

# 2008

## EXECUTIVE SUMMARY



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Infrastructure plays a crucial role in economic development and enrichment of living standards. Various stages of economic development require different levels of infrastructure upgrades or enhancements to ensure infrastructure in fact facilitates economic activities. Thailand has been facing a series of infrastructure challenges, both new and well-established. To name a few: there is a need for infrastructure services to catch up with economic development and international competition, manage the growth in urban areas, respond to global energy prices, and ensure basic services for the poor.

Most of the infrastructure development in Thailand has been responsive to demand rather than forward-looking. Availability and accessibility appear to no longer be a challenge. The next step for Thailand is to put more emphasis on quality of service delivery, management, and sound regulation.

A clear policy framework is needed, and the development direction set forth by the policy makers should be based on reliable information on the current status of infrastructure development. Systematic, periodic, and internationally-standard information collection within the infrastructure sector will provide Thai policy makers with good background with which to assess the current situation, identify bottlenecks, set clear policy direction, and prioritize projects more effectively. This Report aims to contribute to this process.

The issue of sustainable infrastructure development is well-integrated into the NESDB's 10<sup>th</sup> National Development Plan. Three areas which are specifically identified in the plan are as follows: infrastructure and logistics services; energy efficiency and alternative sources of energy; and the framework for overall infrastructure development. To clearly present these issues in the plan should provide sound direction for future development of the sector.

This Annual Report covers the following subsectors of infrastructure: transport, energy, telecommunication, and water, sanitation, and low-income housing. In each subsector section, the current situation and policy and institutional framework are presented first. Next, the performance of the sector is assessed, investment prospects are provided, and lastly, key issues are identified.

### **Transport**

Land transport in Thailand is dominated by a road network; rail plays a much less significant role both in terms of passenger and freight transport. Urban public transportation has been

gaining importance, particularly the development of Mass Rail Transit (MRT) in Bangkok and the vicinity. In terms of water transport, sea freight transport, especially the Laem Chabang deep sea port, has developed to international standards, while inland waterways' transport has been given lesser attention. Air transport has taken up a larger share of passenger transport in recent years with the emergence of low cost airlines. The bottlenecks in Don Muang Airport have eased with the opening of Suvarnabhumi Airport; however, clear policy direction is still needed with regards to future expansion and proper use of Don Muang Airport.

All three modes of the transport sector have performed relatively well by international standards, although there are several areas for improvement. With regards to land transport, reform of the rail system can contribute greatly to the national transport system. Increased use of controlled access roads and the adoption of road charges should be seriously considered for the road sector. In terms of air and freight transport, major bottlenecks in logistics are due mainly to software deficiencies, especially within customs clearance. The transport sector also experiences some institutional deficiencies, such as lack of central planning, weak coordination, and an unclear separation between operation and regulation functions. Government and state-owned enterprises (SOE) still play a large role in planning, regulation, and service provision.

In sum, important development issues in the transport sector have less to do with the accessibility or availability of infrastructure, but rather the efficiency (of provision), regulations, and appropriate institutional aspects. Multi-modal transport has become a top priority as a means to increase efficiency and improve logistics, which would eventually lead to energy savings and lower costs. Institutional, regulatory, and operational improvements are required for a successful multi-modal shift. Private investment and involvement can enhance public infrastructure projects and reduce overall risk.

### **Electricity and energy**

The electricity subsector is based on a state-owned single buyer scheme. The single buyer, the SOE Electricity Generating Authority of Thailand (EGAT), purchases electricity from public and private power producers, and then sells it to unbundled distribution companies, which, in turn, retail to final consumers. Thailand's installed capacity is dominated by EGAT, though independent power producers (IPP) are increasing their stake. There has been increasing private sector participation in power generation through EGAT's IPP, small power producer (SPP), and very small power producer (VSPP) programs.

The main electricity indicators exceed international standards; however, sources of fuel are a major concern. The current generation relies heavily on natural gas, while EGAT's current

Power Development Plan (PDP) focuses only on offsetting its prevalence rather than reducing gross consumption. The transmission and distribution networks are developing steadily, supplying nearly the entire population.

On the demand side, the industry sector is by far the largest consumer, with business and residential consumption falling well below. Different tariff structures apply between the basic generators (IPP, SPP and VSPP), and the single buyer, EGAT, as well as among EGAT, the intermediate distributors (i.e., MEA and PEA) and the final consumers.

Policy and planning for the electricity sector is formulated in EGAT's Thailand Power Development Plan. The current PDP 2007 covers the planning period 2007 through 2021.

The institutional arrangements in the electricity subsector are fairly clear. Functions involving policy setting, regulation and monitoring, and service provision are now separate upon creation of the Energy Regulatory Board that will act as regulator in the electricity sector through its regulatory authority such as the setting of electricity tariffs and granting of licenses for new power plants.

Currently, in the energy sector, the first concern is that more than 60% of the primary supply is imported. Production and consumption has increased steadily as a result of continued expansion of the economy. The pattern of primary commercial energy production comprises 57% natural gas, 17% crude oil, 12.5% lignite, 9% condensate and 4.5% hydropower. Natural gas will remain available for the next 25-30 years, whereas other fossil fuels have little reserves left. By far, the main form of energy consumption in Thailand has been of petroleum products. In 2006, they accounted for a whopping 44% of total consumption. Natural gas had the second largest share at 37%, followed by imported coal (9%) and lignite (7%). In the same year, total energy consumption was 1,547,778 barrels per day of crude oil equivalent, and the pattern of energy consumption by sector changed slightly as manufacturing required the largest amounts of energy, albeit competing closely with transport.

Oil and natural gas infrastructures are meeting Thailand's needs: transmission, storage and refining facilities are not expected to expand substantially in the next years.

As for fuel pricing, the Thai Government intervenes through direct regulation (for natural gas) or through direct or indirect subsidies (differentiated levies for biofuel). Renewable and alternative energy development is a key policy issue in the energy sector. The development of biofuel for use in the transport sector has been supported by the government with tax incentive programs and financial assistance. As in the electricity sector, the recent Energy Act contributed to the

creation of the new independent regulatory agency, the Energy Regulatory Board, and a new regulatory framework for oil and gas industry business.

The petroleum industry is characterized by active private participation from upstream to downstream, particularly by foreign participants. However, in the natural gas industry, private participation remains limited. PTT still has significant monopoly control within the industry through its role as the sole purchaser, transporter, and distributor of natural gas.

A major investment prospect in the energy sector is the expansion of power generating capacity, either through EGAT public investments, major private sector participation (IPP bids) or through smaller scale and community-based investments, mainly in renewable energy and alternative energy projects.

The main concerns for Thailand's energy sector are the oil price hikes, the rising global concern about climate change, achieving a balanced energy portfolio, developing the renewable energy sector and establishing an enhanced regulatory framework, fair competition, and rational pricing.

### **Telecommunications**

The performance of Thailand's telecommunications sector has come a long way in the last decade, particularly in terms of availability and use of affordable telephone service and growth of internet access. The telecommunications sector in Thailand is dominated by mobile communications. There are about 43 million mobile subscribers versus approximately 7 million fixed lines. Furthermore, growth in the mobile market remains strong compared to the fixed market, which is stagnant. Broadband network infrastructure is growing rapidly; however, it is still insignificant. The telecommunications sector is in the era of technological convergence. In this context, it is important to note that Thailand's telecommunications sector is highly concentrated in both the fixed telephony and broadband access markets with only three to four firms dominating each market. Because of concentration in the sector, it is important to take into account the potential for abuse of market power, particularly in regards to licensing and other regulatory policies. The telecommunications sector has done relatively well in providing access to telephone services through fixed and mobile services at reasonable costs. Accessibility is, however, an issue with regards to internet service. The emerging priority in the sector is the development of a broadband access strategy. The regulatory framework must also continue to be strengthened to facilitate competition and protect public interests.

**Water, sanitation and low-income housing sector**

Provisions of a piped water supply are mainly carried out by MWA and PWA. In rural areas, the majority of villages have access to piped water. However, supply expansion is still needed in order to achieve the goal of providing piped water to every village. Access to improved water is impressive by international standards. The private sector has played an increasing role in service provision, especially in the industrial areas of the eastern seaboard. Demands for piped water are expected to continue to grow in the future especially in the industrial and tourist areas of the country. Water shortages are a major concern and expansion of water production facilities is expected. Another key issue in the sector, which diminishes the efficiency of the piped water system, is a relatively high rate of water loss by international standards as a result of inadequate maintenance of the pipeline system. Pricing is also an issue for PWA, which operates under strong price controls.

Development of wastewater and solid waste management are lagging behind other sectors both in terms of responding to demands for service as well as performance of existing systems. The demands for wastewater and solid waste management, however, will continue to grow in response to urbanization and the increase of economic activities. Two priorities of the two subsectors will be to ensure sufficient service coverage both in urban centers as well as municipal areas, and to ensure that the systems operate up to sanitation standards and are properly maintained. Local governments deliver services in the wastewater and solid waste management subsectors, which can be quite a technical and financial challenge. Low or absent fees are another issue constraining financial resources for the operating system. With these problems, efficiency and sustainability of the systems are compromised, which, in turn, inhibits the development of the subsectors. Capacity building at the local level and systematic introduction of user fees are identified as key issues in both subsectors.

The low-income housing sector supplies housing to low-income populations through the Baan Eua-arhorn and Baan Mankong projects. The development of the low-income housing sector, however, is not well planned as policy-setting rests with the cabinet, and not with the direct responsibility of a government agency. Although providing access to low-income housing is seen as necessary by most governments, several policy shifts in budget allocations and at the project level are common in the sector. New slums and demand will continue to emerge due to rapid urbanization. The government will need to respond to recurring challenges and emerging needs under budget constraints. A lack of access to credit for low-income groups often puts project sustainability at risk. To ensure long term success of projects, capacity building and social aspects of housing and slums should be taken into account.

Looking forward, there are a number of challenges for the country in infrastructure development. The most immediate challenge in the context of the global energy situation is rising oil prices. Cross-sectoral issues such as energy security must be addressed more effectively within an integrated framework. Financing is also a challenge. Prioritization of projects is crucial to ensure that limited resources are appropriately allocated. Due to the policy emphasis on macroeconomic and fiscal stability, off-budget financing for infrastructure will be increasingly relied upon. Private participation and innovative international or national sources of financing should be tapped to provide financial flexibility. There are institutional weaknesses in the sector—such as non-integrated infrastructure planning and provision, lack of an independent regulator, negative public opinion toward privatization and new large-scale investments—to overcome in order to reduce obstacles in the delivery system. Long-awaited reform of highly indebted state enterprises provides another major challenge, which impacts heavily on overall infrastructure development. Lastly, sustainability of projects is an issue, which includes weak implementation capacity of local agencies and the lack of appropriate pricing mechanisms and user fees for several infrastructure services. How to incorporate sustainability concerns from the design through to the implementation stages will be instrumental for the long term success of every sector.