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## CLIMATE-SMART AGRICULTURE: SYSTEM OF RICE INTENSIFICATION IN CAMBODIA

### Background

Agriculture plays an important role in sustaining rural livelihoods in Cambodia, with 83 percent of rural people engaged in agricultural activities (NIS and MAFF 2014). In response to changes in climate and weather, a key feature of emerging adaptation and resilience agenda is the adoption of climate-smart agricultural practices. “Climate smart farming is agriculture that sustainably increases productivity, resilience (adaptation), reduces/removes greenhouse gases (mitigation), and enhances achievement of national food security and development goals” (FAO 2013, 2).

The system of rice intensification (SRI) is one such climate-smart practice, introduced by CEDAC (Centre d' Etude et de Developpement Agricole Cambodgien) in 2000. Since its development, various NGOs and government agencies have shifted their focus towards SRI, promoting it nationwide. The SRI Secretariat was set up in January 2005 under the Department of Agronomy and Agricultural Land Improvement, later changed to the General Directorate of Agriculture (Ngin 2010).

SRI is a low-water, labour-intensive organic method based on transplanting young seedlings at wide spacing. It combines a set of best practices that can increase rice yield on poor soils up to 15 tonnes per ha, reduce irrigation



Farmers prepare their land for wet season rice, Kompong Thom, May 2015

water requirements, and use only local inputs (Stoop, Uphoff and Kassam 2002; Uphoff 2007; Kassam, Stoop and Uphoff 2011). Original SRI practices were developed for irrigated rather than rainfed farming and involved planting single 8-12 day-old (instead of clumps of 30-35 day-old) seedlings in a 25cm x 25cm square pattern, intermittent (rather than continuous flooded) irrigation, application of organic matter, preferably compost (as opposed to reliance on external inputs), and regular weeding.

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Table 1: Study sites

| Agroecological area | Province        | District        | Commune                    |
|---------------------|-----------------|-----------------|----------------------------|
| Tonle Sap           | Kompong Chhnang | Samaki Meanchey | Thlok Vien                 |
|                     |                 | Teuk Phos       | Tang Krasang               |
|                     | Kompong Thom    | Prasat Ballangk | Sala Visai                 |
|                     |                 | Stung Saen      | Ou Kanthor                 |
| Lower Mekong        | Prey Veng       | Kanh Chriech    | Chong Ampil                |
|                     |                 | Ba Phnom        | Theay                      |
|                     | Takeo           | Koh Andaet      | Krapum Chhuk               |
|                     |                 | Tram Kok        | Trapeang Thom Khang Cheung |

Rather than a rigid set of agronomy techniques, the principles of SRI are flexible and can be modified (Uphoff 2007). Thus, the system continues evolving to suit local conditions as farmers adapt to creeping climate change, though its core principles and practices remain the same. Today's SRI practices are being adapted for rainfed (nonirrigated) farming and include direct seeding through broadcasting.

This article draws on the findings of a larger study (Sam and Ouch 2015) to identify local knowledge and SRI practices in the Tonle Sap and Lower Mekong agroecological areas. It looks at gaps in local practices and suggests ways of closing those gaps to help cope with the effects of climate change.

### Method

Primary data was collected from seven focus group discussions (FGDs), eight in-depth interviews and 11 key informant interviews (KIIs) with respondents at selected study sites in Kompong Chhnang, Kompong Thom, Prey Veng and Takeo provinces (see Table 1). Secondary data consisted of qualitative information on SRI practices in the target provinces, gathered from various institutions' reports and other documents.

KIIs were held with representatives from provincial departments of agriculture (PDAs), district agricultural offices (DAOs), Ministry of Agriculture, Forestry and Fisheries, Cambodia Climate Change Alliance,<sup>1</sup> Cambodian Agricultural Research and Development Institute, CEDAC and climate-related projects including HARVEST<sup>2</sup>

and PADEE.<sup>3</sup> FGDs involved commune chiefs, commune councillors responsible for agriculture within the commune, and the head or members of local farmer water user communities.

### Key findings

#### *Adoption of SRI practices*

The extent to which SRI practices have been adopted varies according to agroecological area and socioeconomic conditions. In addition, the application of SRI principles in rainfed and irrigated systems is not distinct because farmers cannot control the amount of water on their plots due to lack of drainage. In the visited communes, some SRI principles and practices have been only partly adopted or not adopted at all (Table 2). This largely reflects farmers' integration of those practices as they adapt to specific circumstances. SRI is therefore applied differently across areas and even within the same village.

*Variety selection:* Farmers from the selected communes grow three varieties of rice: modern (IR 66, 504 and 85), improved traditional (Raing Chey, Phka Rumduol, Somaly and Phka Malis) and traditional (Kronhol, Neang Khon and Neang Tom). FGD participants said that farmers prefer to grow modern varieties in the early wet and dry seasons because of their market value, suitability for farm conditions, preferred eating quality, higher yields and reduce risk and disease resistance. Specifically to cope with climate variability, farmers have changed from photoperiod-sensitive late maturing to photoperiod-insensitive early maturing varieties.

1 Cambodia Climate Change Alliance provides grants to many local NGOs to work on climate change adaptation.

2 Helping Address Rural Vulnerabilities and Ecosystem Stability is funded by the United States Feed the Future and Global Climate Change initiatives.

3 The Project for Agriculture Development and Economic Empowerment, through support from International Fund for Agricultural Development, focuses on improving poor people's livelihoods by providing agricultural technologies and establishing local savings groups.

*Seed and seedling preparation:* Most farmers have developed their own methods to prepare seeds for broadcasting and seedlings for transplanting. Some have updated their practices as their knowledge of techniques and technologies improved through training provided by PDA/DAO and NGOs. Seed preparation depends on local conditions. Rather than applying the exact techniques from training, farmers combine some components of the recommended practices they have learned with their usual practices and local knowledge.

*Field preparation:* Farmers prepare rice land before planting by ploughing, harrowing and levelling their fields. Ploughing (by hand, by animal traction or mechanically) is normally done twice, or thrice for weedy fields; levelling (manual or mechanical) is done once. In practice, however, the frequency depends on ploughing techniques, planting methods and affordability.

*Planting methods:* Original SRI practices exclude direct sowing, yet transplanting occurs in only four of the eight communes visited. The age of the seedlings when transplanted depends on the variety and water availability. Farmers have learned that young seedlings are productive and try to use them whenever they can, water supply allowing. The decision whether to grow from transplants or seed depends on local environmental conditions and practices. Strong, healthy transplants can compete with weeds and better tolerate pest damage in early crop establishment. In some areas, farmers broadcast seed because they either cannot or do not want to spend time checking their fields. Now, due to labour shortage, some farmers have switched to broadcasting even though they know that yields are lower. Some have adopted SRI practices: selecting vigorous, young seedlings and planting them in wide rows at a low density of 1-3 seedlings per hill.

Table 2: Adoption or adaptation of SRI practices by province and commune

| Practice             | Details                          | Kg Chhnang |              | Kg Thom    |            | Prey Veng   |       | Takeo        |                            |
|----------------------|----------------------------------|------------|--------------|------------|------------|-------------|-------|--------------|----------------------------|
|                      |                                  | Thlok Vien | Tang Krasang | Ou Kanthor | Sala Visai | Chong Ampil | Theay | Krapum Chhuk | Trapeang Thom Khang Cheung |
| Variety selection    | High yielding                    | √          | ×            | ×          | √          | √           | √     | √            | √                          |
|                      | Pest, drought and flood tolerant | Δ          | Δ            | Δ          | Δ          | Δ           | Δ     | Δ            | Δ                          |
|                      | Ecosystem suited                 | √          | √            | √          | √          | √           | √     | √            | √                          |
|                      | Market demand                    | √          | √            | √          | ×          | √           | √     | √            | √                          |
| Seed preparation     | Seed preparation                 | √          | √            | √          | √          | √           | √     | √            | √                          |
| Field preparation    | Ploughing                        | √          | √            | Δ          | √          | Δ           | Δ     | Δ            | √                          |
|                      | Harrowing                        | √          | √            | √          | √          | √           | √     | √            | √                          |
|                      | Levelling                        | Δ          | Δ            | Δ          | Δ          | Δ           | Δ     | Δ            | Δ                          |
| Seedlings            | Age of seedlings                 | Δ          | Δ            | ×          | Δ          | ×           | ×     | ×            | Δ                          |
| Planting methods     | Direct seeding                   | ×          | Δ            | Δ          | Δ          | Δ           | Δ     | Δ            | Δ                          |
|                      | Transplanting                    | Δ          | Δ            | ×          | Δ          | ×           | ×     | ×            | Δ                          |
| Fertility management | Organic materials                | Δ          | Δ            | ×          | Δ          | Δ           | ×     | ×            | Δ                          |
|                      | Inorganic fertiliser             | Δ          | Δ            | Δ          | Δ          | Δ           | Δ     | Δ            | ×                          |
| Water management     | Water storage                    | ×          | ×            | ×          | Δ          | Δ           | Δ     | ×            | ×                          |
|                      | Water depth                      | Δ          | Δ            | Δ          | Δ          | Δ           | Δ     | Δ            | Δ                          |
|                      | Intermittent irrigation          | Δ          | Δ            | Δ          | Δ          | Δ           | Δ     | Δ            | Δ                          |
| Weed management      | Weeding                          | Δ          | Δ            | Δ          | Δ          | Δ           | Δ     | Δ            | Δ                          |

Note: √ = fully adopted/adapted; Δ = partly adopted/adapted; x = not adopted at all.

Table 3: Factors encouraging and discouraging the use of SRI, by commune

| Commune                    | Labour requirement | Land (No. of plots, size and distance) | Mind set and local practices | Access to water | Access to inputs | Access to market | Access to information | Rural institutions | Risk | Yield | Weeds |
|----------------------------|--------------------|--|------------------------------|-----------------|------------------|------------------|-----------------------|--------------------|------|-------|-------|
| Thlok Vien                 | -/+                | -                                      | -                            | -               |                  | -/+              | +                     | -/+                | +    | +     | +     |
| Tang Krasang               | -                  |  | -                            | -/+             | -/+              |                  | -/+                   |                    | -    | +     |       |
| Ou Kanthor                 |                    | -                                      | -/+                          | -/+             | -/+              | +                | -/+                   | +                  | +    | -     | +     |
| Sala Visai                 | -                  | -                                      |                              | -/+             | -/+              | +                | -/+                   |                    |      | +     | +     |
| Chong Ampil                | -                  |  | -                            | -               | -/+              | -/+              | -/+                   | +                  |      | -     |       |
| Theay                      | -                  |  |                              | -/+             | +                | +                | +                     | +                  | +    | +     |       |
| Krapum Chhuk               | -                  | -                                      |                              | -/+             | -/+              | -/+              | -/+                   | +                  |      | -     |       |
| Trapeang Thom Khang Cheung | -/+                | -                                      | +                            | -/+             | -/+              |                  | -                     | +                  |      | +     |       |

Note: (-) discouraging factor; (+) encouraging factor.

Table 4: Factors encouraging and discouraging adoption of individual SRI practices

| Practices         | Details                          | Labour requirement | Land (No. of plots, size and distance) | Mindset and local practice | Access to water | Access to inputs | Access to market | Access to information | Rural institutions | Risk | Yield | Weeds |
|-------------------|----------------------------------|--------------------|--|----------------------------|-----------------|------------------|------------------|-----------------------|--------------------|------|-------|-------|
| Variety selection | High yield                       |                    |  |                            | -/+             | -/+              | -/+              | -/+                   | -/+                |      | -/+   |       |
|                   | Pest, flood and drought tolerant |                    | +                                      | +                          | -/+             | -/+              | -/+              | -/+                   | -/+                | +    |       | +     |
|                   | Suit to local conditions         |                    | +                                      | -/+                        |                 |                  |                  | -/+                   | -/+                | +    |       |       |
|                   | Market demand                    |                    | -/+                                    |                            | +               | -/+              | +                | -/+                   | -/+                |      |       |       |
| Seed preparation  | Seed preparation                 |                    | -/+                                    | +                          | -/+             |                  | +                | +                     |                    | +    | +     |       |
|                   | Nursery preparation              |                    | -/+                                    | -/+                        | -/+             |                  | +                | -/+                   |                    |      | +     |       |
| Field preparation | Ploughing                        |                    | -/+                                    |                            |                 | -/+              | +                |                       | -/+                |      | +     | +     |
|                   | Harrowing                        |                    |  |                            |                 | -/+              | +                |                       |                    |      | +     |       |
|                   | Levelling                        | -/+                | -/+                                    |                            |                 | -/+              | +                | -/+                   |                    |      | +     | +     |
| Seedlings         | Age of seedlings                 |                    |  | -/+                        | -/+             |                  | +                | -/+                   |                    | -    | +     |       |
|                   | Field preparation                |                    | -/+                                    | -/+                        | -/+             |                  | +                | -/+                   |                    |      | +     |       |
| Planting methods  | Direct seeding                   | +                  | +                                      | -/+                        | -/+             | +                | +                | +                     |                    |      | +     | -     |
|                   | Transplanting                    | -/+                | -/+                                    | -/+                        | -/+             |                  | +                | -/+                   | +                  |      | +     | +     |
| Soil improvement  | Organic materials                | -                  | -/+                                    | -/+                        | -/+             | -/+              | +                | -/+                   | +                  | +    | +     |       |
|                   | Inorganic fertiliser             |                    | -/+                                    | -                          | -/+             | -/+              | +                | -/+                   | +                  |      | +     |       |
| Water management  | Water storage                    |                    | -/+                                    |                            | -/+             |                  | +                | -/+                   | -/+                | +    | +     |       |
|                   | Water depth                      | -                  |  | -                          | -/+             |                  | +                | -/+                   |                    | -/+  | +     |       |
|                   | Intermittent irrigation          | -                  |  | -                          | -/+             |                  | +                | -/+                   |                    | -/+  | +     |       |
| Weed management   | Weeding                          | -/+                | -/+                                    | -/+                        | -/+             | -/+              | +                | -/+                   | -/+                | -/+  | +     | -/+   |

Note: (-) discouraging factor; (+) encouraging factor.

Farmers who broadcast use different seeding rates to those recommended in SRI depending on locality and variety. In Takeo, Prey Veng and Kompong Thom provinces, some farmers who grow IR504 conduct their own field tests to calculate how much seed is needed.

*Soil fertility management:* Organic matter can sustain high yields, enrich soil structure and increase water and nutrient retention. Compost is applied in five of the communes, whereas farmers in Ou Kanthor, Theay and Krapum Chhuk think it takes too long to produce good results and find it hard to transport to their distant, dispersed fields. Recommended compost application rates vary according to soil type. In practice, the amount applied is lower because farmers apply only as much as they can make or transport. If sufficient organic matter is not available or fields are too far away, chemical fertilisers may be used. After much training, some farmers have learned about different types of fertiliser, what and how much to apply to various soil types and when. Others apply excessive amounts of fertiliser without knowing how much to use in the belief they will get higher yields.

*Water management:* Even low-input irrigated fields are more productive than rainfed ones. A central principle of SRI is keeping the soil moist through intermittent irrigation rather than continuously saturated. The water level and watering regime (frequency and duration of flooding) is defined for each phase of rice development, though fields have to be completely level for this low-water technique to be effective. Through training provided by PDA and NGOs, farmers have a good understanding of the level of water needed for rice development. In rainfed areas, some farmers seem to apply SRI irrigation practices well, while others who do not have ponds, dykes or streams to store or drain excess rainwater find it hard to keep the required shallow level of water on their fields. In irrigated areas, where farmers commonly drain water through adjacent fields, maintaining a shallow water level can also be problematic if there is no drainage system. Also, in areas where irrigation water is charged for, farmers rarely let water flow from their fields. Most of the fields in the visited communes were reported by farmers to be uneven because they could not afford to have their fields mechanically levelled.

*Weed management:* When fields are not flooded continuously, weeds often grow more vigorously. Conversely, wider row spacing may allow plants to outgrow weeds in the early stages of growth. Weeding is mostly done manually, though some farmers apply herbicides. Farmers know when to start weeding and how to prevent specific weed species from taking hold.

### ***Factors affecting adoption of SRI***

The interviews and focus groups identified many factors affecting farmers' adoption of SRI. These factors are summarised in Table 3, and their effect on the take up of individual SRI practices is summarised in Table 4. Aspects that attract farmers to adopt SRI practices include:

- reduced labour requirement for transplanting, broadcasting and weeding
- suitability for small farming systems
- positive results
- positive mindset
- sufficient water
- availability of pure seeds, organic materials, fertilisers and machinery
- access to markets, technical information and rural institutions
- reduced risk
- high yield
- lower weed density.

Factors that deter farmers from adopting SRI practices are:

- labour requirement for transplanting, levelling, weeding and inspecting water level
- unsuitability for multiple or large plots
- traditional mindset and habits
- insufficient water
- lack of production inputs
- limited access to market, technical information and rural institutions
- risk associated with lower seeding rate/transplanting density and higher weed density.

### **Conclusion and recommendations**

SRI is a method for increasing rice productivity by improving the management of soil, water, nutrients and weeds. The findings suggest that once farmers decide to upgrade their production,

they not only adopt SRI practices but also adapt them to fit local conditions. However, farmers select only the practices they think are feasible and beneficial. Feasible means easy to implement and in keeping with local agroecological and socioeconomic conditions. This is effective in the current circumstances of rural Cambodia, where access to individual elements for agricultural adaptation to climate change is still limited.

The deciding factors most likely to encourage farmers to adopt SRI practices are higher yields and better market access. On the other hand, labour requirement and land endowment (number of plots, size and distance) are likely to deter farmers from considering SRI. Other factors can either encourage or discourage adoption of SRI.

SRI practices of variety selection (with the exception of pest/drought/flood resistant varieties), seed preparation and harrowing (field preparation) seem to have been fully adopted, whereas seedling selection, planting methods, ploughing and levelling, soil improvement, water management and weed management have been only partly adopted.

Improving the adoption of SRI in Cambodia requires urgent efforts to both bridge the gaps between ideal or recommended practices and actual implementation and address the issues contributing to those gaps. While national efforts require ongoing attention, local efforts that do not depend on external support are also important in helping farmers cope with climate variability and change. Importantly, local communities need to mobilise local resources. Collective action is therefore required to share technical information and adapted practices, facilitate access to markets and inputs, identify local water storage options and share risks and labour.

NGOs should collaborate more closely with departments involved with climate change adaptation and SRI to expand coverage of climate-smart agriculture. They should also focus more on local innovations, consider the complex technical requirements of SRI and look at adaptations for each of the main practices. Further, NGOs and the government through extension agents should provide market advice to help farmers establish links to markets themselves. Subject-matter specialists and institutions also have to be engaged in research and

development. Government should not only increase the number of village agents but also mobilise local people to work together in delivering local extension services.

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# Contracting for Public Health Service Delivery: Insights from Health Workers

## Background

The reconstruction of Cambodia’s health system over the last 20 years has taken extraordinary efforts, starting from an almost non-existent base with the health infrastructure in ruins and fewer than 50 trained doctors (Ovesen and Trankell 2010). Significant investment from government and its development partners in 1989-1995 supported implementation of the first health sector reform (HSR) in 1991-94. That was quickly followed by HSR Phase 2 in 1995-98, when the Health Coverage Plan and Health Financing Charter were established and user fees introduced at public health facilities (MOH 2007).

Efforts to speed up the recovery of the rural health system and improve health services delivery led to the emergence of contracting for specific public health services in 1999. Contracting evolved

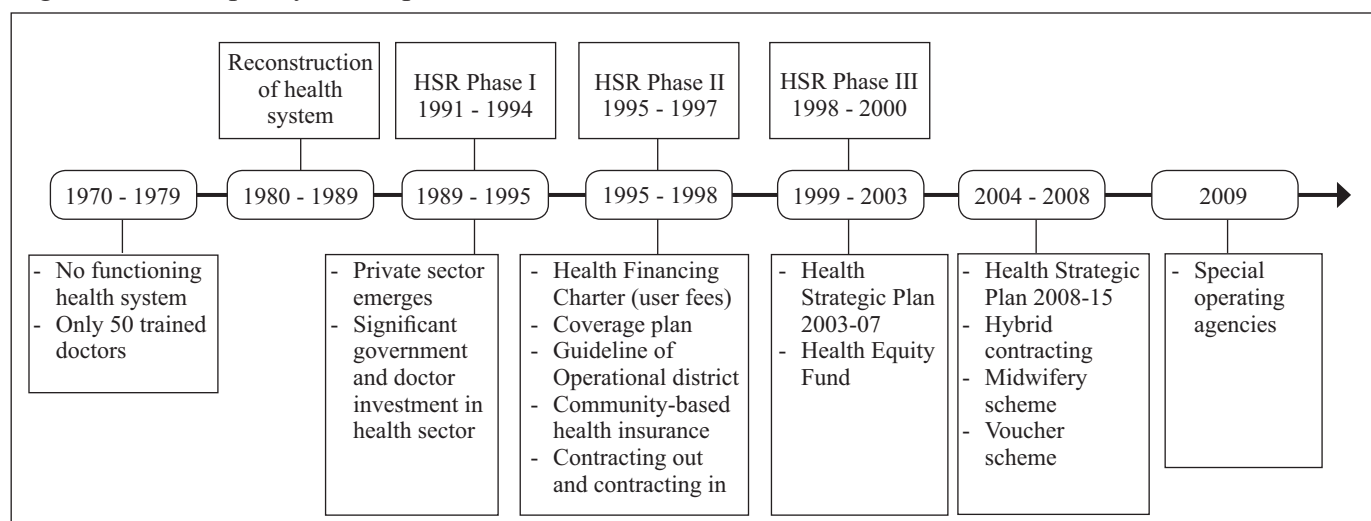
in three phases. First, from 1999 to 2003, external contracting was piloted in five health districts (two districts tested contracting out and three tested contracting in). Health services especially maternal and child health services improved, health service coverage expanded and inequitable access and out-of-pocket health expenditure declined, but at a cost almost twice that incurred by standard districts (Bhushan et al. 2007).

Phase two in 2004-08 involved a form of hybrid contracting in 16 health districts, in 11 of which several international NGOs were contracted to provide management services. At the same time, provincial health departments, with support from Belgian Technical Cooperation, engaged five other districts in performance contracts. Both models featured performance contracts, incentives and monitoring, and building local health management capacity (Keovathanak and Annear 2011; MOH 2007).

The third phase culminated in the current Special Operating Agencies (SOA), a form of internal contracting that builds on Cambodia’s broad public administration reform to improve service delivery, enhance pay and employment, develop institutional and human resource capacity, and promote information and communication technologies (Vong 2013). Under the umbrella of the Ministry of Health

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Figure 1: Health policy development in Cambodia



Source: Adopted from MOH 2007; Ovesen and Trankell 2010

(MOH), SOA contracts operate at four levels. The MOH contracts provincial health departments, which serve as commissioners. They contract operational districts (ODs), which, in turn, contract health facilities under their supervision. And health facility managers contract individual healthcare providers for specific services. Thirty SOA had been established by the end of 2010 and a further six scaled up by 2013 (MOH 2014). Importantly, these internal contracting arrangements allow provincial health departments to contract SOAs directly.

Few studies have focused on the outcomes of SOA implementation. The scheme has been explored as a means for improving district health management and services delivery (Khim and Annear 2013), and a quantitative nationwide survey has compared the use of SOA and non-SOA health facilities (World Bank 2013). Yet no assessment has so far been made of health workers' perceptions of the principles and benefits of SOA. Clearly, there is a knowledge gap that needs to be addressed.

An understanding of health workers' perceptions, motivation and satisfaction with their working environment is essential to improve both health worker retention (Witter et al. 2011) and health system performance (Chirdan et al. 2009). Drawing on a seven-year ReBUILD (Research for Building Pro-poor Health Systems during Recovery from Conflict) project on health contracting in Cambodia,<sup>1</sup> this paper looks at three aspects of SOA service delivery contracts: benefits for individual health workers, effects on health workers' attitudes and behaviours, and challenges to meeting contractual obligations and strategies to overcome them.

### Research methods

Consistent with the literature (e.g. Pope and Mays 1995; Malterud 2001), a qualitative research approach was used to generate information about contracting and reflect the experiences and perspectives of health workers. We wanted to see SOA implementation through the eyes of health workers and managers to understand their viewpoints (Bryman 1988). In-depth interviews were held from March to June 2013 with 27 health managers and workers in four SOA districts, namely Memut,

Peariang, Samrong and Bati. These districts were selected because of their current involvement in the SOA scheme, experience of contracting with NGOs (e.g. for primary or secondary care), geographical area and the services covered. Informed consent was obtained from each interviewee before beginning an interview. Framework analysis provided a systematic, rigorous and transparent approach to interpret and code the data collected (Ritchie et al. 2003). Emerging themes identified in interview transcripts were then grouped into clusters for detailed analysis.

### Findings

#### *Perceived benefits of working with SOA*

Reported benefits were incentives such as salary top-ups and bonuses, training and capacity building, enhanced local ownership of district management, more transparent procedures, and private practice opportunities.

*Incentives and bonuses* paid to health managers and workers may be quite small but nonetheless supplement low civil servant salaries and thus help to sustain livelihoods. In the words of a health worker, "The benefits for health centre staff are not much but [help] supplement their daily livelihoods, so it is quite a big amount for them." And another clearly looked upon these incentives as a reward for professional commitment: "We work hard but we also receive incentives as well." On the downside, some participants felt that over-reliance on incentives provided by SOA could have a negative effect, undermining health workers' ability to work independently: "It's good in some ways, but ... we just sit and wait for money and have no motivation to use our initiative and work independently."

*Capacity building opportunities* via SOA were appreciated by both health managers and workers who were confident that their capacity had improved as a result. Some health facilities are allocated budget that managers can use to provide training for health workers. A health centre manager explained, "By joining SOA, we get a bigger budget from the Ministry of Health to provide incentives to staff and provide training for them." Other participants confirmed that health workers now have more capacity building opportunities through various training courses: "The benefit of SOA is that it has provided a lot of training. Every member of staff has been sent on some kind of training course."

1 The ReBUILD programme is being undertaken by a research consortium with funding support from the Department for International Development, UK (DfID). The project will run until March 2017.



*Local ownership of district management* was stressed as another key benefit of the SOA scheme. SOA health managers now get the chance to lead, work independently, make their own decisions and allow flexible working. They can be more innovative, do not have to follow rigid procedures and have authority over district staff. For example, they can resolve staff problems and fine or discipline poorly performing staff. One manager emphasised, "... with SOA, the operational district takes the lead and is in charge of decision making on how services should be improved, unlike under previous contracting arrangements."

*Transparent procedures* featured as a positive outcome, particularly district health management. All health workers interviewed were aware of the contract and understood how incentives are calculated and allocated among service providers.

*Fewer restrictions on private practice* are another boon. SOA managers are empowered to enable flexible working arrangements, and regulations allow private practice outside of stipulated duty hours.

It's a bit easier than before [when contracting with NGOs]. We can take some time to see our patients outside. When we are busy outside, we just inform our department to make sure there are hospital staff on standby. We can go out for a while to make house calls and just ask another colleague to take our place. The current system is better for staff ...

Despite the freedom to supplement income through private practice, some participants asserted that the SOA scheme could increase health professionals' commitment to the public health system.

SOA provides incentives so that our staff can earn enough money without working outside [private practice]. This means that our staff work in this facility only, and that makes our hospital strong.

### ***Effects of SOA on health workers' behaviour***

Study participants noted positive changes in the behaviour of health workers in SOA districts. Highlighted were improved punctuality, reduced absenteeism from duty, a continuous 24 hour service, better attitudes towards patients regardless of poor or non-poor status, and a better quality of care.

Before, in consultation we just asked a few things, and then wrote out a prescription. But under contract with SOA, we have to measure blood

pressure and body temperature and note these on the [patient's] record ...

If a patient has a fever, we have to do a blood test before we can give a prescription. Before SOA, we would take short cuts [for treatment] ... there was no monitoring from higher up, there were no incentives, [we] were lazy too, that's why ...

In my department, if patients had only a simple illness, we didn't use to check any signs; for example, there was no need to diagnose a headache. But now we have to diagnose patients properly, for every illness, and we have to record the diagnosis on the patient's health record with our signature—in the past, we didn't do this. Now, we have to sign many more documents.

That said, some health workers maintained that the SOA scheme has played only a small role in improving quality of care and that adherence to standard procedures and a code of ethics was instilled through previous contracting with NGOs.

### ***Perceived challenges and coping strategies***

Reaching the targets set out in SOA contracts was identified as a main challenge facing district health management. Participants explained that despite working hard they sometimes failed to achieve targets. Many were concerned that they might have ever higher targets to reach, while others felt that targets should be raised to encourage health workers to provide more services, particularly because the population is growing.

Several reasons why health facilities struggle to reach contractual targets were highlighted. First, inaccuracies in district population estimates make target setting problematic. A general assumption is that district populations are growing. Yet, as health managers reported, population size is affected by migration and population growth may have been slower than anticipated: "Population growth [in the district] had been overestimated and was lower than [expected] because of the number of people migrating to another place."

Second, baseline data used to generate SOA targets does not accurately reflect the use of health facilities. Thus targets were set at too high a level, as stressed by an SOA manager, "... when they did [started] it, they did not do the study to collect baseline data but to check the specificity of data so

that we could settle on this or that number. So, when we started, we used unreliable non-validated data as our baseline.”

Competition among health facilities for patients in the district is a third reason for missing targets. Some participants reported that each health facility has its own target to achieve. But the limited number of patients means that not all health facilities can meet their targets, a point illustrated by a facility chief:

The main issue facing my place is that the outpatient department is underused. People tend to go to the closest facilities, and those facilities hang onto their patients as they have target indicators to fulfil as well. In other words, the population around here hasn't changed, but people have more health centres to go to.

Strategies to help meet contractual targets reported by participants in all four study areas involve monthly community outreach activities. Health workers make house calls to conduct consultations, antenatal examinations and distribute medicines; these visits help boost data reporting in an attempt to fulfil targets. But there are challenges to doing outreach work. A shortage of health centre staff means that only vaccination workers can go to the community. In addition, health centres are usually too busy and cannot spare staff to travel to the community.

## Conclusion

In sum, the study findings reflect a positive view among health managers and workers of working under SOA service delivery contracts. It is not feasible, however, to generalise the benefits and effects of SOA based on a perception study alone. Nonetheless, this study provides useful insight into the perceptions and experiences of SOA managers. These insights can contribute to a better understanding of factors influencing health workers' motivation and job satisfaction, and inform further interventions to improve health worker retention and health service delivery at subnational level.

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## Economy Watch—External Environment

This section describes the economy in major countries and Southeast Asia. The economies of ASEAN countries performed well in the first quarter of 2015 except for Indonesia and Malaysia. The annual GDP growth rate in Indonesia dropped 0.7 percentage points, and in Malaysia 0.2 percentage points, from the preceding quarter. The real growth rate in Singapore was up 0.5 and in Thailand 1.1 percentage points compared with a quarter earlier.

China's real GDP growth averaged 7.0 percent in the first quarter, but growth in Hong Kong declined to 2.1 percent and in South Korea to 2.4 percent. Growth in Taiwan in the 12 months was 3.4 percent compared to 3.1 percent a year earlier.

The real growth rate in the eurozone rose to 1.0 percent. The rate dropped to 0.9 percent in Japan despite the yen depreciation which contributed to an increase of exports and resulted in low 0.1 percentage point increase in GDP growth. The US enjoyed relatively strong growth at 2.7 percent, 0.4 percentage points higher than a year earlier. Exports and state and local government spending also contributed to the rise in the GDP.

### Inflation

Inflation in both developed and emerging economies in the first quarter was in single digits. Inflation

declined to 1.0 percent in Cambodia after the previous quarter's 2.2 percent. In the first quarter the annual inflation rate in Indonesia was 6.6 percent and 0.7 percent in Malaysia. Singapore faced deflation in the last two quarters due to a fall of clothing, footwear and accommodation prices. Inflation in Vietnam was 0.7 percent, the lowest rate for the last nine years. The decrease was due to lower global oil prices. Annual inflation in China declined to 1.2 percent, in Hong Kong 4.4 percent and in South Korea 0.6 percent. Inflation in Taiwan went up to 2.9 percent, the highest rate in the last seven years. Eurozone prices declined 0.3 percent and United States prices 0.4 percent. Annual inflation in Japan remained low at 2.3 percent, a decrease of 0.3 percentage points from the previous quarter.

### Commodity prices in world markets

Major world commodity prices contracted in the first quarter from a quarter earlier. The price of palm oil dropped 12.2 percent to USD627.9/tonne, of rubber 5.7 percent to USD1450.2/tonne and of rice 1.0 percent to USD426.0/tonne. The price of soybeans declined 17.2 percent to USD363.9/tonne, of crude oil 30.7 percent to USD50.9/barrel, of gasoline 17.0 percent to USD0.40/litre, and of diesel 22.4 percent to USD0.45/litre.

Prepared by Sry Bopharath, research assistant, and Pon Dorina, research assistant, Economics Unit, CDRI.

Table 1: Real GDP growth of selected trading partners, 2007–15 (percentage increase over previous year)

|                                       | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |      |      |     |      | 2015 |
|---------------------------------------|------|------|------|------|------|------|------|------|------|------|-----|------|------|
|                                       |      |      |      |      |      |      |      | Q1   | Q2   | Q3   | Q4  | Q1   |      |
| <b>Selected ASEAN countries</b>       |      |      |      |      |      |      |      |      |      |      |     |      |      |
| Cambodia                              | 10.2 | 6.7  | 0.1  | 6.0  | 7.1  | 7.3  | 7.4  | -    | -    | -    | -   | -    | -    |
| Indonesia                             | 6.3  | 6.1  | 4.2  | 6.2  | 6.5  | 6.3  | 5.8  | 5.2  | 5.1  | 5.0  | 5.4 | 4.7  | 4.7  |
| Malaysia                              | 6.3  | 4.6  | -2.4 | 9.0  | 4.9  | 5.4  | 4.6  | 6.2  | 6.4  | 5.6  | 5.8 | 5.6  | 5.6  |
| Singapore                             | 7.7  | 1.1  | -4.5 | 14.7 | 4.7  | 1.3  | 3.8  | 5.1  | 2.4  | 2.4  | 2.1 | 2.6  | 2.6  |
| Thailand                              | 4.9  | 2.6  | 3.3  | 7.9  | 0.0  | 6.7  | 2.8  | 3.1  | 0.3  | 0.6  | 2.2 | 3.3  | 3.3  |
| Vietnam                               | 8.5  | 6.2  | 4.7  | 6.4  | 6.2  | 5.2  | 5.4  | -    | -    | -    | -   | -    | -    |
| <b>Selected other Asian countries</b> |      |      |      |      |      |      |      |      |      |      |     |      |      |
| China                                 | 11.9 | 9.0  | 8.2  | 10.4 | 9.3  | 7.7  | 7.7  | 7.1  | 7.5  | 7.3  | 7.3 | 7.1  | 7.1  |
| Hong Kong                             | 6.4  | 2.4  | -3.2 | 6.9  | 4.9  | 2.9  | 3.0  | 2.5  | 1.8  | 2.7  | 2.2 | 2.1  | 2.1  |
| South Korea                           | 4.9  | 2.2  | -1.0 | 6.1  | 3.6  | 2.1  | 2.8  | 4.1  | 3.5  | 3.2  | 2.8 | 2.4  | 2.4  |
| Taiwan                                | 5.2  | 0.1  | -3.6 | 11.1 | 4.2  | 1.2  | 2.2  | 3.1  | 3.7  | 3.8  | 3.3 | 3.4  | 3.4  |
| <b>Selected industrial countries</b>  |      |      |      |      |      |      |      |      |      |      |     |      |      |
| Euro-12                               | 2.9  | 0.9  | -3.8 | 1.6  | 1.6  | -0.5 | 0.1  | 0.9  | 0.7  | 0.3  | 0.9 | 1.0  | 1.0  |
| Japan                                 | 2.0  | -0.7 | -5.4 | 4.1  | -0.8 | 1.7  | 1.7  | 3.1  | -0.1 | -1.2 | 0.5 | -0.9 | -0.9 |
| United States                         | 2.2  | 1.1  | -2.5 | 2.7  | 1.8  | 2.1  | 1.8  | 2.3  | 2.6  | 2.3  | 2.4 | 2.7  | 2.7  |

Sources: International Monetary Fund, *Economist*, countries' statistics offices

Table 2: Inflation rate of selected trading partners, 2007–15 (percentage price increase over previous year—period averages)

|                                       | 2007 | 2008 | 2009 | 2010 | 2011 | 2012  | 2013 | 2014 |     |     |      | 2015 |
|---------------------------------------|------|------|------|------|------|-------|------|------|-----|-----|------|------|
|                                       |      |      |      |      |      |       |      | Q1   | Q2  | Q3  | Q4   | Q1   |
| <b>Selected ASEAN countries</b>       |      |      |      |      |      |       |      |      |     |     |      |      |
| Cambodia                              | 10.5 | 19.7 | -0.5 | 4.1  | 5.5  | 3.0   | 3.0  | 4.5  | 4.9 | 4.0 | 2.2  | 1.0  |
| Indonesia                             | 6.4  | 10.1 | 4.7  | 5.1  | 5.4  | 4.3   | 7.0  | 7.7  | 7.1 | 4.3 | 6.5  | 6.6  |
| Malaysia                              | 2.0  | 5.3  | 0.4  | 1.7  | 3.2  | 1.7   | 2.1  | 3.5  | 3.3 | 3.0 | 2.8  | 0.7  |
| Singapore                             | 2.1  | 6.5  | 0.5  | 2.9  | 5.2  | 4.6   | 2.3  | 1.0  | 2.3 | 0.9 | -0.1 | -0.3 |
| Thailand                              | 2.2  | 5.5  | -0.9 | 3.1  | 3.8  | 3.0   | 2.2  | 2.0  | 2.5 | 2.0 | 1.1  | -0.5 |
| Vietnam                               | 8.3  | 23.3 | 7.3  | 9.0  | 18.6 | 9.3   | 6.6  | 4.8  | 4.7 | 4.5 | 5.4  | 0.7  |
| <b>Selected other Asian countries</b> |      |      |      |      |      |       |      |      |     |     |      |      |
| China                                 | 4.8  | 5.9  | -0.8 | 3.2  | 5.4  | 2.7   | 2.6  | 2.1  | 2.2 | 2.0 | 1.5  | 1.2  |
| Hong Kong                             | 2.0  | 4.3  | -0.3 | 2.4  | 5.3  | 4.1   | 4.0  | 4.1  | 3.6 | 4.9 | 5.0  | 4.4  |
| South Korea                           | 2.5  | 4.6  | 2.8  | 3.0  | 4.4  | 2.1   | 1.1  | 1.1  | 1.6 | 1.4 | 1.0  | 0.6  |
| Taiwan                                | 1.8  | 3.2  | -1.1 | 1.0  | 1.4  | 1.9   | 0.8  | 1.1  | 1.6 | 1.5 | 1.6  | 2.9  |
| <b>Selected industrial countries</b>  |      |      |      |      |      |       |      |      |     |     |      |      |
| Euro-12                               | 2.1  | 3.3  | 0.4  | 1.6  | 2.7  | 2.5   | 1.4  | 0.6  | 0.6 | 0.4 | 0.2  | -0.3 |
| Japan                                 | 0.1  | 1.4  | -1.3 | -0.7 | 0.1  | -0.03 | 0.4  | 1.5  | 3.6 | 3.4 | 2.6  | 2.3  |
| United States                         | 2.9  | 3.8  | -0.4 | 1.7  | 3.2  | 2.1   | 1.5  | 1.4  | 2.1 | 1.8 | 1.3  | -0.4 |

Sources: International Monetary Fund, *Economist*, National Institute of Statistics

Table 3: Exchange rates against US dollar of selected trading partners, 2007–15 (period averages)

|                                       | 2007     | 2008   | 2009     | 2010     | 2011     | 2012     | 2013     | 2014     |          |          |          | 2015     |
|---------------------------------------|----------|--------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                       |          |        |          |          |          |          |          | Q1       | Q2       | Q3       | Q4       | Q1       |
| <b>Selected ASEAN countries</b>       |          |        |          |          |          |          |          |          |          |          |          |          |
| Cambodia (riel)                       | 4062.7   | 4054.2 | 4140.5   | 4187.1   | 4063.6   | 4037.8   | 5369.6   | 3993.8   | 4026.9   | 4059.5   | 4070.1   | 4042.2   |
| Indonesia (rupiah)                    | 9419     | 9699   | 10,413.8 | 9089.9   | 4374.0   | 9363.0   | 13892.2  | 11,765.8 | 11,615.3 | 11,775.7 | 12,244.1 | 12,809.9 |
| Malaysia (ringgit)                    | 3.3      | 3.3    | 3.5      | 3.2      | 1.5      | 3.1      | 4.2      | 3.3      | 3.2      | 3.2      | 3.4      | 3.6      |
| Singapore (S\$)                       | 1.51     | 1.42   | 1.5      | 1.4      | 1.3      | 1.2      | 1.7      | 1.3      | 1.3      | 1.3      | 1.3      | 1.4      |
| Thailand (baht)                       | 32.22    | 33.36  | 34.3     | 31.7     | 30.5     | 31.1     | 41.0     | 32.6     | 32.4     | 32.1     | 32.7     | 32.6     |
| Vietnam (dong)                        | 16,030.0 | 16,382 | 17,725.2 | 19,200.8 | 20,574.3 | 20,856.9 | 27,987.1 | 21,093.8 | 20,923.2 | 21,221.9 | 21,314.0 | 21,372.9 |
| <b>Selected other Asian countries</b> |          |        |          |          |          |          |          |          |          |          |          |          |
| China (yuan)                          | 8.03     | 6.94   | 6.8      | 6.8      | 6.5      | 6.3      | 8.2      | 6.1      | 6.2      | 6.2      | 6.1      | 6.2      |
| Hong Kong (HK\$)                      | 7.8      | 7.8    | 7.8      | 7.8      | 7.8      | 7.8      | 10.3     | 7.8      | 7.8      | 7.8      | 7.8      | 7.8      |
| South Korea (won)                     | 929.0    | 1137.2 | 1277.8   | 1156.3   | 1108.6   | 1126.6   | 1460.0   | 1069.7   | 1028.9   | 1027.5   | 1088.4   | 1101.7   |
| Taiwan (NT\$)                         | 32.9     | 31.5   | 33.0     | 31.3     | 29.4     | 29.6     | 39.6     | 30.3     | 30.1     | 30.0     | 30.9     | 31.6     |
| <b>Selected industrial countries</b>  |          |        |          |          |          |          |          |          |          |          |          |          |
| Euro-12 (euro)                        | 0.7      | 0.8    | 0.7      | 0.8      | 0.7      | 0.8      | 1.0      | 0.7      | 0.7      | 0.8      | 0.8      | 0.9      |
| Japan (yen)                           | 117.8    | 102.5  | 93.6     | 87.8     | 79.9     | 79.8     | 130.2    | 102.8    | 102.1    | 104.0    | 114.6    | 119.2    |

Sources: International Monetary Fund, *Economist*, National Bank of Cambodia

Table 4: Selected commodity prices on world market, 2007–15 (period averages)

|   | 2007  | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   |        |        |        | 2015   |
|---|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|   |       |        |        |        |        |        |        | Q1     | Q2     | Q3     | Q4     | Q1     |
| Maize (USNo.2)—USA (USD/tonne)                        | 163.7 | 223.1  | 165.5  | 185.9  | 291.7  | 298.4  | 259.4  | 209.9  | 214.0  | 174.1  | 173.5  | 174.2  |
| Palm oil—north-west Europe (USD/tonne)                | 780.3 | 948.5  | 682.8  | 900.8  | 1125.4 | 999.3  | 856.9  | 911.3  | 887.1  | 772.0  | 715.3  | 627.9  |
| Rubber SMR 5  | 0.0   | 1431.6 | 1884.8 | 3405.7 | 4630.6 | 3200.7 | 2575.3 | 2034.7 | 1777.6 | 1672.1 | 1538.1 | 1450.2 |
| Rice (Thai 100% B)—Bangkok (USD/tonne)                | 305.4 | 615.3  | 524.5  | 506.6  | 558.5  | 594.8  | 533.8  | 450.7  | 411.7  | 447.0  | 430.3  | 426.0  |
| Soybeans (US No.1)—USA (USD/tonne)                    | 384.0 | 522.8  | 436.9  | 449.8  | 540.7  | 591.4  | 538.4  | 552.3  | 517.8  | 457.3  | 439.7  | 363.9  |
| Crude oil—OPEC spot (USD/barrel)                      | 66.8  | 99.4   | 57.7   | 76.8   | 106.2  | 109.5  | 105.9  | 104.7  | 105.9  | 100.8  | 73.4   | 50.9   |
| Gasoline—US Gulf Coast (cents/litre)                  | 52.2  | 68.1   | 40.8   | 53.3   | 71.9   | 74.6   | 71.2   | 70.1   | 74.1   | 70.0   | 48.3   | 40.1   |
| Diesel (low sulphur No.2)—US Gulf Coast (cents/litre) | 55.5  | 76.2   | 43.0   | 56.1   | 75.7   | 80.7   | 78.4   | 77.5   | 77.1   | 73.7   | 57.5   | 44.6   |

Sources: Food and Agriculture Organisation, US Energy Information Administration

## Economy Watch—Domestic Performance

### Main economic activities

Fixed asset investments approved in the first quarter of 2015 increased 1816.8 percent from a quarter earlier and 573.0 percent year on year, to USD2873.2 m. Investment in garments accounted for 18.6 percent of projects. Garments investment expanded 110.8 percent from the previous quarter to USD63.9 m. Investments in agriculture rose from nil to USD25.8 m. Services investment accounted for 87 percent of total project approvals. The huge increase was due to investments in tourism and hotels USD60.6 m, telecommunications USD270.1 m, and other services USD2171.2 m.

Total visitor arrivals expanded 5.4 percent from the previous quarter. Arrivals by air increased 13.5 percent, while arrivals by land and water dropped 2.5 percent. Tourist arrivals rose by single digits during each of the last five quarters.

Total exports rose 1.5 percent from the previous quarter, and 9.8 percent from a year earlier. Garment exports rose 3.8 percent from a quarter earlier, from USD1492.6 m to USD1548.8 m. The US and EU remained the major markets for garment products, accounting for 32 percent and 40 percent of garment exports, respectively. However, exports to the EU contracted 3.3 percent from the previous quarter. Garment exports to ASEAN rose 14.1 percent and to Japan 36.1 percent, but exports to these countries accounted for only 1.6 percent and 7.8 percent of the total, respectively.

During the same quarter, exports of agricultural products decreased 9.6 percent from the previous quarter and 10 percent from a year earlier. Rice and rubber were the major agricultural exports accounting for 28 and 60 percent of the total, respectively. Exports of rubber shrank 12.2 percent to USD41.7 m, of fish 28.6 percent and of other agricultural products 81.9 percent, but exports of rice grew 9.0 percent to USD89.5 m and of wood 70.1 percent to USD13.9 m, compared to the preceding quarter.

Imports in the first quarter dropped 3.2 percent from a quarter earlier, but rose 21.4 percent from the previous year to USD2717.3 m. Imports of gasoline decreased 6.3 percent but of diesel fuel rose 11.9

percent, and construction materials increased 8.5 percent compared with the previous quarter.

### Public finance

Total government revenue in the first quarter dropped 10.7 percent from a quarter earlier to KHR2633.5 bn, of which current revenue decreased 6.4 percent to KHR2623.7 bn. Tax revenue, which accounted for 91.8 percent of the total, grew 2.5 percent to KHR2416.8 bn. Non-tax revenue decreased 53.5 percent to KHR206.9 bn. In the same quarter, total expenditure dropped 56.2 percent from a quarter earlier to KHR1958.0 bn. This was due to decreases of 66.6 percent in capital expenditure and 50.5 percent in current expenditure. Capital expenditure decreased to KHR529.4 bn and current expenditure to KHR1428.7 bn due to decreases in wages, subsidies and social assistance and other current expenditure.

### Inflation and foreign exchange rates

Overall prices in the first quarter rose 1.0 percent, compared to 4.6 percent in the first quarter of 2014. The prices of food and non-alcoholic beverages increased by 4.2 percent but of transportation dropped by 10.9 percent. The riel appreciated 0.6 percent against the US dollar, 0.2 against the Thai baht and 0.5 percent against the Vietnamese dong from a quarter earlier. The price of gold increased 7.0 percent from the previous quarter to USD150.9/chi, while diesel fuel and gasoline declined 12.0 percent and 13.6 percent respectively.

### Poverty situation

In May, the real daily earnings of skilled construction workers and rice field workers dropped compared with the same month in 2014. Compared to the February survey, four groups' earnings fell.

Daily earnings of cyclo drivers shrank by 3.7 percent to KHR12, 427. The main reason was fewer customers. All the interviewees were from provinces near Phnom Penh, 52 percent from Prey Veng. Almost all the drivers were the main income earners of their families; their earnings were not enough, said 72 percent. Seventy-eight percent of their earnings were spent every day, largely on food for the driver alone. Sixty-eight percent of drivers' families did paid farm work.

Porters' earnings dropped by 6.0 percent from the previous survey, to KHR15,782/day, due to a lack of work and an increase of workers, reported by 80 percent of the interviewees. Ninety-two percent of the workers rented lodgings in Phnom Penh, living with six people on average. They spent KHR1000/day on rent. Eighty-nine percent of their total daily expenditure went on food.

In May, incomes of unskilled construction workers fell 7.3 percent to KHR15,453/day. There were more people coming into this work though there were fewer jobs, according to 70 percent of respondents. Workers worked an average eight hours per day. Seventy-eight percent of them moved to Phnom Penh alone. Their earnings could only partially support their families.

Earnings of skilled construction workers increased by 17 percent to KHR19,918 per day. Fifty-five percent of the workers moved to work with their families. Most of them stayed at their work sites. Because their earnings were not enough, the families left behind raised livestock and did paid farm work.

Vegetable vendors earned 21 percent more than in February, reaching KHR18,171/day. The vendors

were largely from Kandal province (33 percent). Only 45 percent commuted home daily, the others rented housing or stayed with relatives in Phnom Penh. Their income was not enough to support their families or expand their businesses, reported 75 percent of interviewees. Thirty-eight percent went into debt for living expenses and business.

Scavengers had the largest increase in earnings, of 33 percent to KHR14,169/day. Seventy-eight percent of scavengers came with their families to Phnom Penh. They relied mainly on this occupation, but their earnings were not enough, according to 75 percent of respondents. As a result, 75 percent of scavengers borrowed for their daily expenses.

Real daily earnings of garment workers increased 1.1 percent, to KHR14,803 from the preceding survey. Among the 120 interviewees, the maximum education level was grade 3. Only 29 percent of those workers attended training before being employed. Their work was mainly basic sewing and embroidering. They worked 58 hours per week (six days/week), including overtime. Forty percent were able to save for their future career plans, while the others could not support the families that depended mainly on them.

## Economy Watch—Economic Indicators

Table 1: Private investment projects approved, 2007–2014\*

|   | 2007   | 2008     | 2009   | 2010   | 2011    | 2012   | 2013  | 2014  |       |       |       | 2015   |
|---|--------|----------|--------|--------|---------|--------|-------|-------|-------|-------|-------|--------|
|   |        |          |        |        |         |        |       | Q1    | Q2    | Q3    | Q4    | Q1     |
| Fixed Assets (USD m)                    |        |          |        |        |         |        |       |       |       |       |       |        |
| Agriculture                             | 135.6  | 92       | 615.0  | 530.7  | 725     | 531.6  | 930.5 | 28.9  | 27.6  | 0.0   | 0.0   | 25.8   |
| Industry                                | 709.1  | 724.9    | 818.5  | 403.7  | 2860.1  | 829.3  | 3257  | 179.0 | 239.3 | 434.3 | 149.9 | 342.8  |
| <i>. Garments</i>                       | 170.7  | 142.8    | 90.1   | 122.8  | 393.9   | 497    | 324.1 | 109.3 | 172.4 | 81.6  | 30.3  | 63.9   |
| Services                                | 1742.5 | 10,003.2 | 4432.0 | 1337.3 | 3425.4  | 916.6  | 140.7 | 219.1 | 114.4 | 289.1 | 0.0   | 2504.6 |
| <i>. Hotels and tourism</i>             | 1048.3 | 8758.1   | 3980.1 | 1105.1 | 2850.9  | 691.5  | 106   | 163.3 | 15.4  | 268.1 | 0.0   | 60.6   |
| Total                                   | 2587.2 | 10570.9  | 5865.5 | 2271.7 | 7010.42 | 2278.0 | 4328  | 426.9 | 302.2 | 625.8 | 149.9 | 2873.2 |
| Percentage change from previous quarter |        |          |        |        |         |        |       |       |       |       |       |        |
| Total                                   | -      | -        | -      | -      | -       | -      | -     | -75.8 | -29.2 | 64.1  | -76.0 | 1816.8 |
| Percentage change from previous year    |        |          |        |        |         |        |       |       |       |       |       |        |
| Total                                   | -32.0  | 308.6    | -44.5  | -61.3  | 209     | -67.5  | 90.1  | 95.1  | -81.8 | 142.7 | -91.5 | 573.0  |

\* Including expansion project approvals. Source: Cambodian Investment Board

Table 2: Value of construction project approvals in Phnom Penh, 2007–15

|   | 2007  | 2008   | 2009  | 2010  | 2011  | 2012   | 2013   | 2014  |       |       |       | 2015  |
|---|-------|--------|-------|-------|-------|--------|--------|-------|-------|-------|-------|-------|
|   |       |        |       |       |       |        |        | Q1    | Q2    | Q3    | Q4    | Q1    |
| USD m                                   |       |        |       |       |       |        |        |       |       |       |       |       |
| Villas, houses and flats                | 376.3 | 376.2  | 213.9 | 220.1 | 405.1 | 547.3  | 658.9  | 133.6 | 84.0  | 33.1  | 20.4  | 122.3 |
| Other                                   | 259.5 | 740.9  | 187.8 | 217.8 | 199.9 | 463.6  | 859.6  | 190.0 | 141.7 | 105.6 | 11.7  | 49.8  |
| Total                                   | 635.8 | 1117.0 | 441.2 | 489.8 | 605.0 | 1010.9 | 1518.5 | 323.6 | 225.7 | 138.7 | 32.1  | 172.0 |
| Percentage change from previous quarter |       |        |       |       |       |        |        |       |       |       |       |       |
| Total                                   | -     | -      | -     | -     | -     | -      | -      | -     | 30.3  | 38.5  | 76.9  | 435.8 |
| Percentage change from previous year    |       |        |       |       |       |        |        |       |       |       |       |       |
| Total                                   | 96.7  | 75.7   | -60.5 | 11.0  | 23.5  | 67.1   | 28.1   | -15.6 | 157.5 | 107.6 | -21.8 | -19.8 |

Source: Department of Cadastre and Geography, Phnom Penh municipality

Table 3: Foreign visitor arrivals, 2007–2015

|                  | 2007                                    | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   |       |       |        | 2015   |
|------------------|---|--------|--------|--------|--------|--------|--------|--------|-------|-------|--------|--------|
|                  |   |        |        |        |        |        |        | Q1     | Q2    | Q3    | Q4     | Q1     |
|                  | Thousands                               |        |        |        |        |        |        |        |       |       |        |        |
| By air           | 1280.2                                  | 1239.4 | 1111.7 | 1304.3 | 1480.4 | 1722.1 | 2017.7 | 699.0  | 438.2 | 497.5 | 638.8  | 725.1  |
| By land or water | 740.5                                   | 881.9  | 999.7  | 1094.6 | 1401.4 | 1862.2 | 2192.5 | 569.0  | 495.2 | 501.2 | 663.9  | 647.6  |
| Total            | 2020.7                                  | 2121.3 | 2111.5 | 2398.9 | 2881.8 | 3584.3 | 4210.2 | 1268.0 | 933.4 | 998.7 | 1302.7 | 1372.6 |
|                  | Percentage change from previous quarter |        |        |        |        |        |        |        |       |       |        |        |
| Total            | -                                       | -      | -      | -      | -      | -      |        | 10.0   | -26.4 | 7.0   | 30.4   | 5.4    |
|                  | Percentage change from previous year    |        |        |        |        |        |        |        |       |       |        |        |
| Total            | 18.9                                    | 5.0    | -0.5   | 13.6   | 20.1   | 24.4   | 17.5   | 8.0    | 1.4   | 3.5   | 13.0   | 8.3    |

Source: Ministry of Tourism

Table 4: Exports and imports, 2007–2015\*

|                        | 2007                                    | 2008    | 2009    | 2010    | 2011    | 2012    | 2013   | 2014   |        |        |        | 2015   |
|------------------------|---|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|
|                        |   |         |         |         |         |         |        | Q1     | Q2     | Q3     | Q4     | Q1     |
|                        | USD m                                   |         |         |         |         |         |        |        |        |        |        |        |
| Total exports          | 3050.3                                  | 3097.8  | 2901.6  | 3630.2  | 4929.5  | 6106.4  | 6982.4 | 1976.5 | 1859.8 | 2132.5 | 2137.1 | 2170.1 |
| Of which: Garments     | 2938.9                                  | 2986.2  | 2565.3  | 3223.4  | 4259.6  | 5015.4  | 5386.1 | 1464.0 | 1379.2 | 1624.7 | 1492.6 | 1548.8 |
| . To US                | 1956.5                                  | 1908.3  | 1512.6  | 1853.9  | 2055.3  | 2143.3  | 2075.2 | 531.1  | 452.5  | 511.2  | 468.8  | 491.08 |
| . To EU                | 654.3                                   | 689.0   | 644.7   | 809.5   | 1322.2  | 1716.9  | 1969.6 | 532.7  | 558.5  | 673.8  | 638.7  | 617.3  |
| . To ASEAN             | 3.2                                     | 10.8    | 6.9     | 9.9     | 17.6    | 39.4    | 60.2   | 21.9   | 19.3   | 20.5   | 21.7   | 24.8   |
| . To Japan             | 28.5                                    | 25.2    | 44.5    | 86.5    | 147.0   | 188.6   | 278.7  | 101.4  | 74.9   | 117.6  | 89.2   | 121.4  |
| . To rest of the world | 296.4                                   | 352.9   | 356.5   | 463.6   | 717.5   | 927.2   | 1002.9 | 277.0  | 273.9  | 301.6  | 274.2  | 294.2  |
| Agriculture            | 55.7                                    | 44.5    | 73.1    | 164.9   | 362.1   | 376.7   | 554.5  | 167.0  | 157.3  | 133.7  | 166.4  | 150.3  |
| . Rubber               | 41.0                                    | 35.8    | 51.6    | 89.1    | 197.6   | 176.6   | 175.2  | 31.7   | 40.0   | 34.8   | 47.5   | 41.7   |
| . Wood                 | 8.7                                     | 3.4     | 3.5     | 34.1    | 48.8    | 36.8    | 73.6   | 55.9   | 48.4   | 19.6   | 8.2    | 13.9   |
| . Fish                 | 3.2                                     | 2.3     | 3.9     | 2.8     | 3.1     | 2.0     | 1.2    | 0.3    | 0.2    | 0.1    | 0.2    | 0.2    |
| . Rice                 | 1.5                                     | 2.6     | 10.9    | 34.7    | 106.6   | 146.4   | 262.3  | 57.9   | 52.8   | 55.8   | 82.0   | 89.5   |
| Other agriculture      | 1.2                                     | 0.5     | 3.0     | 4.1     | 6.0     | 14.9    | 42.4   | 21.2   | 16.0   | 23.5   | 28.5   | 5.2    |
| Others                 | 55.8                                    | 67.1    | 263.2   | 242.0   | 307.9   | 714.4   | 1088.2 | 345.5  | 323.3  | 373.0  | 478.2  | 471.0  |
| Total imports          | 3770                                    | 4272    | 4331.5  | 5190.6  | 6375.9  | 8593.3  | 8639.4 | 2238.2 | 2454.4 | 2794.8 | 2807.9 | 2717.3 |
| Of which: Gasoline     | 73.7                                    | 84.9    | 91.13   | 108.6   | 294.4   | 308.0   | 306.4  | 77.4   | 83.2   | 80.2   | 93.9   | 34.5   |
| Diesel                 | 133.7                                   | 119.5   | 180.67  | 203.8   | 447     | 559.5   | 569.1  | 148.5  | 142.5  | 163.4  | 147.9  | 45.1   |
| Construction materials | 44.3                                    | 56.3    | 49.74   | 57.6    | 48.1    | 66.1    | 80.8   | 27.8   | 29.2   | 29.0   | 31.6   | 12.4   |
| Other                  | 3518.5                                  | 4011.8  | 4010    | 4820.6  | 5586.4  | 7659.1  | 7682.6 | 1984.5 | 2199.5 | 2522.2 | 2534   | 835.2  |
| Trade balance          | -719.9                                  | -1174.7 | -1429.9 | -1560.5 | -1446.4 | -1341.6 |        | -261.7 | -589.5 | -662.3 | -670.8 | -547.2 |
|                        | Percentage change from previous quarter |         |         |         |         |         |        |        |        |        |        |        |
| Total garment exports  | -                                       | -       | -       | -       | -       | -       |        | 9.8    | -5.8   | 17.8   | -8.1   | 3.8    |
| Total exports          | -                                       | -       | -       | -       | -       | -       |        | 8.9    | -5.9   | 14.7   | 0.2    | 1.5    |
| Total imports          | -                                       | -       | -       | -       | -       | -       |        | 5.1    | 9.4    | 14.1   | 0.5    | -3.2   |
|                        | Percentage change from previous year    |         |         |         |         |         |        |        |        |        |        |        |
| Total garment exports  | 8.9                                     | 1.6     | -14.1   | 25.7    | 32.1    | 17.7    |        | 19.5   | 9.6    | 3.6    | 11.9   | 5.8    |
| Total exports          | 8.5                                     | 1.6     | -6.3    | 25.1    | 35.8    | 23.9    |        | 25.3   | 14.8   | 8.3    | 17.7   | 9.8    |
| Total imports          | 23.7                                    | 13.3    | 1.4     | 19.8    | 22.8    | 16.8    |        | 2.1    | 10.8   | 35.7   | 31.8   | 21.4   |

\* Import data include tax-exempt imports. Sources: Department of Trade Preference Systems; MOC and Customs and Excise Department; MEF (web site)

Table 5: National budget operations on cash basis, 2007–2015 (billion riels)

|                              | 2007   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   |        |        |        | 2015   |
|------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                              |        |        |        |        |        |        |        | Q1     | Q2     | Q3     | Q4     | Q1     |
| Total revenue                | 1146.1 | 5290.0 | 4885.2 | 5989.0 | 6251.4 | 7691.9 | 8255.2 | 2220.5 | 2793.7 | 2580.6 | 2948.6 | 2633.5 |
| Current revenue              | 1141.6 | 5210.7 | 4855.9 | 5859.1 | 6179.3 | 7443.8 | 8233.2 | 2219.2 | 2765.2 | 2571.4 | 2803.6 | 2623.7 |
| Tax revenue                  | 965.2  | 4409.9 | 4268.0 | 4693.0 | 5277.5 | 6334.8 | 7198.1 | 1988.7 | 2383.1 | 2264.6 | 2358.8 | 2416.8 |
| Domestic tax                 | 661.8  | 3248.4 | 3088.6 | 3533.6 | 4071.6 | 5002.8 | 5728.1 | 1593.6 | 1943.2 | 1798.0 | 1891.6 | 2002.8 |
| Taxes on international trade | 303.5  | 1161.5 | 1064.7 | 1159.4 | 1205.9 | 1331.7 | 1470.0 | 449.0  | 439.9  | 466.5  | 467.2  | 414.0  |
| Non-tax revenue              | 176.4  | 800.8  | 702.1  | 1166.1 | 901.8  | 1118.2 | 1035.2 | 176.6  | 382.1  | 306.9  | 444.8  | 206.9  |
| Property income              | 13.6   | 78.0   | 64.6   | 291.1  | 63.8   | 143.0  | 84.0   | 11.1   | 40.8   | 21.2   | 15.4   | 3.0    |
| Sale of goods and services   | 124.3  | 424.7  | 408.0  | 460.1  | 588.7  | 667.4  | 750.3  | 160.3  | 197.5  | 212.9  | 300.5  | 189.2  |

|                                 |        |         |         |         |         |         |         |        |        |         |        |          |
|---------------------------------|--------|---------|---------|---------|---------|---------|---------|--------|--------|---------|--------|----------|
| Other non-tax revenue           | 38.5   | 298.2   | 228.2   | 408.9   | 249.3   | 298.8   | 200.8   | 5.2    | 143.7  | 72.7    | 128.9  | 14.7     |
| Capital revenue                 | 4.5    | 79.3    | 29.3    | 129.9   | 72.1    | 247.9   | 73.4    | 1.3    | 28.5   | 9.2     | 145.0  | 9.8      |
| Total expenditure               | 1689.7 | 6297.8  | 7383.5  | 8784.6  | 9032.4  | 9660.9  | 12535.7 | 2618.8 | 2867.2 | 3349.0  | 4471.4 | 1958.1   |
| Capital expenditure             | 807.4  | 2574.4  | 2694.9  | 2853.2  | 3546.9  | 3628.3  | 5567.5  | 1187.1 | 1395.9 | 1421.7  | 1586.0 | 529.4    |
| Current expenditure             | 882.3  | 3809.0  | 4440.0  | 4773.1  | 5341.2  | 6188.4  | 6968.3  | 1431.7 | 1471.4 | 1927.3  | 2885.4 | 1428.7   |
| Wages                           | 362.6  | 1397.0  | 2012.0  | 2048.8  | 2170.6  | 2486.6  | 2997.3  | 860.0  | 931.0  | 918.4   | 1046.1 | 935.1    |
| Subsidies and social assistance | 194.2  | 927.1   | 871.4   | 1099.4  | 1518.8  | 1586.8  | 1563.0  | 213.1  | 259.6  | 434.8   | 719.5  | 194.3    |
| Other current expenditure       | 325.5  | 1384.9  | 1556.6  | 1624.8  | 1651.8  | 2115.1  | 2408.0  | 358.6  | 280.8  | 574.1   | 1119.9 | 299.3    |
| Overall balance                 | -543.6 | -1007.8 | -2498.3 | -2795.7 | -1271.4 | -1969.0 | -4280.6 | -398.4 | -73.5  | -768.5  | -522.8 | 675.5    |
| Foreign financing               | 741.5  | 2055.1  | 1746.1  | 1845.2  | -2781.0 | 2457.8  | 4326.2  | 977.9  | 1123.9 | 1,012.5 | 857.9  | 232.2    |
| Domestic financing              | -185.8 | -127    | 474.9   | 938.6   | 2379.2  | -332.9  | 824.4   | -915.0 | -172.9 | -279.3  | -61.4  | -1,248.7 |

Source: MEF web site

Table 6: Consumer price index, exchange rates and gold prices (period averages), 2007–2015

|   | 2007   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   |        |        |        | 2015   |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|   |        |        |        |        |        |        |        | Q1     | Q2     | Q3     | Q4     | Q1     |
| Consumer price index (percentage change from previous year)   |        |        |        |        |        |        |        |        |        |        |        |        |
| Phnom Penh - All Items  | 5.8    | 19.7   | -0.7   | 4.1    | 5.4    | 2.3    | 3.9    | 4.6    | 4.8    | 4.0    | 2.1    | 1.0    |
| - Food & non-alcoholic bev.                                   | 9.9    | 33.1   | -0.3   | 4.4    | 6.5    | 2.5    | 4.9    | 5.7    | 5.3    | 5.1    | 3.4    | 4.2    |
| - Transportation  | 5.8    | 19.4   | -10.7  | 7.0    | 6.9    | 3.3    | -1.0   | -1.1   | 0.5    | -0.2   | -3.3   | -10.9  |
| Exchange rates, gold and oil prices (Phnom Penh market rates) |        |        |        |        |        |        |        |        |        |        |        |        |
| Riels per US dollar   | 4062.7 | 4058.2 | 4140.5 | 4187.1 | 4063.6 | 4039.2 | 4036.2 | 3993.8 | 4026.9 | 4059.5 | 4064.7 | 4042.2 |
| Riels per Thai baht   | 122.8  | 123.5  | 121.1  | 133.1  | 133.2  | 130.0  | 124.9  | 123.0  | 124.8  | 127.1  | 124.6  | 124.4  |
| Riels per 100 Vietnamese dong                                 | 25.0   | 24.8   | 23.4   | 21.7   | 19.7   | 19.4   | 19.1   | 19.1   | 19.2   | 19.2   | 19.1   | 19.0   |
| Gold (US dollars per chi)                                     | 83.2   | 105.9  | 113.1  | 147.5  | 184.5  | 200.9  | 152.3  | 156.6  | 155.9  | 155.5  | 141.1  | 150.9  |
| Diesel (riels/litre)  | 3262.3 | 4555.2 | 3170.9 | 3859.3 | 4761.2 | 4941.2 | 4852.1 | 4971.2 | 5006.7 | 5047.6 | 4382.8 | 3823.4 |
| Gasoline (riels/litre)  | 4005.0 | 4750.8 | 3593.1 | 4368.1 | 5044.5 | 5312.7 | 5083.3 | 5171.5 | 5200.0 | 5348.6 | 4613.0 | 3986.2 |

Sources: NIS, NBC and CDRI

Table 7: Monetary survey, 2007–15 (end of period)

|                                      | 2007     | 2008     | 2009     | 2010     | 2011     | 2012     | 2013     | 2014     |          |          |          | 2015     |
|--------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                      |          |          |          |          |          |          |          | Q1       | Q2       | Q3       | Q4       | Q1       |
| Billion riels                        |          |          |          |          |          |          |          |          |          |          |          |          |
| Net foreign assets                   | 10,735.0 | 10,345.0 | 14,655.0 | 16,697.9 | 17,893.9 | 18,154.5 | 21,260.1 | 23,344.4 | 26,235.8 | 26,817.8 | 26,699.7 | 26,823.0 |
| Net domestic assets                  | 576.0    | 15,13.3  | 1573.0   | 2778.9   | 5760.8   | 10,437.4 | 11,508.3 | 11,817.4 | 12,024.4 | 13,950.5 | 15,859.8 | 16,863.2 |
| Net claims on government             | -1816.0  | -2987.0  | -2252.0  | -2126.6  | -2123.1  | -2486.4  | -2794.9  | -3349.3  | -3747.3  | -4113.0  | -4359.1  | -5064.0  |
| Credit to private sector             | 6386.0   | 9894.0   | 10,532.0 | 13,331.2 | 17,552.8 | 23,536.6 | 27,608.8 | 28,584.5 | 30,621.3 | 33,226.4 | 36,244.6 | 37,759.4 |
| Total liquidity                      | 11,311.0 | 11,858.0 | 16,228.0 | 19,476.8 | 23,654.7 | 28,591.9 | 32,768.4 | 35,161.8 | 38,259.9 | 40,768.3 | 42,559.5 | 43,685.2 |
| Money                                | 2052.0   | 2399.0   | 3120.0   | 3220.9   | 3956.2   | 4045.7   | 4878.2   | 5376.2   | 5231.3   | 5583.1   | 6308.4   | 6628.0   |
| Quasi-money                          | 9259.0   | 9459.0   | 13,108.0 | 16,255.9 | 19,698.5 | 24,546.2 | 27,890.2 | 29,785.7 | 33,028.5 | 35,185.2 | 36,251.1 | 37,058.2 |
| Percentage change from previous year |          |          |          |          |          |          |          |          |          |          |          |          |
| Total liquidity                      | 62.9     | 4.8      | 36.9     | 20.0     | 17.8     | 20.9     | 14.6     | 15.4     | 20.8     | 38.9     | 29.9     | 24.2     |
| Money                                | 23.8     | 16.9     | 30.1     | 3.2      | 16.9     | 2.3      | 20.6     | 19.5     | 14.1     | 18.3     | 29.3     | 23.3     |
| Quasi-money                          | 75.2     | 2.2      | 38.6     | 24.0     | 17.9     | 44.6     | 13.6     | 14.6     | 22.0     | 42.8     | 30.0     | 24.4     |

Source: National Bank of Cambodia

Table 8: Real average daily earnings of vulnerable workers (base November 2000)

|                                | Daily earnings (riels) |        |        |        |        |        |        |        |        | Percentage change from previous year |      |      |  |
|--------------------------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------------------------------------|------|------|--|
|                                | 2011                   | 2012   | 2013   | 2014   |        |        |        | 2015   |        | 2014                                 | 2015 |      |  |
|                                |                        |        |        | Feb    | May    | Aug    | Nov    | Feb    | May    | Nov                                  | Feb  | May  |  |
| Cyclo drivers                  | 9532                   | 10,303 | 10,438 | 10,832 | 10,764 | 9867   | 11,634 | 12,950 | 12,467 | 7.8                                  | 19.6 | 26.4 |  |
| Porters                        | 10,785                 | 12,143 | 13,247 | 12,141 | 12,568 | 13,399 | 16,188 | 16,798 | 15,782 | 22.2                                 | 38.4 | 17.8 |  |
| Small vegetable sellers        | 8337                   | 10,771 | 11,366 | 12,294 | 13,581 | 15,372 | 17,735 | 15,007 | 18,171 | 43.1                                 | 22.1 | 22.1 |  |
| Scavengers                     | 8388                   | 8680   | 9819   | 9593   | 9214   | 8337   | 9548   | 10,627 | 14,169 | -1.4                                 | 10.8 | 10.8 |  |
| Waitresses*                    | 5986                   | 6111   | 6697   | 7449   | 6696   | 7565   | 9435   | 8,466  | 8,742  | 40.0                                 | 13.7 | 15.6 |  |
| Rice field workers             | 5695                   | 6151   | 6599   | 8932   | 5836   | 8795   | 6781   | 8,303  | 8,063  | 6.6                                  | -7.0 | -8.3 |  |
| Garment workers                | 8409                   | 8932   | 10,161 | 9548   | 11,412 | 11,388 | 12,092 | 14,644 | 14,803 | 16.3                                 | 53.4 | 29.7 |  |
| Motorcycle-taxi drivers        | 11,568                 | 12,930 | 13,450 | 13,227 | 13,401 | 12,656 | 14,259 | 14,549 | 14,692 | 8.6                                  | 10   | 16.1 |  |
| Unskilled construction workers | 10,307                 | 11,078 | 13,184 | 15,162 | 15,316 | 15,401 | 15,436 | 16,678 | 15,453 | 15.4                                 | 10   | 0.3  |  |
| Skilled construction workers   | 13,159                 | 13,743 | 15,442 | 15,163 | 15,765 | 20,420 | 18,302 | 17,050 | 19,918 | 10.4                                 | 12.4 | -2.5 |  |

\* Waitresses' earnings do not include meals and accommodation provided by shop owners. Surveys on the revenue of waitresses, rice-field workers, garment workers, motorcycle taxi drivers and construction workers began in February 2000. Source: CDRI



### *Continued from page 20* **CDRI UPDATE**

China Partnership: Opportunities and Challenges”. The event was held on 26 June to coincide with the visit of a high-level CPAPD delegation led by HE Han Qide, Vice-President of the Chinese People’s Political Consultative Conference and President of CPAPD. The keynote addresses were presented by HE Mr Han Qide and HE Dr Sok An, Deputy Prime Minister and Minister in Charge of the Council of Ministers.

The dialogue, which involved around 100 personally invited senior representatives from the policy research community, education sector, the private sector, youth associations and other non-government organisations, provided a unique environment to discuss the opportunities and challenges presented by Cambodia’s deepening partnership with China, both bilaterally and regionally, and how the two countries can work together for mutual benefit.

CDRI, as coordinator of the Development Research Forum (DRF) of Cambodia, organised on behalf of the DRF Research Interest Group on Cambodia and Its Region a policy roundtable on “Preparing Cambodia’s Higher Education for ASEAN Economic Community 2015 and Beyond”. About 40 representatives from academia, Ministry of Education, Youth and Sport, Ministry of Health, and education NGOs joined the roundtable on 5 June to discuss the challenges and opportunities of higher education in Cambodia within the context of ASEAN integration.

## **RESEARCH**

### **Agriculture**

The Unit has been working on nine projects, one of which is a joint study with the Health research team. Three projects receive financial support from the Swedish International Development Cooperation Agency (Sida). First, for the *Impact of Contract Farming on Smallholder Livelihoods*, the project report has been finalised for publication as a working paper. The first draft report for the *Study on Farm Mechanisation and Agricultural Labour Market Trends* is pending feedback from a peer reviewer. And for the third project, *Impact of Rice Export Promotion Policy and Food Security*, the report is in train.

The first draft report for the study on *Livestock Production and Value Chain Analysis*, a project

supported by the Australian Centre for International Agricultural Research (ACIAR) under Phase II of *Agricultural Policies for Rice-based Farming Systems in the Middle Mekong*, is being finalised. In June work started on a new project titled *Impact of Education Public Spending on Human Capital, Poverty and Inequality: A CGE Approach for Cambodia*. Another contract was finalised to undertake a project on *Rice Policy Analysis: Implications of Vietnam’s Rice Export Policy for Cambodia*, with financial support from the United States Agency for International Development (USAID) through the Lower Mekong Public Policy Initiative (LMPPI); research is due to start in August 2015. The contract for a four-year (2015-18) project, *Testing Innovative Models of Extension in Cambodia’s PADEE Programme*, funded by the International Food Policy Research Institute (IFPRI), is being prepared; research activities will begin in late August/early September.

### **Economics**

Under the three-year Greater Mekong Research Network (GMS-Net) programme on *Improving Job Prospects for the Young: Labour Markets, Skill Development and Private Sector in the Greater Mekong Subregion*, supported through a grant from the International Development Research Centre (IDRC) of Canada, CDRI launched its first-ever competitive call for regional subprojects to be submitted by 15 August 2015. Up to 12 projects in two streams of research (policy and action) will be selected for funding.

A consultation meeting held on 11 June in Phnom Penh brought together key stakeholders to discuss the preliminary research findings of a study on *Interrelation between Partner Countries’ Public Policies, Migration and Development: Case Studies and Policy Recommendations*, funded by the Organisation for Economic Cooperation and Development (OECD). The lively dialogue that ensued embraced rich points of view and different interpretations. Report writing is now underway.

For the Sida-supported five-year research project on *Inclusive Growth*, the remaining two components—Labour Market Policy and Credit Market—are making good progress. The project to explore *Community Responses to Violence against Women* is now completed, and work has begun on two new studies. The first, titled *Revisiting the*

*Unfinished Agenda: Determinants of Credit Access and its Impact on Farm Production and the Use of Fertiliser in Rural Cambodia*, is being undertaken with support from the Partnership for Economic Policy (PEP). The second, *Research on Impact of Migration and Remittances to Female-headed Households*, receives backing from GVC (Civil Volunteers Group) and will contribute to its new MIGRA SAFE project.

The Unit is so proud and pleased to welcome back two researchers after successful completion of their graduate studies. Ms Sry Bopharath finished her Master of Arts in Economics at the School of Humanities and Social Sciences, University of Tsukuba, Japan; Ms Ouch Chandarany completed her research doctorate at the Department of Economics, Monash University, Australia.

### Education

The Unit Head and senior managers have held meetings with several development partners including Sida and the Swiss Agency for Development and Cooperation (SDC) to discuss a concept note on “Research, Policy Dialogue and Capacity Building Programme for Cambodia’s Education Reform 2014-18”. As a result, an agreement for a six-month inception project funded by SDC was signed in April to develop a main working document for a long-term technical and vocational education and training (TVET) policy research and dialogue programme. Also, Sida has committed to supporting CDRI’s proposal for a resource partnership on “Higher Education Policy Research and Capacity Development in 2015-16”.

A Higher Learning Hub (HLH) was established in early 2015 to serve as a focal point for academic leaders in higher education to enrich dialogue and debate, promote research and training and provide innovative concepts and best practices to enable universities to fulfil their academic and social roles. The first two events were held in May. These involved a training programme for science faculty members on blended learning and a retreat with academic leaders on “University for What?”

In April, work began on a project commissioned by the SDC Skills Development Programme to conduct a baseline survey for a training needs assessment in Kratie, Stung Treng and Preah Vihear provinces. Data collection was completed in June and the report is expected to be completed by mid-August.

### Environment

Two articles for the project *China Goes Global*, co-authored by our researchers, were accepted for publication in international journals; a third article is being revised and updated. To disseminate the study findings, the Unit will organise a regional workshop in Phnom Penh on 22 September and a commune workshop in Kampot in early October.

Implementation of hydrological assessment, water governance, capacity building and knowledge sharing continues under the IDRC-funded project on *Climate Change and Water Governance in Cambodia*. The research team held three commune workshops and delivered four training courses on community-based adaptation planning. Six draft reports were finalised having been revised based on peer review comments. The study reports will be published as working papers later this year.

The Unit was awarded a project grant from the Lower Mekong Public Policy Initiative/USAID to carry out research on *Sustainability of Hydropower Development on the Cambodian Mekong River and Tributaries*. The team is developing research methodology and tools including a survey questionnaire and focus group guides. Another proposal for an end-project evaluation of *Promoting Climate Change Resilient Livelihoods for Small-scale Farmers in Most Vulnerable Dry Land Areas in Siem Reap and Kampong Cham Provinces* was approved by Plan International and the contract signed.

Research proposals for several projects were submitted to various partners. A new proposal titled “Pilot Study of Water Governance under Climate Change in Cambodia” is being developed, and a concept note to undertake “Research on Food System Policies and Market Innovations for Noncommunicable Disease Prevention” was submitted to IDRC for shortlisting.

### Governance

The studies on social accountability in Cambodia and rights-based determinants have now been published as working papers. Two research projects are ongoing. The study on *Public Service Delivery in Cambodia* has been refocused to look into *Capacity for Deconcentration Reform in Cambodia*. This timely study looks at how the related concepts of “lack of capacity” and “capacity building” are being used by government officials in the context of deconcentration reform, and the political dimensions

of what government officials really mean when they use these concepts in discussing challenges and opportunities for reform. Despite strong political will at the highest level to move deconcentration reform forward, progress has been extremely slow, while ministries are using “lack of capacity” at subnational levels as a justification. The second study titled *Space for Dialogues on Mekong Water Governance* is a component of the Water, Land and Ecosystems research programme. This project aims to enhance the abilities of local people especially women to contribute their opinions about decisions on dam development that affect their land, lives and livelihoods. The project is making good progress with a first draft working paper to be shared at the Water Forum in October 2015.

The team welcomes Ms Ly Tem back from completing her master’s degree study in New Zealand. Ms Ly will continue working on research studies related to promoting women’s participation in decision-making processes at local level.

**Health**

The Health Unit has continued its work on social development focusing on Cambodia’s public health care system, nutrition, sanitation, gender and child labour. The study team for the DFID-funded Research for Building Pro-poor Health Systems

during Recovery from Conflict (ReBUILD) has produced two main publications: *Catastrophic Payments and Poverty in Cambodia: Evidence from Cambodia Socio-Economic Survey 2004, 2007, 2009, 2010 and 2011* and *Contracting for Public Health Service Delivery: Insights from Health Workers*. Another health care project on *Obstetric Referral in the Cambodian Health System*, a joint project with the Nuffield Centre for International Health and Development and the University of Leeds, is progressing well; data coding has been completed and data analysis and report writing are underway.

The Unit’s three latest projects, covering between them nutrition, sanitation and gender issues, are at the data collection stage. These studies involve *Opinion Leader Research (OLR) on Infant and Young Child Feeding (IYCF)*; a *Verification of Sanitation Outcomes to Assess the Impact of Improved Rural Sanitation*; and, from a gender perspective, *Career Pathways for Health Workers in Cambodia*. For our research on child labour as part of the *Eliminating eXploitative Child Labour through Education and Livelihoods (EXCEL)* project, funded by the US Department of Labor (USDOL), data coding has been completed and the final synthesis report is being written up. This project is expected to be completed in September.

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## CDRI UPDATE

## MAJOR EVENTS

Dr Chem Phalla, Head of Environment Unit, has been appointed Acting Director of Research. He has extensive experience in practicing and managing policy research projects.

In April CDRI's Executive Director joined the Chinese Peoples' Association for Peace and Disarmament (CPAPD)/ASEAN NGO exchange programme on the theme "Asian Security for the Future". He led a group of 20 NGO and think tank delegates from Cambodia, Indonesia, Malaysia, Myanmar and Thailand on a 10-day study tour of China, taking in Beijing, Ningxia and Xiamen. During this trip, the Executive Director was able to interact with senior officials from CPAPD and share CDRI's deep interest in establishing cooperation with Chinese think tanks and academic and policy communities with a view to exchanging research ideas and human resources to study the policy implications of China's new "One Belt, One Road" diplomatic strategy. He invited CDRI's Chinese counterparts to visit Cambodia. There were also many opportunities to network with colleagues from ASEAN countries.

A Strategic Management Retreat was held in Kampot on 11-12 May. The goal was to develop CDRI's Strategic Plan 2016-2020 that will provide the guiding framework for the research programme and operational support during the next five years. It builds on the achievements of the previous five-year plan and incorporates the findings and

recommendations of the 2014 Mid-Term Review conducted by the Swedish International Development Cooperation Agency (Sida). It is also aligned with CDRI's 2020 Cambodia Research Strategy. The Strategic Plan presents an overview of how CDRI intends to work on its policy research priorities and capacity development agenda, together with indicators to assess the impacts of its projects and research strategy. The Strategic Plan also addresses priority organisational issues pertaining to CDRI's resilience and sustainability.

The Executive Director was invited by the Ministry of Foreign Affairs and International Cooperation to join a brainstorming session about China's regional initiative on the Lancang-Mekong Development project. Representatives from various ministries and selected private sectors participated in the session on 4 May. CDRI was perceived as an important institution that can contribute to Cambodia's regional development policy.

On 27 May, the Executive Director accompanied by Mr Larry Strange, Senior Advisor to CDRI, paid a courtesy call on HE Sok Chenda Sophea, Minister attached to the Prime Minister, Secretary General, Council for the Development of Cambodia (CDC). The aim of the visit was to explore the potential roles of CDRI in assisting CDC in the implementation of the Industrial Development Plan.

CDRI co-hosted with the CPAPD and Embassy of China in Cambodia a dialogue on "The Cambodia-

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## CDRI's Contact Details

56, Street 315, PO Box 622, Phnom Penh, Cambodia  
☎ (855 23) 881701/881384; ☎ (855 23) 880734  
e-mail: [cdri@cdri.org.kh](mailto:cdri@cdri.org.kh) / [pubs@cdri.org.kh](mailto:pubs@cdri.org.kh)  
website: [www.cdri.org.kh](http://www.cdri.org.kh)



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