



Economic and Social Commission for Asia and the Pacific**Seventy-fourth session**

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Items 3 (d) of the provisional agenda*

**Review of issues pertinent to the subsidiary structure
of the Commission, including the work of the regional
institutions: environment and development****Empowering cities to implement the 2030 Agenda for
Sustainable Development and the New Urban Agenda:
mobilizing municipal finance for sustainable
infrastructure in the Asia-Pacific region***Summary*

In recent decades, cities in the Asia-Pacific region have seen continuous and rapid urbanization, leading to large infrastructure gaps. These gaps must be addressed for cities to grow in an equitable and environmentally responsible manner. The global community has come together on commitments to development outcomes through the 2030 Agenda for Sustainable Development and the New Urban Agenda and has recognized the significance of city-level actions in achieving the Sustainable Development Goals. These agreements emphasize the need for local solutions to address growth and environmental and equity concerns. Further, the Addis Ababa Action Agenda of the Third International Conference on Financing for Development points to the imperative to mobilize domestic sources of finance. Given this global context, the present document contains an analytical basis for city and national Governments to improve institutional enabling environments for local governments to leverage their resources through longer tenor debt, equity and land-based financing of urban infrastructure. The document is based on experience from industrialized and developing countries in raising private debt, equity and land-based financing for urban infrastructure and provides a typology of financing options for municipal finance in the Asia-Pacific region. The Commission may wish to review the present document and provide guidance for the future work of the secretariat on municipal finance and sustainable urban development.

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I. Strategic context and purpose

A. Strategic context

1. Cities in the Asia-Pacific region face increasing demand for financing sustainable, growth-inducing infrastructure (such as roads and transport systems), as well as environmental investments in areas such as waste management and water and sanitation. Many cities are unable to finance necessary investments to meet this demand, which will increase the infrastructure gap and limit their ability to meet sustainable development objectives. According to a range of projections, the current deficit in investment for Asia-Pacific infrastructure is estimated to be more than \$1 trillion, with this investment gap being particularly dire in developing countries and emerging economies.¹ In India alone, the gap in urban infrastructure investment is estimated at \$827 billion over the next 20 years.²

2. While many cities are facing greater expectations to contribute to achieving global agendas, they still struggle to meet their current operational needs amid pressures from growth and migration as well as increasing internal financial and political risks. Furthermore, the risks of investing in infrastructure projects in developing countries are often perceived to be too high for private investors to commit to equity financing. Perceived risks include the general lack of confidence, weak institutional or governance structures, insufficient returns from user fees and revenue-generating assets, and unsatisfactory profit margins for medium and large-scale investments. If these combined risks are not addressed and the infrastructure gap is not closed, millions of urban dwellers will continue to live in inadequate conditions, including in informal settlements without basic sanitation, clean drinking water, energy provision or waste collection. People's livelihoods and quality of life will be inhibited if they lack adequate shelter, public transport systems and general accessibility, and mobility for employment.

3. Since the 1990s, actions that empower cities to improve their own revenue sources, rationalize intergovernmental transfers and provide the regulations for a borrowing framework that can attract long-term capital have been a part of municipal reforms in most developing countries, including those in the Asia-Pacific region. Thus, the demand for debt financing depends on two factors that principally determine municipal revenue streams: the rationality of the intergovernmental fiscal rules (flows from central to local government) and the stability of own-source revenues (including powers over taxes and charges).

4. To attract private finance and close the infrastructure gap, cities must have the legal authority to borrow, create and pay for the use of the assets over time and to de-risk investments by demonstrating clear revenue streams and effective governance structures needed to repay loans.

B. Purpose, structure and key objectives

5. The purpose of the present document is to provide an analysis of key determinants of systemic financing as a useful input to member States' policy discussions on mobilizing private finance for municipal infrastructure

¹ Marianne Fay and others, "Infrastructure and sustainable development", in *Postcrisis Growth and Development: A Development Agenda for the G-20*, Shahrokh Fardoust, Yongbeom Kim, Claudia Sepulveda, eds. (Washington D.C., World Bank, 2011).

² Isher Ahluwalia, *Transforming Our Cities: Postcards of Change* (Noida, India, Harper Collins Publishers, 2014).

investments. Investment gaps are identified and key urban infrastructure financial instruments that can be deployed to mobilize finance are discussed. It contains a discussion on the benefits and risks associated with each instrument and the requisite local government capacity that may need to be supported to deploy those instruments is also highlighted. The present document is guided by the following overarching question: what are the key enabling institutional conditions which need to be in place for countries in the Asia-Pacific region to strengthen local government financing systems and leverage long-term private financing for sustainable infrastructure, so that cities can effectively deliver needed infrastructure and contribute to national and global sustainable development agendas?

6. In line with the purpose of the present document and the key issues raised in it, section II contains a framework for a functioning municipal finance system and the requisite institutional components for local governments to manage long-term finance and infrastructure investments. From a systems design point of view, four additional points of inquiry merit attention and form the basis for the analysis:

- (a) What do cities need to finance?
- (b) How much is needed and what are the main gaps?
- (c) What are the key components of a functional municipal financing system?
- (d) What financial instruments can municipalities use to leverage greater private finance and investment?

7. Section III contains a summary of the main findings and policy actions to improve the enabling environment for municipal finance systems. It also contains an analysis of the financial instruments presented in section II and outlines policy guidance for countries and local authorities to pursue appropriate financial instruments and facilitate infrastructure investments.

II. Municipal finance framework

A. What do cities need to finance?

8. From a financing perspective, urban infrastructure investments can be divided into three standard categories: first, investments in common goods that are enjoyed freely, such as parks and city roads, that need recourse to taxes to service debt; second, investments in water, waste water and solid waste systems that are more private in nature, in the sense that the use/consumption is not necessarily joint, but that still need capital subsidies and where user charges and taxes can service debt; and third, pure revenue projects such as toll roads that are directly covered by user charges to service debt. The financing challenge appears to be higher in the second category, the so-called missing middle, because private capital needs to be supported by public funds.

9. The above categorization is useful analytically, but from an institutional (and taxpayer) perspective it is more relevant to view a city's financials as an integrated whole. For example, if assets such as toll roads can service private equity investments solely by user charges, then the city can use its own revenues for projects such as parks, which do not generate cash flows, reducing overall financial risk to the city. However, if the toll road needs grant support from municipal revenues, then awarding a private concession limits the potential projects which the city can take up and thus increases exposure to risk.

10. Systemic financing implies financing the city as an integrated whole, rather than financing specific projects. It implies that decisions made in the present to borrow or to pledge future revenues have the effect of giving up future revenues for a particular investment path.

B. How much is needed?

11. In most developing countries, city governments face challenges of creating infrastructure and local public goods in the context of key drivers such as local needs, development patterns and impacts of globalization and migration that affect sustainable development. They require a range of urban infrastructure investments across multiple sectors, many of which will need to be supported by integrated local government financing models. This range of investments in public goods includes water and sanitation, transport and energy systems.

12. *Water and sanitation.* The Asia-Pacific region's projected investment needs in water and sanitation for 2016–2030 based on 2015 prices is approximately \$787 billion, with climate-adjusted estimates at more than \$800 billion.³ Investments in water supply and waste- and storm-water management strategies and systems will be particularly influenced by the impacts of climate change. Solutions will include the following: local water capture, treatment and reuse; green and blue infrastructure (blue infrastructure includes natural water attenuation, conveyance and treatment systems); integrated urban/rural water resource management via land-use practices; and water-efficient urban and peri-urban agriculture.

13. *Transport.* The Asia-Pacific region's investment needs in transport for 2016–2030 based on 2015 prices is approximately \$7.8 trillion, with climate-adjusted estimates at more than \$8.3 trillion.³ Investment is required in mass transit systems, including bus rapid transit and rail; cycling infrastructure and bike-share programmes; infrastructure and spatial development for safe walking; electric cars, buses, lorries and bicycles; car-sharing; smart mobility technologies to promote mobility choice; and emerging technology in autonomous vehicles.

14. *Energy.* This sector has the largest infrastructure financing gap. The Asia-Pacific region's investment needs in power for 2016–2030 based on 2015 prices is approximately \$11.7 trillion, with climate-adjusted estimates at more than \$14.7 trillion.³ The shift to more localized, renewable and low-carbon energy solutions requires investment in a mix of district energy systems (thermal and electric), including smart energy grids; distributed power generation (principally solar electric and thermal, but also biomass or gas fuel cells and microturbines); local and regional scale centralized power generation (solar, wind, wave and tidal); electric vehicle charging; and energy storage.

15. The impact of investments in the above public goods, such as improved public transport leading to higher growth trajectories and cleaner water leading to lower morbidity, are well understood and reflected in most development strategies. In financial terms, infrastructure gaps as a percentage of gross domestic product (GDP) are high in large and small countries of the region as illustrated in table 1.

³ Asian Development Bank (ADB), *Meeting Asia's Infrastructure Needs* (Manila, 2017). Available from www.adb.org/sites/default/files/publication/227496/special-report-infrastructure.pdf.

Table 1
**Infrastructure investment needs and gaps in selected Asia-Pacific countries,
 2015 prices**

<i>Country groups (number of countries) and selected countries</i>	<i>Estimated current investment</i>		<i>Baseline estimates</i>			
	<i>Amount (billions of US dollars)</i>	<i>Percentage of GDP</i>	<i>Annual needs (billions of US dollars)</i>	<i>Gap (billions of US dollars)</i>	<i>Gap (percentage of GDP)</i>	<i>Gap (percentage of current)</i>
Total developing countries (25)	881	5.5	1 211	330	1.7	37.4
Total developing countries not including China (24)	195	3.8	457	262	4.3	134.3
Least developed to lower- middle-income countries (18)	178	4.2	422	244	4.7	137.1
Least developed to lower-middle-income countries not including India (17)	60	2.9	192	132	5.4	220.1
Upper-middle-income countries (7)	703	6.0	789	86	0.6	12.2
Upper-middle-income countries not including China (6)	17	2.0	35	18	1.8	105.8
Central Asia (3)	6	2.9	11	5	2.3	83.3
South Asia (8)	134	4.8	294	160	4.7	119.4
South-East Asia (7)	55	2.6	147	92	3.8	167.3
Pacific (5)	1	2.7	2	1	6.2	100.0
India	118	5.4	230	112	4.1	94.9
Indonesia	23	2.6	70	47	4.7	204.3
China	686	6.3	753	68	0.5	9.9

Source: ADB, Meeting Asia's Infrastructure Needs.

16. Table 1 shows that the greatest infrastructure investment gap among developing countries in the Asia-Pacific region is in South Asia, with eight countries accounting for almost half of the total gap. More than a third of the total investment gap is for infrastructure in India alone. All countries in South Asia will need to at least double the current level of investments to close the gap. South-East Asia follows South Asia, with more than one quarter of the estimated investment gap in seven countries in the region. South-East Asia needs to increase the level of current investments by more than 1.5 times and in some cases, countries will need to triple the current level of investment.

C. Key components of a functional municipal financing system

17. Given the huge needs for and gaps in infrastructure, what is the institutional framework that governs relevant decision-making and action and how can such a framework support de-risked investment in public goods? Since the 1990s, there has been increased emphasis in most countries on local empowerment, reflected in national legislation. Decentralization laws typically embody the principle that local public goods are best produced and financed locally, based on demand-driven needs that are articulated through community processes. This appears to be a near universal trend across countries of varying levels of economic development and requires that city governments have the authority to plan, design, finance and pay for the public goods they produce (for example, India's seventy-fourth constitutional amendment, of 1992, and the Philippines' Local Government Code of 1991).

18. In many Asia-Pacific countries, the unbalanced implementation of decentralization resulted in the transfer of responsibilities from national to local levels without the transfer of necessary powers. This can lead to functional and geographical fragmentation and uncertain governance boundaries that are slow to catch up with the often dense settlements outside city jurisdictions (who does what in the city? and which governance unit is responsible for services?). This is obvious in most large cities and often affects infrastructure creation and service delivery in small and medium cities. Governance reform to reduce both types of fragmentation (by introducing accountability of parastatals to local governments and flexible municipalization criteria to handle the physical expansion) are necessary and underway in most countries.

19. While decentralization may have functional efficiencies, it does not in itself de-risk or facilitate investments, and it may create additional barriers to investment flows. Municipalities may not have the required institutional capacities to implement or manage debt, or a portfolio of built assets which demonstrate financed construction and balanced capital and operating expense management. Those factors will limit investment pools and the flow of capital. There are some key actions that national Governments may take to assure investor confidence in subnational investment. In addition to transferring the legislative authority associated with decentralization, national Governments may need to do the following:

(a) Support institutional capacity-building of municipalities and create monitoring and reporting frameworks to oversee decentralization;

(b) Participate in credit enhancements, including guarantees and risk-sharing to incrementally build the confidence of investors to finance municipalities directly;

(c) Encourage frameworks for aligned and smoother infrastructure implementation, such as right-of-way laws, sectoral regulations and arbitration processes;

(d) Provide a contingent liability fund with terms requiring the public sector to deliver critical components of projects that largely impact the ability of the private partner to deliver the infrastructure (such as land or permits) and empowering it to exact payment (either through user fees or fees from governments). This is an important issue for investors and lenders as governments have rigid, cyclical budgeting processes. Absent this, financiers will add in the cost of probable delays in payments, which would increase overall financing costs;

(e) Communicate clearly at the onset in which sectors local governments want private participation. Any major changes in government

policies on the source of potential funding for infrastructure projects could reduce private sector confidence and commitment, which could take years to redevelop.

20. Apart from the imbalances in powers and responsibilities, there are unfunded mandates caused by imperfect fiscal decentralization and related transfer rules. In some cases, central Governments still wield major influence over municipal budgeting processes. The retention of power is compounded by the limited ability of municipal governments to raise finance (taxes) locally. Furthermore, there is considerable variation in the share of assigned revenues across and within Asia-Pacific countries, as well as in the predictability and timeliness of transfers.

21. There are also major differences across the region in the shares and types of own-source revenues that are allocated to local governments, including powers to assess and set rates, and to create collection mechanisms and efficiency rewards. The extent of powers transferred is clearly a factor that affects creditworthiness and risk.

22. Reforms that improve the rationality of assigned sources and the efficiency and buoyancy of own-source revenue sources supporting de-risking from an institutional point of view are under way in many areas of the region, such as in Georgia; Karnataka State, India; and Punjab province, Pakistan. A relevant example from the Pacific is the case of Port Moresby, Papua New Guinea, where the transfer of a general goods and service tax to the city has provided it with a buoyant revenue source, enabling greater spending per capita than Honiara, for example.⁴

23. Reforms to improve assigned and own-source revenues are important in themselves for de-risking, and they are also important to empower local governments to take proactive decisions on infrastructure, rather than continue as passive responders to scattered grants. Intergovernmental fiscal transfer rules need to be rational and predictable or planning at local levels would be impossible, especially in cities, where the size of assigned revenues is large.

24. Apart from the absolute size of the transfers, the *inter se* distribution between cities should be rule-based. Reforms are a necessary first step to empower local governments to leverage public sources of finance with private sources, as potential lenders base credit decisions on the stability of the fiscal transfer rules.

25. Given the gaps between investments needed and the available public sources of finance, leverage of private finance becomes critical. The public sector provides more than 90 per cent of the region's overall infrastructure investment. Table 2 shows that this amounts to 5.1 per cent of GDP annually for 25 ADB developing countries, far above the 0.4 per cent of GDP coming from the private sector (more than 12 times higher). Moreover, public infrastructure investment rates vary widely across subregions and economies. In East Asia the participation of the private sector in infrastructure investment is almost absent, but in South Asia public sector infrastructure investment is not as dominant and the private sector accounts for a considerable portion of investments. In between are South-East Asia, the

⁴ Meg Keen and others, *Urban Development in Honiara: Harnessing Opportunities, Embracing Change* (Canberra, Australian National University, 2017). Available from http://ssgm.bellschool.anu.edu.au/sites/default/files/uploads/2017-05/urban_development_in_honiara_low_res.pdf.

Pacific and Central Asia, where public sector shares in infrastructure investment are smaller than in East Asia but larger than in South Asia.

Table 2
Public and private infrastructure investment, 2010–2014

<i>Country groups and selected countries</i>	<i>Infrastructure investment (percentage of GDP)</i>		<i>Public-to-private ratio</i>
	<i>Private</i>	<i>Public</i>	
25 ADB developing member countries	0.4	5.1	12.75
East Asia	-	6.3	-
South Asia	1.8	3	1.66
Central and West Asia	0.3	2.6	8.66
Pacific	0.3	2.5	8.33
South-East Asia	0.5	2.1	4.2
China	-	6.3	-
India	2.1	3.3	1.51
Indonesia	0.3	2.3	7.66

Source: ADB, Meeting Asia's Infrastructure Needs.

26. Without leverage, cities will not achieve scale and will continue on low-level growth trajectories. Leverage is typically achieved on a sustainable basis when there is a borrowing framework that provides access to capital for cities of all sizes and an opportunity for repetitive access (as cities need repeated financing as opposed to one-shot special deals). The institutional agenda should provide links between city financing needs and domestic private capital, with the aim of reducing risks, lowering transaction costs and removing contingent liabilities for national Governments. These outcomes require transparent rules, such as rules on access to security mechanisms, escrow accounts, asset recognition, taxation and provisioning norms. In the following sections key design issues are identified, as well as policy actions that support leverage.

D. Debt, equity and land-based instruments

27. Most urban infrastructure investments, especially environmental ones, are capital intensive and long term, and generate externalities across municipal boundaries. Their long life implies that benefits accrue over at least a generation and hence the costs should be similarly intergenerationally spread in the form of long-term debt. For example, water and sewer mains need to be replaced once in 30 years. Additionally, in many cases the nature of public goods (non-excludability in consumption) implies that user charges by themselves can rarely cover capital costs, maintenance and replacement, and relying solely on user charges would create long-term exposure and risk. Subventions are needed either as grants in capital financing or as subsidized interest rates.

28. In smaller cities (which have limited potential to benefit from economies of scale) and in lower income countries, the potential for full user charges is further constrained. For example, a wastewater system takes at least three years to build and involves construction and connection risks with little or no cash flow during this period. This implies the need for the following: initial repayment moratoriums; upfront risks to investors for operational delays, poor

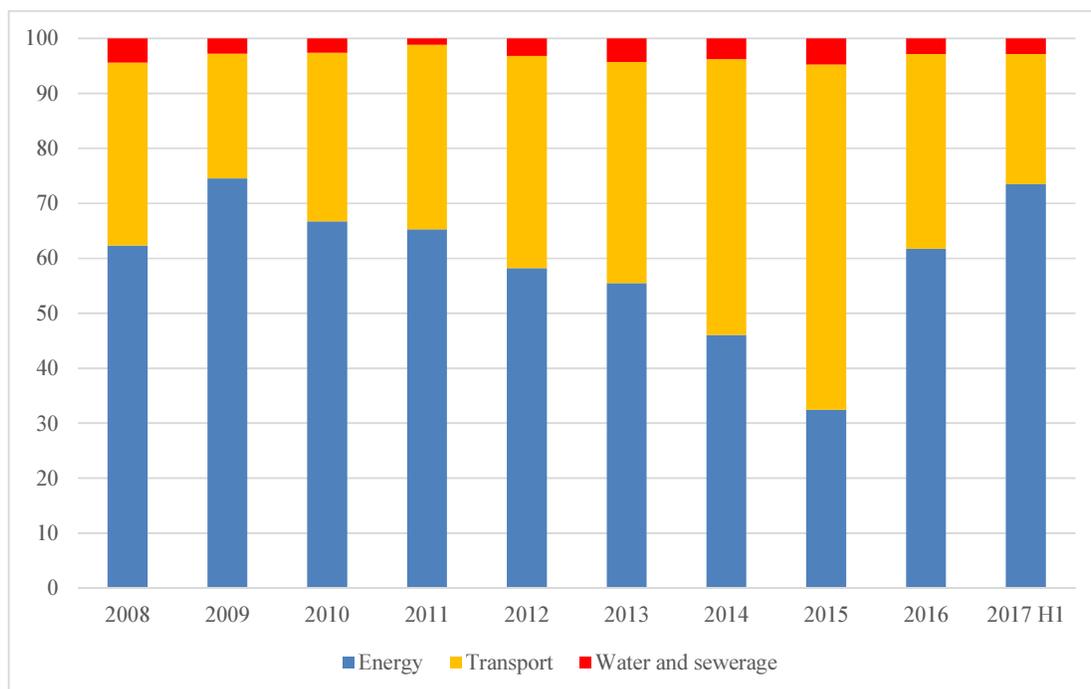
quality or institutional failures; and also perhaps the need to complement debt with grants from fiscal decentralization systems, especially if low-income users of the wastewater system have constrained ability to pay. In small towns, the low volume of connections would lead to higher user charges for debt service.

29. These facts suggest the appropriateness of long tenor debt finance, in which the number of users grows gradually over time (as water and waste water connections increase), to amortize high capital costs in smaller repayment streams and allow for affordability. Debt for municipal infrastructure should be denominated in the local currency since most of these assets do not earn foreign currency revenues, and exchange rate volatility could pose major risks for financial viability.

30. Equity is a preferred instrument if urban infrastructure investments can generate robust third-party sales (as is in the case for telecommunications and power) with users paying for products and limited long-term risk. This is also possible in inter-city toll roads and commercial investments such as municipal shopping markets. However, the prospects for mobilizing equity appear limited without substantial subsidies.

31. Institutionally, there must be a process to guide the selection of the concessionaire (unsolicited offers versus competitive bidding), rules for handling multiple ownership (a city water concession may depend on adequate flows from a source owned by the State and requiring secure, functional, multilevel institutional agreements prior to investment), and security for the lenders (such as step-in rights). Thus, in developed and developing countries, international equity investments in urban infrastructure are limited and have usually not worked as expected (see the figure for sectoral shares).

Figure
Share of sectoral investment commitments, 2008–2017
 (Percentage)



Source: World Bank, Private Participation in Infrastructure Database. Available from <https://ppi.worldbank.org/> (accessed 15 March 2018).

32. Table 3 provides a typology of the strategic instruments and vehicles for municipal financing covered in the present document with a summary on how they can contribute to meeting the infrastructure financing needs of developing countries.

Table 3
Typology of strategic instruments and their contribution to municipal financing

<i>Urban infrastructure finance instruments</i>	<i>Summary</i>
Fiscal decentralization	Reforms to improve assigned sources of revenue are important in themselves, and they also empower local governments to take proactive decisions on infrastructure rather than continue as passive responders to scattered grants. Reforms are meant to correct imbalances between the tasks assigned to the local authorities and their limited resources, correct disparities in revenue generating potential among local governments, and promote national goals in terms of equitable living conditions.
Debt financing	Debt capital can also be raised in the form of municipal bonds, a bank loan or syndicated loan (multiple lenders) for a project. Loans can be differentiated between construction or project finance (short-term debt used to pay the costs associated with project development and construction) and permanent finance (longer-term debt used to finance an asset during its operational life).
Public-private partnerships	Public-private partnerships are a finance solution for public entities where private capital is less costly than public capital, and/or where the public sector lacks the technical development and operational and/or managerial resources to efficiently develop and operate a particular infrastructure asset or class of assets.
Land-based financing	Land-based financing or land value capture is a cost recovery tool often used for transport orientated projects, especially when the investment triggers an increase in land values. Land-based financing can also be mobilized through managed urban planning, including land-use changes that facilitate the development of more intensive uses, such as the transition from agricultural to residential or commercial use.

33. While four finance instruments have been prioritized in this phase of the analysis, many other finance instruments and models are also likely to be effective in overcoming finance barriers.

34. The mobilization of private capital to finance city infrastructure needs is usually described as public-private partnerships in policy debates. Various types of public-private partnerships are described in the following paragraphs, of which the first two are relevant to the discussion of leverage.

35. First, private equity companies may set up project companies or special purpose vehicles with recourse to project cash flows and other revenue streams in the form of upfront capital grants or taxes to supplement user charges. Government debt instruments, such as bonds or direct project finance, will continue to be effective finance solutions where the fiscal position of a local government is strong, but this is limited in many jurisdictions. Off-balance-

sheet special purpose vehicles, in collaboration with private entities, may be one solution to address fiscal constraints. However, this will vary by government accounting practices.

36. Second, public authorities (namely cities) may use private debt to design, finance and create infrastructure and repay debt from project and municipal revenues. National and subnational governments can raise private debt capital to finance infrastructure projects. Debt capital can be raised in the form of a bank loan or syndicated loan (multiple lenders) for a project. Loans can be differentiated between construction or project finance (short-term debt used to pay the costs associated with project development and construction) and permanent finance (longer-term debt used to finance an asset during its operational life). Risks are generally more predictable for permanent loans, which therefore tend to have lower interest rates than construction debt. Risk mitigants such as loan loss reserves, loan guarantees, liquidity facilities, currency hedges and other credit enhancements are additional elements that can be brought in whole or in part from public agents.

37. Third, methods of capturing the value that arises from improved infrastructure are particularly relevant in transport financing, although they are more like a cost recovery tool than an upfront method of capital mobilization. Land value capture relies on a set of instruments for financing public infrastructure, particularly large transport projects. Improvements in transport infrastructure lead to increased value of land and property nearby and the increased value can be used as a source of revenue. At the same time, land value capture can be used to drive more compact urban development. Strategies for governments to extract the increased value include land value taxation, negotiated extractions, tax increment financing, special assessments, joint development, betterment levies, transportation utility fees, impact fees and air rights. Land value capture can be used in combination with public, debt or equity investments to finance infrastructure.

38. Fourth, partnerships between municipalities and communities may share the costs (usually maintenance) of assets (typically sanitation) created for low-income neighbourhoods or other areas. Though the institutional framework for such partnerships is often unclear they are important from a poverty perspective and they foster more inclusive investments in low-income neighbourhoods.

39. The cases in the present document focus on the first two types of public-private partnerships, the primary concern being the mobilization of finance. Public-private partnerships (especially those focused on equity) are also expected to enhance managerial efficiencies, although this aspect is beyond the focus of the present document. As public-private partnerships are relatively few, it is difficult to make a rigorous comparison between their operational efficiencies those of publicly managed systems.

40. Mobilizing private debt for municipally owned infrastructure can be characterized into two types, namely, a commercial bank (primarily in Europe) and capital market approach (dominant in the United States of America). Both models link city financing needs with domestic debt, through intermediation, usually set up with public ownership. The key difference between the two is that in the commercial bank model, the risks of default fall on the bank. Given those risks, the loans would have to price in (include) dividends based on the risk-reward appetite of the lenders and the credit risks of the borrower. Unlike commercial banks, United States bond banks have low equity, and repayments rely on local government cash flows and credit enhancements. As a consequence, there is limited need for dividends to be a high proportion of loans.

41. The following discussion focuses on developing country experiences with mobilizing debt. Until the mid-1990s, traditional methods of financing relied on intergovernmental loans and guarantees in most countries, especially for small and medium cities. The financing was not demand driven, but was provided for preselected projects that were contracted out to parastatals. As the city governments were usually involved in neither the design nor in the implementation, collecting user charges and repayments was problematic and the loans ended in default in several countries in the Asia-Pacific region.

42. However, since the 1990s, especially after decentralization, reforms were launched in most countries. City governments were encouraged to plan, design, raise finances and pay for infrastructure based on local priorities. These reforms took place across diverse countries such as Bangladesh and Indonesia, as well as across provinces within larger, federal countries, such as India, where municipal reforms are typically a provincial responsibility.

43. The reforms typically consisted of policies that empowered local governments through rationalizing intergovernmental flows (the Philippines), strengthening own revenues (Indonesia and Sri Lanka) and using specialized financial intermediaries for small and medium city financing (the Philippines and Thailand). Further, recognizing that small and medium cities' needs are perceived as too small (high transaction costs) for direct market access, many of these emerging economies have invested in structures to pool these demands and lower risks through efficient intermediation (the States of Tamil Nadu and Karnataka, India). As of 2016, global pooled finance mechanisms have raised more than \$2.6 billion for small and medium city infrastructure.⁵

44. The outcomes of these major institutional reform efforts on the demand and supply side show that: (a) large cities with medium-term investment plans have been able to repeatedly access local capital markets and establish a credit relationship with the private sector (examples include Ahmedabad, India (table 4); Ho Chi Minh City, Viet Nam; and Shanghai, China), and (b) small and medium cities have found ways to access the capital market through intermediaries (examples include pooled funds in Tamil Nadu State, India, and the infrastructure financing company PT Sarana Multi Infrastruktur in Indonesia, which was established in February 2009 as a State-owned enterprise).

⁵ Global Fund for Cities Development, "The potential catalytic role of subnational pooled finance mechanisms", paper presented at the third International Conference on Financing for Development, Addis Ababa, July 2015.

Table 4
Selected municipal bond issues in India

<i>City</i>	<i>Rating</i>	<i>Amount (millions of United States dollars)</i>	<i>Purpose</i>
Ahmedabad-1	AA-	100	Water and sanitation
Ludhiana	AA+	10	Water and sanitation
Bangalore	A-	125	City roads
Nasik	AA	100	Water and sanitation
Nagpur	AA	50	Water and sanitation
Madurai	A+	25	Bypass
Ahmedabad-2	AA	100	Water and sanitation
Tamil Nadu Urban Development Fund (TNUDF)	AA+	100	Municipal infrastructure
Water Fund (Tamil Nadu State, India)	AA	30	Water and sanitation

Source: Credit Rating Information Services of India Limited (CRISIL), 2008, Credit Rating List. Available from www.crisil.com/en/home/our-businesses/ratings/credit-ratings-list.html (accessed 15 December 2017).

45. Some major national level reform efforts, such as in Bangladesh and Tamil Nadu State, India, suggest that when reforms have been concerted and efforts have been focused on intergovernmental fiscal transfers, own-source revenue systems and the borrowing framework, the leverage has tended to be substantial and sustainable (boxes 1 and 2).

Box 1

Tamil Nadu State, India: empowering municipal decisions

Recognizing the need to free up municipal decisions, and position municipalities as proactive creators of infrastructure, major political, legal, administrative and financial reforms were made in Tamil Nadu State in the mid-1990s. These reforms included the linking of fiscal transfers to state taxes (rule-based rather than on patronage), strengthening own sources (including powers to set rates) and setting up a supply-side intermediary.

Based on the needs in the water, sanitation and hygiene sector and recognizing the need to lower costs for these projects, the state Government set up the Water and Sanitation Pooled Fund in 2003 as a trust with limited equity, and it eliminated dividend expectations. The fund, with little recourse to the capital, relied on credit enhancements of a debt service reserve fund and repayment from the borrower's taxes and fees. The average size of projects (such as drinking water connections, pumping stations) was \$1 million, and by pooling these demands, the fund raised \$30 million through a bond issue (rated as AA). A study of the bond issue of the fund demonstrated that domestic private debt can finance municipal infrastructure at low costs if sufficient attention is given to the design of the intermediaries' capital structure and security structures. This case is particularly relevant for market access for small and medium cities, and it demonstrates the advantages of pooling to overcome the limitations of issuing small scale bonds and their ensuing high transaction costs.

The initial investors in the bond were commercial banks and the project size (less than \$10 million individually) shows the efficacy of intermediation. The secondary investors in the bonds were private pension funds, which provides evidence of the maturity of the debt market and the ability to sell municipal obligations to long-term private funds seeking fixed-income returns.

Source: Krishnaswamy Rajivan, "Linking Cities with Finance", presentation at Evolving Regional Urban Agenda: Focus on Municipal Finance in Rabat, 18 and 19 March 2013.

Box 2

Establishing a municipal development fund to finance local infrastructure in Bangladesh

In response to its infrastructure financing gap, the Government of Bangladesh, with technical and financial assistance from multilateral institutions, set up the Bangladesh Municipal Development Fund in 2004. It is financed by loans from development partners and disburses loans to municipalities based on its own reviews of project proposals. Its finance is a blend of grants, loans and the municipality's own contribution for a project. Over the past decade, 154 municipalities have received financing for infrastructure projects. In addition, the fund's tax revenue and requirements and the competitive nature of its allocations have helped steer municipalities towards increasing their tax revenue by an average of 17.5 per cent.

However, the fund has also encountered challenges. Due to shortages of resources, projects have addressed only a subset of municipalities. Many towns are overlooked or need to wait years to receive financing for another project. A related challenge has been the sustainability of the Fund, which remains donor-dependent. Due to a perceived lack of added value and discomfort with disparate investments and the lack of new capital, the fund has experienced periods when it was in danger of closure. There is also a need for closer coordination between the fund and other government-driven local development programmes. Moreover, technical assistance at the local level must be built into projects, since many municipalities lack the capacity to formulate investable project proposals.

Sources: www.bmdf-bd.org/ (accessed 15 March 2018); ADB, *Bangladesh-ADB: 40 Years of Development Partnership* (Manila, 2013); and World Bank, *Bangladesh Municipal Services Independent Evaluation* (Washington, D.C., 2013.)

46. Compared to private debt financing of publicly owned infrastructure, the record of public-private partnerships with access to private equity is more mixed, and so far, performance is significantly lower than that of private financing of municipally owned infrastructure. In the United States, approximately 94 per cent of water systems are publicly owned and financed by private debt. Contracts would have to be measured by metrics such as efficiency and cost over a period going beyond commencement. Cases of public-private partnerships that have been tracked from project implementation to operation are discussed below.

47. Two main inferences can be drawn from the experience in developing countries with public-private partnerships with access to private equity, which mirror the experience in industrialized countries. First, they are quantitatively insignificant in mobilizing finance for urban infrastructure, and second, these concessions have usually faced profitability problems, requiring renegotiations and consequent losses to the State that were unanticipated at the time of contract award.

48. For example, in China, public-private partnerships have not as yet played a major role, financing less than 4 per cent of total investment in water supply and sanitation systems, with municipalities accounting for more than 85 per cent of investments.⁶ In any event, most of the Chinese corporate investments are through the mechanisms of companies owned by the municipal government.

49. Land value capture has been recommended as a cost recovery tool, especially when the investment triggers an increase in land values. Apart from transport investments it is possible for regulatory decisions, such as a change in land use, to directly affect property values. Typically, land value capture institutes a process to capture part or all of the change in value, and uses proceeds to finance infrastructure investments (such as investments in transit) and any other improvements required to offset impacts. In cities experiencing rapid development, expected increases in land values and economic growth may well make land value capture a viable and attractive option. There are two main categories of land value capture: development-based and tax- or fee-based. Development-based land value capture can be facilitated through direct transactions of properties whose values increased following public regulatory decisions or infrastructure investment. Tax- or fee-based land value capture is facilitated through indirect methods, such as extracting the surplus from property owners through various tax or fee instruments (such as property taxes, betterment charges and special assessments)

50. Land value capture is useful for capturing the benefits of urban transit systems in developed and developing countries or areas. For example, the transit system in Hong Kong, China, was financed using these techniques. National Governments such as the Government of India have issued guidelines on methods of using land value capture, especially in the transport sector. Systems such as enhanced property taxes and impact fees exist in legislation and practice. Land value capture through impact fees is an optimal policy tool to ensure that external benefits are recovered. The example of the Republic of Korea is given in box 3.

⁶ Michel Bellier and Yue Maggie Zhou, "Private participation in infrastructure in China: issues and recommendations for the road, water, and power sectors", World Bank Working Paper No. 2 (Washington, D.C., World Bank, 2003). Available from <https://openknowledge.worldbank.org/handle/10986/15156>.

Box 3

Land-based financing in the Republic of Korea

Rapid economic development drove urban migration in the 1970s and 1980s, and created a serious housing shortage in Seoul. To reduce congestion, the Government planned four new urban “districts” in Gyeonggi Province in the early 1990s. The land use for the four new cities was changed from agriculture or forestry to housing or commerce. Consequently, land prices sharply rose with some of the increase captured by the developer: the Korea Land and Housing Corporation.

The Korea Land and Housing Corporation financed most of the new transport infrastructure and constructed new suburban railways and expressways between Seoul and Bundang, Ilsan and Pyeongchon. The land value capture reached nearly \$2.8 trillion. After construction, companies bought some of the newly developed land for housing or commercial buildings. Thus, the land value capture was ultimately paid by consumers. However, as housing or building prices had by then increased substantially, consumers also benefited from appreciated values.

The model continued for new cities and housing complexes into the 2000s, particularly following a 1997 law which stipulates that appropriate land values must be captured for transport infrastructure for new developments. As a result, from 2001 to 2008, 38 land development projects were built in Gyeonggi with significant land capture finance. The average land value capture per project was approximately \$559 million (21.5 per cent) of the average \$2.6 billion project cost.

Source: E.Y. Shon, “Infrastructure Financing in Korea”, background paper for the ADB Technical Workshop on Infrastructure Finance, Manila, 18 and 19 August 2016.

III. Main findings and policy implications

A. Main findings

51. The total infrastructure investment needs for the region are estimated to reach \$22.6 trillion over 15 years (from 2016 to 2030) in a baseline scenario, and the annual financing gap is estimated at \$226 billion. The analysis for selected Asia-Pacific countries⁷ over a five-year period from 2016 to 2020 shows that public sector reforms on tax revenues and expenditures can meet approximately 46 per cent of the annual financing gap (\$121 billion out of \$262 billion) for investments based on baseline estimates. The result is a 54 per cent gap (or \$141 billion) specifically for private sector infrastructure finance instruments, including those covered in the present document.

52. With the private sector in the region estimated to invest approximately \$63 billion at present, expanding private finance to the required level is certainly a major challenge. At the same time, however, opportunities to leverage private finance for sustainable infrastructure investments are significant. Focusing on the debt equity instruments presented in this document, more than \$340 billion was raised by Asian bond issuers in 2017, up from \$211 billion the previous year, according to analytics group Dealogic using JPMorgan data.

⁷ The 25 countries are: Afghanistan, Armenia, Bangladesh, Bhutan, Cambodia, China, Fiji, India, Indonesia, Kazakhstan, Kiribati, Kyrgyzstan, Malaysia, Maldives, the Marshall Islands, the Federated States of Micronesia, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, the Philippines, Sri Lanka, Thailand and Viet Nam.

53. Policy actions are needed to enhance the power of cities to improve own-source revenue, rationalize intergovernmental transfers and provide regulations for a borrowing framework in an integrated fashion that can attract long-term capital and contribute to positive municipal reforms in the Asia-Pacific region.

54. To improve municipal access to private sources of finance, policies that reform those three key components should have the impact of reducing investor risk, improving leverage and enabling a more responsive institutional environment for more robust local government financing systems. International development efforts that aim to assist in creating an enabling institutional environment for local government financing should foster an expanded municipal finance market. When designing such policies for municipal finance systems, countries in Asia and the Pacific should take into account the following summary of findings:

(a) In industrialized and developing economies, leveraging public finances with private debt is the dominant source of finance, historically comprising anywhere from 70 to 90 per cent of the total capitalization of infrastructure projects.⁸ In industrialized economies, the institutional mechanisms, namely the rules for fiscal assignments and pledges, credit enhancements mechanisms, have evolved to suit city financing needs. In developing economies, decentralization has encouraged policy actions to facilitate debt finance through intermediation. These are works-in-progress for developing economies. A main reason for the minimal participation of private equity firms in public-private partnership schemes (in industrialized and developing countries) is that public projects have usually faced profitability problems, requiring renegotiation and consequent losses to the State that were unanticipated at the time of contract award;

(b) International experience shows certain obvious commonalities between industrialized and developing countries on financing infrastructure in small and medium towns, such as the need for local, long-term debt to finance these investments and the importance of pooling to enable criteria-based, open access to finance for cities of all sizes;

(c) Experience from developing countries indicates that successful leverage is dependent on State-level actions to implement reforms that empower local governments through intergovernmental transfers, own-source revenue collection and support for the creditworthiness of cities within a borrowing framework to create certainty for subnational investment, and free up municipal decision-making. If local governments are constrained in their basic functions, such as planning, design and raising revenue, and if they are institutionally hampered by functional and geographical fragmentation, leverage would be limited. However, if local governments are respected, their share of taxes is transferred to them, and their governance structures and institutional capacity are enhanced to manage long-term debt, they can be expected to leverage their own finances, reduce risk and exposure and develop needed infrastructure. In such a situation, an efficient intermediation system makes leverage possible and sustainable. Hence the primacy of integrated policy actions on all three components of municipal finance.

55. Subsequent to cities enjoying legislative authority, they will still require enhanced capacity to initiate and build the requisite institutional and governance structures. This will be an incremental process where at initial stages, the State

⁸ Organization for Economic Cooperation and Development, *Infrastructure Financing Instruments and Incentives* (Paris, 2015). Available from www.oecd.org/g20/topics/financing-for-investment/Infrastructure-Financing-Instruments-and-Incentives.pdf.

may need to provide credit enhancements to reduce risk, such as sovereign or other guarantees. Investment grade credit ratings will also benefit from the local government's ability to document their historical portfolio in servicing debt, ultimately allowing them to expand their portfolios and build replicable models.

56. Under an enabling institutional environment utilizing the above recommendations to countries, experience from the Asia-Pacific region and around the world shows that countries could develop and take advantage of four prioritized financial instruments to drive implementation on the ground: fiscal decentralization; debt financing; public-private partnerships; and land-based financing. While each of these instruments has inherent benefits and risks, they can potentially support the leveraging of private finance by city governments for sustainable infrastructure investments. The characteristics and benefits/risks of each instrument are analysed below.

1. Fiscal decentralization

57. Fiscal decentralization can increase the efficiency of public finances and provide municipalities and regions with greater control over sources of revenue. The design and management of intergovernmental transfers, spending responsibilities and governance mechanisms at different levels of decentralization or devolution have a major role to play. Even when cities and regions have built the capacity necessary to generate local revenues, transfers may continue to play an important role in order to supplement local taxation which may not be sufficient to meet spending requirements;

58. Regardless of the levels of decentralization in a country, measures are required to ensure appropriate accountability and to balance own-source revenue-raising, intergovernmental transfers and spending obligations among levels of government to reduce risk. Intergovernmental fiscal transfer rules need to be rational and predictable, or planning at local levels would be impossible, especially in cities where the size of assigned revenues is large. When fiscal transfers are used, the effectiveness, efficiency and equity of transfers will depend greatly on design and will be greater when coordination among national, regional and local governments is strong.

2. Debt financing

59. Debt financing can raise private capital to finance infrastructure projects. Creditworthy national Governments can collaborate with cities to identify investment priorities and the preconditions to issue national bonds to support them. Where national debt markets are constrained by a lack of liquidity, national Governments should work with capital market authorities and international financial institutions to create secondary markets and instruments to reduce the cost of longer-term local currency finance.

60. As a prerequisite for this instrument, cities need sufficient own-source revenues for making debt repayments, together with capacity for budgetary, accounting and financial management. Risk mitigants, such as loan loss reserves, loan guarantees, liquidity facilities, currency hedges and other credit enhancements, are additional elements that can be brought in whole or in part from public agents. Risks are generally more predictable for permanent loans, which therefore tend to have lower interest rates than construction debt.

3. Public-private partnerships

61. Public-private partnerships can play a role in delivering urban infrastructure projects where governments face technical and financial constraints, particularly in middle- and high-income countries with mature financial systems. Public-private partnerships allocate risks between public and private entities and aim to provide more sustainable financing options and better value for money. Private sector participation is likely to increase where projects involve commercial returns on revenue-generating assets.

62. Public-private partnerships offer a finance solution to public entities where private capital is less costly than public capital, and/or where the public sector lacks the technical development and operational/managerial resources to efficiently develop and operate a particular infrastructure asset or class of assets. Private investors expect a high rate of return, thus the number of suitable projects for public-private partnerships is limited principally to those that can generate sufficient income-backed returns. The effectiveness of public-private partnerships in urban infrastructure in the region has been mixed, and success depends heavily on appropriate project identification, structuring, contractual arrangements and government capacity, particularly to monitor liabilities.

4. Land-based financing

63. Land-based financing or land value capture can help to finance large urban transport and development projects. National Governments can provide strong regulatory frameworks and guarantees that enable municipalities to use land value capture for shaping compact urban development. National Governments can also incentivize municipalities to assess and implement land value capture under best practice guidance as a condition of allocating national funds to partially finance infrastructure projects. Furthermore, they can be active participants in urban infrastructure and property development in cases where land is controlled by national entities. While revenue for land value capture is locally derived, national legislation and frameworks are critical to create the revenue stream. Constitutional, statutory and policy frameworks created by national Governments can incentivize land value capture financing of sustainable infrastructure by regional and municipal governments. Where urban infrastructure is partially financed by a national finance ministry, the release of national public funds can be linked to effective land value capture plans.

64. Even when local governments are empowered to collect property taxes, higher levels of government often retain the power to set assessment parameters or tax rates which represents a significant risk to the effectiveness of this instrument. Furthermore, in a number of countries where urban finance and decision-making is largely centralized, national bodies use land value capture mechanisms to finance local urban investments. Land value capture is most risky when combined with an ineffective tax system and opaque property market.

B. Policy implications

65. Going forward, technical cooperation work programmes should support policy actions and instruments that national Governments can implement and use to overcome barriers to municipal, private and institutional investments in sustainable urban infrastructure. For municipal governments, fiscal decentralization can empower them to use local finances for large infrastructure programmes. For private and institutional investors, national regulatory frameworks and policy programmes can incentivize incremental investments into more sustainable infrastructure.

66. The ambitions of the 2030 Agenda, the New Urban Agenda and the Paris Agreement compel policymakers to take collective actions at all levels of governance and require commitment and investments from the public and private sectors. Cities must build and demonstrate their capacities to create confidence that they can deliver and manage infrastructure and provide stable returns on long-term investments needed to deliver public goods and services to their citizens. To mobilize and de-risk investments for sustainable urban infrastructure, development partners, national and city governments, and the private sector must work towards a core agenda to improve the institutional enabling environment for municipal financing, in order for local government to leverage resources based on the findings and policy entry points identified in the present document.

IV. Issues for the consideration of the Commission

67. The Commission is invited to review the present document with a view to providing directions and suggestions on (a) providing directions and suggestions on strengthening the secretariat's work on municipal finance as a vehicle to implement sustainable urban development, and (b) how best to leverage the Commission's conference structure in support of developing complementarities for the effective implementation of the 2030 Agenda and the New Urban Agenda.
