

INFRASTRUCTURE

For ASEAN, regional economic integration cannot stop at policy measures. Integration cannot end at cutting tariffs, removing nontariff barriers, reducing obstacles to investment and easing restrictions on trade in services. Economic integration must also mean binding ASEAN's members through infrastructure in energy, transport and communications. These facilities are the lifeblood and the nervous system of an integrated regional economy. They make capital flows and trade in goods and services possible. Their availability and efficiency encourage entrepreneurship and investment. Indeed, their own construction and operation stimulate economic activity.

Integrating a regional infrastructure is one of ASEAN's toughest goals, because the region is geographically diverse and its economies are at different levels of development. For example, several of its members Thailand, Myanmar, Viet Nam, Laos and Cambodia-form one landmass. This geographic characteristic should mean that infrastructure links among them-connecting roads, communication and power lines across national boundaries-would be relatively easy to set up. But not when some of these boundaries are mountain ranges and great, swiftly flowing rivers. In ASEAN's newer members, infrastructure is relatively underdeveloped. While the other ASEAN members-Brunei Darussalam, Malaysia, Singapore, Indonesia and the Philippines-may have better developed infrastructures, they are separated by deep seas, making linkages between them expensive.

Funding is the biggest problem for ASEAN infrastructure. The World Bank estimates that the developing East Asian countries would need between US\$1.2 trillion and US\$1.5 trillion in investment in infrastructure until 2010-just to cope with economic growth.

Despite these difficulties, ASEAN has made the development of infrastructure linkages one of its primary goals. ASEAN members must rely primarily on their own national resources to build up their infrastructures. ASEAN's role would be to ensure cooperation and coordination of its members' infrastructure projects and their linkages, and to lift economic and political barriers to such cooperation.

As early as 1982, ASEAN formed the ASEAN Cooperation Project on Interconnection, aimed at linking up the power systems of neighbouring ASEAN countries. In 1986 ASEAN members signed an Agreement on ASEAN Energy Co-operation, by which they agreed "to cooperate on the efficient development and use of all forms of energy, whether commercial, noncommercial, renewable or nonrenewable, in modalities that they may design. . . ."

The Manila Declaration of 1987 provided that each ASEAN country's "existing transportation system shall be strengthened to ultimately form an overall ASEAN transportation network." The Singapore Declaration of 1992 and the Frame-work Agreement on Enhancing ASEAN Economic Cooperation directed ASEAN members to "further enhance regional cooperation to provide a safe, efficient and innovative transportation and communications infrastructure network" and "continue to improve and develop the intracountry postal and telecommunications system to provide cost-effective, high-quality and customer-oriented services."

Despite the 1997 East Asian financial crisis which slowed down infrastructure projects all over the region, ASEAN member countries remain committed to the development of regional infrastructure. The Ha Noi Plan of Action in 1998 called for adopting “the policy framework and implementation modalities by 2004 for the early realisation of the trans-ASEAN energy networks covering the ASEAN Power Grid and the Trans-ASEAN Gas Pipeline Projects.”

The Seventeenth ASEAN Ministers on Energy Meeting, held in Bangkok on 3 July 1999, adopted the ASEAN Plan of Action for Energy Cooperation, 1999-2004. This action plan serves as a guide to the identification, formulation and implementation of specific projects and activities in the ASEAN energy sector.

The ASEAN Vision 2020, adopted in Kuala Lumpur in December 1997, lists as one of its goals “the development of an integrated and harmonised trans-ASEAN transportation network.” The Ha Noi Plan of Action calls for “intensifying cooperation in the development of the trans-ASEAN transportation network as the trunkline or main corridor for the movement of goods and people in ASEAN, consisting of major road and railway networks, principal ports and sea-lanes for maritime traffic, inland waterway transport and major civil aviation links.”

At the Sixth ASEAN Transport Ministers’ Meeting, held in Bandar Seri Begawan on 4-5 October 2000, the ministers reviewed the progress of the transport agenda and of the sectoral negotiations for air transport and maritime transport under the ASEAN Framework Agreement on Services.

ASEAN has four long-term flagship projects for integrating the region’s infrastructure: the ASEAN Power Grid, the Trans-ASEAN Gas Pipe-line, the ASEAN Highway Network and the Singapore-Kunming Rail Link Projects.

ASEAN Power Grid

Having rich energy resources-mainly coal, hydroelectric and gas-ASEAN offers opportunities for its member countries to develop a borderless electricity industry. This would be built by establishing electrical interconnections in an ASEAN Power Grid. ASEAN countries are speeding up the restructuring, privatisation and liberalisation of the energy sector, particularly the power-supply industry. Many ASEAN countries are progressively deregulating their electricity sectors and privatising utility assets. This activity gives them the opportunity to tap private funds for the huge capital requirements.

A regional power grid provides considerable benefits for each ASEAN member. Among them:

Improvement in the reliability and quality of electricity. This will be achieved because one ASEAN country can tap, through the interconnection, “generation reserve margins,” whenever these are needed. The generation reserve margin is the capacity a power plant needs to have-beyond what it needs to supply day-to-day demand-to ensure the continuous supply of electricity with the required quality. Inter-connection between ASEAN countries would allow them to tap each other’s power supply in emergencies and disturbances.

Economic benefits. Interconnection will also enable ASEAN countries to share reserve margins. Consequently, one specific ASEAN state can defer capital investment for new generating facilities, because it can operate at a lower reserve margin but still meet the load demand at a high reliability and security of supply.

Interconnection will also allow the use of large or small generators because power is distributed over a much larger system. Such economies of scale can be used to optimise investment. The cost of generating electricity will also be reduced, since the interconnection can provide the energy requirements at peak loads. Without such source of power at peak periods, a country would have to build expensive “peaking plants,” or generators that can start up quickly but which produce expensive power. Since the peak load can be met by power bought through the interconnection, a country’s production plants can run on the base-load scheme, which gives a more efficient energy output, and consequently a lower generating cost. Interconnection will also allow commercial export and import of power among the interconnected countries.

The beginning of an ASEAN Power Grid preceded ASEAN’s establishment in 1967, when the Lao People’s Democratic Republic and Thailand agreed in 1966 to exchange electric power. This was followed by bilateral agreements for power exchange among Thailand, Malaysia and Singapore in 1978. The agreements involved two major interconnections. One was between Thailand’s Electricity-Generating Authority and Malaysia’s Tenaga Nasional Berhad (TNB). The other was between TNB and Singapore’s Power Grid, Ltd.

ASEAN made the first big push for developing power grid in 1981, when it set up its forum of the Heads of ASEAN Power Utilities/ Authorities (HAPUA) to study interconnection projects. This led to the formation in 1982 of the ASEAN Co-operation Project on Interconnection. In its yearly meetings since 1981 HAPUA has gradually firmed up the plan for an ASEAN Power Grid, especially at its fifteenth meeting in April 1999. The Seventeenth ASEAN Energy Ministers’ Meeting, held in Bangkok on 3 July 1999, adopted the ASEAN Plan of Action for Energy Cooperation, 1999-2004, which set as a major goal the eventual establishment of the ASEAN Power Grid.

HAPUA is now working on 14 interconnection projects to initiate the regional grid system. To this end, HAPUA has considered establishing a joint-venture company to provide equity investment and carry out ASEAN interconnection projects. An ASEAN Interconnection Master Plan Study Task Force within HAPUA is working on the technical aspects of the ASEAN Power Grid that will result from these interconnections.

Two of these projects have been carried out and are operating:

Peninsular Malaysia-Thailand Interconnection. Commissioned in 1981, the interconnection is between Malaysia’s Tenaga Nasional Berhad’s Bukit Ketri substation in Northern Peninsular Malaysia and Thailand’s Electricity-Generating Authority’s Sadao substation in Southern Thailand. The interconnection allows a maximum power transfer of 80 megawatts, which has optimised both power systems’ production costs. It has also enabled the two power firms to help each other during emergencies on several occasions.

In 1988 the Malaysian power firm and its Thai counterpart did a feasibility study for upgrading this connection. In 1994 the two firms agreed to install a more modern form of interconnection (the HVDC technology) that would raise power transfer from 80 megawatts to 300 megawatts, upgradeable to 600 mega-watts. This project is being carried out and is expected to be finished this year.

The Peninsular Malaysia-Singapore Interconnection. Commissioned in 1985, the interconnection is between Singapore's Power Grid's Senko Power Station and Malaysia's Tenaga Nasional Berhad's Plentong substation in Southern Peninsular Malaysia. The interconnection has improved the resilience of the two power systems and has enabled them to help each other on several occasions.

Encouraged by its experience of these two projects, ASEAN has identified criteria for future connections:

- The interconnection should not completely replace the capacity of each country's own generation, unless its plan is to undertake long-term supply contracts.
- Although the interconnection is oriented toward the present status of the system, it must provide for a rise in future demand.
- The interconnection should safeguard against the spread of a disturbance in one system to the other.

What would have been one of the biggest projects for the ASEAN Power Grid was the interconnection between Sarawak and Peninsular Malaysia, through the Baukun Hydroelectric Project. Deferred due to the economic downturn in 1997, the Baukun project is now being revived.

The 11 other interconnection projects that would make up the ASEAN Power Grid still require feasibility studies or identification of funding sources. These are the interconnections between Singapore and Batam Island in Indonesia; Sarawak and West Kalimantan; southern Philippines and Sabah; Sarawak, Sabah and Brunei Darussalam; Thailand and the Lao People's Democratic Republic; Lao PDR and Viet Nam; Thailand and Myanmar; Viet Nam and Cambodia; Lao PDR and Cambodia; and Thailand and Cambodia.

The Trans-ASEAN Gas Pipeline

The Trans-ASEAN Gas Pipeline is one of ASEAN's most important infrastructure projects. In July 1999 the Senior Officials' Meeting on Energy and the Seventeenth ASEAN Energy Ministers' Meeting approved a plan of action to establish the Trans-ASEAN Gas Pipeline. The project is part of ASEAN's Plan of Action on Energy Cooperation for 1999-2004.

The two major aims of the Trans-ASEAN Gas Pipeline are:

1. To ensure the reliability of gas supply for ASEAN member countries. This is important because of estimates that ASEAN's gas demand will treble from the year 2000 to 2010.

2. To encourage the use of environment-friendly fuel.
3. Experts on energy note that abundant gas resources in the ASEAN region remain to be explored or developed. The development of a Trans-ASEAN Gas Pipeline will attract multinational companies to invest in gas exploration.
4. The availability of gas made possible through a Trans-ASEAN Gas Pipeline would reduce the region's dependence on crude oil.

As a first step in building a Trans-ASEAN Gas Pipeline (TAGP), ASEAN has organised a "TAGP Task Force" under the ASEAN Council on Petroleum (ASCOPE). Malaysia has been designated the overall lead coordinator of the task force, to be supported by country coordinators and leaders of expert working groups. The TAGP would gradually build up and then link each ASEAN country's gas pipeline. The ASEAN Council on Petroleum has agreed on a Plan of Action for the task force. The final draft of a master plan for the Trans-ASEAN Gas Pipeline will be finalised by 2001.

The ASEAN Highway Network Project

The Fifth ASEAN Transport Ministers' meeting in Ha Noi in September 1999 signed the Ministerial Understanding on the Development of the ASEAN Highway Network Project and spelled out a plan of action for this goal. And at their sixth meeting in Bandar Seri Begawan in October 2000 the ministers reviewed the progress being made.

Counting each member country's roads, ASEAN has identified the highway network:

The network consists of 23 designated routes totalling 38,400 km. As a first step in transforming these highways into a network, ASEAN will come up with a route numbering system to identify each highway in the network.

As embodied in the Ministerial Understanding, the Transport Ministers agreed on a timetable to develop the ASEAN Highway Network:

- Stage 1 to be completed this year: network configuration and designation of national routes.
- Stage 2 to be completed in 2004: installation of road signs for all designated national routes, and their upgrading to at least Class III standards. Building missing links in the national routes and designating cross-border points.
- Stage 3 to be completed in 2020: upgrading to at least Class I of all designated national routes, although Class II standards would be acceptable for low-traffic nonarterial routes.

An ASEAN Highway Infrastructure Development Plan is being prepared to guide project preparation and the building and upgrading of priority roads over the next five to ten years.

Singapore-Kunming Rail Link Project

The Singapore-Kunming Rail Link Project is the core project under the ASEAN Mekong Basin Development Cooperation initiative. A Special Working Group, chaired by Malaysia, carries out this project, which was first proposed at the Fifth ASEAN Summit in Bangkok in December 1995. The Ha Noi Plan of Action again underscored importance of this Project.

With 2 million ringgit of funding support from Malaysia, a team of consultants commenced services in March 1997. At the Second Informal Summit in Kuala Lumpur, in December 1997, the ASEAN leaders agreed that the proposed rail link should be implemented on a consortium basis, involving all ASEAN countries and that an early decision be made about its implementation. The leaders also agreed that non-ASEAN countries such as the United States and those in Europe and Japan should be invited to take part in its construction.

The Feasibility Study of the Singapore Kunming Rail Link project has been completed.

The study examined six routes to link Singapore with Kunming as identified by the Special Working Group on the Singapore-Kunming Rail Link Project, which met in June 1996 in Kuala Lumpur. The study covered the technical, economic and financial feasibility of the routes, environment impact, prioritised routes based on set criteria, financing options, and the appropriate implementation schedule.

The consultants had recommended Route 1, as it has the shortest missing links, the highest social and economic impact and a positive internal rate of return of 6%. The consultants recommended the development of part of Route 6 that would integrate Myanmar into the rail network.

The ASEAN Transport Ministers at their sixth meeting in October 2000 in Bandar Seri Begawan supported the route recommendations. This route configuration would cover seven ASEAN member countries and China. It would include the spur line from Thailand to Lao PDR to Vietnam and a link to Myanmar from Thailand. The Twenty-second ASEAN Railways General Managers' Conference in October 2000 in Yangon also supported the route recommendations.

The second Steering Committee Meeting of the ASEAN Mekong Basin Development Cooperation in October 2000 in Kuala Lumpur agreed that Malaysia would report to the Fourth Informal Summit and the ASEAN-China Summit in Singapore on the outcome of the feasibility study and the ASEAN Transport Ministers' endorsement of the route configuration in order to seek endorsement of the ASEAN and Chinese leaders.

Other Transport Initiatives

ASEAN has also undertaken initiatives to integrate its member countries' other transport systems:

- To complement infrastructure development and to support the implementation of the ASEAN Free Trade Area, ASEAN countries have concluded a framework agreement on the facilitation of goods in transit. Two of the nine implementing protocols have been signed—those on types and quantity of road vehicles and on technical requirements of vehicles. The ASEAN transport ministers expect to adopt and sign the final drafts of the following agreements at its seventh meeting in Malaysia next year:
- ASEAN Framework Agreement on Multimodal Transport;
- The remaining transport-related protocols on designation of transit transport routes and facilities, railway border and interchange stations, and dangerous goods for the ASEAN Framework Agreement on the Facilitation of Goods in Transit; and
- ASEAN Framework Agreement on the Facilitation of Inter-State Transport.
- Adoption of the ASEAN-wide network of 51 designated airports and 46 designated ports to form integral parts of the trans-ASEAN transportation network envisaged in the Ha Noi Plan of Action.

The ministers are also pushing for an ASEAN Multilateral Agreement on Air Freight Services for possible signing at their seventh meeting next year. They are eager to develop the regional framework and guiding principles for liberalising air services in ASEAN.

Telecommunications

With the phenomenal growth of telecommunications in Asia, ASEAN is seeking to ensure that its member countries' systems help in the development of a regional infrastructure.

ASEAN is working on broadband interconnectivity to ensure the interconnectivity and interoperability of the national information infrastructures of ASEAN countries. Work covers the policy and regulatory environment, universal access, technical standardisation and harmonisation, data security, intellectual property rights and cooperative applications. The aim is to ensure the seamless roaming of telecommunications services and to ease intra-ASEAN trade in telecommunications equipment and services. ASEAN is pursuing the development of “e-ASEAN,” which would pull together and integrate ASEAN members' efforts in information and communications technology. The project would involve interconnectivity, with its own high-speed backbone. It would seek to harmonise policies, regulations and standards in information and communications technology within ASEAN.

In October 2000 the ASEAN Telecommunications Regulators Council finalised the sectoral Mutual Recognition Arrangement (MRA) for Telecommunications Equipment—to put in place the regionwide acceptance or recognition of conformity assessment procedures of telecommunications and telecommunications equipment. This sectoral MRA will be made operational after the endorsement of the ASEAN Telecommunications Ministers at their first meeting sometime in April 2001 in Malaysia.

ASEAN member countries are embarking on cooperative programmes to develop telecommunications and information technology (IT) as a major growth sector for ASEAN's competitiveness and to create an ASEAN Information Society, where its citizens are able to work, communicate and re-create a knowledge-based economy. More specifically, ASEAN is cooperating in policy development and programme implementation in the following areas:

- Establishment of the ASEAN Information Infrastructure in the further advancement of the e-ASEAN initiative;
- Facilitation of intra-ASEAN trade and investment;
- Coordination and harmonisation of policies and programmes;
- Promotion and development of indigenous content;
- Promotion of private-sector participation and enhancing collaboration between the public and private sectors on regional programmes and activities; and
- Bridging Digital Divide within ASEAN by encouraging capacity building and human resource development and enhancing access to and use of telecommunications and IT.

Outlook

Much remains to be done in building an integrated infrastructure system in ASEAN. But, ASEAN has laid the groundwork and the regional institutions for realising this aspiration.