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Mobilizing Capital for Local Government Finance in Asia and the Pacific through Green, Social, and Sustainability Bond Markets

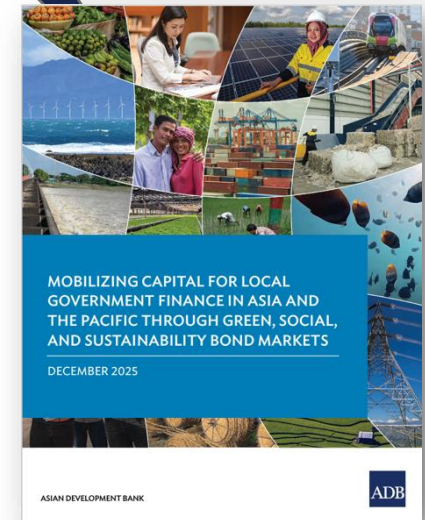
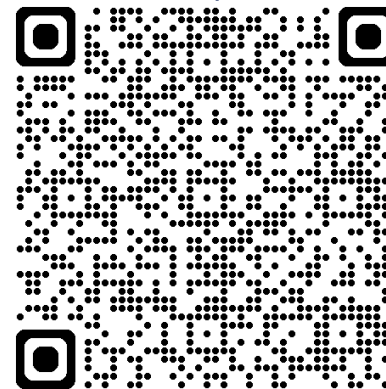
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Access the report here:



Report Structure and Key Findings

Report Structure

- **Analysis:** Structure and development of local government bond markets
- **Review:** Sub-sovereign financing and the role of municipal financing organizations
- **Assessment:** What are advantages to financing local sustainable infrastructure with GSS+ bonds?
- **Case Studies:** Local governments issuing GSS+ bonds for mitigation, adaptation, and resilience

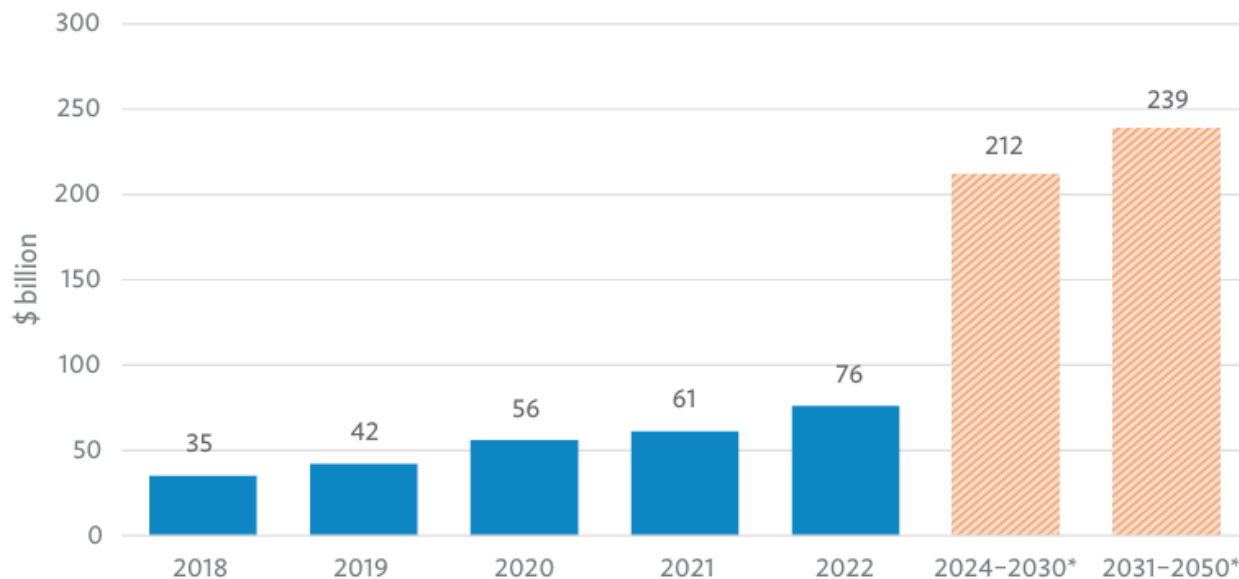
Key Takeaways

- ✓ **Local government borrowers increasingly use GSS+ bonds for financing**
 - *GSS+ Bonds offer long-term financing for sustainable local infrastructure and municipal project delivery*
 - *They now account for over 10% of annual local government issuance in several advanced economies*
 - *GSS+ bonds align public sector needs with private investor demand for high-impact investment opportunities*
- ✓ **GSS+ bonds can finance a range of Local Mitigation, Adaptation, and Resilience projects**
 - *Use-of-proceeds GSS+ bond format is well suited to local government investment projects and tailorable to the local context*
 - *For Mitigation – Sustainable water and sewer infrastructure, clean mass transit and energy, green municipal buildings, urban nature*
 - *For Adaptation and Resilience – Flood and storm management infrastructure, drought resilience and water saving, heat resilience*
- ✓ **Local government borrowers can pool resources with Municipal Finance Organizations**
- ✓ **Development partners can help catalyze local government GSS+ issuance in Asia and the Pacific**

- **\$2.5 to 4.0 trillion:** estimated annual spending needs for low carbon, climate-resilient urban infrastructure in EM
- **\$200 billion:** of which estimated needs for Adaptation spending (largely concentrated in Asia and the Pacific)
- **\$76 billion:** actual global Adaptation financing flow to EM and Developing Economies in 2022 (latest available)

Global Adaptation Financing to EMDE

Annual Flows and Projected Needs

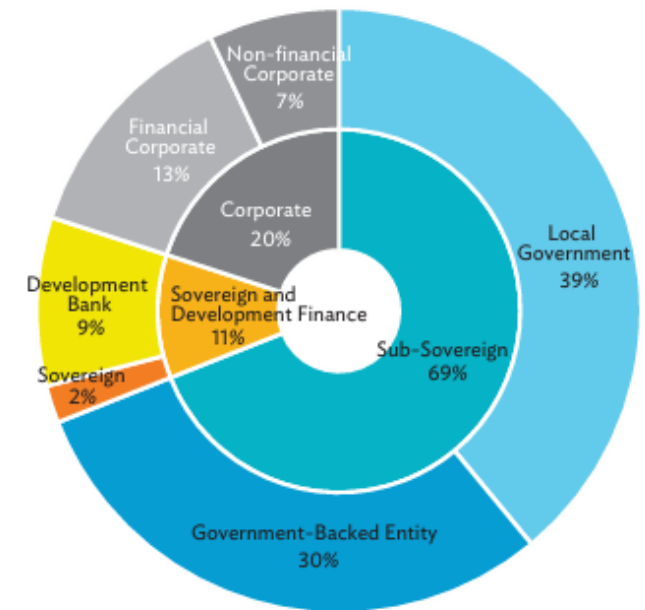


* = projected values.

Notes: Projected needs are annual averages. Figures are likely underestimates as they only account for the needs of emerging markets and developing economies (EMDEs), and many costs cannot be accurately measured. From 2018 to 2022, EMDEs accounted for 92% of adaptation finance flows. Source: B. Naran et al. 2024. Global Landscape of Climate Finance 2024. Climate Policy Initiative.

Adaptation and Resilience-Related GSS+ Bonds – Distribution by Issuer Type

Distribution by Issuer Type



Source: Climate Bonds Initiative. Climate Bonds Resilience Taxonomy Methodology 2024. https://www.climatebonds.net/files/documents/supporting-documents/Climate-Bonds_Resilience-Methodology_2024.pdf

Financing Local Adaptation and Resilience with GSS+

A&R = Adaptation and Resilience

- **Adaptation and Resilience** projects are typically public sector financed (disaster and cost-avoidance is a social good)
- **Local and Municipal governments** are both most exposed, and able to respond to A&R risks with local solutions
- **Budget tagging, taxonomy development, and national plans** for climate adaptation and resilience boost project pipelines
- **High exposure to climate and physical risks** make Adaptation and Resilience use-of-proceeds a natural fit for Asia and the Pacific

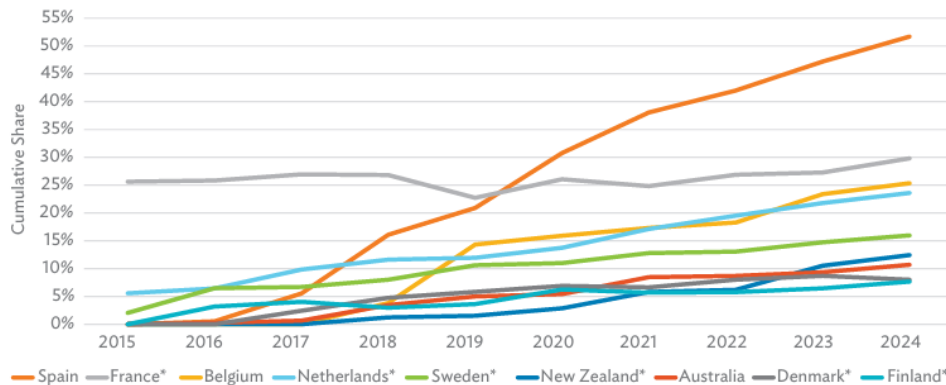
Adaptation and Resilience Categories Mapped to Use-of-Proceeds GSS+ Frameworks

Adaptation and Resilience Category	Damage Type	ICMA Use of Proceeds	CBI Resilience Taxonomy	Examples of Municipal Projects
Water Supply and Drought Resilience	Drought, Water Stress	Sustainable Water and Wastewater	Water Supply, Wastewater Collection and Treatment Infrastructure	Efficient and climate-resilient waterworks and sewerage, water reuse and recycling facilities, resilient water treatment distribution, leak reduction
Flood and Stormwater Management	Flood, Sea Level Rise	Climate Change Adaptation	Flood Management Infrastructure, Flood Resistant Systems	Levees, seawalls, and surge barriers; stormwater networks, permeable pavements, wetland and floodplain restoration; flood risk analysis
Heat Resilience and Urban Cooling	Heat Stress	Climate Change Adaptation	Urban Infrastructure, Buildings, Municipal Services	Expansion of parks and green corridors, urban tree canopy, cool roofs and pavements, climate shelters and cooling centers
Resilient Energy and Critical Infrastructure	Flood, Storm Damage	Climate Change Adaptation	Energy, Transport, and ICT Infrastructure, Buildings	Grid hardening, microgrids and backup for hospitals and emergency services, undergrounding powerlines and utilities, resilient transport and telecom nodes
Climate-Smart Buildings and Housing	Multiple	Climate Change Adaptation, Green Buildings	Municipal Facilities including Schools, Health, and Housing	Flood-proofing and elevating public housing and infrastructure; climate resilient schools and clinics; wind, flood, and heat-hardening retrofits to public buildings
Public Health and Early Warning	Multiple	Climate Change Adaptation, Social Co-Benefits	Public Admin. for Disaster Risk Reduction and Social Protections	Disaster preparedness measures, emergency supply stockpiling and distribution, emergency shelters, heatwave and air quality early-warning systems
Nature-Based Solutions and Ecosystem Protection	Multiple	Terrestrial and Aquatic Biodiversity	Freshwater, Marine, and Terrestrial Ecosystem Services	Mangrove, wetland, and dune restoration; nature-based wetland buffers and shoreline stabilization; expansion of urban biodiversity corridors and nature spaces

CBI = Climate Bonds Initiative, ICMA = International Capital Market Association, ICT = information and communication technology. Note: Categorization adopted from the ICMA Green Bond Principles (June 2025 revision) and CBI Resilience Taxonomy Version 1. Source: Authors' compilation.

- **GSS+ is practical and flexible financing tool** with widespread adoption across a range of regional contexts
- **Strong alignment** with the infrastructure investment and municipal service delivery needs of local sub-sovereigns
- **Large and growing market share** of GSS+ format issuance for Sub-Sovereign issuers in Europe, Japan, AusNZ

Cumulative Share of Local Government Bond Issuance in GSS+ Formats – for selected markets



*Indicates markets where issuance by local municipal finance organizations is included.
 Note: Data are as of 31 March 2025. Source: Authors' calculations based on Bloomberg LP data.

List of Municipal Finance Organizations around the world

Entity Name	Country	Year Established	Sustainable Finance Framework(s)	Total Debt Outstanding (\$ billion)
Kuntarahoitus Oyj (MuniFin)	Finland	1989	Green, Social	55.0
KommuneKredit	Denmark	1898	Green	32.7
Agence France Locale (AFL)	France	2013	Sustainability	10.6
Kommuninvest	Sweden	1986	Green, Social	52.2
Japan Finance Organization for Municipalities (JFM)	Japan	1957	Green	126.7
Japan Major Joint Local Government Bond (JLGB)	Japan	2003	Green	82.9
New Zealand Local Government Funding Agency (LGFA)	New Zealand	2011	Sustainability, Sustainability-linked Loan	14.8
Kommunalbanken AS (KBN)	Norway	1927	Green	61.3
Nederlandse Waterschapsbank (NWB Bank)	Netherlands	1954	Green, Social	64.0
Bank Nederlandse Gemeenten (BNG Bank)	Netherlands	1914	Social, Sustainability	112.2
UK Mincpal Bond Agency	UK	2014	Green, Social	0.3
Municipal Finance Authority of British Columbia (MFA)	Canada	1970	Sustainability	7.0

GSS+ flexibly support the needs of local governments

- **\$4.2 trillion outstanding of US Municipal Bonds** – the world’s largest, most developed and diverse local market
- US Muni bonds finance specific **public and social infrastructure projects** - transport, power, water, health / edu
- **7% of bonds in the US Muni market are issued in GSS+ formats** - many other eligible projects are left unlabeled

United States Municipal Bonds by Bond Classification and GSS+ Label Type

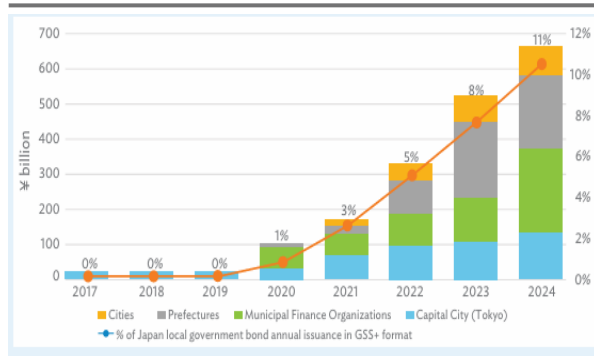
US Municipal Bond Classification	Green	Social	Sustainability	Total
Housing (single, family, multi-family, student)	1%	21%	11%	33%
Energy (including clean energy projects)	24%	0%	0%	24%
Mass Transit	17%	1%	1%	18%
Water and Sewer	17%	0%	1%	17%
Project Infrastructure and Project Finance	14%	1%	0%	16%
Waste Management	12%	0%	0%	12%
Economic and Industrial Development	9%	0%	1%	9%
Airports	6%	0%	0%	6%
Electricity and Power Utility	6%	0%	0%	6%
Education	1%	1%	0%	3%
Health Care	1%	0%	0%	1%
Other (state, city, economy, local tax authority)	1%	1%	0%	1%
Labeled Municipal Bonds as a Percentage of Total Outstanding	4%	2%	1%	7%

Notes: The table shows the percentage of United States (US) municipal bonds that are labeled. For example, 4.0% of all outstanding US municipal bonds and 17.1% of mass-transit-related US municipal bonds have a “green” label. Data are as of 31 December 2024. Source: Authors’ calculations based on Bloomberg LP data.

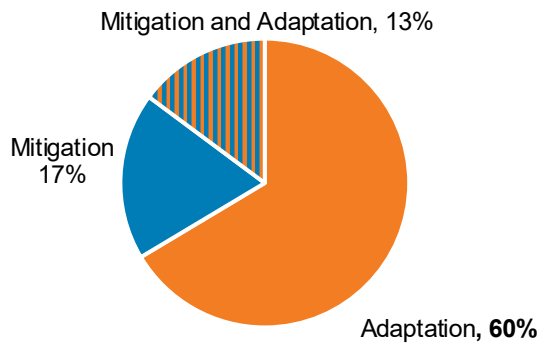
GSS+ flexibly support the needs of local governments

- Growing adoption of GSS+ labels by local government issuers with **11% new issuance market share in Japan**
- Japan has significant climate and physical hazards – relatively large share for **Adaptation and Resilience UoP**

Japan Issuance of GSS+ Local Bonds



Japan Local GSS+ Finance Categories



Commonly observed GSS+ use-of-proceeds categories for Japan local governments

Adaptation		Mitigation	
River floodways and embankments		LED light installation in public buildings	
Coastal storm surge prevention infrastructure		Solar and small hydro power plant installation	
Forestry management and road rehabilitation		Purchase of new energy and energy-efficient vehicles	
Erosion and anti-landslide measures		Green building construction and efficiency upgrades	
Disaster-resilient roads and energy infrastructure		Parks and city greening improvements	
Parks and heat island prevention		Sewer system upgrades for GHG and energy reduction	
Kelp bed and local fisheries management		Energy-efficient air conditioning in public buildings	
Environmental			
Adaptation		Mitigation	
Environmentally Sustainable Management of Living Natural Resources		Land use Terrestrial and aquatic biodiversity	

Practical guide to local GSS+ use-of-proceeds examples

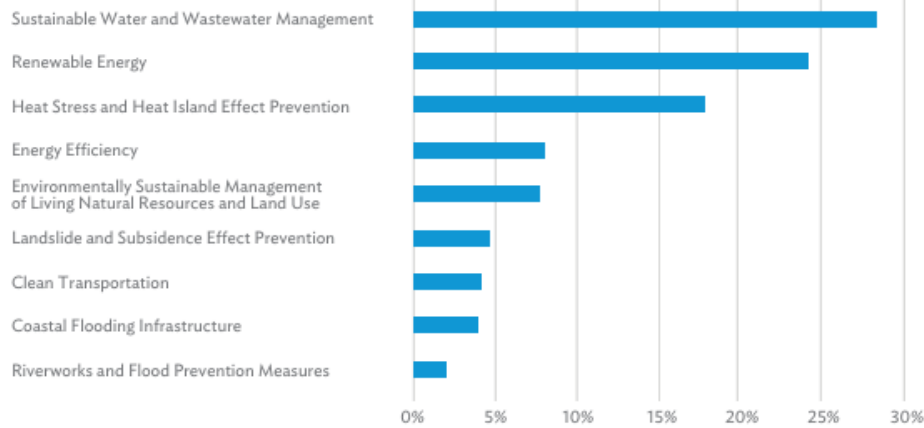
Commonly Use of Proceeds in GSS+ Local Government Bonds – Mapped to Report Case Studies

Sector	Use-of-Proceeds Examples	Case Study Reference in This Report			
		Tokyo	Gothenburg	Cape Town	Île-de-France
Transport	Purchase of electric, hybrid, and other low-emissions vehicles for public transport and official use	X	X		X
	Provision of electric vehicle charging stations and other clean-transport-enabling infrastructure		X		
	Expansion and improvement of public transportation networks (rail, tram, bus, ferry, bicycle)	X			X
Energy	Development of new renewable energy generation capacity (solar, wind, hydro, geothermal)	X	X		X
	Development and promotion of electrical energy storage, transmission, and distribution capacity	X			
Water	Construction and rehabilitation of municipal water infrastructure			X	
	Improvement of sewerage infrastructure and wastewater treatment facilities			X	
	Development of flood control infrastructure and mitigation measures	X		X	
Buildings	Development of green buildings for public housing, schools, health facilities, and municipal buildings		X		X
Efficiency	Installation of LED lights in municipal facilities and transportation infrastructure	X	X		
	Installation of energy-efficient heating, cooling, and lighting in municipal buildings	X	X		
	Development of municipal district heating and cooling infrastructure		X		
Environment	Development of parks and green spaces, city tree planting, river and wetland cleanup and preservation	X	X		

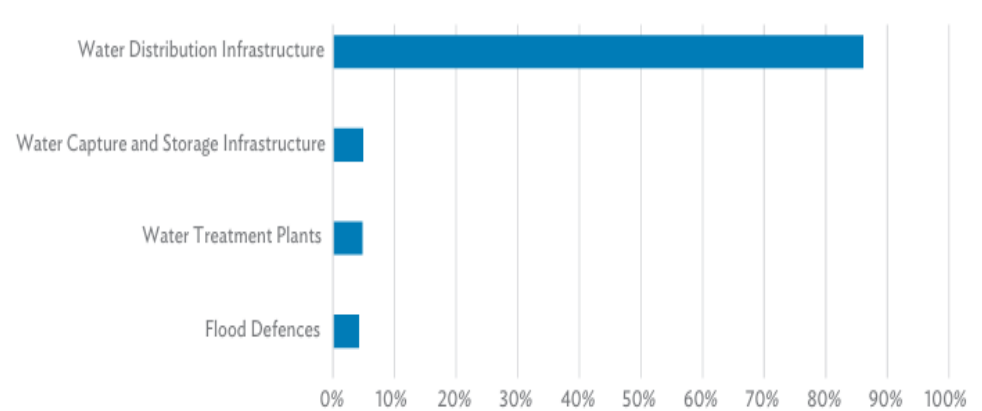
Practical guide to local GSS+ use-of-proceeds examples

- Tokyo Metropolitan Government's GSS+ reporting shows a large % allocation to **Adaptation and Resilience UoP**
- City of Cape Town issued a Green Bond in response to a severe drought for **water distribution infrastructure**

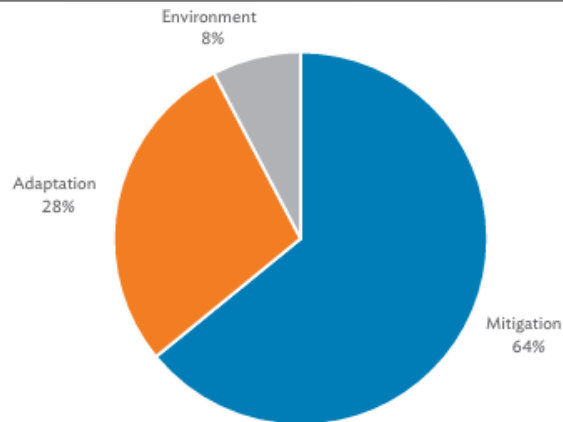
Tokyo – Green and Sustainability Project Allocation %



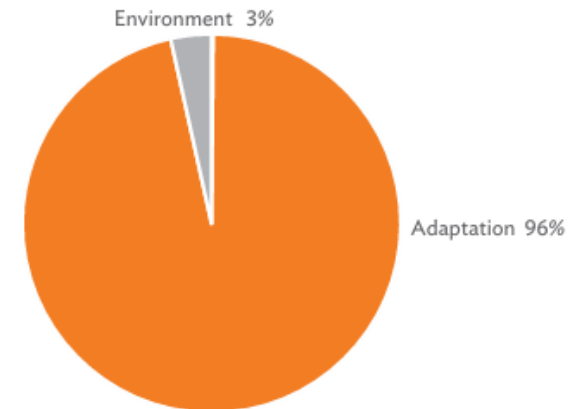
Cape Town – Green Project Allocation %



Tokyo – Allocation by Sustainable Finance Type %



Cape Town – Allocation by Sustainable Finance Type %



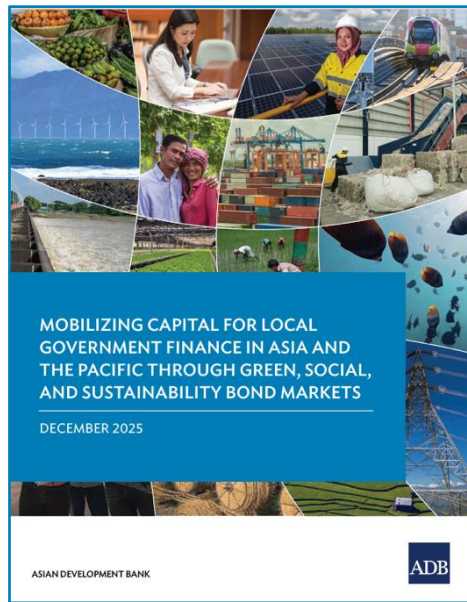
Recommendations

1. **Align local government project financing** with sovereign sustainable financing frameworks
2. **Use pooled municipal financing vehicles** to scale bond markets with a focus on green and social
3. **Leverage MNDB resources and guarantees** to kickstart local government bond markets
4. **Strengthen financial oversight, disclosure, and governance frameworks** to enable local government financing

GSS+ Bonds for Local Mitigation, Adaptation, and Resilience

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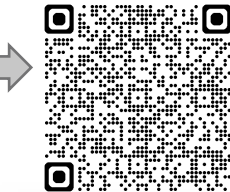
MOBILIZING CAPITAL FOR LOCAL GOVERNMENT FINANCE IN ASIA AND THE PACIFIC THROUGH GREEN, SOCIAL, AND SUSTAINABILITY BOND MARKETS

DECEMBER 2025

ASIAN DEVELOPMENT BANK



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Mobilizing Capital for Local Government Finance in Asia and the Pacific Through Green, Social, and Sustainability Bond Markets

subsovereign entities. GSS+ bonds can directly support local governments' climate adaptation priorities by financing projects such as sustainable water infrastructure, nature-based adaptation solutions, and disaster prevention measures (Table 3).

Table 3: Adaptation and Resilience Categories and Use of Proceeds for Local Government Bonds

Adaptation and Resilience Category	Damage Type	ICMA Use of Proceeds	CSRI Resilience Taxonomy	Examples of Municipal Projects
Water Supply and Drought Resilience	Drought, Water Stress	Sustainable Water and Wastewater	Water Supply, Wastewater Collection and Treatment Infrastructure	Efficient and climate-resilient waterworks and sewerage, water reuse and recycling facilities, resilient water treatment distribution, leak reduction
Coastal and Marine Infrastructure, Flood Management, Flood Protection				Levees, seawalls, and surge barriers; stormwater networks, permeable pavements, wetland and floodplain restoration; flood risk analysis
Urban Infrastructure, Buildings, Municipalities				Expansion of parks and green corridors, urban tree canopy, cool roofs and pavements, climate shelters and cooling centers
Transport, and Infrastructure, Buildings				Grid hardening, microgrids and backup for hospitals and emergency services, underground powerlines and utilities, resilient transport and telecom nodes
Public Facilities (e.g., Schools, Health, and Housing)				Flood-proofing and elevating public housing and infrastructure, climate-resilient schools

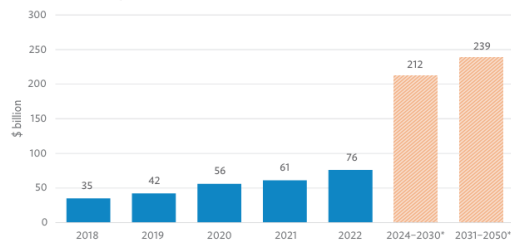
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2.3 Bridging the Financing Gap for Local Governments in Developing Economies

Estimates of spending needs for low-carbon and climate-resilient urban infrastructure in emerging markets range from \$2.5 trillion to \$4.0 trillion, with over \$200 billion needed for adaptation alone (Figure 1). Much of this spending is in Asia and the Pacific, a region highly vulnerable to climate impacts and home to many rapidly urbanizing economies. However, total estimated flows to urban climate finance worldwide reached only \$831 billion in 2021/22, including \$407 billion in Asia and the Pacific, with nearly all of these funds allocated to mitigation projects (e.g., clean transport and green buildings) and very little to adaptation.⁵

This stark imbalance underscores the urgent need for local governments to develop new and additional sources of climate finance, particularly for adaptation, amid constrained central government fiscal resources and borrowing capacity.

Figure 1: Global Adaptation Financing to Emerging Markets and Developing Economies—Annual Flows and Projected Needs



* projected values.
Notes: Projected needs are annual averages. Figures are likely underestimates as they only account for the needs of emerging markets and developing economies (EMDEs), and many costs cannot be accurately measured. From 2018 to 2022, EMDEs accounted for 92% of adaptation finance. Source: B. Naras et al. 2024. Global Landscape of Climate Finance 2024. Climate Policy Initiative.

2.4 Building Local Government Bond Markets: Policy and Capacity Foundations

Direct bond issuance by local governments can help address these financing gaps. However, establishing a local government bond market requires both central government policy support and local institutional capacity building. Central governments play a critical role by developing policies and regulatory oversight to foster the development of substantial debt markets and enable local government entities to finance sustainable infrastructure effectively.⁶

⁵ Cities Climate Finance Leadership Alliance. 2024. The State of Cities Climate Finance 2024. <https://citiesclimatefinance.org/publications/2024-state-of-cities-climate-finance>
⁶ OECD. 2022. 2022 Synthesis Report World Observatory on Subnational Government Finance and Investment. <https://doi.org/10.1787/88808b0c-eb>

Mobilizing Capital for Local Government Finance in Asia and the Pacific Through Green, Social, and Sustainability Bond Markets

Box 3: continued

Box Figure: Issuance of GSS+ Local Government Bonds in Japan by Year and Issuer Type



GSS+ = green, social, sustainability, sustainability-linked, and other labeled bonds.
Source: Authors' calculations based on Bloomberg LP data.

A unique aspect of the Japanese local GSS+ bond market is its relatively large allocation to climate adaptation and resilience projects.

Global Overview of Local Government Bond Markets

Box 1: continued

As US municipal bonds are often used to finance public and social infrastructure, the market includes a sizable share of GSS+ bonds, which comprise 6.9% of total outstanding issuance (0.9% green, 1.9% social, and 1.1% sustainability). (Box Table)

Analysis of the current outstanding stock of US municipal bonds shows that green labels are commonly used for public infrastructure and power, mass transit, water, and waste management projects, while social and sustainability labels are almost exclusively used in housing-related sectors. Interestingly, other large sectors of the market, including education and health care, do not typically issue under sustainable financing labels, despite their apparent linkages to social projects. This indicates that municipal bond issuers in the US do not simply rely on their status as "pure play" social institutions when choosing whether to label their issuance programs as sustainable finance.

Box Table: United States Municipal Bonds by Type of Label

US Municipal Bond Classification	Green	Social	Sustainability	Total
Housing (single, family, multi-family, student)	1%	21%	1%	23%
Energy (including clean energy projects)	24%	0%	0%	24%
Mass Transit	17%	1%	1%	19%
Water and Sewer	17%	0%	1%	17%
Project Infrastructure and Project Finance	14%	1%	0%	16%
Waste Management	12%	0%	0%	12%
Economic and Industrial Development	9%	0%	1%	9%
Apprenticeship	6%	0%	0%	6%
Health and Power Utility	6%	0%	0%	6%
Education	3%	1%	0%	3%
Health Care	1%	0%	0%	1%
Other (state, city, economic, local tax authority)	1%	1%	0%	1%
Labeled Municipal Bonds as a Percentage of Total Outstanding	4%	2%	1%	7%

Notes: The table shows the percentage of United States (US) municipal bonds that are labeled. For example, 4.0% of all outstanding US municipal bonds and 17.6% of mass transit-related US municipal bonds have a "green" label. Data as of 31 December 2024. Source: Author's calculations based on Bloomberg LP data.

Box 2: Huzhou Green Finance Pilot Zone—Sustainable Municipal Investment in the People's Republic of China

Since their introduction in 2021, the People's Republic of China's (PRC) green finance reform and innovation pilot zones have played a key role in stimulating finance at the local level for green investments and carbon reduction projects.

Huzhou, located in Zhejiang province, is one of the PRC's flagship green finance reform and innovation pilot zones. The city has developed its own comprehensive sustainable finance ecosystem at the local level—encompassing regulatory guidance and infrastructure, policy incentives, financial product innovation, and digital transformation and capacity-building initiatives—to accelerate the adoption of municipal green finance.

continued on next page

5. Recommendations

Mobilizing and scaling up sustainable finance for local governments is a common challenge across developing economies in Asia and the Pacific. Addressing this effectively requires a coordinated and multilateral policy approach across levels of government. While there is no single "right approach," mechanisms and frameworks established in other contexts to develop efficient local government financing markets can serve as valuable reference points for Asia and Pacific policymakers.

The following recommendations summarize the key findings of this paper and outline practical steps for establishing market-based local government financing, with a focus on mobilizing capital for municipal projects that deliver positive economic, environmental, and social outcomes.

- Align local government project financing with sovereign sustainable financing frameworks.** Local governments are primary providers of public investment and urban infrastructure for climate and social needs. However, they often lack the financial resources and borrowing capability to effectively deliver on these demands. Central government policymakers can advance national development priorities by enabling responsible municipal borrowing that addresses sustainability challenges at the local level. They can also promote the development of local sustainable investment project pipelines by providing guidance through their own sovereign sustainable financing frameworks.
- Establish pooled local government financing vehicles to scale local government bond markets, with a focus on green and social finance.** Pooled municipal financing vehicles are a proven approach for expanding subnational government access to capital by aggregating local issuance needs and consolidating resources into a single well-capitalized entity. These vehicles can lower borrowing costs, improve operational efficiency, and enhance market credibility through their scale, while also increasing market transparency and the functionality of municipal finance markets. In many cases, they become leaders in developing high-quality green and social public financing frameworks and in mainstreaming sustainability standards in their jurisdictions.
- Leverage multinational development bank resources and guarantees to kickstart local government bond markets.** Development finance organizations such as the Asian Development Bank can play a catalytic role in developing municipal finance markets through both financial support and technical assistance. Examples of such support can include initial capital contributions, partial credit guarantees, and technical support for developing subnational borrowing frameworks and preparing project pipelines.
- Strengthen financial oversight, disclosure, and governance frameworks for sustainable local government financing, including those based on green and social taxonomies.** Reassuring investors that local government-financed projects are backed by a secure and reliable repayment structure is critical for developing trust and securing market access for municipal issuers. But local government borrowers must also demonstrate their own integrity and capacity for responsible fundraising through frameworks for financial and sustainability disclosure and high-quality governance. Issuing green, social, and sustainability bonds based on taxonomies and globally recognized frameworks such as the ICMA Green, Social, and Sustainability Bond Principles can significantly enhance the credibility and attractiveness of local government bonds to long-term investors.