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Modernising Cambodia's Hardware: Transport and Electricity Infrastructure Development

“The progress we have made in the construction and rehabilitation of roads, railways, ports, and irrigation systems must continue, with cost-effective and environmentally responsible energy generation now also a priority.”

*Samdech Akka Moha Sena Padei Techo HUN SEN
Prime Minister, Kingdom of Cambodia*

Developing Hardware Capacity for Future Development¹

Decades of war and under-development have caused Cambodia's physical infrastructure to lag behind other countries in the region. Until recently, Cambodia's future hardware capability looked bleak, with a limited number of poor quality roads, poor and intermittent electricity coverage, and an ailing railway network.

Recently, however, the government has been actively investing in upgrading infrastructure, largely through Greater Mekong Sub-region (GMS) sponsored initiatives. There has been significant investment in transport and electricity infrastructure in developing the Southern Economic Corridor (SEC). By the end of 2008, the SEC comprised a total of nine projects supported by USD418 million of ADB funding.

Such rapid development has put Cambodia on the track to diversified, high and sustainable growth. However, significant challenges remain. With regards to transport infrastructure, logistical constraints

impede infrastructure development from realising its full potential. Particular constraints are customs infrastructure, which is out of date and inefficient, and vehicles that transport goods that are badly in need of modernisation.

In tandem, Cambodia needs to focus policy on improving coverage and securing its long term energy supply. This will require significant investment in physical infrastructure, such as power lines and hydropower capability, as well as accompanying regulation to optimise outcomes.

Modernising Transport Infrastructure

As part of GMS SEC development, Cambodia has benefited from upgrades in infrastructure that have increased connectivity to major regional manufacturing and transport hubs.

Figure 1 illustrates the SEC's three sub-corridors that link Cambodia to Thailand, Vietnam and Laos: the Central Sub-corridor: Bangkok–Phnom Penh–Ho Chi Minh City–Vung Tau (Vietnam); the Southern Coastal Sub-corridor: Bangkok–Trat (Thailand)–Koh Kong–Kampot Cambodia–Ha Tien–Ca Mau–Nam Can (Vietnam); and the Northern Sub-corridor: Bangkok (Thailand)–Siem Reap–Stung Treng–Rattanakiri–O Yadav (Cambodia)–Play Ku–Quy Nhon (Vietnam). An important inter-corridor link is the Southern Laos–Sihanoukville Sub-corridor: Dong Kralor–Stung Treng–Kratie–Phnom Penh–Sihanoukville (Cambodia).

¹ This is a summary of the 2011 Cambodia Outlook Conference presentations by Mr Paul Apthorp, Strategic Development Director, TNT Express Worldwide; Mr Victor Jona, Deputy Director General, General Department of Energy, Ministry of Industry, Mines and Energy, Royal Government of Cambodia; Mr Putu Kamayana, Country Director, Cambodia Resident Mission, Asian Development Bank (ADB).

Figure 1: Road Construction in the Southern Economic Corridor



Source: Mr Kamayana's presentation to the Cambodia Outlook Conference, 16 March 2011

Cambodia is currently rehabilitating its ailing railway network, with support from the ADB and private sector investment. This US\$148 million project will connect the country to Thailand and Vietnam, forming a key section of the Singapore – Kunming rail link.

Physical infrastructure has been backed up by region-wide regulatory reforms to better facilitate increased cross border economic cooperation. The Cross Border Transport Agreement (CBTA), which has been pushed by the ADB and ratified by most countries in the GMS, aims to streamline the bureaucracy of cross border transport.

Improvements in infrastructure in the GMS have greatly benefited cross-border trade. Road conditions and transit times across the economic corridors are improving. However, because of internal constraints, Cambodia has yet to capitalise on these opportunities to the extent that its GMS neighbours have. For example, freight from HCMC to Bangkok goes through Lao PDR

and not through Cambodia. Transiting through Lao PDR allows companies to know to the hour when their shipment will arrive. There is no such certainty in Cambodia.

Streamlining customs infrastructure

A key constraint to Cross Border Transport in Cambodia is outdated customs infrastructure and procedures incurring increased costs for operators. Every time an operator offloads freight to be cleared or stored it costs money and increases the risk of damage, loss or pilferage. Handling facilities have to be paid for, in terms of both labour and machinery, and these costs can be high. Unloading cranes, for instance, can cost over a quarter of a million dollars each.

The time delays caused by such excessive procedures are also inefficient and costly. When transporting goods to market, time is even more expensive than distance. Transport companies' assets are their vehicles (trucks, planes, ships), if they are standing still they are not being productively utilized.

The costs of such inefficient cross border frameworks are all passed to the consumer. Freight rates are driven by market forces not distance; if there are lengthy, cumbersome customs procedures, it is likely that transport costs will be more even if distance to market is less.

These factors negate Cambodia's other comparative advantages, such as low cost labour, and have negative impacts on Cambodia's competitiveness and investment attractiveness.

Customs requirements at present are a particular hindrance to the development of small and medium scale enterprises (SMEs), which constitute a key future growth driver in Cambodia. For SMEs to thrive, cross-border trade needs to be efficient and predictable. Companies need to know when exactly a product will arrive, for the time it takes to reach its destination to be as short as possible, and for the cost to be low. Streamlined customs procedures, with clear and understandable rules and regulations, are key in this regard.

Infrastructure modernisation could alleviate pressures on customs facilities at the borders and streamline the process of cross-border transport. Inland Clearing Depots (ICDs) constructed near population centres or free-trade zones could clear freight before it gets to the border. Similarly, there should be an effort to expand bonded warehouse facilities where un-cleared goods can be off-loaded and stored without paying the expense of storage in customs' warehouses. In addition, border facilities should facilitate 24 hour transit for bonded or ICD transit vehicles, and "Express" clearance for documents and parcels, and should have longer opening hours for customs in general.

Modernising the Cross-border Transport Sector

In addition to customs, the quality of the cross-border transport sector (CBTS) in Cambodia is generally poor. Vehicle standards in particular are very low and suffer from a lack of investment. Most of the trucks now in use in Cambodia were built in the 1960s and are unreliable, inefficient, unsuitable for carrying high value cargo and well below base international safety standards. The result of this outdated transportation is high costs per kilo, unpredictable transit times and uncertainties over the safety of the freight.

Key to modernising the CBTS is a competitive environment where service providers have the incentive to drive up standards. Therefore, it is important that the government puts in place regulatory frameworks that promote competition. Regulation could also be effective in stimulating more investment from quality operators by encouraging minimum standards of vehicle safety.

Higher vehicle standards have numerous benefits in terms of trade facilitation. They will make transporting goods more reliable, safer, faster and cheaper. This in turn will motivate more industries to use this sector, leading to increased investment and facilitating a wider array of quality and dynamic services. This would be of particular benefit to the various requirements of SMEs.

In the medium-term, improvements and the regulation of Cambodia's CBTS will have many benefits. First, standardisation will go some way in contributing to full cross-border cooperation within the GMS. Second, higher capacity, modern vehicles will cause less environmental damage (less emissions contributing to the "carbon neutral" ambition for economic corridors). Third, modern vehicles cause less wear and tear to roads and bridges, reducing future maintenance costs.

Sea transport infrastructure is also in need of modernisation, at present adding costs to exported and imported products. Shipping from Cambodia is comparatively slow compared to other hubs in the region. The principal problem is that there are no direct shipping links to markets, and a trans-shipment to Bangkok,

Hong Kong or Singapore is always required. This adds significant delays to transport times. There needs to be purpose shipping that is designed for long distance travel and capable of carrying a high volume of freight.

A particular problem is the small capacity of planes from Phnom Penh to Bangkok. It is very expensive to fly out of Phnom Penh because of the low freight capacity of airlines that serve Phnom Penh; freighters only serve major hubs. Many companies are forced to ship from Cambodia to Singapore then airfreight because they cannot get enough air lift capacity from Phnom Penh. This adds huge costs to getting SMEs quick access to the global supply chain.

Securing Cambodia's Future Power Supply

Power supply has been a key constraint to Cambodia's sustainable development. High costs, poor coverage and reliability issues have all inhibited investment in the country. As Cambodia undergoes rapid growth and a drive to diversify investment into emerging sectors, power supply will have to meet new challenges.

Manufacturing output has increased and consumption patterns have changed with Cambodia's economic growth. This has driven significant increases in the demand for electricity. The annual electricity demand growth rate in the country is currently a staggering 19 percent, and is even greater in Phnom Penh, at a growth rate as high as 25 percent. Between 2009 and 2010, the annual electricity demand per capita increased from 138.4 kWh to 159.2 kWh. While this is still low by international standards, maintaining this growth trajectory will require a significant increase in electricity provision in the future.

The government has made some major advances in energy infrastructure in recent years. In the last year alone there has been significant upgrading: the peak capacity supply increased from 472MW in 2009 to 538MW in 2010; the peak capacity supply in Phnom Penh is now 300 MW.

In securing Cambodia's future power needs, the government has identified three crucial challenges where policy will be focused. First, there is need to pursue policy, regulatory and institutional frameworks – as well as upgrading physical infrastructure – that secure cheap and reliable imported power in the short-term. Second, there needs to be active investment in hydropower to release the vast potential reserves of electricity locked in Cambodia's waterways. Given Cambodia's natural resource advantage in this regard, it is hoped that the country will be a net exporter of power in the medium to long-term. Third, electricity supplies need to be extended outside of urban population hubs into rural Cambodia, improving standards of living and driving agricultural productivity.

The country presently relies heavily on importing power from its neighbours. Imported power constituted 42 percent of total power in 2010. This equated to a total capacity of about 225MW in 2010 – a 48 percent rise from 2009. Cambodia imports electricity from Vietnam (67 percent), Thailand (32 percent) and Laos (1 percent).

With the support of the ADB, power transmission supply lines have been upgraded to more efficiently import power from Cambodia's GMS neighbours. In the east of the country, these have facilitated increased imports from Vietnam. Private sector resources have been mobilised in support of a project to import power from Thailand to the western provinces of Battambang and Siem Reap.

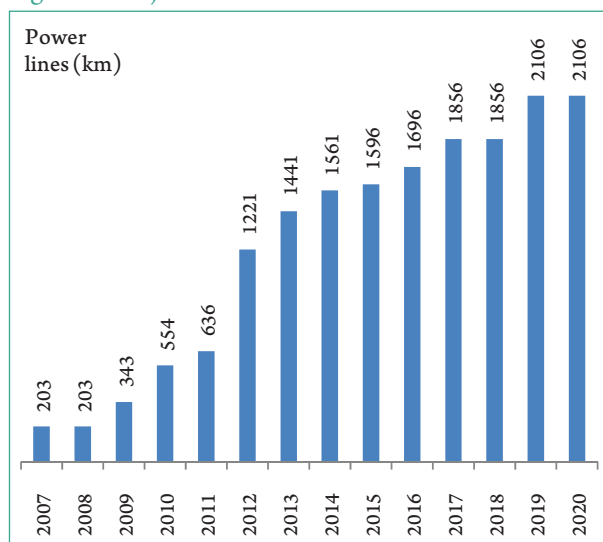
Cambodia has consolidated physical infrastructure developments with appropriate regulatory and institutional reforms. The government has been active in constructing the institutional framework for the sustainable and efficient functioning of the energy trade in the GMS. These reforms have streamlined the process of trading power, reducing costs and optimising efficiency in regional power supply.

Cambodia's medium to long-term strategy is developing hydropower – an area where it has significant natural endowments. Its hydropower potential is estimated at about 10,000 MW. Only 3 percent of the country's electricity, however, comes from indigenously sourced hydropower. A massive increase in capacity is planned for the future.

The Lower Sesan II and Lower Srepok II projects, planned for completion in 2016, expect to have a capacity of 400 MW – which is significantly more than what is needed to power Phnom Penh. There are in total 13 hydropower projects currently in the planning stage. It is projected by 2020 that 50 percent of Cambodia's energy needs will be met through hydropower, and that it may well export electricity generated through these projects.

The other area where policy makers are focusing their efforts is in increasing access to electricity. This will require significant investments in power lines and electricity pylons as such infrastructure simply does not exist in much of the country. In 2010, only 29 percent of households in the country had access to the national grid; there exist huge disparities in urban rates of electrification, which stand at nearly 100 percent, and electrification in rural areas, which stands at only 12.3 percent.

Figure 2: Projected Power Line Extension



Source: Mr Jona's presentation to the Cambodia Outlook Conference, 16 March 2011

The government has set some ambitious targets to address the issue of rural electrification. By 2030, it is hoped that 70 percent of rural households will have access to reliable electricity, with 100 percent of villages acquiring electricity services by 2020. To achieve this, the government needs to increase the length of transmission line to more than 2,100 km by 2020, and plans to spend USD500 million towards achieving this in the next five years alone (Figure 2).

There are cross-cutting themes that the government is also addressing as part of a holistic energy policy framework. Foremost is taking measures to ensure that future energy supplies and sources are not only economically sustainable, but also environmentally and socially sustainable. Further, the government will seek to encourage the efficient use of energy and to minimise the detrimental environmental effects resulting from energy supply and consumption through education campaigns. To these ends, there needs to be increased research on the socioeconomic and environmental impacts of energy policy, and the findings should be fed back to the government and integrated into future policy.