

Featured Articles

Overseas Deployment of Japanese-style Public-sector Solutions that Contribute to the Development of Emerging Economies

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OVERVIEW: Among the important challenges associated with the sustainable growth of emerging economies include not only providing physical infrastructure, but also providing institutional infrastructure such as laws and systems. Recognized as being ahead of other nations in having to deal with certain issues, Japan is highly regarded around the world for its technologies and public institutions, and for encouraging the export of its excellent infrastructure systems as an important part of the government's growth strategy. Along with an increasing awareness that furthering the widespread adoption of Japanese-style infrastructure systems will require aid that covers both physical and institutional aspects, there is also rising demand in public-sector IT for solutions as well as for hardware. Against this background, Hitachi is working hard on the overseas deployment of public-sector solutions that are suited to local needs. This article describes the directions being taken in this work along with solutions on which work has already started.

INTRODUCTION

PROVIDING social infrastructure such as electric power, water, transportation, and communications is essential to the economic growth of emerging economies. The provision of infrastructure that has supported national development to date in emerging economies such as Brazil, Russia, India, and China (the “BRIC” countries) and the members of the Association of Southeast Asian Nations (ASEAN) has primarily focused on physical infrastructure.

In addition to physical infrastructure, however, the challenges associated with sustaining growth in these countries also include providing institutional infrastructure such as laws, systems, and human resource development.

Against this background, Hitachi is seeking to expand in the global market with a focus on Social Innovation. In emerging economies, Hitachi is seeking to contribute to the development of these economies by drawing on its experience in Japan to supply information technology (IT) solutions that balance both physical and institutional considerations.

NEW FORM OF AID FOR EMERGING ECONOMIES

Japan has led the world in having to deal with such issues as an aging population, falling birth rate, and environmental pollution. The provision of institutional infrastructure such as government, education, healthcare, and social security is an important challenge for emerging economies, and it is believed that establishing Japanese-style institutions that draw on experience and know-how from Japan offers a highly significant opportunity to help maintain the long-term growth of emerging economies.

Japanese Government Initiatives

Encouraging the export of Japan's excellent infrastructure systems forms an important part of the government's growth strategy. The Ministerial Meeting on Strategy Relating Infrastructure Export and Economic Cooperation set up to study this issue agreed on an Infrastructure Systems Export Strategy⁽¹⁾ in May 2013. The content of this strategy was also reflected in the Japan Revitalization Strategy⁽²⁾ that

was agreed on in June 2013. Furthermore, whereas past overseas aid, such as Official Development Assistance (ODA), has focused on physical infrastructure, there is a growing awareness that encouraging the wider adoption overseas of Japanese practices in the form of Japan's excellent technologies and institutions will require aid that covers both physical and institutional aspects, with an increasing amount of overseas aid being provided in the form of solutions rather than just equipment procurement.

Hitachi Initiatives

Hitachi is working hard on the deployment in emerging economies of public-sector solutions that are suited to local needs, with an ultimate objective that extends beyond installation to include the establishment of practices that will enable the sustainable use of systems. Hitachi engages in dialog with the stakeholders in the country concerned, such as central government, regional government, local companies, and local Hitachi subsidiaries, to identify local needs, and strives to supply solutions in a form that suits conditions in the country in collaboration with Japanese government agencies including the relevant ministries, the local Japanese embassy, and the Japan International Cooperation Agency (JICA).

The following section describes three initiatives in which Hitachi is currently engaged in emerging economies.

ROAD TRANSPORTATION SECTOR INITIATIVES

Hitachi Transportation Solution

Chronic traffic congestion is a societal problem that is common in emerging economies experiencing rapid economic growth. To alleviate traffic congestion, it is important to engage in ongoing work on traffic control measures that deal with traffic congestion and accidents in realtime based on an accurate understanding of current traffic conditions, and road planning that utilizes the information collected by these activities to help improve the road network from a long-term perspective (see Fig. 1). The following are two solutions to be applied in this work.

(1) Probe technology

Probe technology is a technique that uses global positioning system (GPS) data collected by taxis and other vehicles to identify the roads they are driving on and calculate traffic information such as the mean speed they travel at different times of the day. The

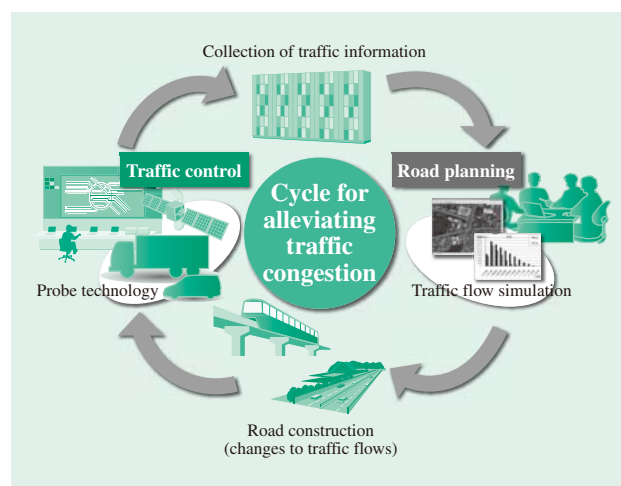


Fig. 1—Cycle for Alleviating Traffic Congestion.

The alleviation of traffic congestion requires both traffic control measures that operate in realtime and road planning that utilizes the information collected by these activities.

calculation results enable realtime monitoring of the level of congestion across an entire city and can be utilized in traffic control and various other activities and services.

(2) Traffic flow simulation

A traffic flow simulation recreates the traffic flow in a particular area based on information such as road layouts and traffic volumes. The technique can be used to estimate the benefits of constructing a new intersection, for example, by simulating how it will affect traffic flows. This helps achieve efficient road planning by providing quantitative preliminary assessments of planned measures before starting on actual road construction.

Traffic Solution Pilot Project in Myanmar

The alleviation of traffic congestion has become a pressing concern in the city of Yangon in Myanmar, which has experienced a rapid rise in the number of vehicles on its roads over recent years due to economic growth and other factors.

Hitachi has participated in a pilot project using probe technology and traffic flow simulation since September 2014 in collaboration with the local government through a JICA program for disseminating private-sector technology to promote the social and economic development of developing countries.

This pilot project demonstrated the ability to monitor traffic conditions in Yangon by using Hitachi's probe technology to generate traffic information from GPS data collected from approximately 100 taxis (see Fig. 2). It also demonstrated how traffic

flow simulation could predict the change in traffic conditions in the vicinity of a bridge constructed during the pilot project.

In addition to the future adoption of the two technologies trialed in this pilot project, which will enable traffic conditions in the city to be monitored at comparatively low cost, it is also anticipated that they will enable more sophisticated traffic control. It is also expected to facilitate efficient road planning and help avoid road construction being undertaken sequentially.

SOCIAL SECURITY SECTOR INITIATIVES

Japan's Social Security System

Since Japan passed its first law providing health insurance for employees (workers) in 1922, a variety of social security schemes have been introduced covering public pensions, medical insurance, workplace accident compensation, and employment insurance. The employee pension system was introduced in 1944 to provide an environment in which workers could be confident of their livelihood in old age as well as in the event of sickness or serious injury. In this way, economic growth was underpinned by an environment in which providing social security systems enabled workers to focus on working rather than other concerns. Furthermore, coverage was extended from workers to the general public with the establishment of insurance schemes covering the entire population during the period of rapid economic growth.

Hitachi Initiatives in Japan

Hitachi has contributed to the implementation and operation of information systems that support the administration of a variety of social security schemes, including medical insurance, public pensions, and workplace accident compensation. In the case of the public pension schemes, Hitachi has been involved in the implementation and maintenance of the information systems that support the National Pension, Welfare Pension, and Mutual Aid Pension schemes for over half a century. The pension payment system for the National Pension and Welfare Pension schemes, for example, is a very large system with a high level of public interest that pays out more than 50 trillion yen each year to approximately 40 million pension recipients throughout Japan⁽³⁾.

These information systems contribute to the accurate and timely operation of such activities as scheme enrollment, contribution payments, and pension payments through the appropriate



Fig. 2—Use of Probe Technology for Visualizing Traffic Conditions in Yangon.

The traffic conditions in Yangon at any given time can be determined for each section of road.

management of information on tens of millions of scheme members over a period of decades.

Social Security Schemes in ASEAN Nations

Providing social security schemes has become a matter of urgency for ASEAN nations against a background that includes: (1) longer life expectancies and aging populations, (2) the breakdown in practices of caring for the elderly, which was previously a matter for the family or community, accompanied by a trend toward nuclear family structures, and (3) growing disparities caused by economic development.

ASEAN nations are also forecast to experience rapid economic development in the future, with a combined gross domestic product (GDP) expected to grow to approximately four trillion US dollars in 2020, roughly the same as that of Japan⁽⁴⁾.

Given this background, it is clear that ASEAN nations will seek to establish and extend social security schemes as their economies develop.

Initiatives Aimed at Deployment in ASEAN Nations

The international deployment plan in the Japan Revitalization Strategy cites the export of infrastructure systems as a strategic initiative for establishing overseas markets.

To implement this national strategy, Hitachi aims to utilize the knowledge and technologies for information systems it has built up from more than half a century of work on social security schemes to deploy social security information systems in ASEAN

nations that will contribute to the establishment of social security schemes in these countries and their accurate operation.

As social security schemes for workers in ASEAN nations are established by learning from initiatives in developed economies, their operation will be supported by the provision of information systems. It is anticipated that this will boost the economic development of ASEAN nations. Furthermore, in the future Hitachi intends to contribute through information systems to the provision of fine-tuned social security schemes such as universal social security schemes and social welfare in ASEAN nations.

Not only will this initiative assist with the progress of ASEAN nations, it is also anticipated that, once social security schemes are in place, they will assist Japanese companies moving into ASEAN by facilitating stable industrial relations and long-term employment. Activities aimed at deploying social security systems in ASEAN nations can be expected to deliver benefits to both these countries and Japan in the future.

POSTAL SERVICES SECTOR INITIATIVES

Export of Postal Systems

One of the system export areas where the government is promoting the export of infrastructure systems is the postal system. Improvements to postal services in Myanmar by Japanese postal experts commenced in FY2014 following the signing of a memorandum of understanding on collaboration in the postal services between Myanmar's Ministry of Communications and Information Technology and Japan's Ministry of Internal Affairs and Communications. Japan's postal technology is top class compared to the quality of other nations' postal services, and the export of high-quality Japanese practices has benefits for both nations, including encouragement for Japanese companies to set up operations as well as improving services to the public in Myanmar and contributing to economic development.

Japan Post Initiatives

Initiatives undertaken by Japan Post Co., Ltd. in FY2014 included sending postal experts to Myanmar, hosting training for Myanmar Post in Japan and providing technical instruction, and also preparing service manuals, establishing service counters, and postmark deployment. As a result, the time taken to send express mail between three cities (Naypyidaw,

TABLE 1. Comparison of Postal Service Size in Myanmar and Japan

Myanmar has a very small number of post offices and transactions compared to Japan.

	Myanmar	Japan
Land area (×10,000 km ²)	67.6	37.7
Population (×10,000)* ¹	5,141	12,706
Postal service operator	Myanmar Post	Japan Post Co., Ltd.
Number of post offices	1,380* ²	24,168* ³
Number of transactions (million/year)	Mail	18,188* ⁵
	Parcels	3,846

DEMS: domestic express mail services

*1 As of 2014

*2 As of 2014

*3 As of May 2015

*4 As of FY2013 (parcels, including DEMS)

*5 Actual data for FY2014

Yangon, and Mandalay) fell from between two and three days to an average of 1.1 days, and delivery rates rose from 87.8% to 99.3%. As work practices still include sorting mail manually and using handwritten ledgers, it is difficult to measure improvement. For further operational improvements, the adoption of IT will be essential if greater efficiency and accuracy are to be achieved, with a need for the installation of IT for things like electronic ledgers, forms printing, and information collection. So that the same number of staff can continue to cope even if the volume of mail increases as the economic development of Myanmar progresses, investigations are being undertaken into the use of IT for tasks that cannot be performed manually (see Table 1).

IT Initiatives

Hitachi is involved with Japan Post Co., Ltd. in a wide range of IT areas, and is drawing on its experience in the postal services to pursue marketing activities that serve the purpose of piloting the use of IT in Myanmar Post's money transfer service (see Fig. 3).

Because the money transfer service has problems such as reading or entering information incorrectly due to the use of handwritten ledgers, it has decided to adopt IT to improve accuracy and speed. The process consists of the amount and recipient being recorded in a database at the accepting office, and the payment form and cash being handed over to the recipient at the target office in accordance with the recorded information. In addition to providing greater convenience for the public of Myanmar, it is expected that this will also reduce the staff workload for the money transfer service by providing functions for searching and for collating daily and monthly totals.

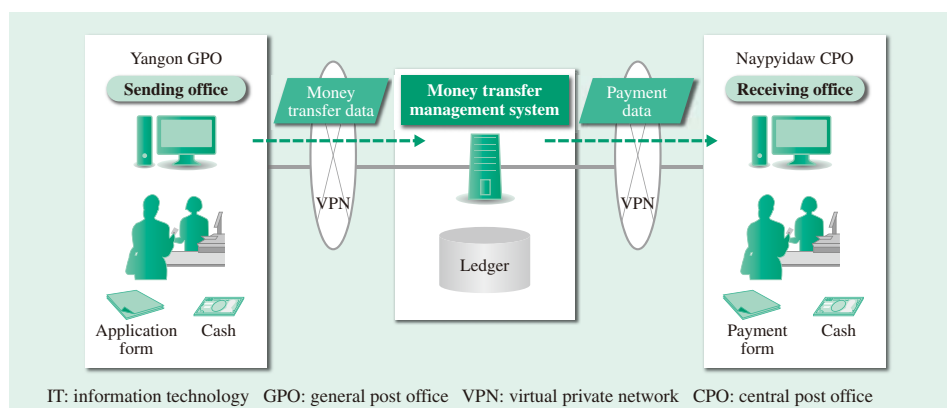


Fig. 3—Overview of IT Use in Money Transfer.
IT has been adopted for the recording in ledgers of money transfers between two offices in Yangon and Naypyidaw.

Another area being investigated for the adoption of IT in the future is the management of mail delivery. It is anticipated that service can be improved by the acquisition of data about the trucking of mail, including identifying bottlenecks in delivery so that they can be alleviated, and providing information on delivery completion.

CONCLUSIONS

This article has described the importance of providing institutional infrastructure in emerging economies, actions taken by the Japanese government to encourage the export of infrastructure systems, and how these serve as background factors in Hitachi's work on the overseas deployment of Japanese-style public-sector solutions.

In the future, Hitachi intends to contribute to the progress of various nations by providing functions that take account of local culture and other requirements, with the adoption of Japanese practices playing a pivotal role in providing institutional infrastructure and systems in emerging economies.

REFERENCES

- (1) Ministerial Meeting on Strategy Relating Infrastructure Export and Economic Cooperation, Prime Minister of Japan and His Cabinet, <http://www.kantei.go.jp/jp/singi/keikyou/> in Japanese.
- (2) Headquarters for Japan's Economic Revitalization, Prime Minister of Japan and His Cabinet, <http://www.kantei.go.jp/jp/singi/keizaisaisei/> in Japanese.
- (3) Pension Bureau, Ministry of Health, Labour and Welfare, "FY2013 Report on Employees' Pension Insurance and National Pension," (Dec. 2014), <http://www.mhlw.go.jp/topics/bukyoku/nenkin/nenkin/toukei/dl/h25a.pdf> in Japanese.
- (4) International Monetary Fund (IMF), World Economic Outlook (WEO) Database, April 2015 edition, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>

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