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ENERGY & INFRASTRUCTURE Resolving Challenges & Exploiting Opportunities For Cambodia Agricultural Sector

David (Vichet) VAN Deputy Secretary General 20th February 2013





ENERGY



_oTypes of Energy Available in-country:

Hydropower

Cambodia has total Hydro potential of more than 10,000 MW > Coal

One deposit in Phum Talat (Stung Treng province) identified and reserve estimated around 7 million tons. Promotion of Clean Coal Technology should be an important strategy in coal-fired plants

> Solar

Cambodia has a tropical climate with favorable conditions for the utilization of solar energy. Measurements during 1981-88 in Phnom Penh revealed average sunshine duration of 6-9 hours per day, indicating considerable potential for solar energy utilization

> Oil & Gas

Fossil fuel resources are currently under exploration







Wholesale electricity supply situation
IPP (31%), EDC (15%), REE (8%), PEC (4%)
Electricity Imported (42%)
Vietnam (67%) – Thailand (32%) – Laos (1%)

Generation Mix in 2010



Electricity Supplier 2010





ENERGY Demand Projection For Cambodia



(MW)

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Source	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
EDC (Base Case)	806.72	878.11	943.76	1,024.93	1,112.79	1,217.41	1,319.99	1,432.88	1,557.47	1,688.49	1,832.94	1,980.15	2,140.78	2,314.80
EDC (High Case)	876.34	966.87	1,053.31	1,159.77	1,276.89	1,416.18	1,557.68	1,715.87	1,893.65	2,084.74	2,299.07	2,522.37	2,770.68	3,045.33
EDC (Low Case)	680.88	721.97	755.99	799.69	845.54	901.57	951.73	1,005.36	1,062.55	1,120.11	1,181.78	1,242.23	1,306.03	1,372.63
ADB	516.00	652.00	717.00	866.00	1,008.00	1,122.00	1,219.00	1,325.00	1,440.00	1,610.00	1,752.00	1,894.00	2,048.00	2,216.00
EDC (Base Case) - ADB	290.72	226.11	226.76	158.93	104.79	95.41	100.99	107.88	117.47	78.49	80.94	86.15	92.78	98.80
EDC (High Case) - ADB	360.34	314.87	336.31	293.77	268.89	294.18	338.68	390.87	453.65	474.74	547.07	628.37	722.68	829.33
EDC (Low Case) - ADB	164.88	69.97	38.99	-66.31	-162.46	-220.43	-267.27	-319.64	-377.45	-489.89	-570.22	-651.77	-741.97	-843.37

Development of Rural Electrification

Goal of the Rural Electrification Development Program

All villages in the Kingdom of Cambodia have access to electricity of any type by the year 2020

At least 70 % of all households in the Kingdom of Cambodia have access to grid quality electricity by the year 2030





Development of Rural Electrification (Con't)



Grid extension:

Progress expected from the extension of the national grid:

Rural areas	2010	2015	2020	2030
Connection to residences	6.9%	29.1%	47.4%	66.2%
Supply to village	10.9%	46.1%	78.3%	94.8%

Electricity demand for rural areas:



ENERGY - Challenges



- High Dependency on Hydropower
- Electricity shortage during Dry Season
- MRC advocated for 10 Mekong Mainstream Hydropower Projects to be suspended for 10 years
- Inter-Ministerial Institutional Arrangement between MIME and MOE

MIME has rights to develop Hydro projects & MOE looks after EIA but with no decision making power. IPP are middle decision makers and formulate own manuals & regulations

- High Dependency on Private Investments
- Potential Need for further capacity increment and extension National Grid
 More FDI required





- More diversification of electricity generation portfolio
- In response for possible stagnation of hydropower developments
- More coal-fired plants? In view of Vietnam now greater dependency on imported coal thus our cost of imported electricity would increase
- More focus on "Self-Scheduling & Self-Sufficiency"
- To counter possible tight supply of imported electricity from neighboring countries
- To improve power supply quality in border areas





Ongoing Cooperation with Developing partners in Rural Electrification

- China Exim Bank: 53 Million US\$
 -1,772 km of MV line, 460 Transformers
- KFW: 8 Million Euro
 - -500 km of MV line, 150 Transformers
- Aus-Aid & EDC : 7 Million US\$
 - -220 km of MV line, 77 Transformers
 - -400 km of LV line, 13,000 Meters and Accessories
- ADB and OFID (Rural Electrification): 55 Million US\$
 -2,110 km of MV line, 300 Transformers
- Royal Government of Cambodia: 80 Million US\$ -4,750 km of MV line, 1540 Transformers



ENERGY – Current Cost in SEZs



SEZ along borders with Thailand & Vietnam \$ 0.12/KWh - Poipet (Riels 480/KWh) \$ 0.1265/KWh - Bavet

SEZ in Phnom Penh \$ 0.193/KWh (Riels 770/KWh)

SEZ in Sihanoukville \$ 0.25 - \$ 0.28/KWh (Riels 1,100/KWh)

Source: Ernst & Young ShinNihon LLC – Oct 2012

Diesel Generator = \$ 0.23/KWh (Riels 900/KWh) Excluding Depreciation & Maintenance Cost of Equipment

ENERGY COST FOR RICE MILLS & OTHER FACTORIES



Banteay Meanchey Siemreap Battambang Pursat Svay Rieng Kandal Kg Cham Prey Veng Takeo \$ 0.25 - Riels 1,000/KWh \$ 0.21 - Riels 820/KWh \$ 0.25 - Riels 1,000/KWh \$ 0.40 - Riels 1,600/KWh \$ 0.16 - Riels 650/KWh \$ 0.28 - Riels 1,100/KWh \$ 0.33 - Riels 1,300/KWh \$ 0.26 - Riels 1,050/KWh \$ 0.24 - Riels 950/KWh

ENERGY USAGE SURVEY OF RICE MILLS



Out of 97 Millers surveyed by SNV in 2012 in Banteay Meanchey, Siemreap, Kg Cham, Kg Thom, Prey Veng, Kandal, Kg Speu:

- 83 used own diesel generator sets
- 8 used national grid
- 6 used both combination

Out of 203 Millers surveyed by SNV in 2012 in Banteay Meanchey, Siemreap, Kg Cham, Kg Thom, Prey Veng, Kandal, Kg Speu:

- 43 installed Gasifiers
- 160 did not install Gasifiers



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Focused Conservatively:

Building of Roads, Bridges, Irrigation Canals, Ports

Overlooked:

Enhancing Waterways, especially in countries (like Cambodia) that are blessed by many rivers/waterways

ARPEC ARPEC ARE EXECUTED IN A SUBJECT 生活量形本 デ新県会 Allance of Rice Producers & Depirture of Cambodia

Good Infrastructure is part of the Equation of a Dynamic Trade Facilitation Environment



Both the old and new focus needed for success!

Infrastructure is also the Achilles Heel in CLMV Logistics Performance Index Survey by World Bank

- Performance in Customs and Infrastructure is relatively weaker than other components but compares favorably to other regions
- Physical Infrastructure remains a major constraint in many countries
- CLMV lag behind, especially in areas that require public policy, regulation or investment, e.g. Customs, Infrastructure, and logistics competence



Infrastructure critical as part of Global Interdependence of Factory Asia





Note: This shows the nations where parts are sourced for a hard-disk drive assembled in Thailand; the disk drives are then shinned on to various markets to be used in various electronics.

Rice Policy – Strategies



- Two-prong strategy Revert informal paddy to formal rice export Enhance competitiveness in medium term
- Two types of policies, quick-win and medium to long term measures
 - > Quick-win:
 - (1) Invest in irrigation, extend appropriate technology and small credit;
 - (2)Promote private sector and address financing issues;
 - (3) Facilitate export procedure and reduce informal fee.
 - Medium to Long Term: Improve competitiveness.





Asian distribution of rice area



Source: USDA, and Rice in the Global Food Supply, Fairhurst et al., (2002)



Challenges



Millers/Exporters not yet able to undertake conventional Mother Vessel shipment size of 20,000 MT-40,000 MT/shipment due to:

- 1. Fragmented supply chain with most millers/exporters working in his corner
- 2. Pricing competitiveness vis-à-vis neighboring giants
- 3. Financing for CAPEX (upgrading of mill equipment) and CASHFLOW (for paddy procurement competing with Thai/Vietnamese Traders = Loss of Value Add in country)
- 4. High inland transport cost (\$15/MT in CMB vs \$3/MT in VIE)
- 5. Insufficient Port Infrastructure
- 6. No National Rice Standards, unable to command better prices as a majority of overseas buyers are still wary of both consistency in supply and quality



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Opportunities



- Maximize usage of under utilized waterways
- Rehabilitation of Railways linking Poipet, Battambang,
- **Upgrading of Ports Phnom Penh, Kampot & Sihanoukville** 3. (operational 2015)

Phnom Penh Port new terminal in operation in January 2013 accommodating 4,000 DWT vessels and by 2015 10,000 DWT vessels after further dredging in Mekong Delta area by Vietnamese authorities - upgrading of port equipment for bulk cargo handling;

Sihanoukville Port upgrading to accommodate 25,000 DWT vessels by 2015

Cambodia 1st Bulk Loading for Rice - 2011









Rice Export by Bulk Shipment





Rice Export by Bulk Shipment













Enhancing Load Rate with better equipment





Paddy & Rice Mill Distribution



King Strephone Report of Combodia
 King Strephone Report of Combodia
 King Strephone Report of Combodia
 For Producers & Export of Combodia

Trade Flows of Rice and Paddy



Cambodia's Waterways: Under Utilized Still...



In any given country (whether Developed or Under Developed) the cost of transportation by order of cost efficiency is:

- 1. Waterways / Maritime (River Freight Ocean Freight)
- 2. Railways
- 3. Inland Trucking
- 4. Airfreight

Waterways Cost Comparison With Neighboring Countries



- Vietnam Rice Mills located mainly along estuaries and their cost of transport is \$ 3/MT
- Cambodia cost of transport in average out \$ 15-17/MT by inland trucking
- Cargo to Sihanoukville from Phnom Penh is transported by road (\$7-\$8/MT) while that to the Vietnamese ports moves either via the Mekong River to the deep water port of Cai Mep or Ho Chi Minh City (HCMC)
- Shipment by Barges from PNH Port to HCM Port about
 \$ 14/MT
- Similar distance in Thailand only \$ 4/MT



Waterways: Improvement Needed The Soft = Policies

THE SYNDROME? The Soft of Infra-structure (Policies)
 State Monopoly over Shipping aspect but does not provide
 adequate services and State imposing heavy duties on
 incoming Barges or Vessels - Shipping Lines & Agents are
 penalized with additional cost

- 1. Cambodia must eradicate such Monopoly & open to other competitive shipping agencies
- 2. Many complains from vessel owners who have intention to accommodate their vessels to Cambodian Ports but Port Charges must be competitive with regional ports
- 3. Inadequate service and unreasonable cost....

Inland Haulage



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Commence	1 st Quarter of 2012
As- Is	Only Trucking from main site to Port (Limitation of huge Volume)
To-Be	1) Able to transport huge volume 2) Safety 3) Cost Saving





Main Product Site

---- Ferry Barge



---> Barge / Marine Vessel





Waterways: Improvement Needed The Hard = Waterway Hubs in-country

Establishing more Collection Hubs to collect and load commodities along selected/suitable waterway points

Undertake appropriate surveys on river locations with proper depth and conduct dredging Waterways Exploitation Underway



A Logistics Firm plans upcoming services from Tonle Bet (Kg Cham) Hub to PNH New Port (PPAP) --but not yet operational at the moment--

>\$160/Container by barging but Quantity is conditional: Minimum 30 Containers – Maximum 45 Containers

>\$350/Container from PNH New Port to Shekou Port (Southern China)

>\$300/Container for Documentation fee

Total = \$ 32.40/MT (if we stuff 25 MT Rice per 20' FCL) Compared to about USD 53/MT by SHV Port Route to Shekou (China)



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THANK YOU FOR YOUR ATTENTION