



United Nations Conference on Trade and Development

Distr.: General
4 March 2013

Original: English

Trade and Development Board
Trade and Development Commission
Multi-year Expert Meeting on Promoting Economic Integration and Cooperation
First session
Geneva, 11–12 April 2013
Item 3 of the provisional agenda

Supporting infrastructure development to promote economic integration: the role of the public and private sectors

Note by the UNCTAD secretariat*

Executive summary

Infrastructure development can contribute to growth and development through several channels, such as reducing transaction costs, increasing the durability of capital goods, fostering higher trade and investment, expanding demand and supply diversification and achieving economies of scale and scope. However, the financing gap for infrastructure development is massive in poorer countries, on some estimates in excess of US\$1 trillion per year. In recent years privatization and public–private partnerships (PPPs) have been the focus of much of the discussion on infrastructure development, including in the context of development cooperation. However, each carries costs as well as benefits which need to be carefully weighed if the financing gap is to be closed both efficiently and with clear development gains. Regional development banks (RDBs), including those with a strong South–South dimension, can provide alternative financing mechanisms. Some examples of successful infrastructure development projects are those led by the Asian Development Bank (AsDB), the African Development Bank (AfDB), the Inter-American Development Bank (IADB) and the European Investment Bank (EIB). Subregional development banks are also increasingly filling the funding gap but are not established in many developing regions. Deliberations are needed on the constraints to funding regional and subregional development banks as these banks can play a critical role not only in providing financing for infrastructure directly, but also as “market makers” that create and provide financing instruments which better share risks between creditors and borrowers. Their role can also be leveraged to include development responsibilities towards providing financial support for infrastructure development in low-income countries.

* This document was submitted on the above-mentioned date as a result of processing delays.

Introduction

1. There is broad consensus that infrastructure is beneficial to growth and development. Infrastructure contributes to growth and development via productivity gains, and by reducing adjustment costs, especially for small firms, increasing the durability of private capital and markedly improving health and educational outcomes (Agénor and Moreno-Dodson, 2006). Infrastructure development, moreover, can facilitate trade and foreign direct investment and has the power to foster intraregional trade and investment flows, thereby creating regional markets, and in the process further accelerate growth and reduce poverty. Together with expanded demand, infrastructure development can also encourage supply diversification and regional economic convergence.

2. Nonetheless, infrastructure development in the developing world, where it is needed most, has been very limited except in certain parts of East Asia (Fay et al., 2011). Financing has been a major constraint: recent estimates for a step change in infrastructure expansion to support growth acceleration and development put the gap in the financing needed at between US\$1.25 and US\$1.5 trillion per year, an amount equivalent to 5–6 per cent of developing country gross domestic product (GDP). Most current investment in infrastructure comes from the public sector. Private investment is about US\$150–US\$250 billion, or scarcely 1 per cent of developing country GDP (Battacharya et al., 2012).

3. The private sector alone is unlikely to increase its investment substantially in infrastructure in the near future, due to externalities and the risks involved. Infrastructure development is a multifaceted task that typically requires large-scale funding involving complex financial engineering, an appropriate regulatory framework, active public policy and above all human, technical and institutional capacities.

4. Support for infrastructure development may take different forms. This note for the first session of this multi-year expert meeting examines three specific initiatives and mechanisms which have informed discussion of development cooperation in this area: privatization, PPPs and financing from RDBs.

5. Privatization has been widely undertaken around the world in the past 30 years to enhance enterprise performance, improve quality in services delivery, increase access and, at the macro level, generate fiscal gains. A good deal of development cooperation has aimed at promoting this trend. Empirical evidence, however, has cast doubt over these expected gains. This note will discuss in more detail the rationale that has been put forward in support of privatization, its limitations and possible alternatives to achieve privatization goals such as those mentioned.

6. PPPs, particularly for financing long-term infrastructure projects, have been considered a possible alternative where the State lacks the resources in sufficient amounts to undertake such projects, and there is no guarantee that the private sector will do so. PPPs have also been promoted as a means to scale up investment in public infrastructure and help the State to overcome capacity constraints in project design, construction and operation. However, PPPs can be complex and thus require at a minimum a certain level of technical and institutional capacity for successful outcomes which only larger, middle-income countries might have.

7. With regard to RDBs, this note discusses their specific role in providing finance for large, cross-border infrastructure projects. These banks can address market failures and have the ability to put together complex financing packages, including between developing countries and with private sources of finance.

8. This note first reviews the literature on the links between infrastructure and development, focusing on empirical work on the effects of infrastructure provision on

growth (including work on indirect channels such as trade facilitation), poverty and inequality. It next assesses the role of the three partnerships initiatives and cooperation mechanisms mentioned above in supporting infrastructure development to promote economic integration among developing countries. Finally, the note presents questions for participants of the expert meeting.

I. Infrastructure and development

9. Infrastructure capital, which includes transport-related facilities, water and wastewater treatment facilities, telecommunications, and energy generation, transmission and distribution, is often mentioned as a crucial prerequisite for the success of development policies. Infrastructure matters because it can affect a wide range of economic activities, having a direct impact on both firms' production capabilities and consumers' consumption possibilities. In addition to these microlevel and household impacts, infrastructure can support above all productive diversification and promote intraregional trade and investment, including through trade facilitation. The micro and macro effects of infrastructure contribute to growth acceleration, while the services infrastructure provides to households can help further enhance labour productivity and bring about poverty reduction.

10. On average between one-third and one-half of infrastructure services is for final consumption by households (Prud'Homme, 2004). The remainder corresponds to intermediate consumption, mostly by firms. For small producers and local firms of developing countries, access to distant markets and contacts with potential clients rely on the existence of a suitable and relatively cheap transport and telecommunications network. Furthermore, deficient electricity networks, plagued by frequent power outages and unstable voltage, may induce high costs and even deter some types of investments. Infrastructure can therefore expand the productive capacity of an area, by both increasing resources and enhancing the productivity of existing resources.

A. Infrastructure and growth

11. Since the beginning of the 1990s, a number of empirical studies have found that public investment in infrastructure has a positive and significant impact on output. In his seminal work, David Aschauer (1989) triggered a long overdue dialogue among economists and policymakers when he published a study arguing that much of the decline in the United States of America's productivity in the 1970s was precipitated by declining rates of public capital investment. Aschauer's work suggested extremely high returns on public infrastructure, with the marginal product of government capital in the region of 100 per cent per annum or more. This would imply that one unit of government capital paid for itself in terms of higher output within a year or less. Given these results, it is not surprising that Aschauer's work was to initiate the "public infrastructure debate" which has since resulted in numerous academic studies (Gramlich, 1994).

12. Despite the fact that the original headline elasticity claims of Aschauer have been reduced over time, overall the abundant literature concludes that a stock of infrastructure assets has a positive and significant impact on the rate of output growth (Agénor, 2011; and Straub, 2008). Infrastructure tends to be particularly important along the process of structural transformation, as developing countries move away from primary to secondary and tertiary economic industries. In a recent paper, Battacharya et al. (2012) show how for most developed economies a temporary boost in investment and infrastructure spending has indeed been necessary to move to the next stage of economic growth and development.

13. In addition, there are many structural reasons to believe that the size of required infrastructure expansion is greater today than it has been in the past. First, since global trade is playing an ever increasingly important role in countries' development, so too must infrastructure, including traditional transport infrastructure and increasingly information technology infrastructure. Second, the rapid pace of urbanization and of population growth in the developing world necessitates greater infrastructure requirements than before. Third, the need to ensure the environmental sustainability of economies necessitates a greater role for infrastructure and its related networks.

B. Infrastructure and inequality

14. By affecting factor productivity and therefore relative factor returns, government spending on infrastructure may also play a critical role in the evolution of wealth and income distribution as the economy grows over time. However, a priori, the nature of such a relationship will be unclear.

15. In contrast to the public investment–growth relationship, empirical evidence on the relationship between infrastructure investment and inequality is less conclusive. For instance, Ferranti et al. (2004), Fan and Zhang (2004), Lopez (2004), and Calderon and Servén (2004) find that public investment has contributed towards the alleviation of inequality. Wolff and Zacharias (2007) document an inverse short-run relationship between government expenditure and inequality for the United States, though they do not distinguish between public consumption and public investment. However, some other empirical evidence is less supportive. Khandker and Koolwal (2007), for instance, find that access to paved roads has had limited distributional impact in rural Bangladesh.¹

16. It is possible to obtain more unambiguous (and positive) results on the infrastructure–inequality nexus by looking exclusively at the impact of consumption services. These services, such as water and electricity, generally occupy a significant fraction of poor households' budgets. Increasing investment in these areas therefore tends to benefit relatively more households at the lower tail of a distribution. For example, in a sample of Latin American countries, households in the poorest quintile often spend more than 5 per cent of their income on water and more than 7 per cent on electricity (Straub, 2008). In East Asia, figures from the Japan International Cooperation Agency (2005) for 2003 show that the average share of total household expenditure on water services varies between 0.8 per cent (China) and 3.2 per cent (Cambodia), but can reach up to 16–33 per cent for some of the poorest households in Indonesia.

C. Trade facilitation

17. Various kinds of infrastructure can be provided to foster international trade. Hard trade-related infrastructure covers ports, airports, roads and rail lines – all critical for connecting a country to the outside world. Less visible but no less important are the soft trade-related infrastructures of border and logistics management (shipping, air transport, telecommunications, business environment).

18. Trade facilitation is garnering increasing attention among academics and policymakers, since most countries have cut their tariffs, liberalized their quotas and floated their exchange rates, thus creating other trade-related transaction costs that are relatively

¹ See also Brakman et al. (2002), Artadi and Sala-i-Martin (2003), Banerjee and Somanathan (2007) and the World Bank (2006).

more significant. Another transformative change contributing to the rising attention devoted to trade facilitation has been the spectacular growth of global value chains that span national boundaries (World Economic Forum, 2012). In fact, 60 per cent of global trade involves intermediate products, and 30 per cent of this total is conducted between affiliates of the same multinational corporation. This raises the importance of trade costs because they are incurred more than once in the trip from producer to consumer, and because a multinational can easily calculate the amount that trade transaction costs are subtracting from its global profits.

19. An important strand of the literature emphasizes the significance of trade facilitation and logistics, and proposes the view that building up an enabling environment for trade would be key to boosting development.² Employing the World Bank's new Logistics Performance Index (LPI), Portugal-Perez and Wilson (2012), for example, find that logistics outperformers enjoy faster trade expansion, more rapid economic growth and more diversified exports.

20. The LPI compares the trade logistics profiles of 155 countries and rates them on a scale of one (worst) to five (best). The ratings are based on 6,000 individual country assessments by nearly 1,000 international freight forwarders, who rate the eight foreign countries their companies serve most frequently. As with other perception indexes, however, the LPI has large margins of error. As development aid is increasingly made conditional on the implementation of reforms, countries with the least resources to implement "good" trade facilitation stand to suffer most from withdrawal of precisely the support they need to have a realistic chance of improving trade-related infrastructure. In this way, perception-based indexes can become entirely counterproductive.³

21. Lack of support to implement "good" trade facilitation may, in addition, pressure countries towards the other end of the spectrum. The result is that countries may end up adopting measures such as excessive reductions in import tariffs, which can both erode their capacity to raise much needed government revenues, and leave specific productive sectors overly exposed to foreign competition.

II. The role of different partnership initiatives and cooperation mechanisms in support of infrastructure development

A. Privatization

22. The intensification of privatization in the last three decades marks a distinct change in the trend, frequency and value of transfers from the public to the private sphere, which has impacted the economic organization of assets, capital stock and production across countries at all levels of development.

23. After the global recession and the spread of debt crises in many developing countries in the early 1980s, the structural adjustment programmes led by the International Monetary Fund and the World Bank emphasizing fiscal balance of government budgets became the short-term analogue to a longer-term goal of reduction in the size of Government and its role in the economy. Given pressures from international organizations, and in the face of financing constraints, developing countries adopted privatization programmes which gained

² See e.g. World Bank 2010 and 2012.

³ See Arndt and Oman, 2006, for a critique of perception indexes of governance.

traction in the early 1990s. Since then, ownership transfers have continued as an established source of budgetary resources.

24. As developing countries went through the process of fiscal adjustment, justification for privatization became increasingly associated with efficiency goals in the areas of production and management, along with an alleged need to address principal-agent problems in the public sphere. However, frequent episodes of collusive fire sales have gained prominence and become a centrepiece of attention in the literature on privatization. This has led to efforts to create regulation systems aimed at assuring transparency and fairness in the transfer process.

25. Successful privatization has been deemed not solely dependent on proper public-private transfer but also on increased efficiency in production by privatized firms, as well as comprehensiveness of coverage in service provision and retention of public revenues by Governments in the form of taxes from newly privatized enterprises. The literature on privatization, therefore, has focused on coverage issues – seen as critical among those weary of passing on control of vital goods such as water and electricity to the private sector – and on efficiency gains, a central issue for those eager to highlight the benefits of privatization. Whether productivity gains can come from increased output due to technological upgrading, from more efficient management or from labour-shedding and downsizing is an important issue that requires closer scrutiny case by case. How efficiency gains are distributed across the economy is another issue which has important implications for economy-wide growth.

26. A topic that has received far less attention in the privatization debate has been the macroeconomics of the production process and overall levels of demand, development and diversification for countries pursuing intensive privatization. Privatization has been associated with the decline of manufacturing in the developing world, but the macroeconomics of productivity often requires deep investment in manufacturing. Unfortunately, there has been little analysis of the link between privatization and a shrinking manufacturing base. There have also been few efforts to explore the proposition that where an economy has had its production base narrowed or reverted to lower value added production, this has been a result of diminished Government pursuit of development programmes, and in particular loss of State-owned enterprises as tools for leveraging change and promoting development.

27. Regarding privatization in infrastructure sectors, the transport sector tends to be the easiest target since it often poses heavy fiscal burdens on the State. Countries that have implemented privatization during a state of crisis (e.g. Argentina, Bolivia, Peru) have put infrastructure at the core of their initial reform wave, while countries that were in a position of relatively greater strength have been more cautious in how they went about privatizing these sectors (e.g. Brazil, Chile and Mexico).

28. Empirical evidence on the impact of privatization has been mixed. The effects seem to vary considerably depending on the nature of the business and the level of power of the market in which it operates, and on whether it is undertaken in countries that have the appropriate regulatory framework and institutional capacities in place to increase the likelihood of positive outcomes (Roland, 2008). Contrary to the stated objectives of privatization, in various instances privatization can lead to sizeable welfare losses due to lower employment, cuts in social benefits and higher prices.

29. Even where the State's economic role through direct ownership of productive assets has declined significantly, State enterprises have still remained an important economic force. In many cases, State-owned enterprises have combined greater efficiency at home with increasing investments abroad, including in other developing countries. In these cases, exposing State enterprises to market discipline has been a way of increasing efficiency

without full transfer of ownership. This has been achieved through various mechanisms, including independent regulation, the strategic entry of selected private sector firms, concessional agreements with selected service providers and the sale of majority or minority shares (see Estache, 2007; Chang, 2007).

B. Public–private partnerships

30. Rising demand for quality infrastructure and growing scarcity of public funds have given momentum to PPPs around the globe. While there is no single definition of PPPs,⁴ they broadly refer to long-term, contractual partnerships between public agencies and private sector firms where the former retain full ownership of the assets involved in a project as well as full oversight of the private sector’s activities in the project, but the private sector is allowed to operate the facility and collect the revenue generated.

31. Depending on the arrangement, PPPs in infrastructure may take different forms, such as build-operate-transfer, design-build-operate and lease-develop-operate. Governments take commitments to make in-kind or financial contributions to a project, whether through subsidies, guarantees, shadow fees and/or availability of payments. Public–private partnership arrangements vary across countries, sectors and projects. There is thus no standard method of public–private partnership implementation. Rather, each country adapts the process as appropriate for its own culture, economy, political climate and legal system.

32. Although the concept of PPPs dates back to the late 1970s, PPPs for providing infrastructure became popular only in the early 1990s and can be traced to the private finance initiative of the Government of the United Kingdom of Great Britain and Northern Ireland in 1992. The largest projects carried out under this initiative were the Channel Tunnel, the Second Severn Crossing and the Channel Tunnel Rail Link. In 1997, the Labour Government introduced the “public–private partnerships” concept which gradually made its way to other European countries such as France, Germany, Greece and Ireland. In 2004, a green paper was issued in the European Union for advancing PPPs, after which the movement took off and country after country explored PPPs. In developing regions, investment commitments to PPPs for infrastructure also started in the early 1990s, growing cumulatively from US\$18 billion in 1990, to US\$782 billion in 2000 and reaching US\$1.8 trillion in 2011.⁵

33. According to the latest updates in the World Bank database on private participation in infrastructure, in 2011 178 PPPs in infrastructure were identified, of which 65 public–private partnership projects were in India alone and 44 public–private partnership projects in Brazil. These two countries together therefore accounted for over 60 per cent of all public–private partnership projects. This indicates a high concentration of PPPs in the large, emerging economies. PPPs are also concentrated in sectoral terms, since 74 per cent of public–private partnership projects are in the electricity sector (see figure). This figure also shows that 7 per cent of public–private partnership projects were in Africa, that is 13 in total, 2 of which were renewable energy projects, while East Asia and Pacific had 15 projects (8 per cent of the total), all on renewable energy. In Latin America and the Caribbean, of 53 PPPs, 2 were transport projects while 51 were energy projects. In South Asia, most PPPs in transport were in infrastructure (40 out of 74 PPPs).

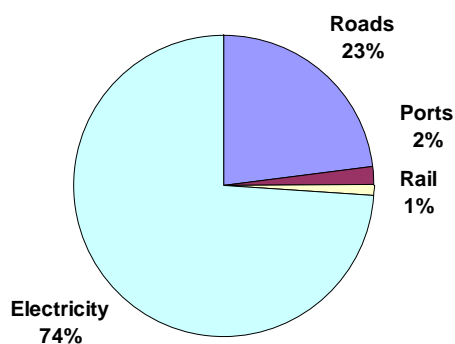
⁴ See Khanom (2010) on the debate on a definition for PPPs.

⁵ Private Participation in Infrastructure projects database (<http://ppi.worldbank.org/>).

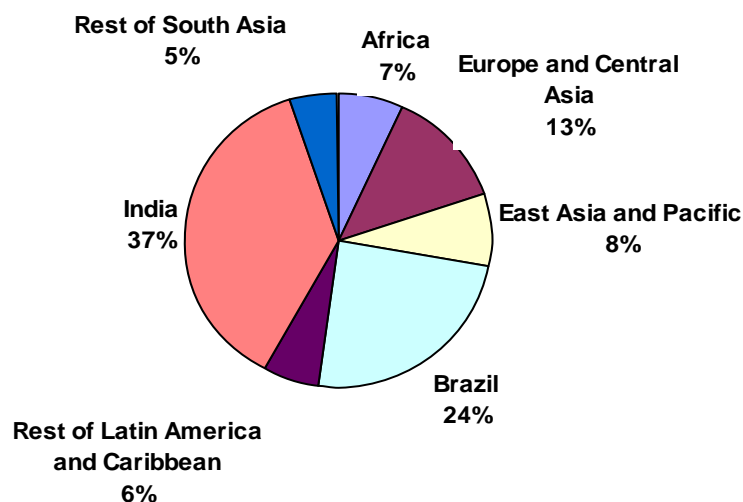
34. In terms of main funding sources, public financial institutions have played an important role. To illustrate this point, in Brazil the Brazilian National Development Bank financed 22 out of 44 projects in the country; in India, all PPPs had debt finance from local public banks.

Figure
Public-private partnership projects in infrastructure (2011)

Public-private partnership projects by sector



Public-private partnership projects by region



Source: World Bank, Public-Private Infrastructure Advisory Facility and Private Participation in Infrastructure projects database.

Note: Sample size = 178 projects.

35. In cumulative terms, Latin America and the Caribbean is the developing region with the largest number of projects and largest amount of project investments in the period 1990–2011, with 1,586 PPPs investing US\$672 billion. The region is followed closely by East Asia and the Pacific with almost same number of PPPs, investing US\$336 billion (see

table). The top three developing countries (with the most PPPs in infrastructure) in the period 1990–2011 are China (1018), India (605) and Brazil (550), while in terms of maximum amount of investment, Brazil comes first with US\$325 billion, followed by India (US\$273 billion) and the Russia Federation (US\$120 billion). In terms of distribution of investments across different sectors, telecommunications tops the list with a total of US\$820 billion, followed by the energy sector (US\$630 billion). The energy sector though tops the list in terms of the maximum number of projects (2,283), followed by the transport sector (1,371).

Table

Private participation in infrastructure, 1990–2011

<i>Region</i>	<i>Project investment (US\$ billion)</i>	<i>Number of projects</i>
Latin America and the Caribbean	672	1,586
East Asia and the Pacific	336	1,564
South Asia	320	771
Europe and Central Asia	289	742
Sub-Saharan Africa	121	436
Middle East and North Africa	85	139
Total	1,823	2,088

Source: World Bank, Public-Private Infrastructure Advisory Facility and Private Participation in Infrastructure projects database.

Rationale for considering public–private partnerships in infrastructure

36. Worldwide, Governments have explored the option of PPPs for providing infrastructure services, especially in the energy, communications and transport, and water sectors. PPPs distribute resources, risks, responsibilities and rewards between the public and private sectors, allowing Governments to overcome fiscal constraints and filling the funding gap in modern infrastructure. Reasons for encouraging PPPs include access to advanced technology and increased efficiency in project delivery, operations and management, as the private sector is expected to be more efficient as compared to the public sector. The promise that PPPs bring in terms of enhancing supply of much-needed infrastructure services – no immediate cash spending, transfer of project risks and possibility of better project designs, operation and service delivery – is an additional point of attractiveness of PPPs for Governments, especially in developing countries.

37. Apart from the promise of benefits mentioned above, PPPs are often proposed to overcome Government failures in project delivery, which may arise from poor procurement policy, high transaction costs and lack of coordination, information and transparency. PPPs, with their risk- and resource-sharing capacity, may accelerate high-priority projects by procuring services in new ways, providing specialized management capacities for large and complex projects and enabling delivery of new technologies developed by the private sector.

38. These partnerships are also sought in countries with high public deficits, as they may help in releasing funds for other projects and relieving short-term liquidity constraints. Some Governments also view PPPs as vehicles for long-term development, as they can encourage private entrepreneurship development, boost innovation and encourage technology upgrading. PPPs may also help in outward investments by the private sector as private sector firms gain experience in their own countries. In short, it is suggested that PPPs in infrastructure are value drivers, as they can help in achieving value for money

given the higher competition, accountability and transparency in PPPs, as opposed to public sector investment in infrastructure. Furthermore, PPPs may involve charging users for services, effectively increasing total government revenue.

Limitations and pitfalls of public–private partnerships in infrastructure

39. In theory, PPPs are expected to create synergetic dynamics by drawing on the strengths of each partner for efficiently delivering public services at a lower cost than what the public sector could do on its own. Evidence suggests that this is not necessarily the case and that PPPs have been beset with problems and limitations.

40. In an attempt to overcome fiscal constraints through PPPs, a government may actually accept excessive fiscal risks as the government’s fiscal commitments to PPPs can be unclear. These commitments are typically long term and therefore contingent on risks such as demand, exchange rates and costs, which make it difficult to compare them with traditional government projects where capital costs are incurred at the outset. Ineffective risk transfers and implicit liabilities such as guarantees can result in excessively large contingent liabilities and, consequently, in governments making large unexpected payments. For example:

(a) In the 1990s, the Government of Colombia guaranteed revenue on toll roads and an airport, as well as payments by utilities that entered into long-term power-purchase agreements with independent power producers. Lower-than-expected demand and other problems required the Government to make payments of US\$2 billion by 2005 (Irwin, 2007);

(b) Also in the 1990s, the Government of the Republic of Korea guaranteed 90 per cent of forecast revenue for 20 years on a privately financed road linking Seoul to a new airport in Incheon. When the road opened, traffic revenue turned out to be less than half the forecast. The Government has had to pay tens of millions of dollars every year (Kim and Kim, 2011);

(c) Lack of fiscal clarity and inadequate control of the public–private partnership process led the Government of Portugal accept risks through its public–private partnership contracts that significantly increased its fiscal exposure, contributing to its 2011 fiscal crisis (Abrantes de Sousa, 2011).

41. Attracting the most competitive providers of services and achieving benefits from competition may also not be true for PPPs, as a large number of contracts are renegotiated, many times a few years after concessions are initially negotiated. Of a sample of over 1,000 concessions granted in Latin America and the Caribbean between 1985 and 2000, it was found that 10 per cent of electricity concessions, 55 per cent of transport concessions and 75 per cent of water concessions were renegotiated. These renegotiations took place on average 2.2 years after concessions were initially awarded (Guasch, 2004). Renegotiations occur in the absence of competition and may result in higher profits for private parties. More developed lobbying abilities may lead to pervasive renegotiation tendencies and therefore may not necessarily relate to technical efficiencies.

42. Expected efficiency gain in PPPs may not materialize. The “optimism bias” in project assessments has been highlighted in the Government of the United Kingdom’s Green Book (United Kingdom, 2011). A series of studies by Flyvbjerg (2008)⁶ shows that costs are systematically underestimated, and benefits often overestimated in PPPs in infrastructure. One of Flyvbjerg’s studies on 258 transport projects shows that, on average,

⁶ See also the studies cited at <http://flyvbjerg.plan.aau.dk/pub.htm#English>.

actual costs were 28 per cent higher than planned costs and 65 per cent higher on average for projects outside of Europe and North America. A study of 25 rail projects found that traffic was heavily overestimated, on average at over twice the actual traffic. A recent report on India's PPPs in infrastructure finds that execution of vital infrastructure projects to build ports, roads, highways and airports is far behind schedule and has surpassed the original estimated costs by 14 per cent (India, 2012). Such delays may erode cost efficiency assessments.

43. Change in operation and management control of an infrastructure asset through a public-private partnership may not be a sufficient condition to improve the asset's economic performance. There are many other necessary conditions for PPPs to be successful, which include effective public-private partnership contracting and government procurement skills, regulatory efficiency, cross-sector planning and coordination, fairness, transparency, accountability, and effectiveness and efficiency of the public sector. All are important elements for ensuring successful PPPs in infrastructure. If limited resources are spent on poorly selected projects that deliver benefits far lower than those estimated, the results may be counterproductive, especially for resource-constrained economies.

44. For PPPs to be successful, it is important that governments have a clear policy framework, which can help in prioritizing sectors, designing bankable projects, appropriately distributing risks, assessing technical and financial viability of projects and retaining efficiency until financial closure of a project. Appropriate legal and regulatory frameworks also need to be in place. Governments may also participate in financing projects through commercial loans or guarantees but need to maintain fiscal responsibility. Exploring financing from financial institutions such as development banks is also a viable option to consider, as indeed has been the case.

C. The role of regional development banks

45. RDBs have played a vital role in financing infrastructure projects. The long-established regional banks – AsDB, AfDB, IADB and EIB – have filled in important financing gaps in infrastructure investment since their creation in the 1950s and 1960s. That gap, and the resulting underprovision of infrastructure, was particularly acute in the 1980s and 1990s in various parts of the developing world, especially in Latin America and the Caribbean and sub-Saharan Africa, due to fiscal adjustment policies that many Governments undertook during the period (Estache, 2010).

46. Among the regional banks, EIB was created in the 1950s with the clear mandate of financing infrastructure to support regional integration. As a consequence, EIB has allocated a significant proportion of its total loans to infrastructure – initially, 48 per cent of total bank loans, and later 44 per cent of the total (Griffith-Jones et al., 2008). Among the other three regional banks, AfDB and AsDB both have a focus on infrastructure, while IADB places more emphasis on social projects (Ocampo, 2006). However, in all three cases, a lower proportion of loans is provided to infrastructure compared with EIB. Moreover, lending to “regional public goods”, which include regional infrastructure projects, has been less than 1 per cent of their total loans (Birdsall, 2006).

47. In Latin America and the Caribbean region, the subregional development banks – the Central American Bank for Economic Integration, the Caribbean Development Bank and the Andean Development Corporation (known by its Spanish acronym as CAF) – have partially fulfilled the financing gap in infrastructure.⁷ This has been especially the case of

⁷ CAF is currently also known as the Development Bank of Latin America.

CAF, a bank created with a specific mandate to support economic integration among its founding member countries (Bolivia, Colombia, Ecuador, Peru and Venezuela), all from the Andean region of South America. Membership has been gradually expanded since CAF's creation to include most Latin American countries, plus countries from the Caribbean region and the Iberian peninsula.⁸ In 2012, CAF loans for infrastructure projects to Latin America as a whole were greater than the combined loans from the World Bank and IADB.⁹ In recent years, over 50 per cent of CAF's total loans have been allocated to infrastructure projects, and nearly 23 per cent to integration infrastructure.¹⁰

48. Although CAF is owned mostly by developing countries, it has a fairly large capital base. This and the excellent repayment records on its loans have been a contributory factor for its investment grade from international rating agencies, which is higher than the ratings of most Latin American countries. This rating enables it to raise capital in international financial markets at a cost lower than most of its member countries are able to do individually. CAF has a number of important features, including a clear, focused mandate, lean management structure, rigorous economic evaluation of projects, rapid approval process and loans granted without conditionalities. These features help explain its success and high credit rating (Griffith-Jones et al., 2008). The Middle East has a number of non-bank financial institutions whose focus is also on infrastructure. For example, the Arab Fund for Economic and Social Development provides soft loans, mainly for infrastructure projects in Arab League countries (Ocampo, 2006).

49. Nonetheless, not all developing regions have subregional banks filling gaps in infrastructure finance. Asia lacks subregional banks, with AsDB playing a dominant role in financing infrastructure. In Africa, AfDB is a main source of infrastructure finance. The remaining financing gaps are huge, however, and Africa's subregional banks – the East African Development Bank, the West African Development Bank, the Central African States Development Bank and the Eastern and Southern African Trade and Development Bank – have limited capacity to provide finance for infrastructure projects on a scale that meets regional needs, despite the fact that in all cases promoting economic regional integration is part of their mission or their strategy in the near future.¹¹ This may be explained by these banks' capital base, which seems not sufficiently large, and by their ownership, given that most owners are the borrowing countries themselves, with limited financial resources to expand the banks' capital base substantially. Subregional banks that include non-borrowing developed (or emerging) countries, as well as institutional owners such as other, larger banks, tend to have greater capacity to lend to member countries and therefore meet their core mandates. This is an area in which more research would be very welcome to help uncover the factors constraining these banks' capacity to lend and what actions might be appropriate to mitigate the barriers to greater lending capacity for infrastructure projects to further regional trade and integration in the developing world.

50. The financing gap for infrastructure in the developing world is huge. To meet the growth and development needs of developing countries, infrastructure spending will have to be at between US\$1.8 and US\$2.3 trillion per year by 2020, from the current level of US\$0.8–US\$0.9 trillion per year – that is to say, an increase from 3 per cent to 6–8 per cent of developing country GDP. These estimates are based on the assumption that developing

⁸ CAF membership expanded later to also include Argentina, Brazil, Chile, Costa Rica, the Dominican Republic, Jamaica, Mexico, Panama, Paraguay, Portugal, Spain, Trinidad and Tobago, and Uruguay.

⁹ *Financial Times*, 2012.

¹⁰ As of the end of 2006. See Griffith-Jones et al. (2008), p. 7, table 2.

¹¹ Africa also has the Development Bank of Southern Africa, a bank wholly owned by South Africa that serves the Southern Africa Development Community focusing on large infrastructure projects.

countries will grow by 4 per cent on average between now and 2020. The estimates include capital spending to build infrastructure that can be more efficient, have lower emissions and be more resilient to climate change, but do not include operation and maintenance costs. If the latter were included, then estimates indicate annual spending should be doubled. National government budgets contribute about 60–70 per cent of current spending in infrastructure, the private sector between 20–30 per cent, and official development assistance and the multilateral development banks about 5–8 per cent (Battacharya et al., 2012). Private sector investment is not only relatively small, but also very concentrated in the energy, transport and information, communication and technology sectors (Estache, 2010).

51. The infrastructure spending needs are not distributed evenly across different developing regions. Estimates published in 2008 and summarized by Estache (2010) indicate that, as a proportion of GDP, the highest spending needs, when operational and maintenance costs are included, are found in South Asia (11.3 per cent), followed by the Middle East and North Africa (9.2 per cent) and sub-Saharan Africa (8.9 per cent), while the lowest needs are in Latin and Central America (4.4 per cent). These percentages reflect, to an important extent, average income per capita levels in these regions, with lower-income countries needing more infrastructure spending as a proportion of GDP. In absolute terms, the East Asia and the Pacific region has the largest financing needs accounting for nearly 37 per cent of total needs of developing countries.

52. Developing countries therefore face massive infrastructure needs, but the financing gaps are equally vast. Although private sector investment in infrastructure has grown since the early 1990s (Fay et al., 2011), continued growth in the future is held back by a number of factors, a main one being the perceived and actual excessive risk due to asymmetries in information. Lenders do not have sufficient information for pricing risk appropriately and for monitoring. Infrastructure projects also tend to be long term, which increases perceived risks and uncertainty about future returns. Moreover, such projects tend to generate social benefits that are greater than private benefits, a gap that is not internalized in private sector profit calculations. Regional infrastructure projects further affect the private sector's willingness to invest due to complexity in the regulatory framework for cross-border projects and the political risks involved.

53. In this context in which market failures exist, RDBs can play a critical role not only in providing financing for infrastructure directly, but also as “market makers” by creating and providing financing instruments that better share risks between creditors and borrowers and through time. RDBs can also help mitigate the informational deficiencies facing the private sector by partially providing screening, evaluation and monitoring, and where needed their money, thus partnering with private investors in co-financing. Indeed, a partnership between RDBs and the private sector may take different forms. For example, RDBs may provide long-term lending, while the private sector provides more short-term resources; or RDBs may provide guarantees to cover regulatory and contractual risks, and the private sector cover market risks.

54. RDBs can above all play a leading role in regional infrastructure projects. These projects generate positive externalities in the form of benefits that are shared by neighbouring countries. However, this creates cross-border collective action and coordination challenges, which RDBs are well positioned to undertake, given their accumulated knowledge and experience, and they have instruments at their disposal to overcome coordination problems (Griffith-Jones et al., 2008).

55. RDBs can also help address the needs of low-income countries to have access to loans for financing infrastructure project at subsidized rates, even if the bank does not have a developed country as one of its shareholders. To the extent that these banks generate profits and do not distribute dividends, they can use such profits to expand the bank's capital base,

but part can also be used to subsidize loans to low-income country borrowers. As regards the subregional development banks, especially those operating in sub-Saharan Africa, their lending capacity today is limited, and this has been especially the case for large, expensive infrastructure projects. A way forward might be to attract a small part of the huge foreign reserves that a large number of emerging economies currently hold for investment in these banks, thereby enhancing their capital structure and enabling them to fully meet their mandates of supporting regional economic integration. Some of these banks already have emerging countries such as China as shareholders, which means that the institutional arrangements are in place to expand the capital base of these banks.

56. Finally, it is worth noting that a proposal has been made for the creation of a BRICS (Brazil, the Russian Federation, India, China, South Africa) bank, which would have shareholders with capacity to contribute to the formation of a large capital base, and therefore give it adequate capacity to lend to participating countries, as well as their respective regional neighbours.

III. Questions for the experts

57. The following questions are presented to the experts for their consideration:

(a) What sorts of PPPs modalities (e.g. service contracts, operation and management, design-build-finance-operate) are most conducive to successful outcomes, and for what categories of countries?

(b) What factors have been identified as playing a determining role in successful PPP stories, and what has been identified as causes of failure? What are the main obstacles and constraints to public-private partnership opportunities – legal, technical, risk, financial, political? What role can development cooperation, in all forms, play in addressing these obstacles and constraints?

(c) How can a government strike a balance between providing guarantees against risks under PPPs and avoiding excessive contingent liabilities and therefore potentially severe fiscal impacts?

(d) How can South-South integration and cooperation help developing countries scale up infrastructure investment? Which particular success cases are worth examining?

(e) What are the possibilities for scaling-up existing regional financing mechanisms and creating new ones to undertake infrastructure development?

(f) How can the role of RDBs (and subregional development banks) be further enhanced in this area?

(g) What are the potential benefits and pitfalls associated with trade facilitation?

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