# .bn

Brunei

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2003 ——— 1995 · · · · · · global average

Overview

The economy of Brunei, which is predominantly based on oil and gas exports, has done well given the high prices enjoyed by the two commodities during much of 2004. The country is expected to embark on a new round of investment-oriented development activities. A second wave of e-government spending is also expected to extend beyond the current Eighth National Development Plan ending in March 2006. Economic growth is expected to strengthen further in the years ahead due largely to increased government spending. GDP is projected to increase at 3–4 percent. The largest share of the country's annual budget for 2004–2005, amounting to B$5,000 million (US$1 = B$1.7), was the B$604 million that went to the Ministry of Education.

A two-pronged investment strategy has been conceived by the Brunei Economic Development Board (BEDB) to accelerate economic diversification. Plans are underway to develop an international port and hub at a deserted island off the coast of Brunei Bay called Muara Besar. Another set of plans focuses on building a series of heavy industrial plants (aluminium refinery and tyre recycling plants) in Sungai Liang, a town close to the Brunei Liquefied Natural Gas Plant. The Eco-Cyber Park project runs parallel to these initiatives. It has been conceived to integrate ICT and ecology, principally in the form of eco-tourism and environmentally friendly approaches to industrial development within a specially gazetted zone. This project was the brainchild of the Ministry of Communications and is now managed by BEDB. It aims at jumpstarting foreign direct investment in ICT-related fields and incubating local entrepreneurs. However, the Eco-Cyber Park appears to have been overshadowed by the Sungai Liang Industrial Park project. The master-plan contract for the latter was awarded to the Halcrow Group in December 2004. The urgency of attracting downstream investors to the Sungai Liang Industrial Park will further retard the progress of the low-priority Eco-Cyber Park. The consultancy report from the Monitor Group, presumably a part of the feasibility study on the projects, was submitted to BEDB in mid-2003.
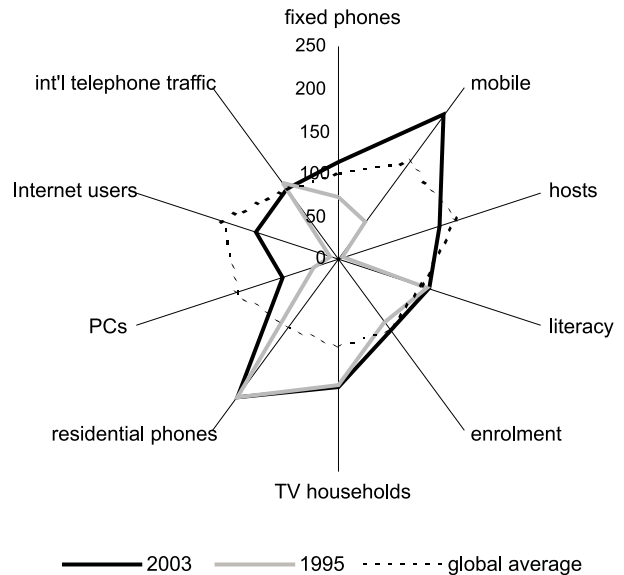
The newly appointed chairman of BEDB, Pehin Dato Hj Mohammad, is likely to maintain the momentum of securing international investors to develop downstream and manufacturing industries in Brunei. BEDB will play a more prominent role in the implementation of the Eco-Cyber Park project. A request for proposal was issued in early 2003. However, there is no indication as to when and how the project will be awarded. Ironically, high crude-oil prices do not favour diversification of the economy into the energy-intensive heavy industries. From a business perspective, it is rather fruitless to allow high profits from oil exports to be offset by heavy spending on downstream activities. The current trend in the oil industry appears to be to focus on lean and niche fields, cutting off subsidiaries or plants that are not making good profits. If it is difficult to create and maintain clusters of manufacturing plants in the country, then other options such as financial services, tourism, logistics and ICT are likely to become mainstream economic activities.

The government is actively pursuing the vision of establishing Brunei as a financial hub in the region, specifically for Islamic financing and trade-related financial products. The country has an edge in this field because of its friendly international policies and alliances. Brunei Darussalam is a Malay Islamic monarchy state, renowned for its peace and security. It also does not need to further burnish its reputation as a modern, progressive and global player. In this regard, the government is committed to improving and strengthening Brunei's finance-related services.

The Treasury, Accounting and Finance Information System (TAFIS) project led the first wave of e-government initiatives in the country. The Brunei Accenture Group, a joint venture between Accenture and a government-owned enterprise, won the contract to implement the project, which is scheduled to be completed by the middle of 2005. TAFIS was followed by the PMOnet project of the Prime Minister's Office. A message that comes across clearly from these two projects is that the government is pinning high hopes on the

outcomes of e-government. There are good reasons to be optimistic. The B$1 billion set aside for all the ministries to implement several e-government flagship projects should generate significant ICT-related economic activities and raise public awareness. E-government will also provide a backbone to support all the other initiatives aimed at attracting foreign direct investment for the diversification of the economy. An efficient, effective and transformed government should help to boost investor confidence. At the same time, human resource development associated with the initiatives will align Brunei's workforce with the requirements of the knowledge-based digital economy.

"Build, operate and transfer" hiccup

The concept of public–private partnership has been mooted in many government forums that focus on financing of government projects. The Eighth National Development Plan outlines the importance of such partnership in the country. However, no ministry or government agency has worked out a detailed strategic plan on how it could be deployed to meet the needs of the e-government programme while complying with legislation, financial regulations and stakeholder requirements.

Concepts such as "zero budgeting" and "build, operate and transfer" (BOT) may be popular in conventional infrastructure projects (such as the construction of bridges and highways), but they pose major difficulties if applied to large ICT projects because the life span of ICT equipment is generally too short to achieve break-even. Besides, it would be awkward to justify fee increases for online permits or licence applications for the purpose of offsetting costs when putting services online often results in lower costs in successful economies.

An interesting case in this regard is the hiccup in the electronic land transport information system (e-Latis), which was initially planned as a BOT e-government project. After the project had been awarded with zero budget from the government, it was operationally stalled for nearly two years despite the vendor having developed several modules. Among other barriers faced was the reluctance of several stakeholders to foot the extra costs. The Ministry of Communications has recently sought government funding for this otherwise "model" BOT project.

On the user end, the target of providing last-mile Internet connectivity to all households in the country remains a far-fetched ambition. The 2003 census reported that about 46.6 percent of households own at least one PC and about 61.4 percent of these PCs are connected to the Internet. The majority of the connections are dial-up with a maximum speed of 56 Kbps. Although there are two ADSL services delivering a maximum speed of 256 Kbps available to domestic users, their popularity is limited. Perhaps the monthly cost of B$98 for a 128 Kbps ADSL line is too high for the budget of an average family.

There is wide disparity in Internet usage in the private sector. At the top end, companies such as the Brunei Shell Companies, HSBC Bank and Royal Brunei Airline are connected via secure leased lines and have nearly reached the maturity level of the Nolan stages of information system development (Nolan, 1984). The Nolan stage model consists of six stages:

Stage 1 Initiation: The computer system is used for low-level transaction processing. There is either no planning of information systems or little systematic methodology in systems analysis and design. Users are not aware of the technology.

Stage 2 Contagion: Users become more curious and demanding about the level of information systems and supporting applications. Technical problems with the development of programs are rampant as budgetary control over IT expenditure is misaligned. This is a period of unplanned growth.

Stage 3 Control: Users see little progress in the development of information systems while the IT department undergoes restructuring and develops a systematic approach to budgeting, planning and management.

Stage 4 Integration: The IT department becomes more oriented towards information provision. There is a significant growth in the demand for applications and a consequent increase in supply and financial resources to meet the demand.

Stage 5 Data administration: Progressing from stage 4, the support for and the quality of applications also are enhanced whereby the service level or redundancy of data increases. Users become more accountable for the integrity and correct use of information resource.

Stage 6 Maturity: This level is the ideal destination.

Within each stage of development, four major growth processes must be planned, managed and coordinated:

(a) *Application portfolio:* This first element refers to the support for key applications within an information system organisation. Some examples are finance systems, accounting applications and call centres.

(b) *Data processing organisation:* The second element focuses on the orientation of data processing, for example, as centralised and technology driven or as management of data as a resource.

(c) *Data processing planning and control:* This refers to the degree of control, formalisation of the planning process, management of projects and extent of strategic planning.

(d) *User awareness:* The last element deals with the level of expertise and human resource development within an organisation.

In contrast to large corporations, the average small and medium enterprises in Brunei are not taking e-commerce as seriously as their counterparts in other Asia-Pacific countries. Their ICT focus is on managing applications and operations. Their software applications are usually derived from customising off-the-shelf packages. As such, Linux and other open source software are not commonly found in these enterprises.

Putting all these into perspective, the future does look very bright for ICT development in the country. The fundamentals are strong with the economy being driven by a growing GDP, an educated population, political stability, supportive international alliances and a rich heritage. Some sceptics may point towards the country's inability to move fast enough with the implementation of projects. Other analysts are doubtful if the small size of the economy will enable it to achieve a critical mass. Despite these unfounded worries and the many trade barriers emerging in the sector, there is very little doubt that the ICT landscape will grow and be significantly different in a couple of years.

Local online content

The government has begun to disseminate information online through a single website (*http://www.gov.bn*) as a part of its e-government initiative. In the past, most of the information was released through the Information Department of the Prime Minister's Office in the form of printed documents. The various ministries also maintain their own websites, which tend to be limited to providing information about the missions and structure of the respective ministries. But this is now changing, and information about the latest activities of the ministries is also being posted. The way that the government disseminates its information will evolve further with the implementation of one of the six principles adopted recently by the e-Government Programme Executive Committee, which requires all information released by the government to be made available electronically. There will be a major overhaul of the government ICT infrastructure by the end of 2004 following the award of the contract for

establishing PMOnet to a consortium comprising local system integrator Syabas Technologies and IBM Business Consulting Services.

Outside the government establishment, Radio Television Brunei has expanded its website to provide international news links and online news broadcasts. However, content creation among private sector organisations is regrettably slow and weak. Much of the existing content is focused on news, events and forums as exemplified by *http://www.brudirect.com*. Very little information about indigenous knowledge, such as local customs and practices, cooking, dressing, folklore and music, is available on the Web. The bulk of the existing local content in this area is related to tourism promotion. The two notable tourism sites are *http://www.tourismbrunei.com* and *http://www.bruneibay.com*. The University of Brunei Darussalam is attempting to fill the gap by building a site consolidating indigenous knowledge under the university library's initiative Bruneiana (*http://www.ubd.edu.bn/suppserv/library*).

Online services

As in the content area, online services will be significantly different by the end of 2004 with the implementation of the e-government projects, which include the setting up of web portals. TAFIS, the first major e-government project, has successfully established linkages across several ministries and government departments via a secure infrastructure to deliver treasury and financial services online. Eventually, these online services will be extended to all government contractors and suppliers as well as authorised financial institutions in the country.

Moreover, the PMOnet project will establish a service delivery infrastructure to facilitate the effective dissemination of information and services electronically within the departments of the Prime Minister's Office. These services include a collaborative e-office (CEO), an enterprise service portal (ESP) and customer relationship management (CRM), which are designed to help transform the Prime Minister's Office into a customer-oriented organisation (Brudirect, 2003). The ESP will enable public access to information and services as well as host government websites, which are currently hosted by the Telecommunications Department (Jabatan Telekom Brunei, JTB). The CRM system will help the Prime Minister's Office to identify and monitor all applications and grievances handled by the relevant agencies and the actions taken by them. The CEO will create an environment that enables collaboration and communication across agencies in delivering their services in a more efficient and productive manner through the use of email and an electronic document management system.

In the private sector, banks are taking the lead in enabling online services. HSBC Bank provides a range of online services including a secure Internet payment gateway that accepts Visa and MasterCard. However, the number of local

e-commerce sites is very small. Noting the low uptake of e-business activities, the ex-chair of the e-Business Programme Executive Committee (EBPEC) has reorganised the committee to focus on a unified approach to promoting e-commerce in the country. The current chair of EBPEC also chairs the BEDB.

Industries

BEDB (*http://www.bedb.com*) was set up to diversify the country's oil- and gas-based economy and to attract foreign direct investment to new industries. In 2003, BEDB engaged the Monitor Group to identify and prioritise industry clusters for potential growth in the country. The study also considered action plans to access and attract foreign direct investment to develop these industry clusters. Despite strong competition from the established ICT sector of neighbouring countries, the study found the need for Brunei to focus on the ICT cluster.

Efforts to develop the ICT industry should show results shortly. The new industry will provide ICT services to the oil and gas sector, locally based international financial institutions and e-government initiatives. The success of ICT development within the Brunei Shell Petroleum Company, which has a strong local workforce, has provided an impetus to government agencies to draw on both local and international expertise. A robust ICT infrastructure and a vibrant industry cluster are perceived as indispensable to the operations of financial institutions and for attracting more offshore banking institutions to set up offices in the country.

There have not been significant changes in the telecommunications industry except for the steadily increasing number of mobile phone users and broadband subscribers. The much anticipated splitting of JTB, under the Ministry of Communications, into a regulatory arm called the Authority for Info-communication Technology Industry (AiTi) and a service-providing corporate arm to be called Telekom Brunei Bhd has not been fully implemented. There are two service providers in Brunei, and they are JTB and the private DST Communications. JTB is the fixed-line service provider, while DST provides GSM services.

Enabling policies

AiTi was established by the Authority for Info-communication Technology Industry Order 2001, also known as the AiTi Order. It was formed on 1 January 2003 with board members appointed from public and private sector organisations and is chaired by Pehin Dato Haji Abdullah, Permanent Secretary of the Ministry of Communications.

AiTi's primary roles are to regulate and develop Brunei's ICT industry. Its vision is to establish a dynamic, innovative and vibrant ICT industry that is anticipative of the needs of the nation and responsive to the challenges of the information era. AiTi has five missions:

- To ensure the supply of reliable, affordable and accessible ICT.
- To contribute towards the economic development of the country by being more competitive.
- To provide a regulatory framework that would enhance effectiveness, efficiency and accountability.
- To keep abreast of international changes and development.
- To create an environment conducive to the development of the ICT industry.

Running in parallel with the missions of the regulatory body are the following principles of e-government:

- *Electronic documentation:* All information released by the government should be made available electronically.
- *Customer-centric approach:* All projects must be designed on a customer-centric and not agency-centric basis.
- *Attaining category C (interact):* All government agencies must achieve at least category B (publish) capability for their projects. Only projects that do not involve transactions with the public are allowed to remain at this level of capability; others should aim to attain category C status.
- *Key in once and visit once:* If the physical presence of a person is required at a government agency, in spite of available online services, the person shall be required to make only one visit to the agency. If personal information is required by the agency, a citizen or a user of the system shall be required to key in or update the information in the system only once.
- *Exchange, collaborate and integrate:* All information systems in government agencies shall work towards the exchange of information, collaboration of services and integration of processes so as to deliver seamless and speedy services through single points of access.
- *Access for all:* Government agencies shall provide multi-level access and assistance to those who need help in obtaining the benefits of e-government services.

Regulatory environment

There were no major changes in the regulatory environment in the past year. However, representatives of the Attorney General's Chamber are actively involved in the various e-government committees, notably the e-Government Programme Executive Committee (EGPEC), the e-Government Strategic, Planning and Evaluation and Coordination Committee (EGSPEC) and the Policy Taskforce (termed locally as KKT).

Among the new regulatory frameworks being drafted are those that deal with the setting up of the Data Protection and Privacy Guidelines, the Generally Accepted System Security Principles (GASSP) and the Computer Emergency

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Structurally adjusting for better results

One of the remarkable achievements in the e-government journey lies in the structural adjustments adopted for planning and implementation of projects. Although the work flows and processes may seem rather bureaucratic, they are carefully managed with clear understanding of the possible outcomes. The top-tier committee (EGPEC), chaired by the Permanent Secretary of the Prime Minister's Office, consists of all ministerial permanent secretaries. Reporting to this committee is the active strategic policy and coordinating committee (EGSPEC), which consists of representatives from key stakeholders. Regional experiences and best practices are incorporated in the planning and project approval stages. A central consultant helps all the agencies in finalising their respective information system and IT plans, and in this way a sense of ownership is developed.

EGSPEC advises agencies on the models to adopt. For example, the recent award of a consultancy contract for the Government-Wide Human Resource Management System to Wescot Technologies and KPMG (Singapore) shows that the lead agency was willing to implement the system only after establishing a clear layout of requirements and purposes. Actively learning from the mistakes of other e-government journeys and avoiding the need to reinvent the wheels run deep into the system. It is a simple way of managing risks and delivering better results to the e-government projects.

Response Team (CERT). These frameworks will provide a solid foundation for building the ICT industry. The Data Protection and Privacy Guidelines will raise investor confidence and help to attract companies and financial institutions with international databases to locate their databases in Brunei. GASSP aims to strengthen the security of the national network, while CERT is focused on creating a regional cyber-crime unit to share information on hackers, worms and viruses among ASEAN member countries that have agreed to establish CERT by 2005.

Open source movement

The open source movement of Brunei is in its infancy. Only a small number of organisations have deployed open source applications, even though awareness is fairly high among practitioners in the ICT sector. The main obstacle is the lack of suppliers who can deliver open source products and services. Faculty members from the University of Brunei Darussalam are active participants in regional conferences on open source issues. A survey in the country indicated that open source applications for email and web servers as well as network monitoring are gaining popularity because of their lower cost of acquisition.

Research and development

Brunei's R&D activities in ICT are concentrated within academic institutions such as the University of Brunei Darussalam and the Institute of Technology Brunei Darussalam. There are no R&D efforts to produce commercialised ICT products. However, the establishment of the Eco-Cyber Park is expected to give rise to commercially driven R&D.

Trends

Some interesting patterns in the consolidation of information systems are beginning to emerge among ICT-mature organisations such as Brunei Shell Petroleum and DST. These companies are in the process of implementing a SAP system that integrates most of their business applications. There was vigorous debate about alternative middleware application platforms for government agencies offered by .NET, J2EE, Oracle 9Asi and SAP. Microsoft and .NET developers and suppliers are more competitive and readily available, but the J2EE platform promises a more robust and advanced set of features. The award of the PMOnet project to Syabas and IBM means that the middleware application server in the Prime Minister's Office will be IBM WebSphere. Two other interesting developments that are likely to dominate the industry are the adoption of the electronic document management system and the mushrooming of CRM and call-centre services across government agencies.

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