



**CDRI - Cambodia's leading independent
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Annual Development Review 2013-14

**Development Inclusiveness,
Sustainability and Governance in Cambodia**



A CDRI Publication



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development policy research institute

Annual Development Review 2013-14

1. Development Inclusiveness, Sustainability and Governance in Cambodia: Trends, Issues and Challenges
2. Cambodia and the Region
3. Pro-pooriness of Growth, Healthcare and Education in Cambodia: An Assessment
4. Complementary Feeding Communication Campaign on Child Nutrition: An Assessment of its Influence on Child Feeding Practices
5. The Inclusiveness of Public Spending on Education in Cambodia: Benefit Incidence Analysis
6. Policy Priorities for Raising Rice Yield and Output in Cambodia
7. Cambodia's Fertiliser Industry: Trends, Challenges and Opportunities
8. The Impact of Agricultural Extension Services on Rice Production: Evidence from Panel Data of Nine Rural Villages in Cambodia
9. Climate Change: Vulnerability, Adaptive Capacity and Water Governance in The Tonle Sap Basin
10. Greening Cambodia's Tourism: Potentials, Constraints, and Policy Options
11. The Effect of D&D Reforms on Local Democracy from a Political Geographer's Perspective: A Case Study of the Tonle Sap Demarcation Project
12. Interrelationship between District and Commune Councils: Representation and Accountability in Local Governance

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List of Acronyms

ADB	Asian Development Bank
AEC	Asian Economic Community
AFAS	ASEAN Framework Agreement on Services
AIA	ASEAN Investment Area
AIC	Agriculture Inputs Company
AMS	ASEAN Member States
AFTA	ASEAN Free Trade Area
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
ATIGA	ASEAN Trade in Goods Agreement
AusAID	Australian Aid for International Development
BAMS	Bureau of Agricultural Materials Standards
BIA	Benefit Incidence Analysis
CARDI	Cambodia Agricultural Research and Development Institute
CBET	Community-based Ecotourism
CCCSP	Cambodia Climate Change Strategic Plan
CCWC	Commune Committee for Women and Children
CDHS	Cambodia Demographic and Health Survey
CDM	Committee for Disaster Management
CDRI	Cambodia Development Resource Institute
CEPEA	Comprehensive Economic Partnership in East Asia
CFC	Complementary Feeding Communication
CIF	Climate Investment Funds
CJK	China, Japan, Korea
CLMV	Cambodia, Laos, Myanmar, Vietnam
COMBI	Communication for Behavioural Impact
CS	Commune/Sangkat
CSES	Cambodia Socio-Economic Survey
D&D	Decentralisation and Deconcentration
DAL	Department of Agricultural Legislation

DD	Difference-in-Differences
DDA	Doha Development Agenda
DMK	District/Municipality/Khan
EAFTA	East Asia Free Trade Agreement
EIAs	Environmental Impact Assessments
ELC	Economic Land Concessions
EU	European Union
FAO	Food and Agriculture Organisation
FDI	Foreign Direct Investment
FGD	Focus Group Discussion
FTA	Free Trade Agreement
FWUC	Farmer Water User Community
GDP	Gross Domestic Product
GMS	Greater Mekong Subregion
GNI	Gross National Income
GPS	Global Positioning System
GTZ	German Technical Cooperation Agency
HARVEST	Helping Address Rural Vulnerabilities and Ecosystem Stability
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
HYVs	High-Yielding Variety
ICJ	International Court of Justice
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
JICA	Japan International Cooperation Agency
KIIs	Key Informant Interviews
LASED	Land Allocated for Social and Economic Development
LPI	Logistics Performance Index
MAFF	Ministry of Agriculture, Forestry and Fisheries
MDT	Mekong Discovery Trail
MEF	Ministry of Economy and Finance
MFIs	Micro Finance Institution
MFN	Most Favoured Nation

MOC	Ministry of Commerce
MOE	Ministry of Environment
MOP	Ministry of Planning
MOT	Ministry of Tourism
MOWRAM	Ministry of Water Resources and Meteorology
MRA	Mutual Recognition Arrangement
MSG	Mothers' Support Group
MVU	Moharussey Vedic University
NAADS	National Agricultural Advisory Services
NAFTA	North American Free Trade Agreement
NAPA	National Adaptation Programme of Action
NCDM	National Committee for Disaster Management
NCHP	National Centre for Health Promotion
NDG	Narrowing the Development Gap
NGO	Non-governmental Organisation
NIS	National Institute of Statistics
NMCHC	National Maternal and Child Health Centre
NPK	Nitrogen, Phosphorus, Potassium
NP-SNDD	National Programme for Sub-National Democratic Development
NSDP	National Strategic Development Plan
NTFP	Non-timber Forest Products
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PA	Protected Area
PDOWRAM	Provincial Department of Water Resource and Meteorology
PPCR	Pilot Programme for Climate Resilience
PSM	Propensity Score Matching
PSU	Primary Sampling Unit
QIP	Qualified Investment Project
RCEP	Regional Comprehensive Economic Partnership
REDD	Reducing Emissions from Deforestation and Forest Degradation
RGC	Royal Government of Cambodia
ROO	Rules of Origin

RUA	Royal University of Agriculture
Sida	Swedish International Development Cooperation Agency
SLC	Social Land Concession
SME	Small and Medium Enterprise
SNV	Netherlands Development Organisation
SPS	Sanitary and Phytosanitary
STEM	Science, Technology, Engineering and Mathematics
TPP	Trans-Pacific Partnership
TSB	Tonle Sap Basin
TVET	Technical, Vocational, Education and Training
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNWTO	United Nations World Tourism Organization
UK	United Kingdom
USD	United States Dollar
VHSG	Village Health Support Group
WDI	World Development Indicators
WEF	World Economic Forum
WTO	World Trade Organisation

Development Inclusiveness, Sustainability and Governance in Cambodia: Trends, Issues and Challenges

by Srinivasa Madhur¹

1. INTRODUCTION

Cambodia is rapidly changing – economically, socially and politically. With an average annual gross domestic product (GDP) growth rate of about 7.7 percent in the last two decades, the country is now on the verge of graduating from low-income to middle-income status. A society that was torn apart by protracted civil conflict and external aggression in the 1970s and the 1980s is now demonstrating strong social cohesion and unity. Home to widespread poverty, miserable health conditions, and high illiteracy only about two decades ago, the country has more than halved extreme poverty, achieved robust improvements in health and is close to attaining universal primary education. The country has achieved these economic and social transformations at the same time as it has embarked on a process of internally driven democratisation and decentralisation of its polity. Recognising these development achievements, the International Monetary Fund (IMF) now includes Cambodia in the select list of “dynamic” low-income countries that started their economic takeoffs in the 1990s (IMF 2013).

Current indications are that, despite the political stalemate following the July 2013 national elections, growth in 2014 is likely to be around 7 percent – similar to the annual figures for 2011-2013 (ADB 2013; IMF 2013; World Bank 2014). With the current account largely funded by external aid and foreign direct investment, and annual inflation remaining around the historical average of 5 percent in recent months, no immediate macro-financial risks seem to threaten the growth prospects, although the rapid bank credit growth of recent years underscores the need for policy vigilance (Heng 2014). If the country maintains the current pace of growth until 2018, it would join the globally coveted club of 16 countries that have achieved high and sustained growth in the post-World War II period (that is, posted annual growth of 7 percent or more for about a quarter-century) – a feat that neighbouring Vietnam seems to have achieved in 2011 (CGD 2008; Madhur and Menon 2014).

Despite the commendable achievements to date, Cambodia’s remaining development agenda remains substantial – maintaining strong growth, ensuring that growth is socially inclusive, making sure that growth and development are environmentally sustainable, and strengthening governance and public institutions for development (CDRI 2013; World Bank 2013; CDRI 2014).

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Against the backdrop of these emerging priorities in the country's development agenda, the collection of papers in this year's Annual Development Review examines trends, issues and challenges in the three interrelated areas of inclusive development, environmental sustainability and development governance. This introductory chapter summarises and synthesises the key messages of the 12 papers that follow under the same thematic areas. Issues relating to development inclusiveness are discussed under the broad subcategories of growth and poverty (Section 2), health and education (Section 3) and agricultural transformation (Section 4). Section 5 deals with environmental sustainability issues and Section 6 covers governance. Finally, Section 7 provides a brief conclusion.

2. GROWTH AND POVERTY

Cambodia is a small but highly open economy located in the dynamic Southeast and East Asian region. It is also a member of several important regional and subregional cooperation and integration initiatives. Despite the high openness and the favourable geographical location, Cambodia is not economically well integrated – with its neighbours, in particular, or within “Factory Asia” more generally.

Hing and Strange (Chapter 2) place Cambodia's growth and development process in the regional context. They argue that Cambodia has huge potential to gain from the several integration initiatives that are underway such as the Greater Mekong Subregional (GMS) initiative, the ASEAN Economic Community (AEC) and the Regional Comprehensive Economic Partnership (RCEP). In order to realise the potential benefits from these subregional, regional, and inter-regional integration initiatives, Cambodia has to address several challenges. Hing and Strange prioritise three of these – strengthening connectivity with its neighbours (through better road, rail, sea and air transportation links), simplifying trade logistics (through better transparency in logistics procedures, reducing informal fees charged by officials at the border, and integrating the country's trade logistics services with its neighbours), and building the skill-base of the country's human capital (through better access to health and education services as well as a freer but well managed labour migration policy as part of the upcoming AEC).

Chapter 3 analyses trends in the pro-poorness of Cambodia's growth and a few health and education indicators. Using data from the Cambodia Socio-Economic Surveys (CSES), Roth and Lun find that Cambodia's growth during the period 2004-2011 as a whole was moderately pro-poor, and that the pro-poorness of growth has increased since 2007. Growth became more pro-poor from 2007 because consumption inequality fell, in contrast to the rising consumption inequality during 2004-2007. In general, these results are consistent with the recent estimates by both the Royal Government of Cambodia (RGC) and the World Bank that show a substantial decrease in poverty since 2007 (MOP 2012; World Bank 2013). Using data from the Cambodia Demographic and Health Surveys (CDHS), the authors extend their measurement of pro-poorness to two more areas of human development – health and education. Roth and Lun find that the pro-poorness of child health in terms of malnutrition in children under five years old (assessed from the prevalence of stunting, wasting and underweight) declined during 2005-2011 (compared with trends over the period 2000-2005). The results are

similar in the case of education in that mean years of schooling declined during 2005-2011 compared with the preceding five years. Overall, the authors caution that despite the impressive decline in the poverty rate since 2007, the remaining poor and those who hover just above the poverty line are highly vulnerable to even small negative income shocks.

3. HEALTH AND EDUCATION

Health and education are both components and determinants of development. A healthy and educated society provides a country with a pool of productive workers and hence contributes to economic growth. As well as a means for fostering growth, good health and good education are also worthwhile ends in themselves. In this context, Chapters 4 and 5 look at some specific aspects of health and education in Cambodia.

Chapter 4 takes up the issue of child nutrition, which is inextricably linked to several factors, one such factor being infant-feeding practices. The government has launched initiatives to improve children's nutritional status, including the Complementary Feeding Communication (CFC) campaign. Introduced in April 2012, the campaign uses television infomercials (advertisements that provide a lot of information), health fairs with cooking demonstrations, home visits and group meetings to promote the usefulness, ingredients, preparation, and feeding regimen of a particular nutritious meal for children aged 6-24 months. The target audiences for this programme are the children's mothers and other primary caregivers. Making an initial assessment, Chea, Nou and Ros conclude that, in the short period since its introduction, CFC has helped to improve the awareness of mothers and other caregivers and that most of them have adopted the recommended infant meal. The authors caution, however, that as yet there are no strong signs that the target groups will maintain the feeding regimen over the long term. The country's low rural electrification rate, among other barriers, constrains even the campaign messages from reaching a larger number of mothers and infant caregivers in rural and remote areas through one of the most effective communication media today – the television. The authors suggest that while there is merit in continuing the campaign, there is also a need to ensure that the target groups not only receive the messages and adopt better child-feeding practices but also that those improved practices are maintained over the longer haul.

Chapter 5 dwells on a key element of development inclusion – the pro-poorness of public expenditure on education. Tong and Phay apply benefit-incidence analysis, supplemented by marginal benefit incidence analysis, to evaluate the pro-poorness of current public spending on education and to predict to what extent households across different income groups would benefit simply from blanket increases in public expenditure across three levels of education – primary (grades 1-6), lower secondary (grades 7-9) and upper secondary (grades 10-12). Their results indicate that current public expenditure on primary education has been generally pro-poor in that the poorer households have benefited more than the richer households have from these expenditures. The results for lower secondary education spending, while not quite so rosy, are progressive nonetheless. However, the figures for upper secondary education spending are inconclusive. Indeed, the deduction is that an expansion of public spending on upper secondary school would benefit middle-income households more

than the poorest or the richest. Possible explanations for this are that, for the poor, the cost of sending children to school would still be too high, while richer parents tend to favour private schooling over its public counterpart. The authors suggest, therefore, that policy options to increase the pro-poorness of education spending should consider reallocating some of the current education budget. This could include allocating a higher share of education expenditure to primary and lower secondary levels, where, as the results indicate, such action would increase the pro-poorness of public spending. However, at upper secondary level, existing public expenditure should be better targeted to benefit poorer households, especially in rural areas. This could be done through, for example, conditional cash transfers for the poor, in-kind interventions such as school meal programmes for the poor, or the provision of other schooling support for the rural poor.

4. AGRICULTURAL TRANSFORMATION

Agricultural transformation has tremendous potential to alleviate poverty and stimulate inclusive growth. Cambodian agriculture has experienced rapid transformation in the past couple of decades, with impressive increases in both output and yield. Building on this success, there is huge potential for further productivity increases. The concomitant decline in the share of labour employed in agriculture would, in turn, release surplus labour for rapid industrialisation and economic diversification. It is in this setting that chapters 6 to 8 explore the challenges and policy options for increasing agricultural yield.

Rice accounted for almost 40 percent of Cambodia's agricultural value-added in 2010 (NIS 2011); consequently, raising rice yield is crucial for faster agricultural transformation. In Chapter 6, Theng and Flower look at the requisite policy priorities to achieve this. Most of the rice farmers in the country cultivate small landholdings. After a detailed analysis of the constraints that smallholder farmers face in raising their yields, Theng and Flower identify poor seed quality, high input costs (largely due to fertiliser market inefficiencies), inequitable distribution of agricultural land, and lack of information about the rice market as the major constraints on increasing the country's rice yield and output. To ease these constraints, the authors propose better vertical integration of production through a secure supply of good quality seeds, timely provision of extension advisory services, credit for farm-level investment, easing the current import restrictions on fertiliser, and better regulatory enforcement of fertiliser quality. Other suggestions include the promotion of horizontal linkages between farmer organisations and agricultural contract schemes, and measures to secure agricultural land ownership for smallholder farmers. For these policies to yield maximum benefits, the authors underscore the need for much better coordination among relevant ministries and government agencies so that smallholder farmers can access the many government-sponsored agricultural services through a one-stop government service window.

In Chapter 7, Theng and Khiev focus on the country's fertiliser market and ways and means of ensuring that it achieves its function in improving agricultural productivity. The fertiliser market in Cambodia is a relatively free market: there is no policy to

protect or favour local fertiliser production plants, and the government allows fertiliser suppliers to compete on quality and prices at all levels along the supply chain. Fertiliser supply has increased rapidly in response to rising demand. Future gains in crop production are expected to come mostly from increased yields, and fertiliser will play a key role in that. Analysing the constraints on the effective functioning of the country's fertiliser market, Theng and Khiev suggest three sets of reforms: simplifying import licensing procedures and regulations, removing tonnage restrictions on importers, and expanding scientific research and public extension services through increased public spending to improve the efficiency of fertiliser use by farmers. These measures should go a long way towards raising farm yield, especially since both the intensity and efficiency of fertiliser use in Cambodian agriculture is much lower than is the case in many of its neighbouring countries.

In Chapter 8, the focus shifts to an analysis of the role of agricultural extension services (such as seed selection, chemical fertiliser and pesticide usage, water management, composting and planting methods) in facilitating better farmer practices and raising farm yield. To date, few studies have attempted to decipher the effects of agricultural extension services on farm yield in the country. Using panel data from surveys conducted by CDRI in 2008 and 2011 in nine villages from the four main geographical regions – Mekong Plains, Tonle Sap Lowlands, Upland Plateau, and Coastal – and applying a variety of statistical methods, Keo and Theng deduce that agricultural extension services have a positive effect on rice yield. However, given the data limitations, inherent difficulties of accurately measuring the effect of agricultural extension services, partial adoption of agricultural technology/innovation by farmers, and omission of certain effects of extension services in the survey data, the observed effect of extension services on rice yield is not statistically significant. Such results are common in a variety of similar studies conducted on other countries. Given the pioneering nature of such study in the Cambodian context, the authors argue that more empirical evidence is needed to make a more accurate assessment.

5. SUSTAINABILITY: CLIMATE CHANGE AND THE ENVIRONMENT

Cambodia is particularly vulnerable to the adverse effects of climate change. The Tonle Sap River, which connects the Mekong River to the Tonle Sap Lake, features a unique reverse hydrological regime: it flows from the Mekong to the Lake in the wet season and vice versa in the early dry season. Although this flood pulse sustains the region's fisheries, traditional livelihoods and rich biodiversity, it has long led to flooding, especially given the country's geography. However, the effects of climate change and a lack of proper rural infrastructure have been exacerbating the effects of floods – as well as droughts – on the people that rely on the Basin's natural resources (CDRI 2013). Moreover, with industrialisation and population growth in the last couple of decades, greenhouse gas emissions from human activities have substantially increased. Although the absolute level of such emissions is still relatively low, a need has emerged to respond sooner rather than later to this potential threat. Chapters 9 and 10, therefore, focus on the issue of environmental sustainability and address two critical topics – water governance in the Tonle Sap Basin, and the potential to reduce the carbon footprint of the country's tourism sector.

In Chapter 9, Chem and Kim examine the combined implications of climate change and natural system changes caused by human activities (such as deforestation and infrastructure development) for water resources and water governance in the Tonle Sap Basin. Relying mostly on a participatory approach through commune-level consultation workshops in Kompong Thom, Pursat and Kompong Chhnang provinces, the authors identify disaster hotspots in the Basin and assess the type, frequency and severity of natural disasters. The impacts of climate change are categorised into four groups – flood, drought, lightening storm and disease outbreak. These natural disasters have occurred in the Basin almost every year in the past two decades, with the possible exceptions of 2003 and 2008, and it is felt that their frequency and intensity are gradually increasing from year to year. Local people consider flooding to be the most frequent and severe climate-related natural disaster, followed by drought. Accordingly, the authors suggest that there is a need to: (i) introduce new farming technology that enables farmers to adapt to the greater occurrence of periods of excess and deficient rainfall (given that climate change alters rainfall patterns), (ii) develop an effective mechanism and plan for emergency preparedness, response and recovery, (iii) raise awareness about climate change and its harmful effects at village and commune levels, (iv) coordinate climate change response plans at the commune, district and provincial levels, and (v) target emergency adaptation and relief efforts to assist the poorest and most vulnerable segments of the population.

In chapter 10, Lonn analyses the environmental implications of the rapid growth of the tourism sector and suggests how it can be made more environmentally sustainable. He cautions that the numbers of international and domestic tourists, hotels and resorts, flights to and within Cambodia, and other related tourism services are growing rapidly and can create great pressure on local resources like energy, fossil fuel, water, food and land. These side-effects of tourism industry development – natural resource depletion and an increased carbon footprint – need to be controlled if Cambodia's tourism industry is to be sustainable. The priorities are, he argues, energy efficiency measures in “green” hotels, expansion of renewable energies particularly solar power, increased diversity of tourism sites, better industry regulation, and, above all, an integrated strategy to promote an environmentally-friendly tourism industry. Encouragingly, there is enormous potential to diversify Cambodia's tourism beyond the World Heritage sites so that the environmental pressure on the areas around these is kept within manageable limits. There are also great prospects for developing ecotourism, which could create growth and jobs while preserving natural assets such as forests, water and wildlife. At present, Cambodia is lagging behind neighbouring countries in developing this sector, so there is much scope for further action.

6. GOVERNANCE: DEMOCRATIC DECENTRALISATION

Cambodia's democratic decentralisation programme has had mixed results. It has helped create political pluralism by setting up multi-party local councils elected directly by the people. However, political decentralisation has not necessarily been accompanied by significant administrative and fiscal decentralisation. This, in turn, has constrained subnational governments from playing a major role in socioeconomic development (CDRI 2013). Within this context, Chapter 11 focuses on the impact of the D&D

programme on the “democratisation of decision-making” at the subnational levels in terms of accountability, representation and responsiveness. Chapter 12 looks at the interrelationship and interactions between the two layers of subnational government – the district authorities and the commune councils.

In chapter 11, Kim and Hort present a case study of the Tonle Sap Demarcation Project (TSDP). Implemented between mid-2010 and 2011, the TSDP was introduced to prevent further deforestation in the Tonle Sap Basin but without infringing local farmers’ rights to their farmland. The objective was to demarcate a well-defined boundary between the flooded forests (designated as protected forest area) and the floating rice cultivation areas (that farmers had the right to use for cultivation). Using documents related to the TSDP and results from interviews with government officials, local farmers and opinion leaders, Kim and Hort assess the “democratic process” of the TSDP’s implementation. Based on a variety of evidence, they conclude that this initiative constituted a clear top-down process in which the central government officials dictated the boundaries. The local people and their elected representatives enjoyed little accountability, representation or responsiveness in the implementation of the TSDP: local authorities were often sidelined by the centrally-assigned TSDP agents, and no local authority representatives at any level took any initiative to represent the interests of the local floating rice farmers who were adversely affected by the initiative. Kim and Hort (p. 156) surmise that “... the governance reforms have not had significant and meaningful impacts on the democratic deepening of the Cambodian state, as accountability, representation and responsiveness are at times replaced or even displaced by a top-down practice of neo-patrimonial orders.”

Using data and information from a survey conducted by CDRI on the roles and responsibilities of the various layers of subnational government (Chheat *et al.* 2011) and recent follow-up interviews, in Chapter 12 Chheat examines the interrelationship between the commune/sangkat (CS) and district/municipality/khan (DMK) levels. A key conclusion is that the interactions between these two layers of government in terms of their roles, representation and accountability are plagued by the lack of a common understanding about the lines of accountability between them. While most of the DMK authorities consider that they are accountable to the residents in their jurisdiction, most of the CS councillors, as the directly elected representatives of the people, expect DMK officials to be primarily accountable to them and not to the electorate as such. Because of this major misunderstanding, the CS and DMK are unable to coordinate even the limited roles they are expected to play in local development and public service delivery. This underscores the urgent need to define their respective roles, responsibilities and accountabilities. Further, these two subnational layers of government need to be assigned adequate financial and human resources to build their capacity for public service delivery and development more generally.

7. CONCLUSION

Overall, the following chapters recognise the huge strides the country has made in the past decades and identify the next steps and potential ways forward towards determining the remaining development agenda. In brief, this volume highlights the need to:

- ***integrate the country with its neighbours*** (better connectivity, improved trade logistics, and investor-friendly business practices)
- ***reduce the vulnerability of the poor and the near-poor*** (better access to basic public services and a robust social protection programme)
- ***tackle child malnutrition*** (more low-cost, high-impact interventions such as the CFC campaign)
- ***enhance the inclusiveness of public education expenditure*** (consider targeted and conditional cash or in-kind transfers)
- ***raise agricultural yield*** (supply of quality seeds, a more efficient fertiliser market, and better agricultural extension services)
- ***ensure environmental sustainability*** (stronger capacity to adapt to climate change/natural disasters and a greater focus on more green growth)
- ***strengthen decentralisation*** (greater administrative and fiscal decentralisation and local capacity building).

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Cambodia and Its Region – Challenges and Choices

by Hing Vutha and Larry Strange¹

1. INTRODUCTION: CAMBODIA AND ITS REGION – ‘INTERESTING TIMES’

In mid-December 2013, Cambodian Prime Minister Hun Sen led a large government delegation to the 40th ASEAN-Japan Commemorative Summit and the 5th Mekong Japan Summit in Tokyo. This was followed by an official bilateral working visit to Japan. The Tokyo programme concluded a busy year of subregional and regional summitry and engagement for Cambodia, reflecting the complex range of formal associations and major economic and development cooperation mechanisms in which Cambodia is now enmeshed. The list includes the Greater Mekong Subregion; the Association of Southeast Asian Nations (ASEAN) and its ASEAN Regional Forum on security issues; ASEAN+3 (China, Japan and South Korea); ASEAN+6 (India, Australia and New Zealand); the East Asia Summit (ASEAN+6+Russia and the USA); and various ASEAN bilateral free trade agreements. It also includes the latest regional economic integration and cooperation initiative – the Regional Comprehensive Economic Partnership (RCEP) based on ASEAN+6 membership. This visit also took place at the end of a year of significant cross-border and regional tensions over territorial and national sovereignty issues involving small and big regional powers.

Prior to his departure for Japan, the prime minister expressed concern over the tensions between Japan and China (*Cambodia Daily* 5 December 2013). He called for both countries to exercise self-restraint and warned of “serious and unpredictable consequences” for the region if they did not act responsibly. He stressed that Cambodia was a “good friend” of both China and Japan, adding that any conflict or confrontation between them would have a detrimental impact on the less developed members of ASEAN in terms of development assistance, trade and investment. He further encouraged ASEAN to play a facilitation role in encouraging dialogue, particularly as the ASEAN Plus Three (China, Japan and South Korea) had been “the most important mechanism for ASEAN” as a vehicle for East Asian economic integration and regional cooperation.

The visit resulted in substantial new loans from Japan, and a commitment to enhance defence cooperation and build a “strategic partnership”. That said, local senior officials and foreign policy experts were keen to stress, “this move toward closer cooperation with Japan did not signal a step away from China, Cambodia’s most important ally and largest investor.” (*Phnom Penh Post* 18 December 2013)

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The prime minister's comments, and the media and expert analysis surrounding them, reflect the dilemma posed for small but strategically significant countries by the simmering regional tensions that continued, and in some cases accelerated, throughout 2013. These primarily focused on long-standing territoriality and sovereignty issues in the South and East China Seas and involved complex historical, geographic and legal issues in relation to disputed islands and maritime zones. The potential natural resources these disputed regions contain now involve China, Japan, South Korea and ASEAN member claimants. Inevitably they also reflect the big power politics of the East Asian and Asia-Pacific regions, particularly the regional competition between China and the USA, and the countries in the region with whom they have close alliances.

Complex and chilly relations between Japan and South Korea also have the potential to affect the progress and feasibility of the China-Japan-Korea Free Trade Agreement, which could potentially dock with the Asian Economic Community (AEC) for broader East Asian economic integration and cooperation (Madhur 2013). At the same time, the ambitious, overlapping and potentially competing new regional trade and economic cooperation mechanisms – Regional Comprehensive Economic Partnership (RCEP) and Trans-Pacific Partnership (TPP) – also make regional relationships more complex than ever. Some, but not all, ASEAN member states are involved in both of these, while China has a role in one (RCEP) but not, as yet, in the other (TPP), although this is under consideration. For Cambodia, the RCEP remains a priority, given that it has ASEAN at its core, with China, South Korea and Japan also involved. The RCEP's broad commitment to narrow the development gap through regional cooperation and assistance for less developed member countries enhances its appeal. However, if China eventually decides to join the TPP, the regional economic integration and cooperation landscape will again undergo significant changes.

On an issue closer to home, in November 2013 the International Court of Justice (ICJ) delivered its decision on the dispute between Cambodia and Thailand over the ownership of the great temple of Preah Vihear and adjacent land. The ruling affirmed the original 1962 ICJ decision in favour of Cambodia's ownership of the temple itself and the escarpment on which it is located. Although this is yet to be formally accepted by Thailand, and no action has yet been taken, both governments have striven to minimise nationalistic tensions. Even so, the start of another cycle of internal political instability in Thailand, sustained opposition dissent, and the dissolution of parliament for new elections, could jeopardise the mood of constructive cooperation that has developed between the two countries. Furthermore, there is little prospect of an early resolution to Thailand's political impasse, and this creates concerns that another wave of nationalistic Thai fervour over Preah Vihear could erupt.

In the Greater Mekong Subregion (GMS), the construction of hydropower dams on the Mekong and its tributaries – upstream in China, and in the downstream states of Myanmar, Laos and Cambodia – continued to raise concerns. Growing tension has focused on the potentially negative environmental impact of these dams, which will be compounded by the consequences of climate change. The effects on water flows, flood and agricultural cycles for the Mekong and Tonle Sap river systems, fisheries and livelihoods, particularly in Cambodia and Vietnam, could be dramatic.

Weak intergovernmental mechanisms to reach mutually acceptable solutions, and little evidence of political will to find binding cooperative GMS solutions, exacerbate this tense situation.

Finally, in early December, China's official Xinhua News Agency published an article critical of the Cambodian government's response to political unrest and calling for "serious and deep reforms" in the country over the next five years (*Xinhua News Agency* 4 December 2013). The call for a more effective response from the Cambodian government and its leadership to dissent over the July national election results, and for further reforms, appears to reflect China's concerns that instability in Cambodia would adversely affect China's economic and strategic interests, not just in Cambodia, but also in the wider GMS, ASEAN and East Asian countries. More specifically, China relies on Cambodia and other sympathetic ASEAN member states to play a reliable role in supporting its approach to a slow and pragmatic resolution of the South China Sea disputes. It was a surprising development in the Cambodia-China relationship, given that China is currently Cambodia's number one trading partner, investor, and provider of development assistance, and that the two countries are internationally perceived to have a particularly close strategic relationship.

2. CAMBODIA AND ITS REGION: THE POLICY CONTEXT

The Cambodian government's Rectangular Strategy for Growth, Employment, Equity and Efficiency Phase III, was released in September 2013 following the national elections in July. This provides the policy framework for its current five-year mandate, and will form the basis for the next National Strategic Development Plan (NSDP) for 2014-18. It constitutes a blueprint for "promoting economic growth, creating jobs, equitable distribution of the fruits of growth, and ensuring effectiveness of public institutions and management of resources". The strategy focuses on four priorities: development of human resources to ensure competitiveness in an increasingly open regional labour market; investment in transport infrastructure and improving trade facilitation to ensure connectivity within the country, regionally and globally; developing value-added agriculture; and strengthening governance and the capacity of public institutions to improve the efficiency of public service delivery and the investment climate.

One section of Rectangular Strategy Phase III deals with "Deepening Cambodia's Integration into the Region and the World." This is to be achieved through participation in subregional and regional cooperation frameworks, as well as internationally through membership of the WTO and other organisations. It states:

The process of Cambodia's integration into regional and global communities will deepen especially through participation in the ASEAN Economic Community to be established in 2015, while making utmost efforts to effectively harness opportunities and the conducive environment stemming from regional integration to achieve maximum benefits for Cambodia, particularly through linking the Cambodian economy to regional production networks and global value chains.

These policy commitments are consistent with earlier public statements by Prime Minister Hun Sen, including his opening address at the 2012 Cambodia Outlook Conference, soon after Cambodia had assumed the chair of ASEAN in January 2012:

The integration of Cambodia's economy into our region will also be critical to our success. Cambodia's strategic location in an increasingly integrated and 'connected' Greater Mekong Sub-region, in ASEAN and in our proximity to China, the world's second largest economic power and the world's largest market for agricultural surpluses, is a major asset – for private sector development and investment, inclusive growth, socioeconomic development and poverty reduction.

The Cambodian government has demonstrated its strong commitment to the realisation of an ASEAN Economic Community by 2015. We have worked hard, through our maintenance of an open economy, and our compliance with WTO accession requirements and specific AEC requirements, to maximise our preparedness for AEC 2015. On the latest 'AEC Scorecard' Cambodia has achieved more than 70 percent of the key deliverables required under the AEC, ranked third behind Singapore and Malaysia. We are currently also making progress in the computerisation of cross-border trade and customs transactions to achieve further compliance. However, work still needs to be done in strengthening the institutional capacity of agencies responsible for the administration and good governance of cross-border trade, transport and people flows. These efforts will better position Cambodia to reap the benefits of subregional and regional integration, while remaining an open economy seeking international opportunities for trade and investment both within and beyond our region.

These broad policy commitments seem clear, but they do not reflect the complexities and uncertainties facing Cambodia and its neighbours in the Asian region. They also fail to fully capture some of the challenges and choices that lie ahead for Cambodia and the subregional and regional organisations and mechanisms in which it is involved, such as the GMS and ASEAN, ASEAN+3, ASEAN+6, and RCEP.

3. FREE TRADE AND REGIONAL ECONOMIC INTEGRATION: OPPORTUNITIES AND CHALLENGES FOR CAMBODIA

The Proliferation of Free Trade Agreements (FTAs) and Driving Forces

The Asian region has seen rapid progress in economic integration and an unprecedented surge in FTAs. Regional economic integration has deepened as the way to boost trade and promote prosperity. As of January 2013, Asia is engaged in 257 FTAs, of which 132 have been signed, with 109 already in effect, 75 being negotiated, and 50 that have been proposed (ADB 2013:50). ASEAN+6 countries – the 10 ASEAN members plus Australia, China, India, Japan, the Republic of Korea, and New Zealand – are even more active in FTAs with an engagement ratio of 70 percent of the total FTAs in Asia (ADB 2013:50).

The factors that contribute to the proliferation of FTAs include greater economic links and interdependence influenced by the market-driven forces of cross-border trade, foreign direct investment (FDI), and finance. The success of the European Union (EU) and North American Free Trade Agreement (NAFTA) economic integration, and the concerns about emerging European and North American blocs that discriminate against Asian exporters and investors have delivered salutary lessons. So, too, has the financial crisis of 1997-98: East Asia needs to strengthen economic cooperation in order to sustain economic growth and stability (Kawai 2007; Chia 2010; Zhang and Shen 2011).

The increase in FTAs is also driven by changes in individual countries' trade policies in response to slow progress in the World Trade Organisation's (WTO) Doha Development Agenda (DDA) and open regionalism in Asia Pacific Economic Cooperation (APEC) – the two conventional multilateral frameworks that most countries in Asia have used to liberalise their trade policies. All countries in the region have shifted their trade policies to a three-track approach. This combines global (WTO-based), transregional (APEC-based) and regional (ASEAN+3 or ASEAN+6), and bilateral liberalisation. Apart from economic considerations, FTAs may be used to cement political relationships between countries (Zhang and Shen 2011). For example, ASEAN began as a politico-security institution with limited attention devoted to economic issues. Similarly, the ASEAN-China FTA was regarded as contributing to the process of building political confidence when China emerged as a regional power.

Key Region-wide FTAs

ASEAN Economic Community (AEC): The AEC was adopted by ASEAN leaders at the 2003 ASEAN Summit in Bali. It responded both to the accelerated pace of ASEAN economic integration and to the challenges of globalisation including the economic rise of China and India. The initially agreed deadline of 2020 was later brought forward to 2015. The AEC unifies and extends various existing frameworks such as the ASEAN Free Trade Area (AFTA), the ASEAN Framework Agreement on Services (AFAS), and the ASEAN Investment Area (AIA). The aim is to create, in AEC, a regional organisation that is characterised by four pillars: (1) a single market and production base; (2) a highly competitive economic region; (3) a region of equitable economic development; and (4) a region that is fully integrated with the global economy. The recent AEC Scorecard report indicates significant progress in implementing and achieving various associated measures. For instance, by the end of December 2011, ASEAN Member States (AMS) had completed 187 (67.5 percent) out of 277 associated measures, with implementation rates of 65.9 percent for Pillar 1, 67.9 percent for Pillar 2, 66.7 percent for Pillar 3, and 85.7 percent for Pillar 4. However, although the Scorecard provides useful mapping in terms of actions taken, it gives little indication of how far the AEC objectives are actually being realised (Chia 2013). Some observers even criticise AEC development for being too slow, which could break the success of the integration.

ASEAN still faces some major hurdles and challenges. First, the region is fraught with divisions, the most striking of which include disparities in income, economic structure, investment and infrastructure. Unevenness also exists in terms of other human

development dimensions that separate the newer members – the CLMV countries of Cambodia, Laos, Myanmar and Vietnam – from the original ones (ASEAN+6). Such large development gaps are complicated by legislative and regulatory limitations and weakly coordinated implementation across national ministries and agencies.

The second challenge concerns the willingness of AMS to address sensitive issues – such as the list of goods and services excluded from liberalisation measures – and to tackle non-tariff barriers and domestic regulatory reforms to align with AEC commitments. The free movement of labour also presents challenges, and while the AEC has made clear provisions for some professions, domestic regulations and practices tend to impede such mobility (Chia 2011). These include constitutional provisions that reserve jobs for a country's own nationals; requirements and procedures for employment visas, employment passes and permits; economic and labour market tests; lack of recognition of foreign professional education, training and experience; licensing regulations of professional associations; and language proficiency requirements.

The third concern relates to ASEAN's ability to significantly improve intraregional trade and investment, particularly when the limited use ASEAN businesses make of tariff preferences is taken into account. Reasons include an insignificant difference between Most Favoured Nation (MFN) and preferential rates for many products, and problems with customs valuations and Rules of Origin (ROOs). In addition, private sector operators, especially small and medium enterprises (SMEs), have little knowledge about tariff preferences (Chia 2013). The status of progress, and the persistent challenges, prompt many analysts, including Chia (2013), to conclude that ASEAN has a long way to go to realise its AEC 2015 aspirations. Indeed, ASEAN needs to accelerate the realisation of the AEC or it could lose “centrality” and relevance in the broader context of ASEAN regional economic integration.

ASEAN Plus Agreements: ASEAN has continued to support the creation of the ASEAN Plus One framework and as a result it has completed the ratification of FTAs with Australia and New Zealand, China, India, Japan, and the Republic of Korea. This has made ASEAN a de facto FTA hub. All the ASEAN+1 (i.e. plus China) FTAs are comprehensive and have been dubbed FTA-Plus and WTO-Plus (Chia 2010) in that they extend beyond trade liberalisation in goods to embrace trade in services and investment, trade and investment facilitation, government procurement, intellectual property rights, competition policy, and wide-ranging economic and technical cooperation. Additionally, they include special and differential treatment, flexibility, and capacity building for the CLMV countries (Chia 2010). Essentially, ASEAN has built an FTA network (ASEAN+1 FTA) throughout greater Asia with itself in pivotal position. The downside, however, is that the existence of several ASEAN+1 FTAs creates an overlapping, complex and confusing “noodle-bowl” situation that potentially hampers businesses' use of preferential systems (Fukunaga and Isono 2013). The study also argues that the current ASEAN+1 FTAs have not yet achieved a fully liberalised region: the level of tariff liberalisation is not sufficiently high; ROOs are not liberal and uniform enough; and liberalisation of services exhibits only small WTO-Plus components in most FTAs. These limitations have been the impetus behind the decision of ASEAN members to initiate a broader East Asia-wide FTA known as the Regional Comprehensive Economic Partnership.

Regional Comprehensive Economic Partnership (RCEP): The RCEP was launched by ASEAN+6 leaders during the 21st ASEAN Summit in Phnom Penh in November 2012. The move has been widely viewed as the ASEAN strategic response to the two competing region-wide FTA initiatives: the East Asia Free Trade Agreement (EAFTA) between ASEAN and CJK (China, Japan, Korea) – a proposal strongly advocated by China and Korea – and the Comprehensive Economic Partnership in East Asia (CEPEA) between ASEAN and its six partners (CJK, India, Australia and New Zealand). The latter proposal was initiated by Japan with support from Australia, New Zealand and, to a lesser extent, India, to counterbalance China. The creation of the RCEP was also driven by a wish to ease the “noodle-bowl” situation (relating both to ROOs and to the huge variety of tariff schedules and rules). It was also designed to increase participation in production chains via “accumulation”, and to respond to a political economy argument that ASEAN needed to “up its stakes” in mega FTAs in order to compete with other agreements such as the Trans-Pacific Partnership (TPP) and the CJK FTA. This was seen as essential in enabling it to maintain its centrality (Fukunaga 2013). Negotiations, which started in 2013 and are expected to conclude in 2015, have been guided by eight principles.²

If implemented, the RCEP will be the world’s largest trading bloc with an integrated market of 3.4 billion people (around 49 percent of the world’s population) and a combined GDP of about USD21.4 trillion. This constitutes about a third of the world’s current annual GDP (ADB 2013:14). The future deal is expected to offer significant income gains approaching USD644 billion by 2025, or equal to 0.6 percent of the world’s GDP (Petri *et al.* 2012). The RCEP is thus an ambitious initiative that builds on ASEAN Plus frameworks and at the same time demands significant improvements over existing FTAs.

However, a number of obstacles could hinder ASEAN and its partners in achieving their goals. First, the ASEAN+1 FTAs have different features and are at different stages of implementation. Consolidating these into the RCEP framework could be tough and complex. Second, RCEP modality conforms to the “ASEAN way”, in that it encapsulates a high degree of flexibility including preferential treatment for least developed countries. This could potentially slow its progress. Third, major economies in the region are in mega region-wide FTA negotiations as alternative platforms. For example, CJK recently agreed to bring the CJK FTA initiative forward, while seven RCEP members have joined the TPP – viewed by many as a direct competitor to the RCEP and a mega-dynamic, region-wide initiative. In addition, some members are directly involved in conflict with China over the South China Sea issue which could weaken ties among members. It has even been argued that ASEAN centrality will

² The guiding principles for negotiating the RCEP include: (1) consistency with the WTO; (2) significant improvements over the existing ASEAN+1 FTAs; (3) facilitation of trade and investment; (4) flexibility to respond to the different levels of participating countries’ development; (5) no detracting from existing bilateral/plurilateral FTAs; (6) an open accession clause to enable the participation of any ASEAN FTA partner that did not participate in the RCEP negotiations and any other external economic partners after the completion of the RCEP negotiations; (7) provision of technical assistance and capacity building; and (8) parallel negotiations of different chapters.

be unable to survive given emerging regional tensions and the advent of alternative, mega-regional FTAs.

Trans-Pacific Partnership (TPP): The TPP, originally known as the Trans-Pacific Strategic Economic Partnership, was signed in 2005 by Brunei, Chile, New Zealand and Singapore, and now extends to 12 countries including Australia, Canada, Malaysia, Mexico, Peru, the United States, Vietnam and soon Japan. The pact represents a market of 792 million people, a combined GDP of USD26.5 trillion (32 percent of world GDP) and total trade of USD9.4 trillion or 26 percent of world trade (Choi and Lee 2013). The modality of the TPP is “WTO-Plus” covering a wide range of areas including trade liberalisation in goods, services, investment, intellectual property rights, environmental protection, labour, financial services, technical barriers to trade and other regulatory issues. Besides comprehensive coverage, the agreement aims to achieve a high standard FTA – a more North American style FTA model – and this requires a more demanding set of commitments. This is especially true of issues about which slow progress was made in WTO negotiations, and in respect of which the US has a comparative advantage such as intellectual property rights, labour standards, environmental issues, competition policy, and investment rules.

Although participating countries have similar objectives and expectations in relation to the economic and welfare gains from the TPP (according to Petri *et al.* (2012), the annual income gains for the world economy by 2025 are estimated at USD104 billion), its ambitious goals and complex negotiation process make it difficult to reach agreements. The most challenging issues are the significant reforms required in domestic industrial and economic policies. Another hurdle is the fact that different levels of economic development among members make it difficult for consensus to be reached on optimal standards. On a political front, the TPP is seen as a process led by the US to advance its economic and strategic interests in Asia and to provide a counterbalance to China’s influence in the region. In other words, the TPP is another part of the ongoing Sino-US rivalry (Basu Das 2013). The absence of China, when close allies are participating in the bloc, is significant. Given that China is an active member in East Asia-wide FTAs, especially the RCEP, the TPP is seen as direct competition.

Opportunities and Challenges for Cambodia

The surge of FTAs in the region presents both opportunities and challenges for Cambodia. On the one hand, participation in FTAs would offer economic and welfare gains. Table 1 summarises simulation results by Itakura (2013) and Petri *et al.* (2012) with respect to the impacts of major FTAs on GDP, trade and investment. The results suggest that FTAs will have a positive and significant impact on Cambodia’s economy. Specifically, the AEC is expected to increase real GDP by 4.4 percentage points, while bigger, region-wide FTAs like ASEAN+3 and ASEAN+6 will have an even larger impact leading to an increase in real GDP of 6.42 percent and 6.44 percent, respectively. Among ASEAN+1 FTAs, the ASEAN-China FTA will have the largest impact on Cambodia’s economy, increasing real GDP by 8.3 percentage points. The

results also suggest that economic gains will arise from an increase in volumes³ of international trade due to lower barriers to trade in goods and services, and an increase in investment⁴ from both domestic and foreign investors.

Table 1: Economic Gains for Cambodia from Major FTAs

	Real GDP (% change from baseline)	Exports (% change from baseline)	Imports (% change from baseline)	Investment (% change from baseline)
AEC	4.4	5.3	14.8	24.8
ASEAN-China FTA	8.3	9.2	24.3	41.3
ASEAN-Japan FTA	6.7	6.5	15.9	28.5
ASEAN-Korea FTA	4.7	5.5	15.4	26.0
ASEAN-India FTA	4.6	4.7	14.8	25.9
ASEAN-ANZ FTA	4.7	6.0	15.6	25.5
ASEAN+3 FTA	9.3	12.5	24.1	39.6
ASEAN+6 FTA	9.5	13.4	24.4	39.0
ASEAN-EU FTA and ASEAN-US FTA*	12.3	113.9	135.3	-

Source: Itakura (2013)

* This result is quoted from Petri *et al.* (2012)

Hing (2013) and Strange *et al.* (2013) draw similar conclusions in qualitative terms on opportunities for Cambodia that will arise from FTAs. The former argues that apart from maintaining political and macroeconomic stability, regional cooperation can promote physical connectivity, bring greater access to regional markets, resources and investments, increase involvement in regional production networks, accelerate necessary domestic reforms and thus improve the business and investment climate. These will all contribute to accelerating productivity, employment generation and economic growth. Strange *et al.* (2013) assert that given Cambodia's strategic location in the fast-growing East Asian region and its proximity to China – the world's second largest economic power and largest market for agricultural products – the dynamic regional processes represent huge opportunities for Cambodia to enhance exports and increase diversification and competitiveness. The authors conclude that it would be in Cambodia's interests to have moved beyond the AEC and to have become part of an East Asia-wide free trade and economic community, which could help narrow or bridge the development gap in East Asia through a coordinated approach to economic and regional development cooperation and integration.

On the other hand, regional FTAs with different rules, templates and degrees of liberalisation pose a number of challenges for Cambodia. First, it could be the case

³ Cambodia's exports are estimated to increase by 5.3 percent under the AEC, 12.5 percent under ASEAN+3, and by 13.4 percent under ASEAN+6. The impact on imports is larger. The AEC will lead to an increase in imports of 14.8 percent, whereas ASEAN+3 will trigger import increases of 24.1 percent and ASEAN+6, 24.4 percent.

⁴ Investment in Cambodia will increase by 24.8 percent under the AEC, 39.6 percent under ASEAN+3, and by 39 percent under ASEAN+6.

that ASEAN loses its “relevance and centrality”. This could be partly the result of political instability within some AMS, tension among AMS on border issues and unwillingness to tackle sensitive issues, and partly down to the emergence of rivalry among regional cooperation initiatives such as the CKJ FTA and TPP. Such evolution would not be in the best interests of Cambodia since it would reduce its relevance in the fast-growing and dynamic regional economic integration. Second, the complex set of initiatives to promote connectivity and greater economic interaction in the region are also a challenge for the capacity of Cambodian institutions and the country’s private sector. Most public institutions in Cambodia are characterised by a lack of financial and human resources, uneven coordination vertically and horizontally, and lack of sufficient incentives to perform tasks effectively; this is evident in the country’s low score⁵ of 3.3 out of 6 in the World Bank’s Country Policy and Institutional Assessment (CPIA). Given its current level of development and institutional limitations, the complex and multi-layer regional integration processes will cause greater coordination problems for Cambodia and thus lead to less effective management of regional cooperation.

For business, despite the existence of effective, national-level mechanisms for consultation between the government and the private sector, private sector engagement in ASEAN processes is at best uneven, and there is a lack of awareness about the benefits and opportunities of region-wide FTAs and of regional integration (Chan and Strange 2012; Strange *et al.* 2013). Also, the complex set of rules and procedures creates a burden and leads to confusion for businesses. Such a serious knowledge gap is compounded by obstacles to international trade such as inefficiency in import and export processes, poor quality and accessibility of infrastructure, and inefficient logistics services; all of these directly affect trade costs, total factor productivity and competitiveness (Hing 2013).

These major challenges contribute to the fact that the country has not fully reaped the benefits of regional integration. This statement is proven by two indicators. First, data on international trade indicates that the volume of intraregional trade is meagre compared with other countries in the region. Second, the use of tariff preferences among Cambodian businesses is quite low (Fukunaga 2013). Out of 60 firms surveyed, 20 percent had applied for a certificate of origin under the ASEAN Trade in Goods Agreement (ATIGA) scheme, 16.7 percent under the ASEAN China FTA, and 3.3 percent under the ASEAN Korea FTA. The vast majority of businesses cited a lack of information as the main reason for not using FTAs. In sum, it is broadly agreed that the challenges for Cambodia are how to exploit the benefits fully and leverage regional integration for economic growth. A major priority, according to Strange *et al.* (2013), is ensuring the complementarity, mutually supportive objectives and adequate resourcing of subregional and regional cooperation programmes. The focus should be on regional cooperation to achieve long-term human resource development and institutional strengthening to bridge the development gap in ASEAN and East Asia. Promotion of deeper regional integration, and increased private sector engagement

⁵ Among the 16 indicators used as assessment criteria, Cambodia scored lowest in property rights and rule-based governance, transparency and accountability, efficiency of revenue mobilisation, and corruption.

in regional and subregional integration, are important, together with awareness of the opportunities under regional FTAs and connectivity initiatives.

4. CAMBODIA AND ITS REGIONAL FUTURE: CHALLENGES AND CHOICES

Cambodia is a small but strategically important country at the heart of the Greater Mekong Subregion (GMS). It is a member of ASEAN, ASEAN+3, the East Asia Summit, and several other subregional and regional integration frameworks. Its strategic location in an increasingly integrated GMS, in ASEAN and in its proximity to China is a major asset. The prospect of an integrated production network and market, extending from China, through the GMS countries to the rest of Southeast Asia, provides Cambodia with opportunities for trade, growth, prosperity, private sector development, and poverty reduction.

(Strange *et al.* 2013: 9)

In plotting its regional future, along with the many opportunities presented by AEC 2015 and broader East Asian integration and cooperation, Cambodia also faces some significant challenges and choices.

‘Connectivity’: What does it mean for Cambodia in the GMS, ASEAN, East Asia and Beyond?

Various CDRI studies (CDRI 2013; Strange *et al.* 2013; Hing 2013) have argued that infrastructure development in Cambodia has lagged behind that of its ASEAN neighbours. The Global Competitiveness Report 2011 ranked Cambodia’s overall infrastructure at 114, with a score of 2.70 – quite low compared with the average score of 4.35 for ASEAN⁶ as a whole. Road transport remains embryonic and inefficient, and the railway system is in bad shape with little traffic demand. While the effectiveness of ports has improved, the cost of shipping remains high. The power supply is costly, insufficient, and to some extent unreliable, while telecommunications coverage remains limited. In addition, soft infrastructure is currently lagging behind hard infrastructure. The World Bank’s Logistics Performance Index (LPI) 2012⁷ ranked the country at 101 among 155 countries, compared with Vietnam (53) and Thailand (38). This poor performance largely stems from two major problems: first, lack of transparency in fees, often informal, that hide the true costs thus making logistics expensive; second, a lack of integration of logistics services with neighbouring countries, also leading to higher costs, lack of capacity and delays (Clark and Sok 2013).

To enhance connectivity, which is essential to successful subregional and regional integration, Cambodia should invest in infrastructure development – roads, bridges, railways, airports – and in energy generation. This could be achieved through multilateral and bilateral development cooperation, private enterprise investment and public-private partnerships, and would help to connect ASEAN-GMS-ASEAN+3

⁶ Laos and Myanmar are excluded due to data unavailability.

⁷ <http://lpiurvey.worldbank.org/> (accessed on 13 January 2014).

and beyond. Major attention must also be paid to soft infrastructure and logistic efficiencies through: eliminating the culture and practice of charging informal fees; reforming and modernising customs and wider associated information sharing and dissemination; greater competition in road, sea and air freight; improving access to information about international transit agreements; enhancing transport capacity and logistics services; and integrating the regional road transport market (Clark and Sok 2013; Hing 2013).

Well coordinated regional and subregional multilateral and bilateral development cooperation will be needed to achieve these “hard and soft infrastructure for connectivity” goals. These are critical building blocks for the achievement of AEC 2015 and RCEP, or alternative ASEAN+3 economic cooperation and integration, with associated development cooperation to bridge or narrow the development gap. Cambodia has experienced a steadily deepening relationship and connectivity with China over the past decade. Indeed, China now constitutes Cambodia’s major partner in terms of trade, investment and economic assistance. China’s investments in Cambodia have focused on garments, agriculture, hydropower, tourism and mining; its economic assistance has concentrated on infrastructure, particularly on the repair or construction of major roads and bridges, and on irrigation and hydropower projects. However, relationships with Japan, South Korea, AMS and Australia have also proved significant. China, Japan and South Korea are now the major providers of official development assistance (ODA), both bilaterally and multilaterally, through ADB country and GMS programmes (in 2011 they provided 30 percent of total ODA, amounting to USD375 million). ASEAN remains a limited source of foreign direct investment (FDI) (in 2012 it provided 17 percent, amounting to USD225 million) but FDI from ASEAN+3 is very significant (in 2012 it provided 76 percent, amounting to USD998 million).

Cambodia’s economy remains trade dependent, and trade with China, South Korea and Vietnam is increasing significantly. In 2011 the ASEAN+3 share of trade was 17.7 percent of Cambodia’s total exports and 73.9 percent of imports, but the US and EU remained the major export destinations for the garment industry. However, the expiry of EU preferential trading status, once Cambodia graduates from least developed country status, economic diversification – particularly in agribusiness and light manufacturing – and the realisation of AEC 2015 may change this as Cambodia moves to lower middle income status in 2015-16. Tourism from China to Cambodia has also increased dramatically with nearly 334,000 Chinese tourist arrivals recorded in 2012 – an increase of 35 percent from 2011 – third after arrivals from Korea and Vietnam. This trend is likely to continue with enhanced subregional and regional transport infrastructure and Cambodia’s Open Skies Policy, along with the rehabilitation and construction of railways linking Cambodia, Thailand, Vietnam and China.

The associated greater intra-ASEAN people connectivity through education networks and scholarship schemes, well regulated and skilled labour and semi-skilled labour movement, and popular culture flows will also enhance and promote regional integration and cooperation. Furthermore, many young Cambodians now benefit from undergraduate and postgraduate study opportunities, often funded by national scholarship programmes, in ASEAN+3 countries such as Japan, South

Korea, Singapore and Thailand, and also in Australia and North America. Despite the rapid increase in private healthcare investment in Cambodia, many middle and upper income Cambodians still access healthcare in Thailand, Vietnam and Singapore. Given its young population, Cambodia is also highly receptive to popular culture from China, South Korea and Thailand and is active in ASEAN sporting events.

As Cambodia remains aid-dependent, key aspects of the way development assistance is delivered may also require a new approach if regional connectivity is to be realised and deepened. This should be achieved particularly through a reduction in reliance on expensive international consultants and technical advisers, with development assistance redirected to building long-term local human resources and institutional capacity; there should be a corresponding increase in the use of regional consultants and institutional partnerships so that Cambodia can benefit from development experience that matches its own, and that can inspire progress through “development success stories” in ASEAN, China, Japan and South Korea. It will also be necessary to directly link development assistance strategies, priorities and resources to regional and subregional integration, intraregional trade and investment, hard and soft infrastructure for connectivity, private sector development, and related national institution building and reform. Economic cooperation to assist in bridging or narrowing the development gap in ASEAN, as is proposed in the RCEP framework, will be a key element of this.

Narrowing the Development Gap (NDG) in ASEAN

NDG is another major challenge facing ASEAN and broader Asian integration efforts. For this reason, attempts to achieve this are explicitly integrated in the priority agendas for regional development cooperation and economic integration. For example, AMS and their dialogue partners have agreed to include economic and technical cooperation as an integral part of the RCEP to support AMS and maximise their benefits from the implementation of the agreement. Some see NDG as a wise response to the problem of huge disparities in economic development among members – ASEAN is divided, and the most striking divides are disparities in income, economic structure, investment and infrastructure and other human development dimensions that separate the newer members of ASEAN from the ASEAN+6 countries. The NDG agenda is also seen as a political agenda in economic integration and cooperation. Least developed member states view the NDG clause in the cooperation framework as an opportunity to acquire technical and financial support to catch up. In contrast, developed countries view NDG assistance as a bargaining technique to demand more concessions and to accelerate the negotiation and integration process. The key questions though are whether strong political commitment from leaders, especially from developed countries, will be translated into support for the implementation of policies and programmes, and whether there are enough resources to carry out the proposed action plans.

Regional initiatives to bridge the development gap are important, especially mechanisms such as mega regional FTAs, special and differential treatment for developing and least developed countries, capacity building and non-tariff barriers. However, there is general agreement that the most effective NDG efforts must take place within individual country development agendas. Menon (2012: 6, 1) argues that: “The further narrowing of these gaps will require an increase in the speed

and breadth of policy reforms... while aid can play a part, the solution must come from within the countries themselves. This will necessarily involve the adoption of policies that promote rapid economic development and economic convergence”. To bridge the development gap, Cambodia should promote equitable and inclusive growth, facilitate trade and improve regional connectivity, enhance productivity through structural reforms and heavy investment in human capital, and strengthen institutions to make them more effective.

Since private businesses are at the heart of the development process, improving the investment climate is also fundamental to driving growth and reducing poverty (World Bank 2005). Despite significant improvements in areas such as macroeconomic management, access to finance and information technology and trade facilitation, Cambodia’s investment climate remains less conducive to business than is the case in other countries in the region, as evidenced by its low ranking in business and economic assessments. To rectify this, policymaking should focus on measures to upgrade infrastructure, to streamline customs procedures, enhance logistics, invest more in human capital and eliminate corruption and bureaucratic red tape (CDRI 2013; Hing 2013).

Movement of Labour

Although labour migration from and within ASEAN has increased rapidly to involve an estimated 5.3 million workers – equivalent to 9 percent of global migration – the liberalisation of people-movement has so far shown slow progress. The AEC, for example, covers only skilled labour, representing just a small proportion of intraregional labour movement. The exclusion of measures to support the mobility of labour on a wider scale is a major shortcoming of the AEC and, as a result, most labour movement in the region has taken place outside the legal framework of both the sending and receiving countries. Another pitfall of regional labour movement efforts is the reluctance of AMS to allow the free flow of skilled labour. This responds to concerns that liberalisation could have an adverse impact on domestic employment and occupational standards. The Mutual Recognition Arrangements (MRA) is the major instrument for skilled labour mobility in ASEAN. However, negotiating MRAs for the diverse AMS has been a complex and time-consuming process, and effective implementation of these MRAs has posed problems (Chia 2011).

Cambodia’s labour market poses some specific challenges. On the one hand, it is a net labour exporter, but most are unskilled/low skilled workers who migrate to seek/take jobs without valid documents (irregular migration) and are not covered by the AEC’s free flow of labour component. The region has also made only slow progress in drafting a regulatory framework to protect and promote the rights of these migrant workers, and there are serious policy and practice gaps in measures needed to protect them. On the other hand, Cambodia is now facing skill shortages largely due to lack of motivation, high staff turn-over, and insufficient education and training. Going forward, Cambodia can benefit from the AEC since it can continue to import skilled labour from other ASEAN countries to tide it over this period of skills shortage. But over the longer term, the country should also focus on developing the skills of domestic labour so that it can reduce its dependence on foreign skilled labour.

Improving the education system should be the prime policy focus, with primary and secondary education imparting the necessary foundational skills to young people, and higher education and TVET (technical and vocational education and training) building on that. In particular, this would produce the highly skilled youth (especially in science, technology, engineering, and mathematics – STEM subjects) the country requires. In addition, institutional capacity building to formulate and implement the appropriate policies and interventions in the education sector is also vital.

Some Policy Questions for Cambodia and for Our Region

In meeting these challenges, Cambodia might consider some broad policy questions:

Which of the related and sometimes competing models of “regional architecture” will ultimately “win” – ASEAN+3? ASEAN+6? Others? Which would be in Cambodia’s best interests?

Can ASEAN’s “centrality” in future regional architecture still be assumed? Why? How can it best be maintained? What might a CJK FTA mean for ASEAN’s and Cambodia’s future? How feasible would it be, given the unresolved tensions and issues between China, Japan and South Korea? Is it in Cambodia’s and ASEAN’s interests to create a CJK FTA and then “dock” with the AEC to constitute an East Asian Economic Community, either as the dynamic driving force of the RCEP, or as an alternative regional integration and cooperation mechanism?

Does ASEAN need to strengthen its institutional structure, rules and resources? Is “The ASEAN Way” still an effective means of dealing with regional tensions and issues if ASEAN is to continue to claim its centrality in respect of regional economic integration and cooperation?

How is geopolitical and economic competition between China and the US in the Asian region likely to affect regional architecture and regional cohesion? What are the implications for Cambodia?

Which model(s) of regional economic integration and cooperation would best serve the need of ASEAN’s least developed countries, now and when they achieve lower middle-income status? Is the RCEP a feasible vehicle for narrowing the development divide? How?

Do these issues really have any impact on the day-to-day lives and activities of Cambodian communities, private sector companies and NGOs? Or do they mainly keep government officials busy? How can these other stakeholders in Cambodia’s regional future become more informed and engaged to benefit from the opportunities that regional economic integration and cooperation bring?

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Pro-poorness of Growth, Healthcare and Education in Cambodia: An Assessment

by Roth Vathana and Lun Pide¹

1. INTRODUCTION

Practitioners and economists have largely come to agree that growth alone, albeit a precondition for a well-developed economy, is not enough to produce a recognisable reduction in poverty incidence. Pro-poor growth is a term used to describe the growth that benefits the poor; however, how much benefit the poor receive remains an unsettled issue. Lately, the discussion has shifted to inclusive growth (development), a fairly recent concept postulating that any growth is inclusive if it enlarges economic opportunities and makes them available for the poor, non-poor and rich. Inclusive growth creates the level playing field for everyone to participate in, contribute to and benefit from average income growth and prevailing opportunities.

Cambodia has achieved remarkable growth, averaging 7.9 percent during 2000-12 and 11.1 percent between 2004 and 2007 (ADB 2013). The increased gross domestic product has translated partly into a decline in poverty headcount from 53.2 percent in 2004 to 20.5 percent in 2011 (World Bank 2013). However, the trickle-down effect is ambiguous in view of rising inequality, from a Gini coefficients of 39.6 in 2004 to 43.1 in 2007 (World Bank 2009: ix). The reduction in poverty is laudable, but the fact that the rural poverty rate fell more slowly than the urban rate suggests that the urban-rural income gap has widened and the distribution of and access to economic opportunities in rural areas remain uneven. Under the concept of inclusive growth, Cambodia provides a credible case study to examine how growth is distributed in society.

The paper examines the growth-inequality-poverty nexus by focusing mainly on the combined effects of growth and inequality on poverty reduction. We first examine empirically whether the country's growth has been pro-poor in relative terms, meaning that inequality declines over time. Then, we extend this pro-poor framework to non-income dimensions: education, health and household wealth.

The report finds that the poverty rate in Cambodia, as measured by a class of Foster-Greer-Thorbecke poverty indices (Foster *et al.* 1984), has decreased since 2004. The reduction in the poverty headcount ratio observed between 2004 and 2007 continued to 2009 and 2011. Although the study could not provide exact figures for poverty rates, the sensitivity analysis confirms the continued reduction in poverty during the observed periods. The study also finds an improved distribution of per capita household consumption over the periods. Per capita consumption inequality decreased from a Gini coefficient of 38.7, plus or minus 1, in 2004, to 36.0 in 2011. Income and

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land inequalities also decreased; however, the levels are still high, in the range of 40 and 50, respectively.

On consumption, the study shows that Cambodia's economy was moderately pro-poor between 2004 and 2011, as indicated by a pro-poor growth index of 0.53. Only during 2009-11 was growth strictly pro-poor. Data indicates that Cambodia is gradually moving from quantity of growth – maximising economic efficiency – to quality of growth, enhancing economic equity. Cambodia is also on track towards non-consumption pro-poor growth, the main contributor to inclusive growth. Between 2000 and 2005, the country made steady improvements in health and education, yet its performance between 2005 and 2010 was less satisfactory, implying that more needs to be done to accelerate the progress of health and education indicators.

2. ANALYTICAL FRAMEWORK AND METHODOLOGY

Lopez (2011, 2004) provides a concise review of the pro-poor growth definitions that have been used in practice and policymaking, and the contributions of reviewed papers in explaining and measuring pro-poor growth. He also summarises the relation between policy reforms, growth, inequality and poverty reduction and the empirical knowledge on the causality of these important indicators. He postulates that the literature has provided enough evidence that good policies are beneficial for long-term growth, but that we have not known enough about how policy reforms affect income (consumption) distribution. The literature also provides strong evidence that GDP growth is statistically positively associated with poverty reduction; nonetheless, the magnitude accruing to the poorest of the poor may be different from one growth scenario to another. We also have enough evidence that higher inequality means lower poverty reduction given the uneven income distribution which potentially jeopardises social coherence and harmony. The last and important relation that policymakers and scholars have not had enough knowledge of is the relation between growth and inequality. That is, does higher economic growth cause greater income inequality? And, conversely, is higher income inequality detrimental to long-term growth?

Ravallion and Chen (2003) argue that the poor do not lose in either absolute or relative terms from increased average living standards. In other words, poverty will fall during boom times and worsen during recessions. Kraay (2006) points out that overall income growth will be pro-poor in the medium and long term. Thus, policies and institutional reforms that aim at improving “broad-based” economic growth are said to be pro-poor. Roemer and Gugerty (1997) show that the effect of growth on poverty has a “one-to-one” relation for the poorest 40 percent, meaning that average growth of real per capita income of 10 percent would translate into a 10 percent increase in the income of the poorest 40 percent. Easterly (1999) finds that, generally, life is good during fast growth, and growth per se does not significantly affect income distribution. Deininger and Squire (1998) postulate that (1) inequality in asset (land) distribution is negatively correlated with long-term growth, (2) income growth of the poor would be more affected by inequality than that of the rich, and (3) evidence in favour of the

Kuznets inverted U-shape² relation between growth and inequality is inconclusive. Others who find no impact of growth on income inequality include Dollar and Kraay (2002), Ravallion and Chen (1997) and Deininger and Squire (1996).

Kakwani and Pernia (2000) define pro-poor growth as any growth in which the poor benefit proportionally more than the rich, meaning that the average income of the poorest quintile has to increase proportionally more than the overall average: inequality must fall over time. They argue that total poverty elasticity is attributable to both growth and inequality effects. A criticism of this proposed definition and measure is that it can suggest efficiency-equity trade-offs, that is, having to compromise high growth for redistribution. Put differently, governments need to design policies that are biased towards the poor to assist them to participate in, contribute to and benefit from the growth process. Progressive taxes and social protection schemes are examples.

As shown, disagreements exist over how the poor can be helped to move out of poverty. However, what is clear is that one cannot simply ignore the effect of inequality on poverty reduction, for high inequality can cause socio-political turmoil and hinder efforts to alleviate poverty and sustain growth. Income differences between and within regions have sometimes widened in some fast growing economies, e.g., China and Cambodia. This might imply that although the poor benefit from growth prosperity, the distribution has been uneven (Ravallion and Chen 2004; World Bank 2009). Therefore, if the poor are not assisted in some ways and at certain times, their ability to participate in, contribute to and benefit from growth might be further jeopardised. Thus, it is imperative to understand the combined effects of growth and inequality on poverty reduction so that public policy aiming to balance between more growth and even distribution can be designed and implemented accordingly.

As far as analytical tools are concerned, there seems to be no unified framework for assessing the inclusiveness of growth. Some of the proposed approaches to evaluate country progress include: growth diagnostics to identify constraints possibly impeding growth (Hausmann *et al.* 2008); the extension of the growth diagnostics of Hausmann, Rodrik and Velasco's framework proposed by Ianchovichina and Lundstrom (2009); a social opportunity function similar to a social welfare function (Ali and Son 2007); and an inclusive growth index (McKinley 2010). Since the paper adopts the inclusive definition proposed by the Asian Development Bank (ADB), which acknowledges that sustained rapid growth needs to be accompanied by declining income and non-income inequality, the pro-poor growth approach of Kakwani and Pernia (2000) is applicable.

The basic reasoning of Kakwani and Persia's (2000) framework to explain the growth-poverty-inequality link is that total poverty elasticity is dependent on both growth and inequality. They propose a single index to measure pro-pooriness, that is, a pro-poor growth index. The index can be written as:

² Kuznets (1955) hypothesised that income inequality increases at the low level of income per capita, yet should diminish when a country becomes rich. The rationale is that when a country is poor, the majority of the population depend on low productivity agricultural work. As the economy matures, people move to jobs in high productivity manufacturing.

$$\theta = \frac{\varepsilon_p}{\varepsilon_g} \quad (1)$$

They argue that the growth is pro-poor if and only if $\theta > 1$, and pro-rich if and only if $\theta < 1$. If $\theta > 1$, equation (1) ensures that inequality has to be negative since growth always reduces poverty. The functional form to decompose the poverty elasticity of growth and inequality can be expressed as:

$$\varepsilon_g = 1/2 \left\{ \ln \left[\rho \left(z, c_j, L_i(\rho) \right) \right] - \ln \left[\rho \left(z, c_i, L_i(\rho) \right) \right] + \ln \left[\rho \left(z, c_j, L_j(\rho) \right) \right] - \ln \left[\rho \left(z, c_i, L_j(\rho) \right) \right] \right\} \quad (2)$$

$$\varepsilon_i = 1/2 \left\{ \ln \left[\rho \left(z, c_i, L_j(\rho) \right) \right] - \ln \left[\rho \left(z, c_i, L_i(\rho) \right) \right] + \ln \left[\rho \left(z, c_j, L_j(\rho) \right) \right] - \ln \left[\rho \left(z, c_j, L_i(\rho) \right) \right] \right\} \quad (3)$$

Equation (2) illustrates the pure growth effect (ε_g) on poverty (z) keeping income (consumption) distribution constant. Thus, variables are consumption between the two periods, c_j and c_i , while $L_j(p)$ and $L_i(p)$ are the same. Equation (2) calculates the magnitude of the impact of consumption growth on poverty between the two specified periods (i and j) had consumption distribution remained unchanged. Equation (3) is just the opposite, measuring the inequality effect on poverty; that is, it allows consumption distribution to change between the two periods, $L_j(p)$ and $L_i(p)$, and consumption growth, c_j and c_i , is constant.

The thresholds to assess the pro-poorness of growth are given in Table 1.

Table 1: Thresholds of Pro-poor Growth Index

Pro-poor index	Value judgement
$\theta < 0$	Growth is anti-poor
$0 < \theta \leq 0.33$	Growth is weakly pro-poor
$0.33 < \theta \leq 0.66$	Growth is moderately pro-poor
$0.66 < \theta < 1.0$	Growth is pro-poor
$\theta \geq 1.0$	Growth is strictly pro-poor

Source: Kakwani and Pernia (2000)

3. DATA

The study uses four rounds of the Cambodia Socio-Economic Survey of households (NIS 2004, 2007, 2009, 2011) and three rounds of the Cambodia Demographic and Health Survey (CDHS) (NIS 2000, 2005, 2010). The CSES is a nationally representative household survey that collects information on 3500 households every year and on 15,000 households every five years. Major socio-cultural-political characteristics of the households include demographics, housing, agriculture, education, employment, health and nutrition, victimisation, income and consumption.

The CSES employed stratified sampling³ in three stages to select the required sample size. The required number of primary sampling units (PSU: villages) was selected in

³ For detailed information on sampling design, please refer to the technical report on survey design and implementation of each CSES.

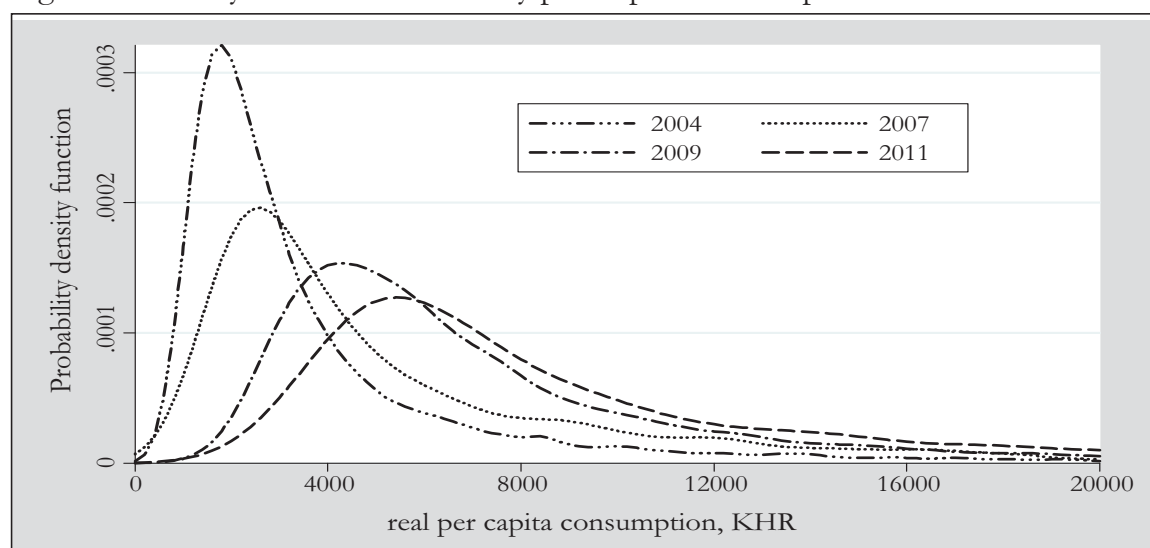
the first stage. Then, enumeration areas were picked from each village; the number of households was selected from each area in the last stage. This sampling design has implications for our calculation of population characteristics, e.g., mean income/consumption or poverty headcount. Failing to consider the sampling design can potentially generate biased and unrepresentative results. Thus, household weight – already calculated and available in the dataset – is used.

We also utilise the CDHS datasets from 2000, 2005 and 2010, which include data on years of schooling, school attendance, child mortality and nutrition, and household assets. The CDHS is a rich dataset providing a wide range of information, especially on infant and maternal health. The survey produced four datasets in 1998, 2000, 2005 and 2010. A nationally representative sample of men and women in the selected households aged 15-49 were interviewed across 14 individual provinces and five groups of provinces, both urban and rural.

4. DESCRIPTIVE STATISTICS: CONSUMPTION AND NON-CONSUMPTION

Figure 1 illustrates the density distributions of real daily per capita consumption during the observed periods. The general trend since 2004 is that per capita consumption has increased, implying that the poorest quintiles increased their consumption. Consumption distributions have been skewed to the right; the level of skewness rose from 10.8 in 2004 to 17.9 in 2011. The shift partly reflects increased living standards and well-being of average Cambodians and provides an early indication that the poverty headcount ratio is declining. The improvement in per capita consumption can be largely attributed to the double-digit GDP growth between 2004 and 2007, and the quick recovery from the 2008 global financial crisis and the 2011 flood. The increased consumption does contribute to reduced poverty headcount as shown in Figure 2. Despite the discrepancies, estimates from the World Bank (2013) and the Ministry of Planning (MOP 2013) illustrate that the poverty rate in Cambodia has decreased since 2004.

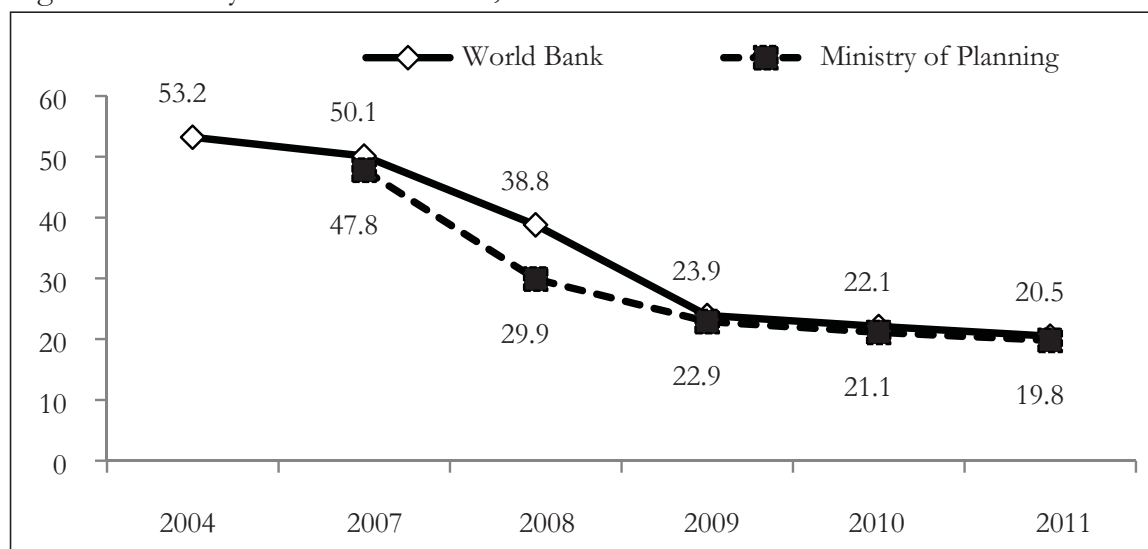
Figure 1: Density Curves of Real Daily per Capita Consumption



Source: Authors' calculations using the CSES

Our sensitivity test for poverty estimates based on particular poverty lines clearly shows that, regardless of the poverty line, the poverty headcount rates in Cambodia continued to fall from 2004. The results are consistent with the findings of the World Bank (2013) and MOP (2013). Although the country was hit by two major crises, the global financial and European debt crisis and the devastating flood in 2011, the poverty headcount remained comparatively low, which is attributable partly to the quick rebound of macroeconomic performance, redistribution programmes such as the amendment of the Budget Law in 2009 to stimulate the economy to mitigate external shocks, and effective responses to help flood victims recover from flood-related impacts. The approval of the five-year National Social Protection Strategy (2011-15) is another milestone to safeguard poor and vulnerable groups, thus mitigating external and internal shocks. Nonetheless, effective implementation and coordination among the stakeholders involved is what the government should take seriously. The sensitivity analysis also reveals the improved conditions of those living near (poverty gap) and far below the poverty line (squared poverty gap, which measures the severity of poverty).

Figure 2: Poverty Rate in Cambodia, 2004-11



Sources: MOP (2013); World Bank (2013)

The improvement can also be seen from the increased consumption share of the population when divided into 10 equal intervals (Table 2). The ratio of consumption share of the bottom poorest 10 percent to the top richest 10 percent was 1:13 in 2004, whereas the ratio was 1:9 in 2011. Between 2004 and 2011, the consumption share of the bottom poorest 10 percent increased by 16.8 percent. The overall trend is consistent with the results of a CDRI study (2013: 18) where the consumption ratio of the top 20 percent to the bottom 20 percent increased from 7.1 percent in 2004 to 8.5 percent in 2007, then decreased to 5.8 percent in 2009 and again to 5.3 percent in 2011. The double-digit growth between 2004 and 2007 was accompanied by growing consumption inequality as the Gini coefficient rose from 39.6 in 2004 to 43.1 in 2007 (World Bank 2009). Inequality between 2004 and 2007 is also evident from the increased consumption share – 8.2 percent – of the richest 10 percent. Our calculations also reveal that consumption inequality increased from 2004 to 2007 and decreased thereafter (Table 3).

Table 2: Consumption Share by Deciles (Percent, 2004=100)

Group	2011	2009	2007	2004
Decile_01	3.26	3.31	2.21	2.79
Decile_02	4.38	4.43	3.12	3.86
Decile_03	5.11	5.26	3.79	4.63
Decile_04	5.83	6.05	4.49	5.38
Decile_05	6.67	6.95	5.35	6.20
Decile_06	7.66	7.95	6.53	7.25
Decile_07	9.18	9.30	8.27	8.62
Decile_08	11.53	11.33	11.26	10.73
Decile_09	15.70	14.97	16.46	14.93
Decile_10	30.68	30.44	38.54	35.61

Note: Decile_01 represents the poorest 10 percent while Decile_10 denotes the richest 10 percent of per capita consumption distribution.

Source: Authors' calculation using the CSES

Table 3: Estimated Gini Coefficients of Inequality in per Capita Consumption, by Year

Year	Estimate	Standard error	Lower bound	Upper bound
2004	0.387	0.006	0.374	0.401
2007	0.435	0.024	0.386	0.482
2009	0.362	0.006	0.348	0.375
2011	0.360	0.031	0.299	0.422

Note: The standard errors reflect 95 percent confidence interval.

Source: Authors' calculation using the CSES

The average education of household adult members (15 and over) did not change much between 2000 and 2010, averaging 3.3 years of schooling – less than two years in the bottom quintile and five years in the top. This suggests that enhancing adult education has not been a major focus of the government. The average years of schooling of children increased between 2000 and 2005 but declined in 2010.

Child mortality has been declining over time. The under-five mortality rate was 124 per 1000 live births in 2000, then dropped to 83 in 2005 and again to 54 in 2010, a decrease of 56 percent within 10 years. Child nutritional status significantly improved between 2000 and 2005, with a reduction in the numbers of stunted, wasted and underweight children. However, trends in the following five years showed little to no improvement: the number of underweight children remained almost unchanged, the number of wasted children rose from around 8 to 11 percent, and the number of stunted children declined from 42 to 38 percent.

Table 4: Nutritional Status of Children Aged Under Five by Quintile (z-score)⁴

Quintile	Stunted (mean)			Underweight (mean)			Wasting (mean)		
	2000	2005	2010	2000	2005	2010	2000	2005	2010
1	- 3.98	- 3.76	- 3.70	- 3.28	- 2.98	- 3.03	- 2.77	- 2.24	- 2.42
2	- 2.52	- 2.49	- 2.48	- 2.08	- 2.07	- 2.05	- 1.25	- 1.22	- 1.23
3	- 1.84	- 1.82	- 1.82	- 1.53	- 1.51	- 1.52	- 0.68	- 0.69	- 0.69
4	- 1.12	- 1.13	- 1.15	- 0.99	- 0.98	- 1.01	- 0.16	- 0.15	- 0.16
5	0.79	0.16	0.30	0.1	0.01	- 0.04	1.26	1.00	0.87

Source: Authors' calculations using the CDHS

Table 5: Household Health and Education by Wealth Status, 2005-10 (z-score)

Wealth quintile	Stunting	Underweight	Wasting	Years of schooling
1	-2.10	-1.66	-0.67	2.70
2	-1.88	-1.58	-0.72	2.92
3	-1.69	-1.45	-0.64	2.99
4	-1.54	-1.37	-0.71	3.11
5	-1.46	-1.24	-0.61	3.24

Source: Authors' calculations using the CDHS

The scores of the top 20 percent of nutrition-rich households declined over time (Table 4): child wasting dropped from 1.3 standard deviations in 2000 to 0.9 in 2010, and similar trends were observed for child underweight and stunting (except from 2005 to 2010). In the bottom 20 percent of nutrition-poor households, two different scenarios emerge. First, between 2000 and 2005, average scores substantially improved in all three dimensions, indicating that the general economic conditions had been pro-poor at least in terms of child nutrition. Then, between 2005 and 2010, the trend reversed. The scores for middle quintile groups were more or less constant, suggesting that the mean scores were affected by changes in the scores of the top and bottom groups.

From 2005 to 2010, the average household wealth index increased by over 90 percent or 2.7 points in absolute terms, suggesting better living standards. The improvement was observed across quintiles, except for the richest group's score, which declined by about 67 percent. In absolute terms, the wealth index of the poorest group improved the most, by 6.3 points. A general trend was that living standards improved proportionately more for poor households than for rich households, implying pro-poor growth in terms of wealth.

The link between the health and education of households and their wealth status is interesting, to see whether more wealth translates into proportionately better health and education outcomes for poorer households than for richer households (Table 5).

⁴ Z-score measures the magnitude of difference between means in a group. If the difference is 0, it means the z-score is equal to the mean. Positive/negative z-score indicates the score above/below the mean. The magnitude of difference is interpreted as the standard deviation. In this study, z-score is calculated using "zscore06" command in Stata.

This is similar to what Grosse *et al.* (2008) call conditional pro-poor growth. As shown in Table 5, there is a robust correlation between a household's health and education status and its wealth status. Households in lower wealth quintiles have lower z-scores and lower years of schooling than do households in higher quintiles.

The upshot is that in terms of health, improvements in health indicators between 2000 and 2005 are highly pro-poor because poorer households benefit much more than richer households do, but this is less true from 2005 to 2010. In education, there is an improvement in the pro-pooriness of growth from 2005 to 2010. While these results indicate that the distribution of non-income benefits might not be a problem, health and education status remain a serious concern. Data for the period 2005-10 indicates that there were no improvements in health and education, which suggests that related intervention policies for balanced growth are needed.

5. THE STATE OF INCLUSIVENESS: PRO-POOR GROWTH

5.1. Consumption

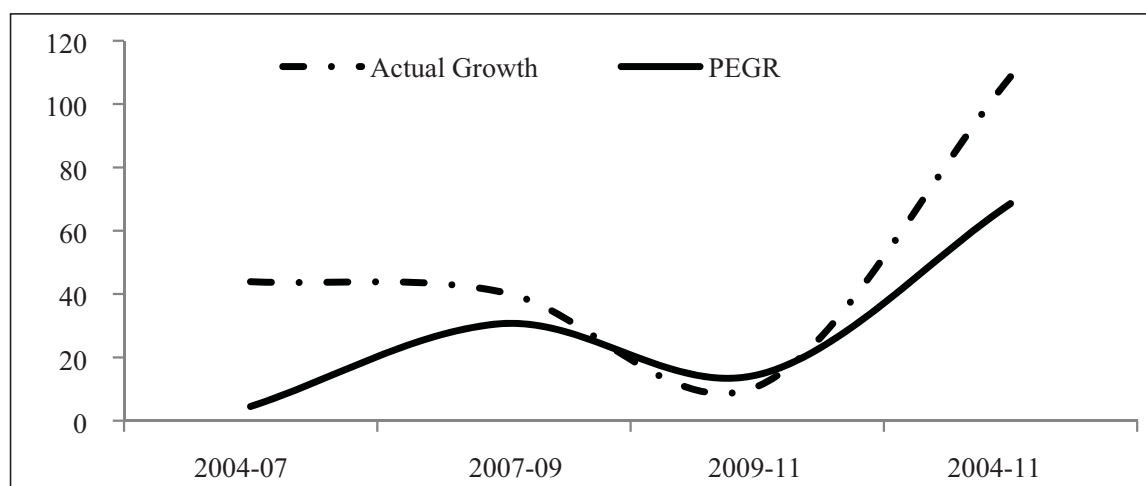
Table 6 illustrates the results of the decomposition of the poverty reduction between 2004 and 2011 into consumption growth and inequality. As mentioned, total poverty elasticity is the combination of pure growth and inequality effects. For instance, between 2004 and 2007, given the 43.8 percent increase in average consumption, the poverty headcount dropped by 0.25 percent. In fact, if there was no change in consumption inequality, growth would have a 1-2 effect on poverty reduction, meaning that a 1 percent rise in average consumption would reduce poverty by 2.43 percent. However, such direct effect was hindered by increased consumption inequality of 2.19 percent. Therefore, during 2004-2007, economic growth was weakly pro-poor (pro-poor growth index was 0.10). The growth between 2007 and 2009 was pro-poor, indicated by the pro-poor growth index of 0.76 overall. From 2004 to 2011, Cambodia's growth was moderately pro-poor; this achievement is attributable to increased average consumption and improved distribution.

Table 6: Growth and Inequality Effects on Poverty

Headcount index	Actual growth (%) (a)	Total poverty elasticity (%) (b) = (c)+(d)	Decomposed by		Pro-poor growth index (e) = (b)/(c)
			Pure growth effect (%) (c)	Inequality effect (%) (d)	
2004-2007	43.87	-0.25	-2.43	2.19	0.10
2007-2009	40.53	-2.30	-3.04	0.74	0.76
2009-2011	10.78	-6.28	-4.68	-1.59	1.34
2004-2011	95.18	-1.80	-3.40	1.60	0.53
2004-2009	84.40	-1.23	-3.04	1.81	0.40
2007-2011	51.31	-3.13	-3.55	0.42	0.88

Source: Authors' calculations using the CSES

Figure 3: Poverty Equivalent Growth Rate for Poverty Headcount



Source: Authors' calculation using the CSES

The pro-poorness of consumption growth can also be determined by examining the difference between the actual growth rate of household consumption and the poverty equivalent growth rate (PEGR). As shown in Figure 3, a growth scenario is characterised as pro-poor if the PEGR is greater than actual growth, implying that the poor are benefiting proportionately more than the non-poor. Strictly speaking, within the observed periods, only during 2009-11 was consumption growth pro-poor, for PEGR is greater than the actual growth rate. The period was marked by two major events: recovery from the impacts of the global financial and European debt crisis, which significantly affected Cambodia's exports, particularly garments, and the devastating flood. These crises raised concern that Cambodia's narrowly based economy would slow, and that the proportion of the population subsisting below the national poverty line could significantly increase. However, the economy rebounded to a GDP growth rate of 6.9 percent in 2011. The rebound was a partial safeguard, at least, to maintain the minimum living standards and to prevent households from descending into poverty. Although other growth scenarios were not strictly pro-poor, the difference between actual growth and the PEGR narrowed. For instance, while the actual growth was greater than the PEGR during 2004-07 (39.4 percentage points), the gap narrowed between 2007 and 2009 to 9.8 percentage points. Thus, this growth scenario is considered moderately pro-poor. This is also the case during 2004-11.

5.2. Non-consumption: Health and Education

Cambodia experienced improved child nutrition between 2000 and 2005 and the growth was highly pro-poor. The progress of the health-poor group was greater than that of the health-non-poor within this period, reflecting better focus on policy to improve the quality of child health. The growth in mean z-scores of stunting, underweight and wasting indicators is all pro-poor. In absolute terms, the increase by 0.036 standard deviations of the stunting z-score reduces the prevalence of child stunting (those below -2 standard deviations) by 0.05 percent (Table 7). This reduction in child stunting headcount is contributed by both the improvement in the z-score itself (better nutritional status) and the improvement in the z-score distribution; in the absence of growth, the stunting headcount falls by 0.04 percent. This makes the growth pro-poor. The pro-poor index for stunting 6.25 – is large. For wasting and

underweight during 2000-05, the results are similar and highly pro-poor: the pro-poor growth index of wasting is 3.41, while that of underweight is 1.25. However, from 2005 to 2010, the results are mixed. The stunting indicator is pro-poor. The improvement in mean z-score (0.15 standard deviations) translates into a 0.05 percent reduction in child stunting, which is entirely caused by an increase in z-score alone while the distribution remains unchanged. This indicator would have been highly pro-poor if the z-score distribution had been more in favour of the poor. There is almost no improvement in the mean z-score of the underweight indicator within the period, yet the growth is still pro-poor.

The pro-poorness of growth judged in terms of education improvements varies between adults and children. Table 8 presents the decomposition results. While there is no general definition as to who is education-poor, we arbitrarily define the education-poor as those whose years of schooling fall into the lowest 30 percent, and the poverty line is the threshold dividing the lowest 30 percent and the quintiles above. We apply the poverty line of the base year to calculate the poverty headcount used to compute poverty elasticity and the pro-poor index. For example, the line in 2005 is used to calculate the pro-poor growth index between 2005 and 2010, and the line in 2000 is used to calculate that between 2000 and 2005.

Table 7: Growth and Inequality Effect on Health Poverty

Poverty Headcount Index	Actual growth (absolute) (a)	Total poverty elasticity (%) (b) = (c) + (d)	Decomposed by		Pro-poor growth index (e)=(b)/(c)	PEGR (absolute) (a)*(e)
			Pure growth effect (%) (c)	Inequality effect (%) (d)		
Stunting						
2000-2005	0.036	-0.051	-0.008	-0.043	6.255	0.222
2005-2010	0.155	-0.055	-0.056	0.000	0.993	0.154
2000-2010	0.190	-0.106	-0.065	-0.042	1.646	1.313
Underweight						
2000-2005	0.268	-0.111	-0.089	-0.023	1.258	0.337
2005-2010	-0.0001	-0.012	0.001	-0.013	1.083 ²	0.000
2000-2010	0.268	-0.124	-0.094	-0.030	1.314	0.352
Wasting						
2000-2005	0.303	-0.104	-0.030	-0.074	3.415	1.034
2005-2010	-0.131	0.024	0.012	0.017	0.726 ¹	-0.312
2000-2010	0.171	-0.075	-0.019	-0.056	3.932	0.674

Source: Authors' calculations using the CSES

Table 8: Growth and Inequality Effect on Education Poverty

	Actual growth (absolute) (a)	Total poverty elasticity (%) (b) = (c) + (d)	Decomposed by		Pro-poor growth index (e)=(b)/(c)	PEGR (absolute) (a)*(e)
			Pure growth effect (%) (c)	Inequality effect (%) (d)		
Adult education						
2000-2005	-0.009	0.012	0.000	0.012	0.000	0.000
2005-2010	-0.007	0.008	0.000	0.008	0.000	0.000
Child education						
2000-2005	0.848	-0.080	-0.066	-0.014	1.205	1.022
2005-2010	-0.621	0.057	0.066	-0.009	1.160	-0.720
Household education						
2000-2005	0.285	-0.044	-0.099	0.055	0.449	0.128
2005-2010	-0.156	0.019	0.099	-0.080	5.178	-0.807

Source: Authors' calculations using the CSES

Between 2000 and 2005, the general improvement in household education is moderately pro-poor; the pro-poor index is 0.45. The average 0.28 increase in years of schooling of all household members reduces the education-poor by 0.04 percent, an outcome due to higher pure growth elasticity (-0.09) but poor distribution (+0.05). That means the growth outcome benefits the education-rich more than the education-poor. In the same period, adult education experienced almost no change. The CDHS data shows that the education of household heads remained static at about 3.3 years between 2000 and 2010. Informal education might play a role in improving the education of these people. There is of course much literature suggesting high returns to productivity from education, especially at primary level. Children's education shows significant change as one might expect, and it is highly pro-poor.

From 2005 to 2010, despite a reduction in household education (by 0.15 years), the outcome is still pro-poor. While negative growth results in more education-poor households, a better distribution offsets the negative effect. Results show that a 0.15 reduction in years of schooling puts 0.09 percent more households into education poverty, but the inequality effect moves 0.08 percent of households out of education poverty. The adverse effect would have been more serious if the distribution had worsened or not improved. Children's education follows the same trend: negative growth but still pro-poor.

6. CONCLUSION AND RECOMMENDATIONS

On consumption, the results illustrate that the significant decline in the poverty rate between 2004 and 2011 is attributable mainly to the combined effects of growth and distribution, indicating that Cambodia has gradually moved from quantity of growth to ensuring equitable distribution of economic growth and, to a lesser extent, access to opportunities. Although the poverty rate is decreasing, the rate is sensitive to higher poverty lines (USD1.25 or USD2.00 per day), signifying that the majority

of households are moving out of poverty but hovering just above the poverty line and are potentially vulnerable to income shock. Cambodia is also on track towards achieving non-consumption pro-poor growth, the main contributor to inclusive growth. Improvements in the standard of living have been substantial and pro-poor. Nonetheless, the overall performance in terms of health, proxied by child nutritional status, has at best been satisfactory. While the distribution of non-consumption indicators was good, the growth of nutritional indicators was slow or absent between 2005 and 2010.

Therefore, the remaining challenge, moving forward, is to maintain growth and ensure a level playing field for the majority. This is a tough task given the following obstacles to be overcome:

- Limited human capital is still one of the major constraints to achieving more growth and avoiding the middle-income trap.
- A large portion of Cambodia's workforce is low-skilled and engaged mainly in agricultural work. The quality of education, particularly primary and secondary, needs to be improved. In addition, access to technical and vocational training is a possible solution worth exploring.
- Limited access to affordable and quality healthcare is another constraint potentially jeopardising labour productivity. Despite progress, more efforts are needed, particularly among the rural population, to improve access and to narrow further the gap between the rich and poor. Because of poor infrastructure and low salaries, there are few incentives to retain healthcare personnel in rural areas. The national per capita budget allocation for healthcare is minimal, forcing households to bear a large proportion of healthcare expenditure. This makes poorer households vulnerable to falling into poverty in times of health crisis.
- Infrastructure such as roads, electricity network and irrigation is underdeveloped, especially in rural areas. Not being able to access these important public goods is a factor that widens unequal access to opportunities between urban and rural areas.
- The government, in 2011, approved the five-year plan of the first National Social Protection Strategy, and this could be a step forward in strengthening the social safety net for disadvantaged and vulnerable groups. However, implementation is yet to be realised and judged. And the issue of financial support is another cause of concern.

Although this paper does not propose rigorous pro-poor policies, it takes the position that addressing the above challenges will put Cambodia on the right path to high and inclusive growth.

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Complementary Feeding Communication Campaign on Child Nutrition: An Assessment of its Influence on Child Feeding Practices

by Chhea Chhorvann, Nou Keosothea and Ros Bandeth¹

1. INTRODUCTION

Improving child nutrition is a high priority area for ushering in better health as part of the comprehensive drive to sustain strong and inclusive growth in Cambodia (CDRI 2013). From 2000 to 2005, Cambodia demonstrated substantial progress in improving child nutrition, but rates stagnated or even reversed between 2005 and 2010 (World Bank 2013). By 2010, the percentage of chronically malnourished (stunted) children had decreased to 40 percent from 42 percent in 2005, the percentage of underweight children remained unchanged at 28 percent, and the percentage of acutely malnourished (wasted) children had increased to 11 percent from 8 percent in 2005 (World Bank 2013). Child malnutrition is correlated with several factors, one of which is child-feeding practices. The response to child malnutrition, therefore, should include efforts to enhance complementary feeding after the age of six months (World Bank 2013).

To combat child malnutrition in Cambodia more effectively, in April 2012 the Complementary Feeding Communication (CFC) campaign, led by the National Centre for Health Promotion (NCHP) and the National Maternal and Child Health Centre (NMCHC) in collaboration with development partners (MOH 2011), was launched across 10 provinces. CFC, as a communication for behavioural impact (COMBI) approach, uses strategic communication to promote and inspire health-related behaviour change at local level. The reasoning is that private sector marketing techniques and health communication approaches can be used together to improve people's access to health information and their capacity to use it, and to encourage people to adopt new healthy behaviour (WHO 2012). The rationale behind this approach is that people will not adopt a new behaviour without gaining knowledge about the advantages, and without being involved in reviewing the benefits against the costs of adopting that behaviour (WHO 2012).

The overall goal of CFC in Cambodia is to contribute to improving the status of child nutrition by increasing the rate of appropriate complementary feeding practices of infants and young children, particularly for children aged 6-24 months. This can be achieved when mothers/caregivers adopt and maintain the cooking and feeding of a recommended nutritional supplement served as a *borbo* (rice porridge) to their children.

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The awareness raising activities of CFC include disseminating messages via mass media and interpersonal communication such as health fairs with cooking demonstrations, home visits and group meetings. The key message of the project is that in order to make children healthy, strong and smart, the homemade multi-ingredient porridge known as *boborkhabkrubkreung*² should be provided. This meal is designed specifically for the complementary feeding of children aged 6-24 months. Clear messages about the nutritional needs of this age group on food consistency, food variety and feeding regimen were incorporated into the communication campaign (MOH 2011). The main target groups of the project are primary carers, i.e. mothers and caregivers of infants and children aged 6-24 months, and secondary carers, i.e. fathers, grandparents and other family members, as well as women of reproductive age, village health support groups (VHSGs), mothers' support groups (MSGs), village chiefs, commune committees for women and children (CCWC), and other child welfare-related groups/organisations.

This paper presents the findings from our initial assessment of the extent to which Cambodia's CFC project has influenced the behaviour of target beneficiaries in adopting the recommended complementary feeding practices. The lessons learned will inform government, stakeholders and development partners about how to improve the effectiveness of CFC and to scale up the project nationwide.

2. ANALYTICAL FRAMEWORK AND METHODS

Behaviour change brought about by communication campaigns has been the subject of several theories, one of which is the stages of change model, also known as the transtheoretical model, that assesses an individual's readiness to adopt a new behaviour by dividing behaviour change into five stages (WHO 2012; Prochaska *et al.* 1992; Slater 1999). First, *precontemplation* refers to the stage where people have no intention to change in the foreseeable future because they lack knowledge, awareness and attention. Second, *contemplation* is the stage where people have recognised the problem and consider taking action in the near future. Third, *preparation* denotes the stage where people begin to experiment, but have not yet successfully changed their behaviour. Fourth, *action* is the stage where behaviour has changed successfully for a certain time. Finally, the stage of *maintenance* is when people have sustained the behaviour change over a substantial period.

The debates among scholars concerning behaviour change generally concurs that the transition from the precontemplation to the contemplation stage requires awareness/knowledge and attention (McGuire 1989 cited in Slater 1999). Similarly, proponents of situational theory stress the importance of problem recognition, that is, the context in which people become aware of a problem and the extent to which they do (or are able to do) something about it (Grunig 1978). Others argue that mass media campaigns and media coverage play a large part in attracting people's attention, both informing and stimulating discussion between friends, families and community members and influencing and forming people's attitudes and behaviour, hence helping people to move from one stage of change to another (Shaw and McCombs 1977). Honing in on

² The terms *boborkhabkrubkreung* and multi-ingredient porridge are used interchangeably.

message design for health communication campaigns to ensure the movement from precontemplation to contemplation, commentators contend that effective messages should focus on drawing the target audience's attention to the campaign issues. To that end, identifying the threat of further harm that could be caused by inaction may persuade people to take note. The advice is that message designers should consider using appropriate resources/promotional materials and try to maximise the target audience's exposure to the message, supporting this with the use of facts, examples and anecdotes that the audience will understand (Baesler and Burgoon 1994 cited in Slater 1999).

The movement from contemplation to preparation is conceptualised in the theory of reasoned action. This theory suggests that in order to move from contemplation to preparation, a person must value the outcomes of a behaviour. People often consider the expected costs and benefits of a suggested behaviour, while perceived social pressure, usually interpreted as corresponding to the relative importance of a behaviour, also directs people's intention to change (Slater 1999). Translating that theory into practice, communication campaign messages should aim to persuade people to accept the campaign arguments and encourage them to change their behaviour.

Social cognitive theory, social learning theory and self-efficacy theory help to explain the transition from intention to action. The self-efficacy theory, for instance, argues that people can adopt a suggested behaviour by moving from intention to action when they are confident that they can effect change, and can see the likelihood of a behaviour trial being successful (Prochaska *et al.* 1992 cited in Slater 1999). Trials that ultimately encourage a behaviour change require modelling that is attractive to the target audience, or to which people can relate, and for which they have the specific skills necessary to carry out the action (Slater 1999). Communication campaigns to trigger this action need to keep on reinforcing the campaign messages. Although initial trials may result in failure, people may keep on trying the suggested behaviour if they receive continual messages about the issue (Slater 1999). A lack of support from peers, family or the community may discourage individuals from enacting the behaviour; therefore, the role of media-based efforts is important in drawing the attention of both the community and individuals to the campaign message and then in encouraging their action (Oetting *et al.* 1995).

The movement from action to maintenance requires both individual belief and confidence, enhanced by the fact that the behaviour is socially acceptable. In the campaign process there is a need to focus on the reinforcement, pervasiveness and frequency, but not so much on the content of the messages. The costs and benefits of performing the behaviour should be justifiable in terms of money, pleasure and convenience (Slater 1999).

This study employs a qualitative approach. Three of the 10 provinces in which this campaign was staged were selected for study, namely Kampot, Svay Rieng and Stung Treng. They were chosen based on poverty headcount and the prevalence of child stunting. To maximise the spatial variation of the data, in each province one health centre was randomly selected from all health centres located in the provincial town and another health centre was randomly selected from all health centres located in

remote areas. In this way, six health centres were selected from the three provinces. For each selected health centre, two villages where cooking demonstrations had been conducted were randomly selected. Data collection methods included in-depth interviews (IDIs), key informant interviews (KIIs) and focus group discussions (FGDs). To collect primary information, 36 interviews were conducted with mothers, other caregivers, community leaders, health workers, civil society stakeholders and other relevant informants. Data was transcribed from audio recordings of spoken discourse for thematic analysis. In addition, the study incorporated a review of the literature examining behaviour change as well as project documents about child nutrition.

3. FINDINGS

The key findings of this study are that, although still in its early days, CFC seems to have had a noticeable impact on awareness raising and acceptance, covering the first three stages of behaviour change – precontemplation, contemplation and preparation. Its impact on the next two stages, action and maintenance, has been positive but somewhat less marked, although this is to be expected given that CFC started relatively recently.

3.1. Recall of CFC Messages, Awareness/Knowledge and Attention

Findings show that the CFC messages broadcast during the campaign were well recalled by participants. The key sources of information were posters, cooking demonstrations, media advertising and interpersonal communication. Many people reported that they liked getting health messages from television programmes. However, access to television in remote communities was limited due to lack of electricity. Face-to-face meetings with a resource person were even more popular among people in communities because this enabled them to interact better in terms of asking any questions they might have. For example, the village health support groups (VHSGs) played important roles in supporting or providing information regarding the cooking of the multi-ingredient porridge. Health centre staff also played indirect roles in supporting the adoption of the multi-ingredient porridge in the target communities. In addition, some mothers reported talking with other mothers about the feeding of their children.

[If you forget what to do, who would you ask?].... [I would ask] the teacher [a VHSG member] who lives next to my house... (a mother, FGD)

I used to meet with a teacher [VHSG] who invited us to the meeting showing how to cook the porridge... (a mother, IDI)

They come [provincial level] to teach us how to cook porridge, by adding pumpkin, carrot, ivy gourd... (a family member, FGD)

Mothers and other family members were aware that complementary feeding should start when a baby reaches the age of 6 months because this is important for a child's growth and development. Another health message that also got through to the public was related to hygiene and sanitation. Study participants often associated poor hygiene with diarrhoea among children.

They advise us to clean everything, especially when taking care of children. If we do not care for children properly, [the children will suffer from] diarrhoea. When cooking porridge, the vegetables should be washed...and we need to wash our hands, clean the pot, spoons... (a family member, FGD)

Participants had also paid attention to the project's aims to prevent stunting and to improve children's intellectual ability. Even though the study participants seemed to have difficulty in remembering which types of food provide energy, increase growth or supply vitamins, they could describe the key ingredients used to make *borborkhabkrubkreung* and its nutritional benefits for their children's health.

They advise us to use green vegetables, carrot, cooking oil and pork, pig liver or fish. We take all of those ingredients and make them into a porridge... (a family member, FGD)

3.2. Acceptance and Appropriateness of the Messages

Besides awareness and attention, the study participants also showed that they had accepted the messages they had received. The message used to promote the multi-ingredient porridge was particularly aimed at mothers because it had been found that a child's health was highly valued among the majority of mothers: they were prepared to devote themselves to enabling their children to grow up healthy and smart.

The most important thing for me is my child. If my child is sick, I have no strength to work... (a mother, IDI)

I want my child to grow well. And it will help my child to become smarter and be free from illness... (a mother, IDI)

Many mothers strongly believed that the multi-ingredient porridge was good for their children, and acknowledged that their child's health was better than that of other children. Or they compared their children's health before and after feeding them the multi-ingredient porridge. Some participants also noticed a change in the growth and development of their neighbours' children who had been fed *borborkhabkrubkreung*.

Since eating it, my child hardly ever falls sick... (a mother, IDI)

However, the evaluation could not establish a causal relationship between child nutritional health and the porridge. The amount of multi-ingredient porridge children ate had not been accurately recorded, so the extent to which *borborkhabkrubkreung* has contributed to an improvement in the health of young children is unknown.

My grandson eats it [borborkhabkrubkreung] and he looks healthy... (a family member, FGD)

My child eats borborkhabkrubkreung. The other [neighbour's] child does not eat it, and he often has diarrhoea... (a mother, FGD)

3.3. Adoption

The practice of making the multi-ingredient porridge for babies and young children was reported to have been adopted by most participants in the study, although initial changes in behaviour have not consistently translated into similar rates of behavioural maintenance. It was found that having received messages from the campaign, the practice of making the multi-ingredient porridge remained a challenge for some mothers, especially knowing what ingredients and cooking techniques to use. The cooking method was not clear, the technique to make the porridge sticky yet moist enough was not widely known, and participants sometimes gave different responses when asked the same question, for instance, whether or not to flavour the porridge with soy sauce, fish sauce, salt, sugar, MSG or other seasoning. Even so, it was reported that the participants had learned the basic recipe and techniques needed to make the special meal.

...clean and boil the rice, add the vegetables and chopped meat, then add salt but do not add sugar or MSG... (a family member, FGD)

...boil the water then add the rice, meat and vegetables. No need to add MSG or sugar or anything [salt] since it has all the flavour already... (a mother, FGD)

...add salt, sugar, MSG, egg and pumpkin... (a family member, FGD)

While participants said that they had adopted the multi-ingredient porridge as a regular meal for their children, some could not follow the recommendations of the complementary feeding campaign fully, or had stopped or switched to buying regular *borbor* (usually sold in the morning). This was influenced by several factors. First, even though the recommended porridge ingredients were believed to be locally available, mothers commonly complained that they could not find them all (all types of vegetables, all types of meat) and this often discouraged them from preparing the porridge for their children.

[We have] pumpkin leaves and ivy gourd at home, but we don't have any other [leaves]... (a family member, FGD)

Mothers needed to buy ingredients such as vegetables and meat to make the recommended porridge, but vendors were reluctant to sell meat in small amounts and poor mothers ended up not buying any meat at all and thus not cooking the special meal porridge. The fact that working mothers did not have the time to go shopping for ingredients in the nearby market, or that the local market was simply too far away, posed another challenge.

While mothers complained about lack of money to buy meat to cook the multi-ingredient porridge, the estimated cost of making it had not been incorporated in the project guidelines or in any other related documents. From the FGDs we learned that the cost of cooking the porridge (twice a day) was about 6000 riels or USD1.5, which mostly went on buying the meat. In that case, it is unlikely that poor families living on a total income of less than USD1 per day could afford to cook it for their

young children. It is not clear whether the estimated cost reported in this assessment is accurate, and the matter requires further study.

It cost 6000 riels to make... (a family member, FGD)

I think it is not very costly, but we don't have all the ingredients...
(a family member, FGD)

There was a misconception regarding the ingredients required. Some mothers thought that they needed to find all types of vegetables and meat to make the porridge and did not cook the meal unless they had all the suggested ingredients. Other mothers thought that the porridge would cause tooth decay and that it was too sticky for young children to swallow.

The question of whether or not the children liked the multi-ingredient porridge got mixed responses. Mothers who added condiments to the porridge when cooking it often reported that their babies liked it, and those who made it without condiments reported the opposite. Those who mixed the porridge with the vitamin supplement package said that their children refused to eat it because they did not like the taste.

My grandson likes the *borborkhabkrubkreung*... I add green vegetables, pig's liver, egg, ivy gourd leaves, pumpkin and then oil to make it sticky and we taste it [we add condiments so that it is tasty], then we blend it...
(a family member, FGD)

It was also found that many children started refusing to eat the multi-ingredient porridge at the age of 12 months. At this age, children might have tried many different tasty snacks or adult foods and consequently reject the plain *borborkhabkrubkreung*.

My daughter ate [the *borborkhabkrubkreung*] until she was one year old, then she no longer liked it... (a mother, FGD)

[How do you get your child to eat *borborkhabkrubkreung* after he/she gets bored with it?] I cook regular *borbor* with preserved [salted] beef then my kid eats it... (a mother, FGD)

One strategy adopted by mothers to encourage their children to eat the multi-ingredient porridge was to be selective in the choice of ingredients. For example, some mothers reduced the amount of vegetables, or used different types of vegetables. Others introduced variety by sometimes using only meat.

When my child gets bored with the food and eats less and less, I reduce the amount of vegetables I put in the porridge or I change the recipe and use only meat for a few days. Then we start to add more vegetables again... (a mother, FGD)

Last, there are some recognised limitations in CFC design and project implementation that hinder the reinforcement of complementary feeding messages. Child health fairs were organised to show mothers and care givers how to prepare appropriate complementary food. Although the child health fairs were popular among mothers with small children and the project was commonly known as the "good food programme",

the limited budget meant that these fairs were held infrequently. Because insufficient time was allowed for each cooking demonstration, VHSG members could not show the audience how to make the porridge from beginning to end, especially how to get it to the right consistency. This might explain why, in our interviews with mothers and other women, some of them did not know how to do this. Furthermore, one of the main problems in implementing CFC was the lack of incentives which discouraged VHSG members from carrying out their duties effectively. Other issues included lack of health education materials and inadequate budget for VHSG members to conduct cooking demonstrations. VHSG members also requested more logistical support in order to improve the implementation of the complementary feeding programme in their communities. They were in dire need of megaphones and bicycles as they were required to work with many households in their villages.

4. Discussion

The project audience's awareness of, and attention to, the importance of cooking and feeding the recommended multi-ingredient porridge to infants and young children was confirmed throughout the interviews. This affirms the general consensus in the literature concerning the transition of the target audience from the precontemplation to the contemplation stage (Slater 1999; McGuire 1989). People had learned to notice and recognise the importance of complementary feeding, which they had never done before.

The acceptance of the campaign messages by the local audience, their belief in the project and their experiments in getting the multi-ingredient porridge recipe right are all signs of movement from contemplation to preparation (Slater 1999). Mothers and caregivers, through trial and error, learned the recommended behaviour in the hope of realising the positive results broadcast by the communication campaign.

The adoption of supplementary feeding practices, i.e. cooking the multi-ingredient porridge and feeding it to infants and young children, demonstrates behaviour change from preparation to action. However, many participants remained non-committal, while their ability to sustain the behaviour change in the long term was questionable. Indeed, some had already stopped making the porridge because of unforeseeable costs. Whether those who have adopted the behaviour will maintain it in the long-term is unclear. The main stumbling blocks were the limitations of project implementation to reinforce the campaign messages, the lack of budget and incentives, and the shortage of health education materials and logistical support. It is worth keeping in mind that the positive reinforcement of the campaign messages is important to encourage the desired behaviour changes within the target groups (Slater 1999).

Since the project started only just over a year ago, it is too soon for the research findings to support firm statements about a change in community perception and social behaviour as a result of its implementation. What is apparent, though, is that an individual finally enters the maintenance stage when he/she believes in it and knows that the behaviour is socially acceptable. The latter underlines the importance of support from peers, family or community in creating opportunities for individual behaviour change (Slater 1999).

5. Conclusion and Lessons Learned

The implementation of the Complementary Feeding Communication (CFC) campaign in Cambodia has achieved satisfactory results among its target audience, although these do not yet indicate a far-reaching behaviour change. It has helped to improve the awareness and attention of mothers and caregivers about complementary feeding, which was not previously evident, and, in turn, they can understand and accept the messages. As a result, most of them had adopted the recommended behaviour. CFC is thus confirmed as effective in helping to promote key behaviour changes among the target audience across the stages from precontemplation to contemplation, preparation and then action.

However, CFC has not yet demonstrated that it can ensure maintenance of the recommended behaviour among some segments of the target audience. The adoption of the recommended behaviour remains negotiable and the project is still on trial due to unforeseeable costs involved in making the special porridge, misperceptions, and the limitations of project implementation. That said, with deliberate efforts to tackle these challenges, the project should be able to identify how best to further engage and influence people to adopt and sustain the recommended behaviour.

This study presents some lessons to improve the next stage of project implementation:

- The details of some messages, such as what ingredients to use, information about food groups, the concept of selecting ingredients, techniques to make the porridge sticky and whether to add condiments, need to be made more explicit to avoid confusion among mothers with children aged less than 24 months, who constitute the project's main target group.
- *Borborkhabkrubkreung* prepared without any condiments tastes bland and is unappealing to young children. It is recommended that a professional chef be involved in improving the current multi-ingredient porridge recipe in terms of its taste, texture and smell to make it more appealing to children especially those aged 12-24 months.
- The cost of preparing the multi-ingredient porridge should be estimated and its impact on household economy assessed. This information is vital for the sustainability of the CFC campaign, as well as for scaling it up nationwide.
- Budgets should be shifted to support more child health fairs since these provide unique opportunities for communities to receive health information, encouragement, exposure to CFC messages, and to experience positive peer pressure: mothers and their babies would be able to sample the porridge from the cooking demonstration. Holding fairs more often would help to promote complementary feeding as acceptable social behaviour, which in turn would encourage maintenance of the behaviour.

- VHSGs should receive more training about complementary feeding programmes to compensate for the high turnover of their members. In addition, VHSG members could be given opportunities to learn from each other through exchange programmes or study tours in other regions. This would expand their experience in resolving practical issues at the household level.
- More programmes related to home food production and food security should be introduced at community level since the success of the complementary feeding programme is strongly related to food availability at household level. That is, having meat or fish and various types of vegetables readily available at home could be one of the strongest factors leading to the long-term adoption of the multi-ingredient porridge. This could significantly improve child health.

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The Inclusiveness of Public Spending on Education in Cambodia: Benefit Incidence Analysis

by Tong Kimsun and Phay Sokcheng¹

1. INTRODUCTION

Cambodia has achieved remarkable economic and social development over the past 20 years. Gross domestic product (GDP) has grown at an annualised rate of 7.8 percent since 1994, except for in 2009 when, mainly due to the global financial and economic crisis, it registered just 0.1 percent. Overall, GDP per capita increased nearly threefold from USD210 (at 2000 prices) in 1994 to USD590 in 2011. Although there are some inconsistencies in the estimation of poverty, it seems likely that Cambodia's poverty headcount ratio declined by 50 percentage points from 1993/94 reaching 19.80 percent in 2011 (RGC 2012), and importantly, the Gini coefficient, a proxy to measure inequality, dropped from 0.39 in 2004 to 0.31 in 2011 (World Bank 2009; RGC 2012). Some performance indicators for education and health, which are the focus of sustainable and inclusive development, also show substantial improvement. For example, Cambodia has almost achieved universal primary education; the net primary school enrollment rate reached 96 percent in 2010 and the completion rate stood at 87 percent in 2011. At the same time, the under-five mortality rate dropped significantly from 120 (per 1000 live births) in 1993 to 51 in 2010 (World Bank 2012).² Recent assessment studies confirm that to some extent the Cambodian economy is pro-poor (Roth and Lun forthcoming; Tong 2012; McKinley 2010).

Fiscal policy has played a key role in both spurring and stabilising Cambodia's socioeconomic progress. Since this policy covers many different types of public spending, this article attempts to focus on one of its components – educational expenditure. The study mainly highlights the disparities in educational expenditure across geographical regions (Phnom Penh, Plains, Tonle Sap, Coastal, Upland Plateau), urban and rural areas, educational levels and income groups by using benefit incidence analysis (BIA) – one of the most common and simple methods used to assess the distributional impact of public spending. Such empirical evidence is expected to be useful for both development partners and the government to adjust their existing educational spending, especially now that more inclusive access to education services is emerging as a major development priority for Cambodia (CDRI 2013). This article is a part of the study on “Assessing the Pro-Pooriness of Fiscal Policy in Cambodia”,

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² See CDRI (2013) for the most recent assessment of Cambodia's development performance.

which is one component of the Swedish International Development Cooperation Agency (Sida)-supported five-year research project on Inclusive Growth.

The remaining sections of this article are organised as follows: section 2 reviews previous studies on fiscal policy and educational expenditure in Cambodia; section 3 describes the data and the methodology of benefit incidence analysis; section 4 presents the empirical results; and section 5 provides conclusions and policy implications.

2. LITERATURE REVIEW

The government of Cambodia initially introduced its pro-poor policy to development partners during the consultative group meeting in Tokyo in June 2001. The policy paper, entitled *Cambodia: Strengthening Macroeconomic Stability and Ensuring Sustainable Broad-Based Development*, described in detail the proposed reform programmes to accelerate economic growth, alleviate poverty, and build a foundation for long-term economic growth and sustainable development (Lord 2001). On fiscal policy, the reform programmes seek to expand domestic revenue, boost social sector public budget allocations and spending including on education and health, and improve the overall effectiveness of public spending. Until now, few studies have attempted to assess whether those macroeconomic policies are pro-poor.

However, among those that have been conducted, that of Lord (2001) aims to measure the impact in Cambodia of three types of macroeconomic policies, namely fiscal, monetary and trade, on poverty and income distribution by using the integrated quantitative macroeconomic framework known as IMMPA (integrated macroeconomic model of poverty analysis). Lord finds that trade reform is the most effective tool to reduce overall poverty, along with exchange rate adjustments to promote agricultural exports and alleviate rural poverty. Fiscal policy reforms seem to have little impact on poverty and income distribution compared with other policies examined. Having reviewed the incidence of public spending during the period 1994-2001, the author suggests that the impact of fiscal policy reforms could be improved by reducing direct taxes on the poor. In addition, he notes that public health facilities, secondary and tertiary education are used relatively more by the better-off households than by the poor. This result may have important implications for the government to target households and/or children in the poorest group.

Beresford *et al.* (2004) conducted a comprehensive review of Cambodia's fiscal policy covering the period 1991-2002 to provide further guidance for making policy more pro-poor. They concluded that, to achieve the target economic growth of 6-7 percent with equitable income distribution, fiscal policy should consist of the following three steps: strengthening revenue collection, enhancing the transparency of fiscal operations, and increasing public spending in "priority sectors", i.e., education, health, agriculture and rural development. Jenkins and Klevchuk (2006) focus on the priority sectors to try to identify the key constraints on fiscal policy that render economic growth less pro-poor, and to propose adjustment policies that might address those constraints. Overall, they note that Cambodia faces two critical problems: a weak public administration system, and insufficient and poor quality infrastructure outside the main capital. Regarding

the education sector, the major constraints seem to be procurement, institutional and personnel capacity, infrastructure adequacy, and supporting facilities.

Most recently, the World Bank (2011) has assessed various aspects of the education sector including the achievements of the Education Strategic Plan 2006-2010 on the basis of: access, quality and institutional capacity; the structure of education spending; issues relating to teacher quality and pay; textbooks; out-of-pocket spending on education; and higher education spending. The report highlights the fact that Cambodia has made substantial progress in terms of providing access to primary education, but improving the quality of teaching and learning and providing access to other levels of education remain key challenges. The report provides both short and medium term implications. For the short term, it maintains that the government needs to consider reallocating the budget for early childhood education, textbooks, and scholarship programmes. In the medium term, its assessment is that the education sector will be improved by better strategic planning and school quality.

While reasonably comprehensive, none of the above-studies attempt to assess how pro-poor the macro-fiscal policy, which the government has implemented since 2001, is. To fill this gap, this chapter examines the pro-poorness of public spending on education using benefit incidence analysis (BIA), which is one of the most popular tools for evaluating the distribution of benefits from public programmes. To our knowledge, this is the first attempt in Cambodia to apply the BIA approach to the education sector.

3. DATA AND METHODOLOGY

3.1. Data

The study is mainly based on household data from the Cambodia Socio-Economic Survey (CSES) conducted by the National Institute of Statistics (NIS) in 2004, 2009 and 2011.³ The survey is nationally representative including households from all 24 provinces. A three-stage sampling method was used (NIS 2005). The first stage involved the selection of sample villages using systematic sampling with probabilities proportionate to size, while enumeration areas (or primary sampling units) and

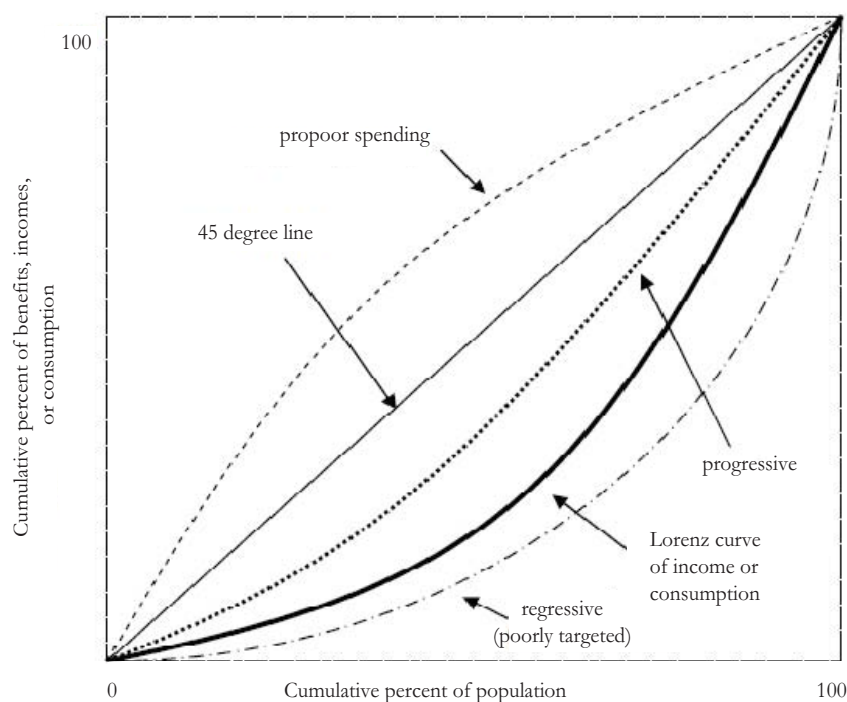
³ The NIS has conducted nationally representative household surveys, i.e., the Cambodia Socio-Economic Survey, many times since 1993/94. To the best of our knowledge, the survey data available for public use was collected in 1993/94, 1997, 1999, 2004, 2007, 2008, 2009, 2010 and 2011. However, only the surveys done after 2004 used a proper sampling frame (the general population census) and are considered good quality. The sampling frame for the 2004, 2007 and 2008 surveys was the 1998 general population census, and that for the remaining survey data was the 2008 general population census. The 2004 and 2009 surveys sampled around 720 villages and 12,000 households, while those in 2007, 2008, 2010 and 2011 sampled half of the number villages and about one-third of the households. The sample villages for 2007 and 2008 were sub-samples of 2004, and those for 2010 and 2011 were sub-samples of 2009. For this reason, we use only the 2004 and 2009 data; but to capture the most recent development, we also report the result generated from 2011.

households were randomly selected in the second and third stages, respectively. The survey datasets contain detailed information on geographical location, household characteristics, household expenditure including educational spending, household income, and education and literacy levels of all household members aged 3 years and older. This allows us to decompose our analysis by region, educational level, gender, and income group. However, income tends to be underestimated and subject to seasonal fluctuations, particularly in developing countries, while consumption remains relatively stable, implying that consumption reflects household welfare better than income does (Haughton and Khander 2009). For these reasons, this study uses consumption as a welfare indicator.

3.2. Benefit Incidence Analysis

Benefit incidence analysis (BIA) has been commonly used to assess the distributional impact of public spending since the 1960s. The earliest studies were initiated by Gillespie in 1965 and 1966 and focused on Canada and the United States, respectively. In the late 1970s, the BIA approach was introduced in two studies of developing countries: Selowsky (1979) on Colombia, and Meerman (1979) on Malaysia. It has since been adopted, with several refinements to the original methodology, in case studies based on many countries (e.g., Meesook 1984; Hammer *et al.* 1995; Selden and Wasylenko 1995; van de Walle 1995, 1998; Demery 1997; Castro-Lead *et al.* 1999; Lanjouw and Ravallion 1999; Ajwad and Wodon 2001, 2002, 2007; Davoodi *et al.* 2003; Guloba *et al.* 2010; Alabi *et al.* 2011; Cuesta *et al.* 2012). A comprehensive survey of BIA studies can be found in Demery (2000) and Younger (2001).

Figure 1: Concentration Curves for Public Spending and Two Benchmarks



Source: Davoodi *et al.* (2003 : 14)

As illustrated in Figure 1, the government spending on providing services is pro-poor if the concentration curve for those benefits is above the 45-degree line. If the concentration curve for those benefits is below the 45-degree line and above the Lorenz curve for income or consumption, the government spending on the service is progressive. Government spending is said to be regressive if the concentration curve for those benefits is below the Lorenz curve for income or consumption.

The BIA approach is designed to combine the total public expenditure on each public service with information about the users in order to generate a picture of the distribution of the benefits from government spending and a summary measure of progressivity. Data relating to the former is normally available at the national level but only sometimes at regional level, while data relating to the latter can be found in the usual household surveys. By combining these two sources of information, the benefit incidence of public spending can be estimated across household groups, geographical areas, gender, and so on. More precisely, BIA involves a five-step process that can be easily implemented using computer software programs (Demery 2000; Davoodi *et al.* 2003); the steps are as follows:

1. Estimate the average cost of the public service provided by dividing government spending on the service by the total number of users.
2. Define the average cost of the public service provided as the average benefit of the users.
3. Rank the users from the poorest to the richest using a measure (income or consumption) of individual welfare and aggregate them into groups.
4. Derive the distribution of benefits by multiplying the average benefit estimated in step 2 by the total number of users in each income or consumption group.
5. Compare the estimated distribution of benefits with benchmark distributions such as the 45-degree line or the Lorenz curve.

A drawback to the use of BIA is that data on government expenditures on public services in some countries, e.g. Nigeria (Alabi *et al.* 2011), is not available. To fill the gap, Araar and Duclos (2009, 2013) have introduced an alternative approach to estimating the benefit incidence that does not require this information. They estimate the individual participation rate for each type of service by dividing the actual number of users by the number of eligible members in the households. The participation rate then permits a ranking of individuals or households based on the service benefits received. The larger the value of the participation rate, the greater the public service benefits received, and vice versa.

3.3. Marginal Benefit Incidence Analysis

Improvement in the BIA approach over the years have responded to previous criticisms that it was inadequate as an instrument for evaluating a change of policy (van de Walle 2003; Younger 2003). From a practical policymaking standpoint, in addition to the distribution of current public spending, it is extremely important to understand the extent to which changes in public spending affect different population groups. For

instance, the average benefit from the existing policy that accrues to the poor may be relatively low compared with that accruing to the richer groups, but the poor may benefit more from expansion of the policy than their counterparts do, and vice versa.

To address this issue, Lanjouw and Ravallion (1999) and Ajwad and Wodon (2001) proposed an innovative empirical method, i.e., a regression technique to measure marginal benefit incidence using single cross-sectional data. Technically, they regress the participation rate in a given quintile against the mean participation rate of all quintiles to capture the expected changes of participation over time. The assumption is that the distribution of the new participation rates in the regions where participation is lower will follow the patterns observed in the regions where participation rates are higher. But the two approaches differ in terms of ranking methods (Ajwad and Wodon 2002). Lanjouw and Ravallion (1999) rank individuals as poor or non-poor according to national income distribution, whereas Ajwad and Wodon (2001) use local income distribution – where the country is divided into several distinct geographical regions.

Given these comprehensive measures of well-being, we estimate marginal benefit incidence using the method proposed by Ajwad and Wodon (2001). If the marginal benefit incidence is one, it means that the households in a given quintile derive benefits from an increase in public spending equal to those of the average household. If the marginal benefit incidence is above (or below) one, it means the households in a given quintile benefit more (or less) from an increase in public spending compared with the average household.

3.4. The Limitations of Benefit Incidence Analysis

Despite its appealing simplicity and technological innovations over the decades, several factors limit the application of BIA (van de Walle 1998; McKay 2002). For instance:

1. It is a static method, assessing the impact at a specific point in time.
2. It is based on monetary measures of welfare, which in turn capture only one dimension; in some cases, e.g. the evaluation of food subsidy projects, non-monetary measures such as nutritional outcomes will be of greater interest than monetary indicators.
3. It simply assumes that the cost of the service is its benefit, and it does not take the quality of the service into account.
4. It does not explain why some households do not use the service.

Regardless of those limitations, empirical evidence from BIA can at least inform policymakers about the current incidence of public spending, that is, the extent to which different segments of the population (the poor or the rich, male or female, rural or urban) benefit, or the changes in incidence due to the expansion or contraction of public spending over time. This kind of information would definitely help policymakers to formulate policy that is more pro-poor.

4. EMPIRICAL RESULTS

Table 1 presents the participation rates and share of public spending on three educational levels (primary, lower secondary and upper secondary) by different population quintiles (quintile 1=the poorest, quintile 5=the richest). We define the participation rate as the number of children of the appropriate age enrolled at each level of schooling divided by the total number of children eligible for enrollment at each level (Appendix 1), and categorise the household sample into five groups based on aggregate household expenditure per capita.

Table 1: Participation Rates and Share of Public Spending on Education (%)

	2004		2009		2011	
	Participation rate	Share by quintile	Participation rate	Share by quintile	Participation rate	Share by quintile
Primary school						
Quintile 1	77	18	78	18	83	19
Quintile 2	84	20	88	20	89	20
Quintile 3	86	20	88	21	90	20
Quintile 4	88	21	88	21	94	21
Quintile 5	90	21	90	21	88	20
All	85	100	86	100	89	100
Lower secondary school						
Quintile 1	51	13	61	15	64	15
Quintile 2	71	19	76	19	81	19
Quintile 3	82	21	84	21	92	22
Quintile 4	87	23	86	22	93	21
Quintile 5	93	24	89	23	95	23
All	77	100	79	100	85	100
Upper secondary school						
Quintile 1	2	2	7	5	10	5
Quintile 2	7	7	15	10	19	9
Quintile 3	13	13	26	17	39	19
Quintile 4	22	22	41	27	59	28
Quintile 5	56	56	62	41	82	39
All	20	100	30	100	42	100

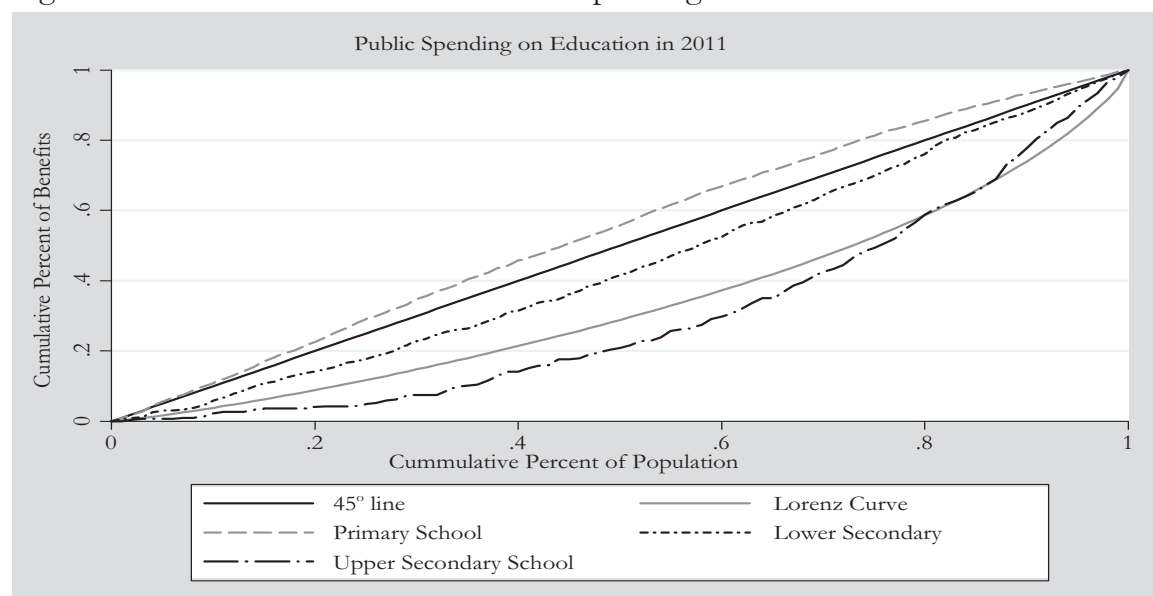
Source: Authors' calculation from CSES 2004, 2009 and 2011

Our results show that the participation rates in all three educational levels increased during the period 2004-2011, particularly in lower and upper secondary schools. The participation rate in primary school increased from 85 percent in 2004 to 89 percent in 2011. The participation rate in lower secondary school went up from 77 percent in 2004 to 85 percent in 2011, while the participation rate in upper secondary school rose significantly from 20 percent in 2004 to 42 percent in 2011. We also note that the participation rates in the three educational levels especially in upper secondary school for the richest households are relatively higher than for

the poorest households. About 77 percent and 51 percent of school-aged children in the poorest households were enrolled in primary and lower secondary school, respectively, in 2004, compared with about 90 percent and 93 percent, respectively, of those in the richest households. However, the gap in primary school participation between the two groups reduced from 13 percentage points in 2004 to 5 percentage points in 2011. This is largely due to an increase in participation of the poorest households rather than a decline in participation of the richest households. For lower secondary school, the participation gap reduced from 42 percentage points in 2004 to 31 percentage points in 2011. Only 2 percent of school-aged children in the poorest households enrolled in upper secondary school in 2004, while 56 percent of those from the richest households did so, and the enrollment gap between the two groups widened significantly from 54 percentage points in 2004 to 72 percentage points in 2011.

The results indicate that the share of public spending on primary school is equally allocated among the five household groups, i.e. the poorest households and the richest households have benefited proportionally. As illustrated in Table 1, about 18-19 percent of the total primary school budget was spent on the poorest households, while those shares were 20-21 percent for the richest households. However, public spending on lower secondary school is unevenly distributed; around 13-15 percent of the total lower secondary school budget goes to the poorest households while 23-24 percent goes to the richest households. In addition, there is a huge disparity between the poorest and the richest households in public spending on upper secondary school. The richest households received up to 56 percent of the total upper secondary school budget in 2004, compared with just 2 percent of the poorest households. In 2011, the share of public spending on upper secondary school accruing to the poorest households was 5 percent, while that to the richest households had declined to 39 percent. This evidence implies that public spending on lower and upper secondary school benefitted the richest households more than the poorest households.

Figure 2: Concentration Curve for Public Spending on Education in 2011



Source: Authors' calculation based on CSES 2011

To verify our results presented in Table 1, Figure 2 shows the concentration curve for the public spending on each of the three educational levels, along with the benchmark distributions, i.e. the 45-degree line and the Lorenz curve. The concentration curve for educational spending on primary school lies above the 45-degree line, reconfirming that public spending devoted to primary school is pro-poor. This result is consistent across the survey years. The concentration curve for lower secondary school lies below the 45-degree line but above the Lorenz curve, suggesting that the educational spending on lower secondary school is relatively progressive. In other words, public educational spending on lower secondary school is more equally distributed than aggregate household income. Since the concentration curve for upper secondary school crosses the Lorenz curve, public spending on this service is neither progressive nor regressive.

As mentioned in section 3.3, benefit incidence analysis did not capture marginal gains, i.e. the extent to which changes in public spending affect different user groups. For this reason, we also estimate the marginal benefit incidence; Table 2 presents the results. We find that households in the lower four quintiles would benefit more from increased public spending on primary and lower secondary school than those in the top quintile would. More precisely, a 1 percent increase in public spending on primary school and lower secondary school would have increased the enrolment rates of the poorest households by 0.93 percent and 1.46 percent, respectively, in 2004; and by 1.17 percent and 1.85 percent, respectively, in 2011. This evidence indicates that improvements in access to primary and lower secondary school have been explicitly pro-poor, since most of the richest households already have access to these basic services. But if there is an increase in public spending on upper secondary school, households in the middle three quintiles are likely to benefit more than those in the lowest and highest quintiles. There are two possible explanations: (a) the richest households might prefer a qualified private upper secondary school for their children, and (b) the poorest households cannot afford the school fees or living costs. Therefore, only households in the middle groups are able to send their children to public upper secondary school.

In terms of regional distribution, Table 3 illustrates education participation rates in the five main geographical regions: Phnom Penh, Plains, Tonle Sap, Coastal and Mountain-Plateau. We note that in 2004 the participation rates for the three educational levels were highest in Phnom Penh and lowest in the Mountain-Plateau region. However, the participation rate for public primary school in Phnom Penh decreased to 85 percent in 2011, the lowest rate among the five regions. This might suggest that a certain proportion of better-off households in the capital were sending their children to a private primary school. For lower and upper secondary school, participation rates were highest in Phnom Penh and lowest in the Tonle Sap and Coastal regions. The budget allocation among the five regions was unequally distributed in that the Coastal region seemed to receive the smallest share of public spending on primary and secondary schooling across the study period.

Table 2: Marginal Benefit Incidence of Public Spending on Education

	2004	2009	2011
Primary school			
Quintile 1	0.93	1.28	1.17
Quintile 2	1.27	1.30	1.23
Quintile 3	1.12	1.07	1.06
Quintile 4	1.03	0.86	1.03
Quintile 5	0.66	0.48	0.52
Lower secondary school			
Quintile 1	1.46	1.52	1.85
Quintile 2	1.21	1.38	1.28
Quintile 3	1.01	0.95	1.00
Quintile 4	0.90	0.95	0.51
Quintile 5	0.42	0.21	0.36
Upper secondary school			
Quintile 1	0.66	1.09	0.89
Quintile 2	0.73	1.09	1.00
Quintile 3	1.22	0.98	1.30
Quintile 4	1.39	1.14	0.96
Quintile 5	0.99	0.71	0.86

Source: Authors' Calculation from CSES 2004, 2009 and 2011

If we decompose our analysis into urban and rural distribution, we find that the participation rates across educational levels in urban areas are always higher than in rural areas. This is mainly in respect of upper secondary school where the enrolment gap between the two areas accounts for more than 20 percentage points. In terms of budget share, urban areas received only 31 percent and 41 percent of total spending on primary and lower secondary school, respectively, in 2011 – approximately 11 percentage points and 4 percentage points higher than in 2004. Conversely, 61 percent of public spending on upper secondary school went to urban areas in 2011, while only 39 percent was allocated to rural areas. This disparity might be because there were more upper secondary schools in urban areas than in rural areas, and because the children in rural areas could not afford to attend upper secondary school.

Table 3: Participation Rates and Share of Public Spending on Education by Geographical Region (%)

	2004		2009		2011	
	Participation rate	Share by quintile	Participation rate	Share by quintile	Participation rate	Share by quintile
Primary school						
Phnom Penh	90	6	88	6	85	13
Plains	86	43	88	42	90	37
Tonle Sap	84	32	86	33	90	31
Coastal	87	8	87	8	92	7
Mountain-Plateau	80	10	81	12	86	13
Urban	87	20	88	15	90	31
Rural	85	80	86	85	88	69
All	85	100	86	100	89	100
Lower secondary school						
Phnom Penh	93	16	90	11	91	22
Plains	77	41	79	41	87	38
Tonle Sap	72	27	77	32	79	25
Coastal	79	9	83	8	88	7
Mountain-Plateau	67	7	74	9	80	10
Urban	88	37	87	24	89	41
Rural	71	63	77	76	83	59
All	77	100	79	100	85	100
Upper secondary school						
Phnom Penh	58	33	63	22	73	40
Plains	15	29	29	38	34	26
Tonle Sap	14	23	24	27	30	20
Coastal	26	12	33	8	29	5
Mountain-Plateau	11	5	20	6	37	9
Urban	45	63	55	40	60	61
Rural	11	37	23	60	28	39
All	20	100	30	100	42	100

Source: Authors' calculation from CSES 2004, 2009 and 2011

5. CONCLUSION AND POLICY IMPLICATIONS

The main objective of this study is to assess the pro-poorness of public expenditure on education in Cambodia by using nationally representative household data from surveys in 2004, 2009 and 2011. Benefit incidence analysis suggests that public spending on education services in Cambodia is pro-poor at primary level and progressive at lower secondary level, while the nature of spending on upper secondary schooling remains inconclusive. The expansion of public spending on primary and lower secondary school seems to benefit the poorest households more than the richest households, whereas the expansion of public spending on upper secondary school seems to benefit middle income households more than the poorest and richest households. The latter possibly reflects the fact that the opportunity cost of sending children to school for poor families is too high, and that households in the richest group tend to favour private school over public school. Our study has also highlighted a large disparity in public spending on education services across regions, especially between urban and rural, at upper secondary school.

A number of pro-poor policy options can be drawn from the findings. The existing budget for lower and upper secondary education could be reallocated to target children in the poorest households, and if there is an expansion of educational spending, the budget allocation should be biased more towards primary and lower secondary education. At upper secondary level, existing government expenditure should be reallocated to give more priority to rural areas. This can be achieved by increasing educational opportunities, implementing food support programmes, and providing monthly allowances for students from remote areas.

This study will be further developed into a CDRI working paper by incorporating secondary data on educational spending published by government. This will capture average public spending per student, and enable the analysis to be extended to the structure and quality of educational expenditure. It will also examine out-of-pocket spending, which is considered an emerging barrier the poor face in accessing higher education.

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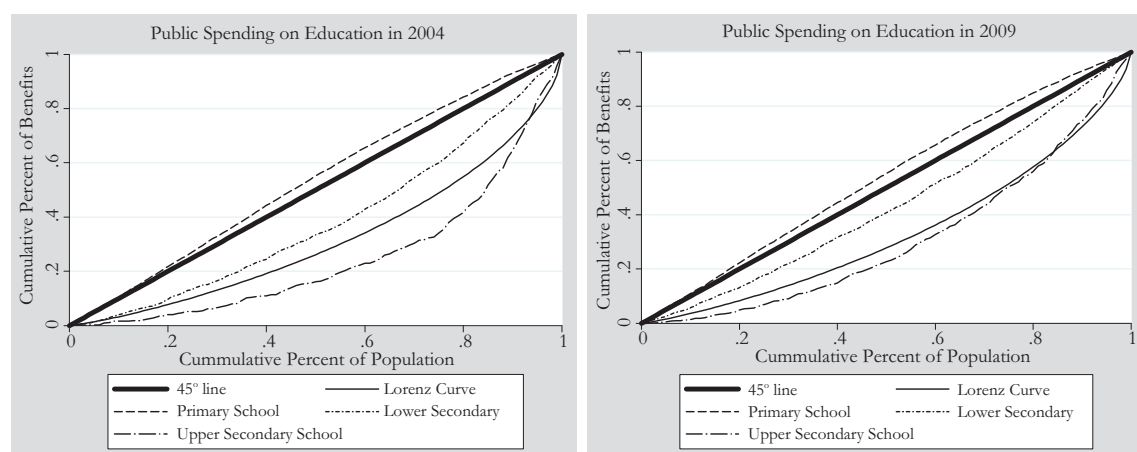
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APPENDICES

Appendix 1: Educational Structure in Cambodia

Age	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Grade				1	2	3	4	5	6	7	8	9	10	11	12
Level	Pre-school			Primary						Lower Secondary			Upper Secondary		
Access	Voluntary			Compulsory									Voluntary		
Cost	Free or small fee			Free											

Appendix 2: Progressivity of Public Expenditure on Education in 2004 and 2009



Policy Priorities for Raising Rice Yield and Output in Cambodia¹

by Theng Vuthy and Ben Flower²

ABSTRACT

This paper reviews the key constraints inhibiting Cambodia's rice commercialisation. It argues that despite impressive progress over the last two decades, there are still obstacles to the ambition of making Cambodian rice into an internationally recognised brand by supplying high-quality rice to the global market and achieving milled rice export of at least 1 million tonnes per year by 2015. Productivity in smallholder rice farms is hindered by inefficient input markets, the structure of informal paddy markets, and inefficient land use and inequitable land management. Current policies promoting contract farming and farmer organisations have addressed some of these issues, but rice production constraints in the main rice-growing areas should be tackled as a matter of urgency. Further up the value chain, upgrading milling capacity, developing export infrastructure and streamlining bureaucratic procedures are priority areas if export targets are to be achieved.

1. INTRODUCTION

The performance of Cambodia's agricultural sector has improved remarkably in the last two decades. Yields more than doubled, from 1360 kg per hectare in 1990 to 3100 kg per hectare in 2012 (NIS 2008; MAFF 2013), driving a steep increase in output, with paddy rice surplus reaching 4.7 million tonnes in 2012 (MAFF 2013). Yet there is still considerable scope to enhance the sector, which lags behind major regional producers Thailand and Vietnam in both yield and output (CDRI 2013). Policymakers are promoting a dual-pronged approach to turn Cambodia into the world's third largest rice exporter by improving productivity and yield, in particular on small family farms, and shifting production to higher value commercial products. This paper examines the policy options for bringing about these transformations.

Around 85 percent of the population live in rural areas where the majority are engaged in agriculture, mainly growing paddy on small family farms. The government has earmarked this demographic in efforts to release pent-up agricultural production capacity, which in turn will significantly increase rice output and provide a stable source

¹ This article is extracted from Dr Theng Vuthy's presentation at the 2013 Cambodia Outlook Conference (see CDRI (2013), "Removing Constraints to Cambodia's Agricultural Development", *Cambodia Outlook Brief 2013*, No. 2, www.cdri.org.kh)

² Dr Theng Vuthy is a research fellow at CDRI; Ben Flower is a PhD candidate at University College, London, and a research intern at CDRI.

of long-term economic growth. Equitable, smallholder-driven expansion of the rice sector through an inclusive growth paradigm rooted in transformative and sustainable development of the agricultural sector is the key to realising that potential, driving down poverty rates, and bolstering food security. Further up the value chain, increases in paddy rice production must be supported with the development of processing and export capacity if Cambodia is to produce high-quality, competitively priced rice to penetrate the global market.

Over the last two decades, national and sectoral policy frameworks have been mobilised to boost productivity, translate increases in output into export revenue, and channel capital to smallholder farmers to invest in further increasing their productivity. Cambodia's Rectangular Strategy Phase III 2014-2018 reaffirms the government's goal to export 1 million tonnes of milled rice per year by 2015 (MAFF 2011; RGC 2013).

This paper identifies the remaining challenges to the development of Cambodia's rice sector and offers policy suggestions that detail how those constraints can be removed. Following this introduction, the second section highlights the problem of high-cost, low-quality farm inputs that constrains the productivity of smallholder rice farming. The third assesses market inefficiencies that hinder the development of paddy markets and reviews some emerging institutional mechanisms, such as contract farming and farmer organisations, which are expected to help overcome structural constraints. The fourth section addresses the issue of land distribution and ownership that constrain rice production, and the fifth considers global market access – the next big challenge for Cambodian rice – stressing emergent issues in production and export capacity. The final section offers some policy suggestions.

2. HIGH FARM INPUT COSTS

As in other countries in the region, Cambodian smallholder profits are eaten away by significant production costs. Fertiliser in particular constitutes a large share of total costs, about 23 percent in the wet season and 37 percent in the dry season (Chhim *et al.* 2013) – a rate similar to that found in neighbouring Vietnam and Laos (no recent information is available for Thailand).³ In addition, low quality inputs, under developed extension services and expensive credit constrain the development of the rice sector.

The fertiliser market, while well-structured at a foundational level, exhibits deficiencies that hinder increases in crop yield. Many of the issues stem from ineffective inspection procedures for imported fertiliser. The systems in place are not sufficient to ensure that substandard and counterfeit products are barred from entering the Cambodian market. Customs inspections at the border are characterised by unclear lines of responsibility, poor coordination between agencies, and petty corruption. In particular, the current import licensing system has created opportunities for permit-issuing officials to benefit from exacting “unofficial fees”, thus undermining the integrity of the system (IFDC 2010; Theng 2012).

³ In Vietnam, fertiliser accounts for about 29 percent of total production costs for transplanted rice and 22 percent for direct-seeded rice; in Laos, fertiliser constitutes about 23 percent of total production costs for wet season rice and 39 percent for dry season rice.

Restrictions on the volume of fertiliser that can be legally imported into Cambodia, currently capped by MAFF at 30,000 tonnes per year per licence, have placed a significant supply-side constraint on Cambodia's fertiliser market. The import quota impedes economies of scale and encourages informal, unregulated cross-border trade with Vietnam and Thailand, key routes for counterfeit and inferior quality products flooding the domestic market through both importers and local traders (Theng 2012).

Imperfections in fertiliser markets in Cambodia are another reason behind the flow of a high volume of counterfeit products entering the supply chain. It is estimated that around 10 percent of fertilisers used on Cambodian crops have been either adulterated or mis-sold, where low quality fertiliser is re-bagged in sacks labelled with a high quality brand. These products have detrimental effects on rice yields and undermine the livelihoods of smallholders: farmers have reported income losses in the range of USD285-350 per year because fertilisers under performed (See Chapter 7 for further detail).

There are clear, actionable policy measures that could improve the supply of reliable, affordable fertiliser to Cambodia's smallholder rice producers. First, and most straightforward, is the removal of the fertiliser import quotas imposed by MAFF. Second, and slightly more complex, is reforming and simplifying import-licensing procedures to allow small and new importers to enter the market; the resulting increased competition would drive down costs and drive up quality. Third, and most important, is to delegate responsibility and powers that would enable MAFF to carry out spot checks on fertiliser samples at the border, including laboratory tests that can determine quality. Currently, Cam Control of the Ministry of Commerce is authorised to check only import volumes and the quality assurance certificates issued by testing laboratories before products are allowed to enter Cambodia. These limited checks have enabled – indeed encouraged – the flow of counterfeit products from supplier countries (Theng 2012).

Improvements in rice cultivation techniques have been curtailed by the supply and demand characteristics of seed markets, resulting in poor seed quality and low yield potential.⁴ There has been general apathy among farmers about switching to the new improved high yielding and high quality rice varieties because of scepticism about markets for such products. A recent project by MAFF aimed to introduce ten new high yielding varieties into the supply chain, but farmers preferred to stick to the seed types they knew they could grow and market. However, even if farmers were to embrace improved high quality rice seed, there are supply-side constraints that need addressing. Currently, the supply of high quality rice seed meets only 20 percent of demand (CEFP 2011: 12).

Limitations in seed and fertiliser markets are compounded by poor extension services constraining the propagation of modern agricultural techniques across rural Cambodia.

⁴ Low quality seed is either a mix of different kinds of rice seed, or farm-saved seed that generally has a low germination rate and produces weak seedlings, thus lowering yield potential and quality.

There is a lack of physical infrastructure to educate and train farmers on the proper use of fertiliser, or to take advantage of improved high-yielding rice varieties and other modern farming techniques (Chhim *et al.* 2013). There is also a disconnect between agricultural research and practice: many modern rice growing techniques tailored for Cambodia have been developed by research institutes such as the Cambodian Agricultural Research and Development Institute (CARDI), yet there are insufficient extension institutions to channel this knowledge to the grassroots level.

Adding significantly to input costs and a core constraint to farmers' investment in rice production is expensive credit. High interest rates of up to 5 percent per month add significant costs to investment and divert capital from productive enterprises. Recently there have been signs of structural change in rural credit markets as microfinance institutions (MFIs) have extended their reach and become increasingly active in rural areas. Nevertheless, the majority of households usually obtain credit from informal moneylenders (Kem 2012).

The reason why informal moneylenders remain prevalent sources of rural credit, despite the fact that they charge high rates of interest, is because they are easily accessible to poor households. Informal loans are dynamic and embedded in social relationships: they can be obtained quickly if households experience shocks that deplete their financial resources, and their terms can be tailored to the complex needs of the vulnerable. MFIs, on the other hand, may be reluctant to lend to poor smallholders, where the risks are deemed too high and the profit margins are small. Many poor households also lack collateral because they are landless, or because their land ownership rights have not been formalised.

Even where households do meet requirements for a microfinance loan, interest rates are high at 2.5 percent per month – a major burden for smallholders. For MFIs to increase investment in rice farms, borrowing conditions and collateral requirements need to reflect the complex economic situations of poor and financially fragile households, and lenders must be properly regulated so that vulnerable households do not take on numerous loans at the risk of becoming trapped in a cycle of unserviceable debt.

For credit to translate into tangible increases in production it is crucial that lending is viewed in the broader context of high farm input costs. Expensive inputs give less incentive to farmers to access credit for investment, causing them to remain rooted in subsistence farming. For outcomes to be optimised, low interest rate credit should augment low-cost high-quality farm inputs, and be supported by high quality extension services.

3. INEFFICIENT AND INEQUITABLE DISTRIBUTION OF LAND OWNERSHIP

Cambodia has one of the highest rates of land inequality in the region; many farmers also suffer from tenure insecurity (SNEC 2007; Muller 2012). It is well documented in the literature that an egalitarian distribution of land and strong property rights are a cornerstone of inclusive growth (Lipton 2009). Thus, issues around land ownership in

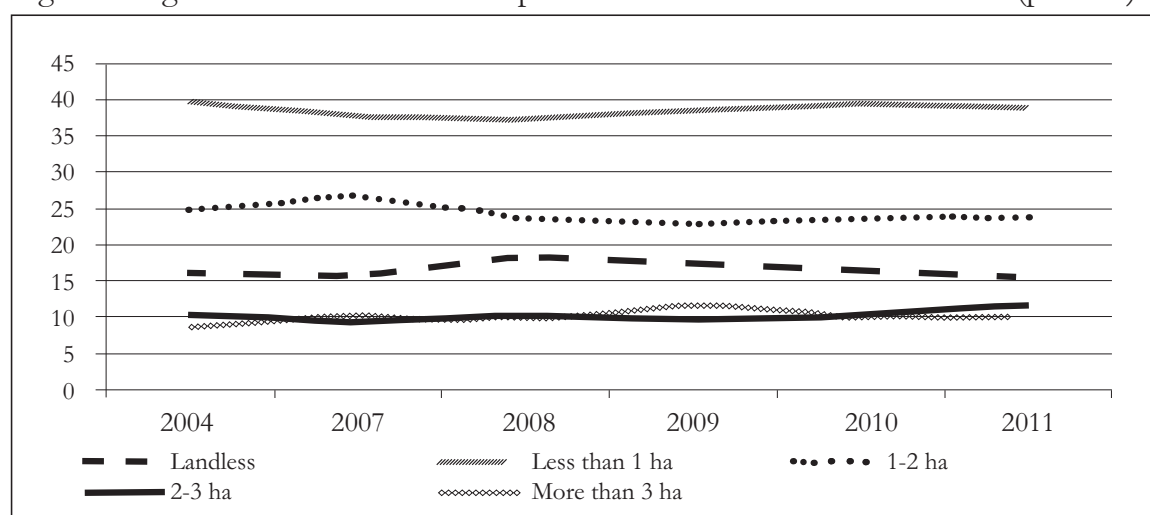
Cambodia perhaps constitute the greatest constraint to increased rice production, as well as being a leading cause of poverty (Muller 2012).

In labour-intensive agriculture there is a well-established inverse relationship between land size and productivity because small farms are better able to utilise labour and therefore produce more grain per hectare than larger farms (Lipton 2009). This inverse relationship holds true for Cambodia (Ngo and Chan 2010). However, in areas where land inequality is high, this yield advantage does not result in surplus for smallholders because land size is too small to provide enough for their subsistence needs, much less to provide surplus grain for sale. In other words, small landholdings limit households' potential to convert their labour into grain because there is simply not enough land to absorb their labour capacity.

Presently, Cambodia's vast pool of rural labour is underutilised because many households are either landless or have very small plots; 55 percent of all rural households fall into this demographic, including 15 percent of households that are landless and 40 percent that own less than 1 ha (Figure 1; CSES 2011). The optimal distribution of agricultural land would best utilise labour in Cambodia's rural economy; this is characterised by households having enough land to utilise their labour stock effectively. In other successful Asian economies, notably Japan and South Korea, an egalitarian distribution of land among smallholders has proved effective in harnessing underemployed rural labour, and sparked a period of historically unrivalled growth (Kay 2002).

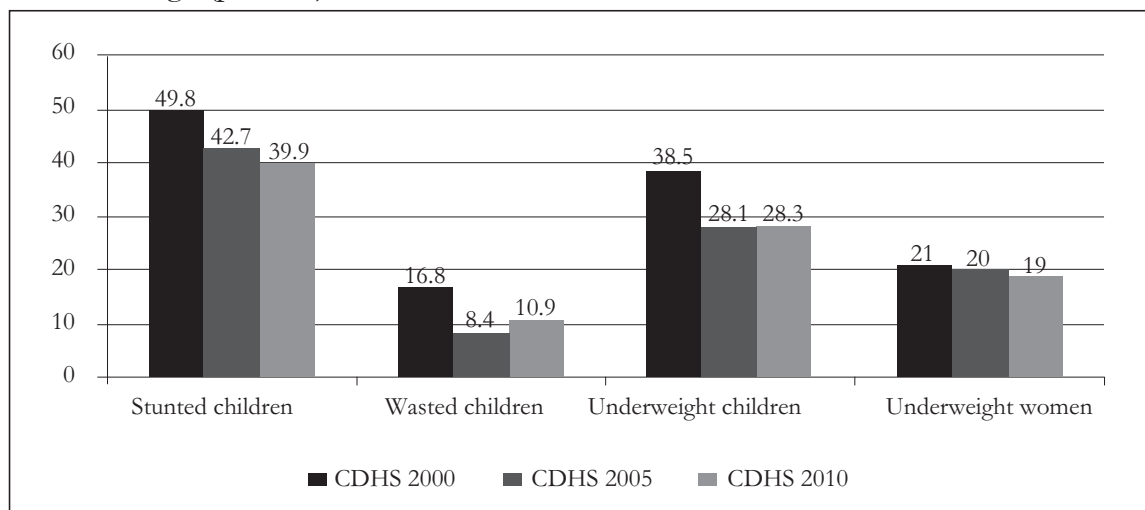
Land-poor households also suffer food insecurity. The 2010 Cambodia Demographic Health Survey (CDHS) found that wasting in children under five years old – classified as serious malnutrition by the World Health Organisation – had increased in this population from 8.4 percent in 2005 to 10.9 percent in 2010 (Figure 2). Malnutrition had also caused high rates of underweight (28 percent) and stunted (39.9 percent) children (CDHS 2010).

Figure 1: Agricultural Land Ownership of Rural Households in Cambodia (percent)



Source: CSES 2004; 2008-2011

Figure 2: Nutrition Status of Children Aged Under 5 and Women of Reproductive Age (percent)



Source: CDHS 2000; 2005; 2010

While many farmers have no land to cultivate, huge tracts have been allocated as economic land concessions (ELCs), much of which is left idle (Muller 2012: 21; SNEC 2007: 13-14). While recognising the important role that ELCs play in the rural economy by producing cash crops and rubber for export (Ngo and Chan 2010), it is essential to monitor how they are allocated, that they are being used productively, and to ensure that the property rights of smallholders are not violated in the process (SNEC 2007; Muller 2012).

The government has recognised that poor regulation of ELCs is a cause of inefficiency in the rural economy, exacerbates poverty, and can be a source of social unrest. In response, the prime minister vowed to review the activities of all existing ELCs. A mechanism to confiscate and redistribute concessionary land has been created – the Land Allocated for Social and Economic Development (LASED) framework. So far LASED has identified around 133,000 ha to be removed from ELCs nationwide, though much of this idle land has since been occupied by nearby rural communities. Between 40,000 to 50,000 ha is available for redistribution as social land concessions (SLCs), but logistical difficulties resulting from the long distances between the locations of cancelled ELCs and landless households have hindered LASED redistribution efforts (Muller 2012: 9).

ELCs have been able to dispossess poor households because informal land ownership mechanisms do not provide tenure security. In many rice-growing areas with long ownership histories, tenure insecurity is not a big issue. But in peripheral areas, insecure property rights have enabled powerful actors to dispossess smallholders. Counter-intuitively, land titling efforts have concentrated on low-conflict rice growing areas as a matter of procedure, and have neglected areas with low tenure security that are perceived to be “too complicated” (Biddulph 2011). To address this issue, under the prime minister’s Directive 001, the government has dispatched youth volunteers to formalise land rights and distribute titles nationwide, including in areas where ELCs operate. As yet, there has been little research into the effectiveness of these recent reforms, and it remains to be seen if they address the problem of tenure insecurity for vulnerable smallholders.

4. STRUCTURAL CONSTRAINTS IN SMALLHOLDER RICE MARKETS

Information asymmetries in Cambodia's rice markets are present from the top to the bottom of the value chain. At the local level, smallholders are highly dependent on brokers from Thailand and Vietnam to facilitate trade. These brokers are able to determine prices and demand for particular products, creating large profits for themselves in the process (Gergely *et al.* 2010; JICA 2012; Chhim *et al.* 2013). The structure of this market is highly undesirable from both efficiency and equity perspectives. Smallholder producers, who contribute to growth by creating a surplus, get below-market rates for their produce and face demand uncertainty, curtailing investment and limiting productivity. Rent-seeking traders (who extract value from the rice chain without making any contribution to rice productivity), on the other hand, benefit proportionately more than primary producers and increase transaction costs in rice markets and even create market information asymmetries (Table 1).

Table 1: Wet and Dry Season Rice Value Chains in Takeo Province, February 2012

Value chain actors	WS price-cost markup (USD/tonne)		DS price-cost markup (USD/tonne)	
	USD	%	USD	%
Farm gate price	250	100	193	100
Village collectors	9.1	3.6	6.6	3.4
Village/local traders	54.9	22	7.4	3.8
Regional traders	40.0	16	10.0	5.2
Provincial rice millers	375	-	-	-
Rice exporters	-	-	14.5	7.5
Vietnamese traders	-	-	262.5	-

Source: Chhim *et al.* 2013

To redress this market imperfection, smallholders must be given adequate access to market information regarding prevailing crop prices and demand so that they are able to get the correct market price for their products. A tangible policy step that could benefit smallholders would be the creation of a database of quality-linked product prices open to the public (JICA 2012).

To address structural constraints, new institutional arrangements are now being trialled within rice production that might help to overcome the structural bias against smallholders that is embedded in rice markets. An emerging mechanism attracting much attention is contract farming, which is often perceived as beneficial to smallholders because it eliminates the uncertainty associated with negotiating with rice brokers. The farmer is contracted to produce a certain amount of produce and the buyer/contractor is obliged to buy those goods at an agreed price for the duration of the contract, subject to quality control standards being met by producers. Under contract farming schemes, farmers receive high quality seeds, access to modern production techniques, low interest loans and better prices for the produce than they would by negotiating directly with brokers.

However, in its present form, contract farming does not go far enough in empowering smallholders. Farmers are not consulted in drafting contract terms, and have the power only to agree with them or to forgo participation in the contract. The unequal power relationships that are the root cause of rice market inefficiencies across the sector have therefore been replicated in contract farming arrangements. Farmers have little power to negotiate the price or define what constitutes a “quality product” and are frequently confused by complex terms. Consequently, many farmers have left contract schemes without seeing any benefits (Nou and Heng 2013).

The weakness in the current contract farming arrangement stems from the fact that it is fundamentally an agreement between individual farmers and large contractors (Gergely *et al.* 2010: 70). To overcome this power imbalance, civil society organisations have been pursuing frameworks that can increase the bargaining power of farmers by uniting them in the form of farmer organisations. To date, 14,000 groups have been formed nationwide, including 240 agricultural cooperatives (JICA 2012).

At present, farmer organisations tend to have limited impact because of weak organisational structure, poor leadership and weak planning skills. Activity stops when support agencies stop their services, even among successful groups. There is a lack of mutual trust within groups, which limits meaningful collective action. Organisations have focused solely on production techniques, and have not been mobilised to benefit from collective action in input markets or to influence terms of rice trade (Theng *et al.* 2013).

Even so, although they are still in an early stage of development, farmer organisations are showing real potential to redress the power imbalances in rice markets. To support this promising development, it is crucial that their scope is broadened and that they are integrated into other rice market structures. Through these measures, farmer organisations could provide a solid foundation to increase the bargaining power of smallholders through frameworks like contract farming.

5. PENETRATING THE GLOBAL RICE MARKET

It is important that government policies restructure Cambodia’s rice sector to better represent the demands of the global market. To compete in the competitive global marketplace, high reliability is required to consistently meet buyers’ quality and volume specifications. But Cambodia, despite posting a rice surplus of more than 4.7 million tonnes in 2012, has been unable to provide a predictable volume of uniform quality product for export (JICA 2012).

Supply chain constraints in the production of milled rice that result in variable quality products have been a barrier for Cambodian rice entering global markets. After harvesting, rice is treated inappropriately during drying and storage, causing uneven and/or high moisture content and this leads to a low rate of head rice recovery (percentage of whole grains) during milling (JICA 2012). Additionally, rice varieties are sometimes mixed after they have been harvested, degrading the overall quality of the product (Chhim *et al.* 2013).

Current production capacity for milled rice is low. Cambodia's rice mills are sufficient to process only about 21 percent of the surplus rice produced, and mills that are equipped with the technology to produce export quality products account for only about 7 percent of paddy surplus (Table 2; Gergely *et al.* 2010). Great strides in capacity are therefore required if the export target of 1 million tonnes of milled rice is to be met: estimates suggest the addition of 92 medium-sized mills and 18 large-sized mills. Considering that each medium-sized mill costs on average USD1.224 million (Gergely *et al.* 2010), the expense involved in such an expansion of production capacity is considerable.

Table 2: Rice Milling Capacity in Cambodia

Mill types	No. of mills	Capacity (tonnes paddy/hour)	Hours per year	Output capacity (paddy)	Output capacity (milled rice)
Small	200	1.5	2000	600000	372000
Medium ^{Exp}	12	5	2000	120000	74400
Large ^{Exp}	8	10	2200	176000	109120
Total				896000	555520
Export quality mills ^{Exp}				296000	183520
Milling capacity (%)				21	
Milling capacity (%) ^{Exp}				7	

Source: Gergely *et al.* (2010)

Note: Paddy surplus in 2011 was 4.34 M tonnes, with an average rice head recovery rate of 62 percent (MAFF 2012). ^{Exp}: Mills produce exportable milled rice

The high input costs of rice milling increase the price of Cambodian products, making them less competitive in the global marketplace and diverting revenue from producers/processors. The biggest contributor processing costs is expensive and unreliable electricity from the national grid. As a result, most mills use high-cost, inefficient diesel-run generators to meet their electricity needs and, consequently, fuel bills are millers' biggest single expense, accounting for 32 percent of total processing costs (Gergely *et al.* 2010; JICA 2012).

The other major input cost for mills is expensive credit. Mills need significant working capital to purchase paddy rice, but the high cost of credit means that acquiring this working capital constitutes a major financial burden, accounting for 28 percent of total processing costs. As a result, many mills do not run at full capacity because they are unable to afford the requisite quantity of paddy. To meet the target of exporting 1 million tonnes of milled rice by 2015, Cambodia's mills will need about USD470 million for purchasing paddy and an additional USD200 million for working capital (Gergely *et al.* 2010: 58). This would require expanding the credit mechanisms available to millers.

Once milled rice is produced, there are further constraints to getting it to market. Cambodia relies on road transport to get rice to its ports, but at USD15 per tonne, this

is expensive compared with haulage costs in neighbouring countries. Compounding these costs are complex and expensive export procedures. For instance, an array of formal and informal fees are demanded by officials, including highway tolls, customs clearance, customs inspection, Cam Control inspection and certification, issuance of certificate of origin, Ministry of Commerce inspection, fumigation, and phyto-sanitary inspections. According to official regulations, fees amount to USD10 per tonne, but in practice, when unofficial costs are taken into account, the figure rises to USD20 per tonne (Gergely *et al.* 2010).

Significant improvements in export-related bureaucratic procedures in recent years, notably the One-Window Service Office, have significantly reduced the scope for various unofficial fees and charges levied on exporters as they move rice across the country and borders. However, Cambodia still has a way to go to catch up with international standards and procedures for rice export. Crucially, progressive policy frameworks could falter without parallel improvements in institutional capacity. The fact that actual customs fees are double the official figure shows that there is still much to be done to reduce the aggregate costs of petty corruption among regulatory agencies. Technological barriers and institutional limitations also need to be overcome. For example, the ability to certify products to international hygiene standards, known as sanitary and phytosanitary (SPS) analysis, is a requirement for rice destined for global markets. Yet exporters currently have to send rice to buyers for pre-shipment testing and inspection before cargoes can be despatched – another source of delay and expense.

Logistics infrastructure must be upgraded as a matter of urgency if Cambodia's rice export ambitions are to be realised. To meet the export target of 1 million tonnes, the current truck fleet would have to increase by 500 percent. Sihanoukville Port is another constraint to the export of large quantities of milled rice; handling such volumes of rice would require a flow of 50,000 containers a year, or approximately 150 a day (Gergely *et al.* 2010), far exceeding current logistical capability and requiring massive investment in infrastructure.

6. POLICY: PRESENT AND FUTURE

This paper posits that there are a number of structural deficiencies in markets related to paddy production, including input markets, credit markets and paddy markets themselves, which limit increases in rice investment and productivity. The resulting hesitant growth is compounded by inefficient land use and inequitable land management. Further up the value chain there are deficiencies in the production of milled rice, which result in a comparatively low volume of variable quality product available for export. If rice exports are to reach government targets, both the volume and quality have to be improved and the hard and soft infrastructure required to facilitate large increases in product flows will have to be upgraded.

Improving productivity in the rice sector has long been an ambition of the government and the subject of much policy action at the national and sectoral levels. Rectangular Strategy III 2014-18 and National Strategic Development Plan 2009-13 are recent

national-level policy incarnations; they have placed rice in the broad context of national development issues, highlighting land reform and nutrition improvement as key deliverables. These frameworks clearly articulate long-term strategic objectives and results to be achieved, as well as delineate indicators of success. As with many aspects of policy reform in Cambodia, the problem has not been the policies but their implementation. As a prime example, this article has highlighted land reform as a key area where institutions have lacked the capacity to implement policies transparently and effectively, such as equitable formalisation of land rights, regulation of economic land concessions, and redistribution of land to the vulnerable through Social Land Concessions.

At the sectoral level, the Agricultural Strategic Development Plan 2009-13 and the Strategy for Agriculture and Water 2010-13 promote sustainable development in the rice sector, highlighting product diversification, productivity, market formalisation, food security, and land and water resource governance. Sectoral policy frameworks exhibit significant shortcomings: policies are too broad and do not articulate clear priorities or measurable objectives capable of guiding national and sub-national institutions. There is confusion over responsibilities as policy guidelines overlap, and different components can be conflicting. Implementation of policy frameworks is rendered complex and difficult by ineffective inter-ministerial coordination.

To remove current constraints to increased rice production and address shortcomings in institutional and policy frameworks, it is suggested that the government implement the following policy options:

1. Enhance vertical integration through the provision of good quality seeds, extension services, fertiliser and credit to increase the quality of products for export and gain higher prices for producers.
2. Promote horizontal linkages – farmer organisations and contract schemes can increase farmers' bargaining power, provide benefits for poor smallholders, and secure stable volume and quality products for export.
3. Improve coordination between ministries and the agencies within their sectors by simplifying administrative procedures through the creation of a one-stop service. This could be an incentive to encourage more investments in food processing and exporting processed products.
4. Transform informal trade to formal trade by strengthening rice-processing industries through financial support systems, infrastructure development and an enabling business environment.
5. Adjust land management policy to ensure more direct benefits for the poor, smallholders and ethnic minorities.

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Cambodia's Fertiliser Industry: Trends, Challenges and Opportunities

by Theng Vuthy and Khiev Pirom¹

1. INTRODUCTION

Cambodia's economy has undergone profound transformation – a shift in the sources of growth away from agriculture towards labour-intensive industrial and service sectors. In 1994, agriculture accounted for 46 percent of GDP, with industrial output contributing 13 percent and services 35 percent. By 2010, agriculture's share had fallen to about 27 percent, that of industry had doubled to 27 percent, and service sector's share had risen to 39 percent (NIS 2011). The decline in the share of agriculture to total output has been accompanied by a decline in the share of employment in agriculture from about 81 percent in 1993 to about 59 percent in 2011. Although its contribution to GDP has been steadily declining over the last 20 years, agriculture continues to be a critical sector for the country's economic growth and poverty reduction efforts (CDRI 2013).

This structural transformation has been intertwined with solid gains in productivity in the agriculture sector. Between 1990 and 2012, crop and food production increased nearly fourfold, while cultivated land areas increased one and a half times. Growth in agricultural output has been largely driven by gains in crop yields, which more than doubled from about 1360 kg per ha in 1990 to 3100 kg per ha in 2012 (NIS 2008; MAFF 2013), representing the largest percentage yield increase compared with neighbouring Vietnam, Laos and Myanmar as well as Bangladesh, Pakistan and Nepal in South Asia (CDRI 2013). This impressive agricultural transformation was especially the result of the increased use of chemical fertilisers, improved seeds and better irrigation systems (Yu and Fan 2009; USDA 2010). Yu and Fan (2009) found that a 1 percent increase in fertiliser use is estimated to increase yield by 0.1 percent in the wet season and 0.2 percent in the dry season. The use of chemical fertilisers in Cambodia is still much lower than it is in comparator countries in Southeast Asia: on average, Cambodia uses about 160 kg of fertiliser per ha (section 3.2) compared with about 400 kg in Vietnam, 281 kg in Bangladesh and 217 kg in Pakistan (Yu and Diao 2011; World Bank WDI 2013 cited in CDRI 2013: 8). Increasing agricultural productivity then, is a process of intensification; big increases in productivity can be achieved through the effective application of appropriate inputs (Yu and Fan 2009).

Fertiliser helps to increase crop production in several ways. First, it helps to replenish nutrients and enhance soil fertility. Second, it helps to increase crop productivity because it can adapt high-yielding varieties (HYVs). Third, in the nutrient-poor soils

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of the tropics, fertiliser is used to increase both crop yields and biomass² (Bumb 1996). Increasing crop production through the expansion of cultivation areas does not seem feasible, given population growth and the slow pace of land reform. Therefore, future increases in crop production are expected to come mostly from increasing crop yields, and fertiliser will remain an essential input in meeting the future demands for crop intensification and greater food security (RGC 2010). Yu and Fan (2009) also argue that fertiliser, seeds and irrigation are major determinants for improving rice productivity response in Cambodia. Furthermore, the Green Revolution package (fertiliser, irrigation and seeds) contributes to increased crop production, agricultural income, and export promotion (Arulpagasam *et al.* 2003).

The fertiliser market in Cambodia has evolved rapidly to serve the demands of Cambodian farmers. It is a free market, led by the private sector operating in a competitive manner, and prices are set by market forces (IFDC 2010). Supply of fertilisers has increased rapidly in response to demands for crop intensification. For instance, in 2002, about 137,877 tonnes of NPK fertilisers (see section 3) were imported, while in 2011, about 433,120 tonnes were imported, indicating a 210 percent rise in demand in a 10-year period. However, higher fertiliser prices in recent years have deterred farmers from using fertiliser in the recommended quantities: about 79 percent of farmers report having under-used fertiliser, citing financial considerations as the main reason (Lim 2006). Poor fertiliser quality is another problem, with the occurrence of nutrient content mismatched with labels (IFDC 2010). The presence of poor quality fertiliser has made many farmers suspicious of the market, and consequently to abstain from it altogether (Schamel and Hongen 2003). Given that fertiliser plays an important role in promoting crop productivity and food security, it is important to review the structure of the fertiliser industry, trends in fertiliser use, the policy and regulatory environment influencing the market and fertiliser use, along with possible interventions for improvement.

The objectives of the study are: (1) to review the structure of the fertiliser industry in Cambodia; (2) to identify key constraints of the fertiliser market with a focus on both demand and supply sides; and (3) to identify possible policy options to enhance the role of fertiliser in Cambodia's agricultural transformation and food security.

The paper is structured as follows: Section 2 provides an overview of the structure of the fertiliser industry in Cambodia. Section 3 details the issues on the demand side. Section 4 presents the supply-side issues. Section 5 provides policy implications for improving the fertiliser industry in Cambodia.

² Biomass can be used to augment the supply of organic matter in soil, which improves moisture retention and nutrient use efficiency and thereby contributes to increased crop yields.

2. STRUCTURE OF THE FERTILISER INDUSTRY

2.1. Historical Background

Between 1979 and 1993, the government was responsible for most of the import and distribution of agrochemicals, in particular fertilisers and pesticides. Limited amounts were imported and distributed by non-governmental organisations. During the Vietnamese occupation from 1980 to 1989, about 35-40,000 tonnes per year of fertilisers were imported from Vietnam, and between 1991 and 1996, the Food and Agriculture Organisation (FAO), Japan and the Asian Development Bank (ADB) donated 92,966 tonnes of inorganic fertilisers. These fertilisers were mainly used in rice production.

After the national election in 1993, Cambodia began privatising state-owned enterprises, resulting in both private and public sector involvement in the supply of fertilisers in a free market economy. From 1993 to 2000, the Agriculture Inputs Company (AIC), a public company under the Ministry of Agriculture, Forestry and Fisheries (MAFF), imported and distributed 131,424 tonnes of various types of fertilisers and 89,353 tonnes of pesticides (ACI 2002). By 1996, the private sector had largely assumed responsibility for fertiliser imports and was seen to be generally efficient in terms of quantity, variety, availability and prices of inorganic fertilisers (Young and Raab, 2000:14). Currently, the fertiliser market is led by the private sector operating in a competitive manner with prices set by market forces (IFDC 2010).

2.2. Trends in Supply

Limitations in available data make it difficult to discern trends in Cambodia's fertiliser supply. Discrepancies between official data recorded by the Customs and Excise Department of the Ministry of Economy and Finance (MEF) and the International Trade Centre's statistics of Cambodia's import of fertilisers from Vietnam and Thailand indicate that many imports have gone unrecorded (Table 1). Trends in fertiliser supply have increased rapidly during the last few years, driven by the Rice Policy Paper on Promotion of Paddy Rice Production and Export of Milled Rice (known as the Rice Policy) which is aimed at increasing rice production through intensification (RGC 2010). Launched in mid-2010, the Rice Policy led to Cambodia doubling its imports of fertiliser in 2011.

Various forms of fertilisers containing single (e.g. nitrogen alone as in urea) or mixed nutrients (NP/NPK materials) are imported. All kinds of products are imported in 50 kg bags. According to regulations, chemical fertilisers imported and marketed in Cambodia must have Khmer language labelling on the packaging. This regulation has, however, not been complied with for some fertiliser products. The major fertiliser suppliers to Cambodia are Thailand, which accounts for 35 percent of total imports, and Vietnam, which accounts for 65 percent, although the share of trade with Vietnam is expected to grow in the next few years (IFDC 2010).

Table 1: Cambodia's Fertiliser Imports, 2002-2012 (tonnes)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Customs & Excise Department										
Nitrogen	2218		56		97	3995	7837	17052	25977	56644
Phosphate	24206	33773	32921	51624	50276	49131	47262	61930	62158	72591
Potash	8						29	25		120
NPK	51866	39731	46595	59843	60873	58988	56784	67591	86012	103098
Other	320	381	21	2830	1190	428	17280	42238	25066	28907
Total	78618	73885	79593	114297	112436	112542	129192	188836	199213	261360
International Trade Centre (ITC)										
Nitrogen	58592	77457	63695	56604	76519	74652	95184	79591	42164	200816
Phosphate		35	66	46		346	719	2412	4934	11821
Potash	849	35	201	134	218	185	6	367	1954	3990
NPK	78261	78157	80409	97363	99871	100769	101859	70168	119648	198792
Other	175	131	547	1413	602	6505	24919	45320	18990	17701
Total	137877	155815	144918	155560	177210	182457	222687	197858	187690	433120
VN (%)	64.5	71.3	68.8	56.0	63.0	64.3	63.6	41.7	46.3	72.7
Thai (%)	34.5	27.9	30.2	42.1	36.6	34.4	31.9	52.0	49.9	23.9
Others (%)	1.0	0.7	1.0	1.9	0.4	1.3	4.6	6.2	3.8	3.5

Source: Authors' calculations based on ITC Trade Map statistics (http://www.trademap.org/Product_SelCountry_TS.aspx, accessed 9 July 2013), and Custom & Excise Department, MEF, Cambodia

2.3 Role of the State

The government has no subsidy policy on fertiliser supply. Since the 1993 national election, the private sector has been virtually the sole supplier. There are, however, laws that provide incentives to support the supply of agricultural inputs including fertiliser. These include zero tariffs on importing agricultural materials (seeds, fertilisers, pesticides and agricultural equipment), and the provision of profit tax exemption for Qualified Investment Projects (QIP) in agriculture and agro-industry for a total of nine years – trigger period three years, grace period three years and priority period three years (CDC 2009). In addition, some government policies such as the Rice Policy (RGC 2010) also promote the provision of agricultural inputs by facilitating import procedures for rice seeds, fertilisers, other agricultural inputs and machinery, and by continuing to provide tax incentives (zero tariffs) on imports of raw materials and equipment.

MAFF, the government authority responsible for controlling the import of agricultural inputs, regulates fertiliser trade through granting licences to all relevant companies. MAFF approves both the products and quantities to be imported. It is believed that the current fertiliser trade regulations through the licence and tonnage quota-system create barriers, restrict free market economy and increase trade transaction costs (see below). Overall, government law and policy, and import regulations, significantly affect the fertiliser supply in Cambodia, though the state has no direct influence on the private sector in this market.

2.4. Structure of the Industry

Cambodia is a net fertiliser importer; Thailand and Vietnam are major suppliers. Cambodia has no fertiliser manufacturing plants, but a blending fertiliser plant in Kandal province began operating in early 2013. It is a joint venture between Vietnam's Five Star International Group and the Investment and Development Company of Cambodia, with total investment capital of USD65 million. The annual blending capacity is around 350,000 tonnes of NPK fertilisers in its first phase of operation, and the full capacity is around 500,000 tonnes per year. However, the current and potential production capacity does not meet local demand; it is estimated that Cambodia needs about 617,000 tonnes per year to fertilise about 4.1 million hectares of crops.

The government has no protectionism policy to ban imports and to consequently protect domestic producers. In contrast, it promotes the free-market by providing zero tariffs on imported agricultural inputs including agricultural machinery and milling equipment. Therefore, local producers and importers play an equal role in the free market and compete at all levels of the fertiliser distribution chain, from large-scale producers and importers to local village retailers.

2.5. Importing Organisations

The Department of Agricultural Legislation (DAL) and Bureau of Agricultural Materials Standards (BAMS) of MAFF control fertiliser imports and provide import licences. All agro-chemical importers have to register at the Ministry of Commerce for business operation and taxation purposes, and then have to apply to MAFF for a licence to import agrochemical materials such as fertilisers and pesticides. The importers have to provide details about the products and quantities to be imported, and submit a laboratory analysis to confirm quality. An official fee of USD75 for each product registration is applied. On receipt of application forms, BAMS initiates the process of getting approval from eight MAFF offices: the technical office, deputy director general of the Department of Legal Affairs, director general of the Department of Legal Affairs, deputy director general, director general, under secretary of state, secretary of state, and the minister.

The licensing process takes four to 12 weeks, and requires an official fee of USD150. The licence is valid for one year, and each importer needs to re-apply annually. To smooth the process through the MAFF offices, most potential importers look for a facilitator, and reports suggest that many unofficial fees are consequently paid (IFDC 2010). MAFF approves the product registration and recommends the quantity to be imported. MAFF can adjust the licence tonnages applied for in a quasi-quota system, which is restricted to a maximum of 30,000 tonnes for single or multiple products.

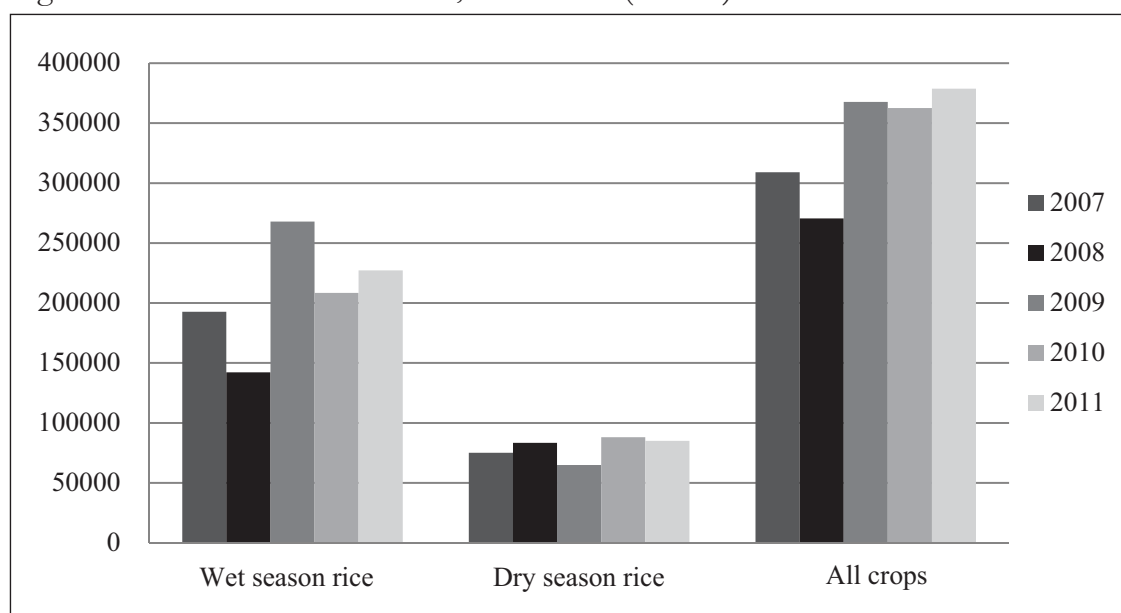
In 2009 there were about 20 registered fertiliser companies importing fertiliser into Cambodia, although only six companies are particularly active, they are: YETAK Group, Heng Pich Chay Import Export Company, Sayimex Co. Ltd., Heng Ny Heng Co. Ltd., E Scor Co.Ltd., and Chhun Heng Company (IFDC 2010). Most large importers can distribute to all provinces in Cambodia, but the small ones are restricted to one to three provinces.

3. DEMAND-SIDE ISSUES

3.1. Trends in Use

Fertilisers are considered an essential input for increasing agricultural production through their nutrients such as nitrogen (N), phosphorus (P) and potassium (K) which plants can absorb from the soil for their growth. Fertiliser products with all of these nutrients have been imported into Cambodia and used by farmers. Figure 1 shows trends in fertiliser use over the period 2007-2011, aggregated from the Cambodia Social-Economic Surveys (CSES 2007-2011).³ Trends of fertiliser use for wet season rice farmers rose gradually, except for a drop in 2008 and a peak of 267,850 tonnes in 2009.⁴ The drop in 2008 responded to a spike in fertiliser prices; high fertiliser use in 2009 can be attributed to a drop in fertiliser prices and farmers consequently increasing their use. Trends in fertiliser use for dry season rice show a range from 75,000 tonnes to more than 80,000 tonnes a year, except for in 2009 when the total fell to about 65,000 tonnes. Again, the drop in fertiliser use was due to the high fertiliser prices that continued to the first quarter of 2009, when dry season rice cultivation started (Figure 2). Overall, fertiliser use increased for all crops, with a slow increase for the last three years given the high prices of fertiliser. There is a large discrepancy in the level of fertiliser imports (Table 1) and fertiliser use by farmers (Figure 1), indicating that there is a large volume of informal trade between Cambodia and Thailand and Vietnam.

Figure 1: Trends in Fertiliser Use, 2007-2011 (tonnes)



Source: Authors' estimation based on CSES 2007-2011 (sampling weight applied)

³ The CSES does not record the amount of fertiliser used; instead, it records total expenditure on fertiliser and other agrochemicals. Due to data limitations and the high proportion of expenditure on fertiliser (90%) to total expenditure on agrochemicals, we made the assumption that total expenditure equaled fertiliser expenditure. We then estimated the amount of fertiliser used by dividing total fertiliser expenditure by average fertiliser prices.

⁴ The amount of fertiliser used at the national level was scaled up by the average amount of fertiliser used (sampling weight applied) multiplied by total cultivated areas (proportion of land fertilised).

3.2. Use by Crops

Table 2 describes the trend in fertiliser use by crop type. This was estimated from the National Dataset CSES 2007-2011. The highest quantities of fertiliser were used for dry season rice and vegetables because these crops produce notably high returns. Overall, on average, farmers apply around 200 kg to 300 kg of fertiliser per ha on vegetable crops, 150 kg to 200 kg per ha for dry season rice, and around 100 kg per ha for wet season rice. Generally, the trend in fertiliser use for all crops fluctuates in line with fertiliser prices. Fertiliser use in 2011 was slightly lower because fertiliser prices in 2011 increased to practically the same levels as during the 2008 price spike (see section 3.3). This indicates that fertiliser price is a major determinant of fertiliser consumption, and confirms the findings of a previous survey where about 79 percent of farmers reported that they had reduced the amount of fertiliser they used because of an increase in prices (Lim 2006).

Table 2: Quantity of Fertiliser Used by Crop Type (kg per ha)

Crop	2007	2008	2009	2010	2011
Dry season rice	232.9	245.9	181.4	229.2	183.7
Wet season rice	108.8	79.1	156.0	115.5	118.1
Corn	138.7	132.2	75.5	107.4	133.8
Cash crops	163.5	174.4	125.1	146.1	112.1
Cassava	48.2	73.5	77.1	151.5	92.8
Vegetables	330.2	212.0	247.9	277.5	192.8
Other crops	222.4	107.7	192.4	187.6	145.6

Source: Authors' estimation based on CSES 2007-2011

On average, the proportion of farmers using fertiliser was about 70 to 80 percent between 2007 and 2011 (Table 3). The highest proportion (77.5 percent) was used for rice (dry and wet season), followed by vegetables (71 percent), corn (68 percent), cash crops (50 percent), cassava (37 percent) and other crops (28 percent). Note that dry season rice has a higher demand for fertiliser than wet season rice; approximately 90 percent of dry season rice farmers applied fertilisers. Generally, between 2007 and 2011, there was a steady increase in the number of farmers choosing to apply fertiliser to all crops.

Table 3: Proportion of Farm Households Using Fertilisers (percent)

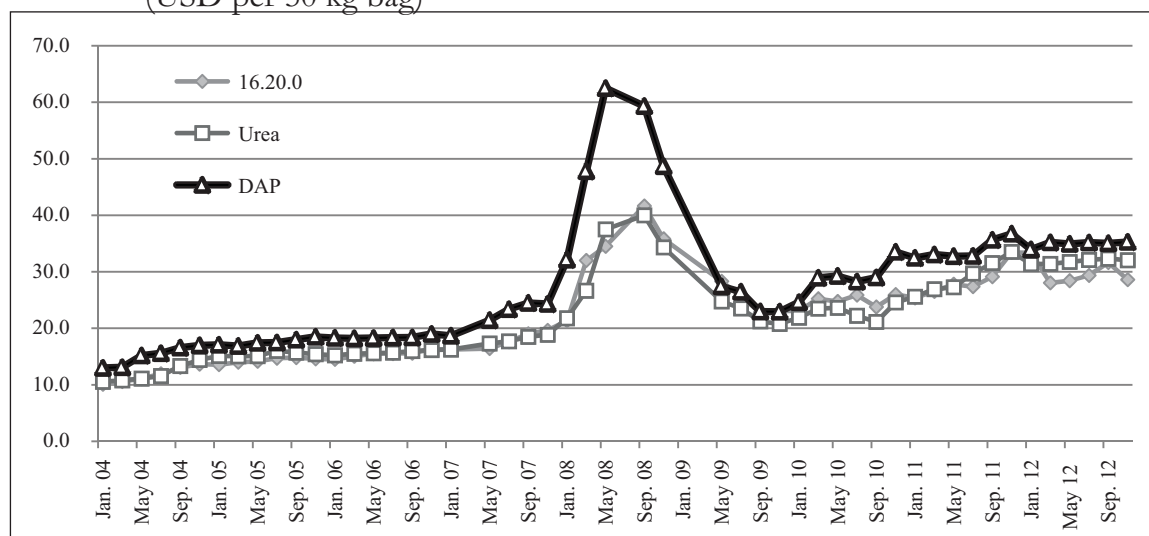
Crop	2007	2008	2009	2010	2011	Mean (2007-11)
Dry and wet rice	80.82	78.36	71.87	76.50	80.04	77.5
Dry season rice	88.98	89.77	89.42	92.34	95.10	91.1
Wet season rice	78.29	74.43	68.41	73.65	76.85	74.3
Corn	58.33	55.74	67.41	81.82	77.78	68.2
Cash crops	43.85	55.79	37.47	51.40	65.52	50.8
Cassava	42.11	11.63	34.23	45.71	52.17	37.2
Vegetables	69.63	77.37	62.50	72.93	73.44	71.2
Others	33.22	28.90	21.41	26.79	31.86	28.4
Total	80.48	77.01	71.49	75.70	78.54	76.6

Source: Authors' estimation based on CSES 2007-2011

3.3. Key Constraints Affecting Fertiliser Use

Price issues: The price of fertiliser is one of the main factors limiting fertiliser use, accounting for about 37 percent of total costs for dry season rice and about 21 percent for wet season rice, or about 15 percent of the value of the harvest (Chhun *et al.* 2013; Ovesen *et al.* 2012). During 2008, the price of urea rose sharply to about USD40 per 50 kg bag from around USD18 in 2007, while that of DAP (diammonium phosphate) shot up to about USD60 per 50 kg bag from around USD25 the year before (Figure 2). At those record high prices, all kinds of fertiliser were unaffordable for most smallholder farmers, and the returns on fertiliser use were negative. The surge in fertiliser prices led to reduced demand by farmers (see sections 3.1 and 3.2).

Figure 2: Monthly Average Retail Prices of Fertilisers in Four Provinces, 2004-12
(USD per 50 kg bag)



Source: AMI 2004-2012

Note: Prices of fertiliser at current prices. 16:20:0 is ammonium phosphate sulphate

Credit access: Most farmers apply inorganic fertiliser only when they have sufficient surplus cash to buy it. Farmers usually have surplus cash at the beginning of the dry season (after the wet season harvest) to afford fertiliser purchases for the dry season crop. However, due to the limited extent of dry season production, most farmers do not have surplus cash at the planting of the wet season crop. Therefore, purchasing fertiliser for wet season rice depends largely on available credit. Microfinance services are available to farmers in most rural areas, but they are not accessible to poor smallholder farmers (Kem 2012; Ovesen 2012). Interest rates for micro credit are around 2.5 to 3 percent per month, a high burden for smallholders. Lack of surplus cash and high interest rates on loans are another key constraint to investment in farm inputs.

Quality assurance: Variability in fertiliser quality is another pressing problem. Inconsistent and unpredictable crop responses to fertiliser have alerted farmers to the issue of low quality and counterfeit products infiltrating local markets. Nutrient analyses indicate that almost all compound NP and NPK fertilisers sold on the market are well below acceptable quality indices (IFDC 2010). Fertiliser contamination, product tampering and substitution by mixing low quality fertiliser with higher quality fertiliser

are thought to be the main causes (ACI and CamConsult 2006). Another common malpractice in the fertiliser sector is re-bagging less expensive fertiliser (e.g. DAP and urea) in sacks labelled with a high quality brand and reselling them as high quality trade brands. The low quality of fertiliser sold on the market is a critical problem, affecting crop yield and resulting in financial loss for farmers (IFDC 2010). A CDRI survey in Takeo province estimated that around 10 percent of farmers had bought low quality fertilisers, causing yield losses in the region of USD285 to USD350 per farmer (Theng 2012). Consequently, some farmers opt to abstain from buying fertilisers or err on the side of caution and under-apply fertiliser because they cannot trust in the integrity of approved fertiliser products (Schamel and Hongen 2003).

Extension services: Few Cambodian farmers are aware of the effective use of chemical fertilisers; most learn through public agricultural extension and NGO programmes, and from their previous crop yield responses. For Cambodia's farmers who are unaware of the proper use of fertilisers and lack the literacy to read labelling, financial loss and ineffective crop production result (MOE 2004).⁵ Although the government has prioritised the agricultural sector as the engine for economic growth and poverty alleviation, it has allocated the sector an extremely limited public budget – about 1 percent of agricultural GDP. This has left agricultural extension programmes significantly underfunded, leading to an acute shortage of trained and experienced extension officers and insufficient on-farm technology transfer and support. In addition, public funding for scientific research is inadequate, impeding current and future agricultural research and extension activities throughout the country. Almost all research and development activities currently rely on development partners' agendas (USDA 2010).

In brief, high fertiliser prices, low fertiliser quality, high interest credit and poor extension services are the main concerns/constraints that limit any increase in agricultural productivity for some smallholder farmers in Cambodia. Inadequate irrigation systems and water scarcity also discourage farmers from accessing credit to buy fertiliser to improve their farming.

4. SUPPLY-SIDE ISSUES

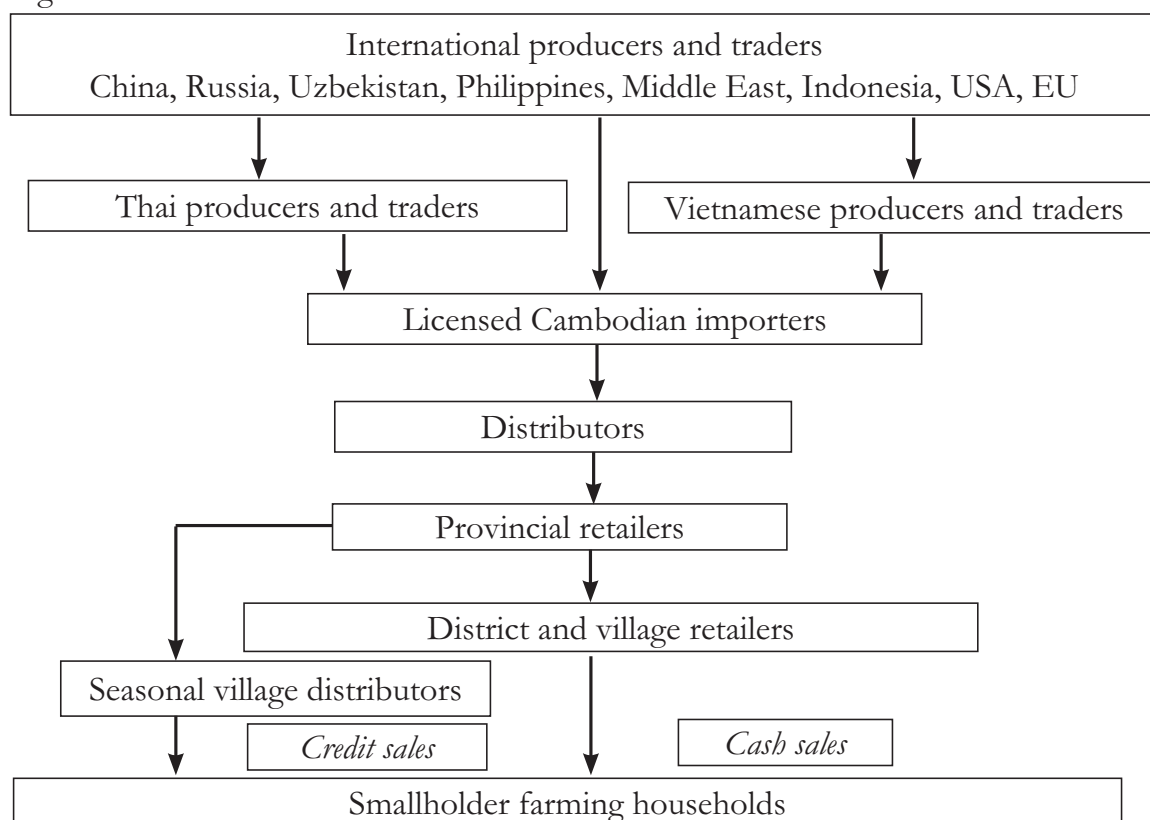
4.1. Fertiliser Supply Chain

4.1.1. Market Channels

The fertiliser market structure is evolving rapidly to meet farmers' demands and in response to the growing crop sector in Cambodia. The market structure is well organised with a network of importers, provincial distributors/wholesalers, and provincial, district and village retailers, and is led by the private sector operating in a very competitive market with prices set by market forces (Figure 3).

⁵ Most fertilisers sold on the market have Khmer language labeling, except for a few kinds such as NPK 16-16-8-13s from the Philippines and prilled urea from China.

Figure 3: Fertiliser Distribution Channels



Source: IFDC 2010

Licensed Cambodian importers store fertilisers in warehouses near the border (Thailand and Vietnam) and/or in Phnom Penh; their distributors transport the products to provincial retailers in the main provincial cities (IFDC 2010).⁶ Transport costs vary according to the distance from the main warehouse to the distribution points; haulage costs about USD0.25 per bag per 100 km, and loading fertilisers on and off trucks costs about USD0.05 per bag (Theng 2012).

Rural retail outlets are typically a one-stop-shop selling a wide range of farm inputs including animal feed, pesticides, seeds and fuel in addition to fertilisers. Village retailers typically buy fertilisers from the representatives of a main provincial dealer; however, some also use different suppliers depending on the prices and services offered and/or to meet the specific demands of their customers/farmers. Retailers' transactions are conducted in cash or on credit. Approximately half of all retail sales are made on credit, with a mark-up of 15,000 to 20,000 riels (USD3.5 to 5) per bag per planting season (3-6 months) (Theng 2012).

Some provincial distributors and district retailers resell their fertilisers to seasonal villager traders who sell directly to farmers. All traders who sell agrochemical products have to register at the Office of Agricultural Legislation of the Provincial Department of Agriculture (PDA) every year, otherwise their business activities are deemed illegal. Seasonal village traders, however, are not required to register with MAFF and can sell

⁶ Cambodian importers mostly source fertiliser from Thai and/or Vietnamese traders, who import fertiliser in bulk from international markets, then re-bag and re-export it to Cambodia, although some importers get their supplies directly from Vietnamese producers.

fertilisers in many locations in rural areas. Mostly, seasonal traders resell fertilisers on credit to farmers who repay the loan during harvest. These sales may result in a mark-up of as much as USD5 per bag per planting season.⁷

4.1.2. Value Chain Analysis

Value chain analysis reveals that the mark-up for traders beyond the importers is very low, at around 2 to 4 percent, whereas the mark-up of import companies is about 6 percent (IFDC 2010; Theng 2012). These figures indicate that the fertiliser market in Cambodia is very competitive, particularly for the most common products – urea and DAP. The retail prices of urea for Cambodian farmers are about 50 percent higher than international bulk prices. When operating costs are taken into account, the margins for fertiliser traders at provincial, district and village level are very low, and the most value-added beyond the producers' factory gates accrues to importers.

This suggests that the fertiliser market is very competitive among traders for marginal profits beyond the importers. The most value-added beyond the importers is the high transport cost from provincial distribution points to village shops, which is largely due to the high unofficial fees paid to roadside police during transportation. Therefore, when operational and logistics costs are accounted for, the mark-up does not allow high marginal profits for most fertiliser traders; the high value-added cost of fertiliser is composed of importers' mark-up (5 – 6 percent) and transport and logistics costs (3 percent).

4.2. Regulatory System

Sub-standard and mis-labelled fertilisers infiltrating the supply chain and local markets is a serious problem and poses significant challenges to customs authorities in Cambodia. The quality problems stem either from the sources of supply or from the distribution channels within the country.

The majority of fertilisers imported into Cambodia come from Vietnam. Nutrient analyses found that almost all of the NP and NPK compounds from Vietnam have below-acceptable quality index values. This low quality is the result of both poor blending and poor quality raw materials used in the factories (IFDC 2010).

Distribution and marketing intermediaries form an important part of the fertiliser distribution channel. They purchase fertiliser from importers or importers' representatives and load it onto trucks for delivery and re-sale to provincial, district and village shops, and direct to farmers. There is a very high opportunity for traders to adulterate fertiliser in this process, either by mixing low and high quality products and selling it on as higher quality fertiliser, re-bagging low quality fertilisers in bags labelled with a higher quality brand, and even selling short-weight bags (Theng 2012). The International Fertilizer Development Center (2010) estimated that during the fertiliser price spike in 2008, approximately 30 percent of fertiliser products on the

⁷ Heng Pich Chhay Import Export Company also sells fertiliser on credit to farmers; it sold around 500 tonnes to farmers during the 2011 planting season. At about USD1.5 per bag, this is a much cheaper option for farmers than buying fertiliser from village traders.

market in Cambodia were fake (IFDC 2010). Although the problem has diminished significantly, it still affects about 5-10 percent of fertilisers sold on the market (Theng 2012). The marked drop in fake products is due to: the reduction in fertiliser prices; the fact that farmers realised that cheap fertiliser is not good quality; the crackdown on fake fertilisers by MAFF and PDA through increased certification of retailers/dealers, more inspections, and fake product awareness and detection training for retailers and farmers; and increased competition among importers.

According to regulations, all agrochemical dealers and retailers have to register at the Office of Agricultural Legislation of PDA to obtain certification to trade in agrochemical materials. However, intermediaries, mobile distributors and/or seasonal village retailers are unidentified and unregulated (IFDC 2010). These operators are blamed for creating fertiliser problems in the marketplace and causing a huge loss to fertiliser customers (Theng 2012). To remedy this situation, all fertiliser dealers must be regulated; at minimum, they should be required to register as fertiliser traders so that the authorities can monitor and control their business activities.

Another critical issue is that MAFF, which is responsible for administering the import and distribution of fertilisers through DAL, has no authorisation to inspect fertiliser quality at border entry points. CamControl of the Ministry of Commerce (MOC) is officially authorised to control the entry of fertiliser products by checking licences, tonnage, and laboratory certificates of quality assurance. Counterintuitively, CamControl's laboratory has no capacity to analyse fertiliser nutrient content, but MAFF's BMAS laboratory has, although capacity is limited.

4.3. Key Constraints Affecting Fertiliser Supply

To import fertilisers, importers need a licence authorised by MAFF. In addition, import tonnage is restricted to a maximum of 30,000 tonnes per importer. Import licensing procedures are complex, out of touch with market demand, and restrictive to competitive market operation. The licensing process is not transparent and creates opportunities for rent-seeking. It is reported that some businesses acquire import licences only to sell them on to other companies, which then import goods on behalf of the "official licensees" under the agreement that they will be paid commission equivalent to 2 to 3 percent of the value of imported goods (IFDC 2010).

Furthermore, the restrictions on import tonnage per importer are contrary to all market principles, imposing considerable commercial drawbacks and restricting economies of scale for the importers. In all market economies, the private sector should be free to determine the supply quantities based on market and commercial risk assessments. The government role should concentrate on monitoring quality based on "Truth in Labelling" laws and regulations. The licensing and tonnages quota system also prevents larger importers from benefiting from cost-effective importing from international markets and hence forces import through either Vietnam or Thailand. Besides adding to transaction costs, the system encourages illegal imports and prevents small firms from entering the market, effectively undercutting the integrity of the fertiliser market at the risk of discouraging investment in agricultural intensification,

and inhibiting market competition that would otherwise bring retail prices down and benefit Cambodia's farmers.

5. WAY FORWARD

The agricultural sector remains crucial to achieving inclusive growth and social development goals in Cambodia. Agricultural crops contribute significantly to agricultural growth and promote food security. Future increases in agricultural productivity are expected to come mostly from the intensification of smallholder crop production (CDRI 2013): fertilisers will play a crucial role in raising crop yields and sustaining the natural resources of farmland (Bumb 1996). To enhance the role of fertilisers in transforming the agriculture sector for food security, agricultural growth, and promotion of exports, the factors affecting fertiliser production and consumption relating to import structure and the regulatory system should be addressed as follows:

1. Import restrictions: MAFF should amend import licensing procedures and regulations, simplify licensing processes and remove rent-seeking opportunities. MAFF should remove the tonnage restriction and allow importers to import any quantity of registered fertiliser products based on market demand and risk assessment, but only products that are suitable for use in Cambodia should be approved. Removing the main barriers to free trade would ease market entry for industry, realise economies of scale for importers, create greater market competition, improve quality and reduce retail prices.
2. Institutional restructuring: to harmonise the roles and line responsibilities of the ministries involved in the fertiliser trade, and to control the quality of fertiliser products on the market, the government should create one department to combine staff from the MOC and MAFF to regulate the fertiliser industry at import, wholesale and retail levels.
3. Data collection and monitoring: All importers and distributors should be required to submit separate data on imports, distribution and prices on a quarterly basis to DAL of MAFF. Market information about import products and prices should be developed and made publicly available so that farmers can check the prices they pay against the prices of different products in different markets.

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The Impact of Agricultural Extension Services on Rice Production: Evidence from Panel Data of Nine Rural Villages in Cambodia

by Keo Socheat and Theng Vuthy¹

1. INTRODUCTION

Agriculture remains a vital economic activity for the majority of the world's population, and enhancing productivity and production practices at the farm level has been high on the agenda of governments and development agencies around the world (Cerdan-Infantes *et al.* 2008). In this regard, agricultural extension has been playing an important role as it attempts to provide farmers with access to technical guidance and information about improved agricultural technologies (Baig and Aldosari 2013). In other words, agricultural extension is an ongoing process of transferring information about new technologies, more effective management options, and better farming practices to increase producers' knowledge of how to use and manage land and water resources effectively to improve production and productivity (Owens *et al.* 2003).

Subsistence agriculture remains the dominant rural economic activity in Cambodia. In 2008, 74 percent of the rural population had subsistence crop farming as its main occupation (NIS 2011a). The sector is characterised by smallholders cultivating very small plots of land: in 2009, 46.9 percent of households had agricultural plots of less than one hectare (NIS 2011a). Rice is the main crop, accounting for nearly one third of the economy's total agricultural value-added in 2010 (NIS 2011b). However, the country's average rice yield is significantly lower than that of neighbouring Vietnam and Laos, but comparable to that of Thailand (CDRI 2013a: 9). This can be attributed to limited access to extension services, credit and inputs (such as fertiliser, seeds and irrigation) and lack of agricultural knowledge among farmers about appropriate production techniques and proper application of inputs (Sok *et al.* 2011; CDRI 2013b). Hence, productivity enhancement at the farm level has been pinpointed to serve as the driving force for rice sector development, which has assumed a strategic role in improving the living standards and alleviating the poverty of rural people and in accelerating economic growth (RGC 2010).

¹ Keo Socheat is a research associate and Dr Theng Vuthy a research fellow at CDRI. This article draws on a Cambodia case study report on the impact of extension services on rice production for the ACIAR-supported project (ASEM/2009/023) "Developing Agricultural Policies for Rice-based Farming Systems in Laos and Cambodia" that will end in May 2014.

To achieve the ambitious goal of exporting one million tonnes of milled rice per year by 2015, the government has been implementing a number of policies to promote paddy rice production and milled rice export (RGC 2013). Reviewing the framework for agricultural extension and expanding agricultural extension services to commune level are the integrated policy measures proposed in the policy document to improve rice productivity, intensification and commercialisation (MAFF 2011).

Thus far, research studies on agricultural extension in Cambodia have not been extensive. Among the few examples, there is a case study giving an overview of agricultural extension services in Kandal and Takeo provinces (Ngo and Chan 2010), an empirical study of the causal relationship between agricultural extension services and agricultural intensification using econometric analysis and data from a two-period panel survey of 231 households in rural Cambodia (Tong *et al.* 2011), and a qualitative analysis that explores some of the key issues affecting agricultural extension services in Takeo province (Chhim *et al.* 2013). Importantly, evaluating the impact of agricultural extension services on rice yield both contributes to the literature on extension services in Cambodia and informs the government to help it formulate policy to strengthen extension services which can provide vital information and advice to improve rice productivity.

The aim of this study is to evaluate the impact of agricultural extension services on rice yield using a combined propensity score matching/difference-in-differences approach and panel data from household surveys in nine rural villages in Cambodia.

The paper is organised as follows. Section 2 reviews the empirical literature on agricultural extension services and assessments of extension outcomes, while section 3 examines the status of Cambodia's agricultural extension services and emerging development issues. Data characteristics are described in Section 4, and estimation methodology is explained in Section 5. Empirical results are presented and discussed in Section 6. Section 7 concludes the findings and suggests some policy implications.

2. LITERATURE REVIEW

Before we review the selected impact evaluation reports on agricultural extension programmes, it is worth understanding the common models, approaches and methods for the provision and delivery of agricultural extension services in developing countries. In connection with this, a recent study in the Asian region points out that extension initiatives in developing economies involve a mixture of public sector organisations, private firms (e.g. seed and fertiliser traders) and NGOs (Baig and Aldosari 2013). In general, the most commonly observed model of agricultural extension services is public sector extension. In this model, a department of the Ministry of Agriculture is the main agency responsible for the promotion of agricultural extension services through separate offices at provincial level, with functions carried out by officers through an unbroken chain of command from the central level to provincial, district and even to village level.

Regardless of the model, extension methodology determines the effectiveness of the services and has an important role in reaching significant numbers of farmers. It is

believed that “individual” (i.e. one-to-one) media and methods have been particularly successful in influencing farmers to follow the advice given, but these approaches are costly in terms of the number of farmers reached (Baig and Aldosari 2013: 621). In contrast, mass media can reach many farmers at a lower cost, although this method is less effective in convincing farmers to apply the knowledge. With mass media and group methods, information distributed through meetings, practical demonstrations, newspapers, magazines, journals, leaflets, pamphlets and brochures reaches a large literate audience. Information disseminated by radio, on the other hand, can be useful for both literate and illiterate farmers provided that the extension advice does not include complex and overly technical information (Baig *et al.* 1999 cited in Baig and Aldosari 2013). Television has great potential to deliver extension messages to various audiences, while radio is an effective tool for disseminating agricultural information at low cost (Antholt 1992). Being both affordable and accessible, radio reaches a wide audience especially the hard-to-reach rural poor.

Overall, evidence from the research literature suggests that many extension projects have been successful due to a good mix of extension methods along with the selection of suitable media (Blanckenburg 1984). For example, a combination of one-to-one advisory work, group meetings and demonstrations, slides and videos can yield effective outcomes. Similarly, radio extension services are effective if extension officers provide follow-up mentoring or “reflection” visits and on-farm training to show farmers how to apply the information to their farming.

Because agricultural extension programmes have been considered a key policy measure to improve agricultural productivity, whether or not such public investment has a significant impact is of interest to academics and policymakers. Previous impact assessments of extension services on agricultural production have revealed mixed results.

For example, a study to examine whether agricultural extension improved household crop productivity, using panel data for the period 2009-10 and distance to the agricultural extension centre as an instrumental variable for participation in extension service programmes, found that extension services had positive and significant impacts on crop productivity (Hasan *et al.* 2013). An earlier study using household fixed-effect estimations and controlling for farmer ability and innate productivity characteristics showed that receiving one or two visits from agricultural extension staff per agricultural year significantly increased crop productivity (Owens *et al.* 2003).

In contrast, a research study to evaluate the impact of agricultural extension services on grape production in Mendoza, Argentina, using a fixed-effect difference-in-differences approach and panel data, found no significant treatment effect on grape yield (Cerdan-Infantes *et al.* 2008). Then again, in an impact assessment of a farmer field school (a method of extension services delivery) in Indonesia, which used panel data and applied a difference-in-differences approach, found that the programme did not have significant effects on rice yield and pesticide use (Feder *et al.* 2003). These findings differ from the results reported by a later study which used datasets from Feder *et al.* (2003) to re-evaluate the impacts of farmer field school by employing a modified model specification and a spatial econometric technique (Yamazaki and Resosudarmo

2007). The results showed that the coefficient of extension services in the rice yield equation was negative and statistically significant; that is, despite farmers' access to extension services through farmer field school, farming performance was declining over time.

3. AGRICULTURAL EXTENSION SERVICES IN CAMBODIA

Even though Cambodia is an agrarian economy, government expenditure on agriculture is not supportive in terms of developing the sector. For instance, data from the Ministry of Economy and Finance in 2010 (Table 1) reveals that, since 2002, the share of public spending on agriculture has ranged from 1.7 to 2.4 percent and it is predicted to be 2.3 percent in 2015.

Table 1: Share of Public Spending in the Key Ministries

Year	Health care (%)	Education (%)	Agriculture (%)	Rural development (%)	Public works and transport (%)	Total spending (USD million)
2000	8.4	13.6	1.9	0.6	1.7	315.4
2001	9.2	14.8	2.2	0.9	1.5	360.8
2002	10.4	18.4	2.5	1.2	0.8	401.9
2003	9.8	17.1	2.2	1.0	0.8	441.9
2004	11.0	18.7	2.2	1.0	0.7	434.3
2005	11.4	17.8	2.4	1.1	0.7	480.2
2006	11.1	18.9	2.4	1.3	0.7	573.3
2007	11.9	17.2	2.0	1.2	0.7	707.9
2008	11.3	16.1	1.7	1.2	0.7	930.0
2009	10.9	15.3	1.7	1.2	0.6	1114.4
2010 ^e	11.9	16.4	1.7	1.7	0.6	1200.5
2011 ^e	12.7	17.4	1.8	1.8	0.6	1263.0
2012 ^e	13.4	18.5	2.0	1.9	0.6	1337.9
2013 ^e	14.1	19.4	2.1	2.0	0.6	1430.2
2014 ^e	14.8	20.4	2.2	2.1	0.6	1529.5
2015 ^e	15.6	21.4	2.3	2.2	0.5	1636.7

Source: Ministry of Economy and Finance (2010)

Note: ^e estimated value

The national coverage of agricultural extension services is limited, especially in terms of public services to smallholders (IFPRI 2011). The department of agricultural extension within MAFF is responsible for strengthening and expanding public agricultural services. The majority of agricultural extension officers work at the provincial level with just a small percentage of them assigned to district Offices of Agriculture. In general, extension staff posted at district level work as counterparts of development partners' and NGOs' projects to deliver agricultural extension services to farmers. This is because the district offices have no budget to provide services to farmers themselves (IFPRI 2011). Public extension comprises 1244 staff members, 90 percent of whom

work as field extension officers (IFPRI 2011). There are three main types of extension service providers – public institutions, private sector organisations and NGOs.

- Public extension institutions include the Department of Agricultural Extension of MAFF, Ministry of Rural Development, Cambodia Agricultural Research and Development Institute (CARDI), Royal University of Agriculture (RUA), Moharussey Vedic University (MVU), Prek Leap National College of Agriculture and Kampong Cham National School of Agriculture
- Private agribusiness firms engaged in the input trade and rice farming contractors also provide extension and advisory services to farmers
- NGOs and other development partners work with their stakeholders, such as district offices of agricultural extension, farmer groups/cooperatives and local authorities, to give farmers extension and advisory services to improve farm productivity.

A baseline survey of 2100 households in four provinces carried out by the Cambodia Development Resource Institute (CDRI 2013c) and funded by the Helping Address Rural Vulnerabilities and Ecosystem Stability (HARVEST) programme, shows that the main sources of extension services for rice production are neighbours, NGOs, Provincial Department of Agriculture and self-study. The knowledge and techniques provided by these extension and advisory services include disease/pest control, row planting, improved varieties, seed selection, chemical fertiliser application, composting, and water management for rice.

4. DATA

4.1. Source of Data

This study uses panel datasets from household surveys conducted by CDRI in 2008 and 2011. The survey involves nine rural villages from four geographical regions: Mekong Plains (Ba Baong and Prek Khmeng), Tonle Sap Lowlands (Tuol Krasaing, Andoung Trach and Khsach Chi Ros), Upland Plateau (Dang Kdar, Kanhchor, Trapeang Prei), and Coastal (Kompong Tnoat).

The household surveys cover general matters. They were conducted twice a year (in March and September) in 2001, 2004, 2008 and 2011, and once (in March) in 2009. The resulting full dataset comprises nine cross-sections, namely March and September in 2001, 2004, 2008 and 2011 and March in 2009; 90 households were interviewed in nine villages, which was the maximum possible within budget limitations. However, the information about access to rice extension services has been included only since 2008, so this year was chosen as the baseline study and 2011 as the endline.

We estimated annual rice production by collapsing data from round one (March) and round two (September) because household rice production was reported in both rounds. However, data about household characteristics and household access to rice extension services was collected only in round one, so our observations are limited to that round.

In estimating impact, we employ propensity score matching and difference-in-

differences approach (explained in section 5) and thus balanced panel datasets between 2008 and 2011 are needed.² Furthermore, households with no rice harvesting areas or that produced small quantities of rice during the survey periods are excluded from our analysis. As a result, we obtained panel datasets between 2008 and 2011 with a total sample size of 547 households in each year (Table 2).

Table 2: Number of Households in the Balanced-Panel Sample by Village

Villages	2008	2011	Total
Krasang	39	39	78
AndoungTrach	42	42	84
TrapeangPrei	48	48	96
Khsach Chi Ros	100	100	200
Dang Kdar	68	68	136
KompongTnaot	82	82	164
PrekKhmeng	15	15	30
Kanchor	67	67	134
Ba Baong	86	86	172
Total	547	547	1094

Source: CDRI household surveys in 2008 and 2011

4.2. Descriptive Statistics for Baseline and End-term

Because the study employs a quasi-experimental approach, which is explained in section 5, we have two groups of households, i.e. the treatment group and the control or comparison group. Treatment households received information relating to rice yield improvement in 2008 – the baseline – whereas control group households had no access to this information. With regard to household rice production, rice yield per ha, rice production value per ha, and gross margin per ha³ are the outcome variables for the impact assessment; that is, we have aimed to detect a causal relationship between extension services and these three indicators. On average, a household in the treatment group could produce 2095 kg of rice per ha in 2008 and 2329 kg per ha in 2011, while the average rice yield for the control group is 2421 kg per ha in 2008 and 2634 kg per ha in 2011 (Table 3). It is worth noting that the rice yield for the treatment group is significantly lower than that for the control group in both the baseline and endline years. This also holds true for rice production value per ha. An explanation for this cannot be presented at this stage because we have yet to control for factors that can influence the differences in rice production between the treatment and control groups. Based on the t-statistics shown in Table 3, both groups had comparable gross margins and harvested rice areas in 2008 and 2011.

² Panel data refers to samples of the same cross-sectional units observed at multiple points in time. A panel data observation has two dimensions: X_{it} , where i denotes cross-sectional unit from 1 to N (age, education, access to extension...), and t denotes the time of observation from 1 to T (i.e. 2008 and 2011). A balanced dataset has every observation from 1 to N observable in every period, in this case, in 2008 and 2011.

³ Gross margin is calculated by dividing net production value by harvest area.

Table 3: Rice Production by Group of Households and Year

Variables	2008		2011		2008	2011
	T	C	T	C	t-stat.	t-stat.
	(n=348)	(n=199)	(n=348)	(n=199)		
rice_yield (kg per ha)	2095	2421	2329	2634	-2.807***	-2.44**
rice_val_ha (‘0000 riels per ha)	197.65	224.75	178.79	207.02	-2.382**	-2.25**
gross_margin (‘0000 riels per ha)	128.58	137.53	127.56	140.94	-1.020	-1.169
rice_area (ha)	2.26	2.12	2.22	2.25	0.654	-0.1191

Note: T=Treatment, C= Control. Statistically significant at 10 percent level *; 5 percent level; **, 1 percent level ***

Source: CDRI household surveys in 2008 and 2011

The comparison of household characteristics between the treatment group and the control group is presented in Appendix 1. This information includes household demographics, assets, land ownership, crop damage, crop failure, access to flooded rice fields, proportion of irrigated rice harvested area, rice production and expenditure on rice production.

5. ESTIMATION METHODOLOGY

Impact assessments for quantitative research studies generally employ each of the following methods (Ravallion 2001):

- **Randomisation:** a well-defined set of people is randomly selected and divided into treatment and control groups. Rice extension services, however, are not randomly provided for farmers because the service providers might have their own target farmers or clients.
- **Reflexive comparison:** no control group is needed, but a baseline survey of participants is conducted before the intervention. In contrast, observing the before-and-after change in outcome indicators for households with access to extension services will not give us the causal impact of the services received because many other factors are likely to influence the outcome indicators over time.
- **Instrumental variables:** these are used to predict participation in the programme under a restrictive assumption that the variables have no causal effects on the outcomes. However, finding instrumental variables is a difficult task in empirical analysis (Ali and Abdulai 2010). In addition, we were unable to find variables to address endogenous variables because the household survey was not initially designed for this impact evaluation study.
- **Quasi-experimental approach:** this type of evaluation aims to determine whether a programme has the intended effects on the programme participants. The comparison or control group is constructed using matched sampling methods, i.e. propensity score matching; difference-in-differences estimation is also feasible if panel data is in place (Ravallion 2001).

The following two sub-sections present a brief explanation and the justification for the conceptual empirical framework for this study, i.e. propensity score matching and difference-in-differences estimation.

5.1. Propensity Score Matching (PSM)

The reason for employing PSM is that it enables us to match the treated households and control households with comparable propensity scores – the estimated conditional probability of being treated given observed characteristics (Caliendo and Kopeinig 2008). We use this approach to make the characteristics between the treatment and control groups more comparable by dropping the observations on those whose propensity scores to receive rice extension services are very different (i.e. they are not in the region of common support when reported in the statistical software package STATA). Below is the summary for PSM which is carried out in STATA:

- Determine the outcome indicators, which for this study are rice yield per ha, rice production value per ha and gross margin per ha in real terms.
- Predict propensity scores for access to rice extension services by controlling for household characteristics (Appendix 2) and using kernel-based matching algorithms. The choice of algorithms varies largely case-by-case depending on the data structure at hand (Zhao 2000). Kernel matching produces the lowest biases in matching households for our data, so we chose this algorithm.
- Use propensity scores to see whether the matching procedure is able to balance the distribution of the relevant variables in both control and treatment groups by investigating the mean and median of the standardised bias before and after matching. A median and mean of standardised bias below 3 and 5 percent, respectively, after matching would be sufficient (Caliendo and Kopeinig 2008), and are met by our results: median=3.5 and mean=4.1 (Appendix 3).
- Keep the households that fall in the common support region for the difference-in-differences estimation of the treatment effects; our calculation shows that 17 households do not fall within the region of common support.

5.2. Difference-in-Differences (DD) Estimation

We use the DD method to control for both the effect of observed time-invariant characteristics (age, sex, zone and household head's education) and for unobserved time-invariant characteristics (e.g. self-discipline and motivation) (Gerter *et al.* 2011). The DD approach is used based on an assumption that in the absence of the programme (rice extension services), the change in treated outcome would have been comparable to the change in controlled outcome as expressed in equation (1) presented in Appendix 4.

For the sake of simplicity, the estimation by DD is summarised in Table 4.

Table 4: Impact Using DD (Comparison of Means)

	2008	2011	Difference
Treatment	Y_{2008}^T	Y_{2011}^T	$\Delta Y^T = Y_{2011}^T - Y_{2008}^T$
Control	Y_{2008}^C	Y_{2011}^C	$\Delta Y^C = Y_{2011}^C - Y_{2008}^C$
Impact (DD)*			$\Delta Y^T - \Delta Y^C$

Source: adopted from Gerteret al. (2011)

Note: * See equation 4 in the Appendix

However, our calculation is performed in STATA, which produces the results shown in Table 5. Although the arrangement of the results using STATA is different from the way that the impact is estimated in our DD framework, the results are the same. In other words, by rearranging the equation we find that $(\Delta Y^T - \Delta Y^C) = (b - a)$.

Table 5: Impact Using DD (Comparison of Means) Estimated in STATA

	2008	2011	Impact (DD)
Treatment	Y_{2008}^T	Y_{2011}^T	
Control	Y_{2008}^C	Y_{2011}^C	
Difference	$a = Y_{2008}^T - Y_{2008}^C$	$b = Y_{2011}^T - Y_{2011}^C$	$b - a = \text{impact}$

After applying PSM, 17 households are not in the region of common support (see Appendix 1 and 2) and were therefore dropped from the sample. Thus the DD results draw on the new sample. Further, when employing DD, STATA enables us to control for the household characteristics described in Appendix 2.

6. EMPIRICAL ESTIMATES

This section presents the empirical results for the impact evaluation of rice extension services on rice productivity, the proxy of which is rice yield per ha.

The treatment effect of rice extension services on rice yield is 11 (Table 6), implying that the average yield change in the treatment group exceeds the average yield change in the non-treatment group by 11 kg per ha, but the difference is not statistically significant. Although the impact of extension services on rice yield is positive, we have failed to reject the null hypothesis that the impact is statistically significant. In addition, our estimates reveal that extension services had no significant impact on rice production values and gross margins.

Our finding is not an exception to those reported in the research literature. For instance, the impact of farmer field school – a form of extension services – on the yields achieved by graduate farmers and their neighbours in Indonesia was not statistically significant (Feder *et al.* 2003); moreover, the rice yields of participating farmers actually declined over time (Yamazaki and Resosudarmo 2007). An assessment of the impact of Uganda's National Agricultural Advisory Services (NAADS) programme on crop yield found that the programme had a negligible effect on productivity (Okoboi *et al.*

2013). A study of agricultural extension provision in Argentina found that it had a non-significant impact on grape yields (Cerdan-Infantes *et al.* 2008).

Table 6: Impact Using DD (Comparison of Means) Estimated in STATA

Yield (kg per ha)			
	2008	2011	Impact (DD)
Treatment (n=331)	2098	2309	
Control (n=199)	2306	2505	
Difference	-208	-197	11
P-value	0.074*	0.090*	0.948
Production value per ha ('0000 riels per ha)			
Treatment (n=331)	198.6	178.1	
Control (n=199)	213.7	201.4	
Difference	-15.1	-23.3	-8.2
P-value	0.221	0.059*	0.637
Gross margin ('0000 riels per ha)			
Treatment (n=331)	129.1	127.1	
Control (n=199)	134.3	141.3	
Difference	-5.2	-14.2	-9
P-value	0.621	0.252	0.547

Note: Statistically significant at 10 percent level *; 5 percent level; **, 1 percent level ***

Source: Calculation based on CDRI household surveys in 2008 and 2011

There are several possible explanations for the non-significance of the treatment effects. First, despite the fact that treated households have improved their knowledge of new techniques and technologies and applied that information to improve their yields, the yield changes are individually too small to give a valid conclusion in an econometric study where the main focus is on statistical significance. This confirms similar results reported in an impact assessment of agricultural extension services delivery in Indonesia (Feder *et al.* 2003).

Second, the complexity of knowledge gained through extension services can affect its usefulness to farmers and diminish their commitment to its implementation. This finding is consistent with the results of case studies in Takeo (Chhim *et al.* 2013) and Kandal provinces (Ngo and Sophal 2010).

Third, a potential reason is that farmers who receive rice extension services might only partly adopt the knowledge they learn, or, because of some constraints, the farmers in our survey were unable to continue to apply the knowledge as they did when they first received it in 2008. In impact evaluation studies, dealing with unprecedented timelags is one of the challenges if it involves a gap of some years (Davis *et al.* 2010).

Fourth, the household survey does not include information about any decline in soil fertility, increase in plant diseases, or climate trends, though data on crop failure, crop damage, and the extent of the irrigated rice area was captured and controlled for in the estimation.

Fifth, a lack of coordination between extension and other agencies working for the improvement of agriculture appears to be one of the most significant constraints in developing countries (Baig and Aldosari 2013). Bureaucratic inefficiency, deficient programme design and lack of financial resources and incentives are particular problems that have hampered extension and other services for farmers. The coordination of agricultural extension service delivery in Cambodia faces challenges that are similar to those experienced elsewhere in Asia. It has been argued that the functional responsibilities and the structural arrangements of extension in Cambodia remain underdeveloped, i.e. the linkage between research and extension agencies and other stakeholders is weak, and the scope of extension agencies' operations is limited due to lack of financial resources and incentives for extension workers (Meas 2010). Limited resources are a major constraint in the provision of extension activities and follow-up services and thus agricultural extension services delivery generally has a limited impact on agricultural productivity.

Finally, multiple sources of extension services may also result in non-significant impacts on rice production. This is because sources that have no impact at all can cancel out the significant effects achieved by others. In our study, the main sources of rice improvement techniques are government agents, radio, relatives, friends and neighbours, and NGOs (Table 7).

Table 7: Sources of Extension Service for Rice Improvement (Baseline 2008)

Sources of Information	n	Percent
Government agent	74	22.4
Radio	72	21.8
Relatives, friends and neighbours	70	21.2
NGO	53	16.1
Television	25	7.6
Community leader	23	7.0
Community bulletin board	11	3.3
Other	2	0.6
Total	330	100

Source: CDRI survey data in nine villages in 2008

7. CONCLUSION

Whether public investment in agricultural extension services has a significant impact is of great interest to academics and policymakers. Hence, this study has aimed to assess the impact of agricultural extension services on rice yield by employing propensity score matching and difference-in-differences estimation using panel data from household surveys in nine rural villages in Cambodia. Our results from the difference-in-differences approach suggest that even though the impact of agricultural extension services on rice productivity in the nine study villages is positive, it is not statistically significant.

Nonetheless, a limitation of our study is that the panel household survey was not specifically designed for an impact evaluation of agricultural extension services: its main objective was to investigate the poverty dynamics in the nine rural villages. In addition, given the relatively small sample size, the study cannot be “generalised” to fully reflect whether or not agricultural extension services have an impact on agricultural productivity as a whole. These issues point towards the need to exercise some caution in extrapolating the study findings for the whole country. Since agricultural extension services delivery in Cambodia adopts pluralistic models, further study using larger sample sizes (if they are available) and looking into specific models of extension delivery might help to present a realistic conclusion and propose policy options to improve existing extension services so that they have a greater impact.

In conclusion, this study’s finding of a non-significant impact made by the extension services does not necessarily suggest that the government should cut back its investment in this area. On the contrary, the government should make more effort to address the key challenges identified by Meas (2010), outlined in section 6, so that the services will have a more significant impact on farmers’ rice production. In addition, further studies examining national datasets or panel data for specific extension programmes along with in-depth analysis from key informant interviews and focus group discussions with relevant stakeholders, including farmers, would produce robust findings to formulate concrete policy options for the government and development partners to improve agricultural extension services delivery.

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APPENDICES

Appendix 1. Definitions of Household Characteristics by Group of Households and Year

Variables	Definitions of variables	2008		2011		2008	2011
		T	C	T	C	t-stat.	t-stat.
		n=348	n= 199				
prim_ agri	1 if a HH has agriculture as primary source of income, 0 otherwise	0.4	0.33	0.3	0.29	1.642	0.322
dum_ radio	1 if a HH owns a radio	0.32	0.23	0.32	0.35	2.122**	-0.66
dum_tv	1 if a HH owns a TV set	0.61	0.5	0.63	0.56	2.569**	1.464
hh_sex	1 if HH head is female	0.14	0.25	0.13	0.26	-3.35***	-3.7***
hh_married	1 if HH head is married, 0 otherwise	0.87	0.78	0.86	0.77	2.712**	2.458**
educ	years of education of HH head	3.26	3.08	3.16	3.17	0.721	-0.03
age	age of HH head (year)	47.45	46.2	51.16	49.18	1.199	1.912*
nadult_15_65	number of adults aged 15-65	0.92	0.92	1.8	1.81	-0	-0.39
hhsiz	HH size	5.29	4.75	5.32	4.9	3.209***	2.748***
homeaset	real value of home appliance in '0000riels	24.88	22.23	15.08	14.61	0.665	0.242
transpr	real value of transportation asset in '0000riels	243.55	142.78	163.37	115	2.495**	2.14**
agri-aset	real value of agriculture equipment/asset in '0000'riels	273.37	89.83	131.91	141.94	1.003	-0.44
landagri_s	size of agricultural land owned by HH in ha	1.85	1.62	1.65	1.54	1.507	0.575
flooded_ricefield	1 if HH has access to rice flooded field	0.19	0.23	0.24	0.29	-1.02	-1.08
sick	1 if any HH members got sick with the 6 months	0.27	0.32	0.23	0.18	-1.16	1.492
crop_failure	1 if HH faced crop failure within last 6 months	0.11	0.05	0.1	0.09	2.536**	0.474
crop_damage	1 if HH faced crop damage by flooding	0.06	0.06	0.01	0.04	0.136	-1.6
irrigated	percentage of irrigated land for rice	35.88	45.13	40.19	51.79	-2.32**	-2.84***
network	1 if HH reported that it can get small loans from more than one person; 0 otherwise	0.59	0.61	0.60	0.58	-0.48	0.51
rice_inputs_ha	rice purchased input value in '0000 riel per ha in real terms	69	87.2	51.2	66	-3.24***	-3.29***

Note: T=Treatment, C=Control. Statistically significant at 10 percent level *; 5 percent level; **, 1 percent level ***. Source: CDRI household surveys in 2008 and 2011

Appendix 2. Propensity Score for Household Matching (logit estimation)

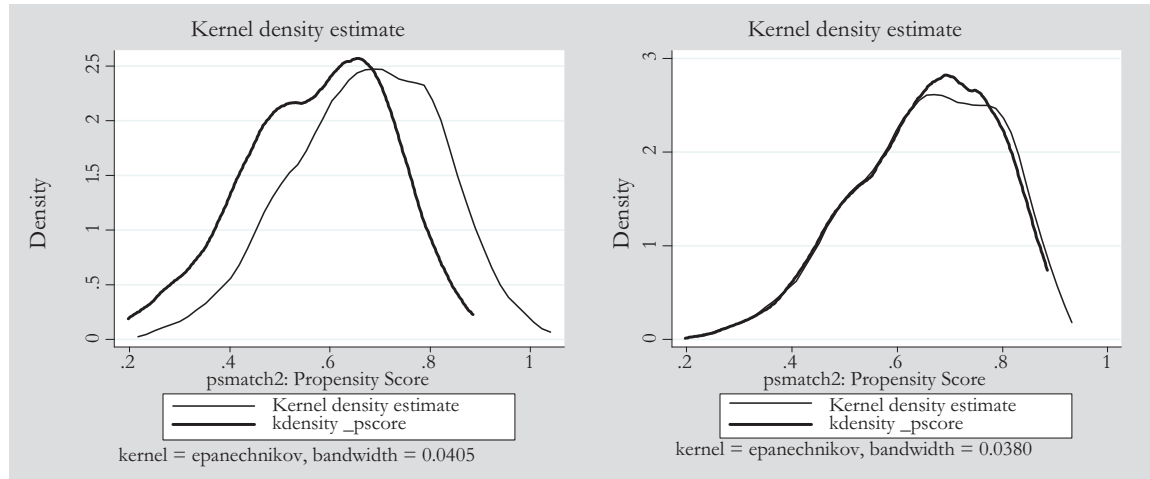
Logistic regression	Number of obs	=	547
	LR chi2(19)	=	57.69
	Prob > chi2	=	0.0000
Log likelihood = -329.75276	Pseudo R2	=	0.0804

treated	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
prim_agri	.2751711	.2167607	1.27	0.204	-.149672	.7000142
dum_radio	.3372903	.218502	1.54	0.123	-.0909657	.7655464
hh_sex	-.6014302	.3646658	-1.65	0.099	-1.316162	.1133016
hh_married	-.0049786	.3701298	-0.01	0.989	-.7304197	.7204625
educ	.0056995	.0379209	0.15	0.881	-.068624	.0800231
age	.0131116	.0107175	1.22	0.221	-.0078943	.0341176
nadult_15_65	-.0430419	.441886	-0.10	0.922	-.9091225	.8230387
hhsz	.089841	.0557579	1.61	0.107	-.0194426	.1991245
homeaset	-.0025072	.0022628	-1.11	0.268	-.0069423	.0019278
transpr	.0007689	.0003913	1.97	0.049	2.02e-06	.0015357
agriaset	.0011822	.0005365	2.20	0.028	.0001306	.0022338
landagri_s	-.0414416	.0710988	-0.58	0.560	-.1807927	.0979095
flooded_ri~d	-.274789	.2447739	-1.12	0.262	-.7545372	.2049591
sick	-.2947943	.2115475	-1.39	0.163	-.7094199	.1198312
crop_failure	.8592268	.3831621	2.24	0.025	.1082428	1.610211
crop_damage	.0145162	.3931478	0.04	0.971	-.7560394	.7850718
irrigated	-.0041089	.0025042	-1.64	0.101	-.0090171	.0007993
rice_input~a	-.0041858	.0016221	-2.58	0.010	-.0073651	-.0010066
network	-.2401084	.1963526	-1.22	0.221	-.6249524	.1447356
_cons	.0149446	.9080426	0.02	0.987	-1.764786	1.794675

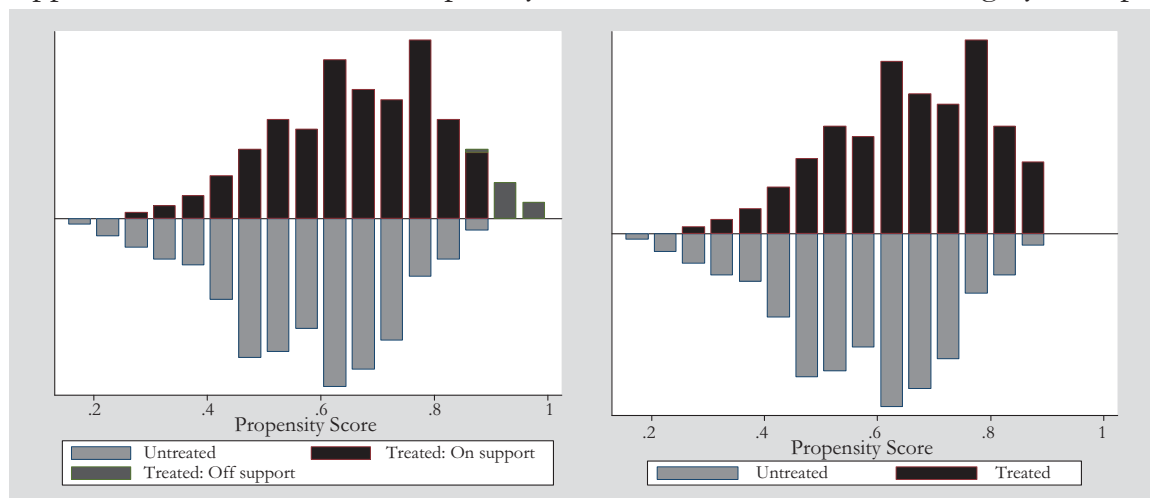
Appendix 3. Summary of Distribution of Bias (Before and After Matching)

Before matching				
	Percentiles	Smallest		
1%	.0211965	.0211965		
5%	.0211965	1.209378		
10%	1.209378	4.30639	Obs	19
25%	6.380492	5.530637	Sum of Wgt.	19
50%	13.51229		Mean	14.87724
		Largest	Std. Dev.	9.564844
75%	23.62262	24.19099		
90%	28.80045	28.77326	Variance	91.48623
95%	28.8627	28.80045	Skewness	.0993289
99%	28.8627	28.8627	Kurtosis	1.713994
After matching				
	Percentiles	Smallest		
1%	.0306922	.0306922		
5%	.0306922	.4079107		
10%	.4079107	1.260909	Obs	19
25%	1.798708	1.660047	Sum of Wgt.	19
50%	3.538448		Mean	4.060509
		Largest	Std. Dev.	2.94463
75%	7.053827	7.295862		
90%	8.062195	7.685252	Variance	8.670845
95%	10.60273	8.062195	Skewness	.6065958
99%	10.60273	10.60273	Kurtosis	2.393915
Sample	Pseudo R2	LR chi2	p>chi2	
Unmatched	0.081	58.40	0.000	
Matched	0.007	6.15	0.998	

Appendix 4. Kernel Density of Propensity Score Before and After Matching



Appendix 5. Distribution of Propensity Score Before and After Matching by Group



Difference-in-Differences Estimation

The left-hand side of equation (1) is change in treated outcome had there been no rice extension services (i.e. counterfactual) over the course of our impact evaluation, while the right-hand side represents change in non-treated outcome (i.e. control group).

$$E(Y_{2011}^0 - Y_{2008}^0 | T = 1) = E(Y_{2011}^0 - Y_{2008}^0 | T = 0) \quad (1)$$

In general, equation (2) defines the average treatment on the treated over the two periods (2008-2011) as follows:

$$ATT = E(Y_{2011}^1 - Y_{2008}^1 | T = 1) - E(Y_{2011}^0 - Y_{2008}^0 | T = 1) \quad (2)$$

However, it is impossible to observe the counterfactual outcome $E(Y_{2011}^0 - Y_{2008}^0 | T = 1)$. The important task of impact assessment is to investigate the outcomes for observations (either households or individuals) had they not received the services (Ravallion 2001). Hence, instead of the hypothetical situation of not having access to the programme or services, a comparison group is used to compare the expected change in outcome of

the treatment group with that of the control counterpart. By subtracting and adding $E(Y_{2011}^0 - Y_{2008}^0 | T = 0)$ in equation (2), we obtain:

$$ATT = E(Y_{2011}^1 - Y_{2008}^1 | T = 1) - E(Y_{2011}^0 - Y_{2008}^0 | T = 0) - E(Y_{2011}^0 - Y_{2008}^0 | T = 1) + E(Y_{2011}^0 - Y_{2008}^0 | T = 0) \quad (3)$$

Therefore, referring to the main assumption of the DD approach – equation (1) – where change in counterfactual outcome equals change in non-treated outcome, we can estimate the impact using DD as expressed in equation (4):

$$DD = E(Y_{2011}^1 - Y_{2008}^1 | T = 1) - E(Y_{2011}^0 - Y_{2008}^0 | T = 0) \quad (4)$$

where $T=1$ represents household access to rice extension services (treatment).

Climate Change: Vulnerability, Adaptive Capacity and Water Governance in the Tonle Sap Basin

by Chem Phalla and Kim Sour¹

1. INTRODUCTION

1.1. Climate Change in Cambodia and the Tonle Sap Basin

Cambodia is a least-developed country and makes little contribution itself to global greenhouse gas emissions, which climate scientists maintain – and is widely accepted – cause global warming, the prime driver of global climate change. Conversely, Cambodia is highly affected by the effects of climate change because of poverty and because the livelihoods of the majority of its population are heavily dependent on those sectors most at risk from the impacts of climate change. Almost all of the country's provinces are vulnerable due to low adaptive capacity and dependence on climate-sensitive occupations (Yusuf and Francisco 2009). The Tonle Sap Basin (TSB) is especially vulnerable as climate change is exerting a particular impact on its unique flood pulse system,² subsequently affecting water regimes (Eastham *et al.* 2008). This pulse system is critical to the highly productive fisheries and rice fields of the Tonle Sap lake-floodplain ecosystem, which “is closely connected to – and dominated by – the Mekong River” (MRC/WUP-FIN 2007 cited in Keskinen *et al.* 2012: 10).

A recent comprehensive assessment has highlighted this vulnerability and reports that the TSB is undergoing worrying hydrological change. Many farmers now face water excess in the wet season and severe water shortage in the dry season, causing a growing incidence of water conflicts between upstream and downstream farmers (Chem and Someth 2011). Similar hydrological changes have been observed in the TSB by AusAID's Exploring Tonle Sap Futures study (Keskinen *et al.* 2011).

The combined effects of climate change and natural system changes induced by human activities such as deforestation, infrastructure development and urbanisation make Cambodia prone to flooding, droughts and wind storms. The increasing frequency of hazardous natural events, especially since the late 1980s, has been linked to higher temperatures which have caused uncertainty in rainfall patterns and magnitudes. These climate-related hazards have exacted huge socioeconomic costs on Cambodia. The

¹ Dr Chem Phalla is a senior research fellow and Kim Sour a research associate at CDRI; the paper was written with the support of Dr Pech Sokhem, senior climate change and water governance specialist, and Thai Soda, Hatfield Consultants.

² “Ecosystems that experience fluctuations between terrestrial and aquatic states, such as the Tonle Sap ecosystem, are called pulsing ecosystems, and the hydrology of such systems can be described as a ‘flood pulse’” (Kummu *et al.* 2006 cited in Keskinen *et al.* 2012: 10).

2000, 2011 and 2013 floods and storms around the Tonle Sap Lake, for example, were the worst in recent history, resulting in high numbers of displaced people, hundreds of deaths, and other losses. Especially in 2011 and 2013, severe widespread flooding destroyed much of the last two decades' investment in infrastructure in both rural and urban areas of the Tonle Sap and Mekong floodplains.

In responding to the impacts of climate change, the Royal Government of Cambodia has worked hard to enhance its understanding and facilitate analysis of the levels of vulnerability and adaptive capacity to cope with climate variability and extremes, and to plan action. Perspectives related to vulnerability and adaptation have been integrated into policy and practice, including the development of the National Adaptation Programme of Action (NAPA) in 2006, and the implementation of the Pilot Programme for Climate Change Resilience (PPCR) Phase I and PPCR-II 2013-18. For the purpose of improved climate change resilience, PPCR-II will review all of NAPA's priority projects and will seek funding for these. As recently as November 2013, the government launched the first Cambodia Climate Change Strategic Plan (CCCSP) 2014-23, which is based on several existing policies and plans including the National Strategic Development Plan (NSDP), the Rectangular Strategy, the National Policy on Green Development, and the Sectoral Development Plan. All of these strategies respond to the impacts of climate change in Cambodia within a framework of crosscutting sectoral efforts through national climate change adaptation measures, voluntary efforts to reduce greenhouse gas emissions, and low-carbon development. Adaptation measures so far have centred on institutional capacity development, scientific vulnerability assessments, and adaptation and risk reduction, with particular focus on five climate-sensitive sectors: agriculture, water resources, forestry, fisheries and tourism.

1.2. Objectives and Key Questions

Building on earlier study, and under the framework of the ongoing Climate Change and Water Governance in Cambodia project, this research aims to identify the impacts of climate change on local livelihoods and how local people in the Tonle Sap Basin have adapted to such impacts. Specifically, it addresses three key research questions:

- What impact is climate change having now, and what impact is it likely to have in the future, on people's livelihoods in the Tonle Sap Basin?
- How are local communities adapting to climate change and its impacts on their livelihoods?
- What water governance reform measures are required to enable people to adjust and to adapt in a better way to climate change and its impacts on livelihoods?

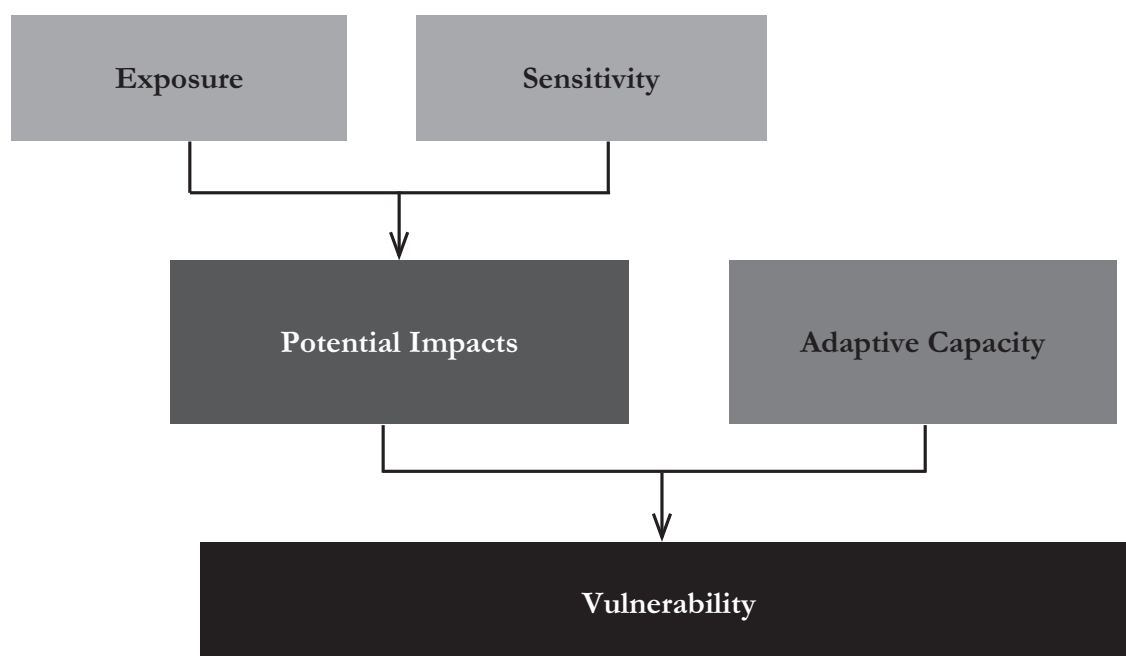
1.3. Terms and Concepts of Climate Change and Vulnerability

Before detailing the research methodology, it is necessary to define some key terms relating to climate change. The Intergovernmental Panel on Climate Change (IPCC 2001: 982-996) defines *vulnerability to climate change* as "the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change,

including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity.” *Exposure* is “the nature and degree to which a system is exposed to significant climatic variations.” *Sensitivity* is “the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli.” *Adaptive capacity* is “the ability of a system to adjust to climate change (including climate variability and extremes), to moderate the potential damage from it, to take advantage of its opportunities, or to cope with its consequences.”

Thus, if a system is highly exposed and sensitive to climate change and adaptive capacity is low, the vulnerability of a system to climate change is high. On the other hand, if a system is exposed and sensitive to climate change to the same degree but the adaptive capacity is high, the system’s vulnerability to climate change is low. This concept is illustrated in Figure 1.

Figure 1: Conceptual Relationship between Different Components of Vulnerability



2. METHODOLOGY

The study applied participatory values, methods and processes to enable local-level qualitative evaluation of climate change impacts and vulnerability in the TSB. Importantly, the study drew on the findings of qualitative case studies conducted in Kompong Thom, Pursat and Kompong Chhnang provinces to make a preliminary assessment of issues related to water governance, climate change and adaptive capacities through the perceptions of farmer water user communities (FWUCs), commune councils, and district and provincial authorities.

The assessment involved holding three commune-level consultation workshops, one each in Kompong Thom, Pursat and Kompong Chhnang provinces, to (1) identify the effects of climate change impacts, adaptive capacity and vulnerability, and (2)

analyse sector-based (agriculture, natural resources and infrastructure) adaptation, all at local level. The results of the commune consultation workshops were verified at a provincial-level validation workshop in Kompong Thom province on 31 October 2013, which was attended by provincial and district officers from all three provinces. The provincial workshop had dual objectives. The first was to discuss the effects of climate change impacts on local water resources and the implications for local livelihoods. The second was to identify an action plan (steps) for the implementation of the Climate Change and Water Governance in Cambodia Project in Kompong Thom, Pursat and Kompong Chhnang provinces, with particular focus on conducting field interviews and focus group discussions with local people and communities in each province.

Along with the preliminary results of the commune consultation workshops and feedback obtained from the provincial validation workshop, a critical review of the research literature and current development policies relating to climate change in Cambodia was used to complement and synthesise the findings of the case studies.

3. RESULTS

3.1. Climate Change: Trends and Impacts

Kompong Thom

Kompong Thom province comprises eight districts and has three main streams flowing into the Tonle Sap Lake, namely the Saen, Stoung and Chinit. Natural disasters have been observed from 1961 right up until 2013 when many parts of the province were flooded; the entire Baray district and part of Santuk district (Prasat and Tang Krasang communes) were particularly affected. The natural disasters identified range from floods, thunderstorms, droughts and lightning strike to higher temperatures in the dry season, the late arrival of wet season rains, and disease outbreaks (skin disease and dengue fever). It was observed that floods and thunderstorms were happening more frequently than they used to, especially since 2000; these events caused damage to houses, rice fields and public infrastructure.

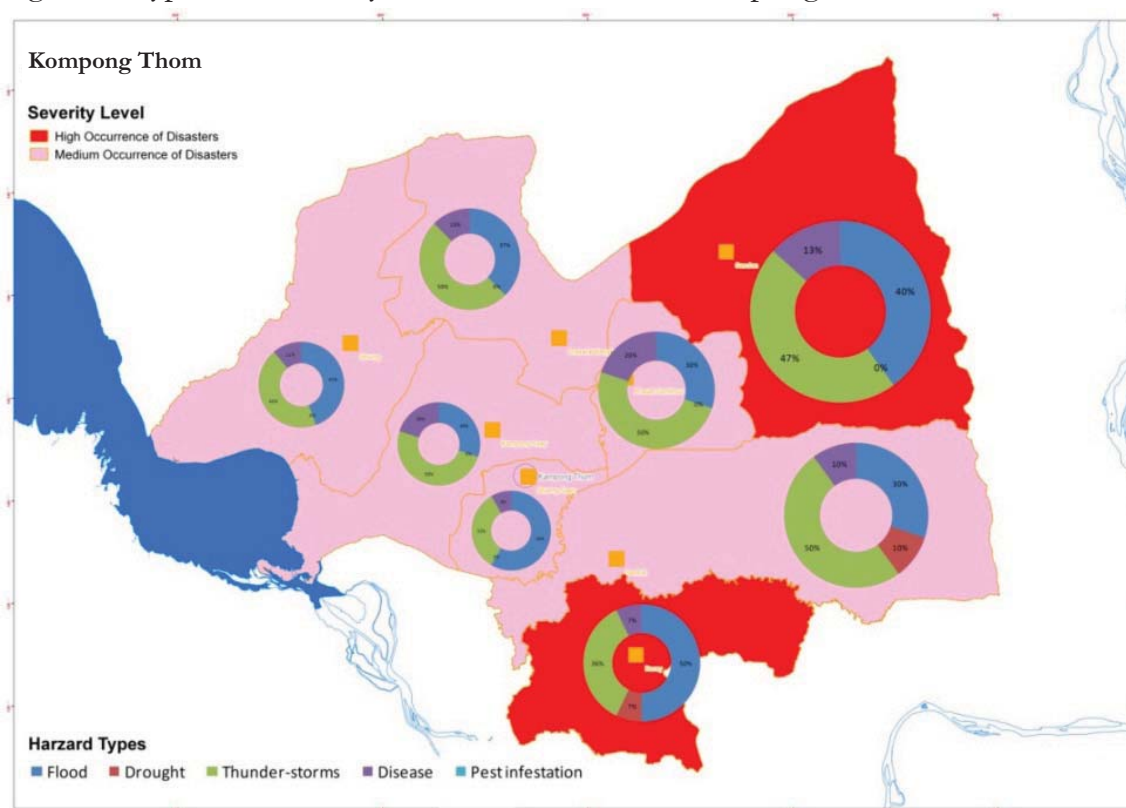
The trends that are expected to affect the province in the future were also identified. Possible outcomes include increased risk of natural disasters, especially more floods, droughts, storms and lightning strikes. Unseasonal or extreme weather will likely alter the crop calendar and have a detrimental effect on crop production, livestock and natural resources. Population pressure, ecosystem (forest) destruction and habitat degradation were cited as causes for the increasing severity and frequency of natural disasters. Disease outbreaks in the aftermath of flooding, compounded by poor knowledge about disease causation and no or inadequate access to sanitation and safe water, are expected to affect both livestock and human health. Overall, climate change impacts will likely reduce agricultural productivity, increase the poverty rate and generally diminish people's well-being.

A simple tabulation analysis of natural disasters in Kompong Thom province shows that five main hazards take place frequently: flood, drought, thunderstorm, disease outbreak and pest infestation. The participants at the commune workshop identified

two districts – Sandan and Baray – that were affected the most by climate change. At the later provincial workshop, it was confirmed that Sandan is one of the most affected districts in the province, with major hazards comprising flood, drought, storm and disease outbreak. Thunderstorms contribute about 47 percent of total disasters, followed by flood (40 percent) and disease outbreak (13 percent). In Baray district, flooding is the most severe hazard accounting for 50 percent of total disasters, followed by thunderstorm (36 percent), drought (7 percent) and disease outbreak (7 percent).

Other districts that are particularly affected include Kompong Svay, Stueng Saen, Prasat Sambour and Stoung. Figure 2 illustrates the different types of natural disasters in different districts in Kompong Thom province that were identified at the commune workshop and then validated at the provincial workshop.

Figure 2: Types and Severity of Natural Disasters, Kompong Thom Province



Pursat

Pursat province has six administrative districts. Historically, natural disasters have taken place since 1958, when significant flooding affected Ta Lou commune in Bakan district. Similar to the situation in Kompong Thom province, natural disasters have occurred more frequently in the last decade; these were in the form of floods, droughts, disease outbreaks in livestock, thunderstorms, insect invasions, and dengue epidemics.

Among all natural disasters, floods have reportedly contributed most frequently and intensely to the tally, with flood waters reaching higher levels than before. It was also observed that just as drought destroys rice and vegetable crops when there is water scarcity during the dry season, too much water (heavy rains) during the rainy season

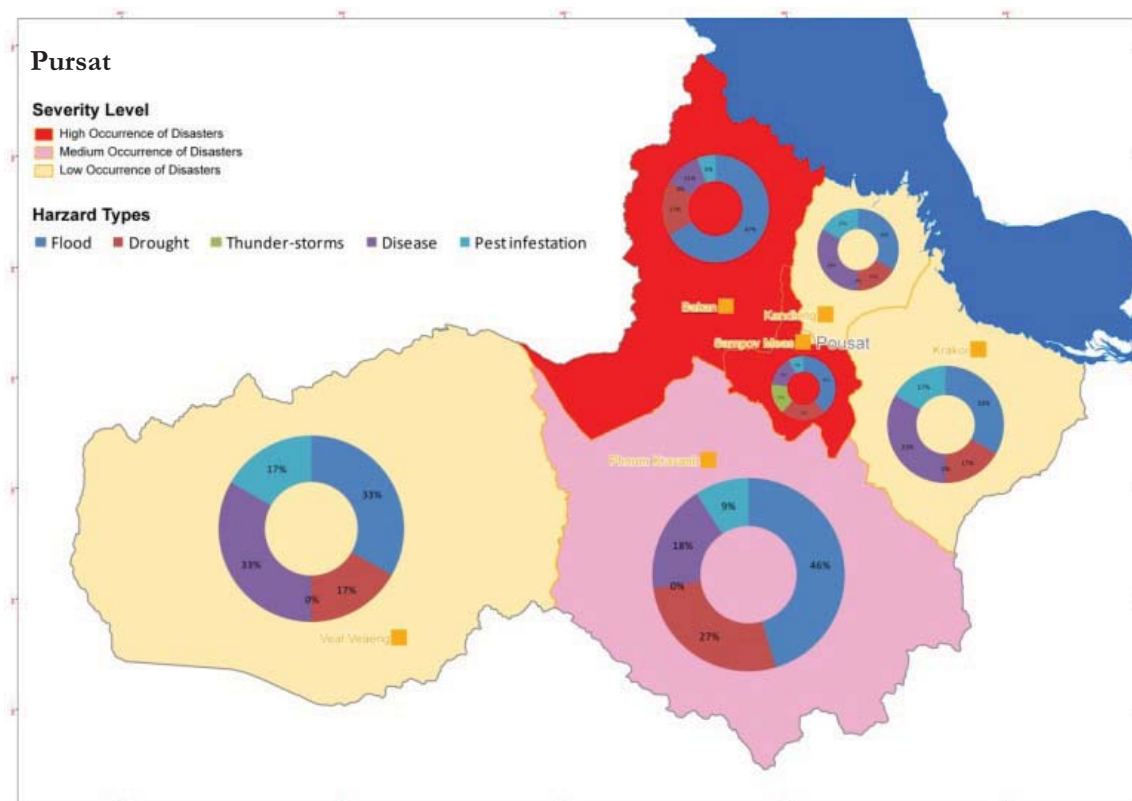
can also damage crop production. It was reported that more people have died from lightning strikes in the province in recent years than in the 1950s.

Local people reported that Kandieng is the most vulnerable district in the province in that it is prone to regular flooding almost every year. This was validated by participants at the provincial workshop. Of the total disasters reported at the commune workshop, flood and disease outbreak account for equal shares at 33 percent each, whereas drought and insect infestation each contribute 17 percent (Figure 3). Bakan was also reported to be one of the most affected districts, where flooding is the greatest hazard, accounting for 67 percent of disasters, followed by drought representing 17 percent, epidemic diseases (11 percent) and insect invasion (5 percent). In addition, participants at the provincial workshop also identified Krakor district as being one of the most vulnerable districts in the province.

People predicted that natural disasters would be more frequent and even more intense in the future. Water systems would be shallower. People felt that temperatures would increase, floods would occur more frequently, and water shortages in the dry season would be a significant problem. Lightning would kill more people, and disease outbreaks would be more widespread. Local people, therefore, would find it challenging to adapt to such climate change impacts.

Figure 3 shows the different types of disaster and their severity by district, as identified by participants at the commune workshop in Pursat province.

Figure 3: Types and Severity of Natural Disasters, Pursat Province



Kompong Chhnang

Kompong Chhnang has eight administrative districts. Participants reported that there had been natural disasters in Kompong Chhnang since 1951, when the river flooded National Road No. 5 and affected many districts including Kompong Tralach, Rolea B'ier, Baribour, Kompong Leaeng and Chol Kiri. The flood damaged roads, rice fields, small and large irrigation structures, and affected human health.

The frequency of natural disasters has been observed to be increasing, especially from 2000 until 2013 when they were identified as flood, drought, lightning strike, dengue fever, disease outbreak among livestock, and thunderstorm. Floods have become more frequent and more intense; they can be divided into two categories: flash flooding, and mainstream flooding along rivers. Thunderstorms were reported to be occurring more frequently. The pattern of rains within seasons has changed, with the onset of the main rains in the wet season delayed by about one month. Furthermore, cool season temperatures have increased; the months of December and January, which used to constitute a short “winter”, are now warmer than they used to be and cold days are far less common.

Activities that are deemed to hasten climate change were observed in the province. For instance, the increase in the population has heightened the need for houses and has increased consumption in general. Logging for furniture, charcoal and firewood and large-scale forest clearance by land concession companies were cited as the main causes of the loss of forest. High market demand for natural resources such as timber also encourages local people to cut down more trees. The loss of forest has depleted natural water sources and caused soil erosion, which has led to increased sedimentation in the river.

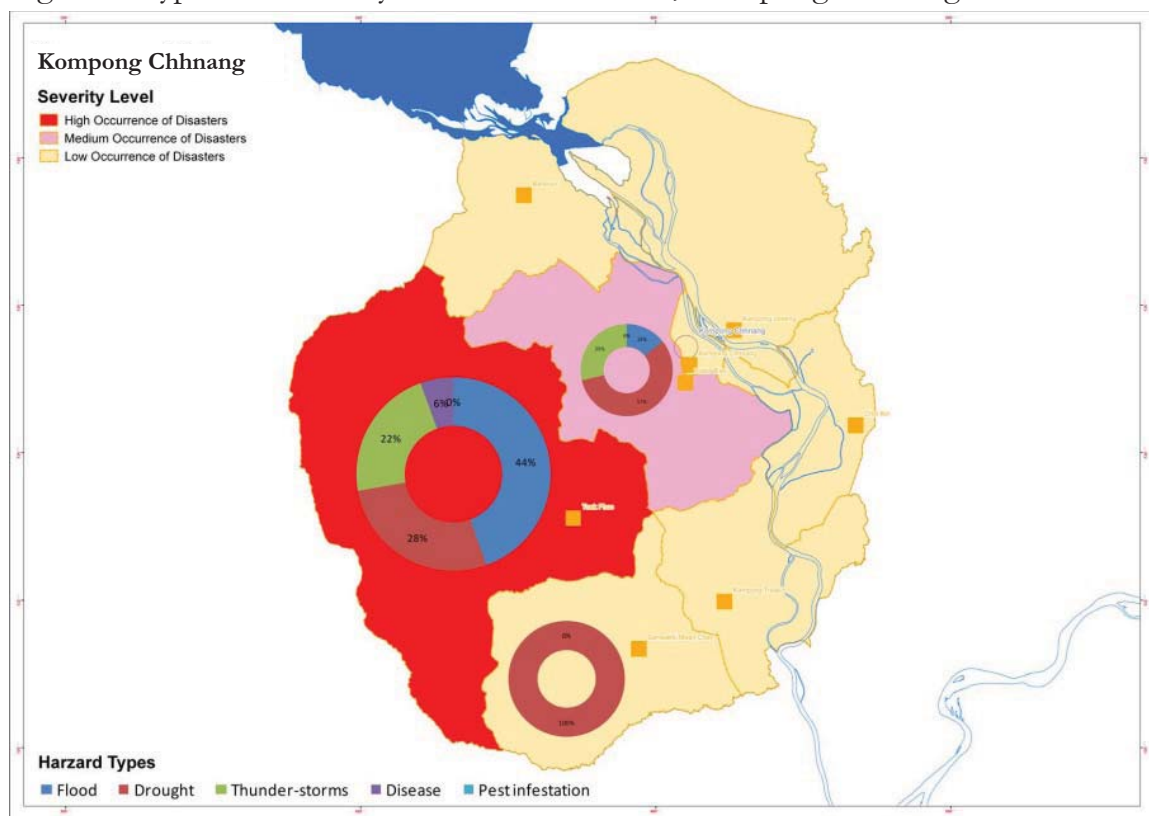
Drought occurs every two years and particularly affects those people and farmers who are situated far away from irrigation canals.

It was noted that thunderstorms, floods and droughts were more frequent and had intensified. The weather was hotter and more changeable. Streams and deep pools were shallower because of soil erosion and resultant sedimentation. Increasing amounts of greenhouse gases were being emitted from human activities, and more natural resources were being lost.

Chol Kiri district was identified by participants at both the commune and provincial workshops as the most affected area in the province. Sameakki Mean Chey, Tuek Phos and Rolea B'ier districts were also identified as vulnerable areas at the commune workshop, while Kompong Leaeng and Baribour districts were reported to be the most affected areas in the provincial workshop.

In Tuek Phos district, four main natural disasters were observed, namely flood, drought, thunderstorm and disease outbreak. Flood was the major hazard in Tuek Phos district, contributing 44 percent to the total, followed by drought (28 percent), thunderstorm (22 percent) and disease outbreak (about 6 percent). Figure 4 presents the natural disasters in Kompong Chhnang province as identified by participants at the commune workshop.

Figure 4: Types and Severity of Natural Disasters, Kompong Chhnang Province



3.2. Challenges of Adaptation

Kompong Thom

In Kompong Thom province it was reported that there are some mechanisms in place to help people adapt to climate change. The most important of these is the National Committee for Disaster Management (NCDM), which exists at all levels including at commune level. The commune members of the NCDM play a significant role in disaster management, especially through two-way communication. They report information from the local community to the national level about the extent and impact of the damage caused by a disaster (i.e. local communities' needs), and at the same time bring official flood/river level warnings/updates and rain forecasts from the national level to local people. When financial support is received from the Cambodian Red Cross and non-governmental and civil society organisations, local commune councils help to deliver vital relief assistance to people affected by drought and flood.

Other provincial and district technical agencies like PDOWRAM, Provincial Department of Agriculture and Provincial Department of Rural Development help local farmers to organise irrigation systems, support improvements in agricultural production, and develop rural infrastructure. There are hydrological stations in Kompong Thom and Preah Vihear provinces through which data on water level, stream flow and rainfall is collected and reported to the Ministry of Water Resources and Meteorology (MOWRAM) in Phnom Penh for analysis and broadcasting.

In addition, there are farmer water-user communities (FWUCs) in Stueng Chinit (Kampong Thma and Boeng Lvea communes, Santuk district) and Rolous (Sangkat

Srayov commune, Stueng Saen district). The FWUCs protect the irrigation systems within their mandate, and keep a check on and report flood levels along the Stueng Chinit and Stueng Saen to PDOWRAM. The skills and knowledge needed for adaptation are still limited, and there are some challenges when natural disasters occur in their areas. It was reported that the management and maintenance of irrigation systems are still not effective; water allocation, especially between upstream and downstream areas, remains a challenge because of lack of coordination and communication. The FWUCs have little experience in providing services and limited effectiveness in collecting user-fees. There was also a report that farmers in the Stueng Chinit community were unable to cultivate dry season rice because of regular pest outbreaks during the dry season. The most frequent problem is that farmers lack rice seed after a natural disaster like a flood or storm. Finally, limitations of data and information, and even the capacity to analyse risk information, make it difficult to provide accurate and live warnings/forecasts to local people.

Several factors affect adaptive capacities. In terms of social aspects, poverty is the main obstacle because the poor do not have the resources or assets to deal with natural disasters. Lack of solidarity, through which people would be able to help one another, is another factor contributing to the challenge.

As regards economic factors, poor rural infrastructure such as roads and bridges contribute to weak adaptive capacity. Living conditions are generally poor and job alternatives are limited at local level. Poor people do not have any means (finance, equipment, staple food stockpile) to protect themselves against imminent disaster, so it is very difficult for them to adapt to manage climate-related risks. There are reports of lack of labour, investment, equipment and post-harvest storage facilities, which also contribute to capacity challenges.

In terms of factors relating to governance and management, the level of education of local people is very low, so it is hard for them to understand and prepare for the impacts of climate change. Lack of clear mechanisms and plans for water management and allocation to solve the problems of water excess and scarcity reduce their ability to cope. Finally, limited cooperation between relevant institutions and authorities at all levels creates other barriers.

Pursat

In Pursat, as in Kompong Thom province, the establishment of a Committee for Disaster Management (CDM) at commune level plays a very important role in helping local people by communicating and coordinating with higher government agencies. There are hydrological stations in Phnum Kravanh district and Pursat municipality which regularly report water levels and flows to PDOWRAM and then to MOWRAM for analysis and broadcasting.

Other mechanisms are the preparedness of local and national governments for disaster in that facilities and equipment are in place and in standby mode. There is also a local broadcasting system in the form of a loudspeaker in the Fishery Community to warn of any impending natural disaster. In each village there is a volunteer who helps

distribute information and emergency relief and reports on the disaster. In addition, there are safe places (30 in total) in each commune for emergency resettlement.

Challenges include the ineffective management of both the main and on-farm irrigation and drainage systems and the inconsistent maintenance of water control structures; water is still not equally allocated between those located near the water sources and those who are further away. Lack of coordination and poor communication between FWUCs and government technical agencies were reported as further hindrances, as are technical issues regarding the construction of irrigation dams and canals.

Another critical challenge is that despite the introduction of water/drought resistant rice varieties, none of them are resilient to the harsh conditions such as severe water limitations during the dry season.

The socioeconomic factors influencing adaptation capacity include lack of participation from local people due to their limited understanding and lack of resources, particularly financial resources. Competition and conflict between upstream and downstream water-users over water use and allocation is a barrier to effective water management and efficient water use. Labour shortages and the use of unsuitable rice varieties also limit adaptation capacity. Lack of rural infrastructure is a critical issue, especially in that this impedes the delivery of emergency aid relief when disaster strikes.

Although there is a clear mechanism and plan in place for emergency management, weak management capacity and inconsistent performance are governance and management factors contributing to the limitation of adaptive capacity.

Kompong Chhnang

Existing mechanisms for coping with natural disasters and adapting to the impacts of climate change in Kompong Chhnang province are similar to those in the other two provinces. The Committee for Disaster Management (CDM) is in place at commune level, and is affiliated to the district, provincial and national committees. Specifically, the commune committees are divided into four teams, each with responsibilities for different aspects of disaster management, namely information gathering, emergency response, fund raising, and health response. Committee members generally work on communicating information about impacts and vulnerabilities at the village and community level to the higher level.

Schools are designated as safe places for evacuated people to shelter from flood. Local programmes provide awareness raising in villages to prepare people before disaster strikes and to help them to cope during and after a disaster.

The committees request funding from private and non-governmental organisations, and have worked especially closely with the Cambodian Red Cross for emergency aid relief. They have also prepared some food stocks, basic equipment and materials for emergency response. In addition, commune councils contribute a small amount of their budget to the Cambodian Red Cross for use in emergency response.

Despite there being mechanisms in place, adaptive capacity in Kompong Chhnang faces several challenges. First, the management of irrigation systems and water control

structures is ineffective and not fully developed. Water allocation issues, especially during the dry season, still exist in that there are competing demands for water between upstream and downstream users. The lack of communication and coordination between FWUCs is another challenge compounding this issue. Another problem is the high demand for water during the dry season as more and more people cultivate dry season rice, especially in Kouk Banteay commune, Rolea B'ier district. Finally, the limited capacity of FWUC committees means that water management systems cannot be sustained and user-fees are not collected.

As regards socioeconomic factors, poor knowledge and traditional patterns of behaviour are concerns. Local people find it difficult to be aware of, and to learn about, the links between global climate change caused by greenhouse gas emissions around the world and the impacts on local areas in Cambodia. Being poor makes it difficult for local people to think beyond their immediate needs, let alone plan for nebulous issues like climate change; all their efforts go into finding sufficient income and food to support their family on a daily basis. The lack of solidarity and understanding tends to stoke the tension and conflict arising over water use and allocation between upstream and downstream farmers.

In terms of governance and management, the current political stagnation is cause for concern; as well as lacking solidarity, local people are divided by political affiliations both within the commune and at village level. The flow of information to and from the national level is slow, and emergency response is rarely appropriate. FWUCs' weak capacity and limited financial resources, and local farmers' lack of participation, hamper efficient water management. Disaster preparedness is lagging, especially the development of emergency management plans and organisation at all levels.

3.3. Implications for Water Governance

Kompong Thom

Participants at the commune workshop tried to identify key needs for building adaptation capacity to cope with the effects of climate change impacts. It was pointed out that there needs to be more public awareness about adaptation and water management. Cooperation between governmental and non-governmental agencies is necessary to support the development and implementation of adaptation strategies and plans.

It was requested that more FWUCs be established and extension services provided for the development of these. The capacity of existing FWUCs should be strengthened so that they can manage water resources and collect user-fees effectively. Seed banks should be established in each village to help farmers replant rice after disasters. And, importantly, on-farm training in agricultural production techniques should be provided, particularly those that improve water-use efficiency including the introduction of crop calendars.

Pursat

The participants at the commune workshop pointed out that the development of irrigation systems and roads is a requirement for the province. Strengthening FWUCs'

management capacity for equitable water allocation and to ensure effective operation and maintenance of irrigation systems is also important, as is the need to provide training in water-use efficiency.

In order for the central level to respond rapidly when disaster strikes, the commune-level disaster committees need training on how to report and communicate local conditions to higher authorities. Moreover, these committees need to raise awareness about the risks different localities face from climate change so that local people can understand the issues that matter and be prepared for them.

Kompong Chhnang

The commune and provincial workshops identified the need for capacity development to reduce the impacts of natural disasters and climate change. Most importantly, new crop calendars and water-efficient farming techniques are needed; extension services to promote these new crop management and water saving methods should be intensified. FWUCs' management capacity should be strengthened as a matter of urgency in order to improve water allocation and prevent conflicts over water use. Raising farmers' awareness of the present and foreseeable limits of water resources in the dry season is also called for so that they can be prepared to change water use behaviour in the future.

A clear mechanism for emergency preparedness, response and recovery should be put in place. Natural disaster forecasting and warning systems should be strengthened to improve prediction accuracy and to ensure that information reaches local people and communities in good time. Staple foods, basic materials and equipment should be available and ready for use whenever a disaster is imminent.

4. CONCLUSION AND RECOMMENDATIONS

Based on local people's perceptions, the study attempted to map disaster hotspots and assess the type, frequency and severity of natural disasters by district in each province. The impacts of climate change can be divided into four main categories: flood, drought, lightning storm and disease outbreak. Flood was considered the most severe and frequent disaster, followed by drought. These natural events have become familiar to people and they predict that such events will occur more frequently and intensify over the years ahead. Indeed, it was reported that natural disasters have occurred in the three provinces studied almost every year for the past two decades with the exception of 2003 and 2008.

The provinces have experienced similar types of natural disasters. Within each province, however, there are differences between districts in terms of their location with respect to water bodies (streams and the Tonle Sap Lake) and the types of disaster. In Kompong Thom, Sandan is one of the most affected districts; in Pursat, Kandieng was the most vulnerable district having suffered floods almost every year for the last decade; and in Kompong Chhnang, Chol Kiri district has been hit the hardest. However, other districts in the three provinces were also identified as being particularly vulnerable.

The poorest people are the most vulnerable to these natural disasters because they do not have the human or financial capacity to cope with, let alone adapt to, the effects of these natural disasters.

Workshop participants were aware of the causes of natural disasters; they knew that deforestation, land clearance and habitat destruction are responsible for changes in water regimes, soil erosion, loss of biodiversity and productivity, and damage to human health.

The commune council is the lowest level of the Committee for Disaster Management (CDM), through which it is linked to the national level. This existing mechanism plays an important role in efforts to adapt to the impacts of climate change at local, regional and national levels. However, resources and commitment are relatively limited and performance tends to be weak and passive; disaster relief responses were generally delayed. Most of the relief effort comes from the Cambodian Red Cross, while the CDM is limited in terms of both human and financial capacities.

The study raises the following recommendations for consideration:

- Given that climate change alters rainfall patterns, the introduction of crop calendars and new farming technology that enables farmers to adapt to climate change and weather variability should be a top priority.
- A clear mechanism for emergency preparedness, response and recovery should be put in place with stocks of basic food, materials and equipment in standby mode at local level.
- Awareness raising events should be conducted and extension services made available at village and commune levels to teach local people about disaster risks, what to do in the event of disaster, and how to build resilience to expected climate change impacts.
- Coordination and communication from commune level to district level, provincial level and national level and vice versa should be timely in order to disseminate information and respond rapidly to the greatest needs when a disaster is imminent.
- Greater reliability and accuracy in predicting disasters and broadcasting warnings is urged. In particular, a warning system should be put in place that is able to reach people and communities likely to be affected before disaster strikes.
- Emergency response and adaptation efforts should be focused on the poorest and most destitute people since they are the most vulnerable to natural disasters; when these hit, such people have no means to adapt.

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Greening Cambodia's Tourism: Potentials, Constraints, and Policy Options

by Lonn Pichdara¹

1. INTRODUCTION

Tourism is identified as one of the priority sectors in the Royal Government of Cambodia's Rectangular Strategy for Growth, Employment, Equity and Efficiency (RGC 2012). It is recognised as contributing significantly to socioeconomic development through job creation, income generation, livelihood improvement, poverty alleviation and green growth (MOT 2012a). The sector can generate substantial revenues and boost economic growth, help sustain the trade balance, and contribute to regional and international integration (MOT 2012a). With around 3 million annual tourist arrivals in recent years, tourism has been a crucial source of foreign exchange earnings, income generation and employment creation for Cambodia (CDRI 2013).

In fact, tourism, in accordance with the World Travel and Tourism Council's estimates, contributes more to annual income and employment generation in Cambodia than it does in any of the other ASEAN member countries. As Table 1 shows, in 2012, the direct contribution of travel and tourism to GDP was 11.5 percent and to employment about 10 percent. Factoring in the indirect impacts of tourism revenues on all tourism-related economic activities (the well-known multiplier effects through the backward and forward linkages of tourism with other sectors in the economy) (CDRI 2013), the total impacts on income and employment are more than twice the direct contributions. The overall contribution in terms of income is about 26 percent of GDP (total GDP was USD14,062 million in 2012) and 22 percent (or 1.8 million jobs) of the country's total employment.

The tourism sector in Cambodia has been growing at a rate of 20 to 30 percent per year since 1997, when the Siem Reap International Airport, which is close to the ancient Angkor Wat temple complex, was opened. International tourist arrivals to Cambodia reached 3.5 million in 2012 (Table 3), an increase of almost 24 percent compared with 2011, and air tourist arrivals went up by around 19 percent and 28 percent in Phnom Penh and Siem Reap, respectively (MOT 2012b).

As well as the rapid growth in domestic tourism (8.2 million Cambodian tourists in 2012, a 3 percent rise from the previous year), the growth in tourism from neighbouring countries and the region as a whole is also significant. Of international tourists in 2012, the highest number came from Vietnam, followed by Korea, China, Laos and Thailand (Table 2). Increasing numbers of tourists from Vietnam, Laos and Thailand indicate the importance of regional tourists to Cambodia's tourism industry. Long-haul tourists from Europe also showed an increase of 24 percent, despite the current poor performance of Europe's economy (MOT 2012b).

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Table 1: Contribution of Travel and Tourism to Income and Employment, 2012

Country	Contribution to income (percentage share of GDP)		Contribution to employment (percentage share of total employment)	
	Direct	Total (Direct + Indirect)	Direct	Total (Direct + Indirect)
Cambodia	11.5	25.8	9.7	22.3
Laos	5.3	16.7	4.5	14.6
Thailand	7.3	16.7	5.2	12.4
Malaysia	7.0	15.6	6.5	13.6
Singapore	5.2	11.3	4.4	9.1
Vietnam	4.5	9.4	3.8	8.1
Indonesia	3.0	8.9	2.6	8.0
Philippines	2.0	7.0	2.0	7.7
Brunei	1.8	5.8	2.6	6.8
Myanmar	1.3	3.0	1.1	2.6

Source: World Travel & Tourism Council: Economic Impact (2013)

Table 2: Tourism Sector's Top Five Markets, 2005-2012

Ranking	Nationality	% of total international visitors	Ranking	Nationality	% of total international visitors
2005			2006		
1	Korea	15.2	1	Korea	16.8
2	Japan	9.7	2	Japan	9.3
3	USA	7.7	3	USA	7.3
4	France	4.8	4	Taiwan	5.0
5	UK	4.7	5	China	4.7
2007			2008		
1	Korea	16.4	1	Korea	12.5
2	Japan	8.0	2	Vietnam	9.9
3	USA	6.8	3	Japan	7.7
4	Vietnam	6.2	4	USA	6.8
5	China	5.9	5	China	6.1
2009			2010		
1	Vietnam	14.6	1	Vietnam	20.5
2	Korea	9.1	2	Korea	11.5
3	USA	6.9	3	China	7.1
4	Japan	6.8	4	Japan	6.1
5	China	5.9	5	USA	5.8
2011			2012		
1	Vietnam	21.3	1	Vietnam	21.3
2	Korea	11.9	2	Korea	11.5
3	China	8.6	3	China	9.3
4	Japan	5.6	4	Laos	7.1
5	USA	5.3	5	Thailand	5.6

Source: Adopted from Hem Socheat (2013)

Except for during the political deadlock in 2003, tourism revenue has gone up continuously; in 2012, the sector generated income of more than USD2 billion (Table 3). The average length of stay is now around 6.3 days, average individual tourist spend is USD410 per stay, and average expenditure for group tours is USD1100 per stay (NIS 2012). The numbers of hotels and guesthouses have grown rapidly, reaching a total in 2010 of around 440 hotels (55 rooms per hotel) and 1087 guesthouses (14 rooms per guesthouse): the average growth rate for hotels and guesthouses has been around 6 percent and 6.8 percent, respectively (NIS 2012).

Table 3: Tourism Highlights

Year	Tourist arrivals		Average stay	Hotel	Guesthouse	Hotel occupancy	Tourism receipts
	No.	% change	No. days	No.	No.	(%)	USD million
1998	286524	30.9	5.2	216	147	40.0	166
1999	367743	28.3	5.5	221	186	44.0	190
2000	466365	26.8	5.5	240	292	45.0	228
2001	604919	29.7	5.5	247	370	48.0	304
2002	786524	30.0	5.8	267	489	50.0	379
2003	701014	-10.9	5.5	292	549	50.0	347
2004	1055202	50.5	6.3	299	615	52.0	578
2005	1421615	34.7	6.3	317	684	52.0	832
2006	1700041	19.6	6.5	351	742	54.79	1049
2007	2015128	18.5	6.5	395	891	54.79	1400
2008	2125465	5.5	6.65	398	925	62.68	1595
2009	2161577	1.7	6.45	451	1018	63.57	1561
2010	2508289	16.0	6.45	440	1087	65.74	1786
2011	2881862	14.9	6.5	na	na	66.15	1912
2012	3584307	24.4	6.3	na	na	68.49	2210

Source: Ministry of Tourism (2012b); National Institute of Statistics (2012)

Taking into account the importance of travel and tourism for growth and employment generation, continuously boosting the attractiveness of the country for tourists is as important as refining the industrial business environment and investment climate. With regard to a combined measure of travel and tourism competitiveness produced by the World Economic Forum (WEF 2013) – which factors in fourteen sets of indicators ranging from tourism infrastructure to safety and security, health and hygiene and cultural resources – Cambodia has upgraded its ranking from 109 out of 139 countries in 2011, to 106 out of 140 countries in 2013 (CDRI 2013). Despite this improvement, and the fact that Cambodia is just ahead of Laos and Myanmar, it is still behind the other Southeast Asian comparator countries in terms of tourism competitiveness (WEF 2013). Besides putting in place the measures required at the national level, Cambodia could also benefit from reducing the costs of doing business and improving the country's competitiveness by forging stronger regional ties as part of its membership in sub-regional and regional forums such as the GMS, ASEAN, and ASEAN+3 (CDRI 2013).

While tourism offers significant potential for economic growth in Cambodia, the impacts of natural resource scarcity, international climate change mitigation policies, and climate change itself could undermine the competitiveness and growth of the sector over the next ten years (Ellis 2013). What will this look like? What impact will it have on Cambodia's competitiveness and growth? What threats and opportunities will it create? And how should policymakers and businesses respond? (Ellis 2013)

This article examines how these issues could play out in Cambodia over the next decade, particularly focusing on the potential of greening Cambodia's tourism. This study is a case study employing a combination of desk research, key informant interviews and a consultation workshop. The interviews were conducted between 18 and 27 February 2013 with 22 representatives from the Ministry of Tourism, the Cambodia Supreme National Economic Council, Electricity of Cambodia, Rural Development Bank, Cambodia Economic Association, non-governmental (Wildlife Conservation Society, World Wildlife Foundation, Mlup Baitong) and private sector organisations (three hotels), and enterprises and local communities involved in community-based ecotourism in Chambok commune. The stakeholder consultation workshop was held on 24 July 2013 in Phnom Penh and was attended by 55 participants. The aim was to raise awareness and stimulate discussion about the issues at the national level, not to provide detailed policy recommendations, but rather to set out some possible policy and business responses to the issues identified. These responses require further discussion and a more detailed analysis.

2. POTENTIAL FOR CAMBODIA'S GREEN TOURISM

2.1. Sustainable Tourism

Today, sustainable tourism is increasingly used to tackle the negative impacts of mass tourism practices (Shoko n.d.). A definition of tourism appears in Box 1 below.

Box 1: United Nations Definition of Sustainable Tourism

Expressed simply, sustainable tourism can be defined as:

“Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, industry, the environment and host communities”

Conceptual definition: “Sustainable tourism” should:

1. Make optimal use of environmental resources that constitute a key element in tourism development maintaining essential ecological processes and helping to conserve heritage and biodiversity.
2. Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
3. Ensure viable, long term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.

Sustainable tourism development requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus building.

Sustainable tourism development should also maintain a high level of tourist satisfaction and ensure a meaningful experience to tourists, raising their awareness about sustainability issues and promoting sustainable tourism practices among them.”

Source: UNEP and UNWTO (2005:11)

2.2. Ecotourism

Unlike sustainable tourism, which is an overall concept, ecotourism is a specific form of tourism that focuses on the preservation of the natural environment through tourism activities (Shoko n.d.). Ecotourism, basically, is one form of responsible tourism and an integral part of sustainable tourism development, which was declared a global strategy at the World Summit at Rio De Janeiro in 1992 (Leksakundilok 2004).

Community-based ecotourism (CBET) in which the community plays a strong management role, is, particularly in Cambodia, defined as “responsible travel to natural areas that conserves the environment and improves the well-being of local people” (TIES 2012). Cambodia’s first CBET site was established in 1998 at Yeak Laom Lake in Ratanakiri province and is now a successful locally managed project (Reimer and Walter 2012). To be a successful CBET, Honey (2008 cited in Reimer and Walter 2012: 4) provides a seven-view analytical framework of the elements to be considered: “it involves travel to a natural destination, minimises impacts, builds environmental awareness, provides direct financial benefits for conservation, provides financial benefits and empowerment for local people, respects local culture, and supports human rights and democratic movements.” Therefore, ecotourism aims to teach tourists about the local community (to safeguard environmental, socio-cultural and economic sustainability), to promote their participation in environmental conservation, and to enable them to make a distinct contribution to improving community livelihoods.

2.3. Green Tourism

The fundamental features of green tourism are similar to those of ecotourism in that it is nature-based. Ecotourism, however, explicitly aims at a segment of the population that is keen on learning about the natural environment through travelling. In contrast, “green tourism” is targeted more at urban dwellers by suggesting a style of holiday, spent in the countryside, where they can recover from the daily stresses of their usual routine through staying close to nature (Shoko n.d.).

This definition has been influenced by a rural tourism conference in 1986, held in the UK, when the essence of a green tourist was defined as “a selective individual from a higher class socio-economic group, taking a second or third holiday in rural areas and often already well-informed” (Jones 1987 cited in Shoko n.d: 6). That said, there is no commonly agreed definition of green tourism (Yokoyama 2006 cited in Shoko n.d: 6).

In Cambodia, the term usually refers to tourism activities that take environmental protection into account; the reasoning is that a green environment can contribute to reducing climate change and related natural disasters, and thus meet the goals of sustainable tourism (Xinhua English News 2013).

2.4. Potentials of Ecotourism and Green Tourism in Cambodia

Increasingly, tourists around the world are choosing to travel to developing countries rather than to developed countries (UNEP 2013). As people become more environmentally and socially conscious, they are looking for responsible alternatives to traditional travel options. For example, a survey in 2010 found that Chinese travellers

have a preference for environmentally friendly tourism and cultural immersion programmes (VISA 2010). Similarly, in a 2012 poll, 47 percent of respondents answered that they would consider the ethical or environmental implications of their main holiday in 2013 (Blue and Green 2012 cited in UNEP 2013). Furthermore, research indicates that consumers are willing to spend more on their holidays if they can be assured that workers in the sector are guaranteed ethical labour conditions (ILO 2010). For instance, in a Trip Advisor survey, 34 percent of travellers indicated that they were willing to pay more to stay in environmentally friendly hotels (Pollock 2007).

To capture the opportunities and stay competitive, Cambodia has promoted green tourism initiatives such as ecotourism and has introduced a Green Hotel award. Furthermore, community-based ecotourism (CBET) initiatives have received support from NGOs and relevant ministries including the Ministry of Environment (MOE), Ministry of Tourism (MOT) and Ministry of Agriculture, Forestry and Fisheries (MAFF). So far, 56 ecotourism sites have been created in the northeast, the Tonle Sap area, along the south coast, and in the southwest of Cambodia (Rann 2013). In the northeastern provinces, for instance, where there is considerable potential for ecotourism expansion, the number of ecotourism tourists increased by nearly 10 percent in 2012 – to a total of 53,374 – compared with 2011. Most ecotourists come from France, China, the UK, Germany, Vietnam, Australia, the Netherlands, the US, Switzerland and South Korea. With unique natural assets such as the Irrawaddy dolphin, the Mekong River, forests and mountains, the northeastern parts are considered to have the potential to attract 1 million international and 5 million national tourists by 2020 (Rann 2013).

On a national scale, the MOT reports that ecotourism attracted around 450,000 tourists to Cambodia in 2011, a number that represents only around 16 percent of the total number of tourists to the country. Cambodia's tourism sector has mainly concentrated on cultural, archaeological and historical heritage sites, with a particular focus on the UNESCO-listed World Heritage sites of Angkor Wat and the Preah Vihear temple.

Although few of the 56 CBET sites have generated revenues and helped to conserve natural forest, there are exceptions. For instance, Chambok CBET in Kampong Speu province is held up as the most successful example, in 2011 generating income in the region of USD26,500 and attracting 11,200 tourists, 80 percent of whom were Cambodian (Lonn *et al.* 2012). This is largely because it is close to Phnom Penh and boasts a specific waterfall attraction.

As another example of CBET success, the Mekong Discovery Trail (MDT) is a joint project between the MOT, SNV Netherlands Development Organisation and the United Nations World Tourism Organization (UNWTO). It aims to foster sustainable forms of tourism to reduce poverty in the region and to conserve the Mekong River dolphin (SNV 2010). The MDT is part of a network of ecotourism journeys through some of the most natural and least populated parts of the Mekong in Cambodia – in Kratie and Stung Treng provinces (SNV 2010; Tourism of Cambodia 2013) – offering local experiences including horse/ox cart rides, homestays, tree planting, cultural experiences such as traditional shadow puppet shows, trekking, river trips and mountain biking (Tourism of Cambodia 2013).

A study of the impact of tourism development focusing on Siem Reap showed that it made an important contribution to the local economy, with income from the tourism sector comprising around a quarter of total household incomes (Men 2007). Another study confirmed that tourism in Siem Reap has helped to improve the well-being of local people by creating jobs and income-earning opportunities in construction, hotels and restaurants, and transport, as well as through increasing land values.

Some international initiatives also have the potential to support Cambodia's ecotourism development. For instance, climate finance such as the Climate Investment Funds (CIF) could provide support for ecotourism projects as a way to promote livelihoods based on sustainable forest management, as could possible carbon finance mechanisms implemented through Reducing Emission from Deforestation and Forest Degradation plus sustainable forest management, conservation of forest, and enhancement of carbon sinks (REDD+). However, given the slow rate of international progress on carbon markets, it seems safer to base ecotourism strategies on contributions from public sources of climate finance in the short term.

3. GREENING CAMBODIA'S TOURISM: CONSTRAINTS AND REQUIREMENTS

Despite its vibrancy, the tourism sector's impact and development potential have not yet been maximised – particularly in relation to ecotourism. Indeed, it is estimated that there was a loss in tourism revenue to foreign markets in the region of 25 percent due to reliance on foreign imported goods to supply growing demand (MOT 2012a). Increased domestic production of goods such as vegetables, fruit, fish and furniture, and the provision of labour, services and expertise could help to capture more of the revenues for Cambodia.

There is also scope to improve the local contribution to tourism through a more coordinated approach to value chain development (Ballard 2005). For example, some hotel chefs have met with farmer groups to discuss product quality as a prelude to agreeing to take regular supplies of local produce for their guests. Hotels and restaurants could contract directly with farmer associations if they were able to procure quantities of produce that were of a reliable, specified quality. The state, NGOs and civil society actors could work alongside farmers to provide technical advice and training to support the achievement of such contracts. These contractual agreements would have the benefit of specifying the terms of quality and guaranteeing a price for the farmers, which would provide the confidence they need to undertake investment in improved production. Development partners could support these kinds of market development programmes, capitalising on private sector-led opportunities in the tourism industry. In return, hotels and restaurants would not only improve the local farmers' livelihoods but also satisfy their own demand for high quality produce, such as vegetables, and other necessities.

As another drawback, the rapid growth of the tourism industry has exerted substantial pressures on the most popular destinations, and this necessitates a broad strategy for the diversification of attractions and the development of associated infrastructure. The

northeastern and southwestern regions of Cambodia boast various tourism assets, such as Mekong River dolphins, Tonle Sap waterbirds, and attractive beaches, islands and coastal ecotourism sites; however, these areas still lack sufficient tourism infrastructure (MOT 2012b).

It is clear that ecotourism could create new sources of growth and income that would help to protect natural assets, including forests, and create a stronger economic case for improved natural resource management in Cambodia. A number of communities are interested in setting up ecotourism sites, but currently there is no legal or regulatory framework for ecotourism management: this constitutes a further constraint. The MOT is now seeking financial support to develop a law on ecotourism management and community-based tourism.² However, there is jurisdictional overlap between the MOE, MOT and MAFF, and these competing objectives can complicate ecotourism strategy development. Thus, there is a need for a more coordinated and participative approach to developing a strategy for the ecotourism sector that balances competing objectives.

Developing Cambodia as a major ecotourism destination is a further challenge. First, specific tourist attractions – such as waterfalls, caves and wildlife viewing opportunities – need to be identified and then developed, conserved and marketed successfully. Local tourists, and those from within the region, tend to be less interested in wildlife than are tourists from further afield (Ellis *et al.* 2013).

There are, too, issues around the conservation of ecotourism sites. Most potential ecotourism sites are located in protected areas (PAs), of which there are currently 23 within Cambodia, including national parks, wildlife sanctuaries, protected landscapes, multiple-use areas, Ramsar sites (wetlands of international importance), biosphere reserves, natural heritage sites, and marine parks. Protected areas account for over 21 percent of the country and are mainly managed by the MOE, though a growing number of fish sanctuaries and protected forest areas have been set up through MAFF.

Indigenous people continue to live inside the PAs, and the MOE has designated “community protected areas” in which such people are permitted to consume natural resources for subsistence. However, population growth, unclear land tenure and user rights, and no demarcation around the PAs and ecotourism sites undermine the effectiveness of these arrangements. In addition, there are few PA authorities to guard and manage the many thousands of hectares of PAs. Thus, conservation and protection of ecotourism sites is threatened, undermining incentives to invest in ecotourism enterprises.

Other potential ecotourism sites are in conflict with economic land concessions (ELCs) granted by the government, which often result in areas of forest being cleared for other purposes. Forest degradation is jeopardising the development of ecotourism, as are forest fires and unsustainable harvesting of non-timber forest products (NTFP) (Lonn *et al.* 2012). Water contamination particularly that caused by mining activities, is also undermining ecotourism sites (rivers or streams).³ Although there is a regulatory

² Key informant interview with an official from the Ministry of Tourism.

³ Key informant interview with an official from the Ministry of Tourism.

framework governing waste management, there is no regular monitoring of activities, and the law is not stringently enforced.

In addition, there is a lack of private sector involvement in ecotourism development. This could help to counter the fact that, currently, members of the local community often lack the necessary skills and knowledge relating to food preparation, hygiene, hospitality, the provision of local guides (and related language skills), site and environmental management, pollution and waste management.

3.1. Carbon Mitigation and Threats to Cambodian's Tourism

There is certainly potential linked to climate change initiatives, but the issue of carbon emissions also threatens the development of Cambodia's tourism. For instance, increased air travel costs arising from higher fuel prices and aviation carbon taxation may reduce long-haul flights, affecting tourism growth potential. Air passenger duty is being imposed by a number of countries, and air travel is now a part of the European Emissions Trading Scheme, which could affect prices of travel to long-haul destinations such as Cambodia. However, this is likely to represent only a small proportion of the total cost, and evidence suggests that tourists may be relatively price inelastic, so the ultimate effect on tourism numbers may be limited. In addition, as much of the growth in tourism to Cambodia is from neighbouring countries rather than from more-distant rich countries, these risks may not represent too significant a threat.

3.2. Tourism and Climate Change

In qualifying the potential of ecotourism, we also need to consider other issues around climate change. Worldwide, the pace of climate change is very likely to increase over the 21st century (UNWTO 2008), and analysts have estimated that climate change will have total monetised damage equivalent to 1.5 to 2 percent of world GDP (Fankhauser and Tol 1997); the OECD would face losses equivalent to 1 to 1.5 percent of GDP, and developing countries 2 to 9 percent.

Within this international picture, Cambodia is classified as highly vulnerable to the effects of climate change impacts; the intensity and frequency of floods and droughts has increased, and changes are occurring in temperature and rainfall patterns. This has had a disproportionate affect on Cambodians, who are overwhelmingly dependent on agriculture (World Bank 2012). Climate change also has the potential to disrupt tourism through the increased risk of extreme weather events and natural disasters, and associated impacts on tourism infrastructure such as road damage, decreased availability of hydroelectricity, and damage to tourist facilities (Ellis 2013). It could also spark changes in tourists' choice of their holiday destination; for example, rainstorms in Sihanoukville and in Siem Reap might encourage visitors to go to other locations or regions instead.

There could also be indirect effects such as decreased crop yields leading to lower food availability and hence higher prices, which in turn could lead to more competition for food resources between tourists and local people. More detailed analysis of these risks to the tourist industry, and possible mitigation measures, could be used to improve the resilience of the sector.

Ministry of Tourism officials have also raised concerns over epidemic diseases and viruses such as H5N1 (which causes bird flu), for example, which might be linked to both climate change and population growth, and have been among the worries and threats looming on the horizon for the tourism sector in Cambodia. Those, too, will pose a serious problem if appropriate prevention measures are not taken. As of early November 2013, 23 (12 fatal) cases of H5N1 had been reported in Cambodia, which is the country's worst ever outbreak of the disease, compared with another nine deaths from the virus worldwide (Hruby 2013).

3.3. Impacts of Tourism Growth on Natural Resources

Despite its considerable economic benefits, tourism growth has had adverse environmental impacts, in particular the substantially increased consumption of energy and water (UNEP 2011). In Siem Reap, for instance, there is a growing water shortage, and ground water is often used as a result. In this region alone, more than 6000 illegal private pumps, including many constructed by hotels, and 1000 wells have reportedly been sunk (Doherty 2010). There are concerns that, over time, this might create instability, which could cause ancient monuments like Angkor Wat to crack or crumble. The Department of Urbanization and Development of APSARA (Authority for the Protection and Management of Angkor and the Region of Siem Reap) has collaborated with the Japan International Cooperation Agency (JICA) to examine water supply issues. They concluded that the two existing water storage reservoirs (the Western Baray and the other in the Kulen Mountains) that currently serve Siem Reap will not meet the future water demands of the city (APSARA 2005). This could jeopardise ongoing tourism development in the area and has led to calls for tourist volumes to be controlled in the Angkor Wat area. This example highlights the importance of understanding, measuring and managing the possible economic and environmental trade-offs associated with tourism development. One possible solution is to introduce a requirement for environmental impact assessments (EIAs) to be undertaken, including consultation with relevant stakeholders, to assess the economic and environmental benefits and costs of any proposed tourism development projects.

High levels of waste generation can also create problems. Total solid waste in Phnom Penh increased from around 900 tonnes per day in 2009 to about 1000 tonnes per day in 2010 (Derkeiler 2009; Euronet 2012). Furthermore, the lack of a wastewater treatment system is likely to cause water pollution problems (Euronet 2012). Appropriate regulation, waste management systems, recycling systems and waste-to-energy technologies are not only important in maintaining a safe and healthy environment that is attractive to tourists but they can also create new green growth and job opportunities.

4. RECENT GOVERNMENT INITIATIVES, EMERGING POLICY OPTIONS, AND PUBLIC INCENTIVE SCHEMES

What has been the government's response to these opportunities and challenges? Tourism has been described by the government of Cambodia as "Green Gold" and an important element of the green economy.⁴ This is reflected in the Tourism Development Strategic Plan 2012-2020, which was developed to herald a clear long-term vision for tourism development in Cambodia, based mainly on the potential of cultural and natural resources. Cultural tourism has already been prioritised; however, ecotourism needs to be developed not just to attract tourists but also to contribute to climate change mitigation and green economic development (MOT 2012a). The Plan emphasises a number of strategic objectives: tourism product development, tourism marketing and promotion, connectivity and travel facilitation and tourist transportation, a tourism safety system, negative impact management, a legal system and management mechanism, and human resource development.

A number of measures and campaigns have been initiated, aiming to develop Cambodia's reputation as a green holiday destination. The Law on Tourism in Cambodia states that an "Eco Label" will be established and awarded to tourism operators who comply with environmental standards set by the MOE (MOT 2009). In addition, the MOT has coined the slogan, "Clean City, Clean Resort and Good Services", which is designed to promote good practices, including the reduction of litter and waste, through training, awareness raising and incentivisation via awards made to individuals and organisations for outstanding achievements in this area (MOT n.d.).

In another initiative, the "Stay Another Day Cambodia" booklet has been published since 2007, and stems from a project established by the International Finance Corporation in cooperation with the German Technical Cooperation Agency (GTZ). Since 2009-2010, it has been put on a private sector footing, with support and collaboration between the MOT, Economics Today magazine and GTZ (Kim and Browne 2011). The initiative aims to attract tourists to stay a little longer in Cambodia in order to learn more about the way of life, and to contribute more through visiting different charitable or tourist initiatives and volunteering their own time or financial assistance. Each of the initiatives listed has been carefully screened in order to ensure it is culturally, environmentally and socially responsible.

The government has recently developed the "One Tourist, One Tree" initiative. To date, 11 provinces have created designated gardens where tourists can plant trees to promote green growth (*Xinhua English News* 2013). In February 2013, tourism officials launched a new initiative called the Eco-Club, designed to promote environmental

⁴ "UNEP has developed a working definition of a green economy as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive. Practically speaking, a green economy is one whose growth in income and employment is driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services"(UNEP n.d).

awareness and improve the image of Cambodian cities through the better management and disposal of plastic bags. The MOT has confirmed that the Eco-Club will be promoted through schools, universities, factories, and radio and television stations (*Xinhua English News* 2013). This builds on earlier initiatives, which, since 2011, have led to a significant growth in youth participation in campaigns promoting clean cities and resorts, and tree planting. There has also been a debating championship on environmental and economic development with the cooperation of senators, the municipalities of Phnom Penh, Siem Reap, Preah Sihanouk, and Junior Chamber International. This aimed to raise awareness and encourage city dwellers, visitors and citizens, particularly young people, to keep the cities and resorts clean and attractive (JCI 2012).

Although the overall impact of these initiatives is difficult to measure, they do serve to demonstrate the potential complementarities between developing the tourism sector and establishing greener growth patterns.

To promote “green thinking” within the hotel sector, ASEAN Member States set up the Green Hotel Recognition Award to reward hotels that operate on environmentally friendly principles (Karantzavelou 2012). Award ceremonies have been held every two years since 2008, the most recent being hosted in South Sulawesi in January 2012. The main criteria include: environmental policy and activities relating to the operation of the hotel; use of green products; collaboration with communities and local organisations; human resources development; solid waste management; energy efficiency; water efficiency; air quality (indoor and outdoor) management; noise pollution control; waste water treatment and management; and toxic and chemical substance disposal management.

A total of 50 hotels in Cambodia have already received ASEAN’s Green Hotel Standard (Björn 2012). The Angkor Palace Resort & Spa in Siem Reap Province, to give an example, was awarded the ASEAN Green Hotel Standard Award twice in a row (2008-2009 and 2010-2011). The Resort has been running a water saving campaign for in-house guests, uses energy saving lights, and treats wastewater so that it can be used to maintain the garden (Grand Soluxe Angkor Palace 2013).

Many of these kinds of initiatives make good business sense, helping to cut costs and overcome resource shortages in addition to earning reputational and marketing benefits. However, there is still considerable scope for improved awareness. In other countries, for example, there is greater recognition of the potential to use solar panels or solar water heaters in hotels, or to construct hotels using green principles that will save energy (e.g. reduce the cost of air conditioning) throughout the life of the building.

The Frangipani Villa Hotels are an exception. The chain of boutique hotels in Siem Reap and Phnom Penh has invested a considerable amount in energy-efficiency measures and renewable energy, including a solar water heating system and LED lighting. While the total cost of a solar water heating system can be anything from USD20,000 to USD50,000 depending on the number of guest rooms (15-25 rooms) – which is much higher than the cost of a traditional water heating system – a solar water heating system can generate considerable savings over its lifetime of 15-20 years. Given that global

energy prices are expected to rise, investing in energy efficiency and renewable energy technologies now could provide a considerable competitive advantage in the future. Raising awareness through demonstrating the effects, better-publicised awards, and wider public recognition could help. In other countries, advertisements have been taken out in the press to highlight the cost savings of such energy-efficiency measures.

These kinds of investments would also help to build the reputation of Cambodia as a green holiday destination, which should attract increasingly environmentally conscious tourists. Indeed, pressure from tour operators for more sustainable operations is slowly growing. Partly this reflects demand from customers for more sustainable tourism, but it is also a result of pressure from investors. This voluntary self-regulation is exemplified by the Travelife Award system – an international certification scheme, set up by tourism industry members, that awards a Gold, Silver or Bronze rating to participating hotels and accommodation providers (currently represented in 25 countries, of which Kenya is the only low income country to date) based on a number of environmental and social criteria.

The growth of such certification schemes could drive increased self-monitoring of water and energy use and carbon emissions, and might become increasingly important for hotels that wish to remain competitive. Thus, putting in place the necessary natural resource management policies, regulations and private sector incentives for energy efficiency and sustainable natural resource management could help to enhance the sector's competitiveness, especially for those low income countries that are the first to adopt these guidelines and can thus establish, early on, a reputation and associated international "brand" for green tourism (EU 2012). However, environmental awareness is relatively low among tourists from within the region; thus, pressure to adopt green measures may be less evident in current patterns of tourism growth in Cambodia.

5. CONCLUSION

Table 4 presents a summary of tourism sector opportunities and risks associated with the three drivers identified earlier in this chapter – natural resource scarcity, climate change, and international mitigation. Possible policy and business responses are suggested for further discussion and exploration.

Table 4: Summary of Tourism Sector Opportunities and Risks

Opportunities/risks	Implications/responses
Natural resource scarcity	
Tourism can create great pressure on local resources (food, water and energy), posing challenges to natural resource management including threats to the value of existing tourist attractions, e.g. in Siem Reap.	<p>Introduce environmental impact assessment (EIA) as an effective tool to assess the possible impacts proposed tourism development projects may have, including consultation with relevant stakeholders.</p> <p>Diversify tourist attractions to reduce pressure on popular areas while spreading the benefits more widely.</p> <p>Invest in essential infrastructure and services (e.g. water and sanitation) for sustainable tourism expansion.</p> <p>Develop appropriate regulatory frameworks.</p> <p>Raise awareness about natural resource management and green and sustainable tourism in the community and with tourists themselves.</p> <p>Consider costs and benefits of controlling tourist numbers.</p>

Poor waste management is a threat to tourism growth and development more generally, but there is significant market potential in recycling and waste-to-energy schemes.	<p>Introduce appropriate regulatory framework and explore options to develop recycling and waste-to-energy schemes and create new markets.</p> <p>Implement and reinforce the 3Rs strategy: Reduce, Reuse and Recycle.</p> <p>Introduce a campaign to improve the efficiency of resource consumption.</p>
There is considerable potential to expand ecotourism to support sustainable development and green growth.	<p>Develop a coordinated ecotourism development strategy involving all relevant ministries and stakeholders to balance competing objectives, and establish and implement an appropriate legal and regulatory framework.</p> <p>Strengthen the protection and conservation of ecotourism sites.</p> <p>Officially demarcate all ecotourism sites.</p> <p>Implement measures identified through public-private dialogue to attract private investment in ecotourism.</p> <p>Target investment to develop infrastructure, services, local community skills, and marketing of particular attractions to facilitate growth of ecotourism.</p>
International mitigation policies	
Aviation taxes and air transport costs may rise and undermine tourism growth. Tourism industry as an advocate and driver of green growth patterns, to demonstrate green credential initiatives as a source of competitive advantage.	<p>Promote tourism from within the region and ease travel and cross-border transportation by cooperating with neighbouring countries.</p> <p>Collaborate with the tourism industry in rolling out initiatives to promote a clean, attractive environment and to raise awareness.</p> <p>Target green tourists as a market segment.</p> <p>Promote “Clean City, Clean Resort and Good Services” movement to promote low-carbon competitiveness of the Cambodian tourist sector.</p> <p>Encourage the use of natural domestic products and energy-efficient technologies.</p>
Public climate finance can be used to invest in green tourism initiatives and ecotourism.	Develop a strategy that optimises public funding sources of climate finance, such as Climate Investment Funds, to support the development of new green industries, e.g. renewable energy.
Growth in interest in environmental credentials from tourists and tourism industry will reward relatively green tourism destinations.	<p>Establish Cambodia’s brand as a green tourism destination to create a competitive advantage.</p> <p>Introduce and strengthen standards, labels, and award schemes that reward green credentials in the tourism industry, including energy efficiency and responsible water management.</p> <p>Promote and expand ASEAN Green Hotel Recognition Award.</p> <p>Consider joining Travelife, an international scheme for responsible tourism..</p>

Cambodia has benefited enormously from the fast growth of tourism in the last 10 years, and there is much potential for further growth. However, appropriate management of natural resources is required to ensure that continued growth is not undermined. There is a need to diversify Cambodia’s tourist attractions beyond the World Heritage sites located at Siem Reap and Preah Vihear in order to reduce environmental pressures in those areas, to capitalise on Cambodia’s other natural assets, and to share the economic benefits of tourism more widely.

Increasing international emphasis on environmental credentials within the tourism industry is inevitable, and will reward those tourism destinations that are perceived

as relatively green. Therefore, establishing Cambodia's brand as a green tourism destination could be important in creating a competitive advantage for the future: the introduction of regulations or incentives to promote environmentally sound and energy-efficient practices within the industry will help to achieve that goal.

Within that context, investment in renewable energy and energy-efficiency by hotels can provide both cost advantages and reputational benefits. However, there appears to be less awareness about these issues within Cambodia as compared with other countries. Thus, publicising the benefits and providing support and incentives for these investments may be warranted to maintain a competitive sector. Public sources of climate finance could support the development of a green tourism sector, for example, by supporting energy audits or the introduction of green energy by hotels, or by supporting ecotourism projects as a way of promoting sustainable forest management.

There is enormous potential in developing the ecotourism sector, which could create new sources of growth and income that would in turn help to protect natural assets, including forests, and create a stronger economic case for improved natural resource management. Yet the sector is still underdeveloped, and there is much that needs to be done to overcome the many challenges it faces.

The tourism industry itself has an interest both in developing a sustainable and environmentally conscious sector and in protecting the natural environment, and thus can act as an important advocate of green growth policies. As this study has shown, there are many potential synergies between developing a sustainable and lucrative tourism sector, and promoting sustainable and inclusive growth.

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The Effect of D&D Reforms on Local Democracy from a Political Geographer's Perspective: A Case Study of the Tonle Sap Demarcation Project

by Kim Sean Somatra and Hort Navy¹

Cambodia, over the past two decades, has made considerable efforts to forge democratic governance. Most significant has been the decentralisation and deconcentration (D&D) reform, with the specific purpose of promoting local accountability, representation and responsiveness through increased local participation (RGC 2005). To further those aims, the government established local elections where local citizens can choose their representatives, and arranged for the delegation of central roles and responsibilities to lower levels of government and administrative units to perform certain public functions and manage local development planning (RGC 2005).

The extent of the state's capacity to be accountable, responsive and representative, thereby reflecting the interests of its citizens, is a subject of much debate, however. Some scholars argue that D&D has begun to have some positive impact on the nature of state operations (CDRI 2013; Chheat *et al.* 2011; Heng *et al.* 2011; Ojendal and Kim 2006). Others contend that the reform's success has been shallow (Craig and Pak 2011; Hughes 2009; Ledgerwood and Vijghen 2002; Niazi 2011; Rusten *et al.* 2004; Un 2006, 2009, 2011; Un and Ledgerwood 2003; Un and So 2009, 2011). These differing accounts probably reflect the stance of the observers. Those who hold a more or less positive view tend to look at D&D from a comparative perspective with insight from local level, while those with a sceptical view tend to examine progress from a normative perspective using a legal-rational framework of analysis. Without judging or taking sides, this paper attempts to contribute to a richer understanding of the impact of the reform on the formation of the Cambodian state from a political geographer's perspective. Using the example of territorial resource governance, specifically the demarcation of the flooded forests surrounding the Tonle Sap Lake, this paper discusses the real democratic or non-democratic nature of state operation in terms of accountability, representation and responsiveness.

1. CONCEPTUAL FRAMEWORK

In line with the broad D&D objectives of good governance, this paper conceptualises democratic formation as constitutive of the accountability, representation and responsiveness of the state to the needs and interests of the people. Accountability is defined simply as answerability or the ability to give an account or explanation

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for one's action. In this paper, it is defined from a decentralisation point of view as consisting of the accountability of elected representatives to their constituents, and the accountability of executive state agents to elected representatives (Manor 1999). Representation is defined as the opportunity for local people to have their needs and interests presented before government (Diamond 1999). Responsiveness is measured in terms of the speed, quality and quantity of response, the extent to which the citizens can access the state, and the extent to which local concerns are reflected in the political agenda. It is also measured by the extent to which state policies and legislation respond to demands, and how people's grievances are alleviated (Yishai 1984).

This paper draws on a case study of territorial resource control (i.e. the process of territorialisation) to serve as an empirical grounding to inform understanding of the issues at hand. Thus, the paper looks at accountability in resource mapping and demarcation. That, in turn, provides insights into the representation of citizens' interests. Because territorialisation involves the geographical reclassification and marking of physical space, it inevitably results in a degree of enclosure and exclusion. In that respect, this paper examines the degree of state responsiveness to local demand for action.

This way of framing allows for analysis of the accountability, representation and responsiveness of the state, thus making it possible to arrive at a conclusion about the democratic formation of the state as a result of the D&D reforms.

2. RESEARCH METHOD AND CASE STUDY

To understand the issues of state accountability, representation and responsiveness, this paper employs the case study research method. A state project to demarcate protected flooded forests in the Tonle Sap area was selected. Implemented between mid-2010 and 2011, this project emerged within international development discourse on environmental protectionism and amid rising national concern over environmental destruction in the Tonle Sap area, particularly the clearance of flooded forests. For example, in a report in 2005, the Asian Development Bank (ADB), demonstrates the rapid decline in the area of flooded forest, from 795,000 hectares in 1985 to 370,000 hectares in 1992 and less than 20,000 hectares in 1997. This was due mainly to rice cultivation and fuel wood collection. That led to an announcement by the prime minister calling for a clearly marked boundary between the flooded forest and floating rice areas. In so doing, the prime minister also emphasised the need for development to respect existing farmland.

While the objectives of the demarcation were based on rational resource governance, it took place in a complex, diametrically opposed political context of, on the other hand, decentralisation that aims at promoting local accountability, representation and responsiveness, and, on the other, neo-patrimonialism which features elite politics and the accumulation of wealth and power. Thus, the manner in which the demarcation project was carried out provides unique and important insights into the democratic or non-democratic nature of the state in Cambodia.

In terms of the case study material, this paper benefits from a doctoral research project undertaken to examine territoriality and state power in Cambodia using a methodological combination of document analysis, formal and informal interviews, and field observations of the Tonle Sap demarcation project (Kim 2013). Document analysis entailed a desk review of state policy documents on Tonle Sap governance, NGO reports and development partners' project reports such as that on ADB's Tonle Sap Initiative. Qualitative data was collected in formal interviews with state officials who have formal responsibilities for Tonle Sap governance, and informal interviews/conversations with experts who do not have formal responsibilities but have hands-on knowledge of the Tonle Sap's geography and governance history. This group includes local farmers, opinion leaders and state agents at sub-national levels. Data on local accountability, representation and responsiveness was obtained from field observations and participants' observations of the interactions among state agents at different levels, and state agents' interactions with local citizens particularly in the study commune in Pursat province. For a more detailed discussion of the data collection method, its reliability and validity, see Kim (2013).

3. FINDINGS

As resource exploitation in the Tonle Sap is deemed unsustainable, the prime minister announced a new resource governance regime for the area. This new regime is based on the understanding that the threat to the Tonle Sap comes from the clearing of flooded forest, which appears to have been made partly or mainly possible by the lack of a clearly marked boundary between flooded forests and floating rice areas. The absence of boundary demarcation has meant that local farmers could expand their cultivation land without appearing to encroach on flooded forest. Thus the prime minister called for a clearly marked boundary. How this boundary line is marked strongly reflects the extent to which decentralisation is occurring in Cambodia. The rest of this chapter is divided into three parts. The first two look at the top-down process of the state's territorial strategy of mapping and demarcation, and the last one looks at the local process of appeal against the state's action. Studying these processes yields significant insights into the issues of state accountability, representation and responsiveness.

3.1. Mapping and Accountability

The case study of the Tonle Sap demarcation, particularly the way the new definitive map of the Tonle Sap was drawn up, suggests that state accountability in this instance is highly questionable. The new map directly concerns at least three important actors: state actors in charge of resource governance, local authorities and local farmers. For the Tonle Sap area to be accurately represented on the new map, all three needed to work in close collaboration.

The case study material indicates that local citizens did not have any role in the making of the new map. Local people, for whom the local space is much more than a mere empty space for reclassification, and who have customary knowledge of the local landscape based on true-life experience, were not given a chance to contribute their ideas or represent their interests. Interviews suggest that they were not aware that state agents in charge of collecting data for the new map had come into their

area. Because of that, they were denied the chance to participate in the data collection survey and thus were excluded from the production of the new map. Meanwhile, the locally elected representatives had no meaningful role in the data collection or the production of the new map. Interviews with some local authorities suggest that locally elected representatives were not even aware of the changing policy on the resource governance regime for the Tonle Sap area, which evolved into the need for the new map. Commenting on the presence of the central state agents in their locality, one local representative said, “They were doing something. But it is their job, and they didn’t tell us what it is.”² In the absence of local inputs, the new map represents the local landscape in the Tonle Sap area in a way that displaces the local customary knowledge of local land use that has served as the basis for property rights. The new map, as it stands, was made without consideration of pre-existing local land uses, but in line with ministerial guidance and the rigid plan to demarcate 645,000 hectares of flooded forest. For example, in the case study commune, an estimated 80 percent of the floating rice area was marked as protected forest.

The case study material suggests that the way the new map of the Tonle Sap area was made features a strong line of upward accountability. That is, from the cartographer to the minister. Based on interviews with local officials and local farmers, the cartographers, who collected data to form the basis of the new map, were more accountable to the minister who pre-fixed the size of the flooded forest area at 645,000 hectares. Setting the size of the protected area beforehand determined the course of data collection, making it not a process of collecting data on local geography, ecology and everyday land uses, but more a process akin to a modernist state project based on rational resource planning and conservation. While fixing the specific size of the area to be set aside could be justified as necessary for the protection of the nation’s fisheries resources, thus serving the interest of the nation at large, it left the cartographers with an insufficiently meaningful role as surveyors of the local landscape to construct a map that reflected local reality. In this respect, the fixing of the size stands not for accountability but for enclosure and the exclusion of a certain group of people, namely those living in the area.

The way the new map was developed and the boundary marked did not allow any opportunity for the local authorities to be accountable to their constituents. Although the new map concerns their territory, all management responsibility and decision-making power rest in the hands of the central agents, who tend to view the space in question as abstract space and translate geographical reality into generalised data. This inclination towards ecological simplification, accommodated by their distance, allowed those cartographers to produce a map that represents the space in the Tonle Sap in ways that displace local land uses and ecological services and, more importantly, displace local knowledge of the space in the Tonle Sap area. The other aspect of accountability – that which exists between the executive agents of the state and locally elected representatives – is absent. The case study material suggests that the central state agents in charge of data collection for the map effectively sidelined the local authorities, treating them as logistics persons rather than as counterparts. This suggests

² Interview with commune chief, Pursat, 4 October 2010

that the central state agents were not required to explain their decisions or justify their actions to the local authorities. Interviews with the local authorities reveal that there was no consultation or discussion of any sort between the cartographers from the central ministry and the local authorities concerning the nature of data collection for the new map.

3.2. Territorial Demarcation and Accountability

Territorial Demarcation and Downward Accountability

The translation of the map data into physical boundary demarcation took place in the study commune on 8 March 2011. The manner in which the demarcation was carried out shows a serious absence of local accountability. Under the D&D framework, local citizens vote to elect their local representatives, i.e. commune chiefs. Those chiefs, in exchange for the vote, are expected to act in the interests of local citizens. Field observations, however, reveal that for matters such as the demarcation, decision-making power does not rest with elected local representatives but with central state agents assigned to the specific task. Local authorities are treated as *senatika*-entourage, who are expected to follow the central agents, provide logistics support and do as they are told (Kim 2013). This working arrangement inhibits local accountability, and means that local authorities have no meaningful roles or responsibilities in the demarcation process.

For the central state agents, there exists a distinct line of upward accountability. Because they are not elected by the locals, they have no formal duty to respond to local citizens. Instead, they answer to their political leaders in the central ministry whose political operation is far from the pure legal-rational bureaucracy of a public office with a fixed jurisdiction. Field observations suggest that the realities of local accountability in the supposedly decentralised Cambodia were the opposite of an ideal type of bureaucracy. The top leader at ministerial level determined the size of area to be protected, the cartographer responded with a new map, and then the field agents in charge of the demarcation actualised the state project of geographical imagination. Direct observations of the interactions between the field agents in charge of the demarcation and local farmers showed that local realities and local customary knowledge were effectively ignored; demarcation was based on GPS (Global Positioning System) coordinates pre-set by agents from a distant place.

I have been despatched here to place the pole. I don't have the authority to decide [where it goes] or change the position of it. I just follow my machine [GPS]... The machine does not lie, and it points out to me that the position of the pole should be here.

(Team leader in charge of pole-placing project, Pursat, 8 March 2011)

Field agents often made the excuse of pressure or power from the top, effectively exonerating themselves for not taking into account local realities.

Territorial Demarcation and Upward Accountability

Intuitively, the absence of a downward line of accountability would be taken as indicative of the presence of an upward accountability. However, the case study material

suggests that upward accountability, a common conception of neo-patrimonialism, is also in question. Indeed, the material suggests that one cannot speak of a linear line of upward accountability, and that detailed attention is needed to understand how accountability exists at different levels of the state. The case study brings to light the disjoint of the concept of upward accountability. At the time of the demarcation in 2011, the national policy, particularly the order of the prime minister on the Tonle Sap demarcation, emphasised the need for a clearly marked boundary line between the flooded forest and floating rice areas. This policy objective, if observed carefully, creates two important criteria for determining the positions of the boundary poles. At a broad level, it calls for a clearly marked boundary line between the two zones, while at the same time it requires that the status of existing farmland be respected. Field data shows that the first criterion to demarcate the areas was actualised, but the second – to respect existing farmland – was over-ridden by field agents' duty to follow the map and their street-level logics.³ Field observations suggest that the field agents' obligation to follow the map created by their line ministry effectively countermanded the national policy of respecting existing farmland. That is, where the positioning of the poles affected small and powerless local farmers, the field agents strictly followed the map even if it meant the enclosure of local floating rice areas. This suggests a break in the line of upward accountability assumed to exist from the agents to the prime minister. The material reveals that state agents are more accountable to their immediate superiors than they are to the distant boss at the top, who made it clear that existing farmland was to be respected.

Field data shows that the field agents carried out the physical demarcation based on the challenges presented by their travel logistics. For instance, the first demarcation round in 2010 coincided with the rainy season, during which much of the Tonle Sap floating rice area was flooded. The flooding made it difficult, if not impossible, to access some of the areas marked on the map. According to local interviews and field observations, field agents determined the position of the boundary poles in some locations based purely on their ability to get to the area.

They just drove to the end of the village road, got off their truck and placed the pole. (Interview, a farmer in Pursat, 9 February 2011)

This comment suggests that the field agents' positioning of the boundary poles was not done on the basis of rational resource planning, nor on orders from the top, but rather on street-level logic determined by travel problems.

At the same time, the case study material also suggests that the field agents' actions can be attributed to their pursuit of rents. Analysis of the national discourse concerning the demarcation, particularly the prime minister's emphasis on respecting existing farmland, together with evidence on the ground, suggests that there were opportunities for field agents to correct the wrong done during the first phase of demarcation. The

³ This term is adapted from Lipsky's (1980) concept of street-level bureaucracy to explain the discrepancy between local bureaucratic practices and the central state policies. The street-level part of it is to suggest that everyday circumstances on the ground influence the way local agents carry out their public duties.

prime minister's renewed order, which emphasised following the actual physical and geographical landscape and not the pre-made map, was understood to give the field agents discretionary power to ensure accurate demarcation. However, evidence suggests that the field agents instead used that discretionary power to exact rents from local farmers (see Kim 2013).

Elsewhere, where powerful interests were involved, the boundary line demarcation skirted the farmer's land regardless of the pre-existing legal status of the land. A recent field trip to other areas of the Tonle Sap floodplain discovered that in some places within Kampong Thom province, field agents had drawn the boundary line around the farmland of important government figures so that their land was unaffected.

Overall, the case study of the demarcation project suggests that there is no local accountability as such. Local authorities are often sidelined by specially assigned agents from the central state who are in full control of every meaningful aspect of state action. This diminishes D&D's ability to bring about local accountability. Meanwhile, upward accountability cannot be assumed to be firm. Empirical evidence based on observation of the demarcation project suggests that upward accountability is not a simple straight line to the top, as it depends on, among other things, the viewpoint of the agent's direct superior on conservation and development, street-level logic and rent-seeking opportunities.

3.3. Local Demand, Representation and Responsiveness

In the face of state action that affected the local way of life and their livelihoods, local farmers did try to oppose the action that displaced the local lived space⁴ of floating rice. Even so, analysis of this local appeal suggests that the locally elected representatives were not able to represent local interests in the way that the D&D reforms intended.

The case study material shows that no local authorities at any level took any initiative to represent the local floating rice farmers affected by the demarcation. Interviews with the village and commune chiefs concerned reveal that those local officials were not willing to stand up, at least not openly, for the local citizens. Although some raised the issue verbally and voiced their objections against the decisions and actions of the central agents that led to the enclosure of existing farmland in their locality, they were unclear in their intent. What is more, analysis suggests that local officials were quick to back down and retreat to their comfortable position of obedient junior partners. This is because, as field data suggests, locally elected representatives were not given any clear and meaningful role in the demarcation project, which was widely presented as "the PM's project". In effect, the central agents harnessed the power of association with the prime minister to demand full compliance from the local agents. The case study suggests that in this kind of complex arrangement, the D&D aims of greater autonomy and broader responsibilities for the locally elected representatives can at times be ousted by the neo-patrimonial practice of centralised power. When that

⁴ Lefebvre (1991) employs the concept of lived space to argue that space may be viewed by those in power as abstract and empty of human experience, but in fact space has a strong identity and character that is felt by local citizens who have a deep sense of attachment to it and rich social relations within it.

happens, as in the case of the Tonle Sap demarcation, the local representatives do not have the ability to represent local interests, and both the local agents and local citizens are at the whim of central agents.

The case study material shows that, in the absence of a formal mechanism of representation, local people can represent and act in their own self-interest. The initiative and momentum for the local movement to challenge the central state agents came mainly from local farmer leaders. This group of leaders consists of those farmers who own a sizable amount of farmland. While their identity, values and interests are the subject of a lengthy discussion, available data indicates that this group was crucial to the local appeal as they initiated the movement by going around the villages to lobby the farmers who were affected and to encourage them to come forward and join forces to file an appeal. The group also played an essential role in sustaining the movement by supplying both ideas and material resources.

Local movements such as the farmers' lobby group appeal against the enclosure of their floating rice areas cannot ensure local representation. Analysis of the dialogue between the central agents, the local representatives and the local leaders reveals the severely unequal balance of power between them. The tone of the local appeal letter addressed to the agent in charge of the demarcation, for example, sounds more like a polite request than a demand for an explanation of the central agents' action: "Please, Your Excellency, re-examine and reconsider the matter."⁵ The local people are at the mercy of the agents who have no responsibility towards them; the state agents are not in any way bound to be accountable to the local citizens. This is implied in the servile tone of the appeal letter and the way the central agents handled local attempts to appeal. Data shows that the central state agents alone made decisions about who could participate in the appeal process, the manner in which the appeal could take place, and the outcome of the appeal.

The local appeal can be taken as further evidence of locally elected representatives' lack of responsiveness to local citizens' demands. Field observations show that when local people expressed their intention to appeal against the state action, the local authorities rejected or avoided their claim.

I heard about it [the enclosure of local floating rice land], too, but let me talk to the commune chief first to see if he would allow me to do anything.
(Village chief, Pursat, 10 March 2011)

This is confirmed by further observations, which reveal that the commune chiefs waited for instructions from the district chiefs who also waited for instructions from the provincial governor. This illustrates that, for issues such as the Tonle Sap demarcation, the local authorities are still heavily influenced by the old practices of upward accountability, that is, the traditional relationship of subordinate. The custom of waiting for orders or approval from higher authorities is working in the opposite direction to the logic and objectives of decentralisation; in other words, it hampers local state responsiveness to local demand.

⁵ Author's translation of an extract from the local appeal letter in Khmer.

Although the local state actors appear to be infringing the regulatory framework of D&D and doing their citizens a disservice in the process, their conduct is readily understandable. The remnant of the past political practice of upward accountability shaped by a neo-patrimonial arrangement, where top leaders confer on certain central state agents the power to take direct state action, is amplified by an atmosphere of accusation, intimidation and threat of imprisonment exploited by the central agents who dominate the local discourse of appeal. The central agents took advantage of their perceived access to the power of the prime minister to pre-empt any attempt to challenge their actions. Further analysis of the appeal dialogue reveals an interesting discourse that frames and reframes the local attempt to counter the power of the central state as illegal. Data from interviews and participants' observations shows that the central agents employ an active strategy of accusing local authorities who might wish to defend local floating rice farmers as colluding with unscrupulous business people, and threaten them with handcuffs. This ability of the central agents to take over the local process of appeal, together with their ability to monopolise responsibility for issues such as boundary demarcation, severely affects the local authorities' line of accountability and their inclination to represent local interests. One interesting revelation was the discovery that the governor was unwilling to endorse the local appeal for fear of potential political consequences orchestrated by the central state agents concerned.

Due to the active discourse against local authority involvement in the appeal, and the traces of political centralism distorting upward accountability, the local authorities were not able to represent the interests of the farmers affected. The case study material clearly suggests that the local authorities, apart from being brushed aside in the demarcation process, were more inclined to steer clear of the matter altogether.

4. DISCUSSION AND CONCLUSION

Based on insights from the state project to demarcate the Tonle Sap area, this paper argues that for such matters as resource governance, the state does not exhibit enough downward accountability to local citizens. This is due to a complex and overlapping working arrangement between the central state agents and locally elected representatives that arises out of the tension between the decentralisation reform, on the one hand, and neo-patrimonial orders on the other. Local governments do not extend accountability towards their constituents not because they fail to discharge their clearly assigned roles and responsibilities, but because they are excluded from the assignment of roles and responsibilities necessary to deal with the matter. Further, the findings of this paper reveal an interesting break in the line of upward accountability, suggesting that, in the case of state agents, there is not a straight bottom-up line to the top person. This line has, in fact, multi-dimensions including the immediate superior's influence and the agents' own logic, which in this instance consist of travel logistics and rent-seeking interests.

This paper also argues that, in this system, where the legal institutional framework of decentralisation co-exists with patterns of neo-patrimonialism, the exclusion of locally elected representatives from state projects such as the Tonle Sap demarcation

renders local governments incapable of representing the interests of their constituents. Empirical evidence shows that local authorities are still suffused with the old practices of centralism in that they have more respect for hierarchy than they do for their public duty. Meanwhile, the central agents' access to neo-patrimonial power allows them to preside over local governments, impeding the ability of locally elected officials to represent local interests.

In terms of responsiveness, the findings suggest that the level of local governments' responsiveness is less than positive. Insights from the Tonle Sap demarcation project show that for issues such as land conflict, the local governments not only fail to initiate actions that constitute responsiveness to local demand, but also refuse to support local movements initiated by their local constituents. This is due to risk aversion amid a culture of fear, amplified by an active discourse of threat contrived by the central agents.

This paper concludes, from a political geography perspective, that the governance reforms have not had significant and meaningful impacts on the democratic deepening of the Cambodian state, as accountability, representation and responsiveness are at times replaced or even displaced by a top-down practice of neo-patrimonial orders.

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Interrelationship between District and Commune Councils: Representation and Accountability in Local Governance

by Chheat Sreang¹

1. INTRODUCTION

This project investigates the relationship between the two levels that make up what we call “local government” in Cambodia’s decentralised system. It looks at the interactions between the commune/sangkat (CS) at the lowest level of administration and the district/municipality/khan (DMK) at the middle level. These two tiers have been instituted as a result of decentralisation reform, formally begun in 2002 when CS councils were first elected. The reform reached a turning point in 2009 when the CS went to the polls to elect the DMK and provincial and capital councils for the first time in Cambodia’s political history. Theoretically at least, the reform should bring the government closer to local citizens and, through democratic participation, increase people’s ownership of local development programmes. It should also improve the overall efficiency of service delivery and ultimately reduce poverty (Cheema and Rondinelli 2007; Öjendal and Kim 2008).

The institutionalisation of local government is a result of a long programme of local development initiatives that encouraged participatory planning and good governance in its implementation (UNCDF 2010). The countrywide decentralisation reform has contributed to socioeconomic and political empowerment among local citizens. It is said to have opened up political space where people can voice their concerns and realise their preferences for local leaders and development projects. In short, it has shifted local attitudes towards local state actors and affected the way local politics is conducted (Ann 2008; Kim and Öjendal 2009; Öjendal and Kim 2006, 2008). Moreover, people now have a better understanding of their role in interacting with the state (Heng and So 2012). The CS, through its discretionary fund, now contributes to rehabilitating and constructing local infrastructure such as roads and canals so that the impact of these public goods is maximised for the benefit of local people (Plummer and Tritt 2012; RGC 2010a). By design, the CS has a broad mandate in local democratisation and development that contributes to improving local governance and local livelihoods. It is also pertinent that local government’s functions are mainly restricted to civil registration, while its role in service delivery such as water, education, and natural resource management is limited or merely de facto in nature (Chea 2010; Öjendal and Kim 2011).

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The reform arrived at a turning point in 2009 with the establishment of the indirectly elected councils at the DMK. To ensure the smooth implementation of the spirit of the 2009 Organic Law, the 10-year National Programme for Subnational Democratic Development (NP-SNDD 2010-2019) and its first three-year implementation plan (IP3) 2011-2013 outline the vision and action plan process for 2010-2019 (RGC 2010a,b). These two policy documents clearly indicate the importance of strengthening the capacity of the DMK administration so that it can assume a more prominent role in service delivery. While this new development is welcome, it is also anticipated that new challenges will arise, particularly as administrators attempt to grapple with the fundamental principles of accountability. The challenges include: strengthening the downward accountability of provincial and district councils to their electors, the CS councillors; working out any possible direct accountability of the district and provincial councils to the citizens; strengthening the accountability of the boards of governors to their councils, with clear separation of power and functions; and maintaining focus on the accountability of CS councils to citizens (UNDP 2012).

Most studies of decentralisation, especially those focusing on the CS, have converged on the capacity of the CS to respond to local needs and its role in promoting local democracy and citizenship. Scant attention has been paid to the unfolding of the reform at the DMK level. Exceptions include a small study on the potential roles of the DMK in service delivery in the context of decentralisation (Öjendal and Kim 2008), and an analysis of the draft Organic Law specifically examining the accountability mechanism it contains, which revealed various flaws that might confuse the line of accountability at the DMK level particularly between the boards of governors and their councils, between the line offices and the boards of governors, and between the DMK and the CS (Hughes and Devas 2008).

This research aims to examine concerns about accountability in local government and fill the knowledge gap on the relationship between commune (CS) and district (DMK) administrations. It draws on a baseline survey conducted by the Cambodia Development Resource Institute (CDRI) in 2011 to ascertain perceptions of the capacity and accountability of local governments and local knowledge of the reform, as well as follow-up key informant interviews (Chheat *et al.* 2011). The survey sought to understand perceptions of the decentralisation reform and the relationship between the CS and DMK held by commune councillors and DMK governors and councillors. It involved 954 respondents from across the country (531 CS councillors and 423 DMK councillors and governors). The survey data was conflated with data from qualitative in-depth interviews conducted in early 2012, early 2013 and late 2013, which included 57 key informant interviews (KIIs) with DMK governors and councillors and CS councillors.

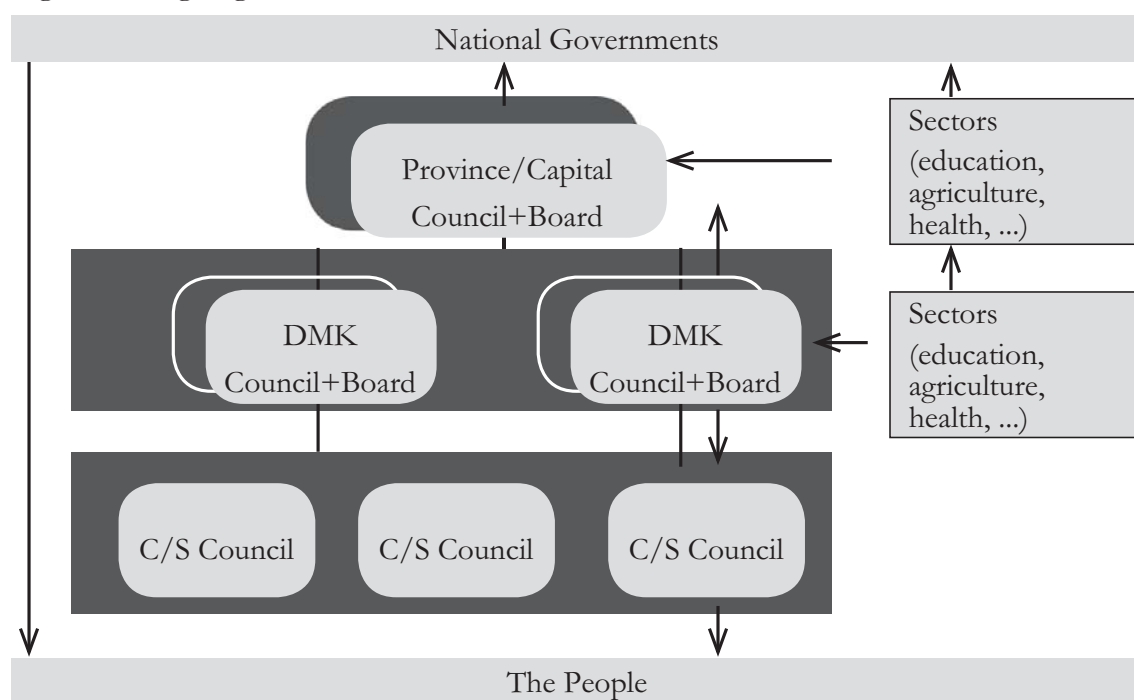
2. OVERVIEW OF REFORM IN CAMBODIA

Achieving the long-term goal of developing a genuine governance system and, with it, poverty reduction, requires that the decentralisation reform in Cambodia attains balance between the different lines (upwards, downwards and horizontal) of accountability. The four-tiered administrative structure is divided into three different levels of administration or government. As shown in Figure 1, CS and DMK make

up what is called local government. The 24 provinces/capital are characterised as regional government and representatives of the national government (RGC 2010a). The concept of “local” in this regard refers more to the proximity of CS and DMK to local residents, though this might not necessarily hold true across the country, and to their potential capacity to deliver basic services. Specific autonomy and power are not necessarily conferred on both tiers in the same manner. It would not be possible to do that.

The reform has affected central-local relationship arrangements, and principles and expected outcomes of decentralisation are evident in the implementation process. The government’s reform policy sets out to achieve three long-term goals, namely to enhance local democracy, to promote local development and, ultimately, to reduce poverty. For the first goal, democratic principles such as representation, participation, transparency and accountability are high on the reform agenda (RGC 2005). The strategic framework also envisions reform of the management structure at both the DMK and the province/capital levels towards achieving unified administration. The aim is that this will address the long-experienced coordination challenges at the subnational level and in the centralisation process (RGC 2005, 2010a).

Figure 1: Organigram of the Government’s Administrative Structure



Note: Arrows indicate the lines of accountability between subnational entities as stipulated in the 2008 Organic Law.

As is evident from previous international research work, decentralisation reform is usually a complex political process (Turner 1999; Manor 2011; Cheema and Rondinelli 2007) and that of Cambodia is no exception. As was set out from the very start, there are two important concepts – “decentralisation” and “deconcentration” – which assume equally important positions in the title of the reform itself. As officially understood, decentralisation connotes the devolution of power and resources to subnational levels, including the CS, while deconcentration is seen as the delegation of resources and functions to subnational levels relating mainly to service delivery (RGC

2009). The DMK is the level at which responsibilities for service delivery are delegated to deconcentrated authorities, and it is the lowest tier in Cambodia's administrative structure to which technical officials and bureaucrats are dispatched. Not all sectoral ministries have representatives at that level, though. As for decentralisation reform, this is exemplified by citizen participation in regular elections to elect CS councillors. Candidates are selected using the party list electoral system, and elections take place every five years. Directly elected by the people, the CS is considered a purely representative form of local government that derives from its democratic legitimacy its capacity to act on behalf of local constituents. With its discretionary fund, made up mainly from the transfer of money from national level, it aims to play a prominent role as an autonomous local representative in local infrastructure development.

The DMK council is a multi-party administration elected by CS councillors through a party list electoral system, and it has a five-year mandate. As envisioned in the 2005 Strategic Framework for D&D and the 2008 Organic Law, the first DMK election took place in 2009; however, the DMK council was immediately criticised for its lack of capacity to carry out its role of strengthening local democracy (Meas 2009; Neth and Vilkins 2008). By law, DMK councillors are also representatives of the people and have both legislative and executive powers. The concept of unified administration is a critical component of the reform, especially in the institution of the DMK administration. Issues connected with the fragmentation of development planning at this level, especially between the different sectoral line offices, should be resolved by bringing all line offices under the leadership of, and making them accountable to, the DMK council. Moreover, the board of governors, though appointed by central government, is legally accountable to that council. The concept of accountability is crucial to the proper conduct of the reform at the DMK level.

As clearly stated in the NP-SNDD 2010-2019, substantial attention has been devoted to defining the role of the DMK administration in the current stage of decentralisation reform, and its role in managing service delivery is expected to expand considerably (RGC 2010a,b). Even so, the CS is still considered the legitimate local representative in influencing party politics at higher levels of government, but particularly at the DMK level. Accountability, both within the DMK administration and between DMK and CS councils, is of paramount importance. In the 2008 Organic Law, Section 7 is devoted mainly to outlining the relationship between the DMK and the CS. Article 98 specifically states, "The District council shall be accountable to the Commune and Sangkat councils and to all citizens within its district for its choices, decisions and performance, including the impacts of those choices, decisions and performance." This complements Article 34, which stipulates, "The council [meaning capital, provincial, municipal, district and khan councils] shall be accountable directly to all citizens for making decisions on priorities and for ensuring democratic development within its jurisdiction."

This focus on the downward accountability of the DMK to the CS should be seen as strengthening the roles of CS councillors as local representatives in the conduct of business with the DMK, especially in light of the strong likelihood that the role of the DMK in local development and local democracy will expand. The 10-year NP-SNDD reiterates,

Commune and Sangkats as the directly elected governing bodies, are to be the voice of the people. As such they are expected to ensure that the development needs of their territories are met either directly where at all feasible, or through higher levels of SNA [subnational administration], as reflected in the functions which will be transferred. Further, they are to hold districts, khans, municipalities, provinces and the capital accountable to the people through participation in various decision-making mechanisms such as representation on Technical Facilitation Committees and through the right to access information, the right to monitor and to receive reports from higher tier Councils, and through mechanisms of accountability that include sanctions for poor performance of higher tier SNAs. (RGC 2010:4)

Although the mechanisms that underlie decision-making at the DMK level are yet to function (NCDD 2011), it is imperative to look at how the DMK and the CS view one another, which is indicative of the value placed on the voice of the CS.

This is intrinsically linked with the policy goal to strengthen the role of the CS so that it can hold the DMK accountable for its actions. Such a project is ambitious, as re-orienting the country's existing political culture calls for continuous and concerted efforts. Granting power to the CS to hold higher public authorities, in this case the DMK, accountable for their decisions is profoundly at odds with a culture where higher authority is revered as the boss and seniority usually reigns supreme. And this holds true in that the majority of CS councillors tend to view district and national government as their boss (Chheat *et al.* 2011; Kim and Öjendal 2009).

A salient feature of the current decentralisation reform and the changing role, along with rising expectations, of local government is the lag in the reassignment of state roles and functions to lower levels of government. Discussion about this has gained momentum in Cambodia but is still a work in progress. It is, however, clear that the end goal of the reform is to enhance local democracy and local service delivery by local government. In order to achieve that, the relationship between the two tiers that constitute local government, that is, the way the CS and the DKM perceive and interact with one another, is crucial in determining the reform's success. The following pages present and discuss the issue based on empirical data.

3. RESEARCH FINDINGS

3.1. Accountability Within DMK

One of the major outcomes expected from the reform is a unified administration at the DMK level, and through that, the reform aims to strengthen policy coherence at subnational level by bringing the action plans of the different line offices, as well as multiple projects and resources, under one common plan. The DMK council is to be vested with executive and legislative powers at this level, and has the authority to hold the board of governors and line offices accountable. Two threads of change are expected: strengthening checks and balances, and instituting new ones, to protect the legitimacy of the council; and strengthening the horizontal accountability of the

line offices, a break from historical dependence on, and sole answerability to, the national ministries. It is believed that these new administrative steps will address the structural deficiency of incoherent policy, which in turn should achieve better policy coordination.

First, the reform has established an institutional mechanism for better checks and balances at the subnational level. The DMK councils have been holding monthly meetings and have formed various committees as required by law to support their work, including the Technical Facilitation Committee and the Committee for Women's and Children's Affairs. By October 2013, as their discretionary budget began to flow in, the DMK councils were able to establish Procurement Committees. With reform in progress, the application of checks and balances at this level of government has become increasingly autonomous. The executive branch (the board of governors) is fully aware that it is accountable to the DMK. The governor or deputy governor, with few exceptions, attends the monthly DKM council meetings where she or he is expected to report on the executive board's activities in the previous month.

Despite the progress precipitated by the reform, it would be premature to applaud its outright success just yet. The system of checks and balances embedded in the DKM's institutional structure is a step away from the traditional (i.e. top-down bureaucratic) modes of decision-making that have until now shaped governance at this level. Further, the "old attitude", where executive arrangements meant that local political business was conducted by centrally appointed authorities in the absence of locally elected representatives, is expected to change. Change is happening, albeit slowly, and remains a challenge, particularly with respect to structural and attitudinal change (Pak and Krui 2011). For instance, the fact that councillors are usually retirees with seniority and experience shapes the scope and nature of representation. Our findings further show that DMK councils have neither prescribed activities nor enough funds for their daily operations, and attending monthly meetings is their only major activity. Moreover, governors' accountability to their respective DMK councils is problematic and uneven. The boards of governors and the councils need more time to understand the concepts of the reform and to learn to work together towards improving checks and balances at the subnational level.

At the other end of the spectrum, extremely negative views about the changes have also been expressed; one DMK councillor from the ruling party went so far as to complain that

The [DMK] council is just like a scarecrow. It is useless because since its creation, it has only provided employment for party loyalists, and council members have no activities other than the monthly meetings. No solution has ever been found to the problems they discuss.²

The varying attitude to change, from extremely positive to extremely negative, might have a lot to do with local politicians' limited understanding of the reform. While the legal and policy framework prescribes that the boards of governors are to report and answer to their respective DMK councils, there is little awareness of this legal change

² KII with DMK councillor in Kampong Thom, 25 January 2013.

(let alone understanding of what it entails) at the local level. In CDRI's 2011 survey, more than half of the district and commune councillors interviewed thought that the district boards of governors have to report to their respective provincial boards of governors, while only around 30 percent of the district respondents believed that they report to the DKM councils (Chheat *et al.* 2011). In other words, the board of governors saw the district council as secondary to the provincial board of governors in terms of their own accountability (see Table 1). Such a limited understanding of the reform goal needs to be addressed in order to strengthen the checks and balances at the DMK level.

Table 1: Commune and Districts' Perception of Who the District Boards of Governors Report to (%)

District Board of Governors reports to...	Commune	District
Political party	1.39	0.51
General people	0.18	0.71
Provincial council	11.63	7.89
Provincial board of governors	54.27	47.11
District council	8.66	30.79
MOI/Phnom Penh	14.78	10.54
Commune council	5.59	0.83
Others	3.49	1.61

Source: Chheat *et al.* (2011)

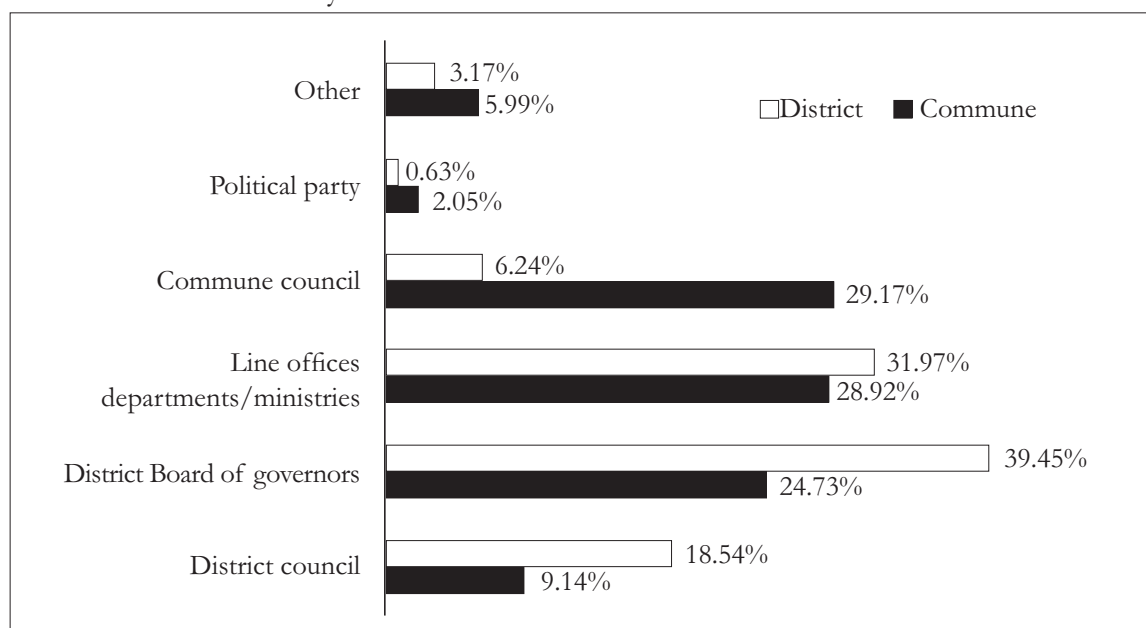
Second, the reform aims to achieve coordinated decision-making at the local level, which can be attained only if the horizontal accountability of the bureaucrats at this level is strengthened. Theoretically, the design of accountability mechanisms is critical to the effectiveness and success of decentralisation, especially as regards the relationships between bureaucrats and elected representatives (Manor 2011). In order to reap the fruits of political reform, these mechanisms must be carefully crafted to achieve a balance between the two forms of bureaucrats' accountability – horizontal and upward; this is because.

If elected members/leaders are given overweening power over the line ministry employees whom they encounter (school teachers, health professionals, agricultural extension workers, etc), they tend to abuse them. But – to consider the more common problem – if elected representatives have little leverage over these people, then line ministry employees tend to do as they like. (Manor 2011: 11)

Improving horizontal accountability by gathering different actors under one roof should address the fragmentation of local planning authorities especially among sectoral departments that have line offices at the subnational level. Until now, however, little progress has been observed. Line offices are important service providers at the DMK level, and regularly take part in meetings and events. However, they implement plans mainly as agents of their respective provincial departments or national ministries and thus remain accountable to the latter. Local authorities and politicians strongly

believe that change will not happen until the corresponding functions and resources have been assigned to the subnational level and necessary legal documents such as the draft Law on Subnational Civil Servants have been promulgated. In addition, lack of common understanding about the accountability line of subnational bureaucrats remains an issue in Cambodia's subnational democratic reform. CDRI's 2011 survey shows that commune councillors expect bureaucrats to be accountable primarily to the CS and secondarily to their respective line departments, while the district/municipality holds them primarily answerable to their respective DMK board of governors and secondarily to line departments (Chheat *et al.* 2011) (see Figure 2).

Figure 2: Commune and Districts' Perception of DMK Technical Offices' Accountability



Source: Chheat *et al.* (2011)

Expected to take on increasingly significant responsibilities for delivering services and promoting the practice of democratic values in their constituencies, the DMK councils are still in their infancy and have plenty of challenges ahead of them. They also have potential for a great deal of fiscal autonomy; therefore, it is important to clarify when and how the councils can start raising their own income through tax and non-tax revenues, and to determine their core functions in service delivery.

3.2. CS and DMK: Representation Meets Accountability?

Analysis of the relationship between the CS and the DMK provides unique insights into the unfolding of Cambodia's decentralisation reform. The two tiers make up local government, which is to be charged with the roles of representation and service delivery. For the DMK, the reform overturns its historically restricted role as a branch of provincial government (Öjendal and Kim 2008). CS councils, in the meantime, still have a limited role and probably nominal influence on the DMK councils' decision-making, yet their success in political bargaining, if any, is considered important in determining the success of decentralisation reform. This reasoning seems valid amid

the current policy focus on the DMK as a step towards strengthening the role of local government in local development; therefore, any mechanism that helps to incorporate CS councils' voices on behalf of their local constituents, and their understanding of the local context and demands, is crucial for local development and democracy. It is thus imperative to examine the relationship between the DMK and the CS within the accountability framework provided and envisioned in the reform policy documents.

The reform has had a great impact and has shaped understanding about the relationship between the two tiers especially their sense of accountability. Our 2011 survey found that their interactions are plagued by a lack of common understanding about the lines of accountability between them. While the DMK considers local residents as their primary accountability line, the CS councils expect the district administration to be primarily accountable to them (see Tables 2 and 3). This is because the CS councils are confident that they can at least hold the DMK accountable electorally (Chheat *et al.* 2011). The survey also notes that the CS and DMK administrations interact only at the district council monthly meetings and usually about security issues. Furthermore, locally elected representatives, because of their limited knowledge of the 2008 Organic Law, frequently misconstrue the nature of the relationship. Among other problems, the main challenges for both CS and DMK in the conduct of their limited roles in local development are lack of capacity, dearth of funds, and political discrimination (Chheat *et al.* 2011).

Table 2: CS and DMK Councillors' Perceptions of Accountability: CS and DMK

CS and DMK are primarily accountable to	First rank		Second rank		Third rank	
	CS	DMK	CS	DMK	CS	DMK
Political party	32	11	38	7	20	8
People	372	268	47	41	27	31
Provincial council	7	2	21	21	45	24
Provincial board of governors	12	8	56	31	85	68
District/commune council	25	43	115	116	80	60
District board of governors	51	58	158	118	106	79
MOI/Phnom Penh	30	20	74	62	67	57
Others	2	0	7	5	19	8
Total	531	410	516	401	449	335

Source: Chheat *et al.* (2011)

Fraught with misunderstanding, envy and power struggle, relations between the CS and DMK are already stretched. As another level of the subnational administration is given more work and money, the potential for overlapping responsibilities becomes a further challenge. Most CS councillors interviewed bemoaned the fact that they have to work very hard to earn only a low salary (incentive) compared with that earned by DMK councillors, who only attend monthly meetings and otherwise remain idle in the office. However, the DMK's apparent "idleness" is partly explained by lack of resources and

lag in functional assignments. Empirical evidence suggests that local governments have high expectations associated with decentralisation and the concomitant state functions to be delegated to various levels of subnational government.

Table 3: CS and DMK Councillors' Perceptions of Accountability: DMK

DMK is accountable to	First rank		Second rank		Third rank	
	CS	DMK	CS	DMK	CS	DMK
Political party	27	8	21	10	32	11
People	126	201	94	55	66	45
Provincial council	48	42	81	65	74	60
Provincial board of governors	24	8	63	43	56	41
Commune council	167	26	118	64	57	61
District board of governors	108	94	90	90	89	68
MOI/Phnom Penh	24	30	44	82	70	65
Others	5	3	20	3	86	61
Total	529	412	531	412	530	412

Source: Chheat *et al.* (2011)

That is not all. CDRI's survey provided insights into opposing views about perceived value between the two levels of administration. Most of the CS councillors we talked to believe that high-level politicians and bureaucrats do not perceive them as valuable in local decision-making (Chheat *et al.* 2011). This perception is particularly true for the early stages of the reform, as evidenced by other countries' experiences of decentralisation (Manor 2011). A sangkat councillor said

We at the sangkat and commune are undermined, and are not appreciated by the upper authorities or agencies because we are the lowest tier of government. But we are working almost as slaves for the people directly, and we also serve the party. Who can work directly with people to attract votes? Only the sangkat, but the real benefits in terms of power are given to the technical and upper agencies. This is unfair. In the urban sangkat we sometimes receive orders directly from powerful people, and rich and business people who have further connections with powerful people in Phnom Penh. They do not care about the sangkat.

This view is strongly held by CS councillors. Although it conflicts with our evidence-based understanding of the reality, we anticipated such a response. This perception among local representatives comes as no surprise to scholars in the field of decentralisation reform, and high-level/central authorities' negative attitude towards decentralised government can be found in other contexts. It would be a mistake though to downplay local councillors' roles in service delivery or in claiming legitimacy, and such a negative perception held by high-level authorities and politicians is not unique to Cambodia. It will take some time for the higher authorities to realise that democratic decentralisation is not a zero-sum game in which a gain for one side means a corresponding loss for the other (Manor 2011). Local authorities have crucial roles

in local development as they can speak the local language, exert more influence and act more effectively than the more distant higher-level authorities can.

There are also some positive signs of appreciation from the bottom up, however. CS councillors view DMK councillors and bureaucrats as more educated and better paid than themselves and consider that the DMK therefore should have an upper hand in decision-making and local development interventions. This perception holds true in terms of their different levels of formal education: the average years of schooling of CS councillors is seven years and that of the DMK councillors is nine years (Chheat *et al.* 2011).

The relationship has now evolved into a new stage, for better or worse, where both the CS and DMK now share responsibility for helping to resolve the challenges and concerns facing their local constituents. Throughout the first mandate of the DMK administration, the CS was well represented in the monthly district/municipality meetings. Recent developments are an encouraging sign that they now have a better understanding of one another.³ It began in 2010 when the DMK formalised its regular participation in CS monthly meetings. Each DMK councillor is tasked to take part in these meetings where they are expected to report on activities at DMK level and to hear about CS activities at local level and take note of CS councillors' concerns and the problems they face in dealing with a wide range of local issues.

4. CONCLUSION

While it is true that it is too early to assess the effectiveness of the reform at the DMK level especially given the pending legal documents, guidelines and functional assignments, this does not mean that examination of what is happening on the ground is not important. Indeed, this study aims to fill some of our knowledge gaps on the reform. At DMK level, the institutional set up has strengthened a workable system of checks and balances, but change remains uneven as the reform is still in its infancy and knowledge about the reform among local politicians and authorities is limited. This capacity challenge has policy implications for both the Ministry of Interior and for line ministries.

Even so, at this early stage of reform, the relationship between CS and DMK should be systematic and mutually complementary rather than uneven and competing. It might be premature to say it is one way or another when not much change has emerged from the reform at the DMK level, but what we should note is that there remains a limited understanding among the two about their roles and expectations. What is particularly true is that DMK's sense of answerability to the CS remains confused and largely un-enacted. This can be partially explained by a limited understanding of the spirit of the reform. What might be equally important in explaining this deficiency, however, is that the goal to overhaul the political culture of the country, where higher authority and seniority is honoured and respected, was too ambitious.

³ KIIs with village chief and sangkat councillors, January 2013; KII with sangkat councillor, Siem Reap, March 2013.

As a policy recommendation, strengthening the roles of local CS representatives and a unified DKM administration will be achieved only by the following immediate policy considerations:

- Assigning functions to the CS and DMK, along with corresponding resources, to enable them to be responsive to local needs.
- Clarifying the accountability line of the DMK towards the CS in order to maintain the spirit of the reform goal of strengthening local representatives' role in decision-making.
- Enhancing knowledge of the reform through capacity development for local politicians and bureaucrats, which is highly likely to contribute to a better sense of accountability among different actors within the DMK administration and between the DMK and the CS.

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