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ANZ Royal

Cambodia Outlook Brief*

2013, № 03

Connecting Cambodia: Energy and Transport Infrastructure Upgrading[1]

"Cambodia must upgrade and diversify its infrastructure if it is to reduce export costs. The development of waterways is key to meeting our future transport needs."

Mr David Van, Deputy Secretary General
Alliance of Rice Producers & Exporters of Cambodia (ARPEC)

Low-capacity Infrastructure, High Export Costs

Energy and transport costs in Cambodia are some of the highest in the region. This adds significant and unnecessary costs to the country's exports, undermining their competitiveness in regional and global markets.

Poor quality and absent infrastructure are at the root of high costs. Despite improvements in recent years, particularly the upgrading of the national road network, in general infrastructure is still very under-developed in comparison to most other countries in the region.

The current state of infrastructure diminishes the gains the government has made in improving the institutional and policy environment for trade and investment, and reduces the effects of comparative advantages such as low-cost labour.

If, as predicted, exports rapidly expand and diversify, low-capacity infrastructure will come under ever-increasing strain and become an even greater constraint. For the government's export-led growth strategy to be sustainable, the issue of energy and transport infrastructure must be addressed as a matter of urgency.

Securing Low-cost, Reliable Power Sources

Cambodia is fortunate to have abundant energy resources that can be used to produce electricity. There are ample fossil fuel deposits: an estimated 7 million tonnes of coal was recently discovered in Stung Treng province, and significant oil and natural gas reserves are thought to exist off the southern coast.

There is also significant scope for renewable energy production: the tropical climate delivers 6-9 hours of sunlight per day making solar energy viable, and most significantly, there is potential for hydropower generation from a large network of rivers.

Despite a natural endowment that could, if effectively exploited, produce a power surplus for export, present energy production stops far short of meeting domestic needs. High-cost electricity imported from Thailand and Vietnam serves about 41 percent of the country's energy demands, resulting in consumers facing some of the most expensive electricity bills in the region. Hydropower dams currently generate almost all the domestically produced electricity, but this reliance on a single source creates problems for supply. Low water levels in the dry season cannot produce sufficient power to feed the grid and outages are common.

Plans to scale up the hydropower programme have run into problems – environmental concerns have led to the suspension of 10 planned hydropower dam projects. The differing agendas of coordinating ministries, particularly the infrastructure-focused Ministry of Industry, Mines, and Energy (MIME) and the natural

[1] *This is a summary of the 2012 Cambodia Outlook Conference presentations by Mr Eric Sidgwick, Country Director, Cambodia Resident Mission, Asian Development Bank; Mr David Van, Deputy Secretary General, Alliance of Rice Producers & Exporters of Cambodia (ARPEC); and Mr Kamemoto Shinichi, President, Sumi (Cambodia) Wiring Systems Co. Ltd.*

habitat-focused Ministry of Environment (MoE), have hindered dam expansion.

The country lacks sufficient infrastructure to transmit the power it produces to the population and their businesses, particularly those in rural areas. In 2010, the power grid supplied just 7 percent of rural households and around 11 percent of total villages' energy needs. In areas connected to the grid, there are wide variations in cost.

A 2012 survey of rice mills found that Pursat, which is relatively far from the border and hydropower dams, had the most expensive electricity at USD0.40 per KWh. On the other hand, Svay Rieng near the Vietnamese border had the cheapest at around USD0.16 per KWh (Table 1).

Table 1: Electricity Costs for Rice Mills, 2012

Province	Price per KWh	
	USD	KHR
Banteay Meanchey	0.25	1000
Siemreap	0.21	820
Battambang	0.25	1000
Pursat	0.40	1600
Svay Rieng	0.16	650
Kandal	0.28	1100
Kg Cham	0.33	1300
Prey Veng	0.26	1050
Takeo	0.24	950

Source: Mr David Van, Cambodia Outlook Conference

Because of disparities in electricity services and problems of supply reliability, many businesses use their own power sources. A survey of 97 rice millers in Banteay Meanchey, Siem Reap, Kompong Cham, Kompong Thom, Prey Veng, Kandal and Kompong Speu provinces found that the majority (83) use their own diesel generators.

Millers' common use of diesel generators, which at around USD0.23 per KWh are costly to run, highlights the fact that lack of affordable, accessible and reliable electricity adds significantly to the cost of producing milled rice. This must be rectified if the ambition to become the world's third largest exporter of milled rice by 2015 is to be realised.

The government and its development partners are actively trying to make up for the shortfall in electric energy infrastructure investment. The government's rural electrification development programme, which hopes to connect all villages to the national grid by 2020 and 70 percent of all households by 2030, should help improve electricity provision and lower prices. Under this umbrella programme, a variety of development partner-supported projects extends power-line coverage (Figure 1).

An issue in need of urgent attention is the stagnation of hydropower development. Inter-agency mechanisms to improve coordination between MIME and MoE need to be put in place so that the national hydropower programme can be expanded.

Alternative energy sources should also be considered. For example, the feasibility of coal-fired power plants needs exploring given the new discovery of large coal reserves. Bearing in mind the country's reliance on high-cost imported electricity, companies should consider using electricity resources more efficiently. Government must prioritise the development of hard and soft infrastructure to facilitate efficient cross-border electricity trading.

Upgrading and Diversifying Transport Infrastructure

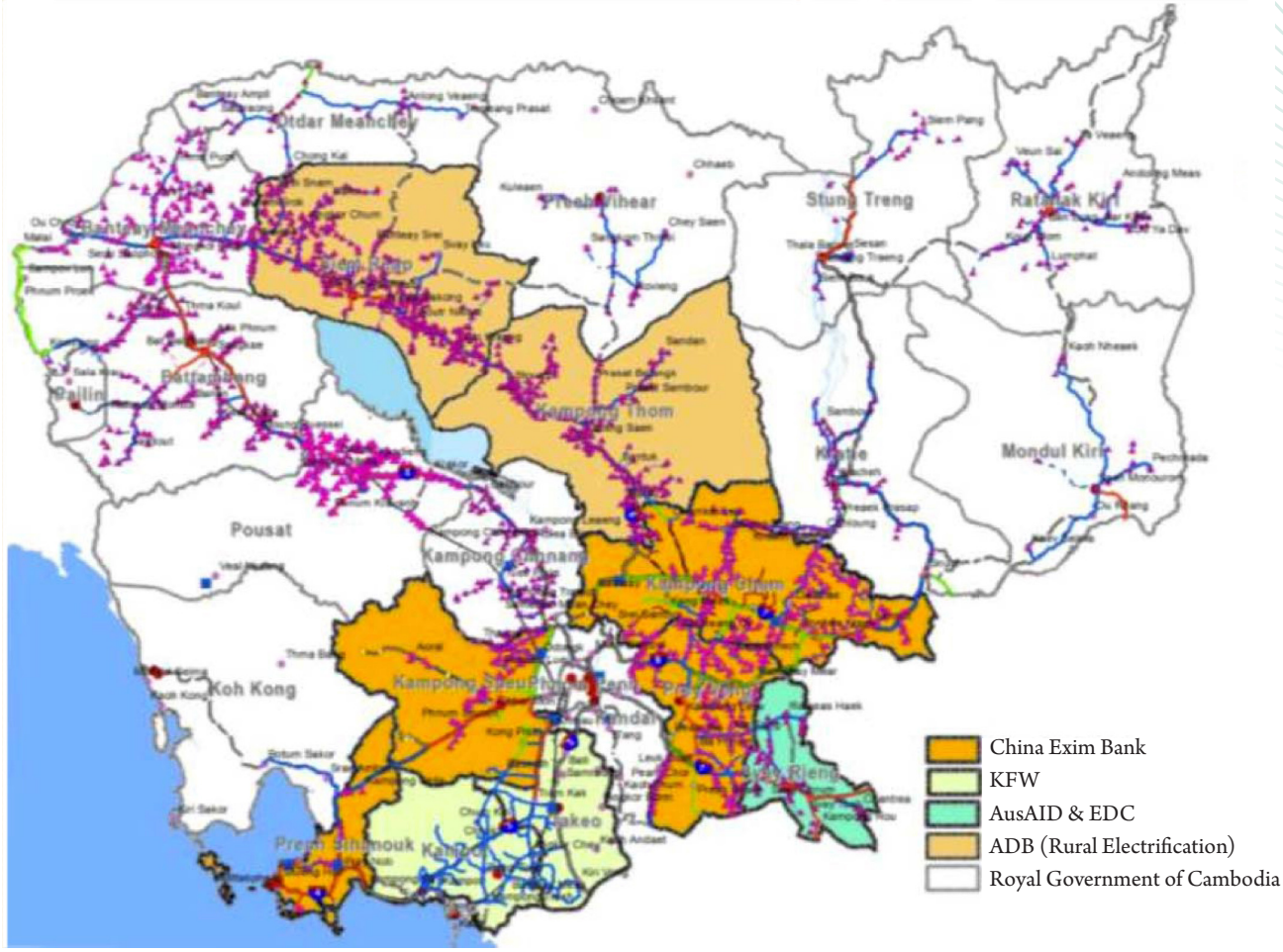
Low-capacity hard infrastructure means that transport costs in Cambodia are among the highest in the region. Road haulage is the primary mode of transport and costs on average around USD15-17 per tonne, significantly higher than in neighbouring Thailand and Vietnam.

Official and unofficial fees associated with export procedures (e.g. customs paperwork, sanitation controls) add still more to export costs. In the case of rice exports, the total processing cost is estimated to be about twice the official fees, adding around USD10 per tonne. Logistics services must be simplified, better coordinated and regulated; single-window service delivery would go some way to reducing soft export costs.

Transport infrastructure capacity is one of the key constraints to reaching the government export target of 1 million tonnes of milled rice per year by 2015. To export this quantity will require a fivefold increase in road haulage capability. In addition, ports would have to process 50,000 containers a year or 150 containers a day, which far exceeds the current transport and handling capacity of existing ports. Without substantial improvement, the cost of transport will increase significantly, undermining the competitiveness of rice exports.

The government's present strategy to upgrade transport infrastructure prioritises roads, railways and bridges. However, river transport offers a potential mode of transport that is cheap and efficient. In Vietnam, for example, river transport costs just USD3 per tonne, significantly cheaper than Cambodia's road haulage costs. Although there is great potential for river transport, it has received little investment or attention from policy makers.

Figure 1: Powerline Projects in Cambodia



Source: Mr David Van, Cambodia Outlook Conference

For river transport to be effective, various constraints have to be removed. First is to eradicate the competition-stifling monopoly of the river-shipping industry that results in some of the highest shipping costs in the region (around USD14 per tonne). Institutional frameworks must be transparent to encourage the much-needed competition among shipping companies that will drive up standards, lower freight costs and reduce rent seeking.

Second, waterway tariffs are in need of reform. The heavy duties imposed on incoming vessels, and high port charges for docking ships must be reduced.

Third, navigable waterways and the connections between them must be kept clear and associated hard infrastructure improved, with a focus on establishing more hubs to collect and load commodities at suitable waterway points, and undertaking river surveys to establish proper dredging depths.

Public-Private Partnerships for Infrastructure and Energy

The government and its development partners view public-private partnerships (PPP), which bring together governmental and private sector resources, as central to Cambodia's future infrastructure development.

State investment in infrastructure is limited because low tax receipts and declining overseas development assistance (ODA) inflows reduce fiscal space. Although the business climate has improved in recent years, private companies tend to lack the capability to take on large-scale infrastructure development, especially in the energy sector. In response, PPPs can link the complementary aspects of public and private entities to upgrade infrastructure.

Taking the Asian Development Bank's (ADB) definition, a PPP constitutes "a contractual arrangement between public (including national or provincial or local level) and private entities through which the skills, assets and/or financial resources of the public and private sectors are allocated in a complementary manner, thereby sharing the risks and rewards, to seek to provide optimal service delivery and good value to citizens".

At the core of the PPP model is an optimal division of risk between public and private entities for a given project: the public entity manages aspects of the project for which it has experience and resources, while the

private entity undertakes tasks for which its institutional facets are better suited.

PPPs, therefore, are important in providing a greater pool of resources for mobilising finance and stimulating innovation in infrastructure development. Engaging the private sector also improves efficient use of resources and drives down the cost of public sector procurements. In the longer-term, PPPs can improve public sector project preparation and management by instilling principles of efficiency and cost-effectiveness in the public sector.

Transparent bidding for projects will encourage competition and increase efficiency in the private sector, improving output and reducing costs. Project outcomes for electricity and transport infrastructure will be large improvements in service quality, availability, cost and reliability of supply – crucial factors in driving down the costs and increasing the competitiveness of exports.

PPPs have already played a crucial role in upgrading Cambodia's energy and transport infrastructure. The Power Transmission Line Project covers the construction of 221 km of 115 kV transmission line from Poipet to Siem Reap and Battambang, and includes three substations and one switching station. This transmission line transmits electricity from Thailand to Siem Reap, Banteay Meanchey and Battambang provinces.

In transport, the USD141.6 million railway rehabilitation project was facilitated through a concession agreement signed with a private railway operator, Toll Royal Railway, in June 2009. The government retains ownership of the existing and rehabilitated assets, while the concessionaire pays concession fees to the government.

As Cambodia integrates into the Greater Sub-Mekong Region, there are increasing opportunities to use PPPs to improve cross-border transport links and electricity transmission. The ADB, under the Corridor Towns Development Project, is financing three pre-feasibility studies – upgrading the Bavet Dry Port logistics facility (USD11.6 million), the Neak Loeung Trade and Transport Complex (USD7.6 million), and the Poipet Dry Port Logistics Facility (USD13.9 million).

For future PPPs to be effective, they must be underpinned by solid institutional frameworks that set out best-practice procedures. These include clear output specifications, service payments, whole-life project costing, optimal risk allocation, competitive bidding, leveraging public resources, and effective contact management.

One aspect that has received much attention recently is the potential social and environmental impacts of PPP infrastructure projects, for example the resettlement of communities affected by infrastructure upgrading. It is crucial that potentially damaging impacts are built into project design and mitigated, with responsibilities clearly delegated among partners.

Currently, development partners and government are focusing on building line ministries' capacity to implement PPPs. The ADB has been actively reviewing existing policies and strategies, laws, regulations and institutions, identifying how to mainstream and make them more effective in the future. It has also looked at extending PPPs to other sectors, such as education and health, to drive up service quality.

Better coordination between ministries can be achieved by the development of cross-ministerial mechanisms, such as the PPP and Risk Management Unit. These frameworks can increase communication across line ministries enabling better implementation of projects that are economically, socially and environmentally sustainable.

Going forward, the government should encourage and strengthen the development of dynamic frameworks that further build and enhance PPPs. Examples of these include PPP funds for scaling up successful projects, such as the Infrastructure Financing Facility, and mechanisms that identify and build on potential "pathfinder" projects.