

### III. FINANCING OF TRANSPORT INFRASTRUCTURE AND PUBLIC-PRIVATE PARTNERSHIPS

Available funding from traditional sources falls far short of the investment needs of the transport sector. Consequently, there is a huge gap in investment in this sector in most developing countries of the region. With countries in the region facing this huge shortfall in investment and its negative consequences on economic growth, there is an urgent need to consider measures to meet these additional funding needs. Under these circumstances, countries have three principal options: first, to review the traditional sources of funds and explore additional funding from these sources; second, to investigate mechanisms for generating more resources from off-budget sources; and third, to consider a greater role for public-private partnerships and to identify and address the impediments to the development of such partnerships. The present chapter discusses these options.<sup>30</sup>

#### A. Introduction

The main traditional sources of funding for transport infrastructure development include allocations from government budgets, domestic and foreign loans and official development assistance. Governments are finding it increasingly difficult to meet their funding needs from these traditional sources, however. Consequently, there has been a need to diversify the sources of funding for transport infrastructure development in many countries.

In recent years, specific user taxes, earmarked funds, retained earnings, tolls and private sector participation have played an important role in infrastructure development in many countries. The role and significance of these sources vary from country to country, however, reflecting a number of factors, including the level of social, economic and political development; the level of sophistication of domestic financial markets; the levels of disposable income; and the extent and efficiency of direct and indirect taxation regimes.

The present chapter provides an overview of recent trends in the financing of transport infrastructure development in the countries of the region, their experiences, and the innovative financing arrangements that have emerged. It also proposes measures that may be considered for increasing the level of available funding, and issues that are perceived as being constraints and impediments to private sector participation. Finally, it raises issues for consideration by national Governments and identifies possible programmes of action at the national, subregional and regional levels.

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<sup>30</sup> This chapter draws on ESCAP document E/ESCAP/MCT/SGO/6, Busan, 6-8 November 2006.

## B. Public-sector financing of transport infrastructure

### 1. Introduction

Many countries in the region are currently implementing ambitious transport development programmes, particularly in the road and airport sectors. For example, 400,000 kilometres of new rural roads are expected to be built in China by 2020 and another 40,000 km of high-standard expressways are expected to be complete by 2007 for its national network. In India, about 368,000 km of new rural road construction is expected. In addition, about 45,000 km of highways four to six lanes wide are being developed, 5,418 km of which were completed by January 2005. In recent years Bangladesh has developed about 46,000 km of paved rural roads. In the Islamic Republic of Iran, major road, railway and port development programmes are being undertaken for the expansion and modernization of the transport infrastructure.

**Table 4: Financing needs of selected transport projects and programmes in the ESCAP region**

| Region/<br>country | Transport<br>subsector/<br>project   | Financing need<br>(US\$ billion) | Time<br>frame | Comments  |
|--------------------|--------------------------------------|----------------------------------|---------------|---|
| ESCAP<br>region    | Asian Highway                        | 18.0                             | -             | Upgrading and improvement of 26,000 km of highways in 26 countries      |
|                    | Trans-Asian<br>Railway               | 23.5                             | -             | Construction of 13 missing links and double tracking of priority routes |
| China              | Rural roads                          | 47.7<br>(Y385.2 billion)         | 2006-<br>2010 | 325,810 km of new roads and paving of 675,535 km of roads               |
|                    | Railway network<br>expansion         | 250.0                            | By<br>2020    | 28,000 km of new lines  |
|                    | Beijing-Shanghai<br>high-speed link  | 24.7                             | -             | 1,320 km of high speed rail link  |
|                    | Airports                             | 17.4                             | 5 years       | 44 new airports plus upgrading of existing ones                         |
| India              | Rural roads                          | 26.0                             | -             | 368,000 km of new rural roads and 370,000 km of upgraded roads          |
|                    | National<br>highways                 | 48.9                             | 2005-<br>2012 | Development of 45,000 km of national highways in phases                 |
|                    | Dedicated freight<br>corridor (rail) | 11.0                             | -             | Proposed 9,500 km of high capacity, high speed freight corridor         |
|                    | Airports                             | 9.0<br>(by government)           | 6 years       | 30 non-metropolitan airports  |

Source: Data compiled from various sources.

Table 4 provides examples of the financing needs of some selected major programmes and projects in the region. Table 5 provides estimates of the average annual transport investment needs in

the region. The estimated average annual investment needs for the developing countries of the region is US\$ 224 billion, representing about 36 per cent of total investment needs for all infrastructure sectors.

**Table 5: Estimates of average annual investment needs in the transport sector, 2005-2015 (Billions of 2004 United States dollars).**

| Transport subsector               | Developing Asian and Pacific countries |           | ESCAP region |           |
|-----------------------------------|--|-----------|--------------|-----------|
|                                   | 2005-2010                              | 2010-2015 | 2005-2010    | 2010-2015 |
| Roads                             | 161.0                                  | 206.0     | 185.0        | 231.0     |
| Railways                          | 7.7                                    | 8.2       | 8.8          | 9.3       |
| Airports                          | 8.7                                    | 10.9      | 14.6         | 18.5      |
| Container ports                   | 2.3                                    | 3.4       | 2.5          | 3.6       |
| Urban mass transit                | 15.6                                   | 24.3      | 20.4         | 29.8      |
| <b>Total</b>                      | 195.0                                  | 253.0     | 231.0        | 292.0     |
| <b>Annual average (2005-2015)</b> | 224.0                                  |           | 261.5        |           |
| <b>All infrastructure</b>         | 608.4                                  |           | NA           |           |

Source: ESCAP, *Enhancing Regional Cooperation in Infrastructure Development Including that Related to Disaster Management* (United Nations publication, Sales No. E.06.II.F.13), pp. 38 and 140.

Note: Estimates are based on investment needs derived from sectoral studies by ESCAP. More recent data on railway investment needs in China show that the annual average would be larger than shown in the table.

A recent ESCAP study estimated that for all infrastructure sectors there was an investment gap in the order of US\$ 220 billion per year.<sup>31</sup> If a proportional gap in funding is assumed across the subsectors, the amount of the shortfall in the transport sector would be about US\$ 83 billion per year.

Using the methodology of a study by the World Bank,<sup>32</sup> the ESCAP study showed that investment of about 7 per cent, varying between 6.57 per cent and 6.92 per cent by subregion, of GDP per year was required for the infrastructure of the developing countries of the region. These figures are not inconsistent with the investments being made in the infrastructure sectors of China, Thailand and Viet Nam, which exceeded 7 per cent of national GDP per year. In a few other countries, investment was between 4 and 7 per cent of GDP per year.<sup>33</sup> However, in general, there is a huge shortfall in infrastructure investment in most countries.

<sup>31</sup> ESCAP, *Enhancing Regional Cooperation in Infrastructure Development Including that Related to Disaster Management* (United Nations publication, Sales No. E.06.II.F.13), p. 141.

<sup>32</sup> M. Fay and T. Yepes, "Investing in infrastructure: what is needed from 2000 to 2010?", World Bank Policy Research Working Paper 3102 (Washington, D.C., World Bank, 2003).

<sup>33</sup> Asian Development Bank, Japan Bank for International Cooperation and World Bank, *Connecting East Asia: A new framework for infrastructure* (Tokyo, ADB, 2005), p. 34.

With countries in the region facing the huge shortfall in investment and its consequences for economic growth, there is an urgent need to consider measures to secure the additional funding needs for transport as well as other infrastructure. There are five major sources of financing in the transport sector: government budgets, official development assistance (ODA), off-budget resources, public-private partnerships and surpluses generated from existing transport organizations. The discussions contained herein focus mainly on funding from government budgets, off-budget resources and public-private partnerships.

## 2. Allocation from government budgets

Direct allocations from the government budget and donor funds continue to be the main source of investment funding in many countries, particularly in the road and railway subsectors. For example, in Pakistan from 2001 to 2005, 75 per cent of total expenditure on the transport sector came from investment programmes financed from the government budget and donor funds. When broken down by sector, these sources constituted 100 per cent of funding for railways, 86 per cent for roads and 65 per cent for ports and shipping. Civil aviation received no funding from these sources. The balance came from different off-budget sources, including self-financing and private sector participation.

In Sri Lanka, budgetary allocations and donor funds will be used to meet the entire investment needs of the country's road sector in 2006.<sup>34</sup> In addition, the road sectors of Bangladesh, Bhutan, Cambodia, Indonesia, Mongolia, Thailand, Turkey and many other countries receive most of their funding from direct budgetary allocations. The situation in ports and civil aviation is different from that of other sectors, because direct charges collected from users generate funds for self-financing. Ports and civil aviation are also different because the private sector is taking an increasingly important role in the development of infrastructure in these areas.

In recent years, budget allocations have increased in real terms in most countries to meet the growing investment needs. However, the share of direct budgetary allocations has declined over the years in many countries. For example, national budget allocations in China in 2004 provided only 3.6 per cent of total road investments for that year, which compares with 78 per cent in 1977 and 9 per cent in 1992.<sup>35,36,37</sup>

National budget allocations for road development programmes in India have increased in real terms but their share has declined. Contributions from a variety of off-budget sources, such as the

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<sup>34</sup> Sarojini Senanayake, Country paper presented at the Expert Group Meeting on the Development of the Asian Highway Network: Regional Experiences and Lessons in Financing Highway Infrastructure and Improving Road Safety, Bangkok, 8-10 May 2006.

<sup>35</sup> Country paper presented on China at the Expert Group Meeting on the Development of the Asian Highway Network: Regional Experiences and Lessons in Financing Highway Infrastructure and Improving Road Safety, Bangkok, 8-10 May 2006.

<sup>36</sup> Yoshitsugu Hayashi, Zhongzhen Yang and Omar Osman, "The effects of economic restructuring on China's system for financing transport infrastructure", *Transport Research A*, vol. 32 (1998), pp. 183-195.

central road funds, debt finance and private investments, now constitute a major part of funding. Budgetary allocations for the rural roads development programme in India represent only 23.4 per cent of the total investment. In Japan, only 0.4 per cent of the road sector budget for 2006 is from the general fund; the rest comes from a special road fund and toll revenues. In the Republic of Korea, the contribution of the national Government to the road sector budget in 2004 was about 58.3 per cent of the total, but most of this came from a special account called the Special Account for Transportation Facility.

There are three main reasons for the general trend towards lower levels of financing from direct budgetary allocation. First, the huge resource requirements motivated countries to explore various off-budget mechanisms.<sup>38</sup> Second, Governments are faced with competing demands from other sectors. Third, as a part of the decentralization process in many countries, such as India, Indonesia, the Philippines and Thailand, devolution of power to provincial and other local levels of government has been granted. This has created higher resource needs at the local level, leaving fewer budgetary resources available to the national Government for its own programmes.

It is likely, however, that, over the foreseeable future, significant levels of funding for transport infrastructure in many developing countries will have to be drawn from government budgets. Consequently, there is a need to continue to pay attention to this source of funds. There remains scope for Governments to increase their tax and non-tax revenues as a share of gross domestic product. This is particularly true in countries where there is a low ratio of revenue to GDP.

### **3. Off-budget financing**

These are a wide range of off-budget financing options that can be used to support the development of transport infrastructure. The most common forms are (a) direct user charges, which include fees and taxes; (b) debt financing, which includes borrowing from financial institutions and development banks; and (c) access to capital markets through different types of financial tools. An analysis of recent trends shows that off-budget sources are meeting an increasing share of total investment needs in many countries. Direct charges to users and beneficiaries are becoming more prevalent. Even in the road sector, where it is still common to think of roads as public goods, it is evident that the acceptance of toll collecting is growing in the region. Consequently, contributions from various off-budget sources are meeting an increasing share of total investment needs in many countries. This section provides an account of the off-budget financing sources that are now being practiced in the region.

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<sup>37</sup> Wang Ruijun and Li Yang Li Huaijian, "Government policy on provincial and rural road development in China", paper presented at the second ANTLER conference organized by ESCAP and Asian Institute for Transport Development, New Delhi, 14-15 April 2005.

<sup>38</sup> Financing of the massive interstate highway development programme in the United States of America in the 1950s and 1960s was undertaken through various off-budget means, i.e. mainly through market borrowings using a variety of financing tools.

(a) *User charges and indirect beneficiary payments*

(i) Earmarked taxes and user fees

Many countries have introduced special taxes, including a cess on transport fuel, vehicle purchase taxes and various user fees. The purpose of these special taxes is to generate funds for investment in the transport sector. Other countries have earmarked a certain percentage of the tax collected from fuel and other sources for the financing of transport projects, particularly in the road sector. Funds from these earmarked taxes meet a significant portion of their investment needs. Earmarked special taxes and user fees are in place in many developing countries, including China, India, Kazakhstan, Nepal and the Philippines.

China has introduced various road-related fees collected at the provincial level, which account for about 30 per cent of road funding. At the national level, 48.2 billion yuan was collected in the form of vehicle purchase taxes, which met 12 per cent of the total investments made in the road sector in 2004.<sup>39</sup> India also collects road user fees in the form of levies on transport fuel. For example, a 50 per cent share of the levy on diesel fuel is earmarked for rural roads. It is estimated that this will amount to Rs 176 billion (approximately US\$ 4 billion) in the first five years for the ongoing rural road development programme (see Box 5). In addition to meeting financing needs directly, guaranteed revenues from earmarked sources have been leveraged in China and India to mobilize additional funds from the market through various financial tools.

(ii) Dedicated road (maintenance) funds

Funds available to the road sector from government budgetary allocations are often significantly less than the amount required to implement new road projects and maintain the road network. Faced with this problem, Governments have taken measures to improve resource inflows and the effectiveness of the management of these resources through the establishment of a dedicated road fund. A number of countries in the region including India, Japan, Kazakhstan, the Lao People's Democratic Republic, Mongolia, Nepal, New Zealand, Pakistan, Papua New Guinea and the Philippines have created dedicated special funds for their road sector. In addition many states in India have also established their own road funds.<sup>40</sup> The revenues for such funds are obtained from levies and surcharges, which are often called user charges. These charges generally fall into three categories: vehicle licence fees, levies on fuel and tolls. Experience suggests that road funds have greatly helped countries to finance their road sectors. Road funds have been particularly effective at helping countries to meet perennial deficiencies in road maintenance.<sup>41</sup>

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<sup>39</sup> Country paper on China at the Expert Group Meeting on the Development of the Asian Highway Network: Regional Experiences and Lessons in Financing Highway Infrastructure and Improving Road Safety, Bangkok, 8-10 May 2006.

<sup>40</sup> For more details on these funds, see D.P. Gupta, "Road funds: a case study of sustainable road maintenance in India", *Transport and Communications Bulletin for Asia and the Pacific*, No. 75 (United Nations publication, Sales No. E.05.II.F.34).

<sup>41</sup> Experience of road funds from countries in Asia, Latin America and sub-Saharan Africa can be found in the *Transport and Communications Bulletin for Asia and the Pacific*, No. 75, cited above.

## (iii) Tolls

While collecting fees directly from road users is a relatively new method in most developing countries of the region, toll revenues meet a significant portion of the road sector budget in developed countries. For example, toll revenues are expected to account for 14.4 per cent of Japan's total road sector investment budget in 2006.<sup>42</sup>

Despite discouraging initial experiences with toll collection in many countries, toll roads are now common in most developing countries of the region, including Bangladesh, China, India, Indonesia, Malaysia, Nepal, Pakistan, the Philippines, Thailand and Viet Nam. In Pakistan, 74 toll sections are in operation on the national highways and another 14 have been approved by the National Highway Authority. In Pakistan, the expected toll revenues in fiscal year 2005-2006 were about PRs 4 billion, providing about 92 per cent of the funds of the dedicated road maintenance account. This money amounted to 57 per cent of the maintenance budget for the whole national road network.

In Indonesia, toll roads have existed since 1978. Currently, 650 km of toll roads are in operation in the country. Since the Indonesia Infrastructure Summit 2005, Indonesia has undertaken major programmes in toll road development. Transactions on 17 toll road programmes were undertaken in 2005. Concession agreements on four toll roads were also reached in 2005. For 2006, the Government is considering another 12 toll road projects.<sup>43</sup>

Toll revenue collection has progressively increased in India as more and more sections of the national highways have been brought under toll operation. The estimated toll collection on national highways in fiscal year 2004-2005 was Rs 4.34 billion. Government policy is for tolls to eventually be levied on all sections of national highways which are scheduled to be upgraded under the national highway development programme.

The administrative arrangement and management of toll revenues vary from country to country. In Nepal and Pakistan, for example, toll revenues are deposited in a dedicated road fund/account for off-budget financing of road sector projects, particularly for maintenance. In India, Indonesia, Thailand and other countries, toll revenues are used to compensate the private concessionaire of toll roads and highways. Tolls collected on highways that were built with public funds may either go to the general fund of the Government or be earmarked for the financing of road projects. In other countries, such as Bangladesh, toll revenues go to the general fund of the Government.

Despite the progress made in direct charging of users through tolls, the political economy issues associated with toll pricing makes direct charging a difficult system to implement.

## (iv) Indirect beneficiary payments

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<sup>42</sup> Tetsuo Miyairi. Country paper on Japan presented at the Expert Group Meeting on the Development of the Asian Highway Network: Regional Experiences and Lessons in Financing Highway Infrastructure and Improving Road Safety, Bangkok, 8-10 May 2006.

<sup>43</sup> See information available at <<http://www.indonesiainfrastructure.com/>> (17 July 2006).

Systems for collecting payment from the indirect beneficiaries of transport projects constitute a major source of funding in some countries in the region. Such systems, which include a capital gains tax in the form of certain land-related taxes and fees imposed on property owners and developers, are used, for example, in China; Hong Kong, China; and Japan as well as the United States of America to capture a part of the development gains generated by new transport projects.<sup>44</sup> However, in most countries of the region, such payment systems either do not exist or have very limited applications. Japan and the Republic of Korea have also used the land readjustment tool for the financing of urban infrastructure projects.

(b) *Debt financing*

(i) Loans from domestic and foreign banks and financial institutions and development banks

Debt financing has become an important source of financing for transport projects. However, it is difficult to ascertain its exact share in the financing of these projects, particularly the share from international financing institutions. Many important transport projects and programmes in the region are at least partially debt financed from domestic and international financing institutions.

In China, revenues from road-related fees and charges are leveraged to borrow funds from domestic banks. Approximately 40 per cent of the total investment in China's road sector comes from domestic financial institutions and another 2 per cent from international financing institutions and foreign countries.<sup>45</sup> Available funding from international agencies for road sector investments in Indonesia was US\$ 253 million (approximately 34 per cent of the total) in 2005 and is US\$ 187 million (approximately 23 per cent of the total) in 2006. In Sri Lanka, foreign funds, excluding grants, provide 50 per cent of the total road development budget amounting to SRs 361 billion for 2006.

The Asian Development Bank, Japan Bank for International Cooperation (JBIC) and the World Bank have financed transport projects in many countries of the region, including Bangladesh, China, India, Indonesia, the Lao People's Democratic Republic, Nepal, Pakistan, the Philippines and Viet Nam. Loans from JBIC have been used to finance the underground mass transit system and the new airport system in Bangkok.

(ii) Bonds

Bonds are a relatively new financing modality in Asia that have been used by a limited number of countries for the financing of transport projects. In India, bonds have been used as an important source of financing for its large investment programmes in the road sector. A part of the fuel cess levied in India is allocated for the development of its national highways. These funds have been leveraged to borrow additional funds from the domestic capital market through the issuance of

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<sup>44</sup> Discussion on various forms of indirect beneficiary payment systems in China, Japan and the United States can be found in Y. Hayashi, Zhongzhen Yang and Omar Osman, "The effects of economic restructuring on China's system for financing transport infrastructure", *Transport Research A*, vol. 32 (1998), pp. 183-195.

bonds that were exempted from the capital gains tax. The National Highway Authority of India have floated bonds/debentures and has raised Rs 85 billion (US\$ 1.89 billion) from the domestic capital market. India has planned borrowings of about US\$ 5.5 billion through government guaranteed tax-free bonds for the first five years of the rural road development programme. India has also gained experience in issuing municipal bonds for financing urban infrastructure projects, but primarily in the water sector.<sup>46</sup>

In China, the first revenue bond financing in 1996 raised US\$ 200 million for the Zhuhai Highway Company Limited in Guangdong Province. The China Development Bank (CDB) is the second largest issuer of debt after the Government. CDB bonds are not formally guaranteed by the Government but are considered semi-official debt.

### (iii) Securitization

Securitization of existing assets is another relatively new mechanism in Asia which has been undertaken in China. Securitization is undertaken once the project is operating, after certain project risks such as construction delays, cost overruns and initial traffic levels have been mitigated. Share listing on the stock exchange in Hong Kong, China and on the Shenzhen and Shanghai exchanges have been used to raise funds through initial public offerings. The main advantage of this financing option is its low cost. The greatest disadvantage of this modality is the time required to complete the regulatory formalities. For example, companies must have three profitable years of operation before they can be listed on the Shenzhen and Shanghai exchanges. Because of these issues, this modality has been considered more appropriate as a refinancing instrument. Since 1995, 15 Chinese expressway companies and infrastructure developers have been listed on the above-mentioned three stock exchanges.<sup>47</sup> Securitization of some existing transport projects in Bangladesh is also under consideration by the Government.

## 4. New initiatives for financing infrastructure projects

### (a) *Private investment promotion fund in Bangladesh*

The Government of Bangladesh has recently launched a fund called the *Investment Promotion Financing Facility* (IPFF) for financing private sector initiatives in infrastructure development. The International Development Association (IDA) gave US\$ 50 million in assistance to this initiative. The Government's share of the fund comes from an ongoing financial institution development project of Bangladesh Bank, the country's central bank. Small-scale infrastructure projects are expected to benefit from the initiative. Banks and non-banking financial institutions will channel their loans to the private sector under the scheme. Entrepreneurs and the financial institution(s) concerned will be

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<sup>45</sup> Country paper on China at the Expert Group Meeting on the Development of the Asian Highway Network: Regional Experiences and Lessons in Financing Highway Infrastructure and Improving Road Safety, Bangkok, 8-10 May 2006.

<sup>46</sup> A large number of Indian cities have issued tax-free as well as taxable municipal bonds. See Chetan Vaidya for further details at < <http://www.ficci.com/media-room/speeches-presentations/2006/apr/2>> (25 July 2006).

<sup>47</sup> Makoto Ojio, "Private sector participation in the road sector in China", *Transport and Communications Bulletin for Asia and the Pacific*, No. 73 (United Nations publication, Sales No. E.03.II.F.43), pp. 1-26.

required to share at least 30 and 20 per cent of the total project costs, respectively. The rest will be covered by IPFF. Investments from the facility are subject to approval of the Government and IDA. The Infrastructure Investment Facility Centre (IIFC), a special public-private partnership facilitation agency of the Government, reviews the eligibility of a project under the Government's private sector infrastructure guidelines of 2004.

*(b) Special infrastructure-financing institutions in India*

India has established special institutions that mobilize funds from domestic and international capital markets for the financing of infrastructure projects. The Infrastructure Development Finance Corporation (IDFC) established in 1997 with the participation of the Government of India, the World Bank, KfW IPEX-Bank and several commercial banks in India, provides long-term loans and guarantees for public and private sector infrastructure projects. IDFC provided a total of US\$ 1.3 billion in loans in 2005.

In a separate initiative, in January 2006 the Government of India established a wholly Government-owned company called the India Infrastructure Finance Company Limited (IIFCL). It has authorized capital of Rs 10 billion. In addition to this capital, IIFCL will be funded through long-term debt from the open market. The Government plans to extend guarantees for repayment of the principal and interest of this debt. One of the expected roles of IIFCL is the refinancing of those private sector projects initially financed by banks, which find long-term financing for infrastructure projects difficult. Public-private partnership projects awarded to private companies for development, financing and construction will receive overriding priority for financing from IIFCL.<sup>48</sup>

*(c) Infrastructure investment fund in the Russian Federation*

The authorities in the Russian Federation are considering the establishment of an investment fund with Rub 40-50 billion in 2005, which is expected to amount to approximately Rub 70 billion in 2006. The purpose of this initiative is to fund infrastructure projects, including those in the field of transportation. Investors can request funding for a part of their investment needs from the Fund. The remaining portion must come from the investor's own resources.<sup>49</sup>

*(d) Pooled finance fund*

Large local government bodies may have the capacity to access domestic capital markets to fund infrastructure projects. However, it is difficult for small and medium-sized local bodies to have access to the capital market. Pooled finance is an innovative mechanism, pioneered in the United States, which has been used for the financing of infrastructure projects. The Government provides grants or "seed money" to establish a fund to capitalize on other loan funds and resources. Total assets in a pooled finance fund can become significant over time through government contributions,

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<sup>48</sup> India, *Economic Survey, 2005-2006*.

<sup>49</sup> RZD-Partner, No. 9(85), 2005. p. 6 ([www.rzd.partner.ru](http://www.rzd.partner.ru)) (in Russian).

state match, leveraging, loan repayments and interest earnings.<sup>50</sup> The money in the fund, in turn, is made available to local bodies for the financing of their projects. Various financial innovations, such as refinancing, government loans and long repayment periods, are used to reduce the cost of financing compared with conventional sources. The State of Tamil Nadu in India has established such a fund, called the Tamil Nadu Urban Development Fund.

(e) *Financing of large programmes*

No single financing method is sufficient to meet the investment needs of some large-scale infrastructure development programmes. For this reason, funding may have to come from a number of sources. The massive ongoing programme to build rural roads in China is an example of such a financing arrangement. In addition, programmes on rural road development need to be integrated with complimentary programmes to have their desired effects. Funds for all such complementary programmes need to be pooled together in order to envision an integrated approach to development in rural areas. However, financing is not the only major issue associated with an approach to development; an institutional framework is also necessary for the integration of all such complementary programmes. The Pradhan Mantri Gram Sadak Yojana (PMGSY) programme in India is a notable example from the region (see Box 5 for details).

**Box 5: Financing of a large programme: the Pradhan Mantri Gram Sadak Yojana Programme in India**

The Pradhan Mantri Gram Sadak Yojana (PMGSY) Programme was launched by the Government of India in December 2000. The goal of this programme is to provide connectivity to unconnected rural habitations as part of a poverty reduction strategy. The Government ensures that the programme's technical and management aspects maintain high standards and uniformity. In addition, the Government facilitates policy development and planning at the state level. In the first phase of the programme, settlements with a population exceeding 1,000 (500 in the case of Hill States, tribal and desert areas) will be covered. In the second phase, settlements with a population of 500 (250 in the case of Hill States, tribal and desert areas) will be covered. About 368,000 km of new road construction and 370,000 km of upgraded or renewed roads are expected to be completed at a cost of about US\$ 26 billion. Planned resource mobilization for the first five years are as follows: budgetary allocations of Rs 176 billion, diesel cess of Rs 176 billion, tax-free bonds of Rs 250 billion and external and internal borrowings of Rs 150 billion (about US\$ 17 billion in total).

Source: [www.pmgysy.org/](http://www.pmgysy.org/)

<sup>50</sup> For example, the Clean Water State Revolving Fund (CWSRF) in the United States has grown to over US\$ 42 billion. For each federal dollar invested, this programme is making US\$ 1.90 available for important water quality projects each year. (See United States Department of State website at <<http://www.state.gov/g/oes/rls/fs/2003/18949.htm>> (19 July 2006).

## C. Private Sector Participation

### 1. Introduction

Governments worldwide have increasingly turned to the private sector for additional resources, increased efficiency and sustainable development in many fields, including that of transport infrastructure and services. Following trends in other fields, private sector involvement in the transport sector has now become common in many countries of the region. More recently, as in other sectors of the economy, the paradigm shift towards a market economy has also led to a growing interest in public-private partnerships in the transport sector.

To facilitate private involvement, reforms have been initiated and Governments are also considering various other steps. As a result, highways, rail systems and new port and airport facilities are increasingly being built following various models of public-private partnerships.

### 2. Recent trends

Globally, private sector participation in infrastructure development grew dramatically between 1990 and 1997. This participation gradually declined from its peak level owing to the 1997 Asian financial crisis. After sluggish private sector participation for several years there has been an apparent resurgence since 2005. Most of the new projects were, however, concentrated in four countries: China, India, Indonesia and Turkey.

Data from the Private Participation in Infrastructure (PPI) Database of the World Bank shows that, in the developing countries of the region between 1990 and 2005 the private sector made investments in 362 transport sector projects (see Table 6). The total value of these projects exceeded US\$ 60 billion. In terms of the number of projects and value of investment, the road sector was at the top, followed by the ports sector.

**Table 6: Total investment and number of projects by subsector, 1990-2005**

| Sector       | Total investment<br>(Billions of US\$) | Share of<br>investment<br>in the sector | Number of<br>projects |
|--------------|--|---|-----------------------|
| Airports     | 7.9                                    | 13.5                                    | 36                    |
| Railways     | 9.3                                    | 15.3                                    | 16                    |
| Ports        | 15.8                                   | 25.9                                    | 100                   |
| Roads        | 27.7                                   | 45.6                                    | 210                   |
| <b>Total</b> | <b>60.7</b>                            | <b>100.0</b>                            | <b>362</b>            |

Source: PPI Database, World Bank (available online at <http://ppi.worldbank.org>).

The total value of such projects, however, is only a part of the total investment made in the transport sector during that period. In more recent years, ports and airports have drawn more investments than in the past and, as a result, their relative shares have increased considerably.

(a) *Ports*

Private participation in port projects is under way in 12 Asian countries. In addition to China, major port sector investments are being made in India, Indonesia and Malaysia. Port facilities with more limited private participation have been built in Myanmar, Pakistan, the Philippines, the Russian Federation, Sri Lanka, Thailand, Turkey and Viet Nam. In 2005, five projects in China with a total investment value of US\$ 2.156 billion and one project in Turkey with a value of US\$ 825 million were undertaken.

Private sector participation in port facilities and services has gathered momentum in India and is expected to be further spurred by institutional reforms in the coming years. A total of 13 private and captive port projects with an investment of about Rs 26.62 billion have been completed and 24 others with investments amounting to Rs 79.10 billion are at various stages of evaluation and implementation.<sup>51</sup> Private sector participation in the management and operation of many ports in India has resulted in efficiency levels comparable to other ports in the region.<sup>52</sup> Considering the impressive success of private operation at Jawaharlal Nehru Port, similar contracts are now under negotiation or are being implemented at many ports across the country. These contracts include the development of a third container terminal at Jawaharlal Nehru Port and a contract for development, management and operation of the container transshipment terminal at Cochin. Many of the major ports in the region are managed and operated by the private sector although they may be owned by the public sector.

The establishment of inland container depots and dry ports is a relatively new development in the ports sector. Inland container depots serve as inland extensions of seaport facilities and have been established to improve logistics efficiency and provide value added services. Although inland container depots with customs clearance facilities have proliferated in other regions, only 103 such facilities exist in the ESCAP region, compared with an estimated 207 in Europe and 373 major ones in the United States. It is significant that many of these facilities have been established with private sector participation. Privately owned and operated inland container depots exist in China, India, Myanmar, Pakistan, the Republic of Korea and the Russian Federation (see the example in Box 6), although many of them do not have customs clearance facilities.

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<sup>51</sup> India, *India Economic Survey, 2005-2006*.

<sup>52</sup> 3iNetwork, *India Infrastructure Report 2003: Public expenditure allocation and accountability* (New Delhi, Oxford University Press, 2003), p. 72.

**Box 6: Kyungin inland container depot in the Republic of Korea: a project with private sector participation**

The Kyungin inland container depot at Uiwang was established in 1992 with the objective of reducing logistics costs. A 75 per cent stake of the inland container depot is held by 16 private sector transportation companies and the remaining 25 per cent stake is held by the Government through the Korean National Railroad. With a paid-in capital of US\$ 5.263 million, the total cost of the project was US\$ 32.2 million. Located close to Seoul, the inland container depot is well connected by road and rail networks with major ports at Busan and Gwangyang. It has an annual cargo handling capacity of 1.37 million twenty-foot equivalent units and provides such facilities and services as rail transportation, inland transportation to and from shippers, and inland customs clearance.

The inland container depot serves as an inland port and has all necessary physical facilities found at a seaport, such as a container yard, a container freight station, and office space for agencies and companies involved in its operations. By serving as a container freight station, Kyungin has brought relief to Busan from the accumulation of cargo. It has also helped to reduce inland traffic congestion by allowing large volumes of cargo to be transported by rail at reduced cost and time.

*(b) Road*

Road projects comprised about half of the total investments with private participation in the transport sector in the region. These projects were limited to seven major countries and were concentrated in China, India, the Republic of Korea and Malaysia. The three other countries with private participation in road projects were Indonesia, the Philippines and Thailand. China was clearly the lead country in terms of both the number of projects and their value. Lately, there has been a marked increase in private participation in the road sector in India and Indonesia. Both the countries are now undertaking a large number of road projects with private sector participation.

India has explored a variety of contractual arrangements for public-private partnerships in highway development. A total of 54 contracts involving 3,100 km of highway and investment of about Rs 190 billion have been awarded. Another 25 smaller build-operate-transfer (BOT) projects at a cost of Rs 14 billion have been taken up for the construction of bridges, flyovers and bypasses. The expected total investment by the private sector for the first three phases of the national highway development programme is about US\$ 6.42 billion. Most of the highway development programmes in the future are expected to be undertaken through public-private partnerships.

The provision of viability gap funding<sup>53</sup> and other incentive measures, investor-friendly contract agreements and transparent administrative procedures are behind the recent success of the public-private partnership programme in India. The Government allocated Rs 14 billion in the fiscal

<sup>53</sup> Viability gap funding is a scheme of the Government of India for providing financial support to public-private partnerships in infrastructure. A grant, one-time or deferred, is provided under this scheme with the objective of making projects commercially viable. Viability gap funding can take various forms including capital grants, subordinated loans, operation and maintenance support grants, and interest subsidies. A mix of capital and revenue support may also be considered.

year 2005-2006 for meeting the viability gap funding of public-private partnership projects.<sup>54</sup> The World Bank and the Asian Development Bank (ADB) are known to have expressed their interest in financing the viability gap of road projects. Box 7 provides a list of important incentives for the private sector.

(c) *Railways*

There are few railway projects with private sector participation and they are located in just seven countries, namely, Australia, China, India, Malaysia, the Republic of Korea, the Philippines and Thailand. Many of these initiatives are urban rail projects and mark the re-emergence of private railway operation in Asian developing countries after a long period of nationalization and public sector management. New urban rail projects in Bangkok, Kuala Lumpur, Beijing and Manila have inspired other countries in the region to consider similar projects for their major cities. Information from the BOT Center in the Philippines shows that, as of June 2006, five urban rail projects for the Manila transit system were under different stages of processing for implementation.

An urban railway project with an estimated cost of Rs 23 billion has been initiated in Mumbai, India, under a 35-year BOT concession agreement. State funding will cover about 28 per cent of the project cost. A similar public-private partnership project is also being undertaken in Hyderabad, which may receive state funding of up to 30 per cent of the cost.

In Australia, a 1,420 km line between Alice Springs and Darwin has been constructed to create a freight landbridge to Asia. Of the estimated total cost of \$A 1.3 billion, the project received government funding of \$A 559.2 million; the rest was mobilized by the private sector. A high-speed train link between Seoul and Busan has been implemented in the Republic of Korea at a cost of about US\$ 17 billion. The project received substantial government grants and loans to make it commercially viable. The Government provided 45 per cent of the cost (35 per cent as grants and 10 per cent as loans); the remaining 55 per cent was mobilized mainly through debt financing.<sup>55</sup> Two public-private partnership intermodal rail projects linking ports in Gujarat have been implemented. These projects, the Pipav Rail Corporation and the Kutch Railway Company, have a total value of over US\$ 198 million.

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<sup>54</sup> India, *Economic Survey 2005-2006*, p. 189, available at <<http://indiabudlet.nic.in/es200506/esmain.htm>> (14 July 2006).

<sup>55</sup> Information available at <<http://www.webmag.transport.alstom.com/eMag/externe/international/korea/ktx/mar2004/1/224.asp>>

**Box 7: Incentives for private sector participation in the road sector in India**

The Government of India has taken a number of administrative, legal and fiscal measures to promote public-private partnerships in the road sector. The model concession agreement has been made investor friendly through more equitable allocation of risks and provision of incentives in the form of grants and other measures. The main incentives include:

- Government bears expenses for land acquisition and pre-construction activities;
- Foreign direct investment up to 100 per cent;
- Capital subsidy up to 40 per cent to meet the viability of a project;
- Government equity up to 30 per cent;
- 100 per cent tax exemption in any consecutive 10 years;
- Duty-free import of road construction equipment;
- Bond exempted from capital gains tax;
- Tax benefits for property development activities;
- Transparent and well defined procurement procedure;
- Equitable dispute resolution mechanism.

*Source:* A.P. Bahadur, "Financing national highways in India", paper presented at the Expert Group Meeting on the Development of the Asian Highway Network: Regional Experiences and Lessons in Financing Highway Infrastructure and Improving Road Safety, Bangkok, 8-10 May 2006.

*(d) Airports*

Airport projects with private sector participation have been implemented in nine countries of the region. The majority of the projects are located in China, India, the Russian Federation and Turkey. Cambodia, the Lao People's Democratic Republic, Malaysia, the Philippines, Thailand and Viet Nam have also implemented airport projects with private sector participation. Last year, two major airport deals were made in Turkey (for the Ankara airport) with a total investment of US\$ 2,848 million.

Recently, India has been able to draw huge private investments for its airport sector. The Cochin airport was the first greenfield airport constructed with private participation, at a cost of about US\$ 68.5 million. Greenfield airports are under construction at Bangalore and Hyderabad at a cost of US\$ 324 million and 399 million, respectively. In both cases the private sector shares 74 per cent of the estimated cost. Several other similar projects are also under consideration by the Government. The Delhi and Mumbai airports have been handed over to private consortia, led by domestic firms, under operation management development-agreements with a concession period of 30 years. The Government will hold a 26 per cent stake in both joint venture companies that will manage these airports. The capital investment for the Delhi and Mumbai airports over the next five years would be about Rs 28 billion and Rs 26 billion, respectively.<sup>56</sup>

<sup>56</sup> The *Economic Times*, available at <<http://economictimes.indiatimes.com/articleshow/1477941.cms>> (July 2006).

### 3. Institutional arrangements for public-private partnerships

Many Governments in the Asian and Pacific region have spelled out their policy and regulatory frameworks. Some Governments have gone beyond their usual roles of formulating policy, streamlining administrative processes and creating a supportive legal environment. They have established specialized units and devised suitable legal instruments to provide active support for private sector activities in infrastructure development. For a list of special units in Governments of selected ESCAP members, see Box 8; for a list of legal instruments in the region, see Box 9.

#### **Box 8: Some of the special PPP units in governments and programmes in the region**

- Private Infrastructure Investment Management Centre (PIMAC), Republic of Korea
- BOT Center, Philippines
- National Committee for the Acceleration of Infrastructure Provision Policy (KKPPI), Indonesia
- Infrastructure Investment Facilitation Centre (IIFC), Bangladesh
- Bureau of Infrastructure Investment (BII), Board of Investment, Sri Lanka
- Partnership Victoria, Victoria, Australia
- Gujarat Infrastructure Development Board (GIDB), Gujarat, India

#### **Box 9: Special instruments in support of private participation in infrastructure development**

- Private Finance Initiative Promotion Law (PFIPA Law), Japan
  - Private Provision of Infrastructure Act (PPI Act), Republic of Korea
  - Land Transport Management Act, New Zealand
  - Build Operate Transfer Law, Philippines
  - Board of Investment Law, Sri Lanka
  - Build Operate Transfer Law, Turkey
  - Gujarat Infrastructure Development Act, Gujarat, India
  - Sectoral laws in many countries (such as India and Indonesia) with the provision of public-private partnerships/private sector participation in infrastructure development
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#### 4. Observations and lessons learned

Private sector participation in the transport sector has increased considerably in the last two years. In the face of continuing government budget constraints and inefficiencies, it is expected that private participation in the sector will continue to grow in order to meet the growing demand.

Until recently, the Asian focus has been on new capital-intensive BOT projects. These projects are very complex to administer, however, particularly in view of the institutional weaknesses and capacity constraints of the public sector. Recognizing the complexities of BOT contracts, attention has been placed on more practical forms of participation aimed at increasing the efficiency of existing assets through improved operation and modernization. The success in the road and airport sectors in India shows that an appropriate risk sharing framework and more diversified contractual arrangements could result in greater participation by the private sector.

The growth of local currency financing, as evidenced in China, India, Malaysia, the Republic of Korea and Thailand, is an encouraging sign for public-private partnerships.<sup>57</sup> However, given the current limited level of debt financing in the region, further innovations in project financing and financing structures are required.

A special public-private partnership unit or programme within a Government can be very effective in promoting public-private partnerships. The experiences of countries with such units and programmes have been positive. These units and programmes have served as catalysts for the promotion and implementation of private projects.

In many countries, legal provisions and procedures related to private sector participation are complex, numerous, scattered over many different instruments and have no fixed time frame for completion. To address these problems, many countries have developed special legal and regulatory instruments, which have helped to reduce the level of uncertainty surrounding public-private partnership project deals and have increased investor confidence.

Experience from both within and outside the region suggests that Governments need to pay special attention to institutional development and capacity-building in the public sector, without which there will not likely be much progress despite the fact that the growing demand requires additional investment by the private sector.

#### D. Major findings and policy issues

The demand for transport infrastructure facilities will continue to increase owing to the growth of external and domestic trade and production, as well as rising incomes and ongoing urbanization. However, without larger government budget allocations, public provision alone will not be sufficient to meet the growing demand.

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<sup>57</sup> Makoto Ojira, *op.cit.*, discusses this development in China.

Current funding levels from all available sources fall far short of the total investment requirement. While the actual amount of future investment needs may still be debated and estimates refined, there is a great need to increase the availability of funding for transport infrastructure development from all possible sources.

An analysis of the current trends shows that off-budget financing of transport infrastructure is becoming increasingly more common in the region. In the future, funds from off-budget sources are likely to meet a larger share of investment needs. Although some countries are already using more off-budget sources, most countries are still relying heavily on their limited budgetary resources. Greater reliance on off-budget sources requires that countries explore options such as direct user charging and use innovative financing tools for borrowing from the market and also use equity participation by the private sector.

Few countries in the region have used financial tools and innovative instruments for borrowing money from the market or from long-term funds. Capital markets in most countries are not fully developed. Legal and regulatory bottlenecks, particularly at the sub-sovereign levels, remain a major constraint to debt financing. The growth of public-private partnerships is also dependent on the availability of debt finance in a country.

Indirect beneficiary payment systems through development gains taxation and other fees are almost absent with the exception of a few countries, such as China, Japan and the Republic of Korea. Indirect beneficiary payment systems could be a major source of finance, particularly for urban transport infrastructure.

Domestic financing is likely to remain more dominant than foreign investment. As such, domestic financing constraints need to be addressed. Suitable financing/refinancing tools, such as bonds and securitization of assets, need to be considered. The lessons learned from countries that have established special infrastructure-financing institutions and mechanisms need to be evaluated.

Governments have progressively pursued different types of partnerships with the private sector as a means of gaining access to additional resources, as well as to capitalize on the private sector's efficiency and ability to innovate. However, progress has been slower than expected owing to a range of issues. The knowledge and the necessary skills that are required to develop and implement public-private partnership projects are often lacking in the public sector. Consequently, despite the large number of potential projects, in many countries few deals for such projects were made.

Effectively engaging the private sector requires policymakers to develop an appreciation for its abilities while remaining aware of the limitations on the role it can play. Experience from various countries suggests that the formulation of an appropriate legal and regulatory framework, a suitable risk-sharing mechanism, transparent procurement processes and streamlined administrative processes as well as the provision of incentives, are also vital for the promotion of public-private partnerships.

## **E. Conclusions**

Most countries of the region are facing shortages of transport infrastructure and services. Available funding from the traditional sources falls far short of the investment needs, resulting in a huge gap in investment. There is a need to increase available funding from all possible sources, with greater reliance on non-traditional sources, including direct beneficiary payment systems and public-private partnerships.

Many Governments are diversifying their funding sources, with increasing emphasis on off-budget sources, and are also encouraging the participation of the private sector. An analysis of regional experiences shows that there is much room for further development in these areas. Off-budget financing still has a very limited role in most countries and private sector participation has also remained limited to a few countries. Considering the potential of these sources, it is important for countries to make concerted efforts at the national level.

### **1. Country level**

Governments that do not have them may wish to consider the establishment of transport funds/accounts. This will make additional funding available for investment in the transport sector. Experience of countries both from within and outside the region suggests that establishment of independent authorities would be ideal for efficient management of resources deposited in such funds. In countries where transport funds/accounts already exist, additional sources of resources may be explored for an increased level of funding from them.

Contributions from direct charging of road users are still fairly limited in most countries. This option needs to be explored further in order to mobilize additional funds for road development and maintenance of facilities.

With the exception of a few countries, the potential of the private sector has largely remained unutilized. Considering the recent positive experience of some countries, Governments may wish to explore alternative collaboration models of public-private partnerships with appropriate risk-sharing frameworks and administrative arrangements supported by necessary legal and regulatory provisions.

Countries may wish to consider their current legislative and administrative frameworks as well as administrative procedures with a view to creating a conducive environment for public-private partnerships. Actions in this respect may include suitable changes in legal and regulatory regimes to induce greater confidence in the private sector, streamlining of administrative procedures that place time limits on approval processes and the establishment of one-stop shops.

A special public-private partnership unit or programme in the Government can address the capacity problem of the public sector effectively and promote private participation in a planned and coordinated manner that takes into account the overall sectoral needs and cross-cutting issues. Such an administrative arrangement in Government can also help to enhance the social acceptability and transparency of private projects by institutionalizing the project identification and approval processes.

In view of the merits of special units and programmes, Governments that do not have them may wish to consider establishing them.

## **2. Regional level**

The secretariat has recently commenced an interregional project on public-private partnerships under the United Nations Development Account. Future activities are expected to continue to build on available expertise, resources, institutions and networks within the regional commissions and other United Nations entities along with agencies that have an interest in financing mechanisms and building capacity for public-private partnerships.