Chapter 11

Proposed Projects Regarding Support Infrastructure

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11. Proposed Projects Regarding Support Infrastructure

11.1 Education and Skill Development

Based on the assessment of the educational requirements, a concept of developing Knowledge City[51] has been suggested for each country. The components of Knowledge City presented below for each country would differ according to the existing education setting and potential benefits that the country can realize from developing these education facilities. The details of projects for each country are given below:

- ***Knowledge City at Chachoengsao in Thailand:*** In order to support industries in Eastern Seaboard, Chachoengsao-Prachinburi region and proximity to large pool of population of north-east provinces, a Knowledge City is proposed to be located in Chachoengsao. It shall have Engineering Colleges, Vocational Training Institutes, Skill Upgradation Centres, etc. in collaboration with industries to maximize academia-industry interaction. These would focus on highly specialized and technical courses like precision mechanics, electronics application, software engineering, advance computing, apart from basic engineering courses.
- ***Knowledge City at Phnom Penh in Cambodia:*** To support the industries and service sector, a Knowledge City is proposed to be set up as part of Phnom Penh Comprehensive Development Zone as Phnom Penh and Kandal provinces have high population and higher educational levels. This city is planned to be the hub for higher education in Cambodia and will focus on (i) technical and vocational training; and (ii) service-based skill development. It shall have Engineering Colleges, Skill Upgradation Centres, Vocational Training Institutes, IT School, Hotel Management Institute, Management School, and a University with variety of courses focusing on service and manufacturing industry. The location of knowledge city in this zone shall provide access to higher education to vast young population and realize its 'demographic dividend'.
- ***Knowledge City at Ho Chi Minh Zone in Vietnam:*** A Knowledge City is proposed to be set up as part of HCM City Comprehensive Development Zone in order to support emerging ICT industry. The knowledge city will have facilities to provide education on basic engineering courses such as industrial, mechanical, electrical, automotive, marine, chemical and dedicated institutions for IT/Software and multi-media applications. Being located in HCM City Zone, it will have an advantage of proximity to huge talent pool and industry-academia interactions.
- ***Knowledge City at Dawei in Myanmar:*** A Knowledge City is proposed to be set up in Dawei to support the industrial, trading and other services proposed there as well as meeting the educational needs of existing population. The Knowledge City would primarily comprise of Skill Upgradation Centres, Polytechnics and Engineering Colleges, focusing on imparting skills for manufacturing industry. The courses to be introduced would be basic engineering courses and vocational skills with the purpose of preparing the students for jobs in industries. It would also host IT School, Hotel Management Institute, Management School, and University with variety of courses for training the students for the service industry such as tourism/hotel, accounting and trade services, health and nursing, among others.

[51] Note: Knowledge city is envisioned as a community of institutions that serve the diverse range of educational needs from early childhood education to post-graduate study. It will provide land or built-up spaces for multiple educational institutes, business schools, academic services and support providers, professional training centres, research institutions and shall also house facilities for students including hostels, health and sports, medical and hospitality. It will also have requisite residential, commercial and recreational facilities to meet needs of student, teacher. The knowledge city is akin to educational cluster or university campuses like Oxford, Cambridge, and National University of Singapore. Unlike these, knowledge cities are specially planned, with all requisite facilities. Key examples of such knowledge city are Dubai Knowledge Village, Qatar Education City near Doha, King Abdullah University of Science & Technology at Jeddah.

11.2 Health

Based on the assessment of healthcare needs and disease profile of countries in the corridor, following projects have been suggested for developing human resources development in each of the countries:

- ***Multi-Specialty Hospital and Medical Education City in Dawei (Myanmar), Siem Reap (Cambodia) and Can Tho (Vietnam):*** The overall condition in terms of healthcare facilities and infrastructure in Myanmar, Cambodia, and Vietnam (particularly Mekong River Delta region) is not adequate to meet the health care needs of existing population. Moreover, there is an acute shortage of skilled medical staff like doctors, nurses, physician, etc. Hence a multi-super specialty hospital and medical education city with 1,000 bed capacity is proposed at Dawei, Siem Reap and Can Tho.
- ***Integrated Mother and Child Care Centre and Training Institutes in Dawei (Myanmar) and Battambang, Phnom Penh and Kandal Provinces (Cambodia):*** Battambang, Phnom Penh and Kandal Provinces in Cambodia and Taninthyari in Myanmar[52] have very high maternal and infant mortality rates. Moreover, there is a high unmet demand for specialized hospitals and skilled manpower and low rates of delivery by skilled personnel. Hence, Integrated Mother and Child Care Centre and Training Institutes are proposed at Battambang, Kandal Province in Cambodia and Dawei in Myanmar. The institute would impart training to local health resource persons e.g. health workers, birth attendants, nurses and midwives for ante-natal and post-natal care, and care of children mainly to prevent disease and malnutrition.
- ***Advanced Cancer Diagnostic and Treatment Centre at* Ho Chi Min City *(Vietnam):*** Vietnam has high incidence of mortality caused by the non-communicable disease and cancer is among the prominent disease. It meets just 10% of demand for cancer prevention and needs international support[53] in terms of cancer diagnosis, treatment, palliation and rehabilitation facilities.
- ***Regional Eye Care and Post-Graduate Research Centre* at Ho Chi Min City (Vietnam)**: There is a lack of healthcare infrastructure in Vietnam to address eye related problems such as refractive error in schoolchildren, trachoma and general lack of awareness of eye care in the community. The dearth of eye care services, infrastructure and human resource capacity in Vietnam is a significant barrier to basic human development. The regional eye care centre would provide professional support to Optometry Technicians and Optometrists, and also assist in the creation of regional eye care resource centre.
- ***Rehabilitative and Occupational Therapy Centre at Battambang (Cambodia):*** Landmines result in significant injuries throughout Cambodia with Battambang continues to be the most heavily mined province in Cambodia[54]. The country needs continued support for developing system for rehabilitation service delivery. Hence, a Rehabilitative and Occupational Therapy Centre is proposed at Battambang Province in Cambodia to provide prosthetics, crutches, wheelchairs, while assisting the affected patients in leading a normal life through rehabilitative therapy. The proposed centre would treat the victims of landmines and rehabilitate them by providing vocational training for jobs or self-employment.

11.3 Power

The power projects have been proposed to be developed in phased manner depending on the demand particularly from key economic centres of Growth Node/Poles. Priority shall be given to those projects which cater to electricity needs of critically deficient areas and new industrial projects planned. Following projects have been identified for MIEC:

[52] Note: Provincial data for Myanmar is not available.

[53] IAEA, 2007

[54] Lutheran World Federation, 2009

- ***500 MW Sihanoukville Coal-fired Power Plant, Cambodia:*** This thermal plant is proposed to be located in Sihanoukville province in the vicinity of 200 MW plant which is already awarded to Power Synergy Corporation. The proposed power plant can be fed to the double circuit 230 kV Sihanoukville – Kompot Transmission Line (Funded by ADB and JBIC) through Sihanoukville substation. The fuel for this project can be sourced from coal reserves in Cambodia and supplemented with imported coal through Sihanoukville port.
- ***1200 MW Soc Trang I Gas Power Plant, Vietnam:*** The project will be located in Soc Trang province in Vietnam. The project can be developed with combined cycle technology. The plant will be connected to the National Grid through existing 200 kV transmission line.
- ***2 x 1000 MW Nuclear Power Plant, Vietnam:*** A nuclear power plant can also be established to meet power demands of Vietnam and MIEC corridor. The project can be located in Ninh Thuan which has already been identified by Vietnamese government as potential location for nuclear power plant. The power plant can be developed either with Pressure Water Reactor (PWR) Technology or Boiler Water Reactor (BWR) Technology. This plant will be connected to the southern part of Vietnam through Tan Dinh substation, near Ho Chi Minh City.
- ***100 MW Hydro Power Plant, Vietnam:*** Lam Dong province of Vietnam has huge potential to generate hydro power which can be supplied to MIEC region.
- ***4 x 600 MW Son My Thermal Power Plant (Unit 1 – 4), Vietnam:*** It is suggested to take initiative in developing the Son My coal fired power plant at Binh Thuan Province to compensate the short fall of power in the corridor region. The first two units shall be taken up on priority to compensate the short fall of power in the corridor region.
- ***600 MW Hydro Power Project, Myanmar:*** This project will be developed on Tanintharyi River in Myanmar. Thailand can invest in this project and electricity generated from this project will be transmitted to Thailand. Some percentage of electricity can also be distributed to compensate the local demand of lower part of Tanintharyi division.
- ***600 MW and 700 MW Thermal Power Plants in Cambodia and Myanmar respectively:*** These gas fired projects can be developed at Koh Kong or Sihanoukville province and Taninthayari division of Myanmar. Fuel for power plant in Cambodia can be supplied from Block A of Khmer Basin in Gulf of Thailand and for Myanmar plant can be supplied from either Yadana or from new M9 Block near Yadana.
- ***Transmission Lines in Myanmar, Thailand and Vietnam*:**
  - *Double Circuit 230 kV Kanchanaburi-Dawei Transmission Line between Myanmar and Thailand:* This Transmission Line would be developed simultaneously with the proposed hydro power plant near Dawei. This 230 kV double circuit transmission line will help to transmit electricity from Myanmar to Thailand.
  - *500 kV Transmission Line in Vietnam:* 500 kV Can Tho – Ho Chi Minh City Transmission Line will help to supply electricity generated from O Mon Power Complex to consumption in South Vietnam.
  - *200 kV Transmission Line in Vietnam:* A 230 kV Phnom Penh – Takeo – Vietnam Transmission Line (project funded by ADB and NFD) will connect Cambodia with Vietnam in Chau Doc, Vietnam. This line is being developed to transmit electricity to Cambodia. Chau Doc needs to be connected to the National Grid. 200 kV Chau Doc – Can Tho Transmission Line will help to complete this line.
  - *Double Circuit 230 kV Phetchaburi Transmission Line between Myanmar and Thailand:* This 230 kV transmission line will evacuate power from proposed hydro power plant in Myanmar. This Transmission Line can be connected to 230 kV substation of Phetchaburi of Thailand.
  - *Up-gradation of 115 kV Thailand – Bantey Meanchey – Siem Reap – Battambang transmission line from single circuit to double circuit:* As the corridor develops and demand for electricity increases, there would be a need to upgrade transmission network to key economic centres in Cambodia. Thus new Thailand – Bantey Meanchey – Siem Reap – Battambang transmission line shall be upgraded to double circuit.

Apart from above-mentioned projects, MIEC will promote renewable energy in corridor. In order to demonstrate the possibility of renewable energy, following projects[55] can be developed as pilot projects to promote renewable/alternative energy in MIEC region:

- **300 kW PV Solar Power Plant at Svay Rieng, Cambodia:** According to a study conducted by New Energy and Industrial Technology Development Organization (NEDO), all of Cambodia has "extremely good potential" for photovoltaic power generation[56]. Within Cambodia, Svay Rieng province has the highest average daily insolation of 5.1 KWh/m²/day, which makes it a suitable location for Solar Power Plant[57].
- **600 kW Bio-mass Power Plant at Battambang, Cambodia:** Battambang has high potential for biomass based power plant. It produces around 6 million cubic meters of fuel-wood annually, which theoretically can produce about 600 MW of power[58]. Battambang is presently hub of agriculture production of crops such as rice, sugar cane, maize. With Battambang being developed as *'Agri-hub'*, the residue is likely to increase further. Thus sufficient quantities of crop residues is expected to be available in Battambang and be used as fuel for power generation.
- **3 MW Wind Power Project at Binh Thuan, Vietnam:** Southern & Central Vietnam has good potential for generating wind power with average wind speeds of 4-7 m/s in many coastal areas[59]. Many investors also expressed their interest in building wind power plants in Vietnam, especially in Binh Dinh, Ninh Thuan and Binh Thuan. Thus a wind power project can be developed in Binh Thuan province.

12. Projects Identified in Corridor

Various projects have been identified from the initiatives presented earlier under each of the Growth Poles and Growth Nodes. Such projects are termed as **"Potential Projects".** The list of projects presented under various categories in Annexure 2 is an exhaustive list and prepared in accordance with the existing and proposed development plans by member countries in the corridor region and plans of various multilateral agencies like ADB, JICA, etc. for the region as a whole.

The immediate need of MIEC region is the development of transportation infrastructure in order to achieve economic integration and act as catalyst for developing Growth Nodes and Growth Poles MIEC and trigger the development in MIEC. Thus out of the list of potential projects, a few projects pertaining to the development of transportation infrastructure in the region especially roads, ports, logistics and cross border infrastructure have been prioritized for immediate development. Such projects are termed as **"Priority Projects"**. The detailed list of priority and key projects is presented in Annexure 2. Some of these projects are planned to be undertaken on PPP basis and a few model projects are identified on PPP for immediate implementation. The potential projects for PPP is further assessed qualitatively based the projects' propensity to attract private investments, current economic conditions, legal and regulatory environment of the countries, ongoing global financial crisis, among others. These are also presented in Annexure 2.

[55] Note: These are indicative location and size of the projects. The detailed feasibility & project report will need to be prepared to identify the site and size of the projects.

[56] Cambodia Renewable Energy and Rural Electrification, 2007

[57] NEDO, 2008

[58] World Bank, 2006

[59] Institute of Energy, Vietnam