budget have been limited since the sector enjoys import tax exemptions as well as tax holidays.

The sector not only contributes to the creation of employment, garment workers' remittances also support their households in rural areas. Many workers are young poorly educated unskilled females who migrated from poor rural areas to Phnom Penh, where most of the garment factories are located.

4.3.2. Findings

Around 10-15 workers were selected from each of the 10 Chinese and 11 non-Chinese factories chosen for case study to attain a total sample size of 300 workers. Non-Chinese factories include two from Hong Kong, two from Korea, two from Malaysia, one from Singapore, three from Taiwan and one from the USA. Most of the sample workers earn around USD80 per month on average, or about USD2.67 per day. They work 8 to 10 hours per day 6 days per week. However, about 76 percent of workers from the non-Chinese factories work for 10 hours per day, compared to only 36.7 percent from Chinese factories.

The total poverty line in Phnom Penh in 2007, as estimated by the World Bank, was USD0.76 per day. At 2006 prices, the average earning of garment workers is USD2.03 per day while the overall poverty line in Phnom Penh is USD0.71 per day. That garment workers' average wage is higher than the income needed to live above the overall poverty line in Phnom Penh to some extent confirms the poverty-reducing effect of the sector.

Approximately half of the sample workers from both Chinese and non-Chinese factories send a proportion of their income to their relatives in rural areas. Relatives of the two groups use remittance for similar purposes: i) daily food consumption (64 percent); ii) investment in agriculture (6 percent); iii) education of family members (11 percent); and iv) buying farm land (6 percent).

Table 10: Earnings of Sample Workers

	Total Sample	**Chinese factories (1)**	**Non-Chinese factories (2)**	**Differences (1) & (2)**
Mean	81.9	83.8	80.1	3.7
Median	80.0	82.0	77.5	4.5
Mode	80.0	80.0	80.0	0.0
Std. deviation	21.5	21.0	22.0	-1.0
Minimum	14.0	14.0*	40.0	-26.0
Maximum	200.0	150.0	200.0	-50.0

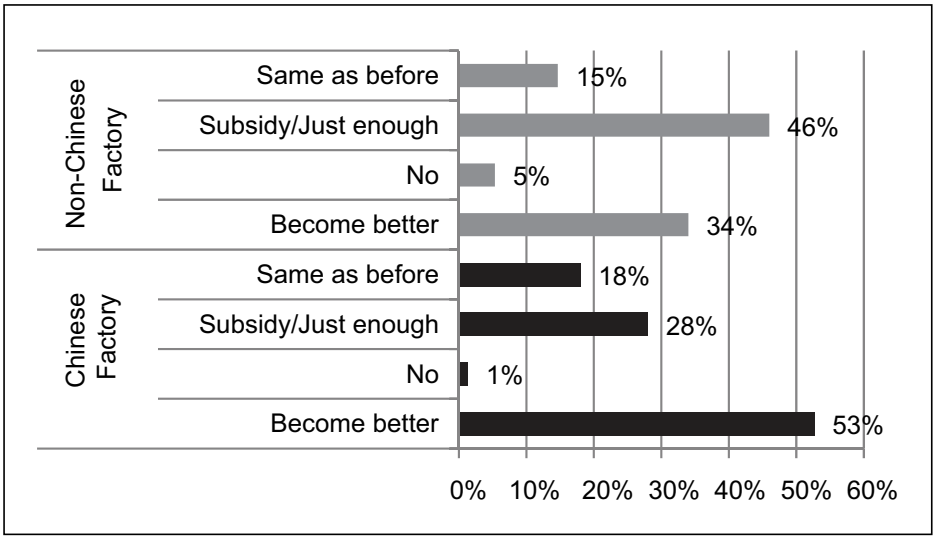
Note: Earnings (in January 2010) include overtime and other allowances

* One garment worker worked only for a few days in January 2010 as she was sick

Source: Survey conducted by CDRI in April 2010

Overall, just over half of the respondents from Chinese factories and around one third of those from non-Chinese factories believed that their household's economic status had improved (Figure 8). The main reasons cited for change in status include i) investment (buying land, motor-boat and livestock); ii) regular income (from working in the factory); iii) more sources of household income; iv) better rice yield; and v) better living conditions in the village.

Figure 8: Perception on Changes in Household Economic Status



Neither the Chinese nor non-Chinese factories offer a rich training programme, particularly skill-related and technical training. Only four workers (two from Chinese factories) of the total sample had received training – in new design and labour law. Forty-one percent of workers from Chinese factories and 63 percent from non-Chinese factories said they had acquired skills from their employment in the factories, but only basic skills learned on-the-job. They anticipate being able to use the new skills and knowledge to: i) find a job in a similar factory in the country; ii) find a job in a similar factory abroad (Korea, Malaysia, Thailand); and iii) run their own business (tailor shop). The majority of the workers did not know whether their factories would support opportunities to attend externally organised vocational training. Only about 10 percent of the workers interviewed had sought and paid for personal skill development such as sewing, designing and wedding designing skills.

The survey also showed that about 30 percent of workers in non-Chinese factories are satisfied with the working environment, i.e. healthcare, working space, sanitation, annual leave and sick leave entitlements, compared to 4-13 percent in Chinese factories.

5. CHINA'S OFFICIAL DEVELOPMENT ASSISTANCE AND ITS IMPACTS

5.1. Magnitude and Changes

Official development assistance (ODA) plays significant roles in financing Cambodia's development as an additional public resource through supporting public service delivery, and as a form of calling-in private sector investment through infrastructure improvement and economic services.[15]

The ODA database of the Cambodian Rehabilitation and Development Board of the Council for the Development of Cambodia (CRDB/CDC), the national aid coordination focal point, has recorded continuous increases in financial disbursement since the year 2000. From 2000 to 2009, the average disbursement funds allocated by official bilateral and multilateral development partners and NGOs in the form of grants and loans amounted to USD662.3million. In 2000, ODA per capita was USD37.0, rising to USD70.7 per capita in 2009. The main sectors targeted by ODA inflow included health, education, agriculture, rural development, culture and arts, energy and electricity, governance and administration, transportation, and community and social welfare, which are consistent with Cambodia's development priorities in the context of the Rectangular Strategy and the National Strategic Development Plan (NSDP). Each year during the period 2000 to 2009, technical cooperation took around 35 percent of the total disbursement fund, investment programmes around 60 percent, while food aid and emergency took a small proportion of 2.5 percent.

Table 11: China's Disbursements in Terms of Assistance 2000-2009 (USD million)

	Term	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009 est.**
Total disbursement by all the development partners	Grant	-	347.0	347.7	373.4	367.2	438.8	458.6	567.3	681.7	699.1
	Loan	-	124.9	183.2	166.1	188.2	171.2	136.1	223.1	273.9	290.3
	Total	**466.8**	**471.9**	**530.9**	**539.5**	**555.4**	**610.0**	**594.7**	**790.4**	**955.6**	**989.4**
China	Grant	-	-	-	-	-	13.1	6.7	0.4	0.2	3.0
	Loan	-	-	-	-	-	33.5	46.5	92.0	95.2	111.7
	Total	**2.6**	**16.3**	**5.7**	**5.6**	**32.5**	**46.6**	**53.2**	**92.4**	**95.4**	**114.7**
		Percentage of total									
China	Grant	-	-	-	-	-	3.0	1.5	0.1	0.0	0.4
	Loan	-	-	-	-	-	19.6	34.2	41.2	34.8	38.5
	Total	**0.6**	**3.5**	**1.1**	**1.0**	**5.8**	**7.6**	**9.0**	**11.7**	**10.0**	**11.6**

Sources: Cambodia Aid Effectiveness Reports 2007, 2008, 2009

15 Cambodia Aid Effectiveness Report 2008 of the Council for the Development of Cambodia: pp. 1 & 3.

China has been a key source of aid to Cambodia. Over the period 2000 to 2009, ODA from this country totalled USD465 million, representing 7.0 percent of the overall endorsement from all Cambodia's. The disbursement kept on increasing every year as is clearly illustrated in the rise from a mere USD2.6 million in 2000 to USD32.5 million in 2004 and then to USD114.7 million in 2009 (Table 11). In 2009, China's ODA ranked second to Japan, contributing 11.6 percent of the total disbursement, and an increase of 20 percent on 2008.

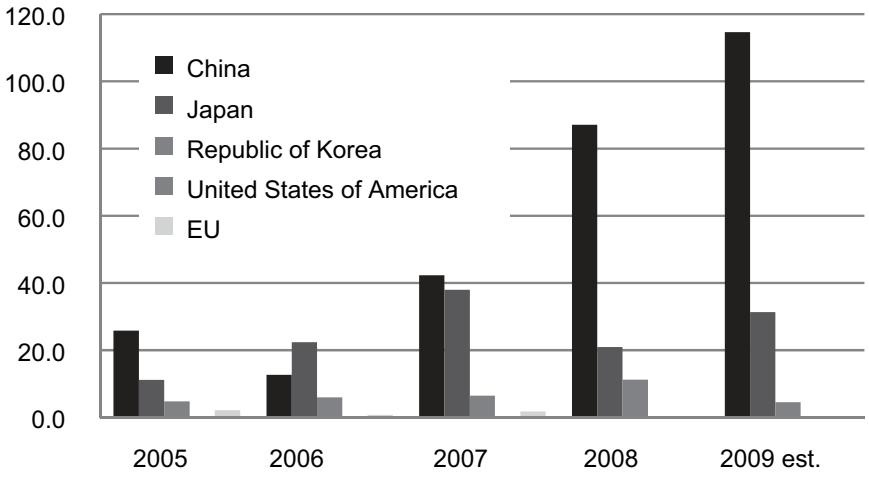
Table 12: China's Disbursement by Sector 2005-2009 (in USD million)

Sector	**2005**	**2006**	**2007**	**2008**	**2009**	**Total**
Health		0.13				0.13
Education		0.38			0.08	0.46
Agriculture	1.71	0.07				1.78
Manufacturing, mining and trade	0.05					0.05
Information & communication			8.85			8.85
Post & telecommunications		8.46				8.46
Transportation	25.83	12.68	42.31	87.12	114.62	282.56
Community & social welfare services	18.53	19.04	26.22			63.79
Culture & arts		0.28	0.3			0.58
Environment & conservation		0.02	0.02			0.04
Governance & administration	0.52	12.18	14.75	8.29		35.75
Total	**46.64**	**53.24**	**92.45**	**95.41**	**114.7**	**402.43**

Source: Cambodia Aid Effectiveness Report 2007, 2008, 2009

Disbursement from China consists of three types of bilateral aid: grants, interest-free loans and concessional loans. Grants and interest-free loans are mostly channelled in-kind through different projects, which are especially directed to social welfare, material assistance, technical assistance and personal training according to the request of the country. Concessional loans are primarily captured in the profitability of China-funded projects, namely infrastructure projects contracting materials, technologies and services of China's state-owned companies (Martyn 2008). In terms of sectoral distribution, China's disbursement was primarily allocated to the transportation sector, a robust upward trend showing annual increases from 2006-2009 (Table 12). Compared to other major development partners, China was the largest contributor to this sector during 2007-2009, followed by Japan and South Korea (Figure 9).

Figure 9: Disbursements on Transportation by Major Partners (USD million)



Source: Cambodia Aid Effectiveness Report 2007, 2008, 2009

China has never hesitated to support Cambodia in the areas that other lenders and donors have given up on due to issues of human rights, lack of response from the Cambodian government on its administrative procedures, the level of corruption, military and administrative reform, and the risky nature of the projects. Moreover, China encourages business between its home investors and associates in Cambodia, which is indicated by the approximately 90 percent cooperation between Cambodian and Chinese private and semi-private firms (Phou Sambath ND cited in Marks 2000). Additionally, the aid from China is primarily based on the actual needs of Cambodia and is not linked to any condition or repayment i.e. 'without strings attached'. Therefore, Chinese development assistance has become more attractive and demanded by the country.

Cambodia has been granted Chinese aid with little quibbling over issues such as transparency and modality, which stem from the severe background of lacking domestic revenue and suffering from several decades of war (Chan Sophal *et al.* 2008). Cambodia's rich endowment of natural resources, strong agricultural base, extensive timber and fishery resources, mineral and hydropower potential, and petroleum reserves as well as its intensive low cost labour force is attractive to China's ODA and FDI flow and assures the country a positive attitude from China. Many critics argue that the Chinese government uses its influence and financial assistance to promote Chinese companies and Chinese interests.

Both Cambodia and China continue to strengthen their relationship through frequent mutual visits. China is willing to expand commercial ties and to make more disbursements to improve Cambodia's infrastructure and agriculture sectors (Deum Ampil 2010). During the visit of Chinese Vice Premier Hui Liangy in March 2010, China signed three Memorandums of Understanding (MOU) with the country, declaring its intention to boost crop production and upgrade telecommunication systems in Cambodia (Ek Madra 2010).

Box 1: China's ODA to Improve Cambodia's Basic Physical Infrastructure, 2004-2009

Over the period 2004 to 2009, the notable rise of China's ODA flow to Cambodia is chiefly chronicled by the improvement of the country's basic physical infrastructure through several main aid programmes:

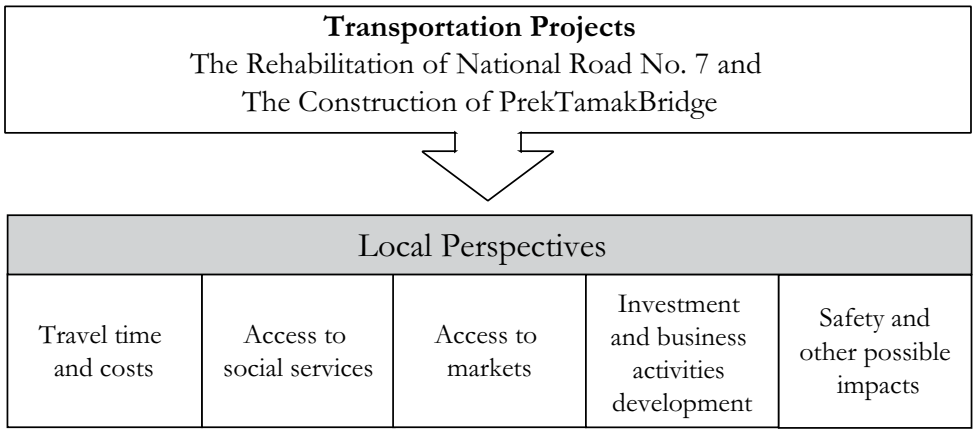
- In 2004 China endorsed USD200 million as buyer's credit to build the Mekong and Tonle Sap Bridges and Road Nos. 76 & 78. The company responsible for construction was Shanghai Construction Group of China.
- In 2006, RMB300 million was provided as non-refundable aid for building Cambodia's government office. Yunnan Construction Engineering Group undertook construction. Soon afterwards, under the GMS programme, China disbursed further concessional loans to build the Information Super Expressway. Another endorsement was the pledge of RMB100 million in interest-free loans for Cambodia's development activities.
- In 2007 China provided USD207 million under preferential buyer's credit for the construction of National Road No. 8, a section of road No. 76, and Prek Tameak and Prek Kdam Bridges. China further donated 200 small diesel-powered water pumps for agricultural use. In the same year, China joined multilateral donors in providing funds to improve the country's education and healthcare, infrastructure, rural development and agriculture sectors. China's disbursement constituted 13 percent of the total USD690 million, which was a remarkable amount. As a bilateral donor, China kept allocating funds to Cambodia, evident in the USD62,500 provided to the Ministries of Parliament and Inspection for organising their offices and transportation equipment; the 60 Cambodian soldiers awarded scholarships for military training in China; and the nine naval patrol boats granted to safeguard oil installations in the Gulf of Thailand (Xinhua adapted from Rasmei Kampuchea 2007).
- In 2008 China promised to endorse low-interest loans of USD55 million at the same time allowing Cambodia to export extra volumes of goods to China without levying taxes on them. Later, China pledged USD280 million in loans for infrastructure projects: irrigation systems in Battambang province; power transmission lines to Phnom Penh; repair of a road linking Kampong Thom and Preah Vihear provinces and the road from Stung Treng province to Ban-lung (Xinhua adapted from Rasmei Kampuchea 2008).
- In May 2009, China provided about USD73 million in concessional loans to build part of the main road in north-eastern Cambodia so as to develop the area into a new economic zone. The road will facilitate border trade, transport, and tourism in the GMS triangle development framework. Shortly afterwards in July, approximately USD66.8 million was endorsed for road restoration in Kampong Thom, Kampong Cham, and Mondolkiri (Xinhua, Rasmei Kampuchea 2009).

5.2. Methodologies and Analytical Framework

As stressed in the previous section, Chinese ODA has been mainly allocated to improve transport infrastructure in Cambodia. Hence, to assess the impact of China's ODA on poverty reduction, case studies on two Chinese-funded transportation projects were conducted to gain insights into specific issues and micro-level impacts: the rehabilitation of National Road No 7 from Kratie to Trapeang Kriel (a border crossing with Lao PDR) which has been completed, and the on-going construction of Prek Tamak Bridge in Kandal province. The analytical framework is illustrated in Figure 10.

Given the lack of quantitative data, focus group discussions (FGDs) with direct and indirect beneficiaries and target group representatives as well as researchers' observations were drawn upon to gather mainly qualitative information reflecting local perspectives.

Figure 10: Analytical Framework of China's ODA in Cambodia



5.3. Case Studies

5.3.1. Background

Case Study 1: Rehabilitation of National Road No. 7 from Kratie to Trapeang Kriel (a border to Laos)

National Road No.7 is a 509 km long national highway that runs through Kratie and Stung Treng provinces connecting Skuon in Kompong Cham province with Veun Sai on the Lao border and then joins Lao Route 13, running northwards along the Mekong River to Luang Prabang. Its reconstruction began in November 2004 and finished in December 2007. It was funded by a concessional loan of USD60.98 million and a grant of USD2.43 million from the Chinese government and was carried out by the Shanghai Construction Group of China. The road is a segment of the road linkage for ASEAN countries and also completes Asian Highway No. 11. Local people in Kratie and Stung Treng province generally refer to the road as the ASEAN highway.

Case Study 2: The Construction of Prek Tamak Bridge in Kandal Province (1060m)

The Prek Tamak bridge is located about 40 km north of Phnom Penh city. Construction of the bridge is funded by concessional loan of USD43.5 million from the government of China and contracted to China's Shanghai Construction Group. The project started in June 2007 and was scheduled for completion in September 2010. By providing a crossing over the Mekong River, the bridge creates another east-west link across the country.

5.3.2. Findings

Case Study 1: The Rehabilitation of National Road No 7 from Kratie to Trapeang Kriel

Focus group discussions were conducted by the research team from 23 to 25 March 2010 in the north-eastern provinces of Stung Treng and Kratie, as National Road No 7 cuts across these provinces and links Cambodia's and Laos' economic corridor. In each province, three villages located along the road and near the border were selected to gain insights into the effects of the road construction on the villagers' livelihoods. The villages of O' Svay, O' Reussey Kandal and Reachea Nokol in Stung Treng province and O' Tanueng, Korsang and Sre Ror Neam in Kratie province were chosen. The six to to eleven participants in each FGD were purposely selected to ensure gender equality, diverse sources of income and a broad age range.

The newly constructed road provides a mixed bag of positive and negative benefits for people living along and near the road. On the positive side, the duration and cost of travelling has been significantly reduced. The journey from O'Taneng village to Kratie town (55km) by mini-bus or taxi, which used to take three hours and cost KHR7,000, now takes one hour and costs KHR4,000. Village children have safer and cheaper travel and more access to lower secondary school; prior to the road, they could only study up to grade 6. Villagers also have quicker, cheaper and better access to distant healthcare centres, lessening their sole dependency on traditional medicine and midwifery practices.

Better direct access to market and more buyers coming to the villages has strengthened farmers' bargaining power, reduced wastage and pushed farm produce prices up. FGD participants reported that overall crop prices have risen from KHR200 to KHR800-1000 per kg, encouraging farmers to expand and diversify their production. Land prices have escalated since road construction began. In O'Russey Kandal village, the land price along the road increased dramatically from virtually nil to USD100 for a 3m by 400m plot, while farm land was valued at USD2,000-3,000 per ha . In Reachea Nokol village, the price of land was USD600 for a 1m by 300m plot and farm land was USD1,000 per hectare. Some villagers could gain by selling land to invest in their children's education and vocational skill training. The village is better connected to development agencies, such as Danida, Oxfam and CIVO, and micro-finance institutions, like Acleda, AMK and Thaneakea Phum.

Despite the benefits, villagers are faced with a number of problems arising from the improved road. A number of households had to move and the compensation of USD1000-2500 for a house in good condition and USD300-600 for a poor one was not enough to buy a new plot of land in the village. The number of traffic accidents has risen, mainly due to the lack of road warning signs and safety awareness. It was also claimed that the new road has attracted several agro-industrial companies, the majority of which are Chinese, leading to disputes between the companies and villagers where investment land overlaps farmers' paddy fields. Because the companies have cut down forest for industrial crop plantation, villagers' income from non-timber forest products has declined.

Case Study 2: Construction of Prek Tamak Bridge in Kandal Province

Two FGDs were conducted in Kampong Domrey and Svay Ath Leu villages, Kandal province, in December 2009 when construction of the bridge was in progress and villagers were still using the ferry to cross the river. Seven to eight participants were purposely selected for each FGD based on their standard of living, which was defined as poor: however, more villagers unexpectedly joined the discussion in Svay Ath Leu, taking the total number of participants to 17.

Villagers were anticipating positive and negative benefits from the new bridge. Travel time will be reduced significantly as they usually have to wait about 1-1.5 hours for the ferry and there is no night time service. They will have better and quicker access to healthcare and education services as well as job opportunities in Phnom Penh city. Cost will also be scaled back through the elimination of ferry fares, currently KHR500 per motorbike and KHR300 per person. Better access to market will cut out middlemen, allowing farmers to get higher prices for their produce. For instance, without having to rely on middlemen, brick producers could get KHR200 instead of KHR150 per brick. They also anticipate new employment opportunities, such as in restaurants which are expected to open in the villages.

Land prices have increased as a result of the new bridge, but villagers do not expect to benefit as they are unlikely to sell their residential land. Additionally, they did not foresee any kind of future investment, except for restaurants.

Although some vendors whose business is located around the ferry dock will lose their income source, they remain optimistic about the bridge. No villagers were employed in the construction of the bridge; mostly Chinese workers were observed at the site. Around 100 households were resettled with compensation of USD18.0 per square metre for land or houses near the bridge, USD15.0 per square metre for other residential land, USD8.0 per square metre for farm land, and USD5.3 per square metre for other land.

6. CONCLUSION AND POLICY IMPLICATIONS

6.1. Conclusions

Trade Dimension

Using the framework developed by Jenkins and Edwards (2004), the study finds that between 1992 and 2008, export to China made a significant contribution to poverty reduction in Cambodia through the rising export shares of labour-intensive agriculture, rubber in particular, and labour-intensive textiles and garments. Positive contribution is also revealed through the employment generated by the rising import of labour-intensive textiles and garments during the same period, while positive effect on poverty reduction is evident given the rise in import share of pro-poor consumer goods between 1992 and 2008. There is no concrete evidence of competition from China in garment export to the EU market due to Cambodia's slim market share, posing no threat to Cambodia's export and to poverty reduction. However, competition in garment export to the US market is more pronounced, implying possible negative effect on poverty reduction in Cambodia's garment sector.

Overall, it appears that China's engagement and relation with Cambodia during the last decade and a half has to some extent positively contributed to poverty reduction in Cambodia. However, one should be cautious about generalising these findings as the study could not quantitatively capture the real rate/effect on poverty resulting from the rising shares of labour-intensive export to and import from China, which requires a more viable and sophisticated approach to capture the true effect on poverty reduction. This study serves as an initial exercise and provides direction for future research.

Investment Dimension

China is a major investor in Cambodia. Its investment in the country has grown substantially since 2004 and is largely concentrated in the natural resource (petroleum, mining, energy and hydropower plants), tourism and garment sectors. China's investors in Cambodia have explored low labour cost, political stability, investment incentives, and newly emerging potential markets for MFN status granted to Cambodia.

From the case study, China's investment in Cambodia's garment industry has shown a positive contribution to employment creation (63 percent of the interviewed workers were self-employed before getting a job in the Chinese factories). Their average earning is more than double the overall poverty line in Phnom Penh at 2006 prices. However, the net benefits between previous (self-employment) and current employment are not captured in the objectives of this study. Remittance sent to their home is chiefly used for daily food consumption, followed by family members' education, paying debt and buying farm land, all of which would help their households move out of deficiency in the short and long-run.

The opportunities and support for capacity and skill development are rated as low, however. The skills and knowledge gained from their current job are only basic skills learned from their daily work. Knowledge and skill transfer then is a major gap for China's investment in Cambodia, especially in the garment sector. Although this sector does not require much skill, the provision of a skill development programme should be a condition for foreign investment in Cambodia.

ODA Dimension

China has been an important development partner in respect to funds channelling and investment gathering. China's ODA also plays significant roles in financing the development of Cambodia as an additional public resource through supporting public service delivery. China's ODA to Cambodia covers a spectrum from diplomatic relationship to economic and investment intervention. The country mostly provides concessional loans to develop the infrastructure sector, especially road restoration and construction.

The two case-studies—the rehabilitation of National Road No. 7 and the construction of Prek Tamak Bridge—suggest that villagers tend to favour the projects as they gain such benefits as reduced travelling time and cost, better access to education and healthcare services, higher farm product prices with direct access to market, and increased possibility of crop diversification. A new road also encourages commercially operated services and creates better connectivity with development agencies and micro-finance institutions.

The construction activities were contracted out to China's state-owned companies which came in the form of materials, technologies as well as expertise and even unskilled workers; only a few local people were employed, and then only to meet short-term need. Another concern raised by villagers and local authorities is that now that the road has been improved, Chinese companies have come to the area to invest in crop plantation and mineral exploration, causing disputes between villagers and the companies. The increasing number of traffic accidents due to lack of proper traffic signs is another concern raised by the villagers.

6.2. Policy Implications

Trade Dimension

The empirical findings indicate that deepening trade and investment relations with China could potentially contribute to poverty reduction in Cambodia through employment creation in the labour-intensive sectors and the import of pro-poor consumer goods, which are complementary products for the domestic market. To better contribute to poverty reduction, it is imperative that the following steps be taken:

- Better tap opportunities for the export of agriculture products of Cambodian specialisation which are labour-intensive in nature, such as fish, live animals, rice, rubber and other light manufactured products with preferential treatment from China under ACFTA framework, which would to a certain extent help ease the burden of negative trade balance, thereby contributing to poverty reduction
- Promote access to and increase availability of finance for small and medium enterprises as they indirectly engage in export activities
- Promote Cambodian agricultural products through trade fairs or trade mission in China
- Lobby Chinese garment producers to source inputs from local producers or establish backward linkage industries in Cambodia
- Encourage and support local producers to engage in backward linkage sectors in the garment industry
- Adopt computerised customs to reduce the number of documents and signatures and informal fees, i.e. ASYCUDA World system at Sihanuokville Port, which will reduce unpredictability and improve investors' confidence.

Investment Dimension

Cambodia's rich endowment of natural resources, extensive timber, mineral and hydropower potential and petroleum reserves as well as the low cost intensive labour force, assures the country of a positive attitude from China with respect to its investment and development assistance. The garment sector case study reveals that China's investment generated employment and income, but had little impact on skill development. The key issue is the extent to which benefits from China's investment spill-over into the domestic sector in a synergistic relationship. Hence, policy interventions are needed to create the necessary conditions for positive spill-over. This is to attract Chinese or other foreign investment to the sectors that have potential for skill and technology transfer, which in turn would lead to innovation and increased productivity, upgrade domestic production and improve quality, and promote backward and forward linkages.

ODA Dimension

Besides the positive impacts from having a better road and new bridge, the following courses of action should be considered at both national and local levels:

- Livelihood opportunities should be diversified or created for those who are likely to lose income from selling around the ferry terminal or have lost access to land and forestry resources
- Traffic information and road safety awareness guidelines should be widely disseminated to villagers through the commune council
- Negotiation with the Chinese government to ensure involvement of Cambodia's manpower in China's ODA projects should be undertaken in order to promote technology and skill transfer to Cambodia through ODA
- Programmes to promote capacity building at local level from China's ODA should be developed.

Future Research

The limitations of this study shape the future research in the areas covered by this paper. More specifically, it should entail more in-depth empirical (quantitative and qualitative) analyses of the linkage between foreign investment and infrastructure development and poverty reduction in Cambodia at both macro and micro levels.

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-III-

Using Propensity Score Matching to Generate Two Comparable Groups in the Baseline Survey: The Case of GMS Transmission Line Project

By Hing Vutha, Saing Chan Hang and Khieng Sothy[1]

1. INTRODUCTION

This research project represents the first baseline socio-economic survey, for the Greater Mekong Sub-region Transmission Project, conducted by CDRI with support from the Asian Development Bank. The study was designed to construct data sets with comprehensive socioeconomic indicators to aid monitoring and evaluation of outcomes and impacts in subsequent years after project completion. An analytical tool known as *"Propensity Score Matching"* is used to obtain a matching result of similar households between the project area (treatment) and the non-project area (control). The propensity score matching analysis enables us to ensure good matches for the treatment households in the comparison sub-sample, and to consider the possibility of dropping some of the comparison households (those with highly different characteristics) from the follow-up survey.

This article is structured as follows. Section 2 looks at the research methodology, covering sampling design, data collection and estimation method. Section 3 describes the key socio-economic indicators derived from the full sample. Section 4 explains the propensity score matching technique and discusses the empirical results. Section 5 concludes.

2. METHODOLOGY

The framework for the baseline survey is consistent with the literature on rural electrification and with the agreed terms of reference, emphasising household level impact indicators. The impact evaluation uses four broad indicators: demographic, economic, social and energy. *Demographic indicators* cover household size, structure and

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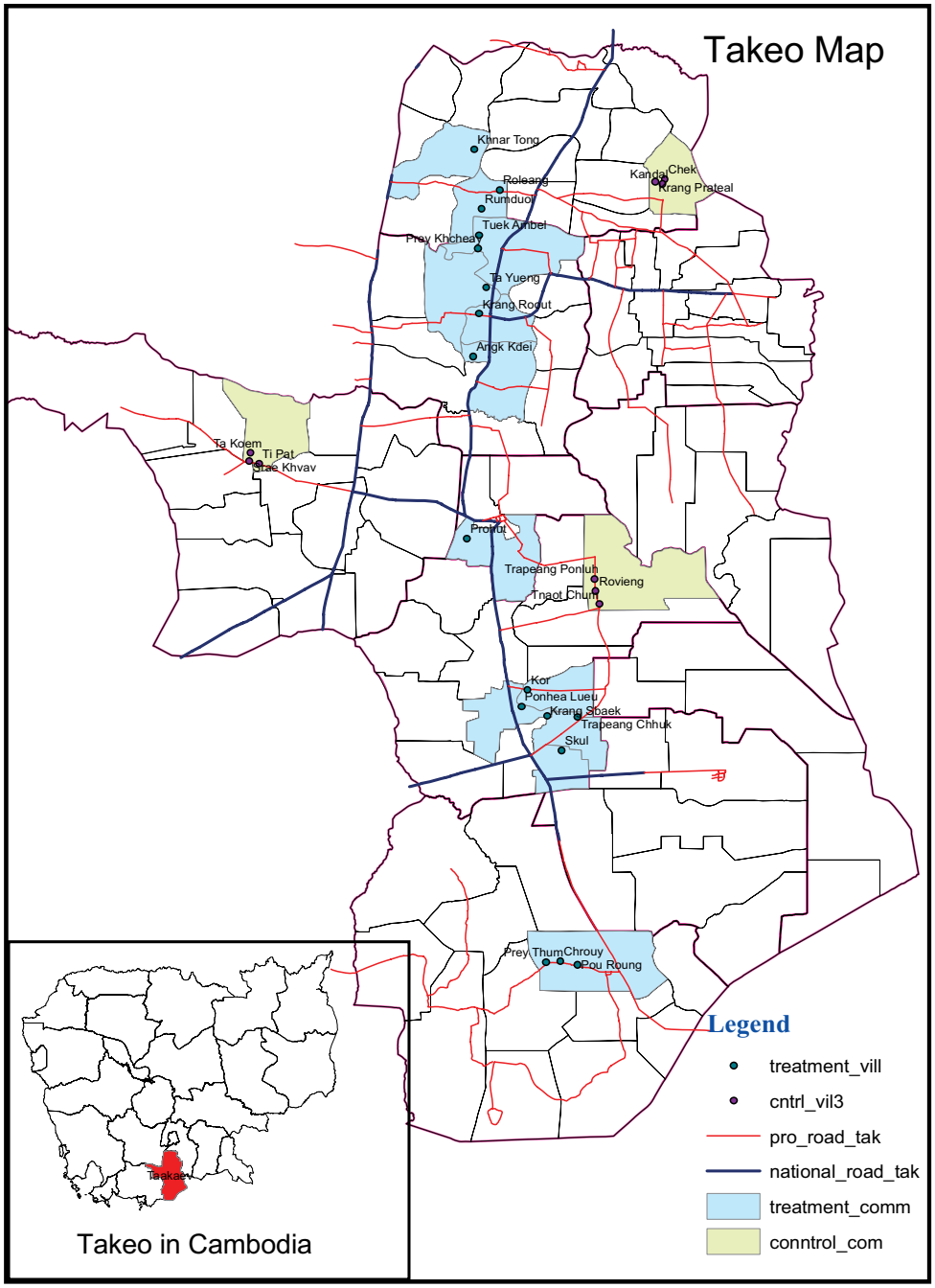
dependency ratio. *Economic indicators* include income sources, employment, expenditure, ownership of assets, savings and credit. *Social indicators* consist of literacy rate, school enrolment, education attainment, reading time, knowledge on health issues, and health practices. *Energy indicators* include energy consumption and expenditure, source of energy, source of electricity, willingness to connect and pay for electricity, and length of time households have been connected to electricity grid.



The study takes the *household* as the measurement unit to generate baseline socio-economic indicators and used a structured questionnaire to collect key household information. The sampling design classified the survey areas into treatment and control areas. The *treatment areas* consist of 17 villages in the project location (one kilometre either side of the grid), which were selected based on consultations with Electricité du Cambodge (EDC) representatives and the "Benefit Monitoring Report" cited in the GMS Transmission Project Inception Report. The *control areas* comprise 10 villages outside the project area, which are least likely to be connected to the transmission grid. To obtain the household sample size from each selected village, probability proportionate to size was applied, which created the total number of 750 sample households, 450 in the treatment group and 300 in the control group (see Tables A.1 and A.2 in the Appendix).

In order to select households from each selected village, a simple random technique was used. A bank note was randomly picked from a wallet to acquire the last digit of the serial number. Then, as each village contains a numbered list of the total number of households, the last digit of the serial number was used to assign the first household to be selected, and consecutive households were selected based on the sum of the last digit of the serial number on the bank note and the interval number.

The interval number (I) was acquired by dividing the household population in the selected village by the total number of households from that village to be selected for survey. For instance, if the team wishes to select 30 households out of a village with a household population of 150, the selected interval number is 5 (I=150/30). Assuming that the last digit of the bank note is 4, the first household to be selected is household 4, the second is household 9 (5 + 4 = 9), the third is household 14 (5 + 9 = 14); and the 30th is household 149 (5 + 144 = 149). The survey team performed this procedure for each village. The survey was conducted and completed in December 2009.

3. KEY SOCIO-ECONOMIC INDICATORS

3.1. Demographic Indicators

The average household size in the sample villages is around five persons. Treatment villages appear to have larger households compared to those in the control villages, but the difference is not statistically significant. The average age of the total population is around 30 years old. Household members of working age (between 15 and 59 years old) account for 64 percent in the control group and 63 percent in the treatment group. Members who are too young or too old to work represent about 17 percent in both control and treatment groups. In terms of age structure by gender, the male to female ratio seems to be nicely balanced in three age categories – 5-14, 15-29 and 30-44 –in both control and treatment groups.

The dependency ratio, which refers to the age-population ratio of those typically not in the labour force (the dependent part) and those typically in the labour force (the productive part), is high in both control and treatment groups. Households in the treatment group have a higher dependency ratio at 70 percent than those in the control

group at 60 percent, with the level of difference being statistically significant. The child dependency ratio is 60 percent in the treatment group and 50 percent in the control group, while the age dependency ratio is relatively low at 13 percent in the treatment group and 12 percent in the control group.

Table 1: Key Household Demographic Indicators

	Control group	Treatment group	Overall	Difference	T-Statistics
Average family size	4.99	5.22	5.13	-0.23	-1.59
Average age	31.0	30.0	30.0	1.0	1.77
Members of working age (%)	64.1	62.6	63.2	-	-
Members not of working age (%)	17.1	16.9	17.0	-	-
Dependency ratio	60.0	70.0	66.0	-10.0	-1.99
Child dependency ratio	49.0	57.0	54.0	-8.0	-1.91
Age dependency ratio	12.0	13.0	12.0	-1.0	-0.61

Source: CDRI household survey in 27 villages, December 2009

3.2. Economic Indicators

Household occupation

The survey data show that the primary occupation of more than half of the household members in both control and treatment groups is in the agriculture, forestry and fishery sector; around a third of whom are students. Relatively few household members work as garment and construction workers, street vendors, vehicle and boat operators.

The occupational pattern of household heads is also similar to that of individual household members, except that none of the household heads are students. The majority of the household heads are engaged in agricultural activities, at around 92 percent in the control group and 83 percent in the treatment group. It should also be noted that 32 household heads in both control and treatment groups were unemployed at the time of survey. The proportion of household heads in the treatment group working as street vendors and vehicle operators is higher than in the control group. Almost 90 percent of household heads in both groups are own-account workers, while 7.2 percent in the treatment group and 3.8 percent in the control group are paid employees. Overall, household heads in the control group tend to be mainly engaged in agricultural activities. Household heads in the treatment group tend to be engaged in petty business, vehicle operation and artisan work and only a small proportion are engaged in farming activities.

Table 2: Occupation of HH Head and Individual HH Members

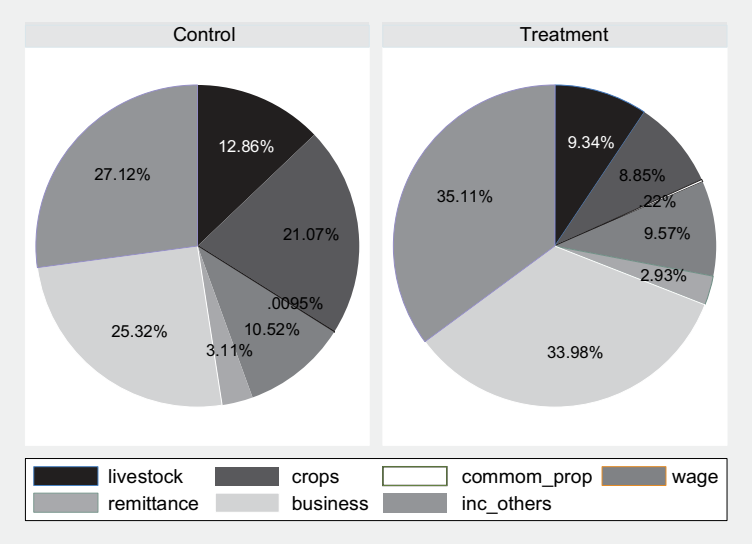
Categories	Occupation of household head			Occupation of individual members		
	Control group (%)	Treatment group (%)	Overall (%)	Control group (%)	Treatment group (%)	Overall (%)
Agriculture-forestry-fishery	92.3	83.8	87.2	55.5	46.9	50.3
Garment worker	0.0	0.2	0.1	4.0	7.6	6.2
Mining-processing	1.0	1.9	1.5	1.2	2.4	1.9
Street vendor	2.4	4.2	3.5	1.6	4.7	3.4
Vehicle-boat operator	0.3	1.9	1.3	0.6	1.3	1.0
Construction worker	0.3	0.9	0.7	0.7	0.9	0.8
Hotel-restaurant	0.0	0.2	0.1	0.0	0.2	0.1
Handicraft-artisan	1.0	1.4	1.3	3.7	0.9	2.0
Student	0.0	0.0	0.0	30.4	31.6	31.1
Other	2.4	5.6	4.3	2.3	3.7	3.1
Total households/ individuals	**287**	**431**	**718**	**1288**	**1993**	**3281**

Source: CDRI household survey in 27 villages, December 2009

Household income

There are six main sources of household income: livestock, crops, common property resources, labour and wages, remittance, and petty trade and business. Patterns of income sources for both control and treatment groups appear somewhat similar, except for income from growing crops and petty business. This reflects the treatment group's geographical proximity to national roads and the provincial town, whereas the control group households reside in villages at a further distance, but close to provincial roads. Households in both groups earn similar shares of income from livestock, common property resources, labour and wages and remittance. Households in the control group earn a larger share of income from crops, while those in the treatment group garner a bigger share of their earnings from petty trade and business. On the whole, households in the control group tend to specialise in crop farming, while those in the treatment group appear to be business-oriented, engaging in petty trade and retail in their individual communities.

Figure 1: Sources of Household Daily Income per capita at 2009 prices



Source: CDRI household survey in 27 villages, December 2009

Results from testing the mean difference of per capita daily income of the two groups by source show that the mean total income and mean income from other sources, except for income from livestock, are statistically different at 1 to 5 percent (Table 3). The differences do not appear to be substantial for income from livestock, common property resources, wage and labour and remittance, but the disparities for income from crops, business and other sources are bigger. The overall mean difference of total income is considerable at around 2,300 riels. In terms of inequality status, the treatment group is more likely to suffer severe inequality (Gini: 0.40) than the control group (Gini: 0.45).

Table 3: Mean Daily Income per capita by Source (riel price December 2009)

Income sources	Control (n=300)	Treatment (n=444)[2]	Difference	T-statistics
Crops	1503.77	965.03	538.73	3.12***
Livestock	917.63	1090.53	-172.90	-1.31
Common property	0.67	26.20	-25.53	-2.10**
Wage and labour	750.67	1117.98	-367.30	-2.95***
Remittance	221.88	344.04	-122.15	-2.21**
Business	1806.78	2645.91	-839.13	-2.36**
Other	1935.50	2770.93	-835.43	-2.33**
Total income	5330.14	6314.72	-984.57	-2.26**

Note: Level of significance: *** at 1 percent; ** at 5 percent; and * at 10 percent
Source: CDRI household survey in 27 villages, December 2009

2 The total number of households in the treatment group was reduced from 450 to 444; six cases were dropped because of their high per capita daily income of between 50,000 and 150,000 riels (considered to be outliers).

Household consumption

The average total daily per capita household consumption of the treatment group is higher than that of the control group. Mean daily per capita food and non-food consumption of the treatment households are also higher than their control group counterparts. The difference in total consumption and non-food consumption between the two groups is considerable and statistically significant at 1 percent, while the difference in food consumption of the two comparison groups is small and statistically insignificant. This suggests that households in the treatment group tend to have a better quality of life compared to households in the control group that have less or limited access to education, health, roads, business and employment opportunities. Status of inequality in the two groups is somewhat similar and is not as severe as the Gini coefficients (acquired by applying the consumption approach) of 0.27 for the control group and 0.32 for the treatment group.

Table 4: Mean Daily Consumption per capita (riel prices December 2009)

Expenditure	Control (n=300)	Treatment (n=450)	Difference	T-statistics
Food and non-food	8619.94	10007.41	-1387.47	-2.88***
Food consumption	4690.55	4908.01	-217.47	-1.35
Non-food consumption	3929.40	5099.40	-1170.00	-3.00***

Note: Level of significance: *** at 1 percent; ** at 5 percent; and * at 10 percent
Source: CDRI household survey in 27 villages, December 2009

Household housing conditions

The proportions of households with a tin roofed wooden house, concrete or brick house in the treatment group are larger than in the control group. However, there are more households with a tile roofed wooden house in the control group. Surprisingly, a larger number of households in the treatment group have thatch houses. There is no significant difference between the two groups in terms of house size, though the average number of storeys and average number of rooms differ moderately, being statistically significant at 1 and 5 percent, respectively.

Table 5: Household Dwelling Condition

Housing conditions	Control group		Treatment group		Total		T-statistic
	mean	n	mean	n	mean	n	
Housing size (m^2)	35.09	300	35.94	450	35.60	750	-0.739
Number of storeys	1.05	300	1.10	450	1.08	750	-2.482***
Number of rooms	0.58	300	0.72	450	0.66	750	-2.167**

Note: Level of significance: *** at 1 percent; ** at 5 percent; and * at 10 percent
Source: CDRI household survey in 27 villages, December 2009

Household land distribution and ownership

Patterns of land distribution and ownership among households in the treatment and control groups are quite similar (Table 6). There are more landless households and households with land less than 1 ha, and between 2 and 4 ha in the treatment group than in the control group. In contrast, the proportion of households with land above 4 ha in the control group is larger than in the treatment group, confirming the observation that households in the control group tend to be more agriculture-oriented.

Table 6: Land Distribution (%)

	Control group	Treatment group	Overall
Landless households	4	6.4	5.5
Less than 1ha	60	60.7	60.4
Between 1 and 2ha	23.3	22.9	23.1
Between 2 and 3ha	7.3	5.6	6.3
Between 3 and 4ha	3	3.1	3.1
Between 4 and 5ha	1.3	0.4	0.8
Over 5ha	1	0.8	0.9
Total	**300**	**450**	**750**

Source: CDRI household survey in 27 villages, December 2009

The overall size of the two groups' agricultural land does not differ markedly. Breaking down agricultural land by quintile, there is evidence of a significant difference in land size between the two groups as indicated in the table below.

Table 7: Average Size of Farm Land to Total Number of Plots by Quintile

	Control (mean)	Treatment (mean)	Difference	T-statistic	Mean total
Agricultural land (ha)	1.064	0.948	0.115	1.499	0.995
1st quintile	0.114	0.105	0.009	0.581	0.108
2nd quintile	0.402	0.415	-0.013	-0.999	0.410
3rd quintile	0.695	0.671	0.024	1.533	0.681
4th quintile	1.066	1.061	0.005	0.217	1.063
5th quintile	2.592	2.336	0.256	1.184	2.444

Note: Level of significance: *** at 1 percent; ** at 5 percent; and * at 10 percent
Source: CDRI household survey in 27 villages, December 2009

Household loans

Almost half of the total number of households in each comparison group had acquired a loan. On average, one household incurs around 1.30 loans. There is no marked difference in average monthly interest rate, at around 3.0 percent, between the two groups. The difference in the age of loan to the total number of loans in the two groups is slight, where the average period of the loan is around six months. There is remarkable disparity in the mean size of loan per household and per loan between the two groups, with t-statistics being statistically significant at 1 percent.

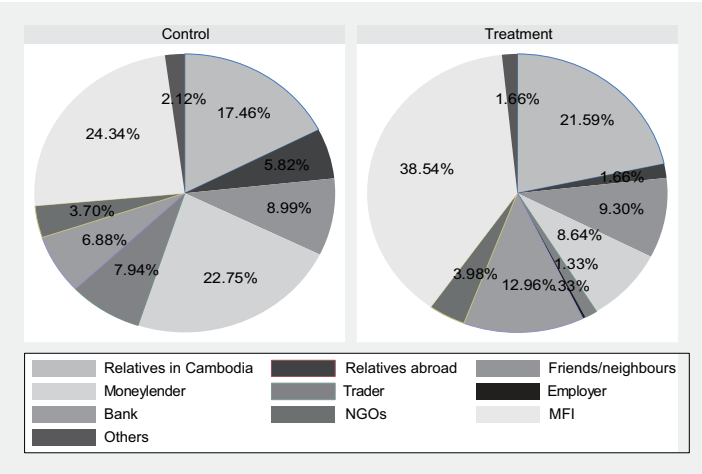
Table 8: Household Borrowing Situation

Classification	Control group	n	Treatment group	n	t-statistics
Number of HH with loan	140	-	234	-	-
Number of HH without loan	160	-	216	-	-
Average number of loans per HH	1.35	140	1.29	234	0.86
Average size of loan of each HH ('0000 riels)	224.61	140	156.66	234	2.71***
Average monthly interest rate (%)	3.13	189	2.90	301	0.72
Average size of loan ('0000 riels)	166.38	189	121.79	301	2.48***
Age of loan to total number of loans (months)	6.83	189	5.66	301	1.72*

Note: Level of significance: *** at 1 percent; ** at 5 percent; and * at 10 percent
Source: CDRI household survey in 27 villages, December 2009

Given their proximity to the centre of the province, particularly the national roads, households in the treatment group tend to have better access to formal lending. These households depend largely on loans from banks and microfinance institutions (MFI), while those in the control group rely mainly on loans from money lenders and traders, or other informal sources of finance. It should also be noted that nearly a third of the total number of households in the control group have access to loans from microfinance institutions. This to a certain extent helps reduce debt severity of the households in the control group as the interest rate on informal loans is normally higher than on formal loans. Similar proportions of households in the two groups rely on loans from relatives, friends, neighbours and NGOs.

Figure 2: Sources of Household Loan by Comparison Groups



Source: CDRI household survey in 27 villages, December 2009

3.3. Social Indicators

Education

Literacy Rate

Literacy rate is defined as the ability to read and write a simple message. Literacy rate for adults (i.e. those aged 15 years and above) stands at 74.59 percent for the control group and at 77.01 percent for the treatment group. The overall level of the adult literacy rate for both control and treatment groups is very close to the national adult literacy rate of 77 percent. In both groups, adult males have a much higher literacy rate compared to adult females.

Table 9: Literacy Rate by Group and Gender

	Control group	**Treatment group**
Overall literacy rate		
Average	70.14	71.15
Male	78.17	78.25
Female	62.90	64.80
Adult literacy rate (age 15 and above)		
Average	74.59	77.01
Male	84.68	86.99
Female	65.87	68.50

Source: CDRI household survey in 27 villages, December 2009

Educational Attainment

Household members in both control and treatment groups have a fairly low education. Around 20 percent have never attended school, 46 percent have the highest level of education at primary school, 22 percent at secondary school and 9 percent at high school. Educational attainment does not differ much between the control and treatment groups. For household heads, about half went to primary school, 20 per cent obtained some secondary schooling, and 25 percent have never attended formal school. The t-statistic confirms the similarity between the two groups, showing no significant difference in educational attainment.

Table 10: Education Level of Household Head by Gender

Education level	Control group (%)			Treatment group (%)		
	Male	Female	Both	Male	Female	Both
Kindergarten	0.5	1.1	0.7	0.0	0.0	0.0
Primary school	50.7	42.1	48.0	43.6	40.0	42.7
Secondary school	21.5	8.4	17.3	26.7	10.0	22.2
High school	11.2	1.1	8.0	13.0	1.7	10.0
Technical/vocational	0.0	0.0	0.0	0.6	0.8	0.7
Undergraduate or high	0.0	0.0	0.0	0.9	0.0	0.7
No schooling	16.1	47.4	26.0	15.2	47.5	23.8

Source: CDRI household survey in 27 villages, December 2009

School Enrolment

School enrolment ratio, defined as the ratio of children of official school age who are enrolled to the population of the corresponding official school age, among household members is high. Survey data show that primary school enrolment stands at 96 percent in the control group and 99 percent in the treatment group compared to the national average of 89 percent. Around 80 percent of children between 12 and 17 years old in both control and treatment groups are enrolled in formal secondary school, while only 21 percent of adults in the control group and 24 percent in the treatment group are enrolled in higher education.

Table 11: School Enrolment by Education Level (%)

Education level	Control group	Treatment group	Overall
Primary	96	99	98
Secondary	81	78	80
Tertiary	21	24	23

Source: CDRI household survey in 27 villages, December 2009

Health

Health Problems

Data on health status show that approximately 34 percent had a health problem in the four weeks prior to the survey. The most commonly reported health problems are flu, fever, arthritis, stomach ache and hypertension. About 84 percent of those who reported a health problem had sought healthcare or treatment for one or more health issues in the previous four weeks. The most common places that household members in both groups went for healthcare services were private hospital, clinic, private pharmacies, and the home of a trained nurse or other health worker. Not many went to the provincial or district health centres for health treatment and even fewer went to a national hospital.

Table 12: Places Visited for Healthcare and Treatment (%)

	Control group	Treatment group	Overall
Private hospital, clinic	28	24	26
Pharmacy	28	26	27
Home of trained health worker	15	19	17
Health centre	11	13	12
Provincial, district hospital	7	13	11
NGO health worker	6	1	3
National hospital	3	3	3
Other (outreach, kru khmer,…)	2	1	1

Source: CDRI household survey in 27 villages, December 2009

Knowledge on public health issues

Household heads' knowledge on key public health issues is high in both control and treatment groups. Over 80 percent of them know about health problems caused by smoking, the symptoms of dengue and preventive measures, children's immunisation, HIV/AIDS and preventive measures, bird flu, birth spacing, TB and malaria. In terms of sources of knowledge, electronic media appears to be the most effective channel to spread information. The survey found that more than 60 percent of household heads in both control and treatment groups know about key public health issues via television and radio. The other important sources of information are health centres, peer education and community outreach by NGOs.

Table 13: Sources of Knowledge on Key Public Health Issues (%)

	Control group	Treatment group	Overall
Radio	50	37	44
Television	18	27	23
Health centre/hospital	15	17	16
Peer educator	9	9	9
Community outreach by NGOs	8	9	8
Other (flier, study at school)	1	1	1

Source: CDRI household survey in 27 villages, December 2009

Health practices

Good knowledge appears to have been translated into good practice in many aspects of public health. One of them is smoking status. The rate of tobacco use, defined as the ratio of persons who smoke cigarettes or chew tobacco to total population, is considerably low in both control and treatment groups. Approximately 13.9 percent of sample household members in the control group and 13.4 percent in the treatment group smoke cigarettes. Tobacco use is skewed towards the male population – that is, men are more likely to use tobacco than women. Another good health practice concerns antenatal care. The ratio of pregnancy check-ups appears to be very high. Regular check-up is very common (77 percent in control group, 87 percent in treatment group), while some at least have an occasional check-up (19 percent in control group

versus 9 percent in treatment group). In terms of vaccination programmes for infants, almost all households with young children take their children for vaccination; this practice appears similarly among control and treatment groups.

Table 14: Pregnancy Check-up and Child Vaccination

	Control group (%)	**Treatment group (%)**	**Overall (%)**
Regular pregnancy check-up	77.27	86.91	83.39
Occasional pregnancy check-up	19.09	9.42	12.96
No pregnancy check-up	3.64	3.66	3.65
Children vaccinated with vaccination programme book	90.83	87.43	88.67
Children vaccinated without vaccination programme book	8.26	10.47	9.67

Source: CDRI household survey in 27 villages, December 2009

Time allocation on daily activities

Time spent on daily activities in the evening differs greatly for male and female household heads. Male household heads spend about half of their time in entertainment activities i.e. watching television and listening to the radio, one quarter in socialising activities, and spend far less time on income earning and educational activities. Female household heads dedicate a considerable amount of time to household chores and entertainment activities, and like their male counterparts, gave limited time to socialising, income earning and educational activities.

Table 15: Time Spent on Daily Activities by Household Head and Student

Activity	Control group		Treatment group		Control group		Treatment group	
	Minutes	%	Minutes	%	Minutes	%	Minutes	%
	Male household head				**Female household head**			
Entertainment	93.41	50.72	82.15	47.2	65.74	35.81	80.54	39.71
Socialising	42.64	23.15	43.22	24.83	34.58	18.84	39.67	19.56
Household chores	36.18	19.64	35.4	20.34	74.14	40.39	74.49	36.73
Income earning	6.95	3.77	7.06	4.06	5.79	3.15	7.67	3.78
Education	5.00	2.71	6.21	3.57	3.32	1.81	0.46	0.23
Total	184.18	100.00	174.04	100.00	183.57	100.00	202.83	100.00
	Male senior student				**Female senior student**			
Entertainment	19.32	35.76	17.49	32.72	24.98	37.38	21.14	33.32
Education	11.96	22.14	13.67	25.57	11.94	17.87	14.52	22.88
Household chores	10.25	18.97	11.02	20.61	16.37	24.50	18.27	28.79
Socialising	10.47	19.38	10.19	19.06	9.48	14.19	8.39	13.22
Income earning	1.80	3.33	1.07	2.00	4.05	6.06	1.10	1.73

Source: CDRI household survey in 27 villages, December 2009

There is a similar pattern of time allocation among male and female sample household members who are currently studying at formal school. Watching television or listening to the radio consumes around one third of their time. Female students tend to spend more time on household chores than male students and relatively less time on education. T-statistics confirm insignificant differences in time allocation between household heads and students among treatment and control groups.

3.4. Energy Indicators

Source and Purpose of Energy Consumption

The main sources of energy in both control and treatment groups are firewood, car batteries and kerosene. Other sources of household energy are candles, dry cell batteries, gas and charcoal, but the level of consumption is quite low. T-statistics confirm that there is no significant difference in the energy consumption patterns between the control and treatment groups. The primary purposes of energy consumption are lighting, cooking, boiling water and powering electronic equipment such as a television or radio. Households rarely consume energy for business operations or agricultural production (e.g. pumping water).

Energy Expenditure

Households spend an average of USD10.95 every month on energy. Spending on firewood and car batteries altogether represents the major share of total energy expenditure. Households in the treatment group spend more on energy than those in the control group, but the difference is not statistically significant.

Table 16: Monthly Energy Expenditure by Major Sources

Source of energy	Control group		Treatment group		Overall		Difference	T-Statistics
	Riels	%	Riels	%	Riels	%		
Firewood	28913	67.00	29865	63.72	29484	64.97	-952	-0.62
Car batteries	7368	17.07	7728	16.49	7584	16.71	-360	-0.56
Kerosene	2184	5.06	2645	5.64	2461	5.42	-461	-1.72
Charcoal	1408	3.26	837	1.79	1065	2.35	571	0.76
Other	3280	7.61	5795	12.36	4789	10.55	-	-
Total	43153	100	46870	100	45383	100	-3717	-1.43

Exchange rate: 4,146 riels/USD (National Bank of Cambodia, December 2009)
Source: CDRI household survey in 27 villages, December 2009

Source of Electricity

Majority of households in both control and treatment groups own a car battery. Households use a car battery as the main source of electricity for about 3.5 hours seven days a week. Ownership and use of car batteries in the treatment and control villages are similar. In the absence of electricity, households in the sample villages use a car battery to power several types of electrical equipment including lighting, television, radio cassette and video recorders.

Willingness to connect to electricity

By design, this survey randomly selected households that are currently not connected to an electricity supply. When asked if they would be willing to have a connection to mains electricity supply, 84 percent in the control group and 90 percent in the treatment group were very keen. Their major reasons are for lighting and entertainment. Other reasons include the lower cost of electricity compared to other sources of energy, light for children to study, and for business purposes. A small proportion of households were not willing to connect to electricity, mainly due to concerns about their inability to pay the connection fee and the monthly electricity bill.

Households would be willing to pay for connection to electricity supply only if the fee is reasonable (USD10.22 for treatment group, USD14.29 for control group). The electricity tariff in rural communities is commonly between USD0.49 and USD0.61 per Kwh, a rate that is widely regarded as very high. Households in the control group suggest that electricity operators should charge USD0.13 per Kwh, while those in the treatment group propose USD0.12 per Kwh.

4. MATCHING HOUSEHOLDS IN THE CONTROL AND TREATMENT GROUPS

4.1. Steps in estimation

Propensity score matching (PSM) is a common approach used to evaluate labour market policies, and has been gaining popularity in various other disciplines for situations where there is one group of treated individuals and another group of untreated individuals (Caliendo & Kopeinig 2008). The principal aim is to estimate causal treatment effects on the two groups. As the data collected for this assessment is a baseline survey, the study must produce matching results for similar households between the control and treatment groups.

In order to obtain similar households from the two groups, first, the propensity score (predicted probability) of household participation in the project must be obtained from a standard logistic regression model (probit/logit). The selected independent variables for the model should be unaffected by household participation in the project.

Once propensity score is estimated, it is used for matching households of the two groups by selecting one or any of the matching techniques, including one-to-one matching, k-nearest neighbours matching, radius matching, kernel matching, local linear regression matching, spline matching and Mahalanobis matching[2]. The performance of different matching estimators varies case-by-case and depends largely on the data structure at hand (Zhao 2000 cited in Caliendo & Kopeinig 2008:45). Additionally, in order to assess the matching quality, the standardised bias of each independent variable in the logistic regression is checked before and after matching. Most empirical studies argue that standardised bias below 3 percent or 5 percent after matching is seen as sufficient (Caliendo & Kopeinig 2008:48).

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2 For detailed STATA command of each algorithm: http://fmwww.bc.edu/RePEc/usug2001/psmatch.pdf

4.2. Data and Model Specification

In order to predict the probability of household participation in the two groups, the study employed the probit regression model as specified in the equation below:

Probit regression equation

$$ADB\_project = \beta_0 + \beta_1 hhsize + \beta_2 hhage + \beta_3 hhagesqr + \beta_4 hheduc + \beta_5 hheducsqr + \beta_6 hhsex + \beta_7 candle \exp + \beta_8 firewood \exp + \beta_9 charcoal \exp + \beta_{10} kerosene \exp + \beta_{11} carbattery \exp + \beta_{12} smallbattery \exp + \beta_{13} hhoccup + \beta_{14} landtype + \beta_{15} housebrick + \beta_{16} index\ homequip + + \beta_{17} indextransport + \beta_{18} indexagri + \beta_{19} telephone + \beta_{20} credit + \beta_{21} primschool + \beta_{22} ngoserv \beta_{23} toilet + \beta_{24} hhhealth + \beta_{25} wateracc + \beta_{26} literacy + \mu$$

Data from both household and village surveys were used for this analysis in order to control for both household demographics and village characteristics. Table 17 presents definitions and summary statistics for the variables used in the empirical analysis. The variables of income and consumption expenditures look consistent. Average daily income per capita is approximately 5918 riels, while average daily consumption per capita is around 9288 riels. However, the standard deviation of income (5836 riels) appears to be larger than that for consumption (6165 riels), reflecting marked disparities in income across sample households. Earnings from business contribute the largest share of total household income, followed by earnings from agriculture, livestock, wages and remittance. For consumption, households spend almost half of their income on non-food items.

Table 17: Definition of Variables and Descriptive Statistics

Variables	Description	Sample	Mean	Std. dev.
Dependent variables				
ADB_project	household within the project (treatment=1); household outside the project (control=0)	750	0.60	0.49
Independent variables				
HH size	household size	750	5.13	1.90
HH age	age of household head	750	47.39	13.42
HH agesqr	squared age of household head	750	2426.09	1325.82
HH educ	number of years of education of household head	750	4.51	3.58
HH educsqr	squared number of years of education of household head	750	33.19	39.55
HH sex	sex of household head (0=female; 1=male)	750	0.71	0.45
candleexp	expense on candles per day per HH in riels	750	11.56	51.30
Firewoodexp	expense on firewood per day per HH in riels	750	982.81	689.87
charcoalexp	expense on charcoal per day per HH in riels	750	35.51	336.51

Variables	Description	Sample	Mean	Std. dev.
Keroseneexp	expense on kerosene per day per HH in riels	750	82.02	119.86
Carbatteryexp	expense on car battery recharge per day in riels	750	252.79	286.12
Smallbatteryexp	expense on common small battery recharge per day per household in riels	750	35.86	62.84
HH occup	occupation of household head	750	1.94	0.80
Landtype	type of land of household (1=agri.; 0=Other)	750	0.95	0.23
Housebrick	housing condition of household (1=brick built house; 0=non-brick house)	750	0.08	0.27
Indexhomeequip	index of household home equipment	750	0.00	1.82
Indextransport	index of household transportation asset	750	0.00	1.07
Indexagri	index of household agricultural asset	750	0.00	1.45
Telephone	household with or without telephone	750	0.46	0.50
Credit	household outstanding loan (1=with; 0=without)	750	0.50	0.50
Primschool	village primary school (1=with; 0=without)	750	0.39	0.49
Ngoserv	village with NGO development programme (1=with; 0=without)	750	0.78	0.41
Toilet	toilet (1) no toilet (0)	750	0.33	0.47
HH health	health of household head in last four weeks (1=sick; 0=not sick)	750	0.45	0.50
Wateracc	access to tube well water (1=access; 0=no access)	750	0.55	0.50
literacy	household head able to read and write (1=can; 0=cannot)	750	0.69	0.46
Outcome variables				
Income	daily per capita income in riels	744	5917.71	5836.02
Income agri	daily per capita income from agriculture in riels	750	1216.39	2515.48
Incomel ivestock	daily per capita income from livestock in riels	750	1016.35	1760.59
Income commonp	daily per capita income from common property resources in riels	750	15.78	162.36
Income wage	daily per capita income from labour riels	750	965.40	1670.87
Income remit	daily per capita income from remittance in riels	750	292.42	737.75
Income business	daily per capita income from business in riels	750	3084.00	10991.82

Variables	Description	Sample	Mean	Std. dev.
Income others	daily per capita income from other sources in riels	750	129.82	602.35
Consum	daily per capita consumption in riels	750	9452.42	6501.29
Consum food	daily per capita consumption in riels	750	4821.02	2168.29
Consum nonfood	daily per capita consumption in riels	750	5268.99	413.81
Male study	time spent by male student on reading (minutes in the evening)	750	12.84	26.81
Fem study	time spent by female student on reading (minutes in the evening)	750	13.05	25.75
HH teaching	time spent by parents teaching kids (minutes in the evening)	750	3.76	10.58

Source: CDRI household survey in 27 villages, December 2009

4.3. Empirical Results

Results of the probit regression before matching are shown in Table 18. Predicted probabilities of participation, also known as propensity score, are used for matching households of the two comparison groups. A couple of control variables are strongly associated with household decision to connect to the transmission grid and are statistically significant at 1 and 5 percent. For instance, the more employment the household head had during the last six months, the higher the probability of a household connecting to electricity. The same evidence is also seen for candle expense, kerosene expense, housing condition, home equipment, and presence of NGO services and primary school in the village.

Table 18: Probit Regression of a Sample of 744 Households

Independent variables	Coefficients	Standard error	z
Household size	0.04	0.03	1.24
Household age	-0.01	0.03	-0.41
Household age square	0.00	0.00	0.39
Household education	-0.06	0.06	-0.99
Household education square	0.01	0.00	1.28
Household sex	0.05	0.13	0.36
Candle expense	0.00	0.00	1.99**
Firewood expense	0.00	0.00	0.54
Charcoal expense	0.00	0.00	-0.24
Kerosene expense	0.00	0.00	1.97**
Car battery expense	0.00	0.00	-0.66
Battery expense	0.00	0.00	0.96
Household occupation	0.20	0.08	2.68***
Land type	-0.24	0.25	-0.96
House brick	0.71	0.25	2.85***
Index home equipment	0.12	0.04	2.75***
Index transportation	0.04	0.05	0.74

Index agriculture equipment	-0.11	0.04	-2.65***
Telephone	-0.32	0.10	-3.12***
Credit	0.09	0.11	0.89
Primary school	1.00	0.13	7.88***
NGO services	0.67	0.15	4.49***
Toilet	-0.01	0.12	-0.10
Household health	0.12	0.11	1.11
Water access	0.15	0.11	1.43
Literacy	0.11	0.18	0.58
Constant	-0.92	0.71	-1.31
Number of observations	744		
Pseudo R^2	0.169		

Note: level of significance: * at 10 percent; ** at 5 percent; *** at 1 percent level

Table 19 shows that the matching operation using k-nearest neighbour (k=3) produces favourable results for mean total income, consumption, adult home study time and time spent teaching children, but differences in income components, such as crops, common property resources, wages and remittance, between households in the two groups remain significant. This indicates that after controlling for household and village characteristics, households in both control and treatment groups have similar overall income, consumption behaviour and time allocation for reading and teaching at home.

Table 19: Comparison of Outcome Variables after Matching

Outcome variables	**Difference (unmatched)**		**Difference (matched)**	
	Unmatched	**T-statistics**	**Matched (ATT)**	**T-statistics**
Income	984.57	2.26**	167.06	0.31
Income crops	-538.73	-3.12***	-1042.53	-4.18***
Income livestock	172.90	1.31	276.00	1.52
Income common	25.53	2.10**	27.38	2.52***
Income wage	367.30	2.95***	272.71	1.75*
Income remittance	122.15	2.21**	121.37	1.90*
Income business	839.13	2.36**	520.24	1.18
Income others	-3.70	-0.08	-8.11	-0.13
Consumption	1118.82	2.44***	143.65	0.24
Food consumption	138.16	0.90	98.53	0.48
Non-food consumption	980.66	2.62***	45.12	0.09
Male study	1.67	0.84	-4.10	-1.43
Female study	2.06	1.07	4.86	1.89*
Household teaching	-0.05	-0.06	0.07	0.06

Source: Matching outcome from survey data

Although the matching operation could not produce better results in terms of household income from different sources, the median bias of the matching operation has been reduced substantially. The level of bias of the independent variables was reduced from 13.5 percent before matching to 4 percent after matching, which suggests an improvement in the credibility of the matching outcomes and indicates the balance of the two comparison groups or reduction in percentage of bias of the all the independent variables in the logit regression equation (Table A.3 in the Appendix). Based on the matching operation, 35 households which are off-support were dropped, creating the final sample of 709 households.

Table 20: Summary of On and Off Support Households

psmatch2: treatment assignment	**pasmatch2: common support**		**Total**
	Off support	**On support**	
Untreated	0	300	300
Treated	35	409	444
Total	35	709	744

Source: Authors' calculation based on survey data

5. CONCLUSION

This article describes the application of the propensity score matching technique—k-nearest-neighbour matching (k=3)—to produce a matching result of similar households between the control and treatment groups as baseline indicators for the GMS Transmission Project. The matching operation produced favourable results for consumption, male adults' study time, and family and children's teaching time, while differences in total household income between the two groups, and income from crops, common property resources, labour wage and remittance remain statistically significant, albeit reduced. This indicates that after controlling for household and village characteristics, households in the control and treatment groups have similar consumption behaviour, total spending and time allocation for reading and teaching at home. Although the matching operation could not produce better results in terms of household income from different sources, the median bias of the matching operation has been reduced substantially.

The propensity score matching analysis enables us to ensure good matches for the treatment households in the comparison sub-sample, and to consider the possibility of dropping some of the comparison households with highly different characteristics from any follow-up survey. After matching, 35 households, which were off-support, were dropped creating the new sample of 709 households. For the follow-up evaluation study, the research team should refer to the study sites as after match sample villages. The reduced sample size should reduce survey costs.

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APPENDIX

Table A.1: Number of Households Selected from Takeo Province as Treatment Group

No	District	Commune	Village	Households	Proportion (%)	Sample
1	Bati	Komar Reachea	Khnar Tong	247	14.17	35
2	Bati	Trapeang Krasang	Roleang	94	21.28	20
3	Bati	Trapeang Krasang	Rumduol	99	20.20	20
4	Samraong	Chumreah Pen	Ta Yueng	156	12.82	20
5	Samraong	Rovieng	Tuek Ambel	160	12.50	20
6	Samraong	Rovieng	Prey Khcheay	116	17.24	20
7	Samraong	Samraong	Krang Roout	173	14.45	25
8	Samraong	Soengh	Angk Kdei	192	13.02	25
9	Doun Kaev	Roka Krau	Prohut	330	12.12	40
10	Treang	Angk Khnaor	Kor	175	14.29	25
11	Treang	Prambei Mom	Krang Sbaek	117	17.09	20
12	Treang	Prambei Mom	Ponhea Lueu	173	14.45	25
13	Treang	Smaong	Skul	224	16.62	35
14	Treang	Tralach	Trapeang Chhuk	87	22.99	20
15	Kiri Vong	Preah Bat Choan Chum	Prey Thum	149	16.78	25
16	Kiri Vong	Preah Bat Choan Chum	Pou Roung	339	11.80	40
17	Kiri Vong	Preah Bat Choan Chum	Chrouy	296	11.82	35
	Total			**3132**	**15.51**	**450**

Source: Cambodia General Population Census 2008

Table A.2: Number of Households Selected from Takeo Province as Control Group

No.	District	Commune	Village	Households	Proportion (%)	Sample
1	Bati	Doung	Krang Prateal	300	11.7	35
2	Bati	Doung	Chek	178	19.7	35
3	Bati	Doung	Doung	185	13.5	25
4	Bati	Doung	Kandal	206	17.0	35
5	Tram Kak	Cheang Tong	Srae Khvav	197	12.7	25
6	Tram Kak	Cheang Tong	Ta Toem	102	19.6	20
7	Tram Kak	Cheang Tong	Ti Pat	114	17.5	20
8	Treang	Sambuor	Rovieng	310	11.3	35
9	Treang	Sambuor	Trapeang Ponluh	225	15.6	35
10	Treang	Sambuor	Tnaot Chum	306	11.4	35
	Total			**2123**	**13.6**	**300**

Source: Cambodia General Population Census 2008

Table A.3: Test for Standardized Bias of Independent Variables

Variables	Sample	Treated (mean)	Control (mean)	% bias	% reduced |bias|
hhsize	Unmatched	5.22	4.99	12	
	Matched	5.22	5.19	1.5	87.8
hhage	Unmatched	46.65	48.51	-13.8	
	Matched	47.10	47.86	-5.7	59
hhagesqr	Unmatched	2353.20	2538.20	-13.9	
	Matched	2393.30	2478.40	-6.4	54
hh_educ	Unmatched	4.74	4.17	16.1	
	Matched	4.60	4.43	4.7	70.8
hh_educsqr	Unmatched	36.15	28.79	19	
	Matched	34.24	34.10	0.4	98.1
hhsex	Unmatched	0.73	0.68	10.7	
	Matched	0.72	0.72	1.1	89.9
candle_exp~e	Unmatched	14.52	7.41	14.1	
	Matched	12.76	14.53	-3.5	75
firewood_exp~e	Unmatched	998.10	963.76	5	
	Matched	983.11	967.48	2.3	54.5
charcoal_exp~e	Unmatched	28.27	46.94	-5.2	
	Matched	19.64	12.17	2.1	60
kerosene_exp~e	Unmatched	88.53	72.80	13.2	
	Matched	90.93	95.89	-4.2	68.4
carbattery~exp	Unmatched	253.63	245.59	2.9	
	Matched	238.53	229.57	3.2	-11.5
battery_exp~e	Unmatched	40.02	29.08	18	
	Matched	36.05	39.04	-4.9	72.6
occupation	Unmatched	2.05	1.80	31.5	
	Matched	2.04	2.05	-1.9	94

land_type	Unmatched	0.93	0.96	-11.3	
	Matched	0.94	0.95	-5.5	51.7
house_brick	Unmatched	0.11	0.02	36.6	
	Matched	0.06	0.05	3.6	90.2
index_home~exp	Unmatched	0.15	-0.27	24.4	
	Matched	-0.07	-0.07	0	100
index_transp	Unmatched	0.07	-0.11	16.6	
	Matched	0.01	0.10	-9.1	45.5
index_agri	Unmatched	-0.11	0.18	-19.9	
	Matched	-0.07	-0.13	4.2	79.2
telephone	Unmatched	0.40	0.55	-30.2	
	Matched	0.42	0.53	-22.1	26.8
credit	Unmatched	0.52	0.47	10.3	
	Matched	0.53	0.54	-3.4	66.7
prim_schol	Unmatched	0.51	0.20	68.7	
	Matched	0.47	0.45	3.8	94.5
ngo_serv	Unmatched	0.79	0.77	5.7	
	Matched	0.78	0.84	-13.1	-128.7
toilet	Unmatched	0.33	0.32	2.1	
	Matched	0.31	0.26	11.8	-454.2
hh_health	Unmatched	0.47	0.44	6.4	
	Matched	0.46	0.47	-1.6	74.4
water_acc	Unmatched	0.55	0.55	0.4	
	Matched	0.53	0.47	11.6	-3111.5
literacy	Unmatched	0.71	0.66	10.6	
	Matched	0.70	0.66	9.8	7.7

Source: Authors' calculation based on survey data

-IV-

Labour Migration Situation and Policy Framework in Cambodia

Hing Vutha, Lun Pide and Phann Dalis[1]

1. INTRODUCTION

Cross-border labour migration is a relatively new phenomenon in Cambodia. It has evolved markedly over the last decade from the migration of refugees displaced during the civil wars and political instability in the 1980s and 1990s to the migration of a labour force that has considerable economic significance for the national economy and household livelihoods. Cambodian workers largely migrate through two different placement systems. Informal or illegal placement is the prevailing practice and in most cases, is facilitated by pioneer migrants or brokers who escort migrants to a workplace in the destination country. Destination countries view such migration as illegal entry, stay or work. Legal migration, the second placement system, is managed by private recruitment companies or public recruitment agencies. The legal option is relatively new, costly and inconvenient for most, particularly for frequent short-term trips. As a result, the number of Cambodian migrants in this category represents less than 5 percent of total migrants.

Cambodia, like a few other countries in the Greater Mekong Sub-region (GMS), is a latecomer in the management and administration of labour emigration. As such, policy and institutional frameworks are seen as ineffective and weak. Policy on labour migration was formulated just very recently and is at a nascent stage that lacks coherence. Regulatory framework has been sporadic and limited with lack of comprehensive coverage especially in respect to the management of the labour migration process, the protection of migrant workers, and the reintegration of migrant workers. The lack of clear responsibilities and coordination and a shortage in resources and low capacity are also common in institutions responsible for managing labour migration. In a situation where institutional and policy frameworks are still weak and migration trends are rapidly increasing, there are substantial loopholes and opportunities for unscrupulous job brokers and employers to take advantage of migrant workers. Irregular migrants, who are mostly the poor and often not paid much attention, are particularly vulnerable to exploitation and abuse. Studies into the living and working conditions of low-skilled migrants in the GMS have shown the high incidence of labour exploitation,

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1 Hing Vutha is a research fellow, Lun Pidé a research associate and Phann Dalis a research assistant at CDRI.

commonly in the form of high recruitment costs; deception about wages, type of work and legal status; withheld wages; retained passports or identity documents; physical confinement; substandard working conditions; and threat of denunciation to the authorities. Cambodia now experiences significant internal and cross-border human trafficking, and is a country of origin, transit and destination.[2] Women and girls are trafficked to Thailand and Malaysia for exploitative labour as domestic workers and forced prostitution in a form of forced or deceived migration.

The prevalence of multi-faceted migration problems reflects the urgent need to design appropriate policy interventions for effective management and better protection of migrants. Best practice in migration policy formulation usually takes into account policy research, especially analyses of the migration situation, the problems and challenges throughout the whole migration process, and the institutional and policy gaps. This article aims to fill this knowledge gap by comprehensively reviewing the labour migration situation and assessing the policy and legal framework governing migration in Cambodia.

2. LABOUR MIGRATION SITUATION IN CAMBODIA

2.1. Evolution of Labour Migration

Labour emigration in Cambodia has evolved over the last decade in respect to mode, scale and scope, and the degree of policy intervention. During the 1980s and 1990s, migration mostly entailed refugees or displaced people seeking temporary stay in Thailand due to civil war and political instability. The new wave of Cambodia's labour emigration has emerged since 2000 and is characterised as the rapid expansion of the number of emigrants to multiple countries of destination. The migration issue by then had received greater attention from government and non-government organisations alike.

At policy level, the government has been working on several aspects of policy intervention such as promoting legal and orderly migration, improving regulatory and institutional frameworks, and ensuring protection of Cambodian workers abroad. In promoting labour exports, for example, Cambodia has signed a labour export agreement with Malaysia in 1997; a Memorandum of Understanding (MoU) on Cooperation in the Employment of Workers with Thailand in May 2003; the Act on Foreign Worker Employment with South Korea in 2003; and an agreement on the Exchange of Manpower with Kuwait in 2009. The country is now in the process of negotiating similar bilateral agreements with Japan and Singapore. It is also formulating policies on regulatory and institutional frameworks for labour migration as well as strategic action plans that serve as a road map for the government in its dialogue with donor communities to enhance good migration governance and promote migration's positive development outcomes. It is also in the process of revising Sub-decree 57 on the Sending of Khmer Workers to Work Abroad, dated 1995, to include new regulations that comprehensively govern several key aspects of migration.

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2 UNIAP: Cambodia Overview accessible at http://www.no-trafficking.org/cambodia.html

The dynamics and complexity of emigration have also prompted international organisations i.e. the International Labour Office (ILO), the International Organisation for Migration (IOM) and non-governmental organisations to work more intensively either separately or jointly with responsible public agencies to achieve various migration-related mandates. For example, ILO has worked closely with the Ministry of Labour and Vocational Training to formulate a comprehensive policy on labour migration for Cambodia, while IOM has launched a number of programmes in the areas of emergency and post-conflict migration management, migration and health, regulating and facilitating migration, and migration, climate change and environmental degradation.

In terms of the economic significance of migration, remittance has become a more important source of foreign exchange for the national economy as well as income for migrants' households. Remittances to Cambodia were estimated at USD12 million[3] or 0.34 percent of GDP in 1996 and had increased to USD325 million[4] or 3.4 percent of GDP in 2008. Several case studies on migration and remittance in Cambodia suggest that remittances are used both to improve current household income, housing conditions, education and access to healthcare services.

The pattern of migration in Cambodia is in part driven by a policy shift towards promoting migration governance, protecting and empowering migrant workers, and enhancing linkages between migration and development. It is also shaped by changes in rural livelihood strategies due to poverty, unemployment and economic hardship. Chronic poverty, landlessness, lack of access to markets and common property resources, natural disasters, unexpected shocks caused by sickness, and lack of job opportunities have placed great pressure on rural people, especially the poor, to migrate in search of opportunities to enhance their livelihoods and economic welfare. External factors such as greater demand for low-skilled workers in receiving countries, economic disparity and wage differentials also play an important role in the migration patterns in Cambodia.

2.2. Labour Migration Trends

Labour emigration in Cambodia has witnessed a steep increase in the number of migrants and countries of destination. During 1998-2009, 45,656 Cambodian migrants were officially sent to work abroad via bilateral agreements, and another hundred thousand were working overseas without authorisation or documents required under immigration regulations. The analysis below presents the trends in Cambodian labour migration.

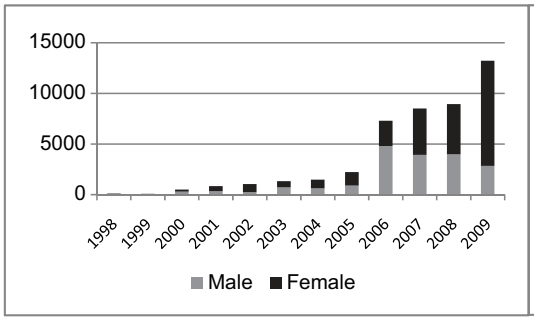
3 World Bank (2007), World Development Report 2007, CD ROM

4 World Bank (2011), *Migration and Remittance Factbook 2011,* Second Edition (Washington, DC: The World Bank)

Regular migration

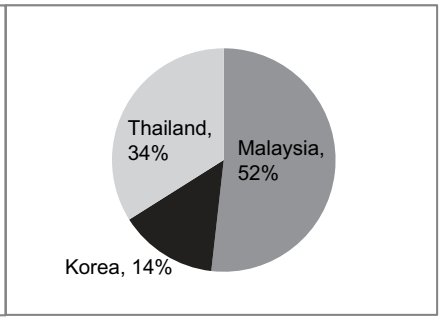
Regular migration, interchangeably referred to as documented migration, is defined as the movement that occurs through recognised, legal channels (IOM Glossary on Migration). The number of Cambodian regular migrants has increased over the last decade. Between 1998 and 2009, the country sent 45,656 workers to work abroad, of which approximately 52 percent went to Malaysia, 34 percent to Thailand and 14 percent to South Korea. Female migrants outnumbered their male counterparts, accounting for 59 percent. The high incidence of female workers is due in large part to the large number of women that go to Malaysia as domestic workers.

Figure 1: Total Cambodian Migrant Workers Sent Officially Abroad by Gender, 1998-2009



Source: Ministry of Labour and Vocational Training

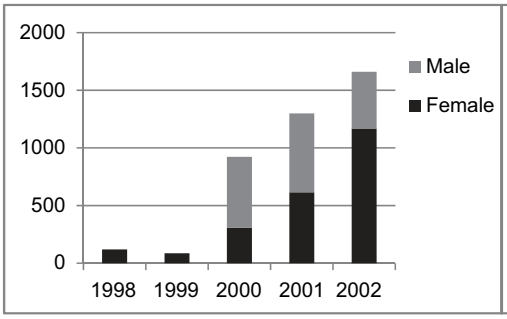
Figure 2: Total Cambodian Migrant Workers Sent Officially Abroad by Country, 1998-2009



Source: Ministry of Labour and Vocational Training

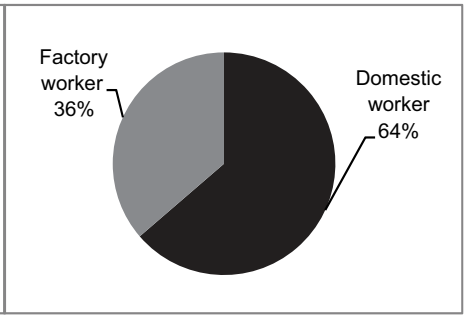
The trend in Cambodia's regular emigration can be divided into two phases. The period 1998 to 2002 marked the early stage of the country's formal labour export when it could only send a few Cambodian workers to a limited number of destination countries. At that time, Malaysia was the only country that legally received Cambodian workers and recruitment was managed by private recruitment companies in accordance with the principles and provisions in the labour export agreement between the two countries. Between 1998 and 2002, Cambodia sent a total of 2,603 workers to Malaysia; 65 percent were women employed as domestic workers and 35 percent were men working in construction and manufacturing sectors.

Figure 3: Cambodian Migrant Workers Sent Officially to Malaysia by gender, 1998-2002



Source: Ministry of Labour and Vocational Training

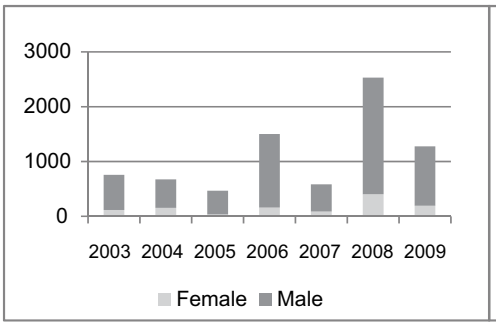
Figure 4: Cambodian Migrant Workers Sent Officially to Malaysia by type of work, 1998-2002



Source: Ministry of Labour and Vocational Training

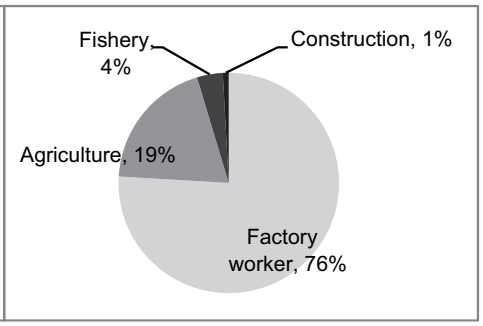
The second period of regular migration started in 2003 and is characterised by a rapid increase in the number of migrants to several receiving countries. From 2003 to 2009, Cambodia sent a total of 43,053 migrant workers to Malaysia, South Korea and Thailand. South Korea has allowed Cambodian nationals to work in the country since 2003 through an industrial trainee system (ITS) and later, via an employment permit system (EPS) provided in the Act on Foreign Worker Employment. The placement of migrant workers in South Korea is made by the Manpower Training and Overseas Sending Board (MTOSB), a public agency for recruiting, training, sending and managing Cambodian workers to work overseas created by Sub-decree 70 in 2006. As of 2009, there were 7,791 Cambodian migrant workers employed in South Korea, the majority of them are males working in manufacturing, agriculture, fisheries and construction sectors.

Figure 5: Cambodian Migrant Workers Sent Officially to South Korea by Gender, 2003-09



Source: Ministry of Labour and Vocational Training

Figure 6: Cambodian Migrant Workers Sent Officially to South Korea by Type of Work, 2003-09

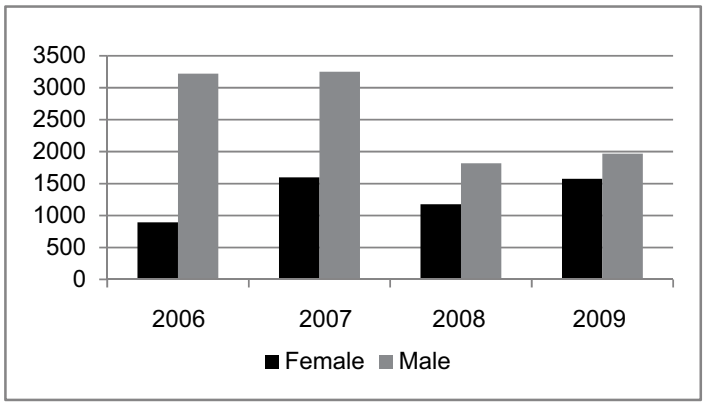


Source: Ministry of Labour and Vocational Training

Thailand has accepted legal Cambodian migrant workers since the MoU was signed in May 2003. The sending of Cambodian workers only started in 2006 once the Inter-

ministerial Working Group had conducted nationality verification of illegal Cambodian migrant workers in Thailand and issued them with a Certificate of Identity (CI). Between 2006 and 2009, Cambodia officially sent a total of 15,496 migrant workers to Thailand, the majority of whom are employed in manufacturing and enterprises.

Figure 7: Number of Cambodian Migrant Workers Sent Officially to Thailand



Source: Ministry of Labour and Vocational Training

Irregular migration

According to the UN General Assembly Resolution 3449 (XXX)[5], irregular migrants refer to 'workers who illegally and or surreptitiously enter another country to obtain work'. The term irregular migrants is also used interchangeably with undocumented or unauthorised or clandestine migrants who cross borders without legal documents or who migrate legally but later lose their legal status due to overstaying (Brennan 1984; Lee 2005; GCIM 2005; Levoy & Geddie 2010). Here we define Cambodian irregular migrants as those who enter a host country to work without sufficient legal documents required by that country. Necessary documents include a valid passport, visa and work permit.

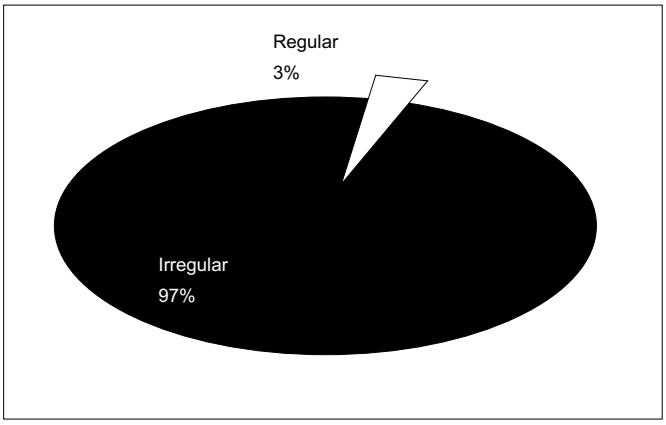
Cambodian irregular migration can be divided into two categories. The first is short-range migration along the Cambodia-Thailand border, usually to do agricultural farm work. Migrants learn about available job opportunities from relatives, friends or villagers, referred to as pioneer migrants or helpers. These pioneer migrants facilitate job placement which in turn forms good migration networks linking between households living primarily in rural areas of Cambodia and employment destinations in Thailand. The second category is long-term migration travelling deep into Thailand or Malaysia working on fishing boats and doing construction and factory work. In most cases, migrants travel in small groups with a broker (or *mekchal*) who escorts them to the border and then to the workplace in Thailand. The basic services offered by brokers include facilitating border crossing i.e. transportation to the border, procurement of a work permit and securing a job in the destination country. Migrants need to pay a facilitation fee of USD100 to USD200 in advance. In some cases, migrants travel in a

5 The resolution can be obtained at http://www.un.org/documents/ga/res/30/ares30.htm

small group with assistance from pioneer migrants who know the work situation and have good relationships with employers.

The main destinations for irregular migrants from Cambodia are Thailand and Vietnam. The geographical proximity of Cambodia to the two countries provides a gateway for people to migrate easily and at low cost. Also, the probability of getting a job is high given abundant job opportunities in the low-skilled sectors in the destination countries. As shown in Figure 8, by early 2008, the Cambodian migrant population in Thailand was around 180,000 over 95 percent of whom were irregular migrants. Thailand is one of the countries that receive the highest number of undocumented migrants in Asia (IOM 2003).

Figure 8: Regular vs Irregular Cambodian Migrants to Thailand (%)



Source: Chan (2009)

Irregular migration is less costly and relatively uncomplicated compared to the legal route. Chan (2009), in his comparison of costs and time between legal and irregular means, concludes that the former costs migrants around USD700 (to Thailand) and takes around three to six months, compared to about USD100 and a few days for the latter. For migrants who are poor, cost is an important determinant that influences their choice of migration method.

However, without legal status in the host country, irregular migrants are often vulnerable to exploitation (IOM 2003). Their fundamental rights, which include access to healthcare, education, and other public services, are also denied. They are also abused by their employer, for instance, forced overtime work, wage cuts, and sexual harassment. On average, irregular migrants are paid relatively lower wages than legal migrants (Shah 2009), and their working conditions are poor and dangerous (Stoyanova 2008). Cambodian irregular migrants are no exception. In Thailand, they are deprived of their basic rights and are at risk of arrest and hence punishment. Being clandestine and fearful of being caught by the authorities prevents migrants from seeking medical services when they need them (Lee 2007b), thus they have to rely solely on their employer. Naro (2009) provides case studies of Cambodian migrant victims who are compelled to work long hours at low rates of pay; incidents of physical abuse such as

beatings are also well documented. Irregular migration also involves cases of human trafficking. There are reports of Cambodian children who were trafficked to work as beggars in Thailand being exploited and female migrants being forced to work as sex workers (ICSW 2007; MoSVY 2005; Marshall 2001). The latter face high risk of contracting HIV/AIDS; consequently, the country of origin incurs social costs once the infected migrants return home.

Irregular migration is a serious concern for both sending and receiving countries as various measures to dissipate the flow continue to be debated. Despite the claim that irregular migrants can fulfil shortages of labour demand especially in low-skilled sectors in the host country, such a move may lead to various adverse consequences if irregular migration becomes an acute problem, including threats to the host country's security in the form of organised crime and the high risk of migrants being exposed to abuse and danger. Irregular migration may also encourage human trafficking, spread contagious diseases, and promote terrorist activity (Koslowski 2004; Koser 2005).

In dealing with irregular population movements, Thailand has initiated a measure to legalise irregular migrants by granting them work permits. In 2005, about 110,000 Cambodian irregular migrants in Thailand were given a work permit (Chan 2009). To discourage further inflow, Thailand has also tightened its border control, penalised employers who hire irregular migrants and deported apprehended migrants to their home country. As a sending country, the Cambodian government and its development partners are also working on projects to raise potential migrants' awareness on safe migration so as to enhance their understanding of migration issues prior to their decision to migrate. Well-grounded labour migration policies are also being initiated to better manage and address the issues of migration.

2.3. Factors Driving Migration

Like many labour sending countries, migration in Cambodia is largely a rural phenomenon. Migrants are the poor from communities characterised as lacking employment, with low productive farming capacity and scarce natural resources. These conditions hinder communities from developing their local economies and households from improving their livelihoods. Households opt to migrate as a strategy either to (i) escape economic distress or (ii) seek better employment opportunities abroad. The first is commonly known as *survival migration* and is especially the case for poor and landless households. The second is known as *opportunity-seeking migration*. Migrants in this category usually come from better-off families who see migration as a livelihood strategy to diversify income sources and overcome social, economic, and institutional development constraints in their home country.

In his survey of a 100 households with migrants, Maltoni (2006b) found that the decision to migrate is largely influenced by structural push factors such as lack of irrigation, inadequate and unfulfilling employment, landlessness or land scarcity and lack of alternative sources of income (52 percent), and partly by environmental push factors such as low land productivity and natural disasters i.e. flood and drought (18 percent). Lack of capital and employment opportunities (16 percent) and debt (10

percent) also contribute to people's decision to migrate. IOM's (2010) recent study on the impact of remittance on local communities in Cambodia indicates that the majority of households with migrants cite poverty (40.3 percent), lack of jobs (34.1 percent) and lack of land (16.2 percent) as the main push factors for households to send an eligible member to work abroad. CDRI's (2007) study on moving out of poverty found that migration in the study villages was pressured by declining fish stocks and landlessness. Similar findings have been corroborated by Chan (2009), in that poverty and lack of income generating activities at home, the areas nearby their villages or elsewhere in Cambodia are the main reasons for migrating to work in Thailand.

Important "pull factors" or factors associated with the destination that draw migrants from Cambodia generally include a high demand for cheap foreign labour in the country of destination, economic disparity, and wage differentials between sending and receiving countries. There is a huge gap in income and wages between Cambodia and migrant-receiving countries. The per capita gross national income (GNI) in Cambodia is six times lower than in Thailand and 12 times lower than in Malaysia. Construction workers are paid around USD2.43 per day in Cambodia compared to USD4.59 in Thailand and USD8.88 in Malaysia. Agricultural workers earn approximately USD2.00 per day in Cambodia compared to USD3.88 in Thailand and USD6.22 in Malaysia (CDRI Survey 2007). Such a substantial wage differential serves as a strong magnet attracting Cambodian migrants to work abroad (Rukumnuaykit 2006).

Migrant networks, or the sets of interpersonal ties that connect migrants, former migrants, and non-migrants in origin and destination areas through ties of kinship, friendship and shared community origin are another big pull factor (Massey *et al.* 1993). From a theoretical point of view, the intensity of these ties between the countries of origin and destination largely determine the degree of migration. A good network can help cope with problems of incomplete and asymmetric information and thus increases migrant workers' safety. The majority of Cambodian migrants are helped in their initial journey by relatives, friends, villagers or brokers; pioneer migrants who have good connections with employers are also engaged in the migration business (Chan 2009; IOM 2010). Without such assistance, potential migrants would be reluctant to migrate and the likelihood of subsequent migration would diminish. Through friends and relatives, new migrants can access information and active support in finding employment and a place to live, thus reducing the costs and risks of movement.

2.4. Migration and Remittance

Remittance is a transfer of money by a foreign worker to his or her home country. It is widely regarded as disposable income for sending countries at the level of the national economy and for the migrant's family at household level. Remittance from Cambodian migrants has increased steadily over the last decade from USD12 million or 0.34 percent of GDP in 1996 to USD325 million or 3.4 percent of GDP in 2008 (World Bank 2010).

Table 1: Workers' Remittances in Cambodia, 1996-2008

	1996	1998	2000	2002	2003	2004	2005	2006	2007	2008
Remittances (USD million)	12	120	121	140	138	177	200	297	353	325
Remittances (% of GDP)	0.34	3.85	3.31	3.27	3.01	3.37	3.23	4.04	4.03	3.40

Source: World Bank (2010)

The majority of migrants send money home and the amount varies according to the type of their work. Migrants in the housework category (majority are women), for example, tend to send more money than those in other types of work (Chan 2009). Housemaids in Thailand send an average of USD334 per year compared to USD322 for factory workers and USD265 for construction workers. The amount of remittance also differs according to the length of stay. The longer the migrants' work stay, the higher the amount they send or bring home each time. Chan (2009) found that those who worked near the border and for shorter periods of time brought home USD30 to USD84 each trip; whereas those who stayed longer remitted USD150 to USD180.

There are various means of sending money to the home country, depending on the country of origin. The most popular way for those working in Thailand is to have the money delivered through a middleman who conducts the whole process over the telephone. The service charge is around 4 to 5 percent of the remittance. Those who work along the border remit money through their relatives and friends visiting their home town (Chan 2009). Around 75 percent of migrants working in Malaysia send remittances through middlemen that travel directly from Malaysia to Cambodia. The informal system of sending money home i.e. through middlemen or friends is well established compared to the formal one i.e. through banking.

Migrants' remittances are commonly used for householde consumption and other expenditure. About 87 percent of total remittance is spent on daily consumption including food, debt repayment, healthcare and durable household assets, while the remaining 13 percent is directed at farm inputs, setting up new business, expanding existing business, and other productive assets or business (Chan 2009). CDRI's (2007) moving out of poverty study suggests that migration is a key factor in upward mobility. Households in the 'climbing into wealth' and 'comfortably rich segments' had more family members migrating along the Thai-Cambodian border or into Thailand for work than other households. It also found that migration plays an increasingly important role in livelihood generation and poverty reduction. Poor households use wage labour, including migration, to offset poor harvests and food insecurity; better-off households access wage employment to diversify income sources and maximise earnings.

3. LABOUR MIGRATION POLICY

Cross-border movement of labour in Cambodia has taken place for many years, despite the absence of concrete migration policy. It was only recently that a policy on labour migration in response to the complexities and dynamics of migration was formulated. The first policy document on labour migration is in the Strategic Plan 2006-2010 of the Ministry of Labour and Vocational Training (MoLVT). The National Labour Migration Strategy is to achieve three major objectives: (i) improve the management of overseas employment services through private companies; (ii) create an employment permit system; and (iii) protect migrant workers. Several important measures are proposed in respect to foreign labour market information, monitoring recruitment companies, coordination among relevant institutions, and protection of migrant workers

The second major policy document is the Policy on Labour Migration for Cambodia. The plan, endorsed in mid-2010, was formulated through a series of consultations involving key stakeholders from public institutions, donor agencies, worker and employer organisations, recruitment agencies, and non-governmental organisations with technical and financial assistance from the International Labour Organisation (ILO). This policy serves as a road map for the government in its dialogue with donor communities, helping it to more effectively seek support for measures that promote migration's positive development outcomes, while limiting its possible negative impacts. It highlights the key issues and policy challenges confronting Cambodia on the cross-border movement of its workers. Policy challenges are categorised as relating to governance, protection and empowerment, and migration and development.

Policy challenges in migration governance in Cambodia concern the refinement of the existing labour migration policy, a legal framework, and the effective management of labour migration. The key policy recommendations for better management and governance of labour migration suggested in the policy documents include:

- Strengthening existing government agencies with resources to promote foreign employment and to protect the rights of migrant workers while at home and abroad;
- Drafting a comprehensive legislation governing the labour migration process and the protection of migrant workers;
- Ensuring adequate protection for migrant workers by posting a labour attaché in Cambodian embassies and equipping them with the resources necessary to perform their duties;
- Adopting the social dialogue approach and the involvement of key stakeholders, including government, worker and employer organisations, recruitment agencies, and civil society in formulating labour migration policy, programmes and legislation.

Policy challenges in the protection and empowerment of migrant workers include the adoption of the rights-based approach for the prevention of and protection against abusive migration practices, and the application and enforcement of national law and regulation in accordance with international labour standards and applicable regional instruments. The key policy recommendations for better protection and empowerment are as follows:

- Establishing resource centres in Phnom Penh and the provinces to provide employment information regarding labour migration;
- Implementing legislation and policies with effective enforcement mechanisms and sanctions to deter unethical recruitment practices including provisions for the suspension or withdrawal of recruitment and placement licences in cases of violation;
- Establishing a list of placement fees and documentation costs payable by migrant workers;
- Coordinating with labour-receiving countries for the adaptation of standardised and enforceable employment contracts;
- Providing effective remedies or responses to all migrant workers in cases of rights violation, and creating accessible channels through which migrant workers can lodge complaints against abusive practices and fraud.

Policy challenges on migration and development include mainstreaming labour migration issues within the national development agenda; establishing a system of recognition for skills gained from labour migration; promoting the productive use of migrant worker remittances for community development; providing return and reintegration services; and establishing support linkages with the diaspora. The key policy recommendations for harnessing labour migration for development are as follows:

- Mainstreaming labour migration in both the national strategic development plan and the national employment policy;
- Strengthening public and private employment services for counselling and matching demand for skilled labour and returned migrant workers;
- Negotiating with the labour-receiving country for the coordinated registration of returning or repatriated migrant workers at border points to facilitate their readmission;
- Reducing costs of remittance transfers, and facilitating access to financial services.

4. LEGAL FRAMEWORK GOVERNING LABOUR MIGRATION

4.1. National Legislation

The main laws and regulations that govern labour migration in Cambodia are listed below:

- Sub-decree 57 on the Sending of Khmer Workers to Work Abroad
- Prakas No. 108 on the Education of HIV/AIDS, Safe Migration and Labour Rights for Cambodian Workers Abroad
- Sub-decree 70 on the Creation of the Manpower Training and Overseas Sending Board
- Prakas 012/07 on the Creation of a Labour Migration Taskforce
- Sub-decree 68/2009 on cost of passport for migrant workers.

Sub-decree 57

Sub-decree 57 on the Sending of Cambodian Workers to Work Abroad, dated 20 July 1995, is the only primary law regulating labour migration from Cambodia. Aiming at formalising the process of cross-border labour emigration, the sub-decree gave the then Ministry of Social Affairs, Labour, Vocational Training and Youth Rehabilitation (MoSALVY) now known as the Ministry of Labour and Vocational Training (MoLVT) the authority to permit recruitment companies to send Cambodian labourers to work overseas through a 'Prakas' or a ministerial order. The law contains 22 articles, most of them defining the legal framework of cooperation between the Ministry and the labour recruitment companies as well as procedural measures on key recruitment issues for private recruitment agencies to comply with, including proposals for recruiting workers, deposit requirement, employment contract, and pre-departure training.

Prakas No. 108

Prakas No. 108 on the Education of HIV/AIDS, Safe Migration and Labour Rights for Cambodian Workers Abroad was issued on 31 May 2006. It aims to enhance understanding and raise awareness of safe migration, human rights protection and methods to prevent and control the spread of HIV/AIDS. It encourages relevant ministries, institutions and organisations working in the field of migrant workers' healthcare and human rights as well as recruitment agencies to conduct pre, during and post-departure training for Cambodian workers and to help them reintegrate into society on repatriation. The awareness raising programme consists of health education on the causes, prevention and consequences of HIV/AIDS infection to: (i) migrants before departure; (ii) the families of migrant workers; and (iii) repatriated migrant workers so that they remain aware of the prevention and control of venereal diseases.

Sub-decree 70

Sub-decree 70 on the Creation of the Manpower Training and Overseas Sending Board (MTOSB) was issued in July 2006 to form a public agency for recruiting, training, sending and managing Cambodian workers to work overseas. The sub-decree specifies the Board's membership, governance structure and key responsibilities. Located in the National Polytechnic Institute of Cambodia (NPIC) of the MoLVT, the Board is to perform the following tasks: building relationships with countries that accept Cambodian workers; coordinating closely with involved institutions within Cambodia to facilitate the recruitment, training and sending of Cambodian workers to work overseas; establishing norms, criteria and procedures for recruitment, education and training; and organising the procedures for sending and managing workers.

Prakas 012/07 on the Creation of a Labour Migration Taskforce was issued in January 2007 to develop and implement policy and action plans under the Labour Migration Section of the MoLVT. *Sub-decree 68/2009* on the passport fee for migrant workers was issued in 2009 to reduce the cost of a passport to USD20 and expedite issuance to within 20 days of application.

4.2. Bilateral, Regional and International Cooperation

Cambodia is currently cooperating with a number of destination countries for the placement of its labour migrants abroad. It has signed MoUs with the following countries:

- Malaysia in 1997
- Thailand in 2003
- South Korea in 2003 (government-to-government recruitment)
- Kuwait in 2009.

The Kingdom of Cambodia and the government of Malaysia agreed to adopt the *Recruitment Procedures for Cambodian National Employment in Malaysia* in 1997. This agreement allows Malaysian employers to recruit workers from Cambodia directly or through their representatives in the country. The agreement spells out the responsibilities of employers and workers in the recruitment process and during employment. Employers' major responsibilities include arranging transportation from the exit point in Cambodia and the entry point in Malaysia, but the costs are borne by the workers; providing suitable accommodation; obtaining the foreign worker card from the Immigration Department in Malaysia; safekeeping workers' passports; and repatriation of workers at the end of employment. Workers are responsible for paying necessary expenses such as visa fee, recruitment fee, transportation cost and the costs of obtaining medical certificate and travel documents.

The *Memorandum of Understanding between Cambodia and Thailand on Cooperation in the Employment of Workers* was signed in May 2003. It covers key aspects of legal migration, which include procedures for the employment, protection, return and repatriation of workers, and measures against illegal employment. The MoU paves the way for Cambodia to send its workers to legally work in Thailand through private recruitment agencies licensed by the MoLVT. It also enables both parties to establish procedures to integrate illegal workers who were in the country of the other party prior to the enforcement of the agreement. After this MoU was signed, Cambodian authorities were invited to conduct a national verification of Cambodian migrants already in Thailand. The implementation of the MoU began in 2006.

Cambodia has been a partner country in sending its low-skilled workers to South Korea since 2003. The placement of migrant workers to South Korea has been made through the MTOSB as a public recruitment agency under the *Industrial Trainee System (ITS)* and later via the *Employment Permit System (EPS)* provided in the Act on Foreign Worker Employment. The *Memorandum of Understanding on the Field of Exchange of Manpower between Cambodia and Kuwait* signed in January 2009 aims at strengthening

cooperation in the field of labour and employment and manpower development, facilitating the movement of their respective nationals, and facilitating relevant services in labour exchange. A Joint Working Group formed by the MoU is tasked to ensure implementation of the memorandum and propose revisions if deemed necessary, study emerging employment opportunities and suggest measures to enhance technical cooperation, training and skills transfer.

Besides the bilateral labour agreements, Cambodia has been a signatory to a number of international and regional conventions. The country is a signatory to the *UN Convention on the Protection of All Migrant Workers and Members of Their Families*, one of the most significant conventions in labour migration. The Convention aims at protecting migrant workers and members of their families by guaranteeing equality of treatment and the same working conditions as nationals. It recognises that legal migrants have the legitimacy to claim more rights than undocumented migrants, but it stresses that the fundamental human rights of undocumented migrants must be respected. Its existence sets a moral standard and serves as a guide and stimulus for the promotion of migrant rights in each country.

Cambodia is also a signatory to the *ASEAN Declaration on the Protection and Promotion of the Rights of Migrant Workers*, adopted by the Heads of State on 13 January 2007 in Cebu, the Philippines. The declaration acknowledges the need to adopt appropriate and comprehensive migration policies and to address cases of abuse and violence against migrant workers. It stipulates the obligations of both sending and receiving states. Receiving states shall protect the fundamental human rights and dignity of migrant workers; facilitate access to resources and remedies through various means i.e. information, training and education, access to justice and social welfare services; and facilitate the exercise of consular functions or diplomatic authority when a migrant worker is arrested. Sending states' major obligations lie in the areas of enhancing livelihood and employment opportunities for their citizens; implementing policies and procedures to facilitate the process and cycle of migration; establishing and promoting legal practices to regulate the recruitment of migrant workers; and adopting mechanisms to eliminate recruitment malpractice.

Cambodia is among 18 participating countries[6] that adopted the *Bangkok Declaration on Irregular Migration* (the Bangkok Declaration) in 1999. This declaration is a political document and is not legally binding. It consists of 18 paragraphs that set out the requirements for the origin, transit and destination countries' involvement, both separately and jointly, in order to manage migration's positive and negative effects in a comprehensive and balanced manner through the following measures: cooperation, information sharing, technical and financial assistance; legislature; awareness raising; repatriation; and treatment of migrants.

6 The participating countries and region comprised Australia, Bangladesh, Brunei, Darussalam, Cambodia, China, the Hong Kong Special Administrative Region, Indonesia, Japan, South Korea, Lao PDR, Malaysia, Myanmar, New Zealand, Papua New Guinea, the Philippines, Singapore, Sri Lanka, Thailand and Vietnam.

5. OVERALL ASSESSMENT OF MIGRATION POLICY AND REGULATORY FRAMEWORK

As Cambodia is a relative newcomer to labour migration management, the country has yet to establish a sound policy and regulatory framework to effectively govern it. Policy on labour migration lacks coherence and has yet to be integrated into national development plan, regulatory framework is sporadic and limited, and institutional capacity remains weak. Weakness in policy, regulatory and institutional frameworks hinders the country from managing migration dynamics more effectively and from harnessing the benefits of migration as a strategic development tool.

Lack of policy coherence

Like many of the countries in the GMS, Cambodia has yet to establish a sound and coherent labour migration policy. Lack of policy coherence is found at two different levels: intra-government and between government and other stakeholders. At governmental policy level, there is hardly a reference to labour migration in the national development plans and policies despite the increased acknowledgement of the contribution of cross-border labour migration to growth, development and poverty reduction in the country. The socio-economic development plans for 1995-2000 and 2001-2005, the National Strategic Development Plan 2006-2010, and the National Strategic Development Update 2009-2013, which are Cambodia's only key strategic guides for development planning within five year spans, neither explicitly nor implicitly articulate strategic actions for labour migration. In addition, even though migration is a complex issue that falls within the authority of different ministries and institutions, horizontal and vertical policy harmonisation are barely evident. Besides MoVLT, migration issues are not raised in other sectoral development plans or in community development plans. Consequently, information exchange, inter-ministerial consultations, and joint implementation of migration policies and programmes are weak and limited.

In the area of stakeholders' engagement, there has been significant progress on government partnership with international organisations working on migration. For example, collaboration between MoLVT and ILO in formulating policy on migration has been quite successful. The ministry is also working with IOM through the latter's provision of technical support in writing a new law on labour migration. However, collaboration has been uneven among other stakeholders i.e. government, NGOs, the business community and migration associations at both local and national levels. There has been no regular engagement in comprehensive, balanced and better-informed dialogue among key stakeholders on migration and development issues. Consequently, mutual trust and collaborative and complementary efforts have not been fostered and remain low.

Lack of comprehensive coverage

The regulatory framework is characterised as lacking comprehensive coverage to govern the complex migration phenomenon. Sub-decree 57 remains the primary legal instrument regulating labour migration and has very limited coverage with only 22 articles, most of them defining the legal framework of cooperation between the MoLVT and labour recruitment companies and procedural measures on key recruitment issues such as deposit requirement, recruitment procedure, employment contract and pre-departure training. The law has no provisions for some important areas such as the responsibilities and obligations of government and recruitment agencies, the rights and obligations of migrant workers, the supervision of placement and protection activities, and socio-economic re-integration. From the experiences of migrant sending countries, these issues (which are usually covered and provided for in migration regulations) are critical in the management of migration procedures as well as in the protection of migrant workers. The absence of any provision to cover these important aspects can lead to widespread problems and malpractice at different stages of the migration process. Studies into the living and working conditions of low-skilled migrants reveal the high incidence of labour exploitation such as high recruitment costs, deception about wages, type of work and legal status, withheld wages, retained passports or identity documents, physical confinement, substandard working conditions, and the threat of denunciation to the authorities.

Sub-decree 57 also offers a limited scope of protection as it only covers Cambodian workers who are sent legally to work abroad by licensed recruitment companies. Irregular labour migrants, who represent more than 95 percent of total Cambodian migrants, are not covered by this law irrespective of whether they intentionally or unintentionally used unofficial channels to migrate. This is certainly an area of severe limitation where immediate policy intervention is needed to address irregular migration as well as to better protect migrants from unreasonable and illegal exploitation and abuse.

Lack of clarity

The regulatory framework governing migration in Cambodia is also widely seen as vague with most provisions being broad and lacking in clarity. For example, Article 10 briefly states the rights of workers but this is limited to annual leave. It does not include the most fundamental rights of migrant workers such as to be correctly and fully informed, to have freedom of movement, equitable access to education and health services, and to participate in cultural life. Article 14 says both the MoLVT and recruitment companies are responsible for preparing and conducting training courses on the work ethics, life style, customs and common laws of the receiving countries. However, whether such training is compulsory is not clearly stated nor are the guidelines for pre-departure training, desirable minimum standards for employment contract and mechanisms for monitoring the practices of private recruitment agencies elaborated. Article 20 states any person that violates the provisions shall be punished but there is no mention of what the penalty is (Lee 2007a).

Lack of integrated and effective labour management system

Labour migration management is perceived as lacking an integrated and effective system and many blame the poor management on the lack of an effective and comprehensive legal framework, weak law enforcement, uneven institutional capacity and insufficient resources. The MoLVT receives only about USD7 million from the annual government budget and has a shortage of staff capable of working on the different aspects of migration management (Chan 2009). At provincial level, the department of labour and vocational training is either absent or insignificant and this hinders effective communication between public administration and existing and potential migrants at community level.

Private recruitment agencies operate in a highly self-discretionary manner in their recruitment, placement and sending processes with no strict legal verification and no active monitoring of their recruitment activities. Given that private agencies are profit-driven, the absence of clear mechanisms to monitor the recruitment practices of labour sending companies leaves room for opportunistic agencies to take advantage of migrant workers, thus rendering workers vulnerable to exploitation and abuse. There are numerous cases of malpractice by private recruitment agencies with regard to excessive extraction of payments from workers, confiscation of workers' passports, absence of a standard employment contract, and negligence to ensure welfare and protection of workers (Lee 2007a).

In terms of information dissemination, migrants receive very little information about their rights, the duties and obligations of their employers and labour agents, the worksite and living conditions, practical tips on health and safety, the location and telephone number of the Cambodian embassy, and where and how to seek help in times of distress (Lee 2007a). Although the law requires private agencies to provide pre-departure training and orientation (Article 14 of Sub-Decree 57), there is no legally-binding minimum standard on the type of pre-departure training and it is up to private agencies to decide on the duration, format and content of the training programme. Lack of information symmetry and ineffective communication by the public institutions responsible puts migrants in a vulnerable position vis-à-vis the recruitment agency and employer.

6. CONCLUSION

From a rapid assessment of the migration situation and the policy framework in Cambodia, this paper argues that while labour migration has notably increased over the past decade and will continue to grow in the foreseeable future, managing migration and harnessing its benefits for development has become a huge challenge for latecomers to labour management like Cambodia. Policy gap analysis also suggests several important policy challenges, many concerning the development of a sound labour migration policy, a legal framework, and effective management of labour migration; the adoption of a rights-based approach to the prevention of and protection against abusive migration practices; and mainstreaming labour migration issues within the national development

agenda. Cambodia has reached a critical point where it needs to address every important aspect of migration. The fruitful and meaningful contribution of migration to national development and household livelihood improvement will depend on the country's ability and capacity to bridge the policy and regulatory framework gaps.

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Section Two
Poverty, Agriculture and Rural Development

-V-

Policy Options for Vulnerable Groups: Income Growth and Social Protection

By Kem Sothorn with significant input from Gove Kimhong, Khiev Pirom and Chhim Chhun[1]

1. INTRODUCTION

Over two decades of war and conflict have left Cambodia as one of the world's poorest countries, with extensive damage to its physical, social and human capital. Despite strong economic growth, particularly in the garment, tourism and services sectors over the past decade, widespread poverty persists, especially in rural areas. In addition, a large proportion of the population is considered to be vulnerable to shocks that could push them into extreme poverty. Risk and vulnerability have been exacerbated by spill-over effects of the global financial crisis that hit Cambodia's main growth sectors. Contraction in these sectors has resulted in the loss of thousands of jobs, dwindling savings and declining remittances, and directly impacts on workers and ultimately their families in rural areas. Furthermore, Cambodia's narrow-based and less than vibrant rural economy leaves a large proportion of rural people with few livelihood options and means to survive income and consumption shocks. Social protection has emerged as a broad set of instruments designed to help individuals, households and communities to better manage risk, shocks, food insecurity and extreme poverty, and to achieve Cambodia Millenium Development Goals (CMDGs) by 2015. Active efforts to deliver social protection are being made by the government and its development partners.

This article aims to provide an overview of the interaction between growth, poverty, vulnerability and social protection, building on existing literature and recent data and statistics. Specifically, this study: (1) identifies vulnerable groups and causes of vulnerability, (2) reviews the existing social protection activities being undertaken by government and its partners, (3) discusses the effectiveness of the existing social protection programme, and (4) sets out policy options for vulnerable groups in terms of income growth and social protection as well as the knowledge gap.

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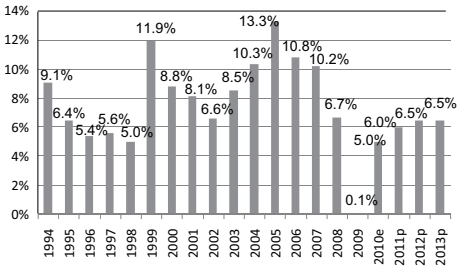
2. LINKS BETWEEN GROWTH, POVERTY AND VULNERABILITY

Poverty in Cambodia is characterised by low income and consumption, poor nutritional status, low educational attainment, lack of access to public services and economic opportunities, vulnerability to shocks, and exclusion from economic, social and political processes. Average GDP growth rate of 9.5 percent per annum for the period 1999-2008 (Figure 1) has profoundly transformed the country, enabling society to progress with key national development strategies in poverty reduction, livelihood improvement, higher education level and better health status. However, economic growth is largely urban based and the benefits have been unevenly distributed, driving inequality increasingly higher (World Bank 200a).[2]

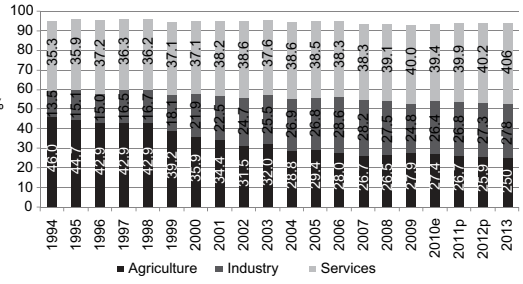
High inequality constrains sustained economic growth and hampers poverty reduction efforts, or may even be detrimental to growth itself and lead to social polarisation and instability (World Bank 2006a). Eighty percent of Cambodia's total population of 13.4 million are dependent on the rural economy where growth is particularly low and insufficient (Figure 2)[3]. This pattern of growth has so far brought little in the way of significant benefits to the majority of people, especially in rural areas. This also means that the rural poor remain highly exposed to different vulnerabilities and risks from various sources. Many poverty studies suggest that exposure to risk and shocks is one of the main determinants that make households more vulnerable and keep them trapped or even deeper entrenched in poverty (Fitzgerald *et al.* 2007; Ballard *et al.* 2007; So 2009; Kem *et al.* 2010).

Figure 1. GDP Growth 1994-2013 (2000 prices)



Source: Data from MoEF

Figure 2. Sources of Growth by Sector 1994-2013



Source: Data from MoEF

2 GDP per capita increased from USD285 in 1997 to USD593 in 2007 (data from IMF). The poverty trend assessment by the World Bank in 2009 records that the Gini coefficient (a measure of income inequality) for the whole country rose sharply from 0.396 in 2004 to 0.431 in 2007.

3 Foreign direct investment (FDI) has been concentrated in the industry and services sectors while the agriculture sector is still suffering from under-investment and under-development. MoEF data show that agriculture's share of GDP has declined since 1994 (Figure 2). Cambodian rice productivity of 2.8 tonnes per ha in 2009 was the lowest in the region (MAFF 2010).

3. WHO ARE THE VULNERABLE? WHY ARE THEY SO VULNERABLE?

The forthcoming National Social Protection Strategy (NSPS), defines vulnerable people as (1) those living below the national poverty line, (2) those who cannot cope with shocks or have a high level of exposure to shocks (people living under or near the poverty line tend to be the most vulnerable), and (3) infants and children, women and girls of reproductive age, food-insecure households, ethnic minorities, the elderly, the chronically ill, people living with HIV/AIDS and people with disabilities.

Using this definition, the vulnerable groups and the factors and underlying causes that make them vulnerable were identified.

3.1. More than One Quarter of the Population are Living below the Poverty Line

An estimated 27.4 percent of Cambodian households were still living below the poverty line by the end of 2009 (MOP 2009). Using the multidimensional poverty index (MPI)[4], however, the poverty rate in Cambodia stood as high as 54 percent, representing around 7.7 million people (Alkire *et al.* 2010). The 2007 Cambodia Socio-Economic Survey (CSES) poverty headcount index notes that the poverty rate was 0.83 in Phnom Penh and 21.85 in other urban areas, suggesting that 7.8 percent of the poor in Cambodia are living in urban areas (World Bank 2009). In the rural areas, poor households are mainly scattered in remote provinces such as Ratanakiri, Mondulkiri, Kratie, Steung Treng, Preah Vihear and some provinces around the Tonle Sap Plain (Kampong Thom, Siem Reap, Pursat) (Figure 3). An FAO study in 2007 consistently identified most of these provinces as food insecure areas[5] (Figure 4), with 2.6 million people likely facing food deprivation (WFP 2007). Within this proportion, the 2005 Cambodia Demographic and Health Survey found that 43 percent of children aged 0 to 5 were chronically malnourished (stunted), 28 percent were underweight, and 8 percent were acutely malnourished. This placed Cambodia's 2009 Global Hunger Index (GHI)[6] at 21.2, an alarming rate despite the country's record rice sufficiency.

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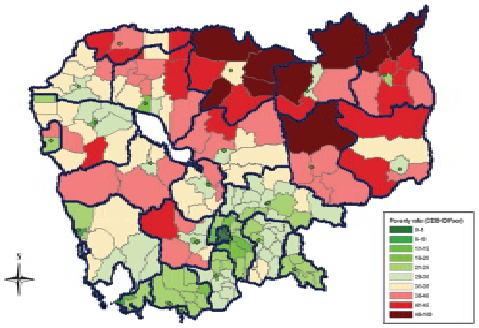
4 The MPI is an index of acute multidimensional poverty; it reflects deprivations in very rudimentary services and core human functioning. This index reveals a different pattern of poverty than income poverty as it highlights a different set of deprivations. The MPI has three dimensions – health, education, and standard of living – and uses ten indicators to measure poverty. A household is identified as multidimensionally poor only if it is deprived in a combination of indicators where the weighted sum exceeds 30 percent of deprivation.

5 Food insecurity exists when people are undernourished due to the physical unavailability of food, lack of social or economic access to adequate food, or inadequate food utilisation (WFP 2005).

6 In 2009, the GHI of Cambodia's neighbouring countries was 11.9 for Vietnam, 19.0 for Laos, and 8.2 for Thailand. In comparison all of them stood at a better rate than Cambodia.

The poor are extremely vulnerable to both idiosyncratic and covariant shocks.[7] The idiosyncratic shocks they generally face include non-epidemic illness, accident, death of family member, loss of livestock, indebtedness, theft, violence, household level crop damage or business failure, income shock in the form of unemployment or falling income. When struck by covariant shocks, such as natural disasters (e.g. flood, drought), widespread (endemic or epidemic) disease, social conflict (land conflict, reduction of natural resources stock) and economic crisis, the poor seem to be the hardest hit of all groups in society. The common and recent factors that cause vulnerability among the poor are discussed below.

Figure 3: Distribution of Household Poverty Rate (%) by district, 2009



Source: Commune Database 2003-2008, Ministry of Planning, Map by National Committee for Decentralisation and Deconcentration PST M&E unit., 2009

Figure 4: Food Insecure Areas

Source: FAO 2007

3.2. Urban Poor

The rate of urban economic growth has been more substantial than in any other area of the country, yet vulnerability among the urban poor is highly prevalent. The study by the Cambodia Institute for Cooperation and Peace (CICP) in 2002 identifies and classifies the urban poor into groups: beggars, in-migrants, seasonal workers, veterans' families, families headed by widows, families coping with chronic illness (especially HIV/AIDS), and displaced persons. The vulnerability of the urban poor in Cambodia is exacerbated by inadequate provision of and poor access to basic public services, social exclusion, lack of secure land and house tenure, few employment opportunities, crime and violence, and poorly managed urban space (UNHABITAT & CDRI 2010 *forthcoming;* CICP 2002). The urban population stood at 2.6 million in 2008. Given that urbanisation is increasing at the rate of 1.3 percent a year, the urban population is expected to have grown by 24 percent by 2015 (Census 2008; Webster 2004), possibly leading to more pressure on urban social services and vulnerability among the urban poor. The increase in urban population reflects (1) the influx of the rural poor to urban areas[8], especially to Phnom Penh, which displaces rural poverty to urban centres, and

7 Idiosyncratic shocks affect some individuals or households but not others; covariant shocks are those that affect many people at the same time.

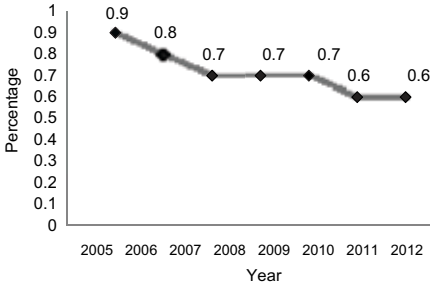
8 Most of the people enumerated in urban areas had moved in from rural areas. In 2008,

(2) the concentration of economic growth in urban areas and the inadequate growth of the rural economy and its lack of capacity to absorb excess labour.

3.3. Poor People with HIV/AIDS

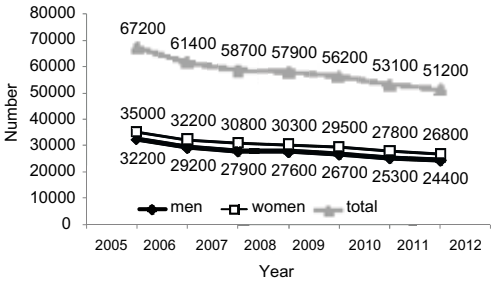
People living with HIV/AIDS are another vulnerable group in Cambodian society. According to the projection by the National AIDS Authority (NAA), HIV/AIDS prevalence in the general population stood at 0.7 percent in 2010, which is equivalent to 53,100 people, 52 percent of whom are women (Figures 5 and 6). If interventions are sustained at the current level, HIV/AIDS prevalence is expected to decline before stabilising at 0.6 percent in 2011.

Figure 5: Projected Prevalence of HIV /AIDS among Population aged 15-49



Source: National AIDS Authority 2010

Figure 6: Projected Number of People aged 15-49 with HIV/AIDS (2006-2012)



Source: National AIDS Authority 2010

The HIV/AIDS vulnerable group comprises men who have sex with men (8.7 percent in Phnom Penh and 0.8 percent in Batambang and Siem Reap), street children (no data available), direct and indirect sex workers (12.7 percent in 2006), their clients and other sexual partners, and intravenous drug users[9] (NAA 2008). The spread of HIV/AIDS is fuelled by economic development, including the prominent role played by increased connectivity through improved roads and other infrastructure in the spread of infectious disease. Interconnected issues of poverty and migration are also among key factors influencing the spread of HIV/AIDS (ADB 2005; Khana 2001; Khana 2008). This epidemic likely undermines efforts towards poverty reduction, more equal income and asset distribution, productivity and economic growth.

27.53 percent of the 3,457,140 total internal migrants had migrated from rural to urban areas (Census 2008). However, there is no data to indicate which provinces have a high rate of rural-urban migration.

9 In 2007, an expert consensus group led by UNAIDS estimated that there were 46,300 illicit drug users. The majority of drug users are young people aged 18-25 and of all drug users, women accounted for 6.5 percent .Among 2,089 street children interviewed by an NGO in Phnom Penh, 1,041 (49.8 percent) reported recent use of one or more drugs. A cross-sectional survey of drug users in rehabilitation centres and in the community in Phnom Penh capital conducted in 2007 found that 24.4 percent (range: 16.4-33.2 percent) who used intravenous drugs were infected with HIV and the prevalence of HIV among non-intravenous drug users stood at 1.1 percent.

3.4. Children and Youth

Figure 7: Age Pyramid of Cambodia 2008

Source: Census 2008

Because of the baby boom in the 1980s and peace and stability over the last several decades, Cambodia has a relatively large young population aged 5-24 which accounts for 45.8 percent of the total population (Figure 7). Poverty, limited access to social services and decent jobs, social exclusion, lack of opportunity and unfavourable living environment are the main factors that drive vulnerability among children and youth.

According to the 2001 Child Labour Survey[10], 52 percent of 7-14 year olds were economically active, suggesting a high need for child labour to contribute to family livelihoods in rural areas (MoLVT 2010). Even worse, more than 310,000 children are now engaged in the worst forms of child labour[11] and half of them suffer from work-

10 The Child Labour Survey was conducted in 2001 only and the survey has not been updated since.

11 Based on ILO Convention No. 182, MoLVT identified work in salt production, brick making, crab and shrimp peeling, stone and granite breaking, rock and sand quarrying, gem and coal-mining as among the worst forms of child labour.

related illness and injury (ILO-IPEC 2010; ILO/UNICEF/World Bank 2006). Street children, orphans and migrants are also vulnerable children. The Ministry of Social Affairs, Veterans and Youth Rehabilitation and the National AIDS Authority estimated that there were 8,664 orphans in 2008. A conservative figure from a local NGO – Mith Samlanh – in 2007 suggests that there were 24,700 street children in Cambodia's major urban areas, half of whom were girls. This number appeared to be rising by 20 percent every year, partly due to rural-urban migration. These children are mostly homeless and live a hand-to-mouth existence as they cannot rely on family members for support and generally have a low education. They get involved in work such as shoe shining, begging, or scavenging, or even prostitution. Their living environment is generally poor. They are also highly susceptible to HIV/AIDS infection because of their exposure to intravenous drugs.

Young people's lack of access to decent jobs is critical in that it is a cause of the most serious vulnerability among them. About 300,000 new entrants join the labour force every year, a figure that may increase to 400,000 in the near future (UNCT 2010). Most employment continues to be concentrated in rural areas, which absorb 82 percent of the total labour force, while Phnom Penh absorbs 8 percent and other urban areas 9 percent (SNEC 2009). Ironically, insufficient growth in the agriculture sector and rural areas suggests why employment growth is not substantial enough to absorb the excess labour force (MoLVT & ILO 2010). Most importantly, young people generally find it hard to get decent employment opportunities because of the mismatch between the skills required for those jobs, the education they have been equipped with and the nature of market labour demand given the changing patterns of economic growth. Much of the literature on youth issues suggests that a large proportion of young people are unskilled or not qualified enough when they enter the labour market due to lack of proper skills training, poor education quality, low education attainment[12], and lack of job information (ILO 2007; Morris 2007; CAMFEBA 2008; UNCT 2010). These combined factors mean that Cambodia is dominated by surplus unskilled labour, implying a deficit in skilled labour to supply market labour demands and to sustain economic growth (SNEC 2009).

Children and youth are the country's most valuable asset for its future development. Vulnerability among this young population not only harms the welfare of individuals but also undermines the country's human capital development, poverty reduction efforts, and long term sustainable growth.

12 A significant percentage of youths that enter the labour market have a low level of education: 45 percent attained only primary education, while just 30 percent completed lower secondary level.

3.5. Elderly People

Elderly people aged 60 or above in 2008 made up 6.4 percent of the total population, with elderly women constituting 58 percent (Census 2008). The proportion of elderly people is expected to increase to 10 percent by 2025, declining marginally to 26 percent in 2050 (UNDESA 2002). The vulnerability of the elderly in Cambodia stems from the fact that they are still considered the breadwinner despite their age. This can be partly explained by the characteristics of poor and vulnerable households, i.e. many small children, lack of adult children, high dependency rate[13], and migration of adults. According to the 2008 Census, the economic activity rate of those aged 65 and above was 68.4 percent for men and 45.15 percent for women. A large majority of older Cambodians are likely to be in poor health (RGC 2007). Older women are known to be more prone to disability and the probability of their recovery is low, adding to their vulnerability (Zimmer 2005). There is evidence that many older Cambodians have suffered the loss of an adult son or daughter to HIV/AIDS. Looking after an adult child who has HIV/AIDS becomes a burden for older parents who also suffer social stigma, both during the illness and after the death of their child, due to the negative attitude of some members of their community. Older parents must then bear the burden of bringing up orphaned grandchildren, some of whom may also be infected with HIV (HelpAge International undated; CCC& ADI 2010).

3.6. People with Physical Disability

Data from the 2008 Census indicate that 192,538 people are physically disabled (both from birth and after birth[14]). This vulnerable group comprises 1.44 percent of the total population, 43.7 percent of whom are female. Eighty-five percent of people with disability live in rural areas. People who become disabled after birth, mostly as the direct result of war, land mines and other accidents[15], account for 70 percent of the total number of those with a disability. Cambodian families and rural communities remain physically endangered and socio-economically disadvantaged by land mines and unexploded ordnance (UXO) discarded after decades of war. More than 40 percent of the population reportedly continue to live alongside the remnants of conflict (MAG 2009).[16]

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13 The dependency ratio was 82 with young dependency ratio of 75.4, older dependency ratio of 5.1 and parent support ratio of 56 (RGC 2007).

14 Disability "from birth" means that a person was born with a disability; disability "after birth" means that a person became disabled due to accident, injury or illness later in life.

15 Currently, approximately three people are killed or injured by mines and unexploded ordnance (UXO) every day in Cambodia but road traffic accidents are responsible for significantly more disability. In November 2004, 628 road accident casualties were reported in Phnom Penh alone, of whom 4 percent died and 35 percent suffered severe injuries warranting surgery and or intensive care (Handicap International 2004).

16 The Cambodian Mine/UXO Victims Information System (CMVIS) shows that from January 2006 until June 2009, 1,223 men, women and children were casualties of landmines and UXO.

Cambodia has 61,151 people who were born with a physical disability; visual impairment has the largest share (Census 2008). Thomas (2005) found that disability after birth is largely caused by illness, disease, congenital conditions and malnutrition. Statistics from the 2008 Census provide a worrying picture in that the literacy rate of people with a disability is 62.25 percent and is much lower compared to the general literacy rate of 78.35 percent. It is important to note that the literacy rate of women with a disability is 51.48 percent, far below that of men with disability at 70.54 percent. Moreover, 44.74 percent of people with a disability are economically inactive while 3.99 percent are unemployed. From these statistics, those with a physical disability are vulnerable due to poor access to education and employment opportunities, resulting in most of them being destitute. Other literature suggests that people with a disability suffer from direct discrimination, social stigma, varying degrees of social isolation and exclusion from the political process and development (Thomas 2005; Chambers 2005; Mackinlay 2004; Hughes *et al.* 2003).

3.7. Ethnic Minority Groups

There are reportedly 36 ethnic minority groups in Cambodia, comprising about 4 percent of the total population (World Bank 2005; Census 2008). The indigenous minorities are spread across Kratie, Mondulkiri, Rattanakiri, Stueng Treng, Kampong Thom, Koh Kong, Pursat, Kampong Speu and Sihanoukville provinces. Data on ethnic groups is limited. However, some research and data suggest that higher poverty profiles and poorer human capital development are found in the highland provinces where most of the ethnic groups reside. These provinces also have a lower school enrolment rate and fewer hospitals compared to other provinces (MoP & UNDP 2007; MoH 2008). This could signify that ethnic groups have high levels of poverty, very low level of basic social services provision and uptake, and extremely poor health and education status. A new source of vulnerability for ethnic groups is the increasing loss of natural resource stocks that their livelihoods traditionally depend upon due to the allocation of land for economic land concessions[17] and land grabbing, which has resulted in the destruction of indigenous minorities' social fabric and livelihoods (NGO Forum 2006).

17 To date, 85 companies have been contracted and licensed for a total land area of 956,690 ha located in 16 provinces. The major goal of economic land concessions is to provide unused land for agricultural and agro-industrial plantation, and processing agricultural products for export, and is expected by the government to create jobs and generate income for rural people However, some concessionaires have not been actively implementing their projects, so MAFF has requested the government to cancel the contracts of 41 companies which should release a total land area of 379,034 ha. (source: http://www.elc.maff.gov.kh/)

3.8. Women Headed Households and Girls of Reproductive Age

The proportion of female-headed households in 2008 constituted 25.59 percent of the total population (Census 2008). Female-headed households are considered vulnerable due to their low capacity to earn and save income and invest in assets, illness and social stigma – especially those without adult males; those with a high number of dependents are likely to be among the poorest households (World Bank 2007; World Bank 2006a; MoWA 2008; Fitzgerald *et al.* 2007; Ballard *et al.* 2007). Further, Cambodian women face a relatively high risk of dying during pregnancy and childbirth as indicated by the high maternal mortality ratio of 472 per 100,000 live births. Approximately 2000 Cambodian women die each year from pregnancy and childbirth-related causes, including abortion, haemorrhage and eclampsia (MoWA 2009 MoWA 2008). Maternal mortality is the most important indicator of women's health and it reflects access to and availability of health services correlated with the education of women, and the allocation of public and household resources for women's healthcare, especially prevention services. Only 38 percent of women use public health maternity facilities when they give birth (RGC 2009). Most women in remote and rural communities are still at higher risk of dying during pregnancy and childbirth or from antenatal complications because health services in these areas are poorly established. Moreover, the poor nutritional status of women during pregnancy is another indicator of women's vulnerability, especially in times of household food shortage (MoWA 2004).

In sum, most vulnerable groups experience different levels of idiosyncratic or covariant shocks, or even a combination of both. The World Bank study on 'Risk and Vulnerability of People in Cambodia' (2006b) examines the relative vulnerability of various groups based on exposure to risks and capacity to manage them. Its findings reveal that children and youths, who form the biggest proportion of the total vulnerable population and characteristically have poor nutritional status, are involved in some of the worst kinds of wage labour, are poorly educated and lack the skills and opportunities they need to get decent jobs. People with disability and the urban poor ranked second and third in terms of vulnerability and their ability to manage risk, followed by the elderly, ethnic minorities, female headed households and garment workers. Garment workers were found to have the lowest level of exposure to shock and the strongest ability to cope with risk among all groups. Studies by So (2009), Kem *et al.* (2010) and Ngo *et al.* (2010) also point out that due to low capacity to cope with shocks from the economic downturn, vulnerable groups and their families, especially women headed households, become more vulnerable to income and consumption shocks, pushing them deeper into poverty. Hence, whatever strategies might help reduce vulnerability and risk of exposure to shocks among the most vulnerable are considered appropriate direct ways to fight poverty and boost a more sustainable and equitable pattern of growth. Social protection is sometimes approached as a "system" to address both covariate and idiosyncratic vulnerabilities (Davies *et al.* 2008; Vakis, 2006). Putting social protection or social safety nets in place to support vulnerable groups has become one of the priority options. The existing social protection programme, its effectiveness, critical challenges and constraints to effective social protection for reducing vulnerability are discussed below.

4. EXISTING SOCIAL PROTECTION AND VULNERABILITY REDUCTION

In Cambodia, social protection has evolved both conceptually and in practice and is now a key policy issue in efforts to reduce vulnerability and poverty. Minna and Salim (2003:1) define social protection in the context of Cambodia as "formal and informal safety nets available to Cambodians to cope with shocks and crises threatening to push them into extreme poverty". Using this definition, two forms of existing social protection can be identified in Cambodian society: (1) informal social protection, and (2) formal social protection. Both of these play very important roles in vulnerability reduction and serve as a buffer for people during shocks and crises or when they need help.

4.1. Informal Social Protection

Informal social safety nets in Cambodian society come in the form of kinship, reciprocal activities, community cohesion and religious institutions, and have been playing a very important role in providing the poor and vulnerable in Cambodia with help and support for generations (Kim 2001; McAndrew 1997; Ebihara 1968; Vijghen 1991). When facing difficulties or shocks, poor and vulnerable people turn to relatives, friends, neighbours or better-off households, monks or pagoda committees to access help (Fitzgerald *et al.* 2007; Ballard *et al.* 2007). Generally, informal social protection is part of community social capital and contributes to socioeconomic and community development and food security (Krishnamurthy 1999); it also complements the efforts of formal social protection in terms of shock and vulnerability mitigation among the poor and vulnerable. Informal social safety nets have evolved over time and been shaped by socio-economic development. Consequences of war and social turbulence such as the breakdown of the nuclear and extended family unit, social dislocation and survival driven relocation left original traditional social protection systems in a fragile state and disrupted many communities' access to the kind of support that they have long relied upon (RGC 1997; Ngy 2009). Rapid population growth, reduction of natural resource stocks, and tighter livelihood competition have had direct and indirect adverse effects on coping mechanisms as well as community solidarity and collective actions to help the poor (Fitzgerald *et al.* 2007; Ballard *et al.* 2007; World Bank 2006). More recent studies even suggest that some forms of informal social safety nets, such as mutual help and reciprocal activities among vulnerable worker groups and some rural households, are close to collapsing due to extreme family hardship exacerbated by the global economic crisis and inflation. It was also found that people have become more individualistic with regard to offering help, owing to uncertainty of employment and income (So 2009; Theng & Kem 2009).

4.2. Existing Formal Social Protection

Formal social protection can encompass a wide range of measures, including legal framework and policy interventions, social assurance, social safety nets and social assistance programmes. By the end of 2009, 76 on-going social protection programmes were being funded by the government and its development partners: 40 programmes

focus on health, 16 on education, 15 on community and social welfare and five projects focus on emergency relief and food aid (CARD/WFP/WB 2009a).

4.2.1. Legal Framework and Policies Intervention

The government is mandated by the Constitution to provide a number of social protection measures to the people. For instance, Article 22, "Everyone …has right to social security"; Article 25, "The right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond [their]control"; Article 36, "Khmer citizens of either sex shall enjoy the right to choose any employment according to their ability and to the needs of the society…"; Article 46, "Prohibition of all types of exploitation and obscenities which affect the reputation of women…provision of adequate social support for women…"; Article 72, "The health of people shall be guaranteed…Poor citizens shall receive free medical consultation in public hospitals, infirmaries and maternities. The state shall establish infirmaries and maternities in rural areas"; Article 75, "The state shall establish a social security system for workers and employees".

Several organic laws have been passed to codify some of the social protection related tenets of the Constitution. The most relevant laws which have been adopted are: (1) the Labour Law which provides a standard legal workweek, and the minimum permissible working age; (2) the Insurance Law passed in 2000 to provide legal framework for better regulation of insurance market activities, including life insurance, pension, credit and natural disaster insurance; (3) the Law on Social Security Schemes that entitles workers and employees in the private sector to old age, invalid and survivors' benefits as well as workers' compensation; (4) the Law on Suppression of Human Trafficking and Sexual Exploitation heavily penalises offenders if victims are below 15 years and gives the police more power to investigate and arrest suspected traffickers; (5) the Law on the Prevention of Domestic Violence and Victim Protection; and two more laws, yet to be commuted by the government, support retired civil servants and veterans, (6) the Law on the Comprehensive National Social Security Fund, and (7) the Law on National Pension for Veterans.

The government also identified social protection-related objectives in its comprehensive National Strategic Development Plan (NSDP 2006-2010) and in its updated plan for 2009-2013, which were formulated using the Rectangular Strategy, National Poverty Reduction Strategy, Cambodia Millennium Development Goals (CMDGs) and others. The NSDP gives priority to addressing rural development and improving rural livelihoods. From this policy framework, key commitments related to social protection include: creating jobs in the formal and informal sectors and ensuring improved working conditions; providing social safety nets for the disadvantaged, including measures to assist victims of natural disasters; targeted programmes for vulnerable groups such as poor female headed households and veterans, and the establishment of rehabilitation centres for orphans and the elderly; addressing violence and people trafficking; and improving health service delivery, quality and financing. Parallel to the NSDP, a number of government institutions have been delivering social protection through individual policy frameworks and action plans. The government has now

mandated the Council for Agriculture and Rural Development (CARD) to set up an inter-ministerial coordination mechanism to implement social protection intervention. A comprehensive National Social Protection Strategy (NSPS) for poor and vulnerable people has been drafted and prepared for submission to the Council of Ministers for comment before being put into full implementation. The vision of NSPS is that more Cambodians, especially the poor and vulnerable, will benefit from improved social safety nets and social security as an integral part of sustainable, affordable and effective national social protection systems (CARD 2010).

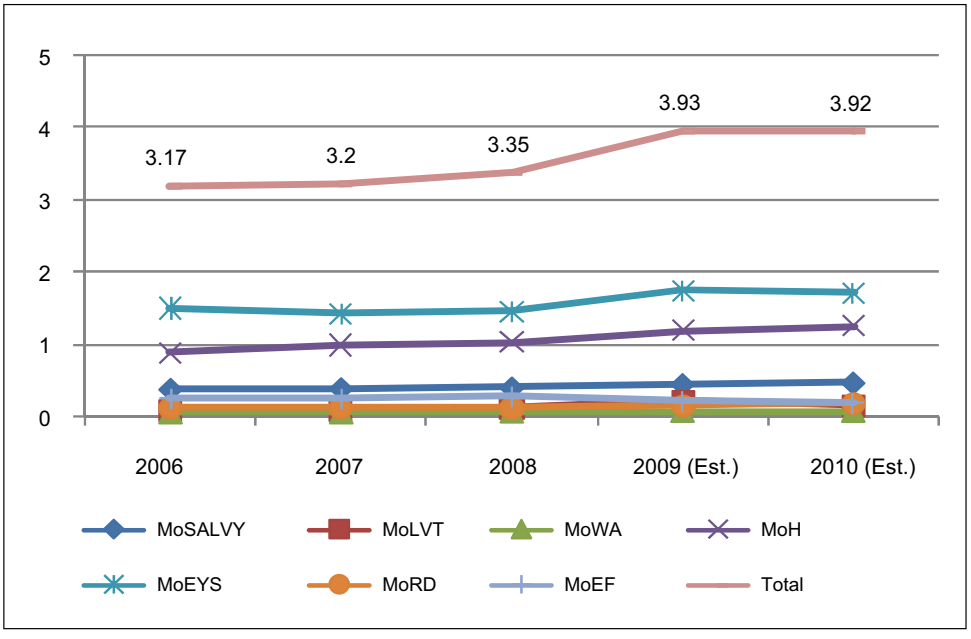
4.2.2. Expenditure on Social Protection

Table 1: Government Expenditure on Social Intervention in 2010 by Region (million riels)

Geographic Location	Social Assistance		Allowance and Social Transfer		Total	
	Amount	%	Amount	%	Amount	%
Phnom Penh City	8242.0	71	844.0	29	9086.7	63
Plain Region	951.0	8	665.2	23	1616.2	11
Tonle Sap Region	1083.0	9	698.7	24	1781.7	12
Coastal Region	620.0	5	255.6	9	875.6	6
Plateau and Mountainous	735.0	6	434.3	15	1169.3	8
Total	11631.0	100	2897.8	100	14529.5	100

Source: Calculated base on data from MoEF 2010

Figure 8: Trend in Social Spending by Ministries (% GDP)



Seven government ministries are currently delivering social protection and safety net programmes. The overall trend of government spending on ministries working on social protection has increased from 3.17 percent of GDP in 2006 to 3.92 percent in 2010, equivalent to USD442.25 million. However, it is still lower than the regional level where average public spending alone was 4.3 percent of GDP in 2004 according to world development indicators (Figure 8). Given the government's priority to develop human capital, the largest budget allocation goes to the Ministry of Education, Youth and Sports (MoEYS) and the Ministry of Health (MoH); other social ministries such as the Ministry of Economy and Finance (MEF) are allocated less than 0.5 percent of GDP.

Most of the government's budget for social intervention is known as "allowance and social transfer" and "social assistance"[18]. Estimated total government expenditure for 2010 is 326,370 million riels (USD77.7 million), of which 11,631 million riels went to social assistance and 2,898 million riels to allowance and social transfer. It is interesting to note that 71 percent of total government expenditure on social assistance is concentrated in the Phnom Penh region alone (Table 1).

Table 2: 2009-10 Disbursements on Priority Projects (USD million)

	Budget 2009	**Disbursement 2009**	**Budget 2010**	**Disbursement 2010**
Economic growth	180.8	135	136.6	171.7
Livelihood	121.2	100.3	111.8	104.36
Safety nets	***68.2***	***51.1***	***58.4***	***51***
Total	370.2	286.4	306.8	327.3

Sources: RGC 2010

Development partners also play an important role in social protection provision. Cambodia's development partners include the UN and multilateral donors, the European Union, bilateral donors and NGOs. According to the aid effectiveness report in 2010, 63 investment related projects have supported economic growth, especially in infrastructure or agriculture, protected people's livelihoods or formed part of essential safety net provision. The disbursement for the safety net project was USD51.1 million in 2009 and USD58 million in 2010 (Table 2).

18 Social security fund includes: (1) family, (2) healthcare and maternity, (3) death, (4) retirement, (5) decommission from the armed forces, (6) work accident and invalidity, (7) children orphaned by the death of a relative, (8) other, (9) return attenuation. Social assistance includes: (1) assistance for hospitalisation, (2) natural disaster, (3) other social expenses, (4) support to social and cultural sector (including sports and cultural communities, orphanages, and the Red Cross), (5) donation to NGOs.

4.2.3. Social Protection Related Programmes and their Effectiveness

In Cambodia, social protection programmes are provided mainly by the government with some external support. To some extent, NGOs and the private sector also contribute to social protection. The major social protection programmes identified under the NSDP are social security services, the National Social Safety Net Fund, vocational training, Scholarship for the Poor, School Feeding and Take Home Rations programmes, health equity funds, community-based health insurance, the nutrition programme, emergency relief, public work programme, social land concession, rural drinking water supply and sanitation and micro or area-based schemes.

It is extremely difficult to assess the effectiveness of social protection programmes since only a few institutions or interventions collect critical monitoring information. Moreover, there are few thorough evaluations of existing safety net interventions, making it difficult to evaluate their performance by international standards and identify areas that may need improving. This review of existing social protection efforts illustrates that the current programme is considered appropriate given its diversity and flexibility to respond to various shocks and vulnerabilities, and the balance it maintains between a bundle of programmes and the more comprehensive government NSDP and CMDGs. The effectiveness of the programme is also clearly seen in the direct support to reduce various forms of vulnerability, especially among the poor and vulnerable groups. More than 60 percent of the total budget allocated to social protection in 2007 benefited the poor (Prom 2007), which indicates a high degree of pro-poor targeting.

The effectiveness of social protection programmes has been undermined by some critical challenges and gaps in implementation. For example, government budget for social safety nets remains low and the majority of funding is provided by development partners, which indicates the incentive incompatibility of social protection programmes. Limited resources have considerably constrained the government's ability to develop an effective and sustainable safety net system. Given the many sources of vulnerability faced by the poor, the limited budget and coverage as well as the infancy of social security and social policy development, social protection still does not reach a large proportion of the population in need of support. In particular, the urban poor and the elderly are often excluded or receive very limited attention (CARD,WFP & WB 2009b; CARD 2010). Besides its limited coverage, other aspects of the social protection programme such as the quality of services provision, its timely responsiveness and ability to help vulnerable groups better cope with risks are questionable.

So far, social protection services have been delivered in a patchwork fashion by several ministries and development partners. Coherent social protection strategies are absent due to the lack of a government body that has a clear mandate to coordinate these interventions. These institutions use different ad hoc targeting procedures, the accuracy of which has not been properly investigated. Moreover, the allocation of safety net resources sometimes reflects only those priorities dictated by development partners' interests and earmarked funding sources. This could result in duplication

of programme provision, uneven geographical coverage or the exclusion of the regions that most need intervention. The government recently assigned CARD as the coordinating institution for social protection and a draft National Social Protection Strategy (NSPS) is to be implemented in the near future. The NSPS will guide social protection policies with a long-term vision for safety net development. The United Nations Development Assistance Framework 2011-2015 promotes improving social safety nets and social security programmes as an integral part of a sustainable social protection system and will work in close collaboration with the government and civil society.

5. CONCLUSION, POLICY OPTIONS AND POTENTIAL RESEARCH AREAS FOR EFFECTIVE SOCIAL PROTECTION

Poverty, growth inequality, social exclusion and lack of access to public services and opportunities are the main causes of vulnerability. Vulnerable people experience different shocks at different levels. It was consistently found that all highly vulnerable groups are less able to manage whenever struck by shock. A wide range of social protection interventions to address poverty and reduce vulnerability have been delivered. The programme, despite its diversity, is truly inadequate in scale such that social support has yet to reach large groups of vulnerable people. The limitations of social protection programmes could be a barrier to social cohesion, human capital development, livelihood improvement, broad based equitable growth and ultimately, poverty reduction. Seeking an approach for effective social protection is almost equivalent in scope to the search for a comprehensive effective approach to address poverty. Given the reality of vulnerability, the nature of poverty and the existing social protection, we attempt to provide a few policy options as outlined below:

(1) Since poverty and vulnerability are highly concentrated in rural areas, more diversified growth in rural areas would seem to be an indirect way of reducing vulnerability among rural Cambodians, in which case, agriculture sector growth should be prioritised.

(2) At the same time, finding ways of scaling-up social protection programmes for equitable access among all segments of the vulnerable population is a likely key to increased equity and security which would in turn lead to a more dynamic, cohesive and stable Cambodian society. Future oil revenues are likely to be quite large and these could be used to expand social protection. There is still a long way to go before social protection can be delivered to the entire population.

(3) Given the current inadequacy of social protection, prioritising programmes that target those whose needs are most immediate or the most vulnerable groups, for example young people or the elderly, would be an option. Channelling support to targeted groups could improve the cost-effectiveness of programmes.

(4) Effective social protection requires institutional capacity, good governance, accountability and good coordination. Hence, implementation of the National Social Protection Strategy (NSPS) would have to ensure better coordination among institutions that deliver social protection interventions. A generic targeting procedure such as

ID-Poor should be comprehensively used to target beneficiaries. In addition, other approaches to measuring poverty and identifying the poor such as the multidimensional poverty index would also be options. Further advances in social protection activities are likely as the government strives to achieve its CMDGs. Measuring the impact and effectiveness of social protection is difficult due to current limitations in monitoring information. Hence, better monitoring and more rigorous evaluation of existing interventions is required. CARD is to use a result-based monitoring and evaluation system to ensure cost efficient implementation and adjustments.

Potential areas of future research: This study provides an updated snapshot of the context of vulnerability and the availability of social protection over the period 2008-2010. The dimensions and reality of vulnerability and risks tend to change along with socio-economic development. More research needs to be carried out to provide updated information and monitor changes in vulnerability and risk. The outcome from such research would be a critical input to the effective design, implementation, monitoring and evaluation of a more dynamic social protection programme that better fits the reality of shock, vulnerability and poverty and accurately targets those most in need.

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-VI-

Transient and Chronic Poverty in Nine Villages of Cambodia: Panel Data Evidence – Asset Approach

By Tong Kimsun[1]

SUMMARY

It is well recognised in the literature that different policies have different implications for chronic and transient poverty. However, little is known about these types of poverty in Cambodia due to the lack of panel data. There are alternative methods such as income, consumption and asset approach to measure poverty, chronic poverty and transient poverty. This article uses various household asset ownership indicators or an asset approach to measure chronic and transient poverty. As a proxy for long-run household wealth, the asset index is constructed by principal component analysis. We decompose measured household poverty into transient and chronic components and use multinomial logit regression to identify the causes of transient and chronic poverty. Our results show that households experiencing transient poverty account for 40 percent of the sample and chronic poverty for 30 percent. The number of males aged 15-64 years, household head characteristics such as educational level and occupation, agricultural land, non-land assets and livestock are important factors for chronic poverty but are not significant determinants of transient poverty. Transient poverty is negatively associated with non-land assets.

1. INTRODUCTION

Poverty analysis in Cambodia is primarily based on cross-sectional household survey data that provide estimates of the static poverty rate. Poverty reduction strategies and policies obtained from those studies are likely to address long run rather than short run poverty. Estimates of poverty over time provide a richer picture of poverty. As discussed widely in the literature (e.g. Jalan & Ravallion 2000; Kedir & Mckay 2003; Haddad & Ahmed 2003), poverty experienced over an extended period of time is called "chronic poverty" and poverty due to income shocks that is likely to be temporary is called "transient poverty". This latter type of poverty reflects vulnerability: the non-poor might suddenly fall into destitution.

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Newly updated World Bank estimates suggest that the global financial crisis left an additional 50 million people in extreme poverty in 2009 and some 64 million by the end of 2010 (World Bank 2010). In Cambodia, a study by Tong *et al.* (2009) confirms that the poverty incidence increased between 2008 and 2009—partly due to an economic contraction in 2009. The global economic crisis poses a great challenge to achieving some of the 2015 Millennium Development Goals (MDG), particularly that of eradicating extreme poverty and hunger.

The World Bank (2009) reports that the poverty headcount ratio for Cambodia was 30.1 percent in 2007, a figure well above the rate it should be at this stage to achieve the MDG. Taking account of the past poverty rate decline of an average 1 percent per year and the increase of the poor due to the economic crisis, the achievement of this target is in doubt. This partly reflects the failure of current poverty reduction policies to protect vulnerable households from falling into poverty.

In other developing countries, the study of poverty dynamics has recently increased (e.g. Jalan & Ravallion (2000), Baulch & Hoddinott (2000), Kedir & Mckay (2003), Haddad & Ahmed (2003)). However, a rigorous analysis of poverty dynamics in Cambodia has yet to be performed, mainly due to the lack of panel data. This study aims to address this limitation.

Development economists often use income and consumption, i.e. monetary indicators, to measure well-being; however, monetary data have accuracy limitations. To overcome the problems, non-monetary indicators such as durable assets, access to utilities and housing characteristics have been used to complement monetary measures of welfare. These non-monetary data are a better source of information about long-term living standards than income and consumption because they have been accumulated over time and are often less likely to entail measurement errors. However, non-monetary data may fail to describe short-term shocks to households.

In recent years, a number of studies (Filmer & Pritchett 1998; McKenzie 2004; Sahn & Stifel 2003; Kolenikov & Angeles 2004; Booysen *et al.* 2008) have attempted to develop a new methodology to aggregate various household assets into a single variable and use that as an index to predict poverty. Due to some problems with the household data from surveys on food and non-food consumption and possibly their poor quality, we used the asset-based approach proposed by Filmer and Pritchett (1998) to measure chronic and transient poverty, and multinomial logit regression to identify the key determinants of the two poverty types. The results could help policy makers to launch evidence-based and effective poverty reduction strategies in appropriate areas.

2. LITERATURE REVIEW

Over the past decade, poverty studies have been increasing in Cambodia. The best known is the Cambodia Poverty Profile, which provides poverty estimates using the nationally representative cross-sectional Cambodia Socio-Economic Survey (CSES) in 1993–94, 1997, 1999, 2003–04 and 2007. That report shows that the poverty headcount rate fell from 47 percent to 30 percent between 1993–94 and 2007. However, it fails to show what happened to individual households over time—the dynamics of poverty—by looking at why some households move out of poverty, some fall into it and some in poverty remain there.

The Moving Out of Poverty study (MOPs) by Fitzgerald and So (2007) examined poverty dynamics in Cambodia. The study used two-period panel data and employed mixed methods (qualitative and quantitative). It categorised households into (a) very poor, (b) moderately poor (between 20 percent above and below the poverty line) and (c) well-off. It found that the status of 52 percent of households did not change between 2001 and 2004. About 14 percent of the very poor in 2001 managed to move to moderately poor or well-off. Approximately 7 percent of the moderately poor become very poor, while 12 percent became well-off. Additionally, 15 percent of the well-off fell to moderately or very poor. The study's descriptive analysis might have ignored other useful economic information concerning simultaneous effects on the key determinants of the defined poverty measure. Therefore, the analysis led to inconclusive results.

There is significant literature on poverty dynamics in other developing countries. Kedir and Mckay (2003) examined chronic poverty in urban Ethiopia. They used panel data on 1500 households collected during 1994–97. Defining the chronically poor as households with real total expenditure per adult per month below the poverty line in all three years and the transient poor as those with real total expenditure per adult per month below the poverty line in one or two of the years, they found that the proportion of transiently poor households was higher than that of chronically poor households. Using multinomial logit regression, they argued that chronic poverty was associated with household composition, unemployment, lack of asset ownership, casual employment, lack of education, ethnicity, household head's age and female household head.

Haddad and Ahmed (2003) applied quintile regression to two-period panel data of 347 households in Egypt to identify the causes of chronic and transient poverty. They categorised households that had real consumption per capita below the poverty line in both periods as chronically poor, and households in which real consumption per capita fell below the poverty line in one of the two years as transiently poor. They used quintile regression to determine the causes of chronic and transient poverty and found that household size, number of members aged less than 15 years, age of household head, livestock assets, agricultural land, education of household members and employment status affect chronic poverty. Only members aged over 60 and agricultural land increased the likelihood of transient poverty.

Jalan and Ravallion (2000) used data on 5854 households in south-west rural China over 1985–90 to test whether transient poverty is determined similarly to chronic poverty. They defined chronic poverty as having time-mean consumption (i.e. an average value of consumption over time) below the poverty line. Households were defined as having experienced transient poverty if they had been observed to be poor at least once in the available data and had time-mean consumption above the poverty line. Using quintile regression, they found that a household's stage of life cycle (age of household head), physical wealth and cultivated land are the most important variables for transient poverty. Demographic characteristics (household size, ages of the children), education, household members' employment status, physical wealth and cultivated land seemed to be more important for chronic poverty.

Although the key determinants of chronic and transient poverty differ slightly among countries, it is commonly noted that health and education services, asset redistribution and infrastructure development are likely to reduce chronic poverty. Unemployment and health insurance, income stabilisation programmes, micro-credit and temporary social safety nets are important when poverty is transient. To achieve policies for alleviating poverty, there is also a need to know the whereabouts of the two types of poverty mentioned above.

3. DATA AND METHOD

The empirical work in this article is based on the results of CDRI's surveys in 2001, 2004–05 and 2008 in nine villages. A brief description of the characteristics of the sample villages is given in the Appendix. The information collected included household demographics, housing condition, land ownership and transactions, credit markets, food and non-food consumption, non-land assets, livestock ownership, household income, agricultural production, production expenditure, wages and self-employment.

Although the survey data are for three different years, the determination of change has proven problematic. Certain inconsistencies have been introduced over time that cannot be easily remedied at this stage. The meaning of some questions has been completely changed, while some others have been combined or split to meet the purpose of the study for each round. Interviewer training and allocation may also have had some impacts on the measurement of household income and expenditure. In addition, the comparison of monetary indicators is only as valid as the deflator used. In this regard, CDRI has collected the price of 106 food and non-food items to construct a village consumer price index since 2004/05. However, the lack of data on commodity prices in 2001 would require a strong assumption regarding village inflation rates between 2001 and 2004/05. The Moving Out of Poverty study by Fitzgerald and So (2007) simply assumed that the inflation rate across all villages between 2001 and 2004/05 was about 18 percent – which is unlikely to be the case since the selected nine villages are in different regions. Importantly, the quality of commodity price data is also poor. Therefore, real income and consumption derived from the estimated village consumer price index have serious drawbacks.

When asked what they own from a list of assets (such as bicycle, television, source of drinking water), interviewees are more likely to provide accurate information than on income and expenditure. Despite this, the use of a single proxy can lead to unreliable or unstable measures of socio-economic welfare. The idea of constructing an asset/wealth index is to incorporate a number of such proxies into a single variable. The most popular method is to assign weights to observed variables and sum them. Pearson (1901) and Hotelling (1933) developed Principal Component Analysis (PCA) for the similar purpose of aggregating information in the early 20th century (cited in Kolenikov & Angeles 2004). In economics, this method has been applied to studies of co-integration and spatial convergence, forecasting, simultaneous equations, education and poverty.

One of the most influential poverty analyses using PCA to construct an asset index is that of Filmer and Pritchett (1998). Following Filmer and Pritchett *(ibid)*, this study applies PCA to construct a wealth index. Albert (2009a) describes the calculation of a wealth index using PCA for poverty dynamics study (PDS) data as a two-stage process. First, PCA is applied to asset data of a national survey (but only for rural households since PDS areas are rural). Second, the resulting factor scores of the first principal component are used to generate the weight for the component wealth index on the PDS data. Because the purpose of the study is to look into the dynamics of living standards, it is crucial to have an absolute poverty line for the wealth index to identify the poor and non-poor households in the PDS data. Albert *(ibid)* also suggests using the poverty rate estimated by consumption data with the national survey (CSES 2003/04) as the benchmark for the poverty line. As shown in Table 1, the poverty headcount in rural areas relative to total poverty line accounts for 39 percent and to food poverty line for 22 percent in 2004. In line with poverty rate estimated by consumption approach, two cut-off lines can be used: (a) the 39th percentile of the asset index; (b) the 22nd percentile of the asset index. As a result, we can define households as:

1. poor if the value of wealth index is less than the 39th percentile of the asset index distribution of persons residing in rural areas;
2. very poor if the value of wealth index is less than the 22nd percentile of the asset index distribution of persons residing in rural areas.

Table 1: Poverty Headcount Index by Region, 2004 and 2007

Poverty line/ region	**2004**	**2004***	**2007**
Food poverty line			
Phnom Penh	2.55	2.55	0.11
Other urban	14.15	14.78	12.73
Rural	22.23	22.12	20.78
Cambodia	19.68	19.71	17.98
Total poverty line			
Phnom Penh	4.60	4.60	0.83
Other urban	24.73	25.78	21.85
Rural	39.18	39.05	34.70
Cambodia	34.68	34.78	30.14

* Limited to villages in the 2007 CSES sampling frame.
Source: World Bank (2009)

Table 2: Descriptive Statistics

	CSES 2004		PDS 2001		PDS 2004/05		PDS 2008	
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
radio	0.354	0.478	0.200	0.400	0.310	0.463	0.310	0.463
tv	0.407	0.491	0.245	0.431	0.447	0.498	0.571	0.495
bicycle	0.665	0.472	0.451	0.498	0.643	0.479	0.758	0.428
motorcycle	0.225	0.418	0.111	0.315	0.191	0.393	0.368	0.482
animal cart	0.296	0.456	0.264	0.441	0.260	0.439	0.245	0.431
sewing machine	0.040	0.197	0.054	0.227	0.077	0.267	0.075	0.264
generator	0.021	0.144	0.012	0.109	0.027	0.161	0.050	0.217
boat	0.101	0.302	0.415	0.493	0.485	0.500	0.438	0.496
plough/harrow	0.464	0.499	0.426	0.495	0.395	0.489	0.302	0.460
water pump	0.017	0.128	0.127	0.333	0.152	0.360	0.227	0.419
threshing machine	0.874	0.332	0.005	0.069	0.010	0.098	0.021	0.142
rice mill	0.023	0.151	0.025	0.157	0.036	0.187	0.056	0.229
drinking water from hand pump	0.292	0.455	0.209	0.407	0.172	0.377	0.167	0.373
drinking water from dug well	0.328	0.470	0.204	0.403	0.166	0.372	0.169	0.375
drinking water from pond, river	0.255	0.436	0.578	0.494	0.628	0.484	0.595	0.491
toilet	0.643	0.479	0.105	0.307	0.100	0.301	0.163	0.370
wooden house	0.388	0.487	0.440	0.497	0.586	0.493	0.757	0.429
bamboo/thatch house	0.397	0.489	0.511	0.500	0.385	0.487	0.237	0.426
agricultural land >0 and < 1000 square metres	0.397	0.489	0.399	0.490	0.334	0.472	0.254	0.436
agricultural land > 1000 and <3000 square metres	0.258	0.438	0.239	0.427	0.316	0.465	0.270	0.444
agricultural land > 3000 and <5000 square metres	0.034	0.182	0.045	0.207	0.048	0.215	0.097	0.296
agricultural land > 5000 square metres	0.023	0.150	0.031	0.175	0.027	0.161	0.051	0.220

CSES 2004: Only rural observations are included.
Source: CSES 2004, CDRI 2001–08

Table 3: Principal Components and Summary Statistics for Asset Indicators

	Scoring Factor	**CSES2004**	**lowest**	**middle**	**upper**
radio	0.1511	0.354	0.239	0.370	0.474
tv	0.3518	0.407	0.121	0.410	0.740
bicycle	0.2641	0.665	0.446	0.713	0.877
motorcycle	0.3036	0.225	0.050	0.180	0.472
animal cart	0.3036	0.296	0.076	0.286	0.561
sewing machine	0.1616	0.040	0.004	0.023	0.099
generator	0.0833	0.021	0.006	0.016	0.044
boat	-0.0195	0.101	0.107	0.098	0.098
plough/harrow	0.2895	0.464	0.215	0.496	0.723
water pump	0.0115	0.017	0.015	0.017	0.019
threshing machine	0.092	0.874	0.819	0.883	0.928
rice mill	0.1663	0.023	0.000	0.009	0.064
drinking water from hand pump	0.0147	0.292	0.278	0.309	0.291
drinking water from dug well	0.0078	0.328	0.333	0.315	0.335
drinking water from pond, river	-0.0538	0.255	0.294	0.243	0.223
toilet	0.1232	0.643	0.542	0.670	0.737
wooden house	0.4394	0.388	0.038	0.359	0.824
bamboo/thatch house	-0.3969	0.397	0.745	0.335	0.049
agricultural land >0 and < 1000 square metres	-0.1512	0.397	0.509	0.396	0.268
agricultural land > 1000 and <3000 square metres	0.1819	0.258	0.119	0.278	0.402
agricultural land > 3000 and <5000 square metres	0.1071	0.034	0.006	0.031	0.070
agricultural land > 5000 square metres	0.0972	0.023	0.006	0.015	0.051
asset index		-0.1711	-1.769	-0.150	1.675

Note: Only rural observations are included.
Source: CSES 2004

Albert *(ibid)* creates a composite asset index from a selection of variables that are commonly available across the three PDS surveys and the CSES 2004. These indicators can be divided into characteristics of housing structure (type of house), household access to utilities and ownership of durable assets. Table 2 lists these variables with their respective mean and standard deviation, and illustrates that the proportion of households holding asset indicators in the PDS 2004/05 is slightly different from CSES 2004. For example, more households are recorded as owning boats, water pumps and wooden houses and with access to drinking water from a pond or river in PDS 2004/05 than in CSES 2004, while the number of households with a threshing machine or toilet in PDS 2004/05 is much less than in CSES 2004. The differences may be partially due to sampling design and or sampling size, so a simple comparison could be misleading. If we take all factors into account, the quality of asset indicators in PDS 2004/05 is possibly similar to CSES 2004, which is a nationally representative household dataset. Even though the PDS empirical result is not nationally representative, it provides an interesting case study on poverty dynamics, and the robustness of the analysis will be high.

The first column of Table 3 provides the scoring factors of the first principal component. The scoring factors are positive for all durable asset except owning a boat, while poor quality housing materials such as bamboo or thatch receive negative coefficients as does poor access to drinking water. In other words, the weights for each index component that reflect higher standards of living contribute positively to the asset index, and components that reflect lower standards of living contribute negatively.

The last three columns of Table 3 present means for each indicator in three wealth quintiles. As in Filmer and Prichett (1998) and McKenzie (2004), asset ownership differs remarkably. For example, only 24 percent of the poorest quintile of households own a radio, while 37 percent of the richest quintile do; 4 percent of the poorest households have a wooden house compared with 82 percent of the richest households. These results show that, to some extent, the asset index in CSES 2004 is a good proxy for well-being.

Given the scoring factor of the first principal component and the cut-off (wealth index poverty line) derived from CSES 2004, asset index and poverty rates across PDS villages can be estimated. The result is that the headcount ratio across all villages and regions dropped significantly during 2001–08 (Table 4). The 2008 poverty rate was 33.7—29.4 percentage points lower than in 2001, indicating that the poverty rate had been reduced by 3.7 percentage points per year over the study period. Among the four different regions, Tonle Sap registered the highest poverty headcount in 2001. Eight years later, poverty in that region had declined to the second lowest figure, below the average.

Table 4: Poverty Incidence (%)

Village	2001	2004	2008
Tuol Krasang	57.6	17.9	19.6
Andoung Trach	62.1	36.3	20.6
Trapeang Prei	54.9	40.5	12.8
Khsach Chi Ros	76.9	63.2	45.5
Dang Kdar	65.0	54.0	40.1
Kompong Tnaot	63.2	46.1	44.9
Prek Kmeng	81.3	70.9	53.8
Kanhchor	58.6	38.6	24.1
Ba Baong	41.0	29.7	20.1
Total	63.0	45.2	33.7
Region			
Tonle Sap	66.1	39.4	29.8
Mekong plain	62.5	52.1	38.7
Plateau	60.3	44.8	28.2
Coastal	63.2	46.1	44.9
Total	63.0	45.2	33.7

Source: CDRI survey data 2001–08

Table 5: Households Poverty Status by Village and Region (%)

Village	Chronic poor	Transient poor	Never poor	Total
Tuol Krasang	11.6	50.0	38.4	100
Andoung Trach	18.0	50.8	31.2	100
Trapeang Prei	15.7	52.9	31.4	100
Khsach Chi Ros	44.8	36.8	18.4	100
Dang Kdar	36.5	42.1	21.5	100
Kompong Tnaot	42.2	33.9	23.9	100
Prek Kmeng	49.1	33.6	17.3	100
Kanhchor	23.6	39.6	36.8	100
Ba Baong	15.5	36.4	48.2	100
Total	30.1	40.4	29.5	100
Region	**Chronic poor**	**Transient poor**	**Never poor**	**Total**
Tonle Sap	25.6	45.3	29.1	100
Mekong plain	32.3	35.0	32.7	100
Plateau	27.3	43.2	29.6	100
Coastal	42.2	33.9	23.9	100
Total	30.1	40.4	29.5	100

Source: CDRI survey data 2001–08

We define the chronically poor as households that have an asset index below the poverty line for all three years, the transiently poor as households whose asset index falls below the poverty line in one of the years and the never poor as households with an asset index above the poverty line in all years (Table 5). Based on assets, the largest proportion of households were transiently poor. Of the total poor in the sample,

approximately 57 percent were transiently poor. To some extent, this confirms our previous suggestion that tackling rural poverty requires a clear understanding of the nature of transient poverty. The number of transiently poor households is highest in the Tonle Sap and plateau regions, while the number in chronic poverty is highest in the coastal region.

Table 6 provides descriptive statistics of household and geographic characteristics in the initial period. Chronically poor households are often associated with smaller households, lower dependency rates and fewer male and female adults aged 15–64 years than the transiently poor and never poor households. The household head of a chronically poor household is more likely to be younger, less educated, female and single than that of transiently and never poor households. Never poor households have fewer children aged 0–7 than chronically and transiently poor households. In addition, chronically poor households have the least agricultural land, non-land assets and livestock, while the never poor households have more of these assets than the others. Less agricultural land, non-land assets and livestock, fewer male and female workers, and a household head who is female, young, less educated and single would probably be key factors of chronic poverty.

Table 6: Household Demographics and Poverty Status

	Chronic poor	**Transient poor**	**Never poor**	**Total**
Household members	5.4	5.9	6.3	5.9
Children aged 0-6	1.1	1.1	0.9	1.0
Children aged 7-14	1.4	1.5	1.5	1.4
Adults over 64	0.2	0.2	0.3	0.2
Male adults aged 15-64	1.2	1.5	1.8	1.5
Female adults aged 15-64	1.6	1.6	1.8	1.7
Household head is male	0.7	0.8	0.9	0.8
Household head's age	42.4	42.5	45.9	43.4
Household head's education (years)	2.5	3.5	3.8	3.3
Household head is married	0.8	0.9	0.9	0.8
Agricultural land holding per capita (ha)	0.1	0.2	0.4	0.2
Non-land assets per capita ('0000 riels)	3.8	11.4	23.8	12.8
Livestock per capita ('0000 riels)	10.5	16.9	24.6	17.2
Employment status of household head (%)				
Others	19.3	22.8	32.8	24.7
Wage worker within village	9.2	6.0	2.5	5.9
Owned account worker	57.0	57.5	48.0	54.5
Wage worker outside village	14.5	13.8	16.8	14.9
Total	100	100	100	100

Source: CDRI survey data 2001–08

4. ECONOMETRIC RESULTS: DETERMINANTS OF CHRONIC AND TRANSIENT POVERTY

We use a multinomial logit model to examine the factors affecting the likelihood of a household being in either of the poverty groups. The explanatory variables include human capital, land and physical assets and geography. The human capital variables consist of dependency, the number of male and female adults aged 15–64 years and the age, education, gender, main economic activity and marital status of the household head. We also include agricultural land, household durable assets and livestock as well as dummies representing the four broad agro-climatic regions.

The dependent variable takes the value of 1, 2 or 3 for the chronically poor, transiently poor and never poor households, respectively. Table 7 reports the marginal effects and their statistical significance for the three poverty measures.

Table 7: Multinomial Logit Estimation on Determinants of Chronic and Transient Poverty

	Marginal Effect		
	Chronic poor	Transient poor	Never poor
Dependency	-0.008	-0.009	0.0173**
Male adults aged 15-64	-0.044**	-0.002	0.046***
Female adults aged 15-64	-0.025	-0.005	0.031**
HHH age	-0.001	-0.004	0.006
HHH age squared	0.00001	0.00002	-0.00004
HHH education	-0.019***	0.017***	0.002
HHH male	-0.002	0.098	-0.096*
HHH married	-0.057	-0.069	0.127**
HHH wage worker within village	0.243***	0.031	-0.275***
HHH owned account worker	0.080*	-0.014	-0.066*
HHH wage worker outside village	0.0242	-0.052	0.027
Agricultural land (log)	-0.020***	0.0019	0.018***
Non-land assets (log)	-0.048***	-0.071***	0.119***
Livestock (log)	-0.007**	0.005	0.001
Tonle Sap	-0.178***	0.097*	0.081*
Mekong Plain	-0.001	0.044	-0.042
Plateau	-0.175***	0.095*	0.079*
Number of observations	827		
LR chi2	389.63		
Prob>chi2	0.0000		
Log-likelihood	-704.732		
Pseudo R-squared	0.2166		

HHH=household head. * statistically significant at 10%; ** significant at 5%; *** significant at 1%.
Source: CDRI survey data 2001–08

The table also shows that an increased number of males aged 15–64 years are significantly negatively associated with the likelihood that households are chronically poor and positively associated with the probability of being never poor. A higher educational level of the household head reduces the likelihood of households becoming chronically poor. Household heads who are self-employed or daily wage workers within the village are more likely to be chronically poor and less likely to be never poor. This confirms village economic activities as being mostly insecure and having lower returns. More agricultural land, non-land assets and livestock decrease the probability of being chronically poor; livestock are less relevant for transiently and never poor households. Non-land assets are the most important factor in reducing the likelihood of being transiently poor. A male household head is less likely to be never poor, and a married household head is more likely to be never poor. We also found that a high dependency rate and educational level of household head increase the probability of being never poor and transiently poor, respectively—which is not likely to be the case. One would expect that the more highly educated a person is, the more capable s/he would be of adapting to both individual and common shocks.

5. CONCLUSION

Our empirical results suggest that determinants of chronic poverty differ from those of transient poverty. For example, males aged 15–64 years, household head characteristics such as educational level and occupation, and agricultural land and livestock are important factors for chronic poverty but are not significant determinants of transient poverty. Only non-land assets are associated with lower chronic and transient poverty. The Tonle Sap and plateau regions have lower chronic poverty and higher transient poverty than the coastal region. In general, our findings reconfirm that different policies will be needed to address the two types of poverty and for each agro-climatic region.

We have also noted that non-land assets play a critical role in reducing transient poverty, which in turn highlights the incomplete market for credit and the lack of formal insurance and social protection programmes, so that rural households have to rely on informal risk-coping mechanisms, i.e. physical assets accumulation. However during widespread and severe income shock such as the recent global financial and economic crisis, the prices of the assets they hold may fall quickly because everyone tries to sell similar assets at the same time after income shocks (Fafchamps & Gavian 1997). As a result, some may be reluctant or unable to sell their assets and therefore fall into poverty. This emphasises that insurance, social protection programmes and other mechanisms for protecting these vulnerable groups are the most important policies. Furthermore, we have verified that increasing human and physical assets are more appropriate policies to deal with chronic poverty.

Appendix 1: Key Characteristics of the Survey Villages (MOPS)

Village	District	Province	Basic criteria for selection
Tonle Sap plains			
Andong Trach	Sangke	Battambang	Substantial amount of wet season rice grown in flooded Tonle Sap, high out-migration
Krasaing	Thmar Korl	Battambang	Substantial amount of wet season rice grown in flooded Tonle Sap, high resettlement of returnees from border camps
Khsach Chiros	Kompong Svay	Kompong Thom	Floating rice plus substantial fishing in flooded Tonle Sap
Mekong plains			
Prek Khmeng	Lvea Em	Kandal	Dry season rice and substantial fishing
Babaong	Peam Ro	Prey Veng	Substantial dry season rice
Plateau / Mountain			
Kanchor	Chhlong	Kratie	Dry season rice and substantial forest dependence
Dang Kdar	Santouk	Kompong Thom	Low yield, wet season rice and substantial forest dependence
Trapeang Prey	Outdong	Kompong Speu	Low yield, wet season rice and dependence on hiring out labour
Coastal			
Kompong Thnoat	Kampot	Kampot	Low yield wet season rice, coastal fishing and salt mining

Source: Chan and Acharya (2002)

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-VII-

Land Tenure and Paddy Productivity: Evidence from Rural Cambodia

Tong Kimsun[1]

SUMMARY

This paper examines the linkage between land tenure and paddy productivity and how these links have been incorporated into recent agricultural, poverty alleviation and land policy documents. The empirical evidence comes from the 2007 Cambodia Socio-Economic Survey (CSES). The paper finds that land ownership documents i.e. application receipt, land investigation paper, certificate from the state, paper from local authority in rural Cambodia, are associated with higher productivity. Land ownership documents raise paddy production by approximately 20 percent – about 10 and 45 percentage points less than found by Markussen (2008) and the World Bank (2006), respectively, in their studies which attempted to assess the impact of land tenure on agricultural productivity. However, strengthening land property rights is still critically important for the Cambodian rural economy.

1. INTRODUCTION

Although the benefit of land tenure is widely recognised and well documented in the literature, land tenure in Cambodia is largely insecure. Land conflicts have increased by over 20 percent per year. It has been theorised that property rights have the potential to increase investment incentives, and therefore productivity (Besley 1995). This might be important for Cambodia, where paddy production is primarily for subsistence and yield is still one of the lowest in East, South-east and South Asia (FAO 2010).

The Royal Government of Cambodia (RGC) has adopted land reform – a land policy addressing administration (to clarify and record ownership and other rights), management (to ensure that land and natural resources are managed effectively) and distribution (to allocate state land for public and private purposes in a transparent, decentralised and fair manner) – as one of the key policies to enhance agriculture (RGC 2009). The priority is to strengthen security of land tenure through land registration by providing titles, particularly to farmers. The government (2009) notes that 1.66 million titles have been issued, covering 24 to 28 percent of all plots (6-7 million). In its Millennium Development Goals, the government set the land registration target for 2010 at 32 percent of all plots and for 2015 at 65 percent. With financial assistance from

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the World Bank, the government has issued more than 1 million titles (mostly in rural areas) through the Land Management and Administration Project in 175 communes in 11 provinces and municipalities since 2002, and three additional provinces under Canadian International Development Agency (CIDA) grant (World Bank 2009). The land titling programme was terminated in September 2009, however, after the World Bank and the government could not agree over some of the disputed urban areas (*Cambodia Daily,* 7 September 2009, p. 1).[2]

The study of land tenure and its effect on agricultural productivity in Cambodia is not new, but the effects of land ownership documents on paddy production, which accounts for the largest share of agricultural crops, are not well documented. The key question that this paper addresses is to what extent land tenure has a significant and positive effect on paddy productivity. Section 2 of the paper reviews previous studies. Section 3 presents a conceptual and empirical framework. Section 4 summarises the data and empirical findings. Section 5 provides a conclusion and policy implications.

2. LITERATURE REVIEW

There are only a few empirical econometric studies of the impact of land tenure on agricultural productivity in rural Cambodia. The result of one unpublished paper by Deininger (2005) is cited in a World Bank report (2006), and another was published by Markussen (2008). Deininger and Markussen, based on the CSES 2003/04, found that secure tenure has increased agricultural productivity by 65 percent and 30–35 percent, respectively. In addition, Deininger reveals that tenure increases rental value by 57 percent, sale value by 38 percent and household consumption by 24 percent, while Markussen suggests that property rights have weak effects on access to credit and lead to decreased availability of common property resources.

Studies from other countries have produced mixed results. Some find positive effects. For example, Feder and Onchan (1987) found that land titling had a positive effect on agricultural investment and capital intensity in two of three Thai provinces. SMERU (2002) observed that land titling in Indonesia has increased investment, increased use of collateral-backed credit and raised land values. Do and Iyer (2006) suggest that land titling in Vietnam has led to increased diversification in multi-year crops and to more time spent in non-agricultural activities. Deininger and Jin (2003) found that improved transfer rights in Vietnam led to a large increase in activity in both rental and sales markets, and that transactions have tended to transfer land to high-ability farmers with small land holdings. Deininger and Jin (2002) show that more secure property rights

2 The World Bank Inspection Panel began its investigation into the Bank-funded Land Management and Administration Project (LMAP) in Cambodia following a complaint filed by the Centre on Housing Rights and Evictions (COHRE) with the support of Bridges Across Borders Cambodia (BABC)—on behalf of representatives of more than 4000 families living around Boeung Kok who have suffered or were being threatened with forced eviction. The LMAP was established with the purpose of improving security of tenure and reducing land conflicts by systematically registering land and issuing titles across country.

in China increased investment without causing greater household exposure to shock. Jacoby, Li and Rozelle (2002) show that increased tenure security in rural China results in higher investment.

Besley (1995) notes a positive effect on investments from informal property rights in the Wassa region of Ghana, but no effect in the Anloga region. Hayes, Roth and Zepeda (1997) demonstrate the positive effect of tenure security on agricultural productivity in peri-urban areas of the Gambia. Smith (2004) presents similar results for the southern provinces of Zambia. Holden, Deininger and Ghebru (2007) found that land certification in the Tigray region of Ethiopia led to increased land rental. Goldstein and Udry (2005) found that land tenure security has a strong effect on agricultural investment in the Akwapim region of Ghana. Place and Hazell (1993) found that informal land rights had only weak effects on investment, productivity and access to credit in Ghana, Kenya and Rwanda. Place and Migot-Adholla (1998) failed to detect any effect of land titling on investment and productivity in rural Kenya. The study conducted by Braselle *et al.* (2002) was unable to confirm the effect of land tenure security on investment in the Bobo-Dioulasso region of Burkina Faso.

3. CONCEPTUAL AND EMPIRICAL FRAMEWORK

In an attempt to conceptualise the economic model linking land tenure, investment incentives and productivity, Besley (1995) developed a theoretical framework based on two main hypotheses articulated in the traditional views (Demsetz 1967; Feder *et al.* 1988): (1) land title could increase security of tenure for farmers and enhance their willingness to make medium- to long-term investments in their land; (2) land title can be used as collateral to improve access to credit, which ultimately leads to an increase in agricultural productivity. In other words, the positive link between land rights, investment and credit could be simply described as: individuals do not invest if the fruits of their investments are seized by others (Demsetz 1967; Alchian & Demsetz 1973), and more secure land rights make it easier to use land as collateral (Feder *et al.* 1988). Feder *et al.* (1988) also hypothesised that land title could stimulate land markets, which would transfer land to the more productive farmers as improved transfer rights make it easier for individuals to let or sell their land. These hypotheses have been used by economists to test for links between land tenure, investment and productivity. Figure 1 presents a simple model of the conceptual framework.

Methodological Issues and Estimation Strategy

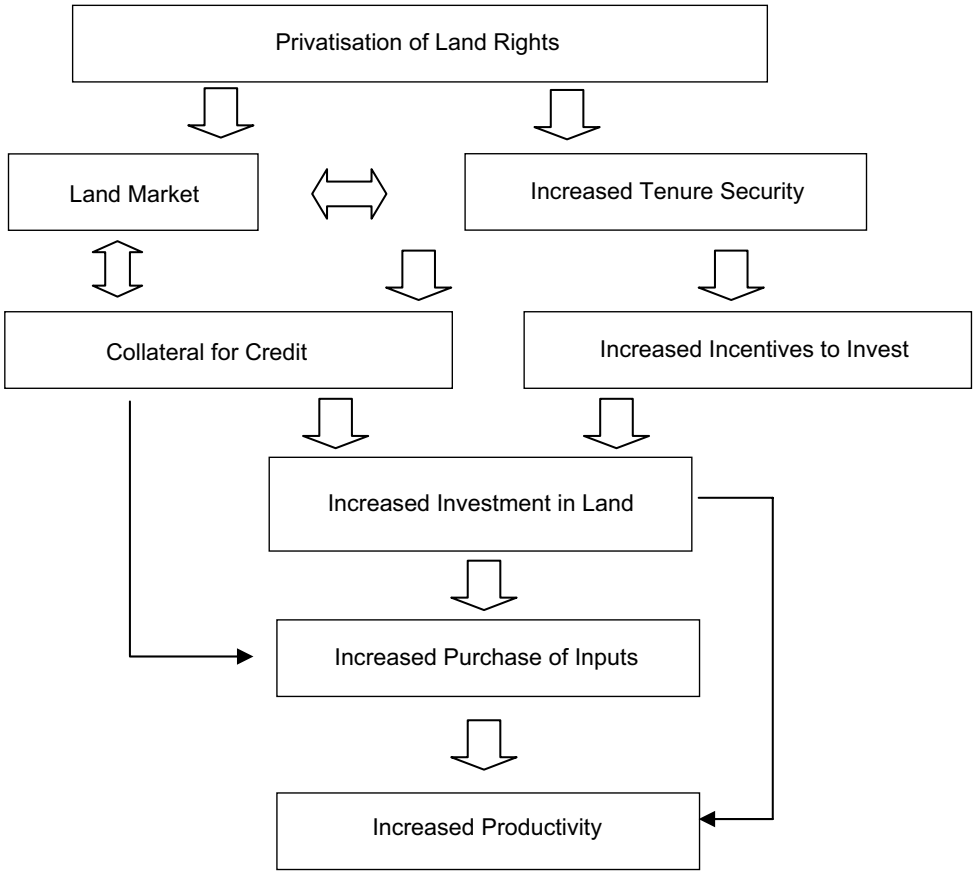
To assess the effect of property rights on agricultural productivity emerging from the theoretical discussion in Section 2, we utilise the analytical framework of Markussen (2008) who suggests that the agricultural production function take the Cobb-Douglas form, written as:

$$\frac{pY_{hj}}{Q_{hj}} = pA\left(x_{hj}, z_h, v\right)Q_{hj}^{\beta_Q - 1} L_{hj}^{\beta_L} V_{hj}^{\beta_V} K_{hj}^{\beta_K} \quad (1)$$

where Y_{hj} is the output on plot j in household h, p the price of output, Q the sown area, L household labour inputs, V non-household-labour inputs, K the agricultural assets and A is a measure of total factor productivity, which depends on vectors of plot, household and village characteristics (x, z and v, respectively). Total factor productivity A (·) can take the following functional form:

$$\ln A\left(x_{hj}, z_h, v\right) = \ln A + \alpha x_{hj} + \gamma z_h + \theta v \quad (2)$$

Figure 1: Conceptual Framework Linking Policy, Land Tenure and Economic Efficiency



Source: Place (2009)

Property rights, *R*, are modelled as an element in x_{hj}. Property rights will increase productivity by affecting total factor productivity through strengthening investment incentive. The empirical model can take the following form:

$$\ln\left(\frac{pY_{hj}}{Q_{hj}}\right) = \ln pA + \alpha_R R + \tilde{\alpha}\tilde{x}_{hj} + \gamma z_h + \theta v + (\beta_Q - 1)\ln Q_{hj} + \beta_L \ln L_{hj} + \beta_V \ln V_{hj} + \beta_K \ln K_{hj} + \varepsilon_{hj} \quad (3)$$

$\tilde{\alpha}\tilde{x}_{hj}$ is αx_{hj} without *R*. The model is specified at the plot level. However, labour inputs are available only at household level.[3] Household labour is measured by the number of household members aged between 15 and 64 years. Land is measured as the area of agricultural land operated by the household, in hectares. Agricultural assets are measured by the index of agricultural assets such as cart, tractor, plough, harrow, hand tractor and water pump as well as cattle, buffaloes and horses.[4] Non-household-labour inputs include spending on seed, seedlings, fertiliser, pesticide, manure and compost, electricity for farming, irrigation charges, transportation of inputs and products, and hired labour. Plot characteristics include a dummy for whether the plot is irrigated, dry land, wet and dry land or *chamkar* land. Household characteristics include education of the head, age of the head, dependency ratio and a dummy for whether the head is male. Village characteristics include a set of dummies such as drought, flood and crop failure due to pests in the last five years, bank or loan units within the village and agricultural extension workers within the village.

Besley (1995) highlights the possibility that property rights are endogenous variables: farmers will make improvements to enhance their rights. This means the ordinary least squares (OLS) estimators will be biased and inconsistent. It is widely noted that the method of instrumental variables or two stage least squares (2SLS) can be used to solve the problem of endogeneity (see Wooldridge 2002). Besley (1995) argues that there are variables that could possibly determine land rights, but might not affect investment (productivity) directly. These variables are (1) whether there is a transfer deed for the plot, (2) whether the household has ever litigated over its right to the field, (3) how the field was acquired, and (4) how many years the plot has been owned. Following Besley (1995), Deininger and Castagnini (2004) and Markussen (2008), we use the mode of acquisition as the instrument for land rights.

4. DATA AND EMPIRICAL RESULTS

The empirical analysis in this study uses data from the Cambodia Socio-Economic Survey (CSES) 2007 collected by the National Institute of Statistics during July-September. The survey is nationally representative, comprising 3593 households, of which 2228 are rural. It provides information on household characteristics such as sex, age and education. There is also relevant information on agricultural assets including cattle, buffaloes, horses, ploughs, threshers and carts. In addition, variables measuring crop value and non-household-labour inputs are reported by each household on every plot of land. The survey asked each household to report on documentation certifying ownership on every field being cultivated at the time. Land certification falls into six categories: application receipt, land investigation paper, certificate (title) from the state, paper from local authorities, rental contract and other. The survey also asked

3 For CSES 2003/04, other non-labour inputs are not available at plot level.

4 Agricultural asset index is estimated by using the Principal Component Analysis Method.

about any investment on each plot since it was acquired, for example: wells, ditches, terracing, drainage construction, soil reclamation, establishing fruit or nut trees. Table 1 gives the mean of these descriptive statistics.

Table 1: Descriptive Statistics, Plots (mean, unless otherwise stated)

	All plots	**Plots with paper**	**Plots without paper**
Plot held with paper	0.56		
Plot size (ha)	0.90	0.96	0.84
Paddy production (tonnes per ha)	2.11	2.22	1.97
Irrigated at least one season	0.36	0.39	0.33
Wet season land	0.84	0.83	0.86
Dry season land	0.14	0.15	0.12
Both wet and dry season land	0.01	0.02	0.01
Given by state	0.39	0.46	0.29
Inherited or given by relatives	0.37	0.29	0.47
Bought	0.14	0.21	0.06
Cleared or occupied for free	0.06	0.03	0.09
Other modes of acquisition	0.04	0.02	0.08
Investment	0.08	0.11	0.05
Sample	2498	1441	1057

Note: Sampling weight applied. Only rural households are included. Eleven percent of total paddy plots owned by rural households which reported an average yield higher than 7 tonnes per hectare were excluded. Source: Author's calculations

Table 2: Descriptive Household Statistics

	N	**Mean**	**Standard Deviation**
Number of plots per household	1470	1.69	1.00
Household head: male	1470	0.81	0.40
Household head: age	1470	44.60	13.63
Household head: educational level	1470	4.06	3.23
Household size	1470	4.86	1.91
Children under 15 years	1470	1.80	1.41
Adults above 65 years	1470	0.19	0.47
Males aged 15-65	1470	1.34	0.91
Females aged 15-65	1470	1.52	0.83
Working age household members 16-65 years	1470	2.86	1.37

Note: Sampling weight applied. Only rural households are included
Source: Author's calculations

Fifty-six percent of plots are held with certified ownership. Paddy production amounts to 2.11 tonnes per hectare. However, production on titled plots is closer to the national level and higher than on untitled plots, and the plots are more likely to be larger and irrigated. In addition, titled plots are less likely to be inherited or given by relatives, or cleared or occupied for free. Eleven percent of titled plots had been invested in in terms of wells, ditches, terracing, drainage construction and soil reclamation, compared to only 5 percent of untitled plots. More than 70 percent of all plots had been terraced. In general, plots with certified titles are associated with more investment and higher production, as predicted in the conceptual framework in Section 2.

Table 3 shows that the proportion of villages hit by drought increased significantly from 2001 to 2005, while the proportion of villages affected by flood declined. Persistent drought over several years may have a substantial long-term impact on agriculture. Floods can cause significant damage but also enrich soil quality a few years later.

Table 3: Descriptive Statistics, Villages

	N	**Mean**	**Standard Deviation**
Agricultural land	197	290.70	558.46
Irrigated land	197	80.48	222.37
Cultivated land	197	269.17	555.13
Irrigated paddy land	197	77.56	219.45
Drought in the last 5 years	197	0.73	0.45
Drought in 2001	197	0.12	0.33
Drought in 2003	197	0.31	0.47
Drought in 2005	197	0.35	0.48
Flood in the last 5 years	197	0.32	0.47
Flood in 2001	197	0.15	0.36
Flood in 2003	197	0.11	0.31
Flood in 2005	197	0.08	0.27

Note: Only rural villages are included. Source: Author's calculations

Table 4 gives the results of estimating equation (3) for paddy productivity defined as production per hectare. The second and third columns are the results of estimating productivity on 2451 plots by OLS and 2SLS. The land ownership paper dummy is positive and statistically significant at the 5 percent level in both models, but the coefficient in the 2SLS model is much higher than in OLS. This is somewhat surprising, as one would have expected the opposite result because property rights would cause an upward bias in the OLS estimation. In this regard, Markussen (2008) argues the results reflect that the main effect of instrumentation is to remove measurement error that arises from simple misunderstanding such as lack of knowledge on the part of the respondent or recording mistakes, and errors emerging from the assumption of similar effects from different types of title in the title variables.

Table 4: Land Ownership Documents and Paddy Productivity

	Dependent variable: Log paddy yield (tonnes per ha)	
	OLS	2SLS
Plot held with paper	0.061**	0.209**
Farm size (log)	-0.434***	-0.438***
Other exspenditure (log)	0.248***	0.250***
Irrigated at least one season	0.175***	0.178***
Dry season land	0.374***	0.378***
Wet and dry season land	0.478***	0.459***
Other types of land	0.869***	0.961***
Household members aged 15-64 (log)	0.006	0.005
Non-land agricutural asset index (tradition)	-0.031***	-0.032***
Non-land agricutural asset index (modern)	0.061***	0.058***
Educational level (year) of household head	-0.016*	-0.021**
Squared educational level (year) of household head	0.0008	0.0012
Household head gender (1=male)	0.138***	0.141***
Household head age (year)	-0.001	-0.001
Dependency ratio	-0.072	-0.068
Drought in 2005	-0.078***	-0.083***
Flood in 2005	-0.071	-0.057
Government agricultural development project	0.023	0.031
NGO agricultural development project	-0.253***	-0.269***
Government and NGO agricultural development project	0.222**	0.202**
Bank	-0.074	-0.094*
Constant	-2.825***	-2.895***
Fixed effects	Province	Province
Observation	2451	2451
R-squared	0.4347	0.4259

Note: Robust t-statistic is reported.* Statistically significant at 10%, ** significant at 5%, *** significant at 1%. Source: Author's calculations

Despite the fact that the coefficient of land ownership paper estimated by 2SLS has some upward bias due to measurement error, its effect on paddy productivity is noticeable. Plots with title certificates are about 20 percent more productive than plots without, which is higher than the effect of irrigation, more modern agricultural assets, male household heads and government and NGO agricultural development projects.

In addition, we also note that the farm size coefficient is negative and statistically significant at the 1 percent level, indicating that larger farms are less efficient than smaller ones. This result is consistent with the evidence from other studies, such as Adesina and Djato (1996) and Deininger and Castagnini (2006), who confirm an inverse relationship between farm size and productivity in Ivory Coast and Uganda. Similar findings in the case of Cambodia can be found in studies by the World Bank (2004) and Ballard and So (2004). More spending on non-household-labour inputs and modern agricultural assets is likely to increase paddy production by 25 percent and 5 percent, respectively, while irrigation could improve paddy productivity by 17 percent. It is also worth noting that traditional agricultural assets are unlikely to contribute to higher productivity.

Male household heads are more productive than female household heads by about 13 percent. But the head's work experience is unlikely to be useful for producing paddy. It is rather surprising that the coefficient of the household head's educational level is negative and statistically significant at the 5 percent level. This could partly be explained by the fact that the majority of household heads in the sample did not complete primary school and education does not make a significant contribution to agricultural output for that reason. The labour force coefficient is not statistically significant from zero, implying that labour is not a key determinant of paddy production. This should reflect a labour surplus in rural areas (see Tong 2005).

To capture the effect of weather on productivity, we include two dummies–village drought and flood. The result suggests that paddy production in villages which experienced drought in 2005 was 8 percent lower on average than villages which did not. By contrast, paddy production in villages hit by flood in 2005 did not seem to be lower than in other villages. This supports the hypothesis that drought may continue to affect productivity in the next season. We also attempted to investigate whether bank or credit programmes ease credit constraints in rural areas, in particular for agriculture. We found that the presence of a bank or credit programme does not necessarily improve paddy production.

5. CONCLUSION AND POLICY DISCUSSION

Previous studies utilising the national representative household survey data confirm that land tenure improves agricultural productivity. Tenure security would be associated with greater incentives for investment in agricultural land and improved access to formal credit by using land as collateral.

In this paper we use new national household survey data (CSES 2007) to explore quantitatively the first hypothesised channel – the link between land tenure and agricultural productivity – mainly focusing on paddy. We find that the impact of certified land ownership on paddy production is relatively lower than on agricultural productivity, but its effect is still remarkable. We also observe an inverse relationship between farm size and paddy productivity which suggests that redistribution of farm land is necessary (for both equity and efficiency). A large proportion of farmers still use traditional agricultural tools; our empirical results confirm that traditional tools do not add to productivity. In addition, we note that drought can cause significant and longer lasting damage to paddy production than flood. The presence of bank or credit programmes does not necessarily improve paddy production. Government and non-government organisations are likely to implement agricultural development projects in their targeted villages independently; the empirical result is that such interventions do not raise paddy production. Close collaboration between the government and non-government organisations contributes greatly to paddy production.

Appendix 1: Land Ownership Documents and Paddy Productivity

	Dependent variable: Log paddy yield (tonnes per ha)	
	OLS	2SLS
Plot held with paper	0.0698**	0.229**
Farm size (log)	-0.678***	-0.681***
Other exspenditure (log)	0.360***	0.363***
Irrigated at least one season	0.109***	0.115***
Dry season land	0.354***	0.356***
Wet and dry season land	0.546***	0.535***
Other types of land	0.762***	0.858***
Household member age 15-64 (log)	-0.007	-0.007
Non-land agricutural asset index (tradition)	-0.032***	-0.034***
Non-land agricutural asset index (modern)	0.062***	0.059***
Educational level (year) of household head	-0.014	-0.019*
Squared educational level (year) of household head	0.0009	0.001
Household head gender (1=male)	0.147***	0.150***
Household head age (year)	-0.001	-0.001
Dependency ratio	-0.111	-0.102
Drought in 2005	-0.103***	-0.106***
Flood in 2005	-0.103**	-0.088*
Government agricultural development project	0.150**	0.154**
NGO agricultural development project	-0.190***	-0.210***
Government and NGO agricultural development project	0.289***	0.270***
Bank	0.014	-0.007
Constant	-4.155***	-4.229***
Fixed effects	Province	Province
Observation	2666	2666
R-squared	0.5778	0.5725

Note: Robust t-statistic is reported.* Statistically significant at 10%, ** significant at 5%, *** significant at 1%. Households which reported an average yield higher than 7 tonns per hectare were also included.
Source: Author's calculations

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Section Three
Natural Resources and the Environment

-VIII-

Participatory Learning and Action Research for Improving Irrigation Management in a Catchment Context

By Chem Phalla and Someth Paradis[1]

ABSTRACT

Water is at the heart of Cambodia's economy. The most successful water management in the country's history was that of the Angkor period. Water was managed in such a way that multiple harvests per year were possible, bringing prosperity to the country. Rice export in the 1920s also raised the Cambodian economy, leading to improvements in education and public works. However, Cambodia's water management began to fail from the *Post-Angkor* period onwards. One reason for failure was environmental degradation. Another was the lack of good water governance due to economic recession, wars and internal conflicts, which diminished attention on water management and caused the hydraulics system to dysfunction.

Access to irrigation is currently constrained by various factors including the natural limits of water in a catchment, lack of irrigation infrastructure and limited human capacity in this field. These limitations give rise to many problems in terms of efficiency and equity in irrigation water distribution. Hydrological knowledge plays important roles in infrastructure design and operation, and irrigation water allocation. Not knowing how much water there is and when it is available makes it difficult for irrigation operators to allocate water properly.

Optimising the use of water can increase agricultural production. This can be achieved by improving equitable access to and sharing of water, reducing conflict related to water use between upstream and downstream irrigation communities, and building the capacity of institutions responsible for catchment management and related water resources management and governance.

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The integrated water resources management approach (IWRM) has been adopted in Cambodia's water law (2007) and policy (2004), but its actual implementation remains somewhat limited. For more effective implementation, this study's findings suggest that a catchment management committee should be established to (1) improve the spatial integration of water use between upstream and downstream users, (2) stimulate participation of both women and men, communities and scientists in water management, and (3) consolidate the social, environmental and economic value of water. Expertise of the Provincial Department of Water Resources and Meteorology and Farmer Water User Communities should be strengthened through on-the-job and academic training. The IWRM approach should be properly implemented by a catchment management committee with representatives from all irrigation schemes. They should have their voices heard in decision-making on irrigation water allocation and development planning.

This paper summarises the results of a participatory learning action research of the Water Resources Research Capacity Development Programme. It draws from literature on previous and current experiences of water management in Cambodia and a case study on Stung Chrey Back catchment in Kompong Chhnang province.

1. THE WATER RESOURCES MANAGEMENT RESEARCH CAPACITY DEVELOPMENT PROGRAMME

The Water Resources Management Research Capacity Development Programme (WRMRCDP) is funded by the Australian Agency for International Development (AusAID) and is being implemented by the Cambodia Development Resource Institute (CDRI) in partnership with the Royal University of Phnom Penh, and the University of Sydney. Since the start of the project in July 2006, CDRI and its partners have regularly consulted with the Ministry of Water Resources and Meteorology (MOWRAM), the Ministry of Agriculture, Forestry and Fisheries (MAFF), their provincial departments and district officials, commune/sangkat councils, Farmer Water User Communities (FWUC), farmers and NGOs to ensure that the research outcomes are relevant to water management policy. This research programme is scheduled to complete in June 2011. The research programme goals are:

1. Generate knowledge related to irrigation management;
2. Build research capacity related water resources management; and
3. Disseminate the knowledge and capacity gained from the research to improve water management in Cambodia.

To accomplish the programme's goals and policy relevance, CDRI and its partners are conducting three research components: physical, economic and governance. This paper focuses only on the physical component, which is being conducted in Stung Chrey Bak catchment in Kompong Chhnang province.

Physical Component Research Problem

One critical aspect of water resources management is catchment hydrology. An understanding about the interconnections between water movements in the catchment helps improve water management (CDRI 2008). The movement of water links communities and other upstream and downstream water-using sectors in a complicated relationship related to the quantity and quality of water, ecosystem impacts and environments. Changes in the hydrological processes in the upstream part of the catchment, i.e. water impoundment and stream flow diversion, potentially have large scale negative impacts on the downstream part of the catchment. A lack of understanding about these processes risks unsustainable irrigation development in the catchment.

Farmers also lack access to enough water for irrigation. This affects income generation; hence it slows down poverty reduction and leads to environmental degradation and conflict, affecting social harmony and unity. Economic water scarcity[2] is fairly severe because of the lack of capacity to capture water for irrigation. At the same time, physical water scarcity[3] is increasingly a cause for concern because of climate change and increased competition for water. To overcome seasonal water shortages, storage facilities have been built in some irrigation schemes. However, the existence of inappropriately designed and poorly managed water infrastructures also contributes to abnormal flood and water scarcity.

Stung Chrey Bak catchment in Kompong Chhnang province was selected for the physical research component case study. Water in this catchment is intensively used for wet and dry season paddy rice production, home gardening and domestic purposes, including livestock. There are four irrigation systems in the catchment. Main hydraulic infrastructures include a small dam, stream weir, canal and other irrigation control structures.

The management of these irrigation schemes is complicated. Water shortage in the dry season is a major problem. Most irrigation schemes were built without integrated and participatory planning, which led to the lack of a sense of ownership and unclear definition of responsibilities. The design and construction of the schemes were often based on limited hydrological knowledge and lack of information (CDRI 2010).

2 Economic water scarcity refers to the limited financial and technical capacities of any institution or authority to improve infrastructure and governance of water resources to increase access to water in a sustainable and equitable manner.

3 Physical water scarcity refers to the natural limitation of water, which limits access to water.

Before 2007, coordination between schemes rarely happened, and when it did, was barely effective. A conflict has emerged between upstream and downstream water users. Currently, water shortage in the dry season is increasingly a big issue. If fragmented management, lack of hydrological information and poor coordination persist, water use at the site is going to be further complicated. Enabling conditions that are conducive to the introduction of alternative water management approaches to support rural income generation are yet to be assessed and created.

This research focuses on two important questions: (1) What are the roles of hydrological knowledge in improving equitable access to water and sustainable use of water resources for agricultural and food production? (2) What are the most pressing issues in current water allocation practices in relation to catchment management arrangement?

Research Objective

The objective of this study is to generate interactive knowledge regarding water use, the water resources system, institutions and policy around catchment management in irrigation and livelihood development. The investigation focuses on two aspects: catchment hydrology and water resources management policy:

- The catchment study involved setting up a hydrological data collection network and analysis of stream flows.
- The water management study involved the analysis of a key challenge and opportunity related to catchment management.

2. WATER RESOURCES MANAGEMENT – AN OVERVIEW

Cambodia's history of water management dates back to the second century when the country was known as *Funan*. The *Funanese* economy was built on trade; however, from the seventh century onwards, it became an agrarian economy. Cambodians grew wet and dry season paddy rice, root crops and raised livestock (Vickery 1998). Water management was strongest in the *Angkor* period (between the ninth and 14th century). Cambodians excelled in water management for agriculture. Rain and surface runoff (including stream flow) were collected and managed using man-made hydraulic infrastructures (reservoirs and canal systems), e.g. West Baray reservoir in Siem Reap province, for irrigation and other domestic uses (Kummu 2003). These hydraulic infrastructures enabled year-round multiple rice harvests, which significantly strengthened the economy and enhanced the country's prosperity (Chandler 1993). However, Cambodia's success in water management declined following the *Angkor* period, from which point Cambodia became a subsistence economy. This decline might be the result of war, internal conflict, environmental degradation and overexploitation of natural resources.

Throughout successive eras – Post-Angkor (1431–1862), French-Colonial (1863–1953), Norodom Sihanouk (1941–1969) and Pol Pot (1975–1978) – the economy and water management was in a state of decline. People spent most of their time growing rice.

Villagers no longer used the hydraulic infrastructures as in the Angkor period. Instead they used natural ponds to store water and there was little technological incentive to support farmers in diversifying their crops and improving their water management. However, there was also a period of economic growth, especially during the 1920s, when some of the colonial government's tax revenues were put into economic development. Because Cambodia has road links to neighbouring countries, hundreds of thousands of tonnes of rice and rubber plantation products were exported. Rice export played a crucial roles in generating taxes, which were diverted into public works such as roads, electricity and education (Chandler 1993).

The most significant change in water management infrastructure occurred in 1975–78. Irrigation was the main focus during this period for the purpose of Cambodia's food self-sufficiency. However, most of the irrigation infrastructure developed during this period was poorly designed and constructed, which resulted in the present management and maintenance problems.

Water management intervention during 1979-98 took an ad hoc approach. Most irrigation development was done as a matter of urgent priority without long-term planning or integration. Most funds and technologies for irrigation development were from international organisations and United Nations international aid programmes. The irrigation system was not fully operational because its infrastructure was only partly complete and the governance arrangement for irrigation management was centralised and ineffective.

However, since 1999, water management in Cambodia has slowly modernised. MOWRAM, its provincial departments and the Farmer Water User Community (FWUC) were established with the purpose of strengthening technical and governance aspects. Through this modernisation, rain-fed and dry season rice production has been improved with the provision of irrigation services for supplementary and dry season irrigation. The total irrigated area is now 43 percent[4] of the total cultivation area (MOWRAM 2009), an increase of about 11 percent compared with 32 percent in 2006 (Sakhon 2007 cited in Phalla & Craig 2008). Hydraulic infrastructures that contributed to the increased rice production include dams, canals, pumping stations, and flood and seawater intrusion protection polders.

Legislation

The government of Cambodia fosters rice export to promote rural economic growth and achieve long-term poverty reduction goals. Water is considered as a key sector to improve rice production. Population and economic growth are the driving force for agricultural and water sector development. MOWRAM and MAFF are jointly responsible for ensuring agricultural water related development. The government has also established a Technical Working Group on Agriculture and Water (TWGAW) to facilitate coordination of the two sectors. In 2007, it developed the 2006-2010 Strategy

4 Cultivated area in 2008 was 2.615 million hectares; about 1.12 million hectares were irrigated.

for Agriculture and Water (SAW) and in 2010, updated this as the 2009-2013 SAW (MAFF & MOWRAM 2007, 2010).

The water vision of the Kingdom of Cambodia is to: (1) improve access to safe and adequate water for drinking, agriculture, industry and other economic activities; (2) tackle and minimise all forms of threat, loss of life and livelihoods pursuant to water related hazards; and (3) manage water resources in a sustainable manner. Because farmers rely on water resources for their rice and other crop production, improving access to water for irrigation is considered a key factor.

To achieve this water vision and equitable access to water, MOWRAM developed Strategic Action Plan Phase II 2009–13. The action plan is to enhance the law[5] and policy[6] implementation. This policy aims to foster effective and sustainable water management so as to improve the national economy and social welfare. Some criteria such as enhancing the agricultural sector, rehabilitating and constructing physical infrastructure, promoting private sector development, generating job opportunities and building human resource capacity have been implemented in MOWRAM's action plan (MOWRAM 2009).

Values of Hydrological Knowledge in Catchment Management

Water management involves handling hydrological changes that can be caused by flood and drought. Hydrological changes affect society, economy and environment. Knowledge of hydrology is important in managing water, particularly when dealing with irrigation design, development and management. Its roles depend upon the scale of irrigation. For example, basic hydrological analysis may be good enough for small-scale irrigation because the variation of stream discharge from the mean is not significant. For large-scale irrigation design, a high degree of data accuracy is required because the variation of discharge from the mean is significant. Therefore, hydrological information justifies long-term collection and recording of data of sufficient accuracy over an extended period of time to derive robust statistics (Fenemor *et al.* 2003).

Hydrological information for water management can be captured in simple or complex ways, depending especially on the information demand and resources of the system. In smaller schemes, a simple water balance model can be used to establish the inputs, throughputs and outputs and the fluxes at each point. This balance analysis can help to explain how human activity and hydrological processes will affect throughputs or outputs. A more complex analysis can help in understanding the input and throughput influences on outputs in a complex system such as linked multi-aquifer-river systems. With a catchment facing multiple and intensifying demands for water, a predictive model that includes water allocation options is essential for sustainable management. Another important use of hydrological data is to predict cumulative effects on water resources: a spatially explicit model is required to develop policy on the allocation of

5 The law on water resources management of the Kingdom of Cambodia (2007)

6 The national policy on water resources management of the Kingdom of Cambodia (2004)

water in drought or low-flow season. This helps ensure equitable allocation among users. Hydrological information has become indispensable for developing water management policy (Fenemor *et al.* 2003).

Hydrological knowledge can include all the water-related variables required for more complex decision-making in integrated water resources management (IWRM). This is essential in continued investment by the government in water sector planning. Several data collection approaches have been suggested by Shaw (1994). Hierarchical hydrometric monitoring can be used, with primary, secondary and tertiary sites across the catchment. A continuous flow record is required at primary monitoring sites, then a less intensive record may be considered at secondary sites and spot flow gauging at tertiary sites. Subsequently, correlation techniques for secondary and tertiary sites could be generated from primary sites that have similar hydrological characteristics.

There are two aspects to consider in determining what hydrological data are needed. Stream flow management is one of these. Data collection may be balanced between targeted (short-term) investigation and long-term baseline data. To quantify water resources, there is need for adequate data to characterise variability in time and space. Rain gauge, stream flow and groundwater monitoring with additional geographical information system tools may allow for geographic effects of topography and weather. Based on an understanding of water quantity and quality, the pressure on the catchment can be evaluated. Monitoring water uses, including pollution and indirect pressures such as land-use change, are important in water resource planning (Fenemor *et al.* 2003).

Another aspect of hydrological data needed is in water allocation decision-making. To allocate water, there is of course a need to know how much water is in the river and its variation over time. This is a technical issue but water allocation also depends on identifying constraints, taking into account environmental safeguards; i.e. quantitative and qualitative biophysical and socio-economic factors should be considered. These safeguards may be derived from scientific enquiry or from legal, political or economic values. It will depend upon what level of optimisation of water use is decided; to balance the constraints on policy decisions, a common subjective judgement between downstream and upstream users can be made based on hydrological information to set the limits of water allocation (Fenemor *et al.* 2003).

New Approach to Water Resources Management in the Context of Improved Physical and Social Irrigation

Given that many communities experience water shortage and that this problem is expected to become more critical in the near future as a result of climate change and increased demand, Cambodia has adopted Integrated Water Resources Management (IWRM) in its water law (2007) and water policy (2004). Participatory Integrated Catchment Management (PICM) is a subset of IWRM and it has been adopted in many countries around the world, including Australia, to address water problems of sector-oriented management. A critical review has been undertaken by German *et al.*

(2006) to assess key principles, benefits and methods that can be potentially adapted for improving sustainable water management.

Different areas of expertise see different objectives of the PICM. Agronomists see it as an approach to scale out technologies, especially for soil and water conservation. The water resources sector sees PICM as enhancing environmental services and public goods for communities in the upper catchment (German *et al.* 2006). Conservationists view PICM as a framework for enhancing trans-boundary natural resources management (van de Linde *et al.* 2001 cited in German *et al.* 2006). Among social scientists, PICM is a framework for collective action and equity in natural resources access and governance that cannot be resolved at farm level (Meinzen-Dick *et al.*. 2002 cited in German *et al.* 2006).

PICM has two characteristics. First, it must be participatory at problem definition, planning and implementation. Second, it must be integrated and reflect technical, social and institutional dimensions (German *et al.* 2006). The objectives include conservation, food security and or income generation (Shah 1998 cited in German *et al.* 2006). PICM is derived from participatory action research. Its development took place through learning from reflection and implementation. Participation and integration involve catchment problem definition, planning and implementation (Chem & Someth 2010).

3. RESEARCH METHODS

Participatory Learning and Action Research

This study employs participatory learning and action research to generate knowledge related to catchment hydrology and analyse key problems related to catchment management, and to propose some practical solutions for improving irrigation management in the catchment context. Participatory learning and action is an umbrella term for a wide range of similar approaches and methodologies, including participatory rural appraisal, rapid rural appraisal, participatory learning methods, participatory action research, farming systems research, méthode active de recherche et de planification participative, and many others. The common theme to all these approaches is the full participation of people in the processes of learning about their needs and opportunities, and in the action required to address them (IIED & CTA 2006).

The methods used range from visualisation, to interviewing and group work. The common theme is the promotion of interactive learning, shared knowledge, and flexible, yet structured analysis.

Common principles of the participatory learning and action research are:

- A defined methodology and systematic learning process by the stakeholders through a system of joint analysis and interaction.
- Multiple perspectives reflecting the various interpretations of reality and solutions for problems faced by the different stakeholders (seeking diversity and differences).

- Group learning process through group analysis and interaction.
- Context specific: methods and approaches designed or adapted to the local situation, preferably by the actors involved (ownership).
- Facilitating experts and stakeholders: the role of outsiders is to act as catalysts (facilitators) for local people to decide what to do with the information and analysis they generate. Outsiders may also choose to further analyse the findings generated by participatory learning action research to influence policy-making processes.
- Leading to change: the process of joint analysis and dialogue helps to define changes which would bring about improvement and seeks to motivate people to take action to implement the defined changes.

Participatory Hydrological Analysis

Hydrological analysis is to inform on the components of the hydrological cycle and the impacts of economic activities on the environment. Informed decision-making weighs the advantages of a proposed development against the possible negative consequences and develops appropriate mitigation measures (Ward & Elliot 1995).

This type of analysis requires hydrological and meteorological data. The data collection starts with inception of the project design by building up a data collection network with the provincial department of water resources and meteorology and farmer water user communities. The participatory hydrological data collection and analysis methods are applied with a view to:

- Improve understanding about the supply-demand relationships and how they contribute to improve water allocation and optimise decision-making between schemes for enhancing equitable access to water and water sharing;
- Enhance the capacity of FWUC members and PDOWRAM staff in hydrological monitoring and water management through participation and collaboration in this research project; and
- Establish a methodological design for a participatory research on water resources management in Cambodia.

Case Study Site

The case study for the physical component was conducted in Stung Chrey Bak catchment, south-west of Kompong Chhnang town. In the catchment, there is a stream of 80 km that originates in the Cardamom Mountains and discharges into the Tonle Sap River near Boeng Thom. Local people call the stream by different names. The upstream part is called Stung Srae Bak, the middle part Stung Kongkea and the downstream part Stung Chrey Bak or Stung Cheung Kriev. The main stream runs across two districts, namely Tuek Phos and Rolea B'ier. The area of the catchment is approximately 791 km^2.

There are four irrigation systems in the catchment. Main hydraulics infrastructure includes small dam, stream weir, canal and other irrigation regulatory structures.

Counting from upstream, they are the Pok Paen, Svay Chek, Tang Krasang and Trapeang Trabek irrigation schemes.

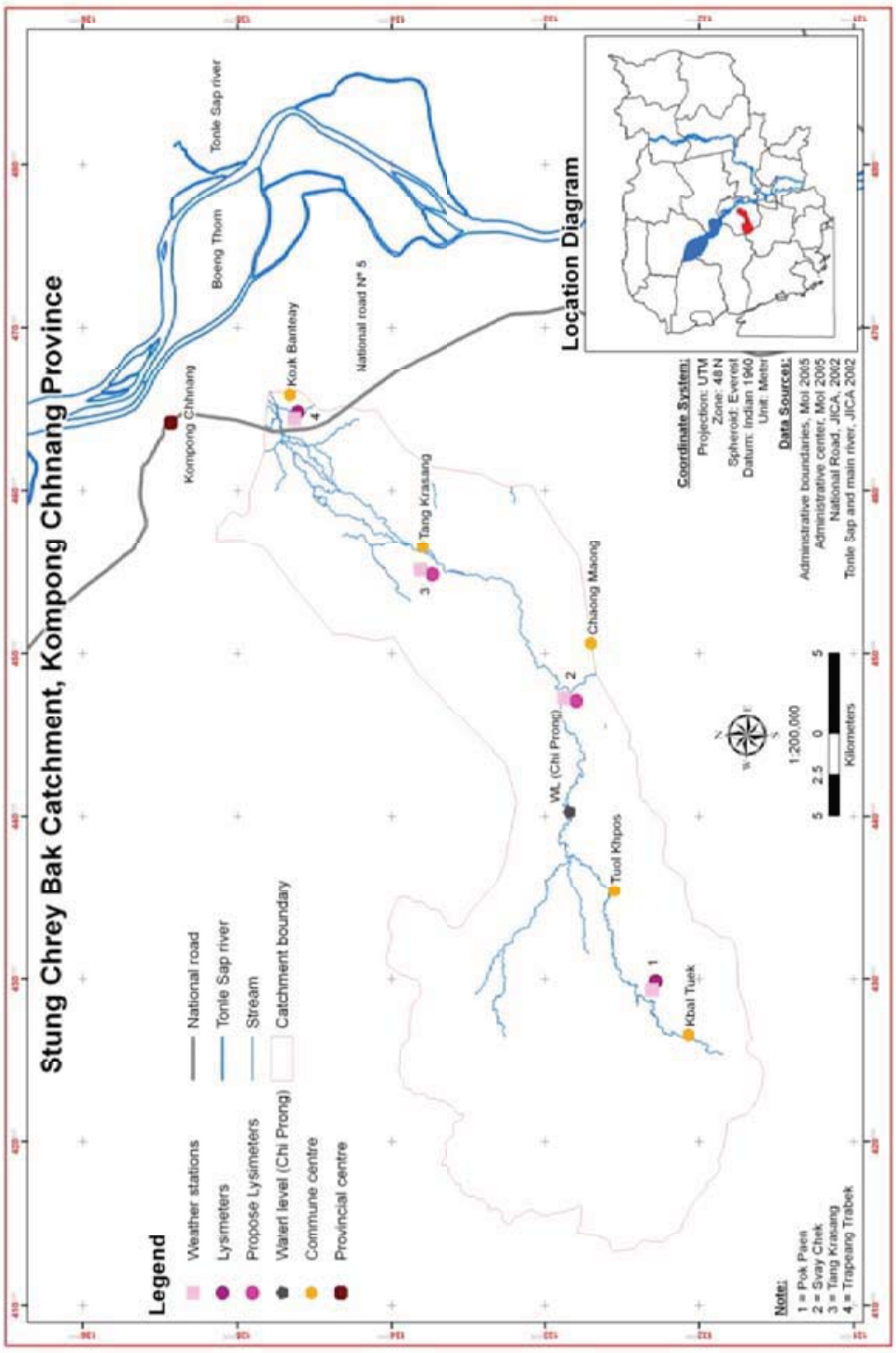


Figure 1: Stung Chrey Bak Catchment

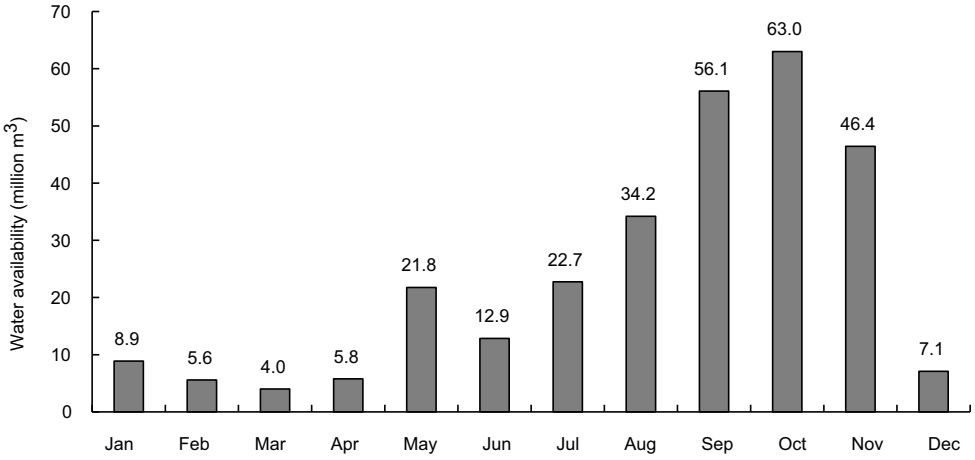
4. KEY RESULTS

Stream Flow Analysis in the Stung Chrey Bak Catchment

Discharge and water level measurements were conducted by the Department of Hydrology and River Work of MOWRAM at Chi Prong hydrological station (Ta Kab village). Simultaneously observed water levels and discharges of the main stream were used to establish the rating equation. The rating equation was used to estimate the discharge of the main stream. The rating equation was established only for the observation site: $Q = 13.259 (H - 0.375)^{2.029}$.

Water availability (or monthly runoff) is defined as the amount of water in the main stream over a period of time. The water availability from the catchment is shown in Figure 2. Annual runoff was about 284 million cubic metres, of which 89 percent occurred in the wet season. Peak flows usually occur in September–November, accounting for about 58 percent of the annual runoff.

Figure 2: Average Monthly Stream Flow Hydrograph in 2007 and 2008



Water Potential and Demand for irrigation in the Stung Chrey Bak Catchment

Since the rice crop water requirement in the study area was not available, the data of other areas were used to evaluate the irrigable area. The water requirement of early variety rice (105 days) for dry season cultivation ranges from 560 mm for silt paddy field (Someth *et al.* 2009) to 990 mm for sandy loam paddy field (Someth *et al.* 2007) in the floodplain of the Tonle Sap Lake. The average of low flow from December to April (63 million cubic metres) was assumed to be the lowest flow to sustain ecosystems of the mainstream. Water withdrawal was calculated as the difference between water availability and low flow. The total possible withdrawal was found to be about 191 million cubic metres, 86 percent of the total water available in the rainy season (222 million cubic metres). Considering the water requirement, the total withdrawal could irrigate 19,000 to 34,000 hectares (no loss included).

Current Institutional Setup for Managing the Irrigation System in the Stung Chrey Bak Catchment

The Ministry of Water Resources and Meteorology (MOWRAM) is responsible for national water development and management. Provincial Departments of Water Resources and Meteorology (PDOWRAM) are responsible for water development and management, including irrigation and catchment management at sub-national level, and they report directly to MOWRAM and the provincial governor.

All four irrigation schemes have informal FWUCs that work directly with commune councillors for decision making on water allocation and maintenance of the irrigation systems. FWUCs themselves do not have financial and technical capacity to independently operate the schemes. MOWRAM and PDOWRAM provide some training to FWUCs in irrigation management and other technical, managerial and financial management skills. Below is a summary of the roles and responsibilities of MOWRAM, PDOWRAM and FWUC in relation to water resources management.

MOWRAM	PDOWRAM	FWUC
• Water law and policy development,	• Overseeing and coordinating roles	• Prepare the work plan for the committee • Formulate the statutes, contracts and internal regulations of the community
• Water resources inventory and planning	• Provide the framework for provincial and sub-provincial development committees in water-related development (water supply, sanitation, and small scale irrigation)	• Maintain the regulation system in good condition to enable the provision of irrigation for the whole production season
• Ensuring effective and sustainable management and operation of the irrigation system through initiating creation of Farmer Water User Communities.		• Manage and distribute water to all members • Strengthen the use, maintenance, and improvement of the irrigation system in an efficient manner • Resolve the problems occurring within the community • Collect Irrigation Services Fee (ISF) from members
• Water resources use and development through water licensing mechanism		
• Water resources protection and flood protection		

5. CONCLUSIONS

Access to water for irrigation is restricted by natural water limitations, the lack of irrigation infrastructure and limited human capacity in this field. None of the irrigation schemes in the Stung Chrey Bak catchment have significant storage capacity. About 190 million cubic metres can be withdrawn from the mainstream during the wet season. This amount of water can irrigate from 19,000 to 34,000 hectares of early (105-day) rice variety.

Apart from the natural limitation of water, the lack of irrigation infrastructure also limits access to water. Inadequate infrastructure gives rise to many problems for system operators and farmers in terms of providing the right amount of water at the right time and place.

The catchment management is fragmented because it lacks financial and technical capacity and a coordinating mechanism. Without Irrigation Service Fees (ISF), FWUC members struggle to provide irrigation service and communicate with other users. Without proper planning, farmers have unequal access to irrigation, which then leads to intense competition over water.

Cambodia is moving from rain-fed to irrigation-oriented cultivation. Approaches to water management such as PICM and IWRM are needed for the sustainable development of the water sector. Although IWRM has been adopted and practised in some projects in Cambodia, its usage is still limited. IWRM is mainly donor-driven and managed by central government ministries. Current IWRM needs more capacity building for local water managers.

Hydrological knowledge plays important roles in effective catchment management, particularly infrastructure design, operation of irrigation schemes and catchment water allocation. Not knowing how much water there is and when it is available makes it impossible for PDOWRAM and FWUCs to allocate water properly. Therefore, lack of hydrological knowledge also causes conflict between users.

6. RECOMMENDATIONS

To improve irrigation management in its wider catchment context, institutional capacity building and related hydrology and water governance is needed. It is recommended that local expertise, including FWUC members, commune councillors and PDOWRAM officials, in water resources management must be improved. This can be achieved through on-the-job and academic training:

- On-the-job training through participatory learning action research should involve researchers, officials from MOWRAM, PDOWRAM, other related departments such as agriculture, forestry and fisheries, FUWC members and farmers. This should provide lessons to managers and local practitioners on problem definition, methodology and practices for problem solving and the appropriateness of the concept of IWRM for the locality.

- Academic training could be achieved through the research project's collaboration with national, regional and international academic institutions. The project should provide student internships as part of the research framework. Capacity building should involve researchers, government officials, local authorities, FWUCs and farmers.

Because of the natural limitation of water in the Stung Chrey Bak catchment, hydrological knowledge about spatial and temporal distribution of flows is very important to sustainable planning. Hydrologists need hydro-meteorological time series data. Therefore, it is recommended that:

- Observation of the mainstream water level should be continued.
- Monitoring of water level in the irrigation system reservoir should be continued.
- Rainfall data should be continuously observed.
- Knowledge on stream flow rating curves and reservoir rating curves, which is needed for irrigation planning, should be transferred to the FWUCs and PDOWRAM staff, and all the data should be made available to FWUCs, PDOWRAM and MOWRAM staff and researchers.

All physical irrigation infrastructure, including spillways, gates, regulators, check structures and irrigation canals, should be rehabilitated. MOWRAM initiated the creation of a Farmer Water User Community (FWUC) to take over the responsibility of managing the irrigation system. The FWUC, as a participatory community-based irrigation management organisation or local irrigation system governance entity, should have its own financial resources by administering the Irrigation Service Fee (ISF) and should receive technical support from MOWRAM through PDOWRAM. The FWUC is responsible for the system's daily operation and maintenance. FWUC should also gain support from local authorities, especially commune councils.

Catchment development should be planned in a participatory and integrated manner. Participatory planning should include farmers, FWUCs, commune councils, district authorities. Integrated planning should include all provincial technical departments and related national ministries.

Both institutions, FWUCs and PDOWRAM, have played crucial roles in local irrigation scheme management, but they lack capacity in Participatory Integrated Catchment Management (PICM). PICM could address the problems of the current management approach:

- All four irrigation schemes need to be integrated in planning for water allocation. FWUCs alone have no capacity to achieve that. It needs the involvement of higher authorities and initiatives from MOWRAM, PDOWRAM, CDRI, donors, provincial governor, district and commune councils.
- A catchment management committee should be established, chaired by the appropriate provincial level, to steer a working committee. Such a working committee should comprise relevant provincial technical departments and be strongly supported by PDOWRAM.

- Representatives from each irrigation system in the catchment should have seats on a working committee that is involved in water allocation.
- To achieve the broad goal of the participatory integrated catchment management and sustainable irrigation development, financial and technical support should be arranged for both FWUCs and PDOWRAM.
- In order to maximise sustainability, PICM should be directly implemented at the provincial level with support from institutions such as MOWRAM (and PDOWRAM) and the Cambodia Development Resource Institute (CDRI). CDRI should provide research-based recommendations and training on participatory integrated catchment management and water governance.

Several steps can be recommended for carrying out PICM:

- participatory establishment of a data collection network with the community;
- applying multidisciplinary expertise in addressing identified problems, processing and analysing data and providing feedback to the community;
- conducting a training course for improving the professional capacity of the researchers and communities, developing research methods and conducting in-depth pilot or case study research;
- devising a catchment mechanism for resolving conflicts between water users.

A catchment data collection and monitoring network is needed. Again, a participatory approach is recommended:

- Participation in hydrological data collection should include defining types of data, how they can be collected, how they can be processed and why they are needed.
- Data collection should involve FWUCs that will benefit from participating. Participation would allow communities to identify problems and solutions themselves and to take ownership over the data and the knowledge they would gain to resolve their problems.
- Researchers should provide new technologies to the FWUCs.

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Section Four
Democratic Governance and Public Sector Reform

-IX-

Accountability in Public Expenditure Management at the Sub-national Level in Cambodia

By Pak Kimchoeun[1]

1. INTRODUCTION

Decentralisation is a key reform in Cambodia, marked first by the commune elections in 2002 and 2007, and the indirect election of district and provincial councils in May 2009. With these sub-national administrations (SNAs) in place, the next step is to transfer more functions and appropriate resources to these levels so that they can better meet local needs.

Transferring expenditure responsibilities needs to be done systematically and with proper sequencing. Central to that process is the need for accountability in the new decentralised system for public expenditure management (PEM), which, as the Deputy Prime Minister Keat Chon made clear, is the backbone of Cambodian governance and especially PEM.[2]

This paper is about accountability in PEM at SNA level in Cambodia and the reforms that the Royal Government of Cambodia (RGC) has been undertaking to strengthen it. First, the paper discusses some general concepts about what accountability means in the context of decentralised PEM, and then looks at that in the context of Cambodia. The paper is based partly on CDRI Working Paper No. 38, *'Accountability and Public Expenditure Management in Decentralised Cambodia,'* (2008), and partly on the latest legal and policy documents and official speeches of the government.

The topic addressed here is complicated, involving a number of technical aspects of PEM. The objective of the paper, however, is not to exhaust all those technical details, but to provide readers with an overview of the key aspects. The paper also provides detailed references which interested readers can refer to for more information should they wish to learn more. This paper is intended mainly for a Cambodian audience.[3]

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1 PAK Kimchoeun is a researcher at CDRI.

2 Keat Chhon's speech at the National Workshop on 2010 Budget of the National Committee for Democratic Development (NCDD), 6-7 October 2009.

3 The paper is also available in Khmer language.

2. ACCOUNTABILITY IN DECENTRALISED PEM – SOME GENERAL CONCEPTS

Accountability is considered a key value of any governance system. The concept can be understood in two important ways: (i) when a person or an institution is given authority and resource, that institution or person needs to be answerable to somebody else or another institution for the use of it, and (ii) a system needs to be in place so that the person or the institution can be made accountable whether they want it or not. From these two important points, the paper proposes that there are at least two dimensions of accountability that need to be understood (Pak *et al.* 2007).

First, accountability is a relationship between two actors where one is held accountable to and by the other person for the use of specific authority and resource given. In this dimension, to understand accountability, two specific questions need to be asked: who is accountable to whom and for what? While this might sound like a straightforward relationship, ensuring accountability even between the two people is a complicated matter. While many scholars have proposed different mechanisms to do that,[4] this paper adopts an approach put forward in the World Development Report (WDR) 2004.

The 2004 WDR suggests that five key elements are needed to achieve accountability, including: delegation, finance, performance, answerability and enforcement. Basically, this means that if person A is to be held accountable, s/he first needs to be given clear roles and responsibilities (delegation), together with commensurate resources (finance). Person A then needs to have the capability to ensure that said tasks are achieved (performance). While performing the tasks, person A also needs to answer for and justify his/her actions (answerability). But answerability is not sufficient, for the accountability would be considered 'toothless' if person A is not rewarded or punished accordingly (enforceability) (World Bank 2004).

In the public sector, there is not just one but many accountability relationships going on at the same time. To ensure accountability therefore, the other related dimension needs to be brought in, i.e. ensuring accountability as a matter of developing and strengthening a governance system. In any system, the same core elements of accountability (i.e. from delegation to enforcement) still apply, but the question is how that system can be set up and developed to ensure that those elements are secured and effectively implemented.

PEM at sub-national level can be understood as a type of governance system. As such, it needs to be developed and enforced in ways that ensure accountability among actors operating within it. Ensuring accountability in such a system would require a process usually referred to as fiscal decentralisation which involves not only expenditure assignment, but also function and revenue assignment (Bahl 1999). This paper focuses only on the transfer of expenditure and zooms in on the question of accountability.

4 Please see Pak *et al.* (2007) for more discussion.

PEM refers to the responsive, efficient and effective allocation and use of public resources from all sources. To do this, a proper system that details budget preparation, execution and monitoring procedures needs to be set up (Schiavo-Campo and Tommasi 1999). In PEM, those who have the authority to spend public resources are the subject of accountability. They are to be held accountable for compliance and or their performance/results. Accountability for compliance focuses on the process by which they spend the money (i.e. whether they have duly followed the process of PEM), whereas accountability for performance/results focuses on the results such spending has achieved (i.e. whether they have actually delivered what they were expected to deliver with the money they had spent).

There is an inherent trade-off between accountability for compliance and accountability for performance/results. For instance, a budget law and the central budgeting agency (usually the Ministry of Economy and Finance (MEF)) might set out and implement a very rigid set of rules for budget execution. This might achieve accountability for compliance, but the rigidity might limit the discretion of the spending managers to a point where they cannot be flexible enough to attain the expected output or outcome, and hence, lower accountability for result. Too much discretion however, might lead to inappropriate use of public funds and thus endangers accountability for both compliance and results. The challenge for PEM is essentially about finding a right balance between the two.

In a decentralised system, more public resources are supposed to be transferred to SNAs. In this arrangement, those SNAs are considered spending managers and therefore need to be held accountable for both the compliance and the result of their spending. Up to this point, decentralisation simply implies a different administrative set up for PEM, where SNAs are supposed to be accountable to the central budgetary agency (namely, the MEF) and ultimately the National Assembly. This is called *upward accountability* (World Bank 2005).

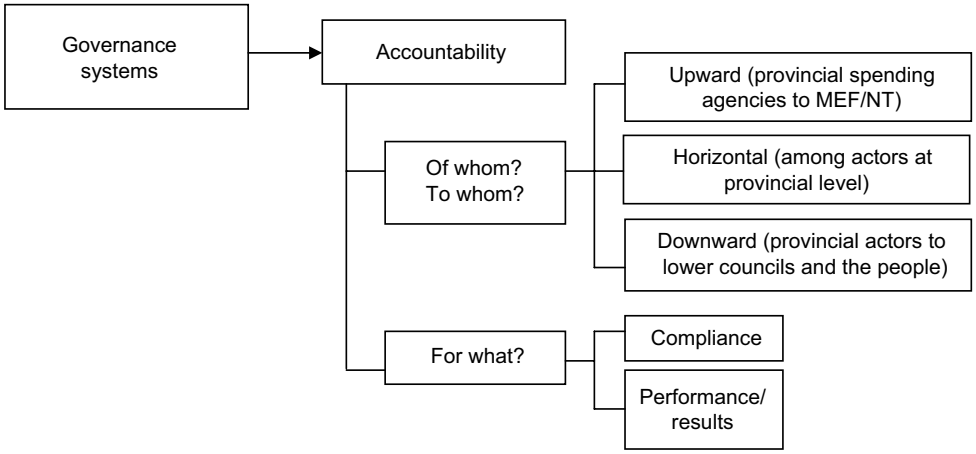
Decentralisation however is not just an administrative restructuring but a political reform, the core idea of which is to bring government closer to the people. It is expected that by so doing, decentralisation will promote a different kind of political accountability, i.e. that between the elected SNA and the electorate. Political accountability is reflected in the ways the SNA allocates and spends its money. In other words, it creates *downward accountability* in the PEM system (*ibid*).

An elected council cannot work on its own to meet the needs of the local people. It needs to have a bureaucracy whose responsibility is to implement the decisions that it adopts. The council delegates such responsibility to the bureaucratic officials along with appropriate authority and resources. In doing so, bureaucratic and technical officials need to be accountable to the council. This is called *horizontal accountability* (*ibid*).

In summary, in a decentralised PEM, the system gets more complex, involving more actors among whom three accountability relationships exist: (i) between SNA and the central level (upward), (ii) between SNA and beneficiaries (downward), and (iii) between councils and bureaucracy at SNA (horizontal). While these accountability relationships

seem straightforward, ensuring them requires a strong governance system which needs to be built and strengthened over time. As the case of Cambodia will show, such tasks are very challenging and time consuming especially in the context of a weak state.

A Guiding Framework for Understanding Accountability in a Decentralised PEM



3. ACCOUNTABILITY IN CAMBODIA'S DECENTRALISED PEM – OVERALL CONTEXT

As a matter of policy, the desired accountability in Cambodia's decentralised PEM is not so different from that discussed earlier. As indicated strongly by the Deputy Prime Minister, Keat Chon, Cambodia's decentralised system emphasises both *financial* accountability (i.e. accountability for compliance), as well as accountability to the people and to the councils.[5] But the question is *'how'* to set up and strengthen a system that helps achieve these multiple accountability relationships. Before determining where to go next with the reform, it is important to first understand where we are. This section therefore discusses current decentralised PEM systems and the kinds of accountability they entail.

Before giving a brief overview of the current decentralised PEM, a number of historical and contextual factors should be understood. First, the system as seen today is the result of various budgetary and decentralisation reforms that have happened since budgetary centralisation was initiated in 1993, taking away virtually all budgetary autonomy from provincial, district and commune levels. In 1994 and again in 1998, some budgetary power was relinquished to provincial level. In 2000, sectoral budget deconcentration initiatives such as the Priority Action Programme (PAP) were also introduced in a number of key priority sectors including education and health in order to channel public funds down to frontline service providers more quickly.

The second important contextual factor is the duality of the current budget system and its heavy dependency on foreign aid. The current system is called dual budgeting

5 Keat Chhon's speech at the NCDD 2010 Budget National Workshop, 6-7 October 2009.

because of the separation between recurrent and capital spending (RGC 2008a: Chapter 2, Section 1). Recurrent budget refers to spending regularly incurred within a year, including regular purchases of goods and services, payment of salaries, social and economic interventions (MEF 2007). Capital spending refers to the budgets allocated for public investment programmes and projects (PIPs). That the government has only been able to finance the recurrent side and a small portion of the capital spending, leaving the rest to be financed by foreign aid, has become a pattern. In 2010, foreign aid accounted for almost 65 percent of capital spending which amounted to 3,121 billion riels[6] (RGC 2009).

Despite several years of attempts to align and harmonise foreign aid, the latest situation is that a large number of donor projects have still been implemented outside the treasury system through the many hundreds of project management units (PMUs) (RGC 2010). In 2010, foreign aid was budgeted at about 2364 billion riels, 15.4 percent of which was given as a budget support, i.e. channelled through the National Treasury (RGC 2009). By so doing, the donors have created different management systems which are minimally integrated with the government's mainstream budgetary system. Donors also channel their support through NGOs that are directly involved in service delivery at community level.

The third contextual factor concerns the ongoing decentralisation reforms which started in 2002. Although there have not been specific functional transfers to the local level, an unconditional grant, the Commune/*Sangkat* Fund (CSF), has been transferred annually to the communes and *sangkats*. In addition, several pilot funds have also been initiated to strengthen governance systems at the provincial and district levels. Driven partly by concerns over the effectiveness of the actual budget transfer and partly by donors' protective measures over their funds, these funds (including the CSF) have been subject to a different PEM system. This system is implemented under the framework of the Annual Work Plan and Budget (AWPB) of the National Committee for Democratic Development (NCDD).

To summarise, at least three main PEM systems are in use: one is used to manage the spending funded by national budget (the mainstream PEM system), another is applicable to the management of donor projects or programmes, and a third is used for various funds established under the framework of NCDD's AWPB. These systems entail different accountability relationships, i.e. they differ in terms of who should be accountable to whom, for what, and what mechanisms have been put in place to ensure such accountability.

It is important to note that these systems came into operation and have evolved without clear coordination and integration among themselves. Therefore, they have not only induced different, but also potentially conflicting accountability relationships. The following section discusses these systems as they have been used at the sub-national level.

6 Exchange rate: 1 USD = 4,100 riels.

4. DIFFERENT PEM SYSTEMS AT THE SUB-NATIONAL LEVEL AND THEIR ACCOUNTABILITY FOCUS

4.1. Mainstream PEM system

This refers to the national budgetary system which is based on the 1993 and 2008 Public Finance Law. At SNA level, this system is applied to two budgetary streams: (i) provincial budget and (ii) line department budget. Currently, the governor is an original spending authoriser for the provincial budget, and a delegated spending authoriser for line departments' budget.

Pending the new Law on Financial Regime and Asset Management for SNA, the 1998 provincial budget law still applies. In the absence of a district budgetary system (currently being developed) and even though district councils have been established, districts still continue to receive their budget through the province. Unlike the pre-May 2009 election, however, the amount designated for a district's budget is now clearly indicated in the provincial budget.[7]

The annual budget law shows the provincial budget, specifying budgeted provincial own revenue and spending. The deficit is to be filled by national transfers. The procedures by which revenue collection and spending are actually implemented are stipulated in the 1998 Provincial Budget Law. In addition to recurrent spending, a province also has budget for capital spending on a number of activities including repair and maintenance of public buildings and equipment, staff salaries, garbage collection and others.

In 2010, the provincial spending was almost 326.37 billion riels (about 77.73 billion riels of which was for capital spending). This spending of 326.37 billion riels represents 3.93 percent of total national spending in 2010, which was about 8300 billion riels. The 2010 provincial budget is 1.1 percent higher than the 2009 budget, an increase caused mainly by the addition of newly elected councillors to the payroll. It was expected that revenue from property tax and increase in transportation tax would help finance the spending (RGC 2009).

The annual budget law also specifies the budget for line departments. Unlike the provincial administration, however, line departments are entitled to only recurrent spending. In 2010, line department budgets totalled 1209.43 billion riels (14.57 percent of total national spending). A line department's budget, as a matter of law, is the respective line ministry's budget. However, when executed, the 2008 Public Finance Law and relevant regulations require that central ministers delegate their authority as spending authorisers to provincial governors (MEF 2009).

In terms of accountability, the mainstream PEM focuses mainly on compliance rather than on results. The system emphasises the role of the MEF (through the Provincial Departments of Economy and Finance (PDEF)) as financial controller, and that of the National Treasury (through the Provincial Treasuries) as a public accountant (RGC

7 Keat Chhon's speech at NCDD 2010 Budget National Workshop, 6-7 October 2009.

2008a: Article 73; MEF 2008). The system is rigid and emphasises fiscal discipline, very often at the expense of allocative and operational efficiency (PFMRP Secretariat 2009).

Over-emphasis on accountability for compliance in the absence of a strong monitoring system has led to rigidity which consequently not only slowed down budget execution but also induced high fiduciary risks on public funds (World Bank & Asian Development Bank 2003). Facing such challenge, the first stage (2004-2008) of the Public Financial Management Reform Programme (PFMRP) worked to streamline the budget execution process so as to channel funds to spending agencies in a faster and more predictable way. With improvement in revenue collection and a more simplified spending process, budget execution improved noticeably (RGC 2007; PFMRP Secretariat 2009). The greater use of Acleda bank for handling line department payrolls, first in Bantey Meanchey and Kandal, and later in nine other provinces, has also helped make budget execution more predictable (National Treasury 2010; PFMRP 2009).

Achieving higher accountability for results requires transferring more discretion to spending agencies and a better link between spending inputs and intended outputs. Within the framework of the PFMRP, said task has been undertaken since stage one of PFMRP but only to a limited degree. An example of such reform initiatives is the adoption of the so-called programme-based budgeting (PBB) in eight sectors, including education, health, rural development and agriculture. In PBB, spending is budgeted to achieve specific programmes and indicators. Another initiative to gain better accountability for results is the internal auditing of spending agencies, but this is still at a very early stage (PFMRP Secretariat 2009).

PBB is a good step towards achieving accountability for results in the mainstream PEM system. This budget, however, is still a small portion of the total state budget: in 2010, the PBB budget was only 255.94 billion riels, equivalent to 5.1 percent of total state recurrent budget (RGC 2009). Moreover, PBB has been implemented mainly in central ministries, with the exception of the education and health sector where a part of the PBB had already been allocated to frontline service providers (Pak 2009a; Pak 2009b).

The mainstream PEM system at the provincial level is also limited in terms of horizontal accountability. The provincial governors, despite their roles as the delegated spending authorisers, have had limited decision making power over the spending of the line department budgets. In this respect, the authority stays largely with the PDEF and the Treasury (MEF 2008). Moreover, there has been virtually no involvement from non-state actors such as civil society in the monitoring of the budget execution under this system (NGO Forum 2007), except for the case of the health sector where NGO partners also have a role in reviewing the status of the budget execution of Provincial Health Department (Pak 2009a).

In summary, the mainstream PEM system is still compliance-focused when it comes to accountability. Moreover, it remains very centralised, not only because just 18.5 percent of the total national spending has been allocated to the provincial and line department

budgets but also because so much budgetary authority (from budget preparation to monitoring) is still vested in the MEF and the National Treasury. Moving towards more performance-based accountability will require more time and will also largely depend on progress in the PFMRP, especially its second stage where the focus is on enhancing the accountability of spending managers.

4.2. Expenditure under the framework of the NCDD's AWPB

The NCDD is an inter-governmental mechanism established in 2008 to lead and coordinate decentralisation reform (RGC 2008b). In addition to its policy responsibilities, the NCDD is also responsible for preparing and implementing the AWPB which covers in particular the CSF and other funds to support the provinces and districts.

The budgetary items prepared under the NCDD framework are funded by both the government and its development partners. For the year 2010, for instance, NCDD's total budget was 381.3 billion riels, about 40 percent of which was funded by the government and the rest by development partners. Of the 381.3 billion riels, 291.1 billion riels (77 percent) was spent at sub-national level. About 195 billion riels went to the communes and *sangkats,* allocated in two parts: the first 148.6 billion riels was channelled into the CSF; the remaining 45.9 billion riels was in the form of block grants, funded by 10 development partners, and earmarked for specific activities to be carried out by the communes and *sangkats*.[8] The allocation of the CSF is formula-based reflecting population size and poverty level of each locality.[9]

At the provincial and district levels, spending takes the form of the Provincial Investment Fund (PIF) and District Initiative Fund (DIF) (NCDD 2008a). The PIF for 2009 AWPB was 9.18 billion riels (USD2.24 million). The funds are allocated to all provinces using population-based formulas; allocations are announced at the National Workshop of the annual NCDD's AWPB. A large part of the PIF is used to fund provincial department projects which serve the needs of the communes and sangkats. The DIF in 2009 was USD0.78 million (3.20 billion riels), covering 106 districts and khans, each receiving 123 million riels (USD30,000) to fund development projects that reflect commune needs. Representatives of the communes also need to have a voice in the allocation and spending of the DIF (PSDD 2009).

8 Examples of these include the Asian Development Bank's Tonle Sap Sustainable Livelihood (TSSL) Project, and Danida's Natural Resource Management and Livelihood Programme (NRML).

9 Keat Chhon's speech at the NCDD 2010 Budget National Workshop, 6-7 October 2009.

At the provincial level, the main agency overseeing and coordinating the implementation of these different budgets is the Provincial/Municipal Rural Development committee (PRDC) and its executive committee (ExCom). PRDC/ExCom was established in late 2002 under the Seila programme (Seila Task Force 2002) and was transferred and placed under the management of the NCDD in late 2008 (NCDD 2008b). A separate financial management system was set up for the NCDD budget; for instance, the NCDD financial and administrative manuals, the CS project implementation manuals and other guidelines were established. Although approved by the MEF, this system is different from the mainstream one (discussed earlier). It has also continued to evolve, reflecting the lessons that have been learned since 2002.

In terms of accountability, the PEM under the NCDD-AWPB framework strongly emphasises the need to protect public funds (a large part of which come from development partners). That is why a strong financial management procedure has been put in place. Moreover, the system not only intends to ensure compliance, but also results, i.e. the achievements of the projects that were identified by communes, districts and provinces. Monitoring and evaluation and auditing, both within the PRDC/ExCom and from outside, have been a significant part of the system (PSDD 2009).

Because the aim of the NCDD's budget is not just to ensure proper use of public funds but also to promote decentralisation, this PEM system has an element of downward accountability. The participatory commune development planning process and the use of accountability working group frameworks at the local level, by design, is intended to promote the people's voice in local development.[10] The way the PIF and DIF are budgeted and spent also reflects a form of downward accountability between the provinces and the districts towards the commune/*sangkat* councils.

In addition, having line departments and line offices enter into contracts with the PRDC/ExCom for the spending of PIF and DIF constitutes a form of horizontal accountability, i.e. among actors located at the same level. These contractual arrangements have created a forum where provincial and line agency officials could learn to work and interact with one another.

Despite these positive features, the PEM under the NCDD framework has a number of short-comings. First, the size of the resources that have been mobilised under this mechanism is still very limited, indicating how narrow Cambodia's decentralisation has been in fiscal terms. For instance, compared to the total national budget for 2010 of 8,300 billion riels (about USD2 billion), the 381.3 billion riel budget allocated under the NCDD system is a very small sum (about 4.6 percent) (NCDD 2010b).

Second, the PEM under the NCDD framework has also been limited in terms of its integration with the state's mainstream PEM system. Although the CSF has been channelled through the Treasury system, its budgetary process is different from the management, for instance, of the payroll and operation and maintenance of the

10 www.ncdd.gov.kh/accountability-working-group (website visited on 4 December 2010)

provincial administrations (discussed earlier) (National Treasury 2010). The task to integrate the CSF system has already been started but is still at an early stage. An example is the use of a new Chart of Accounts for the commune/*sangkat* which is more compatible with that of the National Chart of Accounts (*ibid*).

In addition to its own AWBP, NCDD is also overseeing and coordinating over 20 projects throughout the country.[11] Managerially, these projects are even less integrated with the government's mainstreamed system. For instance, when transferring funds to the communes, districts and provincial agencies, they do not use the treasury system but that of commercial banks.[12] These projects have also relied more on their own auditing and evaluation system to prevent fiduciary risks to their funds. But their lack of financial integration into the government system may contribute to low ownership of the government and thus weaken its accountability to the people. However, it is agreed that more integration could take place, but only in parallel to improvement in the quality of the mainstream budgetary system, which in turn means progress in the PFMRP (PSDD 2009).

Donor projects, especially the ones overseen and coordinated under the NCDD, have also contributed to building accountability by strengthening the demand side. For instance, the Natural Resource Management and Livelihood Programme (NRMLP), in addition to helping the communes and line agencies, also focuses on the empowerment of citizens through the promotion of civil society engagement (Danida/Dfid/Nzaid 2010). Another example is the EU Programme for Strengthening Performance, Accountability and Civic Engagement (SPACE) of Democratic Councils in Cambodia.

In summary, the PEM system under the NCDD framework has followed a high standard of sound budgetary management which emphasises not only accountability for compliance, but also for results, both to the local people and horizontally. The shortcomings however are its small scope and narrow results, which seem to have been limited mainly to project-based objectives. Yet, reflecting the learning by doing approach to decentralisation, what has been learned from this system will be of high value to the next stage of decentralisation and PFMRP reform and will make substantial inputs to the finalisation and implementation of the Law on Financial Regime and the Management of the Assets of the SNA.

4.3. Donor programmes and projects

Donor programmes and projects are considered here because of the high value of aid disbursed at provincial level. In 2009, for instance, about 60 percent of foreign aid was disbursed at provincial level (RGC 2010). As mentioned earlier, a large part of foreign aid given to Cambodia has been channelled outside the Treasury system. This implies

11 www.ncdd.gov.kh (website visited on 4 December 2010).

12 One example of such projects is the Tonle Sap Sustainable Livelihood Project of the ADB. For more information about this project, please see MoI & ADB, 2009, *Guidelines on Community Livelihood Fund, Tonle Sap Sustainable Livelihood Project,* Phnom Penh.

common use of the Project Implementation Unit (PMU) to carry the numerous donor projects. In 2007, 121 PIUs were identified (RGC 2008c). Given the slow progress in aid coordination reforms, it is unlikely that the use of PIUs has been noticeably reduced since then (VBNK & RBMG 2010).

To include the discussion about aid coordination with that of PEM accountability at the sub-national level, while complicated, is necessary. It would be easier to just focus on the donor projects which are intended to support decentralisation: as briefly mentioned earlier, over 20 projects are being coordinated through the NCDD. However, to really comprehend the relevance of development projects to PEM at SNA level, we cannot ignore the existence of many other projects which are funded by donors in various sectors such as education, health and agriculture.

When the process of transferring functions to sub-national level moves forward, these projects will be affected. So far, they have been more sector-focused and have not been keen enough to see the importance of decentralisation and the roles of elected councils at the sub-national level. In other words, they still focus on vertical lines of accountability within their respective sectors, and not those that emphasise accountability between elected bodies and local people (Pak & Craig 2008).

Some sectors however have taken steps to engage SNA in their service delivery arrangements. Education and health are the best examples. At the commune level, monthly commune meetings have been used as an opportunity for the councils, schools and health centre officials to report and share ideas. The Commune Committee for Women and Children (CCWC) also has roles in the provision of these two sectoral services (UNCDF 2010; Pak 2010).

In the health sector, coordination between the line departments and the provincial administration has taken place through regular Provincial Joint Technical Working Group (Pro-JTWG) meetings which also involve NGOs which have been participating in health service delivery. In this way, a kind of horizontal accountability (or joint accountability) has been pursued (Pak 2009b). However, such practice is still rare.

In light of the 10 Year National Programme for Sub-National Democratic Development (NP-SNDD), key development partners have started to give serious thought to how decentralisation might affect their projects. The understanding is that donors cannot keep on operating through their own systems without starting to work more closely with the government and helping build capacity in the SNA (RGC 2010). In terms of accountability, this means two things: one, strengthening mutual accountability between development partners and the government; and two, donors working to strengthen SNA's downward accountability to the people by making them (i.e. the SNA) stronger and more responsive to local needs.

Some development partners, such as the Asian Development Bank (ADB), have started to look at their own projects, distinguishing the functions that will be mostly implemented by the sub-national level from those that will continue to be kept at the central level (Niazi & Lamont forthcoming). The intention is to identify more

space for the donors to work more closely with SNAs, and not just operate mainly in partnership with central ministries. The Outline of the 3 Year Implementation Plan of the NCDD has also considered how best to manage development partners' support both in the process of functional and expenditure assignment and in supporting the transferred functions (NCDD 2010a).

5. PATRONAGE AND ACCOUNTABILITY

So far, the paper has discussed accountability based on formal rules and regulations relating to PEM. Yet accountability is shaped not only by formal but also informal rules and norms. Where the formal rules and institutions are weak, such informal practices are even more influential in shaping accountability relationships among key actors within a public governance system. A relevant form of such informal practices is patronage (Pak *et al.* 2007).

Patronage creates a form of accountability between the patron and his clients. This accountability does not follow any written rules but rests on trust and mutual benefits between the two actors in the patronage. The clients are accountable to the patron for their loyalty and services or benefits, while the patrons, though there is no spoken or written agreement, need to be accountable to the clients for their protection and for certain benefits, as implicitly expected by both parties. Because there are no written rules, expectations and relations among people within a patronage are shaped by past practices or other relevant traditions and social values.

Patronages that run within the state take different forms. They can be small groups that involve people with close ties, e.g. kinship, friendship. But such relationships can also take the form of big shadowy pyramid networks involving many people. With such a large network, smaller groups act as domains trying to control and benefit from specific resource bases. These domains sometimes work together, while at other times they remain discrete and even compete among themselves (Pak & Craig 2008).

Patronages are commonly found in the current PEM systems. They have both positive and negative effects on the accountability for compliance and results along the downward, upward and horizontal lines discussed earlier. For example, while it was initially found that horizontal accountability among provincial governors and line departments in the state system is vague, as a matter of personal relationships, these people are very close. This is because most people at provincial levels tend to have known each other for a long time (more than 10 or 15 years) and more importantly, because they usually belong to the same political party (*ibid*).

Patronages have also undermined both accountability for compliance and the effective use of public funds. For instance, rather than following due process of PEM, personal relations have dominated budget negotiation and execution. The solution so far has been to further strengthen the formal system by using formula-based budget allocation and streamlining budget procedures, all of which have proved successful in the PFMRP and in the NCDD budgeting process.

However, because patronage in Cambodia has been institutionalised and has strong historical and cultural roots (Pak *et al.* 2007), there are real limitations to resolving some technical problems. Some fundamental issues cannot be fixed within the framework of PFMRP alone; instead, the solutions need to come from gradual changes in the broader political and governance system. For instance, as in other countries, maintaining elite and patronage support is very important to the endurance of the ruling party. As such, the patronage problem needs to be addressed within the broader political calculation itself, and not within the more technical reform frameworks. The roles of the people and civil society are also important in asserting political pressure for reforms.

6. CONCLUSIONS

This paper offers a simple framework to understand accountability within the decentralised PEM in Cambodia. Addressing the common sources of confusion about what accountability means in the Cambodian context, the framework makes a distinction between accountability as the relationships among actors within a system, and the governance system that is put in place to ensure such accountability.

The framework is useful as a guide through the complexity associated with decentralised PEM as a technical field. However, it does not replace the need to understand not just one but the multi-systems of PEM that have been operating at provincial level. Understanding these systems is important because they induce and shape different lines of accountability. Moreover, in terms of accountability, these systems need to be understood not in isolation, but side by side because they do not just operate on their own but also shape one another.

The paper suggests that strengthening accountability within the current decentralised PEM will depend on the progress of three different reforms, namely: PFMRP, decentralisation and aid coordination. And it is not just their individual progress that matters, but also how well they progress in coordination with each other. It is also important to note that these three reforms are not just technical and managerial, but also political. This means that they work not only to strengthen accountability between bureaucratic bosses and their subordinates, but also among the bureaucrats, the elected politicians and the people.

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-X-

Assessment of One Window Service Offices and District Ombudsmen Pilot Projects

By Thon Vimealea, Heng Seiha, Kruy Virak and Ly Tem[1]

1. INTRODUCTION

Many efforts have been made by the Royal Government of Cambodia (RGC) to rebuild its institutions, strengthen state capacity, and pursue democratic reforms. However, findings from different studies on governance suggest that weak governance persists throughout the country. This has provided the government with its rationale for public sector and governance reforms and anti-corruption measures (CAR 2001).

Among these, democratic decentralisation reform was officially introduced in 2001 and the country has since successfully held two commune/*sangkat* council elections in 2002 and 2007. In 2005, the government put forward its vision for deconcentration and decentralisation (D&D) with the adoption of the Strategic Framework for D&D reform (RGC 2005). In May 2009, the country held its indirect election of provincial and district councils. To improve the structure and administration of the local governments, a new mechanism for public service delivery called One Window Service Office (OWSO) and District Ombudsman (DO) was introduced. The aim of the project is to create a role with delegated functions for the districts to provide services to the people via simplified procedures with transparent fees (Rusten *et al.* 2004).

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With the approval of Decision 12[2] by the government in June 2008, the Ministry of Interior took a further step in adopting two more *prakas*[3] in March 2009 in which the mechanism of OWSO-DO was to be expanded to another 22 target municipalities, districts or khans throughout the country as part of the Demand for Good Governance project (DFGG).

To contribute to the effective preparation for the expansion of the OWSO-DO mechanism, an assessment was carried out by CDRI researchers, supported by the World Bank, to assess the progress of the OWSO-DO pilot project in Siem Reap and Battambang towns to see how it has brought about changes to Cambodia's local service delivery and the mechanisms that induced those changes. In doing so, it identifies areas of strengths and remaining constraints, and seeks to understand people's perceptions on the new system vis-à-vis the existing system of service delivery. Based on the assessment report, this article picks up major key issues and suggests ways forward that are crucial for the better operation and expansion of OWSO-DO to 22 districts/municipalities on the assumption that good governance can be achieved with good and transparent service delivery at local level and that the efforts of the Cambodian government in introducing the concept of a One-Window Service and District Ombudsman are a stepping stone to achieving this. OWSO and DO will act as a catalyst, triggering positive change in people's perceptions towards the state's local service delivery and is hoped to overall reduce negative informal aspects of Cambodia's local service delivery.

1.1. Questions and Methodology

The Qualitative Impact Assessment was carried out from November 2009 to April 2010. Specifically, the study examines the following questions:

1. How do OWSO officials and villagers and businessmen understand the concepts of OWSO-DO?
2. How does the existing system of district level service delivery work?
3. How does the new system of OWSO-DO work?
4. In the process of reform and change from the existing to the new system:
    - What services do the villagers and businessmen need from the district administration?
    - What are the costs involved in adopting the new system?
    - Will those excluded from the old system benefit from the new one?

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2 Decision 12 on the Establishment of One Window Service Office and Ombudsman Office at District/Khan Level adopted on 30 June 2008. The main purpose of this Decision is to pave the way for the future expansion of the OWSO-DO mechanism into other districts and municipalities throughout the country.

3 *Prakas* 927 on the Establishment and Functioning of DO in Target Municipalities, Districts or Khans in March 2009; *Prakas* 928 on the Establishment and Management of OWSO in Target Municipalities, Districts or Khans in March 2009.

For the purpose of this study, researchers mostly used qualitative methodology to gain in-depth understanding of informants' perceptions on OWSO-DO and the extent of the impacts OWSO-DO has made over the last five years since its inception. Informants include officials from line ministries, line departments, district governors, OWSO and DO staff, businessmen, OWSO users and non-users and ordinary villagers.

In order to guarantee that the information collected is of the highest relevance to the analysis, we conducted the study in three municipalities: two municipalities currently under the OWSO-DO programme (Siem Reap and Battambang) and one urban district without OWSO-DO (Takeo was chosen).

1.2. Scope and Limitations

Since this study is intrinsically a qualitative study, it cannot be generalised and used to represent the universal situation surrounding local service delivery in Cambodia and the study provinces.

An important limitation in scope is that the study, in its analysis of the weaknesses of the OWSO-DO reform, is unable to conclusively distinguish what aspects are transitory and will therefore vanish as stakeholders learn and adapt to the new institutional framework, and what aspects are more permanent and deserve to be addressed if the impact of decentralisation is to be maximised.

The assessment was carried out from November 2009 to April 2010, on which a full report was produced. Since then, an initial expansion of OWSO-DO to seven more municipalities/districts and some changes have been introduced. Follow up studies should be conducted to assess these new amendments and the achievements of the initial expansion.

2. LITERATURE REVIEW

2.1. Good Governance and Service Delivery

There is no single and comprehensive definition of good governance. There is however a significant degree of consensus that good governance relates to political and institutional processes and outcomes that are deemed necessary to achieve the goals of development (UN 2007). The definition of good governance often promotes many ideas that are closely aligned with effective democratic governance. The key attributes of good governance include the concepts of transparency, accountability, participation, and responsiveness. Reform initiatives to promote good governance may include mechanisms to ensure these concepts are achieved, including tools to promote more effective and efficient service delivery that is accessible and acceptable to all (UN 2007). Quality public service delivery is also a crucial tool in helping governments achieve internal legitimacy, in addition to the external legitimacy created by elections under democratic reforms (Roberts 2008).

Most developing countries have selected decentralisation as an instrument of good governance and democratisation, adapted from the successful examples of more advanced governments. Decentralisation promises more effective and efficient government, as well as improvement in the quality of services delivered.

This article bases its argument on the fact that good governance can be achieved with effective and transparent service delivery at local level and that the efforts of the Cambodian government in introducing the concepts of a One-Window Service and District Ombudsman are a stepping stone to enhancing its process of decentralisation and overall good governance policy.

2.2. Single Window

There is actually no single definitive viewpoint of what a Single Window should be. However, literature suggests that one common definition of Single Window is:

> "A facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfil all import, export, and transit-related regulatory requirements." (UNECE 2003)

It is proposed that Single Window helps increase efficiency through time and cost savings for traders in their dealings with various government authorities for obtaining or certifying documents and permits. Single Window is recognised and promoted by several world organisations concerned with trade facilitation, including the United Nations Economic Commission for Europe (UNECE) and the Association of Southeast Asian Nations (ASEAN). Single Widow has been widely practiced in many parts of the world over the last decade and in various forms, accommodating specific national/regional conditions and requirements (UN 2005).

In Cambodia, the Single Window system is being adapted and implemented as a new mechanism for public service delivery. The One Window Service Office, as the name suggests, is a single office for delivering certain administrative services commonly required by citizens and small businesses at the local level. The OWSO-DO project is a key building block in the government's overall D&D strategy as it provides a model of citizen friendly, transparent and accountable service delivery at the district level that will pave the way for further D&D reforms.

2.3. District Ombudsman (DO)

The word ombudsman originates from Swedish, a Germanic language in the same family as English: *ombud* means "commissioner, agent" and *man* corresponds to the English word "man" (American Heritage Dictionary 2009). In government and politics, an ombudsman is understood as "a commissioner who acts as an independent referee between individual citizens and their government or its administration" (Collins English Dictionary 2003).

As an independent referee who investigates and mediates complaints, an ombudsman is a crucial mechanism providing checks and balances to administrative functions and the state's overall service delivery to its citizens. Such a mechanism operates as an important link between the state and its people as it builds trust and confidence in state service deliveries. It helps push for increased transparency and provides people with more possibilities to make themselves heard by the administration.

2.4. The Case of Cambodia's Governance and Service Delivery

The pursuit of good governance is not a new phenomenon for Cambodia. The country's quest for governance started in the early 1940s, since when it has been interrupted several times by war and political instability in the 1970s and 1980s (RGC 2001). The current governance system originated from the patronage governance of the pre-Angkorian period when patrimonial rule was predominant in hierarchical Cambodian society (Chandler 1993). Over time, this patronage system developed and adjusted itself to different regimes.

During the People's Republic of Kampuchea (PRK), 1979-1989, as a result of the Soviet bloc collapse, internal security, corruption and state failure to generate revenues and provide its bureaucrats with enough salary became an issue. Autonomy was then somehow granted to local authorities to generate their own incomes while central officials made their share out of selling and distributing positions to local officials – authority was handed down, money was passed upwards (Gottesman 2004). The regime created a system that explicitly authorised state officials to pocket a percentage of whatever fees and fines they levied. By 1990, almost every transaction with the government required a bribe, causing the people to lose trust in state officials as taxes and fees had come to be seen as "extortion" by state agents *(ibid)*.

As the government started to gradually adopt a more democratic approach to governance, a mixed system of governance was created. Some scholars (Hughes 2003; Un 2005; Pak *et al.* 2007) describe this as neo-patrimonialism. At this juncture, the way public services were provided was quite fragmented because the horizontal working relationship between line ministries and provincial and district authorities was never smooth due to conflicts of interest and blurred lines of accountability. This has affected the way governance operates throughout the country.

Due to these reasons, the key to success in democratic development in Cambodia rests on how the Cambodian government, including all stakeholders involved in the process, harmonises differing concepts – the old governance system with patrimonial rule and the new governance reform agendas introduced by the donor community. The success of the process of harmonisation will also depend on the commitment, cooperation and political will of all stakeholders.

2.5. Conflict Resolution

Hughes (2001), in her study of conflict management in Cambodian villages, suggests that a "culture of peace" manifests itself in Cambodian villages. This means that conciliation practices are to generate stable outcomes that are conducive to community harmony. Cambodian people choose passive responses over active ones when it comes to conflict management. Therefore, conflicts are rarely raised in public or formal platforms as people are not used to filing formal complaints when conflicts occur. Villagers are even more discouraged and often resolve to keeping silence when those conflicts are related to state officials or to dissatisfaction with state services. Scott (1985) observed that the nature of power relations between the rich and the poor force the poor to keep their resistance hidden much of the time.

The lack of trust in state apparatus as a result of war and instability, changes of regime, corruption and the neo-patrimonial system is another factor affecting the potential filing of complaints and how conflicts are dealt with. These all pose constraints to the current efforts to promote people's participation in the government's democratic reform process. It also means that the District Ombudsman reform will require time and great effort to restore the people's trust and encourage the habit of filing complaints against the administration when needed.

3. FINDINGS

3.1. Existing System of Local Service Delivery

Services offered within the existing system of service delivery practiced throughout the country before OWSO-DO reform include most services that fall within line ministries' authority. They are diverse and do not have limits in terms of range, except that some bigger services require decision from the ministry level while smaller services require decision from the provincial line departments; however, the application and transaction are done through provincial line departments.

The case study in Daun Keo district, Takeo province, found that citizens who wish to seek services approach the line office authorities in Daun Keo municipality. Different offices within the municipality are assigned to different line departments, for example, land and construction, industry, education, culture and religion, environment, planning and public works, and transport. Among these line departments, some sectors are in more demand than others.

Within this system, procedures and fees are unclear and intentionally kept so. Informal fees and payments are needed at every stage of transaction, from the commune to the line department. Sometimes line officials offer the services being sought at varying prices, while at other times they refer citizens to the line departments. How much they have to pay for each service is rarely clear to citizens since the price is determined by kinship, relationship, networking and other factors.

Citizens also usually do not have enough information as to what documents are needed and who to approach. Therefore, some people prefer to use a middleman to seek services on their behalf. At other times, as mentioned above, citizens let the line officials carry out the transactions for them. This allows line officials to allocate a small percentage of the charged fee for themselves to help supplement their salary. But more often, especially for businesses, people are not used to visiting line offices every year to pay for or renew their certificates. Line officials have to go down to the houses or shops and convince them to do so. If the business owners agree, then line officials will inform them of the price and carry out all the transactions on their behalf, including delivering the certificates to their shops.

To not seek services until they are forced to or are "served" directly at their shops or houses has become embedded in the culture and norms among the people. Within this system of service delivery, it was found that those with position and power benefit from free-riding and rent-seeking. For this reason people have little trust in the system. Hence it is not surprising that informants' perceptions of the system are generally rather negative as many expressed concerns and dissatisfaction with the services.

There is a lack of transparency, prevalence of informal rent-seeking, and absence of legal contract. Corruption and rent-seeking are major components embedded in service delivery in the country. It affects not only citizens but also staff who work directly with service delivery, as the concepts of transparency, responsiveness, accountability, participation and good governance overall do not seem to exist.

3.2. One Window Service Office (OWSO)

OWSO consists of a 'front office' for interacting with citizens, giving out forms and collecting documents, and a 'back office' staffed by competent agents who are delegated from different line ministries that have transferred functions to OWSO.

a. Functions

Six line ministries have delegated functions to OWSO – (i) Commerce, (ii) Public Works and Transport, (iii) Tourism, (iv) Industry, Mines and Energy, (v) Culture and Fine Arts, and (vi) Land Management and Urban Planning. The OWSOs in Siem Reap and Battambang are markedly different from the former system in a number of ways: (1) the fees for various services at the OWSO are transparent (publicly displayed at OWSO), and (2) the services provided are timely and consistent. There have been suggestions and recommendations to expand existing functions and increase the variety of functions delegated to OWSO. But according to the Battambang governor, the current delegation of functions is plenty to begin with since it would be impossible to do more without accompanying resources and proper support which are still limited.

The issue of ambiguity in some delegated functions was found to be pervasive during the time of study. Some functions are too rigid in terms of their definition and this creates disappointment among those who come to seek services when OWSO cannot make a decision or offer services to them. The issue of ambiguity also causes misunderstandings and frustration between OWSO and the authorities involved. For example, according to *Prakas* 116 of the Ministry of Tourism, dated 31 December 2004:

> "*Normal* restaurants with less than 50 chairs, canteens, canteens at resort sites, food stalls, noodle and coffee shops catering for tourists" are delegated to OWSO to provide certificates.

OWSO staff understand "normal restaurants" as *any* restaurant with less than 50 chairs. OWSO staff were confused when the line department and the Ministry of Tourism demanded that luxury[4] restaurants have to still register with them, and they feel that lucrative businesses are being taken hostage and that it is a matter of private interests. Such an issue instils a lack of trust and creates frustration between OWSO and the relevant agencies. Likewise, Circular 004 of the Ministry of Tourism, dated 13 June 2008, on the management of massage and spa shops is another example that causes frustration and confusion since its content is different from what was stated in the ministry's *Prakas* 116, dated 31 December 2004. Therefore, there should be clearer definition as to which businesses fall under whose authority, otherwise vertical conflict of interest even between the line department and its respective ministry could become prevalent. Without clearer definitions and well-informed understanding among each level of authority, such misunderstandings and overlaps will persist and could affect the delegated authorities' responsiveness, accountability and transparency towards citizens.

Lack of horizontal coordination is also observed. For example, instead of one certificate, vendors have to get several different certificates from various line ministries for the one same business. Some businesses can get all their certificates from OWSO while others have to obtain them from both OWSO and line departments if a certain function is not yet under OWSO.

The discussions above point to two main issues – the lack of political will and hence the hesitance among some agencies, and the lack of coordination among ministries before functions are delegated. The lack of political will isn't a new issue, especially at this stage of reform. A reform such as OWSO is still new to most Cambodians as well as the government agencies. But there has to be proper action and determination to help build true political will and reduce the reluctance which could hamper reform efforts if prolonged.

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4 Claimed to include pubs and bistros and restaurants owned by foreigners and catering mostly for foreign clientele.

b. Budget and Revenue

Revenue

Since the OWSO-DO pilot project was implemented, people's trust in local service delivery and their confidence in the transparent price OWSO offers have greatly increased. The number of those seeking services at OWSO has gradually increased and the revenues OWSO has made greatly exceed the goal set by the government. Compared with 2005, the OWSO in Battambang was able to increase its revenue by almost eight fold in 2009 (from around 27 million riels in 2005 to over 205 million in 2009). Similarly, the revenue of the OWSO in Siem Reap was about 48 million riels in 2005 compared to more than 205 million in 2009, though the government set a goal of only 87 million riels for OWSO in 2009. This goal is set out as an annual baseline to push OWSOs to gradually reach their potential in local service delivery.

The surplus achieved by OWSOs vis-à-vis the government's goal indicates an increase in demand for services among the people, their trust in OWSOs and their overall increased confidence in the state and its service delivery systems. It was observed that even those who have never sought services before due to lack of confidence and fear that they might not be able to afford the fees, feel at ease seeking services at OWSOs. This enhanced participation among the people has proved that relations between the state and the people have improved via this new district administrative reform. This achievement has also been noted and emphasised in different reports prior to this study, showing that the effectiveness and performance of OWSOs up to now has been noticeably robust.

Budget

The current running costs for OWSOs come from the municipal budget, which is a small part of the provincial budget allocated annually to each district and municipality in the province. OWSOs do not have financial autonomy over their budget allocation or over the revenues collected. Revenues are sent to the provincial treasury that annually reallocates a specific share of budget to OWSO via the municipal budget.

As previous reports[5] have pointed out, this study confirms that the budget allocated to OWSO persistently falls short of its actual operational costs. However, neither of the OWSO chiefs could provide precise data on the amount of the budget shortfall (how much would be needed to address the issue of inadequate funding to cover running costs). They can only back their claim for inadequate budget with the fact that the OWSO offices do not have enough equipment, materials or transportation to carry out the tasks required of them. This is because OWSOs mainly receive their equipment and resources in terms of contracted goods, not cash. These transactions as well as the electricity bills are settled by the municipality on behalf of OWSO. Immediate cash to cover everyday operations is not readily available. Such a lack of financial

5 Clasen and Gruber (June 2006), Summary of OWSO Internal Assessment by MoI (May 2007), MoI, Final draft on DFGG project (2007), Simon (February 2008)

autonomy prevents proper budget planning and hampers the everyday operational needs of OWSO.

c. Human Resources

In principle, OWSO's front office staff are contract-based while back office staff are civil servants delegated from line agencies. In terms of human resource management in OWSO, it was found that inadequate knowledge and skills were still a concern.

One of the major factors affecting OWSO's human resources is that the capability of some staff sent to OWSO by each relevant line ministry is quite limited. This obviously results from hesitance among line ministries to assign their capable staff as they have no incentive to do so, except that they might lose their personal interests.

Findings also suggest that the client-staff ratio is emerging as an issue needing attention. In contrast to previous studies by MoI and the Asia Urbs III Project which found that OWSO staff outnumbered service users, our study found a reverse trend, meaning that service users outnumbered OWSO staff. This was mainly because our study was conducted during a time of strict traffic law enforcement which required vehicles and motorcycles to have number plates; hence the demand for motorcycle plates surged dramatically. So it is not our recommendation that more staff be delegated to OWSO as we found that demands are seasonal and it is noted that good staff capacity is actually more important than quantity. Instead, more capacity building, especially training back office staff in the procedures they need to follow and their roles and responsibilities, should be emphasised. Also, it would make a crucial difference if line departments could be (more) cooperative and supportive, ready to send their staff to help during such times of peak seasonal demand. As part of its human resource management scheme, OWSO could also, with appropriate budget and financial autonomy, have the flexibility to hire temporary staff to help during high demand seasons.

In terms of salary and staff incentives, in addition to their basic salary, most OWSO employees were receiving a monthly salary supplement known as Priority Mission Group (PMG)[6] as an incentive. After about five years of OWSO operation, this incentive scheme is found to play an important role in encouraging staff to carry out their work and motivating their performance. More importantly, it is a significant source of income to help compensate their low basic salary. It serves as both a mechanism and a deterrent to prevent corruption and rent-seeking among OWSO staff, thus contributing significantly to the success of OWSO.

The OWSO staff interviewed made it clear that there is no guarantee they would be equally motivated to perform as well and carry out their work in a non-corrupt

6 Established in 2002, the main purpose behind implementing the salary supplement for civil servants who participate in various projects is to enhance the effectiveness of their work performance and accountability in an effort to successfully accomplish priority tasks of their respective ministry or government institution.

manner without some financial incentives, especially having learned that PMG will be withdrawn by the end of 2010. Specifically, since they lack financial autonomy and ownership of budget planning, there is little room for them to suggest any changes once their salary supplement is withdrawn.

As pointed out in the section regarding budget, same financial autonomy or a percentage of the surpluses collected by OWSO should be kept in the municipality for OWSO's use. In other words, OWSO should retain a certain amount from the revenues they earn. By doing so, OWSO would be able to use this to cover not only the shortfall in budget for running costs and urgent expenses, but also to fund an appropriate incentive scheme for its staff.

d. People's and Stakeholders' Perceptions

People's understanding about OWSO was found to have increased, and the notion of democracy and good governance is being embraced. Given the choice of a better, more transparent and trustworthy service delivery, people have shown that they would be more willing to participate and are more confident in seeking services.

Similarly to citizen informants, other informants expressed positive attitudes and expectations of the OWSO model. Based on the team's interviews with OWSO stakeholders, including OWSO chiefs and staff, municipality governors, deputy governors, provincial line departments and offices, and OWSO users and businessmen in both Battambang and Siem Reap, despite some shortcomings, their overall perceptions of the new system are quite positive. OWSOs have significantly reduced corruption and are generally described as a public service delivery mechanism which is inexpensive, efficient and transparent compared to the former system. It helps bring the government closer to its citizens by reversing its role as a ruler to that of a server, providing public services for the people.

Within this new mechanism, people in important positions at both national and sub-national levels or who have networks or high-ranking relatives working in the government now find it impractical to use state apparatus to influence and capitalise on this new system for their own gain. Even most of the civil servant informants claimed to prefer the OWSO model, which reveals that the main and perhaps only source of resistance for the OWSO-DO model are those who had definitely benefited from the former system, both in terms of financial benefits and preferential treatment, to an extent that a mechanism such as OWSO-DO brings them too little gain and too much loss (or at least that is how they currently understand or perceive OWSO). Apart from this, many of those who had received some benefits from the former system expressed that they still wish to embrace a more transparent, simple and effective service delivery as they can see its long-term benefits.

Analysis of Findings

In a model like OWSO where bureaucratic procedures are reduced and simplified, it would be reasonable to expect the speed of service delivery to be faster than that of the former system. However, it was found that the OWSO is still functioning within a broader system of a more bureaucratic administration, thus, at certain times, affecting the delivery of some OWSO services.

That there is a lack of variety in services sought from OWSO was also identified, as the main service sought was for motorcycle number plates due to traffic law enforcement. This shows that, among others, dissemination is still a major issue that needs to be improved and supported to help increase citizens' understanding of other types of services available at OWSO.

Moreover, OWSO needs to be supported to push for financial autonomy. Apart from the budget shortfall to cover its operational costs, the current system has also affected the ownership of its budget and caused OWSO staff to feel that lack of resources is a perpetual problem. Staff incentive is another and perhaps the most important issue found to affect the motivation and sustainability of OWSO performance in that the mechanism of PMG has been the major financial incentive to supplement OWSO's staff otherwise low income.

The relationship between OWSO and line departments is often observed to be weak as the latter do not actually support the former and sometimes do not even recognise OWSO-provided services. Also an issue, the delegation of functions should be followed by resources. Relevant ministries are mandated with this responsibility, thus they should be doing so accordingly. Cooperation and horizontal coordination between ministries should be improved to avoid ambiguity and frustration over unclear functions, with the government and MoI playing a crucial role as facilitators.

3.3. District Ombudsmen (DO)

The responsibility of the District Ombudsmen within the OWSO-DO reform is to improve service delivery of the district/municipal administration, help prevent corruption and build citizens' trust in state officials through receiving, processing, and resolving conflicts and concerns based on a compromise approach.

a. Functions

Although the roles of the Ombudsmen are well recognised as being crucial, their handling of complaints to date is perceived to be limited. Since the establishment of the DO offices in 2005, there have been very few written complaints. The DO chief in Battambang said only two written complaints were filed in 2005 and 2006 and there had been no more written complaints since then up to the time of this study. In Siem Reap, not one written complaint has been filed since 2005.

In contrast, the DO chiefs in both municipalities have received numerous informal forms of complaint, notably verbal ones. The monthly report on the Siem Reap DO's activities in November 2009 recorded that 25 verbal complaints and grievances related to OWSO's services in construction (five cases), transportation (14 cases) and legalisation (six cases) were resolved by the DO. To handle these issues, the DO chiefs employed compromise or negotiation approaches.

It was reported that the DO chiefs have been an important resource in providing support and information about OWSO services to citizens, though the *prakas* does not mention this kind of competence. To put it differently, due to the limited number of complaints, they spend more time supporting or informing citizens about OWSO.

The power and competence of the DO is found to be narrowly defined. In the report on the Siem Reap DO's activities, it is pointed out that he could not express opinions or raise any issues related to citizens' interests at the district council meeting.[7] The DO chief also reported that he was ignored by the municipality and that some information and legal documents such as sub-decree, decision, *prakas* and circular related to OWSO and the municipal administration are being kept from him. This prevents him from fully understanding what the OWSO is doing and what falls under its jurisdiction and it makes it difficult for him to define whether the OWSO is always doing what it should.

It is crucial that the role of DO be strengthened and maintained since its existence provides a mechanism and a forum (virtually absent within the former system) for complaints. So far, the DO has mainly been facilitating and resolving informal conflicts and functioning as a source of information and advice for those who attempt to seek services from the OWSO, playing a different role from the mandate set forth for the DO office. Suggestions as to how to improve the current weaknesses will be discussed in more detail in the recommendation section.

b. Resources

Since 2005, both DO offices have been challenged by limited staff, both quantity and quality. Although Article 13 of *Prakas* 790 allowed for two people (one chief of office and one secretary as an assistant) to work in the DO office, it is noted that each municipality only has a DO chief in place. The DO chief for Siem Reap claimed that his office is sometimes forced to close when he is busy in the municipality since there is no one to cover in his absence. While it has been argued that there is no need to provide the DO chief with an assistant due to the lack of enquiries and complaints filed at the DO offices, the random closing of the DO office during work hours could partly explain the lack of service users.

7 *Report on DO's Activities in Siem Reap in the First Term* (1/11/2005-1/11/2008), 20/12/2008.

In terms of DO's capacity, it was observed that the DO chiefs do not have any formal education in problem solving or conflict resolution. The study also found that no formal training on conflict and complaint resolution or working procedures has so far been provided. This has largely affected the DO's success in carrying out their delegated functions.

Apart from the above findings, this study also found that the issue of remuneration and incentive could have an impact on the independence, neutrality and effectiveness of the DO. Also mentioned in previous reports, both DO chiefs voiced concern over their very limited remuneration of 123,400 riels (USD30) per month with no incentive bonus payable, though they work fulltime, 40 hour week. The DO chiefs described their salary as low and claimed that this is a disincentive.

In addition to the issue of remuneration, both DO offices are also encountering shortfalls in their operational budget, especially for administrative equipment. In fact, the DO do not have their own budget allocation from the government. For example, the DO chief in Siem Reap has to borrow office equipment from OWSO whenever he needs to print or copy documents. It is a fact that capable human resources together with adequate financial resources are essential in any aspect of development. Taking this into consideration, competent and skilled staff, proper remuneration and worthwhile incentives are desperately required to achieve the core principle of the DO in this new reform.

c. People's and Stakeholders' Perceptions

Although people are well aware of the OWSO, their understanding of the DO is still very limited, as found through the interviews. More than 90 percent of the interviewees were unaware of the existence of the DO or did not know what it is. Many of the informants who did know and understand the role of the DO expressed their support and spoke very highly of its service, especially its achievements. For example, the OWSO chief in Battambang acknowledged the important function of the DO in this administrative reform. He also admitted that the DO chief has helped him in overseeing the quality of OWSO staff performance and in building up as well as restoring trust among citizens.

Given the study's findings, it can be argued that people's understanding of the DO, especially its roles and responsibilities, is still a critical issue. Some main factors which could contribute to the limited understanding of the DO are as follows. First, despite various means to raise awareness about the DO including the distribution of leaflets, information bulletin boards, radio commentary and public meetings, the study found that the effectiveness of dissemination is still limited. Therefore, people did not know they could access the DO for help or did not know how to make better use of the DO when facing problems related to public services delivery in the municipality.

Moreover, the name – District Ombudsman – could have directly led to this shortcoming. In the Khmer language, District Ombudsman or Citizens' Office translates as *kariya lay prochea pol rhat,* which literally means 'office for people (citizens)' and is rather ambiguous. Explicitly, the head of DO in Battambang admitted that he personally does not understand the meaning of this name. One key informant, the former project director of Asia Urbs, asserted that one of the reasons for the DO not functioning well is that its title in the Khmer language is vague, giving no clue as to what its purpose is.

Because many of the informants did not know about the DO, in order to understand how they might perceive such an office and its new mandate, the function and roles of the DO were explained to them. In response to the explanations given, informants in both municipalities reacted differently as to whether they would file any complaints with the DO in the future. Some seemed enthusiastic about this new office but others were not at all interested and claimed that they would not file complaints. The main reason for this lack of interest and hesitance, according to the interviewees, is their lack of confidence in such a mechanism as they perceive the DO to be part of the authorities.

In addition to the reasons given above, it is understood that the Cambodian culture of conflict management, as pointed out in the literature review, plays another critical role in discouraging people from lodging formal complaints.

The location of the DO office is another factor. The DO office in Siem Reap is located inside the OWSO compound, and in Battambang it is on the first floor of the municipal office. This helps generate a vague distinction between DO and OWSO and between DO and the municipal authorities, but it does not at all label the DO as an independent body.

In summary, people's overall perception of DO is one of dissatisfaction compared to the trust earned by OWSO. However, the blame cannot be put on the mechanism per se. Through the above analysis, external factors such as the lack of dissemination, its name, the political culture, the deep rooted mind-set of Cambodian people and the office location play a critical role in this constraint.

4. CONCLUSIONS AND RECOMMENDATIONS

Overall, this study concludes that the government's commitment to its administrative reform is broad and strong. This is demonstrated by the huge scope of reforms such as D&D, or smaller ones such as OWSO and DO.

OWSO-DO is a real and deep reform, and is a new model for Cambodia. It involves a change in the norm of service delivery and direct practices at the local level. From the perspective of political decentralisation, it involves real delegation of authority and decision making power from the central level to the sub-national level. In the good governance sense, it involves the building of good governance principles and

reduction in corruption and rent-seeking. In a political economic sense, it involves poverty reduction through improved allocative efficiency. However, in the neo-patrimonial sense, it involves taking away benefits, profits and personal power from the central authorities. It is natural then that such reforms would meet with challenge, reluctance and hesitancy from some agencies and individuals.

In terms of people's perceptions of the OWSO-DO model as a whole, OWSO-DO is still fresh and new and so they are not yet well informed or used to it. There is still some confusion as there are only two offices in two municipalities while the former system is still operating at large throughout the country and for other services they might need. The existence of two parallel structures is a source of confusion. Despite this unfamiliarity, overall it was found that people have become more confident and are satisfied with the services provided by OWSO. There is increased participation in response to the improvement in service delivery responsiveness. To enhance understanding among citizens, more dissemination is required and more resources should be directed to this objective alone.

Although this report has argued that many constraints found by the study are matters of transitional shocks, they should still be addressed in order to avoid them becoming permanent. For OWSO specifically, the remaining constraints found to affect its capacity to deliver services effectively include the lack of budget and financial autonomy, the lack of variety in services sought, the lack of political will and cooperation from some relevant agencies, the limited functions and the delay of accompanying resources to follow the delegated functions, and the issue of staff capacity and incentives demonstrate areas for improvement, especially before OWSO is expanded to other districts or municipalities throughout the country.

Under these circumstances, to enable OWSO to function well and play a critical part in the D&D reform, particularly service delivery, some suggestions are put forward. First, and probably the most feasible, is that OWSO should retain some percentage of the surplus it earns, apart from its target revenues, to induce its 'financial autonomy'. In addition to this, similarly to what previous studies[8] have pointed out, another approach to reduce the large burden of OWSO's daily operational costs is that those ministries delegating their functions to OWSO should provide capable human resources with equipment and budget to support this mechanism. Moreover, as a mechanism to motivate OWSO staff to perform well and curb rent-seeking, salary supplement incentive schemes should be maintained or at least another form of renumeration should be introduced, otherwise staff will lose their motivation and rent seeking will be induced and the reform will only end up back at its starting point.

With regard to the DO, some constraints were found to pose as challenges to its momentum and integrity. To resolve these constraints in an effort to strengthen and sustain the momentum of DO, some recommendations drawn from the interviews and analysis are advanced. First and foremost, both financial and human resources should

8 Clasen and Gruber (June 2006), Summary of OWSO Internal Assessment by MoI (May 2007), MoI, Final draft on DFGG project (2007), Simon (February 2008).

be improved. Financial resources, including high salary and sufficient incentives, are necessary since the DO staff are not in a position to make profit or money. For human resources, since only the post of DO chief is currently functioning, an assistant should be employed as stipulated in the *prakas* in order to support the chief so that he/she is able to monitor the whole municipal administration more closely, not just the OWSO. To qualify for this position and to make DO function effectively, first the DO chief should be well informed about all delegated functions in OWSO and second, training on conflict resolution, management and communication skills should be provided.

Second, to create high demand for DO's services, dissemination on its role and main responsibilities should be improved. In addition, the office space and location should be accessible and separate from OWSO. Another option which could be employed to convince more people and earn more trust from them is to create stronger accountability between the DO and the people. Actions to this end should be taken. First, information regarding the election of the DO should be well spread to all people within its jurisdiction so that people are well informed. Second, any report or information on DO, especially its achievements and activities, should be made public and promoted. In doing so, people would realise and be informed about what DO has done or achieved so far. Finally, efforts must be made to ensure a fair and more open election when electing a head of DO.

Moreover, the title of DO in the Khmer language is still ambiguous which could simply lead to low demand for its services. This study suggests that the District Ombudsman or Citizens' Office should be changed to *"Citizens' Complaints Handling Office"* which people, especially ordinary persons, would readily understand.

After the above mentioned analyses and findings, it can be concluded that corruption in the former service delivery system not only affects the state bureaucracy but also a wide range of citizens, including civil servants. And the success of this new administration, especially through this effective OWSO service delivery mechanism which is affordable, convenient, user-friendly, efficient, consistent and transparent will be a success for all. Everyone will ultimately benefit. The success of this new mechanism, especially the reduction in corruption, will ultimately lead to an increase in trust among citizens towards the authorities and particularly the state provision of public services which is the rationale behind the government's wider D&D reform, public administration reform and poverty reduction initiatives. Thus, OWSO-DO is seen not just as a step towards reducing corruption in the state bureaucracy, but also as a catalyst to achieving long term good governance objectives. And this could be maintained and strengthened, but only if local government is empowered with appropriate resources and authority.

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Section Five
Social Development

-XI-

INCENTIVES AND THE RETENTION OF HEALTH WORKERS IN RURAL AND DISADVANTAGED AREAS OF CAMBODIA

By Seng Bundeth, Net Neath, Pagaiya Nonglak and Sok Sethea[1]

1. INTRODUCTION

Posting and retaining the services of doctors, nurses and midwives in remote rural and disadvantaged areas where health needs are greatest is difficult. The reasons for their reluctance to work outside the capital city include low public sector pay; limited opportunities for private practice; poor education services, housing and other amenities for workers' families; weak managerial regimes; limited professional support; and distance from family. Although the evidence for Cambodia is largely anecdotal, the overall picture appears to be typical of other low income and many middle and high income countries. However, there is increasing evidence that the incentives motivating health workers are complex. They include both `extrinsic' incentives (including, but not only financial) and `intrinsic' incentives arising from the desire to help people and the satisfaction derived from the delivery of healthcare. The structure of these incentives and their relative strength is likely to vary between individuals and between cultural and social settings. As a result, the empirical results from other countries may not hold exactly in Cambodia. In particular, it may not be possible to infer from other studies the incentives required to persuade Cambodian clinicians to work in a remote area.

Cambodia's government health sector wage rates are still almost certainly well below market clearing wage rates. Consequently, the `capture' of clinical time and effort by government employment is incomplete. It is particularly difficult to post clinical staff to remote areas and retain them where the opportunities for private practice may be limited and where they may be isolated from family and social amenities. This poses a conundrum for a government attempting to staff remote and disadvantaged areas in the face of tight budget constraints. On the one hand, it employs more staff than it can easily pay competitive wage rates to – first, within the budget constraints it faces

1 Seng Bundeth and Sok Sethea are research associates, Net Neath is a research fellow and Pagaiya Nonglak is a consultant researcher at CDRI.

and second, without creating undesirable differentials with other sectors. On the other hand, government employed health workers are not distributed optimally with respect to either population or healthcare needs. To date, the main corrective incentive has been by way of administrative postings supported by political appeals to fairness and nation-building. The anecdotal evidence is that neither represents a strong motivator. There is no formal requirement to serve in a particular location before promotion or access to further training, though a posting in Phnom Penh and access to post-graduate training may be used as a reward for service in remote areas.

Until recently, salary grading only reflected seniority and post graduate qualifications and did not take into account location, specialty or skills scarcity. However, the government has now designed and implemented salary supplementation schemes in selected locations. Their effects on worker motivation, retention and productivity have not been fully assessed. During 2009, greater discretion was delegated to Special Operating Agency heads to pay clinical staff above government rates. However, there is uncertainty about what rates would be required to retain and attract clinical staff to employment by Special Operating Agencies.

The purpose of this study is to explore the financial and non-financial incentives that would be required to successfully post different classes of new clinical graduates (doctors, midwives and nurses) to a remote area and retain them there. The study expects to inform policy by addressing the following research questions:

1. What salary would be required to retain and attract different categories of clinical staff to work in areas of varying degrees of remoteness from (i) Phnom Penh; (ii) their family?
2. What intrinsic motivations make staff more inclined to work in rural areas and how could these attributes be used to select applicants for clinical training?
3. What value do graduating clinicians attach to opportunities for private practice, schooling and other amenities in choosing where they will work?
4. How do graduate clinicians value government compared with non-government employment?

2. THEORY AND LITERATURE REVIEW

Incentives and Disincentives to Working in Rural Areas

Economic theory suggests that financial compensation is required to offset the loss of utility of working in a non-preferred location. However, there is evidence to suggest that public sector workers are also motivated by non-financial considerations, including public sector ethos, professional reputation, job satisfaction, recognition and altruism (Burgess & Metcalfe 1999; Dieleman *et al.* 2003; Kitange & Hanoi School of Public Health 2001; Le Grand 2003; Rose-Ackerman 1996; Stilwell 2001; Williams & Windebank 2001; Jolley 2008; Karlsson 2008; Myers 2008). The non-financial incentives motivating behaviour have been classified in different ways by different authors (for example, Dixit 2002; Dixit 2004; Kirton 2001; Jacobson 1995; Williamson

1998) and for government health workers by Bennett & Franco (1999) and Franco & Bennett (2000). Synthesising these classifications generates a hierarchy of non-financial incentives that might modify a worker's reservation wage in a non-preferred location.

Non-financial incentives fall broadly into two groups: non-financial extrinsic incentives and intrinsic incentives. Non-financial extrinsic incentives might include: (1) political (workers might be persuaded to work in non-preferred locations if asked by a high political authority, possibly in the hope of recognition or promotion); (2) organisational (workers might agree to work in a well-managed but otherwise non-preferred location because their contribution is valued, or out of a sense of "organisational citizenship" or team spirit; (3) managerial (workers might agree to work in a non-preferred location because management sets targets for and rewards such service by recognition, honours, training opportunities or promotion – or because their work would be less (or more) well observed); (4) social (workers might prefer to work in a location where they have strong social obligations to their family or community). Intrinsic incentives might include reputation (workers may gain peer group approval), vocation (because they believe that their work has an intrinsic value) and altruism (because they gain satisfaction by helping people).

A key assumption of this study is that non-financial incentives reduce the financial compensation of workers who are posted to otherwise non-preferred locations. However, Dixit (2004) suggests that financial and non-financial incentives may interact in much more complex ways. For example, it may be that stronger financial incentives undermine the strength of social and intrinsic incentives.

Several studies have assessed health workforce recruitment and retention in rural areas. Daniels *et al.* (2007) studied the rural retention of a variety of health workers in the southern United States and found that rural background and preference for working in a small community were associated with rural recruitment and retention. Having enough work available, income potential, professional opportunity and serving community healthcare needs were important for their job choices. The evidence that rural background was a predictor of rural employment was at the basis of the Richards *et al.* (2005) study carried out in the Scottish Highlands. In a developing country (Vietnam), Dieleman *et al.* (2003) found that rural health workers' job motivation was influenced by both financial and non-financial incentives. The main motivating factors were appreciation by managers, colleagues and the community, a stable job, income and training. The main discouraging factors were low salaries and difficult working conditions.

Stenger *et al.* (2008) reveal that the extent to which doctors in rural areas in the United States were satisfied was related to their spouse's or partner's happiness with workplace location. Other elements that satisfied the majority of respondents were quality of local referral specialists and degree of intra-specialty and inter-specialty collegiality. Although the majority of respondents anticipated remaining in their present practice, those who intended to leave raised dissatisfaction with low pay and high workload.

A study of nurses' job satisfaction found that lifestyle and personal life issues were important to job choice (Molinari & Monserud 2008). Features such as time away from work, rural lifestyle, recreation facilities, climate and social activities were necessary for retention. Rural nurses who were mostly satisfied and preferred to live in rural areas generally had rural backgrounds. Satisfied nurses lived close to family, friends and spousal employment. Therefore, in order to increase retention, hospitals could consider marketing rural lifestyle opportunities and interviewing applicants about their rural backgrounds and connections.

Discrete Choice Experiment and Its Applications

Discrete choice experiment (DCE), or conjoint analysis, is a quantitative methodology for evaluating the relative importance of the different product attributes that influence consumer choice behaviour (Louviere *et al.* 2000). In healthcare research, conjoint analysis has increasingly been used to assess patient preferences for healthcare service delivery (Ryan 2004; Ryan & Farrar 2000), but a few studies have also used conjoint analysis to understand healthcare pratitioners's job preferences and choices for rural and urban posts (Scott 2001).

Based on a systematic review of studies using DCE to elicit health worker job choices, Lagarde and Blaauw (2009) found that non-financial incentives are significant, sometimes more powerful than financial ones, in explaining job choices and that different groups of health workers may have different preferences for job attributes. Most of the studies reviewed by Lagarde and Blaauw *(ibid)* were conducted in developed countries and offer insights that are often specific to the health labour markets in such countries. Recently, Günther *et al. (*2010) studied job preferences of young doctors in Germany and the role of six attributes in job choice: professional cooperation, income, career opportunities for spouse or partner, childcare availability, leisure activities and on-call duties. The results indicated that a change in income led to the largest utility change, yet non-monetary attributes such as on-site availability of childcare and fewer on-call duties would decrease the additional income required to compensate the disutility of a rural practice.

A few studies of doctors' job preferences in developing countries highlight a different set of insights. Chomitz *et al. (*1998) found significant differences in location preferences across different groups of medical students in Indonesia. Some of the factors that increased willingness to work in rural areas were rural background, being female and not having studied in a private school. Hanson and Jack (2008) reveal that the most important job characteristic for doctors in Ethiopia was the possibility of working in the private sector (which was not allowed for doctors in the public sector at the time of the study). A pay increase was the next most valued aspect, followed by improved housing, being posted in Addis Ababa (the capital city compared to a regional city) and better equipment. Compulsory service in the public sector in exchange for training was the least important preference. A study by Kolstad (2010) found that different measures are likely to attract young doctors to rural areas. Alongside increased salary and hardship allowance, opportunities for further training were found to be among the

most powerful attributes to attract doctors into rural areas in Tanzania. Other measures included housing, health infrastructure improvement and adequate healthcare facilities and equipment. Individual factors associated with rural choice were high degrees of willingness to help others.

For nurses in Ethiopia, Hanson and Jack (2008) report that the most powerful attraction was increased salary, closely followed by the possibility of being posted in a regional capital. Also, contrary to doctors' preferences, nurses valued better equipment more than better housing and the opportunity of working in the private sector came ahead of avoiding repaying years of training with years of work in the public sector. In another study of nurses in South Africa, Penn-Kekana *et al.* (2005) found that financial incentives were twice as powerful as the next most favoured job attributes of better facility management and improved equipment; well staffed facilities and social amenities were the least important determinants of nurses' job choices. The study also found that younger nurses and those who worked in hospitals were more sensitive to salary levels, while nurses in rural areas were more concerned about facility management. A study by Mangham (2007) on public sector nurses' job choices in Malawi shows that graduate nurses appreciated higher pay but also highly valued the opportunity to upgrade their qualifications quickly, as well as the provision of housing. Interestingly, nurses preferred jobs located in district towns over jobs in cities. Faster promotion was valued more by younger nurses.

3. METHOD

The study also applied the Discrete Choice Experiment (DCE) or a stated preference method, also known as contingent evaluation methodology. Contingent valuation is a survey-based economic technique for valuating certain aspects of things that do not have a market price as they are not directly sold--for example, people receive benefit from a beautiful view of a mountain, but it would be tough to value using price-based models. Typically it asks how much money people would be willing to pay (or willing to accept) to maintain the existence of (or be compensated for the loss of) an environmental feature, such as biodiversity. In this study, the respondents were asked to make choices between hypothetical job offers with various attributes.

Discrete Choice Experiment Development

The first step was to decide which job attributes to include in the experiment and to define the appropriate levels for each attribute. The focus of the DCE was on different financial and non-financial incentives that might be used to attract and retain health workers in rural areas in Cambodia. The selection of policy options included in the DCE was based on:

- The literature review of interventions that have been successful in attracting and retaining health workers in rural areas in other developing and developed countries;

- A review of human resource policy documents and key informant interviews with policy makers to identify feasible local strategies; and
- Focus group discussions (FGDs) and semi-structured interviews with medical and nursing students and doctors and nurses currently working in rural areas to obtain their suggestions and preferences.

An FGD guideline was developed based on the study conducted in Thailand by Pagaiya *et al.* (2009). It consisted of questions related to job characteristics of interest, respondents' job of choice and measures to attract health workers to rural areas. Since the focus of this study was rural-urban career choice, it was important to conduct FGDs with students in both Phnom Penh and outside-Phnom Penh training centres, as location of the training institution is believed to impact on choice behaviour. An equal number of FGDs was administered in Phnom Penh and outside Phnom Penh. A total of four FGDs were conducted and each FGD comprised 8-10 students. Semi-structured interviews were conducted with five doctors, five nurses and five midwives currently working in rural areas.

Determining Job Attributes for the Nursing /Midwifery Students

The FGDs with nursing and midwifery students revealed that they would be interested in jobs that have characteristics such as proximity to hometown, security, appropriate infrastructure including water supply and electricity, higher salary, housing provision, adequate medical equipment, increased patient load, faster promotion, transportation allowance and a good working environment. Salary was suggested to increase by 50 to 100 percent of the current salary.

The in-depth interviews with nurses and midwives working in rural facilities obtained similar results. Job characteristics or incentives that could retain nurses and midwives in rural areas included: higher salary, transportation allowance, safety in the workplace, adequate equipment, adequate electricity and water supply, proximity to family, training opportunities, housing provision and good management.

The results of the FGDs and in-depth interviews were confirmed by a short checklist filled in by the students.

As only about seven attributes can be taken into account in a DCE, a choice had to be made between the attributes suggested. This was done according to the weight respondents generally placed on the attributes and also by taking into account whether relevant policy interventions would be feasible. For example, it could be argued that it is not sensible to include housing provision as an attribute of a hypothetical rural job when current health policy does not offer housing to workers, even if workers value it.

Salary was suggested to increase by USD25 increments up to a maximum total of USD120. "Equipment and supplies" took the values "usually inadequate" or "usually adequate". Housing provision, transportation allowance and closeness to hometown took the values "yes" or "no". The time after which promotion is attained was set

at "one" or "two" years, and training opportunities at "none" or "two weeks per year".

However, some important attributes were dropped: medical benefit package, workplace security and management system. Because workplace security needs to involve more actors, and the implementation of a medical benefit package is against the constitution, these attributes were excluded. Management system was very difficult to describe in a uniform way, and was therefore excluded.

Determining Job Attributes for Medical Students

Similarly to nurses, the job attributes of interest to doctors were derived from FGDs with medical students, in-depth interviews with doctors working in a rural facility and a checklist

Table 1: Proposed Job Characteristics of Nurses and Midwives

Job attribute	**Rural facilities**	**Urban facilities**
Salary	Same (USD45) USD70 USD95 USD120	Same (USD 45)
Equipment and supply	Usually inadequate Usually adequate	Usually inadequate Usually adequate
Housing provision	No Yes	No Yes
Transportation allowance	No Yes	No
Time after which promotion is obtained	1 year 2 years	1 year 2 years
Opportunity for training per year	2 weeks 4 weeks	0 weeks 2 weeks
Close to hometown	Yes No	Yes No

completed by final year medical students. The FGD suggested that the most important attribute in their choice of job location was salary. Students suggested that salary should be increased by 50 percent, 150 percent and 250 percent. Other job characteristics of interest to them were security in the workplace, adequate equipment, transportation and accommodation.

The in-depth interviews with five rural doctors obtained slightly different results. Doctors would be interested in working in rural areas if the salary was good. They suggested that the salary should be increased to USD150–300 per month. Other attributes of interest were accommodation, career advancement opportunities, specialty training, transportation, adequate equipment, good management, teamwork

and friendly communities. The short questionnaire filled in by the students and doctors did not suggest attributes other than those discussed above.

Again the researchers selected seven attributes and set their levels. Salary increase was suggested to reach a maximum of USD300. Similarly to the nurses, equipment and supplies were either "usually inadequate" or "usually adequate". Housing provision, workplace close to hometown, specialty training and allowing time to work in the private sector took the values "yes" or "no". Time after which promotion is obtained was set at either "one" or "two" years.

However, some important attributes were dropped, such as medical benefits package, security in the workplace, community recognition and management system. Security in the work place, management and social recognition were found to be important but it was complicated to include these attributes in the study, so they were excluded.

Table 2: Proposed Job Characteristics of Doctors

Job attributes	**Rural facilities**	**Urban facilities**
Salary	Same (USD50) USD100 USD200 USD300	Same (USD50)
Equipment and supply	Usually inadequate Usually adequate	Usually inadequate Usually adequate
Housing provision	No Yes	No Yes
Workplace location	Far from hometown Close to hometown	Far from hometown Close to hometown
Time after which promotion is obtained	1 year 2 years	1 year 2 years
Opportunity for specialty training	Yes No	Yes No
Time allowance to work in private sector	Yes No	Yes No

The job attributes listed above were combined into a set of hypothetical jobs between which participants were asked to choose. We used Sloane's orthogonal array to develop the most efficient study design and select the hypothetical jobs to be used in the DCE. The selected combinations were organised into a series of 16 choice pairs and respondents selected the job that best suited their requirements in each pair.

Sampling

Sample size was calculated based on empirical experience rather than mathematical calculation (Louviere *et al.* 2000); 100–150 respondents per sub-group were required

(Scott 2001). As gleaned from the above discussion, the sampling unit comprised final year medical and nursing students due to graduate in 2010. Lists of final year students from public medical colleges such as the University of Health Science and the four regional training centres (RTCs) were used to develop the sampling frame. A stratified sample per educational institution was proposed. When non-equal sample fractions were chosen, the results were weighted to obtain representative results; otherwise, the design was self-weighted when equal sample fractions were chosen.

Only 82 final year medical students were due to graduate from the University of Health Sciences in 2010, so all of them were included in the medical student group. In the nursing student group, primary nursing students were excluded because they have only one year of training as opposed to three years for the other students. A two-stage sampling strategy was applied: first, a distinction between the Phnom Penh and non-Phnom Penh nursing students was made; second, a simple random selection of respondents was taken from the pooled nurse student lists, applying equal sample fractions to obtain a self-weighted sample. Total sample size for this group was 170. In the midwifery student group, post-basic midwives were excluded to increase homogeneity and because this category may be phased-out and the secondary midwives were not in their final year at the time of study. Since the population size of the midwifery students is small, all 184 final year midwifery students were included.

Data Collection

Data was obtained through a DCE self-administered questionnaire given to each participant to collect students' personal and family characteristics, attitudes towards living and working in rural areas, parents' or guardians' assets, and reasons for the choice of a career in healthcare. They were then asked to rate their perception towards intrinsic incentives and potential government policies as this may influence their job choice. The questionnaires were administered to groups of 20 students (on average) at a time under the supervision of CDRI researchers. It was estimated that it would take two hours for each student to complete the survey. In order to cover 436 students from six different medical schools within the timeframe, the interviews were conducted by three teams, each comprising a team leader and an assistant.

Analysis

Data from the questionnaires were entered, cleaned and managed in STATA. The analysis used regression techniques to model respondents' choices as a function of the different package components. To analyse the labelled choice experiment, job characteristics were dummy-coded and then interacted with the label. Using a conditional logit model, the odd ratios of the independent variables can be interpreted as the effect of the job characteristic on the likelihood of choosing a rural position or the likelihood of choosing an urban position. In addition, the prediction for rural choice was computed to demonstrate the relative "market share"' of each label under different configurations and under the simulated scenarios.

For descriptive purposes, the respondents' reservation wages were analysed against their socio-economic and demographic backgrounds, for example, for students from a rich versus a poor background, or for students from a rural versus an urban background. Respondents' medical knowledge, intrinsic motivation and job aspirations were measured to determine if, and how, these drive reservation wage choices. Multivariate analysis was also applied to explain the dependent variable – reservation wages for rural service – with the independent variables described above.

4. RESULTS

Relationships between Workplace Preferences and Socio-economic Characteristics

Gender was not an important driver of location preference. The results were not statistically significant for nursing students or for medical students (all midwifery students were female). The father's employment status was likely to have an influence on the chance of the nursing students and medical students choosing to work in urban rather than rural areas, but not in the case of the midwifery students. Childhood background was one of the strongest predictors of location preference. Students from rural backgrounds were more likely to prefer rural service. The results were statistically significant for midwifery and medical students. This is in line with similar study findings in other countries. Lastly, a high level of altruism in midwives translates into a preference for rural service.

Attitudes towards Government Policy

Nurses and midwives were asked to score possible policy interventions to attract health workers into rural areas on a six-point Likert scale[2]. The results indicate that all possible interventions were looked upon favourably, each scoring an average value higher than five. A notable exception was "being able to choose the rural area", which scored the lowest, perhaps suggesting that health workers see rural areas as relatively homogeneous, which in reality is not the case. The correlation between rural-urban background and attitude towards choosing placement location is 0.7043 for medical students, 0.2541 for nursing students and 0.4366 for midwifery students. Nursing students attached most importance to a well-organised workplace and good prospects for career progress as factors that could attract them to rural areas. They also viewed working where the Ministry of Health most needs clinical practitioners as important. Midwifery students reported similar results. Their first and second most valued interventions were identical to those of nurses; however, they put rural hardship allowances in third place.

2 A psychometric scale commonly used in questionnaires, and is the most widely used scale in survey research. When responding to a Likert questionnaire item, respondents specify their level of agreement to a statement. The scale is named after its inventor, psychologist Rensis Likert.

Job Preferences

This section of the report describes the relative contribution of each attribute to attracting graduates into rural and urban posts, and the relationship between rural choice and socio-economic characteristics.

Nursing Students

The study indicates that all seven job attributes selected for the hypothetical jobs were found to be significant for the nursing student group. Increasing the salary from USD45 to USD120 per month had the most important effect on potential rural job uptake. Somewhat surprisingly, working close to hometown had the second largest effect. Increasing salaries from USD45 to USD95 and USD70 were the third and fourth priority attributes, respectively. Other important attributes affecting rural service uptake were: adequate equipment, housing provision, transportation allowance, faster promotion and four weeks training per year (compared to two weeks). Similarly, factors significantly influencing urban choice included working close to hometown, housing provision, adequate equipment and training opportunities.

There is a relationship between rural choice and a student's socio-economic characteristics such as rural background, inclination to live and work in rural areas, and graduating from rural training colleges. Nursing students who grew up in a rural town were more likely to choose a rural post. Respondents whose average score on working and living in rural areas was higher than four were more likely to choose rural facilities. Nursing students who studied at regional colleges were more likely to favour rural posts than nursing students who trained in Phnom Penh colleges.

Midwifery Students

Unlike the nursing students, we found that transportation allowance and better access to training were not statistically significant in making rural jobs more attractive to midwifery students. Other attributes were statistically significant. Working close to hometown was significant, followed by adequate equipment in the workplace. Surprisingly, whereas base salary was USD45, salaries of USD70 and USD95 were found to be more attractive than USD120. Housing provision and faster promotion were likely to attract midwives to rural areas. It is interesting to note that they valued non-financial incentives more than financial ones. This might have been because all the midwifery students in our sample were female and had to take care of their families after graduation. In addition, work placement in designated locations is compulsory for midwives after graduation. Further, a salary as high as USD120 might have been considered unrealistic. These considerations might have led the midwifery students to prioritise more practical criteria. Unexpectedly, the most powerful attribute attracting midwives to rural jobs was closeness to hometown. Second was adequate equipment, and third and fourth were increasing the salary to USD70 and USD95, respectively. In choosing urban workplaces, adequate equipment was the most important, working close to hometowns was also important, followed by housing provision and training opportunities.

Medical Students

The results for medical students indicated that all attributes had a significant influence on the choice of jobs. The odds ratios were all in the expected direction. Both financial incentives and non-financial incentives played an important role. Not surprisingly, a salary increase to USD300 (six times the base salary) was the most important attribute in drawing doctors to rural areas. A salary of USD200 per month was the second most powerful attribute. However, non-financial incentives were also important, such as opportunity for specialty training, allowing private practice and closeness to hometown.

Regarding attributes most likely to draw medical students to urban areas, all attributes were in the expected direction, like those for rural choice. Specialty training was the most important attribute in attracting doctors to urban facilities. Opportunity for private practice, closeness to hometown, adequate equipment and housing provision were also influential in urban choice. The individual characteristics that explain rural job choice for medical students in a meaningful and statistically significant way include: being female (women have a higher propensity for rural service than men), intention to work in rural areas, and a high rural attitude score. Altruistic medical students were no less likely to choose a job in a rural area than nursing and midwifery students.

Predictors for Rural Job Uptake

In this section, we use the results of the DCE analysis to construct a number of possible policy scenarios. Building on the strength of each attribute in making students choose rural above urban jobs, we can now simulate how many students would choose hypothetical rural jobs with specific characteristics. We compare these hypothetical jobs with a base scenario, which corresponds schematically with the current average public sector job profile.

The results for nursing students are shown in Figure 1. The base scenario is close to the current situation in that rural positions are generally characterised by inadequate equipment and urban facilities are provided with adequate equipment. All other urban and rural job characteristics are similar: the monthly salary is USD45 for newly graduated nurses, nurses are provided two weeks of training per year, and neither accommodation nor transportation allowance is provided. Both urban and rural facilities in the base scenario are close to hometown and working one year counts as one year for promotion purposes. In the base situation, the probability of newly graduated nurses choosing to work in a rural facility is 23.7 percent.

The second scenario offers a monthly salary of USD70, while all other job attributes are the same as the base scenario. This rural job would likely be chosen by 33.6 percent of nursing students. When the salary is increased to USD95 in scenario 3, 45.2 percent of newly graduated nurses would be expected to take up rural service. If the salary is increased to USD120, 57.3 percent of nursing students reported they would choose rural placements.

Scenarios 5, 6 and 7 combine monetary and non-monetary incentives and offer a salary increase to USD70 with (i) adequate equipment, (ii) adequate equipment plus housing, and (iii) adequate equipment, housing plus faster promotion opportunities, respectively. The proportion of students expected to prefer rural jobs is 65.5 percent, 68.4 percent and 78.9 percent, respectively.

Figure 1: Prediction of Rural Choice by Nurses in Scenario Simulations

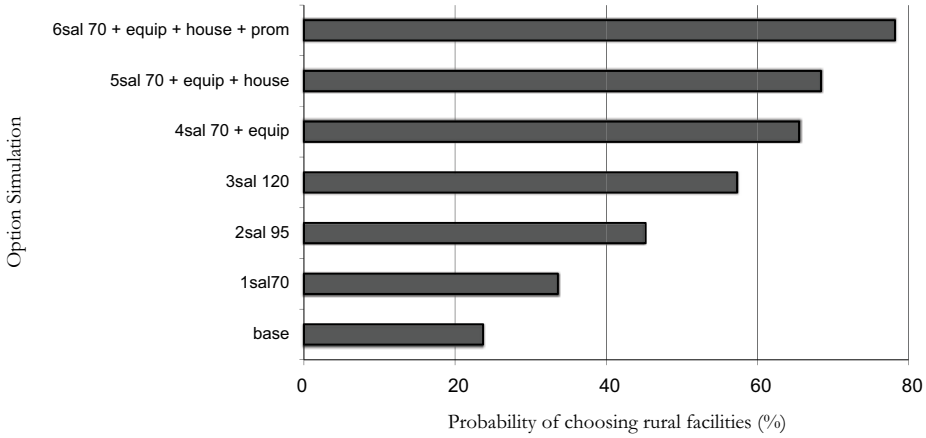


Figure 2 illustrates the results for midwives. Urban and rural jobs are identical in the base situation but for one attribute: urban jobs have adequate equipment and rural jobs do not. The other base job attributes for rural and urban jobs are: a monthly salary of USD45, job close to hometown, one year of work counts as one year towards promotion, two weeks training per year, no housing allowance, and no transport allowance. With these specifications, 51.2 percent of midwifery students would choose rural placement. While this seems high, it is also explained by the importance put on the job's proximity to hometown, which is an attribute of the base job (rural as well as urban). Scenarios 1 to 3 then predict the effects of increased salary levels to USD 70, USD90 and USD120, respectively; the likelihood that a midwife would choose rural work is 56.6 percent, 61.8 percent and 66.7 percent, respectively.

As with nursing students, non-financial incentives are also important. Scenarios 4 to 6 examine the impact of salary level plus non-financial attributes such as (i) adequate equipment, (ii) adequate equipment plus housing provision, and (iii) adequate equipment, housing provision plus faster promotion. These job packages trigger levels of rural job uptake of 86.1 percent, 88.1 percent and 92.6 percent, respectively. This shows that an appropriate benefit package can attract almost all midwifery students to rural areas.

Lastly, we turn to medical students and report on a similar simulation. The current average urban job specification was used to design policy interventions for rural service. In the base scenario, urban and rural jobs are identical except that an urban job comes with adequate equipment and provides opportunities for specialty training. Other attributes of the base scenario are: monthly salary of USD50 for newly graduated

doctors, job close to hometown, one year of work counts as one year towards promotion, permission to practice in the private sector, and no housing. At the base scenario, as shown in Figure 3, only 9 percent of medical students would choose rural placements. The simulations in scenarios 1 to 3 show that increasing salaries to USD100, USD200 and USD300 would increase rural job uptake to 11.8 percent, 17.9 percent and 26.1 percent, respectively

Figure 2: Prediction of Rural Choice by Midwives in Scenario Simulations

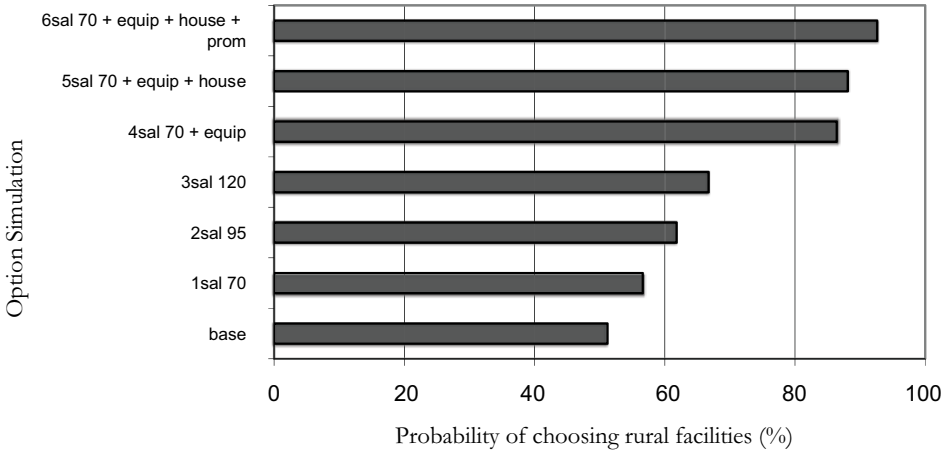
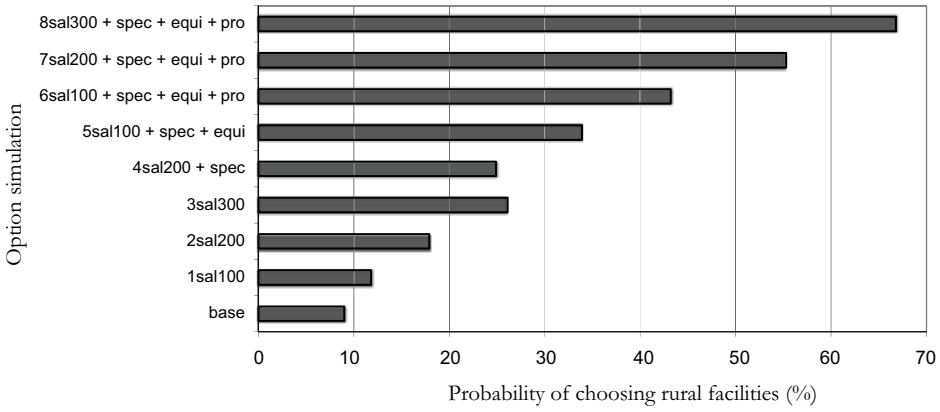


Figure 3: Prediction for Rural Choice of Doctors in Scenario Simulations



Scenarios 4 to 8 explore different combinations of financial and non-financial incentives. These scenarios include: (i) salary of USD200 plus the opportunity for specialist training; (ii) salary of USD100, specialist training plus good equipment; (iii) salary of USD100, specialist training, good equipment plus promotion opportunities; (iv) salary of USD200, specialist training, good equipment plus promotion opportunities; and (v) salary of USD300, specialist training, good equipment plus promotion opportunities. The resulting rural uptake would be 24.9, 33.9, 43.2, 55.3 and 66.8 percent, respectively.

It appears that it is far more difficult to motivate medical students to take up rural jobs than nursing and midwifery students. However, a combination of financial and non-financial incentives, such as scenario 8, could expect to attract almost 70 percent of the entire cohort into rural areas, a tremendous improvement on the current situation.

5. CONCLUSION

This study set out to assess the attitudes of final year healthcare students towards working in rural areas and to evaluate their preferences for various policy interventions that might be used to recruit and retain healthcare practitioners in rural areas. To do this, we designed a discrete choice experiment and carried out a quantitative survey among a sample of nursing, midwifery and medical students.

There are some inherent limitations associated with the Discrete Choice Experiment approach (DCE). For one, the method elicits stated preferences based on hypothetical employment alternatives. Actual choices may be different. Also, the results provide suggestive evidence of the likely impact of different policy interventions, but remain mute on the relative costs of those interventions. However, this is an important element of real life policy-making. It is also likely that the results are biased by an important school effect, i.e. the impact of each college's curriculum and specific training approach on the choices of the respondents. In real life, the school effect may have eroded altogether (and perhaps been replaced) in older health workers, which would mean that a cohort of health workers might react differently to rural incentives than the students surveyed for this study. Another limitation is that the hypothetical jobs are described using seven attributes that are not likely to reflect real-life choices, and healthcare practitioners might take other factors into account when making choices. Finally, the limited number of medical students (fewer than 100 participants) could affect the reliability of the results, which should therefore be interpreted with caution.

Notwithstanding the limitations that accompany DCE, the results clearly indicate that nursing, midwifery and medical students have heterogeneous preferences when it comes to opting for rural service. Rural background and studying at a rural training centre have been shown to be powerful predictors of a more than average uptake of rural jobs for nurses and midwives. This suggests that the Ministry of Health could target policy interventions directly at healthcare students who have a rural background or have graduated from a rural training centre. As the imbalance in geographical distribution is starkest for doctors, the Ministry of Health could consider establishing medical schools outside Phnom Penh given that training in rural areas is associated with a higher likelihood of preference for rural jobs.

Nursing, midwifery and medical curricula play an important role in shaping student attitudes towards living and working in rural areas. The study shows that students with a positive attitude towards rural areas are more likely to choose rural service. Medical schools and healthcare training institutions should therefore expand their curricula and training to nurture positive attitudes towards rural areas.

The design of effective policies to attract and retain more health workers in rural areas is challenging. It is unlikely that the Ministry of Health will be able to increase salaries of health workers sufficiently to meet their demands for rural jobs. However, the research clearly shows that a combination of financial and non-financial incentives can be more effective than financial incentives alone. Indeed, non-financial incentives decrease the additional income required to compensate for the disutility of rural practice, particularly for midwives. This finding offers new perspectives for designing affordable policies aimed at attracting more healthcare workers into rural areas.

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-XII-

Assessing Household "Catastrophic" Payments for Health Care: Findings from the 2007 Cambodia Socio-economic Survey

By Net Neath[1]

1. INTRODUCTION

Health care in Cambodia was officially provided free of charge at public health facilities and was funded by the government up untill 1996. Since then, aiming to regulate unofficial charges and generate additional revenue so as to finance expenses, including supplementing low government salaries, user fees have been levied on all patients, except for the very poor. Although the poor were exempted from paying user fees, the reform gave rise to concern about access to health care for the poorest. This has resulted in the launching of a number of schemes to help the very poor access health care at public facilities. These schemes, financially supported by external development partners, include health equity funds, community-based health insurance and a voucher scheme (Bureau of Health Economics and Financing 2008; Ir Por *et al.* 2010). The voucher scheme, a component of the health equity fund, was piloted in three operational districts in late 2007 (Ir Por *et al.* 2010), while the community-based health insurance and health equity fund were implemented in 1998 and 2000, respectively (Bureau of Health Economics and Financing 2008; Annear *et al.* 2008).

Characteristic of low income countries, health care in Cambodia is predominantly financed by out of pocket payments. In 2005, such payments accounted for almost 74 percent of the total expenditure on health, which is higher than in Vietnam (63.97 percent) and Thailand (27.65 percent)[2]. Out of pocket payments for health care are fees that are charged by both public and private providers (officially or unofficially) for the services used by patients as well as co-payments where insurance does not cover the full cost of care (World Health Organisation 2008). If such payments are large relative to the point where households are unable to pay, they would prevent households from accessing health care services and could pose substantial financial risks and push households into impoverishment (Annear *et al.* 2006; van Dooslaer

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2 Estimated from the data on private expenditure on health as percent of total expenditure on health, and out of pocket expenditure as percent of private expenditure of World Health Statistics 2008, World Health Organisation.

et al. 2006; van Dooslaer *et al.* 2007; O'Donnell *et al.* 2008; WHO 2008). As a part of the principle of fairness, and if equitable access to health care is to be extended to everyone, catastrophic payments should be prevented altogether (World Health Organisation 2000). Not only do those who are unable to pay for health care suffer immense personal loss, catastrophic payments could also have wider economic consequences such as absence of labour, loss of productivity and loss of income. In other countries, such as Indonesia for example, economic costs related to major illness are significant (Gertler & Gruber 2002). It is clear that catastrophic payments would disrupt household welfare, particularly the material standard of living, and may be considered a catastrophe (O'Donnell *et al.* 2008). This large spending on health care implies that households must have forgone the costs of consumption of other goods and services. However, the extent to which this catastrophic payment would disrupt welfare and push households into poverty depends on the incidence and intensity of payments.

Therefore, the objectives of this paper are to assess the incidence and intensity of catastrophic payments for health care at household and individual level by gender and age to examine the distribution of the incidence and intensity of catastrophic payments for health care at household level across the country, and to measure the distribution of such payments at household level. This paper is organised as follows. The next section discusses the concept of catastrophic payments for health care, including definition and measurements and distribution of catastrophic payments. The second section describes methods and data. The third and the fourth sections present and discuss the results, while the final section offers some concluding remarks.

2. CONCEPTS

2.1. Definition

Catastrophic payments for health care may be defined as household out of pocket payments that exceed a certain proportion of household resources such as income (Berki 1986; Russell 2004; Xu *et al.* 2003; Wagstaff & van Doorslaer 2003), expenditure (Wagstaff & van Doorslaer 2003; Wyszewianski 1986) or consumption (O'Donnell *et al.* 2008; Tewarit & Lagrada 2009) over a certain period of time, particularly within one year. This suggests that if a household incurs catastrophic health care payment, then it must forgo the consumption of other goods and services since this type of payment would take a large proportion of the household budget. This opportunity cost could be short or long term depending upon the household member's recovery from illness. If it is short term, then medical treatment could be financed through cutting back on current consumption and if it is long term, treatment could be financed by savings, selling assets, or borrowing. Nevertheless, there are two problems that impede us from clearly defining catastrophic payments for health care when income or expenditure is considered as a household resource.

The first problem is that when the ratio of health payment to income is used to evaluate whether health payment is catastrophic, income is unresponsive to the means of health financing and is thought to be disadvantageous (O'Donnell *et al.* 2008). This is because income is not the sole resource for some households and therefore those households that have several resources are in a better position to finance health care than those that have only one. This means that unlike households with income as their only resource, households with many resources may not incur catastrophic health care payments. Second, when the ratio of health payment to total household expenditure is used as an indicator, the catastrophic payment is proportional to budget share. A problem may arise as the budget share for poor households in low income countries could be small given that a large proportion of the household budget would likely be allocated for subsistence, which would leave little room for health care payment (O'Donnell *et al.* 2008). In order to include those households that cannot afford to pay catastrophic medical expenses, household expenditure net of food allocation as an indicator of living standards was used as the denominator when calculating catastrophic payments, though not all foods are nondiscretionary[3]. Thus, this paper uses expenditure to examine catastrophic payments since many components of consumption are captured in expenditure and can be smoothed, while income flow is intermittent. Data from the 2007 Cambodia Socio-Economic Survey indicate that 79 percent of households in the sample size have an income of less than KHR10,000 per month (USD2.49).

The second problem is that there is no consensus on a fixed proportion, i.e. at what point a household's health care payment in relation to its income or expenditure is deemed to be catastrophic. Consensus will never be reached because the value z[4] depends on whether the denominator is total expenditure or nondiscretionary expenditure (O'Donnell *et al.* 2008) and on other factors such as a household's economic status, intensity of health care utilisation, illness episodes and illness status (chronic illness), proportion of household members over 60 years old, and preference for private health facility (Tin Tin Su *et al.* 2006; Tewarit & Lagrada 2009). Xu *et al.* (2003) and Tewarit and Lagrada (2009) consider that medical spending is catastrophic if such spending exceeds 40 percent of the income remaining after subsistence needs have been deducted. Wyszewianski (1986) defines family medical spending as catastrophic if it exceeds 15 percent of annual household income. Tin Tin Su *et al.* (2006) found that 6–15 percent of total households in Nouna district in Africa incurred catastrophic health expenditure.

Many scholars would consider it a catastrophic payment if spending on health care is more than 10 percent of total household expenditure (Limwattananon *et al.* 2007; Pradhan & Prescott 2002; Ranson 2002; Wagstaff & van Doorslaer 2003). Pradhan and Prescott (2002), Ranson (2002), Wagstaff and van Doorslaer (2003) argue that medical spending greater than 10 percent of total expenditure would force households to forgo other basic needs and sell productive assets, incur debt or fall into poverty (Russell

3 Non-discretionary spending is referred to as spending on necessary basic needs such as food for subsistence.

4 The point at which out of pocket payments for health care are perceived to severely disrupt living standards

2004) and that threshold is considered as catastrophic. Although Xu *et al.* (2003) use 40 percent of capacity to pay as a threshold to indicate catastrophic medical spending, their data on 59 countries show that least developed and low income countries tend to face catastrophic payments for health care at lower thresholds than high income countries do. This paper, however, chooses 10 percent of total expenditure for health care payments as a threshold to examine the incidence and intensity of catastrophic payments for health care. Nevertheless, a range of thresholds (5, 10, 15, 25 and 40 percent of a household's out of pocket payment to total household expenditure) is presented in Table 3.

2.2. Measuring Incidence and Intensity

Analogous to the estimates of poverty incidence and intensity, the incidence of catastrophic payments is estimated as the cumulative proportion of households whose health care costs exceed a threshold, z (see Figure1)[5]. This incidence is measured by a headcount of those who face catastrophic payments and is calculated as:

$$H = \sum_{i=1}^{N} E_i \sum_{i=1}^{N} E_i$$

where E_i takes the value of 1 if a household incurs catastrophic payments for health care or 0 if otherwise, N is the sample size and $i \in \{1, 2, 3\ldots N\}$. Where the proportion of medical spending in relation to total expenditure exceeds a chosen threshold, z is represented by the household's catastrophic payment overshoot. Household overshoot is calculated as:

$$O_i = [E_i(T_i/X_i) - z\ ],$$

where T_i is household out of pocket payments for health care and X_i is the household total expenditure. The average overshoot is:

$$O = \sum_{i=1}^{N} O_i \sum_{i=1}^{N} O_i .$$

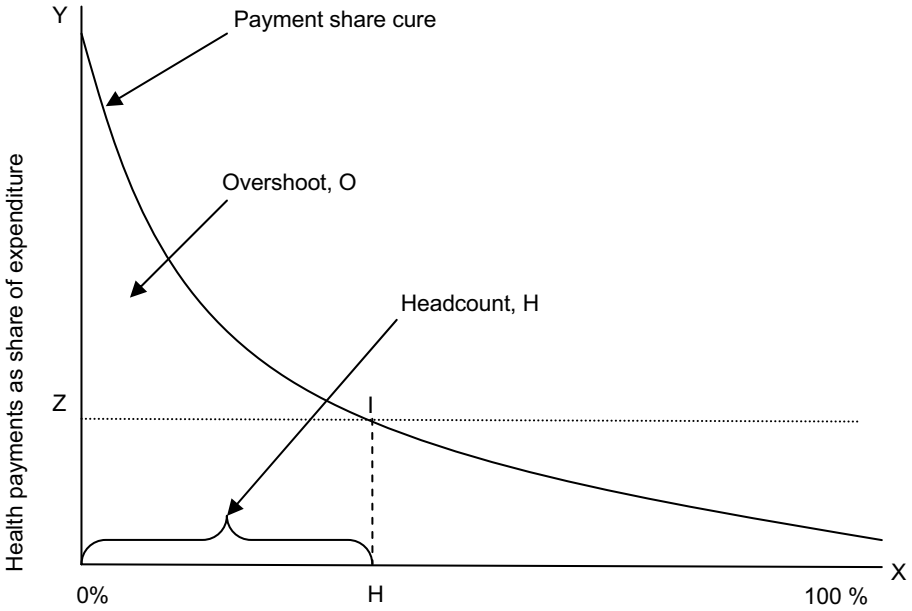
Graphically, it is the IZY area in Figure 1. The intensity of catastrophic payments is indicated by the mean positive overshoot and is defined as:

$$MPO = \frac{O\ O}{H\ H}$$

This relationship implies that O also captures the intensity of the catastrophic payment occurrence.

5 The cumulative proportion of households is ranked by health payment faction in decreasing order.

Figure 1: Cumulative Percent of Households Ranked by Descending Payment Fraction



Source: O'Donnell et al. 2008

2.3. Distribution-sensitive Measures

The measurement of the incidence of catastrophic payments for health care counts households whose medical spending exceeds a threshold equally. Measurement of the overshoot counts the amount of money spent by households on health care that also exceeds the threshold without taking into account whether such catastrophic payments are mainly spent by the poor or by the rich. To manifest this relationship, a concentration index[6] was established for headcount and overshoot. However, the severity of catastrophic payments incurred by the poor is perhaps not the same as that encountered by the rich and therefore it is necessary to weight the poor relative to the rich, i.e. adjustment of the catastrophic payments is intended to treat households equally, regardless of whether they are poor or rich. Wagstaff and van Dooslaer (2003) propose the weighted headcount as follows: $H^W = H\ (1 - C_E)$, where C_E is the concentration index for headcount and the weighted overshoot is $O^W = O\ (1 - C_O)$, where C_O is the concentration index for overshoot. The adjustment tends to give more weight to the poor and less to the rich.

6 Concentration index measures the magnitude of inequality in health variables and takes values between -1 and +1. The positive value indicates that the health variable is disproportionately concentrated on the rich or vice versa.

3. METHODS

3.1. Data

This study used data from the 2007 Cambodia Socio-Economic Survey (CSES) which is carried out periodically (such as in 1993/94, 1996, 1997, 2004/05, 2006/07) by the National Institute of Statistics of the Ministry of Planning. The sample size is 3,593 households, comprising a total of 17,439 people selected from 37 strata in two domains (urban and rural areas) of the 21 provinces in Cambodia[7]. The sampling unit is the commune and the unit of analysis is the household. Households were randomly selected from a two or three stage process depending on the size of the village. First, villages within each stratum were randomly selected from the village sample frame using systematic random sampling (with over-sampling in the urban strata). Depending on the size of the village, households were selected as follows. If the village was not large, 10 households were randomly selected from a list of all households in the village. However, if the village was large enough that different segments showed on the village map, then one of the segments was randomly selected and as a third step, 10 households from that segment were randomly selected from a list of all available households. The 2007 CSES is not self-weighting, but the size and regional composition of Cambodia's population has been weight adjusted based on the 2008 Census.

3.2. Data Analysis

The units of analysis are expenditure and out of pocket payment for health care per capita per year. Expenditure per capita was estimated from household expenditure, which was estimated from food consumption and non-food expenditure data in the 2007 CSES. The reference periods for all food and non-food items were scaled up to an annual basis and then the household expenditure was adjusted to expenditure per equivalent adult. The adult equivalence scale was calculated as: as $e_h e_h = (A_h + 0.5K_h)^{0.75}(A_h + 0.5K_h)^{0.75}$,where Ah is the number of adults in the household h and Kh is the number of children (0-14 years)[8] in household h. Likewise, the estimated out of pocket payment for health care per capita was derived from total household expenditure on health care, which was estimated from the non-food expenditure data of the 2007 CSES. The reference periods of the items were scaled up to an annual basis and then the total household expenditure on health care was applied with the equivalent adult scale. The household out of pocket payments for health care consist of all related medical expenses including travel costs.

Thresholds were chosen on values of 5, 10, 15 and 25 percent when food expenditure was not subtracted from total expenditure and values of 5, 10, 15, 25, and 40 percent when food expenditure was subtracted from total household expenditure. Headcount, overshoot and mean positive overshoot were calculated as demonstrated in section two.

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7 Mondulkiri, Ratanakiri and Pailin provinces were not included in the survey

8 Parameter values have been set based on Deaton (1997: 241-270)

Concentration index[9] was constructed to estimate each threshold for each parameter in order to examine the magnitude of inequality. Household weight was applied to health care payment and expenditure variables at household level, while person weight was applied to health care payment variables at individual level. ANOVA and Bonferroni tests were applied to test for any significant difference in the means between groups. STATA version 11 was used to analyse the data.

4. RESULTS

Table 1 shows the incidence and intensity of catastrophic payments for health care by region. More people living in rural areas tended to incur catastrophic payments for health care and catastrophic overshoot[10] than in urban areas. However, the mean positive overshoot indicates that urban people faced higher intensity of catastrophic payments for health care than rural people.

Table 1: Percentage of Households that had Catastrophic Health Care Costs

Region	Headcount	Overshoot	Mean positive overshoot
Urban	10.38 (0.88)	1.52 (0.19)	15
Rural Area	18.20 (0.78)	2.54 (0.17)	14

Note: standard errors are in parentheses and expressed in percentage

In more specific geographic locations, Svay Rieng province had the highest incidence of catastrophic payments, while Koh Kong province had the lowest (Table 2). For catastrophic overshoot, Kampot province had the highest, whereas Preah Vihear province had the lowest. The highest intensity of health care catastrophic payments occurred in Oddar Meanchey province, while the lowest was in Preah Vihear province.

Table 3 presents the results for headcount, overshoot and mean positive overshoot at individual level by gender. The means of overshoot and mean positive overshoot show no statistically significant differences ($P>0.05$)[11], but the headcount does show a statistically significant difference ($P<0.001$). It appears that females in the sample were likely to incur more health care costs. On average, household health care expenditure for females was 59,328.01 riels (USD14.44) per capita per year, while that for males was 43,221.34 riels (USD10.52). Statistically, the means for health care expenditure for the two sexes were significantly different ($P<0.05$)[12].

9 The index was estimated from the following equation: $\beta = (1/ri)\ [2\ \sigma 2r\ (hi/\mu) - \alpha - \varepsilon i]$, where $\sigma 2r$ is the variance of the fractional rank, ri is the fractional rank of individual i in the living standards distribution, hi is the catastrophic payment for health care variable, μ is its mean and εi is random error of the catastrophic payment for health care variable and is assumed to be normally distributed.

10 Average proportion of household health care spending as share of total expenditure exceeds a threshold (which in this study is 10 percent of total expenditure).

11 The Bonferroni test was applied to test the differences between the means.

12 Person weight was applied.

Table 2: Percentage of Households that had Catastrophic Health Care Costs

Province	Headcount	Overshoot	Mean positive overshoot
Banteay Meanchey	14.93	2.91	19.52
Battambong	10.26	0.85	8.28
Kep	14.96	3.09	20.65
Kampong Cham	24.34	1.73	7.09
Kampong Chhnang	34.27	2.90	8.46
Kampong Speu	11.04	4.03	36.54
Kampong Thom	29.10	0.99	3.39
Kampot	18.11	**5.51**	30.43
Kandal	16.60	2.82	17.00
Koh Kong	**3.35**	0.99	29.48
Kratie	7.70	0.61	7.87
Oddar Meanchey	10.89	5.26	**48.35**
Phnom Penh	18.53	0.89	4.81
Preah Vihear	22.52	**0.59**	**2.62**
Prey Veng	10.94	3.00	27.40
Pursat	13.81	2.74	19.81
Siem Reap	26.43	2.40	9.08
Sihanoukville	16.53	2.05	12.40
Stung Treng	19.80	1.47	7.42
Svay Rieng	**35.43**	2.91	8.22
Takeo	20.00	2.87	14.34

Table 3: Percentage of Individuals that had Catastrophic Health Care Costs, by Gender

Gender	Headcount	Overshoot	Mean positive overshoot
Male	1.06 (0.11)	0.28 (0.08)	26.70 (7.22)
Female	1.81 (0.14)	0.42 (0.08)	23.23 (4.19)

Note: standard errors are in parentheses and expressed in percentage

Figure 2 shows the trend for the incidence of catastrophic health care payments. It seems that the incidence increases from the age of 64 onwards though the pattern fluctuates sharply. Figure 3 shows the trend of the intensity of catastrophic health care payments; similarly, the pattern indicates that the intensity is likely to increase from the age of 58 onwards.

Figure 2: Incidence of Catastrophic Payments for Health Care by Age

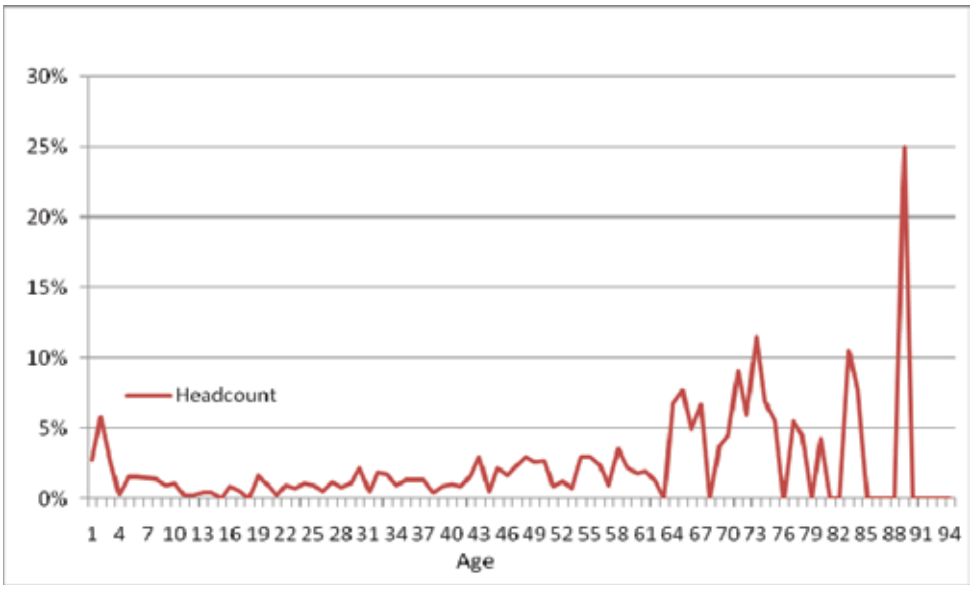
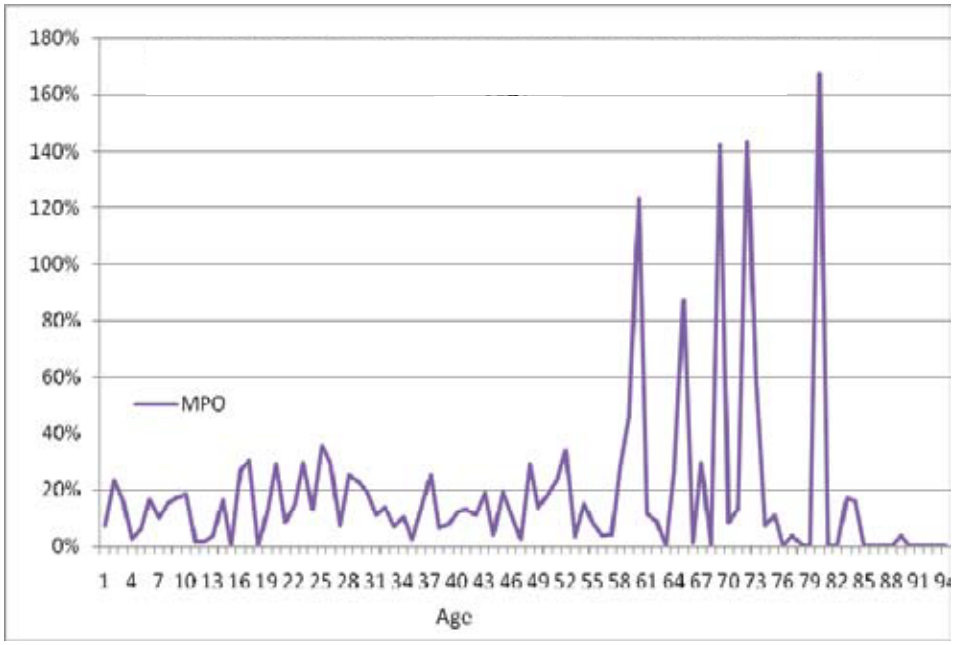


Figure 3: Intensity of Catastrophic Payments for Health Care by Age



While Tables 1 and 2 show the incidence and intensity of catastrophic payments, the figures do not distinguish whether the catastrophic payments were incurred mainly by the poor or by the rich, nor when adjusted for distribution-sensitive measures, how incidence and intensity were changed. Table 4 displays the concentration indices for headcount, overshoot, rank weighted headcount and overshoot adjusted for distribution along thresholds with and without food subtracted from total expenditure at values of 5, 10, 15, 25 and 40 percent.

Table 4: Distribution Sensitivity of Catastrophic Payments for Health Care

	Without food subtracted				
Threshold level	5%	10%	15%	25%	
Headcount (H)	28.55%	16.80%	11.15%	5.61%	
Concentration index of headcount (C^E)	0.026	0.050	0.092	0.176	
Rank weighted headcount (H^W)	27.81%	15.96%	10.13%	4.63%	
Overshoot (O)	3.46%	2.36%	1.68%	0.92%	
Concentration index of overshoot (C^O)	0.136	0.183	0.229	0.300	
Rank weighted overshoot (O^W)	2.99%	1.93%	1.30%	0.64%	
	With food subtracted				
Threshold level	5%	10%	15%	25%	40%
Headcount (H)	49.42%	36.44%	29.48%	19.61%	10.68%
Concentration index of headcount (C^E)	-0.045	-0.036	-0.037	-0.001	0.088
Rank weighted headcount (H^W)	51.64%	37.77%	30.56%	19.62%	9.74%
Overshoot (O)	10.37%	8.24%	6.60%	4.21%	1.99%
Concentration index of overshoot (C^O)	0.024	0.041	0.062	0.110	0.198
Rank weighted overshoot (O^W)	10.12%	7.90%	6.19%	3.74%	1.59%

Both headcount and overshoot decrease as the threshold level increases. This trend is also observed for the adjusted headcount and adjusted overshoot. It is worth noting that the magnitude of the headcount decreases is larger than that of the threshold level increases. This implies that most households were unable to pay for health care as costs increased. When food expenditure is not subtracted from total expenditure, the concentration indices for headcount and overshoot are positive; however, when food expenditure is deducted from total expenditure, the concentration index for headcount becomes negative at thresholds of 5, 10, 15 and 25 percent. This reveals that the income of most of the sample households was inelastic of food expenditure. The positive concentration index for the headcount at 40 percent suggests that the income of only a few rich households was elastic of food expenditure.

5. DISCUSSION

As indicated in Table 1, the proportion of households living in the rural areas facing catastrophic health care payments is greater than in urban areas. On average, the rural households incurred greater catastrophic payments overshoot than the urban households. Nonetheless, the intensity of the urban households' catastrophic payments is greater than that of rural households. This highlights the fact that many rural households have fewer resources than urban households and most of their resources

are devoted to food consumption, which takes a larger share of total expenditure. Since spending on food constituted a large part of total expenditure, little was left to spend on health care.

Similar interpretations about the catastrophic payments overshoot and the intensity of the catastrophic health care payments for the households living in Preah Vihear can be made from Table 2. At the time of the CSES survey, Preah Vihear province had one of the highest poverty rates in Cambodia (Ministry of Planning 2006) and most households' resources were spent on food consumption. It is not clearly known why Koh Kong had the lowest incidence and Preah Vihear had the lowest intensity of catastrophic payments for health care. However, it could be that a significant proportion of medical costs was covered by health financing programmes such as health equity funds or other subsidy schemes that were not reported in the survey since Koh Kong province had the highest health care utilisation rate. If this is the case, then health financing programmes to help the poor must have been working well in these two provinces. The high catastrophic overshoot could indicate that more efforts are needed to improve the health financing programmes in those provinces. It is not surprising that Oddar Meanchey province had the highest intensity of catastrophic health care payments even though it had one of the highest poverty rates in the country (Ministry of Planning 2006) because all the households selected for the survey were living in urban areas (provincial town) and could have accessed more sources of financing.

Although the intensity of catastrophic payments for health care shows no statistically significant difference between males and females, the incidence of catastrophic payments is significantly different. This can be attributed to the intensity of health care utilisation and type of health facilities used by both sexes. The data reveals that about 60 percent of outpatients, 61 percent of patients who used private health facilities, and 59 percent of patients who used services in the non-medical sector were female. More females than males appear to have sought health care services.

The incidence and intensity of catastrophic health care payments seems to increase as people get older, especially from the age of 58 onwards. These findings are consistent with those of Tin Tin Su *et al.* (2006) and Tewarit and Lagrada (2009) who found that the incidence and intensity depended on the proportion of household members over 60 years old and the intensity of health care utilisation. The data further show that the older age group, 58 to 96 years old, was more likely to face higher risk of illness, particularly back pain, ENT[13], diabetes and hypertension than the younger age group of 58 years old and below. Therefore, households comprising this older age group appear to bear higher health care costs than those comprising the younger age group. The highly volatile incidence and intensity of catastrophic health care payments in the older age group, as illustrated in Figures 2 and 3 tell that the households are likely to face a much higher risk of catastrophic health care payments than the households with younger members. This could have forced some of them into debt or to re-allocate resources from food consumption to health care costs.

13 Ear, nose and throat disease.

The positive concentration indices for headcount and overshoot when food expenditure is not subtracted from total expenditure imply a greater tendency for rich households to incur catastrophic health care payments as their incomes seem to be elastic of food. Nevertheless, when food expenditure is deducted from total expenditure, the concentration index for headcount becomes negative at thresholds of 5, 10, 15 and 25 percent. This indicates a greater tendency for most households to be unable to pay for health care in the event that medical costs are 10 percent or more of household total expenditure. In other words, it is the poor who would bear this catastrophic payment through having to re-allocate expenditure from food to health care. This emphasises the critical roles of health financing programmes such as health equity funds, user fee exemption and community-based health insurance in alleviating the burden of health care costs, particularly for those rural households whose food consumption constitutes a large share of total household expenditure and whose income is least elastic.

6. CONCLUSION

The current health financing programmes such as fee exemption for the poor, health equity funds and community-based health insurance may continue to be important for rural households since they tend to have higher catastrophic payments for health care than the urban households. Most of the rural households were living in Svay Rieng, Kompong Chnnang, Kompong Thom, Siem Reap, Kompong Cham and Preah Vihear provinces. However, urban households appear to have a greater tendency for higher intensity of catastrophic health care payments than rural households. Most of these urban households were in Oddar Meanchey, Kompong Speu, Kompot, Koh Kong and Prey Veng. Households comprising older members and females should be given more support from health financing programmes as these households tend to face a much higher risk of incurring catastrophic health care payments. The rich households spend a much larger proportion of their total household budget on health care. This is simply because the income of poor households is less elastic and most of it was spent on food consumption for subsistence. Although the rich households were able to finance health care costs, health subsidy policies or interventions should be designed to reduce the high costs of health care otherwise in the long run, those households that cannot afford to pay higher costs could ultimately fall into poverty. More studies are needed to identify the determinants of incidence, intensity and overshoot.

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