

OECD Urban Studies

Financing Sustainable Cities in Southeast Asia

Diversifying Instruments and Leveraging Private investment



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DIVERSIFYING INSTRUMENTS AND LEVERAGING
PRIVATE INVESTMENT

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Foreword

Urbanisation is reshaping countries around the world. Over the last 40 years, the global population living in cities has more than doubled and is projected to reach 55% of total population by 2050. This rapid urbanisation is driving significant demand for infrastructure, not only to accommodate growing population but also to respond to pressing challenges such as climate change.

Financing sustainable urban development has never been more urgent. Yet, traditional funding and financing mechanisms are falling short of what is needed to meet surging demand. Moreover, while aggregate urban green finance data, such as green bond issuance by country and sector, are available, there is limited “place-based” data on where these investments are implemented, making it difficult to identify where funding gaps are particularly acute or not.

In 2023, the OECD published a report on *Financing Cities of Tomorrow* for the G20 Infrastructure Working Group. The report underscored the need to make cities more inclusive, resilient, and sustainable, echoing priorities raised by G20 Finance Ministers and Central Bank Governors under the Indian G20 Presidency. In line with the G20 Principles on Financing Cities of Tomorrow, the report laid out a framework to accelerate urban infrastructure investment through more effective urban planning, greater private investment, and expanded access to sustainable finance.

Building on this OECD/G20 work, this new report on *Financing Sustainable Cities in Southeast Asia* turns the spotlight on rapidly urbanising ASEAN-5 countries in Southeast Asia (Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam). Through an analysis of 129 sustainable urban development projects across four key groups – buildings; urban transport; water, wastewater and waste management; and integrated urban development – the report sheds light on how cities are funded and financed today. Each project is examined individually, with particular attention to the financial instruments used, while the analysis also draws on desk research on institutional and legal frameworks shaping urban development in the region. Key findings highlight the need for (i) improving public finance and other financial frameworks to enable private investment in sustainable urban development, (ii) removing barriers and providing incentives to broaden the range of funding sources and financing instruments for sustainable urban development, and (iii) strengthening urban planning and legal systems to leverage private investment for sustainable urban development.

While the report focuses on ASEAN-5 countries, many of the insights it offers resonate far beyond the region, offering guidance for all policymakers striving to build more sustainable and resilient cities fit for the future.

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Abbreviations and acronyms

ABMF	ASEAN Bond Markets Forum
ABMI	Asian Bond Market Initiative
ADB	Asian Development Bank
APAC	Asia-Pacific
ASEAN	Association of Southeast Asia Nations
ASEAN Plus Three	Ten ASEAN Member States and the People's Republic of China, Japan and Korea
AUD	Australian Dollar
BEC	Building Energy Code
BID	Business Improvement District
BOLUCs	Building ownership and land use certificates
BTAR	Banking Book Taxonomy Alignment Ratio
CGIF	Credit Guarantee and Investment Facility
CIL	Community Infrastructure Levy
CO₂	Carbon Dioxide
CSH	Civitas Social Housing
DBP	Development Bank of the Philippines
DPWH	Department of Public Works and Highways
EBA	European Banking Authority
ESG	Environmental, Social and Governance
ETF	Exchange Traded Funds
EU	European Union
EUR	Euro
FSB	Financial Stability Board
FUA	Functional Urban Area
FX	Foreign Exchange
G20	Group of Twenty
GAR	Green Asset Ratio
GBI	Green Building Index
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GHSL	Global Human Settlement Layer
GoE	Group of Experts
GreenRE	Green Real Estate
GSS	Green, Social, and Sustainability
HWMI	Heat Wave Magnitude Index
IBRD	International Bank for Reconstruction and Development
ICMA	International Capital Market Association
IDA	International Development Association
JPY	Japanese Yen
KKR Tower	Kementarian Kerja Raya Tower
KPI	Key Performance Indicator
KWAP	Kumpulan Wang Persaraan – Retirement Fund
LCCF	Local Carbon Cities Framework
LCY	Local Currency

LEED	Leadership in Energy and Environmental Design
LGU	Local Government Unit
LGUGC	Local Government Unit Guarantee Corporation
LURCs	Land Use Rights Certifications
LVC	Land Value Capture
MAHB	Malaysia Airport Holdings Berhad
MDB	Multilateral Development Bank
MDF	Municipal Development Fund
MDFO	Municipal Development Fund Office
MOC	Ministry of Construction
MONRE	Ministry of Natural Resources and Environment
MTN	Medium-Term Notes
MYR	Malaysian Ringgit
MyCREST	Carbon Reduction and Environment Sustainability Tool
NbS	Nature-Based Solutions
NLCCM	National Low Carbon Cities Masterplan
NUP	National Urban Policy
ODA	Official Development Assistance
OECD	Organisation of Economic Co-operation and Development
OJK	Financial Services Authority of Indonesia
OMY District	Otemachi, Marunouchi and Yurakucho district
OTC	Over-the-Counter
PDMF	Project Development Monitoring Facility
PE	Private Equity
PGBI	Philippine Green Building Initiative
PFPO	Property Fund for Public Offering
PM2.5	Fine suspended particles of less than 2.5 microns in diameter
PPP	Public-private partnerships
PT SMI	PT Sarana Multi Infrastruktur
REITs	Real Estate Investment Trusts
SDG	Sustainable Development Goals
SEC	Securities and Exchange Commission
SGX	Singapore Exchange
SOE	State-Owned Enterprise
SRI	Green Sustainable and Responsible Investment
TAP	Technical Assistance Programme
TCFD	Task Force on Climate-related Disclosures
TCX	Currency Exchange Fund
TDR	Transferrable Development Rights
THB	Thai Baht
TOD	Transit-Oriented Development
UNEP	United Nations Environment Programme
UOB APAC Green REIT	United Overseas Bank Asia-Pacific Green Real Estate Investment Trust
ETF	Exchange-Traded Fund
USD	United States Dollar
USD PPP	United States Dollar at Purchasing Power Parity
VAT	Value-Added Tax
WHO	World Health Organisation

Executive Summary

Southeast Asia is urbanising at a rapid pace. Between 2018 and 2030, 90 million people are expected to move to cities in the ASEAN region. This surge in urban population is placing significant pressure on urban infrastructure and public services, driving a host of complex challenges, ranging from power shortages and chronic traffic congestion to air and water pollution. These challenges, in turn, have made Southeast Asian cities particularly vulnerable to the impacts of natural disasters and climate-related risks. Urban areas in the region face major environmental threats, including high greenhouse gas emissions, severe flood risks, rising sea levels and storm surges, rising average temperatures, and more intense and prolonged heat waves. These issues underscore the critical need to invest in climate adaptation and resilience infrastructure. However, traditional funding and financing mechanisms are struggling to meet escalating demand. While public sector finance plays a fundamental role in addressing these needs, sustainable urban development can only be achieved through coordinated investment from both public and private sectors.

This report reviews how sustainable urban development is funded and financed in Southeast Asia, focusing on the rapidly urbanising ASEAN-5 countries of Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam, providing following key findings on ways forward for sustainable urban development.

Improving public finance and other financial frameworks to enable private investment in sustainable urban development

- Rapid urbanisation and climate change in Southeast Asia are creating strong and increasing demands for investment in sustainable urban development. City governments are pivotal in leading public sector efforts due to their proximity to and understanding of local needs. However, their capacity to respond effectively is largely shaped by national fiscal decentralisation frameworks. For example, local governments' spending responsibility as a share of total government spending remains limited in Malaysia (7.2%), the Philippines (11.1%), and Thailand (30.5%) – all below the OECD average (39.5%) – indicating a stronger reliance on national governments. A common challenge across the region is the underutilisation of local own revenue generation. In many cases, local governments have limited authority to set fees and charges, adjust local tax rates, or access borrowing options, constraining their ability to finance needed infrastructure.
- A large majority (76%) of the projects analysed in this report were funded and financed in foreign (non-local) currencies, in USD, EUR, AUD, or JPY. In countries where non-local currency funding is common, it is critical to minimise foreign exchange (FX) risk. Developing domestic financial markets is essential to mobilise long-term capital from domestic savings, reducing exposure to FX volatility in future urban investments.
- Within the selected sample of projects, domestic financial institutions currently play a limited role in financing sustainable urban development. Most project funding comes from foreign investors and joint ventures. To strengthen domestic involvement, ASEAN-5 countries could expand domestic capital markets by reinforcing investor base.

- Urban development projects in Southeast Asia also face risks not directly related to the finance itself but which nevertheless serve to deter investors, including institutional instability, legal complexities, and rigid timelines. To minimise these risks, governments could simplify permitting processes, introduce “one-stop” services for development and building permits, enforce standard approval times, strengthen inspections and enforcement, and build trust in developers through licenses and performance guarantees.

Removing barriers and providing incentives to broaden the range of funding sources and financing instruments for sustainable urban development

- ASEAN-5 countries are not fully leveraging the full spectrum of available financial instruments for sustainable urban development. While 73 of the 129 sampled projects used public loans, 14 projects used private equity, 6 projects used bonds, and none employed an infrastructure fund or real estate investment trusts (REITs) as private financing instruments. Efforts to drive sustainable urban development through improving access to, and the range of, financing instruments are limited. Green financing is concentrated in a few sectors such as buildings (52.8%) and energy (26.6%).
- Bond markets, especially green bonds, remain underdeveloped. Scaling up the use of Green, Social, and Sustainability (GSS) bonds, supported by incentives such as tax exemption benefits for bond issuers and stronger regulatory frameworks such as clearer taxonomies and guidelines for GSS bonds, could help unlock more private investment into sustainable urban development projects.
- Private Equity and Infrastructure Funds are gaining traction in Southeast Asia, but urban development still relies heavily on international public finance such as Official Development Assistance (ODA). REITs are underused due to regulatory and tax barriers; for example, REITs often face double taxation risks. To boost investment in climate-resilient projects, governments could improve tax systems, enhance public-private partnerships (PPPs), and reduce barriers for REITs to support green buildings and sustainable development.
- There is a mismatch between public and private investment in urban areas (in terms of both location and level of investment), which can lead to gaps in infrastructure and services that undermine the effectiveness and financial viability of potential private urban development projects. To foster more impactful private investment benefitting well-being and resilience, aligned with public investment and alleviating public fiscal burden, governments could offer incentives such as reduced property taxes or free access to public land for co-ordinated sustainable urban development projects. Establishing land value capture mechanisms such as Community Infrastructure Levies (a form of development charge) and strengthening PPPs could also help direct and align long-term investments.

Strengthening urban planning and legal systems to leverage private investment for sustainable urban development

- ASEAN-5 countries have increased their use of national and subnational strategic planning documents to promote investments. In the past decade, four ASEAN-5 countries have introduced National Urban Policies (NUPs). The development and implementation of NUPs can send a strong signal to the market, attracting investments by offering a clear framework for sustainable urban development. Moreover, NUPs can help improve multi-level co-ordination around their goals by promoting a diversified and balanced mix of resources to finance urban development across government levels.

- Urban development in ASEAN-5 countries is not sufficiently climate-proof, partly due to a lack of co-ordination between ministries, as well as across national and subnational governments, delaying the implementation of broader climate goals and strategies in urban planning frameworks. Governments should embed climate objectives into land use and spatial planning policies at all levels, enforce stronger climate-related regulations, and provide incentives for climate-resilient, environmentally friendly practices. In addition, better co-ordination across jurisdictions through measures such as inter-municipal co-operation arrangements will enhance the efficiency of infrastructure planning and investment by leveraging economies of scale and policy synergies, as many infrastructure projects span multiple jurisdictions.

1 Introduction

Countries around the world are rapidly urbanising. The global population living in cities has more than doubled over the last 40 years and is projected to reach 55% by 2050. Increasingly, traditional funding and financing mechanisms for sustainable urban development are proving inadequate to meet the growing demand. Innovative financing and funding mechanisms are both essential for cities to meet growing infrastructure needs. This chapter explains why policymakers should give more attention to the issue of financing sustainable urban development in Southeast Asia. It then introduces the ecosystem of actors and outlines the various approaches to financing. Finally, it presents the research objective and analytical approach of the study.

1.1. Why focus on the financing of sustainable cities in Southeast Asia?

Countries around the world are rapidly urbanising. The global population living in cities has more than doubled over the last 40 years and is projected to reach 55% by 2050 (OECD/European Commission, 2020^[1]), demanding significant investment in infrastructure, both to accommodate population increases and to adapt to new challenges like climate change. The global investment needed to support urban growth is estimated at USD 94 trillion between 2016 and 2040. Additionally, the International Finance Corporation (IFC) has estimated that cities in emerging markets will need USD 29.4 trillion in cumulative climate investment between 2018 and 2030 to mitigate and adapt to climate change effectively (IFC, 2018^[2]). High-quality infrastructure is a cornerstone of sustainable urban development, delivering a host of social, economic, and environmental benefits, including reduced traffic congestion, increased productivity, more affordable housing, and improved resilience to climate change (OECD, 2015^[3]).

Southeast Asia has represented one of the most dynamic areas in the world in the last decades, showing high population and economic growth. Between 2018 and 2030, 90 million people are expected to urbanise in the ASEAN region, with medium-sized cities between 200 000 and 2 million people projected to drive 40% of the region's growth. By 2025, two in three people in the ASEAN region will be living in cities. (ASEAN Smart Cities Network, 2018^[4]). Meeting the demand for urban infrastructure investment and public service provision has been a major challenge in this region, causing multi-faceted problems, including power outages, chronic traffic congestion, and air and water pollution. These problems, in turn, have made cities in Southeast Asia particularly vulnerable to risks and the impacts of natural disasters.

While financing sustainable urban development has never been more important (Box 1.1; Box 1.2), conventional funding and financing mechanisms are proving insufficient to meet growing demand. Traditionally, infrastructure investments – including for sustainable urban development – have been funded with public money (OECD, 2015^[5]). However, the capacity of governments to finance quality infrastructure investments, already strained before COVID-19, has become even more challenged by monetary policy tightening in key markets and fiscal policy issues worldwide. Public deficits and budgetary constraints imposed during the pandemic put infrastructure investments at risk. There is therefore a need for more innovative financing mechanisms and investment models that leverage private sector investment.

While there is already strong demand from the private sector for urban development, sustainability is not always prioritised, highlighting the need for more effective policy frameworks to guide investment. The good news is that sustainable finance has become a leading investment approach for investors seeking to pursue diverse investment options (Patalano, 2020^[6]).

Box 1.1. OECD Principles on Urban Policy

Adopted by the Regional Development Policy Committee in 2019, the principles consolidate the lessons from the past 20 years and more of work on cities to guide policy makers in building smart, sustainable and inclusive cities. The principles were welcomed by mayors and ministers during the 7th OECD Roundtable of Mayors and Minister held on 19 March 2019 in Athens, Greece. Mayors, ministers and partner institutions are committed to supporting the implementation of the principles through the Athens Pledge.

The Principles offer high-level guidance for developing smart, sustainable, and inclusive cities based on three pillars: (i) targeting an effective scale, (ii) adopting a coherent and integrated strategy, and (iii) engaging stakeholders. They emphasise the importance of stakeholder engagement, particularly for investments and developments that can support high-quality and inclusive urban infrastructure.

In particular, Principle 8 emphasises the need for adequate funding and financing to implement urban policy responsibilities at all government levels. This includes promoting a diversified, balanced, and sustainable mix of resources (such as grants, taxes, user charges, fees, and revenues from assets), allowing subnational governments sufficient flexibility to manage their revenues or "fiscal space", mobilising innovative financing tools, and leveraging private sector finance.

Source: (OECD, 2019^[7]); (G20-OECD, 2022^[8])

Box 1.2. The G20-OECD paper on financing cities of tomorrow

In 2023, the OECD together with the G20 published Financing Cities of Tomorrow for the G20 Infrastructure Working Group. This report emphasised the importance of making cities inclusive, resilient, and sustainable, in response to discussions at the G20 Finance Ministers and Central Bank Governors. In reference to the "G20 Principles on Financing Cities of Tomorrow", this report suggested guidance to accelerate infrastructure investment by three ways.

Firstly, it outlines how new forms of urban planning can mobilise private finance for inclusive, resilient, and sustainable urban investment. Secondly, it examines how leveraging private investment can enhance cities' capacity to support necessary investments in a constrained fiscal environment. Finally, it considers the potential opportunities and challenges in mobilising sustainable finance—such as green, social, and sustainable bonds and loans, sustainability-linked bonds, and catastrophe bonds—for infrastructure investment by city governments. The report also includes 17 brief case studies from 12 countries, showcasing innovative practices for creating the Cities of Tomorrow.

Source: (G20/OECD, 2023^[9]).

1.2. The ecosystem of actors and various approaches to financing sustainable urban development

Financing sustainable urban development involves multiple stakeholders. National governments set strategic frameworks, fund infrastructure, and attract investment, while city governments manage essential services, optimise urban assets, and engage investors. Multilateral institutions provide financing, technical support, and credit enhancements, particularly in emerging markets. The private sector plays a crucial role through direct investments and public private partnerships. Effective policies, governance, and planning are essential for mobilising resources and ensuring sustainable urban growth.

Effective co-ordination across government levels, jurisdictions, and sectors is crucial for efficient urban infrastructure investment. Vertical co-ordination aligns planning, optimises shared investments, and minimises contradictions through mechanisms like city deals and regional strategies. Horizontal co-ordination ensures infrastructure spans multiple jurisdictions efficiently, with inter-municipal cooperation enhancing economies of scale. Cross-sector co-ordination fosters holistic, place-based development by synchronising public and private investments. Engaging private and civil society stakeholders further strengthens strategic planning and implementation.

Innovative financing and funding mechanisms are both essential for cities to meet growing infrastructure needs. Financing spreads upfront costs over time, while funding ensures operational expenses and debt repayment. Insufficient funding limits subnational governments' access to finance, affecting their creditworthiness. Reliable funding sources are essential for sustaining investment and securing financial stability (G20-OECD, 2022^[8]). Subnational governments, including municipal and regional authorities, are responsible for approximately 60% of general budget resources in G20 countries and 40% globally, financing essential services like transport, water, and housing (G20-OECD, 2022^[8]). However, general are often insufficient to fund these essential services, especially amid economic challenges. Subnational governments can attract investment through a balanced mix of revenues: grants, taxes, and user charges (OECD, 2019^[10]). Borrowing, when fiscally managed, can enhance financial capacity (IMF, 2020^[11]), while private investment can bridge funding gaps and support large-scale projects.

1.3. Research objective and analytical approach

This report aims to provide a comprehensive understanding of sustainable urban development financing within ASEAN-5 countries (Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam). The analysis focus on those countries for the reason they are middle-income countries with the fast-growing economy in the Southeast Asia. It seeks to answer four key questions:

- What are the main financing trends in sustainable urban development projects in ASEAN-5?
- What is the relation between project categories (sectors) and funding and financing instruments?
- Which sector(s) are most successfully mobilising private capital?
- How can diversifying financing instruments for sustainable urban development leverage private capital?

The report was motivated by a critical gap in existing urban green finance data. While aggregate urban green finance data, such as green bond issuance by country and sector, are available, there is limited “place-based” data on where these investments are implemented, making it difficult to identify where funding gaps are particularly acute or not. The report fills this information gap on the financing of sustainable urban development projects in Southeast Asia by analysing 129 projects in the ASEAN-5 countries. The projects can be grouped under four categories: (i) integrated urban development, (ii) urban transport, (iii) water, wastewater and waste management, and (iv) buildings. Each project is examined individually, with particular attention to the financial instruments used. The report then identifies challenges

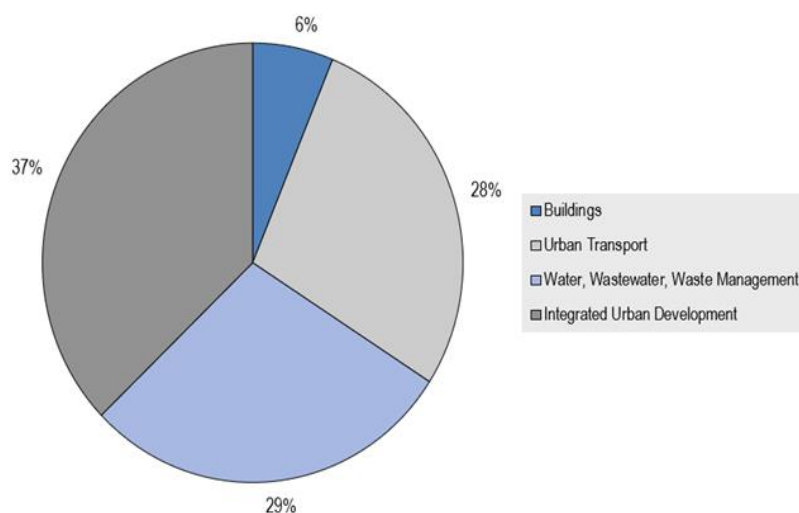
and proposes solutions as to how financing can be diversified and scaled up across the broader Southeast Asia region.

The analysis draws on two OECD Principles on Urban Policy: “leveraging the potential of cities of all sizes for advancing environmental quality and the transition to a low-carbon economy” and “promoting inclusive cities that provide opportunities for all by improving access for all urban residents and users” (OECD, 2019^[12]). Sustainable urban development is linked to urban green growth, which fosters economic development while reducing negative environmental externalities and the impact on natural resources and environmental services (OECD, 2013^[13]).

The study is based on desk-based research, including institutional and legal framework reviews. Primary sources include project databases from international organisations and initiatives (Table A A.1), while secondary sources include several individual resources from national and local institutions and project websites (Annex B). The findings highlight financing mechanisms and barriers to private investment in sustainable urban development. The definitions of the key terms are provided in Annex A.

Figure 1.1. Selected projects by category

Number of projects by category, expressed as a percentage of the total (n=129).

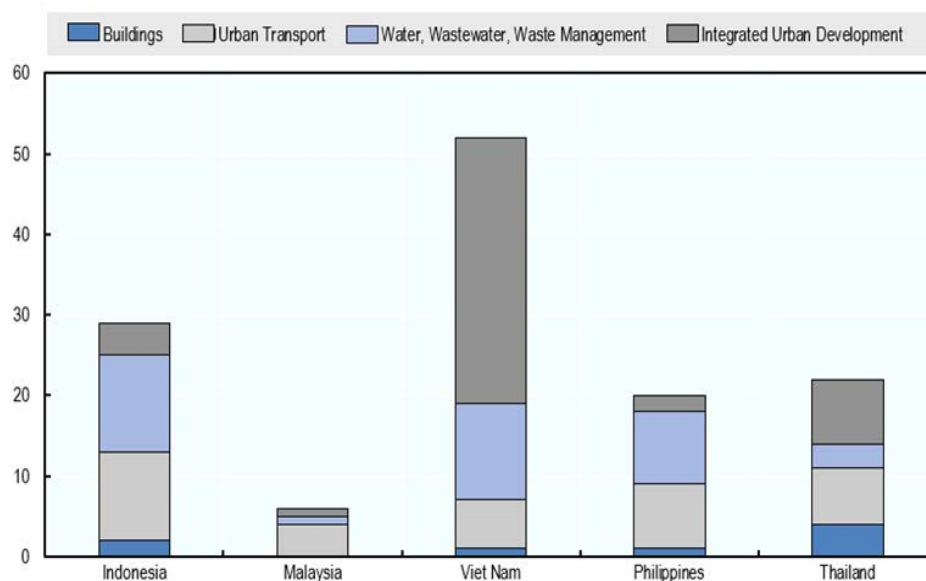


Note: Results based on a sample of 129 sustainable urban development projects collected by the OECD. The number of projects included per category is not indicative of a trend, as the sample is not representative. Out of the 48 integrated urban development projects, 23 were neighbourhood improvement projects (48%), 13 were disaster risk reduction projects (27%), 7 were smart cities (15%), 3 were TOD projects (6%), and 1 was green areas (2%).

Source: Author's elaboration based on the project list Annex C.

Figure 1.2. Selected projects by country and category

Number of projects by category in each country (n=129).

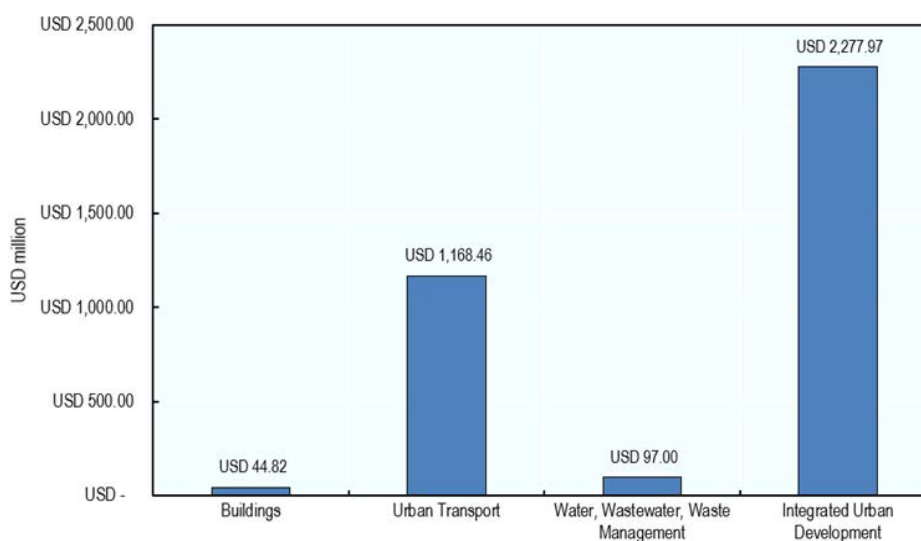


Note: Results based on a sample of 129 sustainable urban development projects collected by the OECD. The number of projects included per country is not indicative of a trend, as the sample is not representative

Source: Author's elaboration based on the project list Annex C.

Figure 1.3. Average selected project size by category

Average project size (USD) by category (n=1290).



Note: Results are based on a sample of 129 sustainable urban development projects collected by the OECD, from which only 125 projects have disclosed financial information.

Source: Author's elaboration based on the project list Annex C.

In addition to analysis of the 129 selected sustainable urban development projects, the findings presented in this report are supported by information gathered through interviews and desk research about key legal instruments, guidelines and initiatives, and selected cases.

The key legal instruments, guidelines and initiatives were grouped into three themes:

- Creating basic conditions to maximise private investment in sustainable urban development,
- Diversifying funding sources and financing instruments, and
- Guiding private investment to drive urban sustainability.

Table A A.2 in Annex A outlines major legal instruments, guidelines and initiatives studied in this report.

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2 Sustainable urban development in Southeast Asia

Southeast Asia is experiencing fast and strong economic growth. ASEAN-5 countries are among the most dynamic areas in the world in economics terms. Evidence shows that ASEAN-5 countries had an average annual population growth rate in cities of 2.3% (vs. the OECD average of 1.3%). The continued rapid urbanisation of ASEAN-5 countries puts pressure on land use and land resources, leading to higher GHG emissions, air pollutions, and increased vulnerability to climate risks such as floods or heatwaves. This chapter presents an overview of the status of sustainable urban development in ASEAN-5 countries and the key challenges they face.

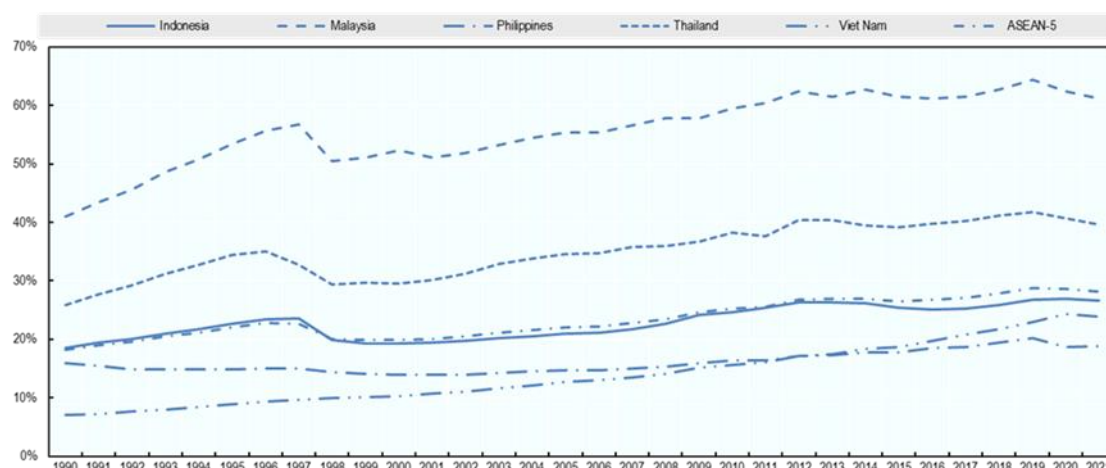
2.1. Urbanisation and economic trends in Southeast Asia

2.1.1. A highly dynamic economic region

Southeast Asia is experiencing fast and strong economic growth. ASEAN-5 countries are among the most dynamic areas in the world in economics terms. Between 1990 and 2019, before the start of the COVID-19 pandemic, the GDP in ASEAN-5 countries increased on average by 4.9% annually, as opposed to the 2.1% average in OECD countries (World Bank, 2022^[1]). The GDP per capita in ASEAN-5 countries remains lower than in the OECD countries but is increasing steadily. In 1990, the average GDP per capita in ASEAN-5 countries was USD PPP 3 029 (18% of the OECD average), while in 2019, the GDP per capita was USD PPP 13 645 (29% of the OECD average). Malaysia has experienced the highest growth rates. In 2019, the national GDP per capita in Malaysia (USD PPP 29 621) was 64% of the OECD average (USD PPP 45 977) (Figure 2.1).

Figure 2.1. GDP per capita in ASEAN-5 countries, 1990-2021

% share compared with OECD average

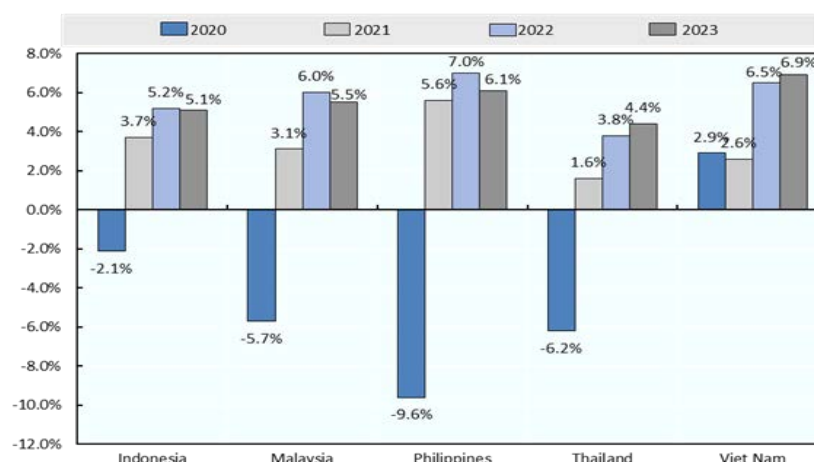


Source: Author's elaboration based on data from the (World Bank, 2022^[2]) World Development Indicators.

Although the COVID-19 pandemic and related containment measures hit the region hard, and the share of GDP per capita in ASEAN-5 countries compared with the OECD average reduced from 29% to 28% (OECD, 2022^[3]). The economies of ASEAN-5 countries began to recover in 2021. Their GDP grew substantially in 2022, particularly due to post-pandemic recovery, and remained positive, albeit with slower growth in 2023 (Figure 2.2).

Figure 2.2. Growth in real GDP in ASEAN-5 countries: Comparison between growth rates for 2020, 2021, 2022, and 2023

Annual % change



Note: Data are as of 7 March 2022. The projection for Indonesia is based on data from the OECD (2021a), OECD Economic Outlook No. 110. Source: (OECD, 2022^[3]). Economic Outlook for Southeast Asia, China and India 2022: Financing Sustainable Recovery from COVID-19. Large metropolitan areas in ASEAN-5 countries drive national economic growth

However, their challenges vary by country (Box 2.1). Moreover, the ASEAN-5 countries currently face some risks such as rising inflation—especially in energy-related products and commodities—disruptions in the international supply chains, depreciation of domestic currencies, financial market volatility, capital outflows due to rising interest rates in developed countries, tightening of global credit conditions, and the rise of public debt (OECD, 2022^[3]).

Cities in ASEAN-5 countries have been experiencing significant growth. Between 2000 and 2015, GDP in cities in ASEAN-5 countries increased by an average of 5.5% in real terms compared to 1.8% within OECD countries (Table 2.1). In 2015, the GDP per capita in cities in ASEAN-5 countries was 42% of the OECD average, while in 2000, the share was 27%.

Among the 731 cities in the ASEAN-5 countries, large metropolitan areas are demonstrating particularly strong economic performances. For example, cities in Malaysia and Thailand show per capita values of GDP higher than the OECD average, thanks to Kuala Lumpur and Bangkok, which produce 60% and 83% of the urban GDP of their respective countries.

Table 2.1. GDP and GDP per capita in cities in ASEAN-5 countries

USD PPP

	Total GDP Annual growth rate 2000-2015	Per capita GDP Annual growth rate 2000-2015	Per capita GDP (\$) 2015
Indonesia	5.3%	4.0%	7 798
Malaysia	5.3%	3.2%	23 228
Philippines	5.1%	3.1%	6 782
Thailand	6.0%	3.4%	28 483
Viet Nam	6.2%	4.6%	5 374
ASEAN-5	5.5%	3.9%	9 758
OECD	1.8%	1.0%	23 340

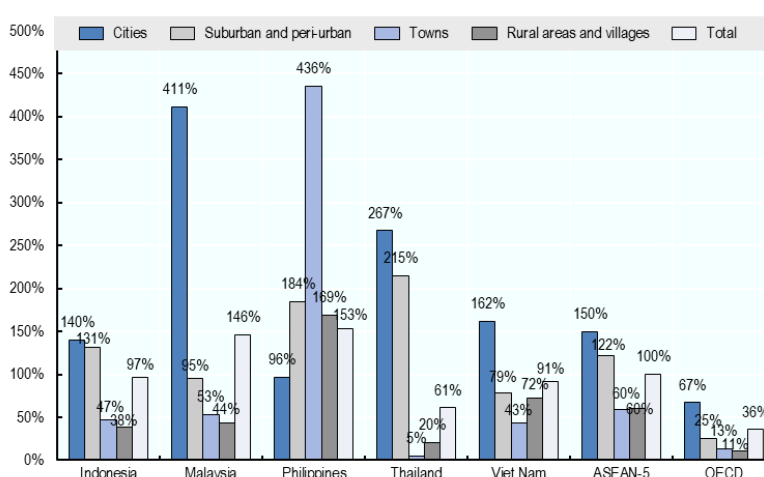
Source: Author's elaboration based on data from the European Commission – Joint Research Centre (Centre, 2019^[4]).

2.1.2. ASEAN-5 cities grew by more than 154 million inhabitants between 1975 and 2015

Economic growth in ASEAN-5 countries has been coupled with strong urbanisation trends. Evidence shows that ASEAN-5 countries had an average annual population growth rate in cities of 2.3% (vs. the OECD average of 1.3%). Cities also led national population growth, contributing to more than half of the total aggregate growth of ASEAN-5 population: this means that for every 100 additional people, 57 were in cities (Figure 2.3).

Cities grew by 150% between 1975 and 2015, faster than other types of settlements under the Degree of Urbanisation in all ASEAN-5 countries, except for the Philippines, where 'towns' demonstrated the fastest growth. Suburban and peri-urban areas also experienced a notable growth increase of 122%, particularly between 1990 and 2000. The population in villages and rural areas grew at a slower pace by 60% (Figure 2.3).

Figure 2.3. The growth rate of the population by settlement type (1975-2015)



Source: Author's elaboration based on data from European Commission - Joint Research Centre (2019^[5]).

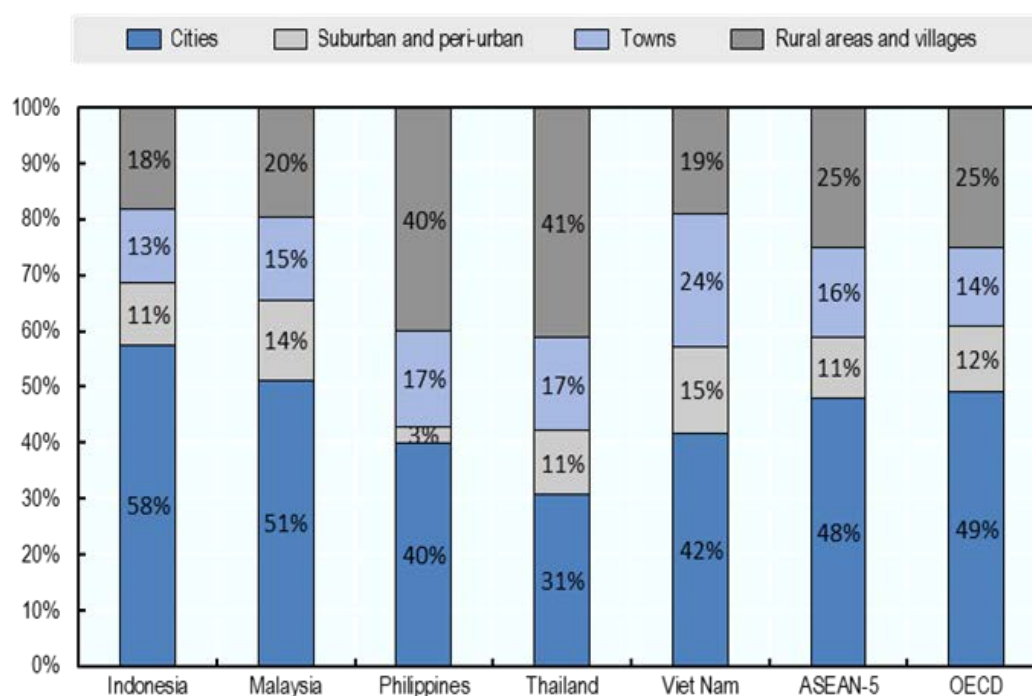
2.1.3. The urbanisation level of ASEAN-5 countries is similar to the OECD average, with Indonesia and Malaysia being more highly urbanised

The level of urbanisation in ASEAN-5 countries are very close to the OECD average. In 2015, 257.5 million people lived in cities in ASEAN-5 countries, accounting for 48% of the total population (compared to 49% in OECD countries); 56.4 million people lived in suburban or peri-urban areas, accounting for 11% of the total population (compared to 12% in OECD countries); and 87.4 million lived in towns, accounting for 16% of the total population (compared to 14% in OECD countries).

Indonesia and Malaysia show higher shares of the population living in cities (58% and 51%, respectively) than the OECD average (49%) (Figure 2.4).

The Philippines and Thailand have relatively lower shares of population living in cities (40% and 31%, respectively) and higher shares of the population living in rural areas and villages (40% and 41%, respectively).

Figure 2.4. Share of the national population by settlement type (2015)



Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2019^[5])

2.1.4. Large metropolitan areas in ASEAN-5 countries lead to urban population growth

Cities and their surrounding commuting zones form functional urban areas (FUAs). Among the numerous methodologies to identify FUAs, the OECD and the European Commission have developed a global definition that provides a better understanding of urban agglomerations in an internationally comparable way (Box 2.1). Within ASEAN-5 countries, 468 FUAs are identified (Table 2.2).

Box 2.1. A global method to define Functional Urban Areas

The concept of FUA considers the 'functional' and 'economic' linkages across space that characterise urban areas. Those linkages can be proxied by the local labour markets, which are usually integrated in urban areas, where densely inhabited cities – that concentrate jobs – are usually surrounded by less densely populated commuting zones: therefore, FUAs comprise cities and their surrounding areas, which approximate the extent of a city's labour market ('commuting zone'). Several methodologies have been proposed to define FUAs, such as identifying one-hour travel time boundaries (Marchetti, 1994^[6]). While the identification of commuting zones is subject to the availability of actual commuting or travel-time data at a granular spatial scale, such data is not always available, which prevents the international application of FUAs.

To address such challenges, the OECD and the European Commission have developed a method to identify FUAs across the world that does not require information on commuting flows. The method draws on a global statistical grid of population and a probabilistic model. It assigns a grid cell to an FUA according to a probability function which considers the (estimated) population of the cell, the population of the nearest urban centre, the travel time between the cell and the nearest urban centre (which is an intermediate notion used to define cities), the country's economic activity level, and the vehicle stock.

Cities are identified by using the methodology provided by the Degree of Urbanisation and GHSL data, i.e., densely populated areas with 50 000 inhabitants and a minimum density of 1 500 inhabitants per square kilometre.

Source: (Marchetti, 1994^[61]). Anthropological invariants in travel behavior. *Technological Forecasting and Social Change*, 47(1), 75-88; (OECD/European Commission, 2020^[71]). Cities in the World: A New Perspective on Urbanisation. OECD Publishing, Paris. (Moreno-Monroy, Schiavina and Veneri, 2021^[81]). Metropolitan areas in the world. Delineation and population trends. *Journal of Urban Economics*, 125.

The demographic analysis for FUAs confirms that the urban population trend continues in ASEAN-5 countries. From 1975 to 2015, 95% of FUAs (444) experienced population growth, and from 2000 to 2015, the figure dropped to 81% (380), but nevertheless remains high. For reference, in OECD countries, the population grew in 86% of FUAs between 1975 and 2015 and in 81% of FUAs between 2000 and 2015.

Table 2.2. FUAs in ASEAN-5 countries: Main figures

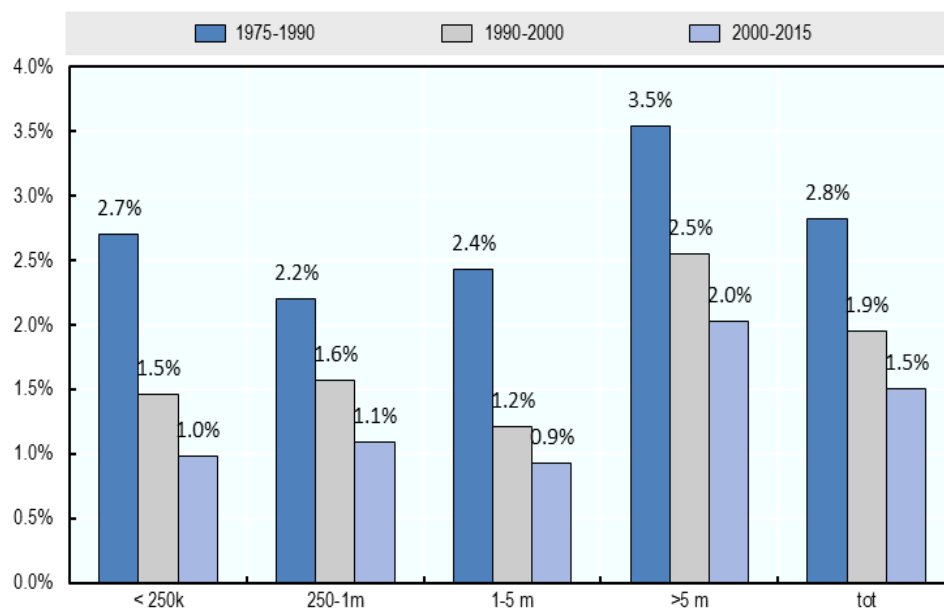
	Number of FUAs	Population (2015)	Share of national population (%)	Share of population in commuting areas
Indonesia	238	164339465	63.6%	15.2%
Malaysia	31	19052412	62.9%	19.3%
Philippines	64	44736135	43.8%	14.0%
Thailand	37	24075625	35.0%	15.5%
Viet Nam	98	44015023	47.5%	16.2%
ASEAN-5	468	296218660	53.6%	15.5%

Source: Author's elaboration based on data from European Commission – Joint Research Centre (European Commission - Joint Research Centre, 2019^[51]).

The FUAs with more than 5 million inhabitants grew fastest among different sizes of FUAs (Figure 2.5). In particular, the largest cities within each of the five countries grew much faster than other parts of their countries (Figure 2.6). Currently, 17% of the total national population in ASEAN-5 countries resides in the FUAs belonging to each country's largest city (Jakarta, Kuala Lumpur, Manila, Bangkok, Ho Chi Minh City), which has grown by 8% since 1975. The rise of megacities is also evidenced by the fact that 9 out of 94 FUAs with more than 5 million inhabitants were found in ASEAN-5 countries in 2015.

Figure 2.5. Population growth in cities by class of population, ASEAN-5 countries (1975-2015)

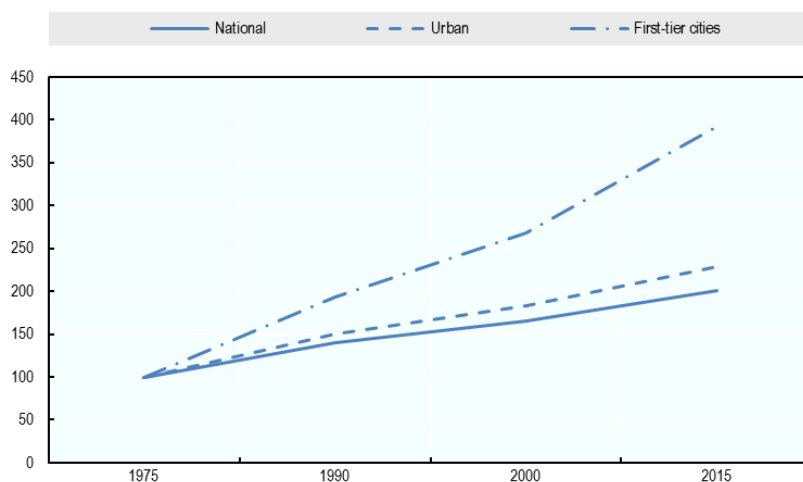
Annual growth rate of population



Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2019^[5]).

Figure 2.6. Population growth in first-tier cities, all cities, and countries in ASEAN-5 countries (1975-2015)

Index numbers (1975=100)



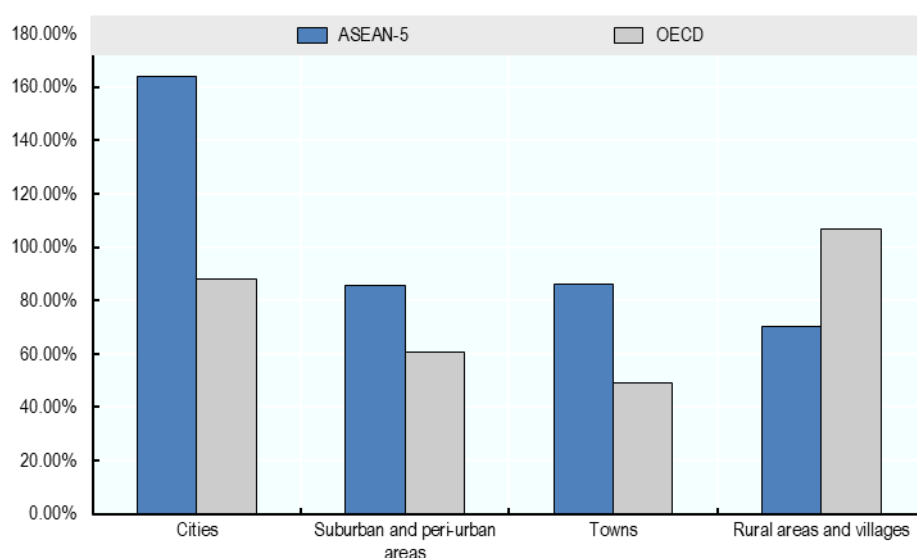
Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2019^[5]).

2.2. Challenges associated with the rapid urbanisation

2.2.1. Urbanisation generates strong needs for investment in urban infrastructure and the urban built environment for citizen wellbeing

The continued rapid urbanisation of ASEAN-5 countries puts pressure on land use and land resources, calling for policy responses on the effective use of land resources. In parallel with the population growth, the built-up areas, i.e., the areas covered by buildings and other physical structures (JRC, 2022^[9]) in ASEAN-5 cities grew much faster than the average of OECD countries. Between 1975 and 2015, they grew by 164%, which is almost double the growth rate in built-up areas in OECD countries (Figure 2.7). This means that every year, on average, 426 square kilometres of land have been newly used in ASEAN-5 cities.

Figure 2.7. Growth in built-up areas by settlement type, ASEAN-5 countries and OECD (1975-2015)



Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2019^[5])

Despite growth in the urban built-up area, ASEAN-5 cities are still much denser than OECD cities. Net-density, defined as the ratio between population and built-up area, is 12 773 inhabitants per square km in ASEAN-5 cities, 2.7 times higher than in OECD cities (4 751 inhabitants per built square km). While net-density is higher in all cities of ASEAN-5 countries than the OECD average, ASEAN-5 countries also show a high level of differentiation: average net density in the Philippines is 3.82 times higher than the average net-density in Malaysia. ASEAN-5 countries also differ in trends: while net-density in cities grew in all ASEAN-5 countries between 1975 and 2015, it grew fastest in the Philippines, showing the highest net-density (31 655.7 inhabitants per urbanised square km) among the five countries (Figure 2.3).

Dense cities are often linked with better public transport and better accessibility to services and jobs, which in turn can promote environmental, economic, and social benefits (OECD, 2012^[10]); (OECD, 2020^[11]). Furthermore, density can reduce infrastructure costs per user, making public services more economically viable. For instance, Transit-Oriented Developments, meaning the expansion of urban areas along (public) transport corridors, can maximise ridership, and therefore the returns of infrastructure investments (OECD, 2020^[11]); (ASEAN, 2020^[12]). On the other hand, investment in the provision of infrastructure can be less cost-effective in densely built-up areas compared to underdeveloped land since it may involve greater

physical and normative constraints, as well as higher transaction costs (OECD, 2015^[13]). Furthermore, in the context of rapid urbanisation, ASEAN-5 countries face challenges in maintaining their investment in urban infrastructure and services to match the rapid population growth in cities. Failing to do so will lead to reduced urban attractiveness and citizen well-being. The variation in urban net-density that characterises ASEAN-5 countries necessitates place-based approaches to urban management and development. This approach integrates city growth with quality urban development. For instance, in densely populated urban areas, promoting a healthy environment includes enhancing accessibility to open public spaces for urban dwellers.

Table 2.3. Net density in cities in ASEAN-5 countries and in OECD countries, 1975-2015

Population per built square km

	1975	1990	2000	2015
Indonesia	16568.3	18668.7	16431.7	18040.1
Malaysia	3937.6	5749.2	6481.4	8280.0
Philippines	10769.0	21016.4	25332.7	31655.7
Thailand	6760.6	8274.5	9122.0	11844.3
Viet Nam	13603.2	17032.5	14794.4	16772.8
ASEAN-5	12773.4	15766.8	14956.0	17159.6
OECD	4751.2	4726.3	4554.2	4812.3

Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2019^[5]).

Data from the Urban Centre Database indicates that, in comparison to OECD cities, ASEAN-5 cities generally exhibit better access to green and open spaces (measured by the proportion of the population residing in areas with such amenities) (European Commission - Joint Research Centre, 2019^[5]) (Figure 2.8). For instance, regarding green spaces, approximately 34% of the population in ASEAN-5 cities enjoys proximity to green areas, with Indonesia showing the highest percentage at 41%, in contrast to 24% in OECD cities. However, the shares in Thailand (17%), Malaysia (19%), and Viet Nam (22%) are below the OECD average (Table 2.4). It should be noted that being close to a green area does not necessarily mean that the area is accessible and available for public use (Figure 2.8). Furthermore, green areas might not qualify as “quality” open spaces usable by citizens. For instance, this definition could encompass residual areas from building development and areas that are vulnerable to floods.

Table 2.4. Potential access to green areas and open spaces in ASEAN-5 cities

Year 2015

	Potential access to green areas (share of population)	Potential access to open spaces (share of population)
Indonesia	41%	72%
Malaysia	19%	52%
Philippines	34%	74%
Thailand	17%	62%
Viet Nam	22%	65%
ASEAN-5	34%	69%
OECD	24%	51%

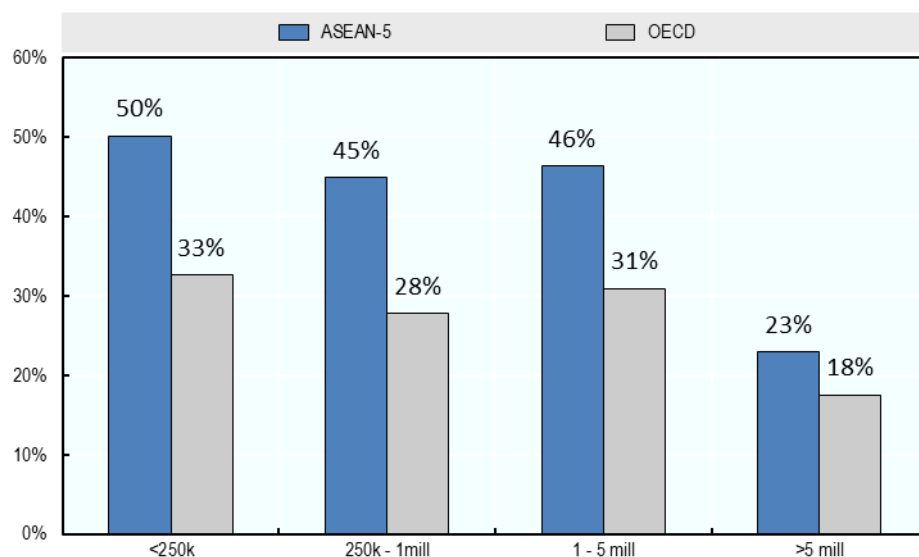
Note: Weighted average of city values (weighted by population). The potential access to green areas is measured as a share of the (estimated) population living in areas where “high green” (i.e., areas with dense vegetation) is found. The potential access to open spaces is measured as a share of the (estimated) population living in areas where non-built areas are found.

Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2021^[14]).

Looking at the data by city size, the largest cities (with a population higher than 5 million inhabitants) have lower levels of potential access to green areas and open spaces, calling for action, especially in large metropolises (Table 2.4).

Figure 2.8. Potential access to green spaces, by class size

Year 2014

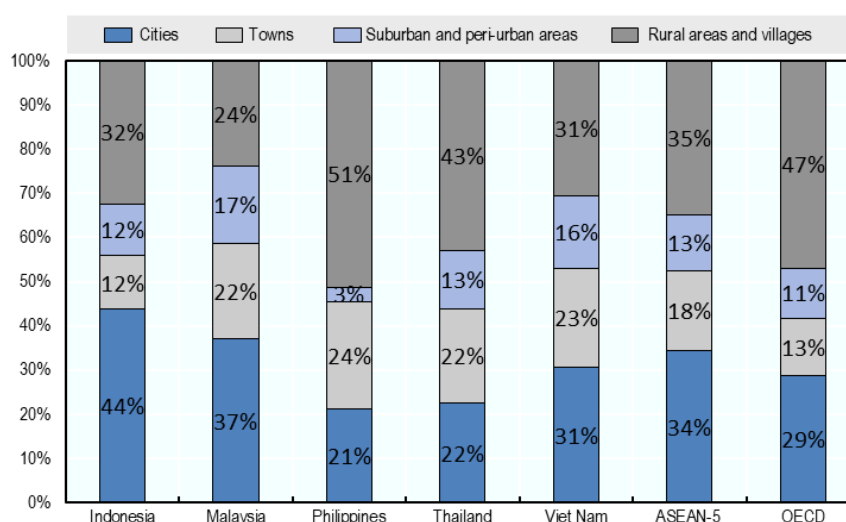


Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2019^[5]).

2.2.2. GHG emissions are high and rising necessitating mitigation strategies and actions

In 2015, urban areas (comprising cities, towns, suburban and peri-urban areas) generated between 70% and 80% of global anthropogenic greenhouse gases and the majority of air pollutants (Crippa et al., 2021^[15]) In aggregate, urban areas were the source of almost two-thirds of total CO₂ emissions in ASEAN-5 countries (vs. 53% in OECD countries) (Figure 2.9).

Figure 2.9. CO₂ emissions in ASEAN-5 countries and the OECD, by settlement type



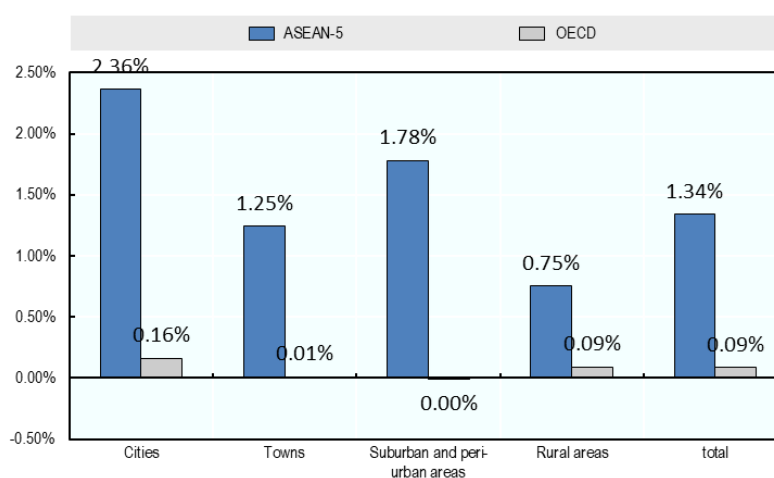
Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2021^[14]).

CO₂ emissions increased across all settlement types in both in ASEAN-5 and OECD countries between 1990 and 2015. However, the increase in ASEAN-5 countries (134%) is notably higher compared to OECD countries (9%). Specifically, CO₂ emissions in cities increased by 236% (in contrast to the OECD average of 37%), equating to an average annual increase of 5%. Suburban and peri-urban areas also experienced substantial growth (178%), followed by towns and rural areas (Figure 2.10).

A closer look by country reveals that cities show the highest growth in emissions in four countries except for the Philippines, where CO₂ emissions grew fastest in suburban and peri-urban areas. In Viet Nam, CO₂ emissions grew by almost 400% in cities. In Malaysia, CO₂ emissions grew in all types of settlements (Figure 2.11).

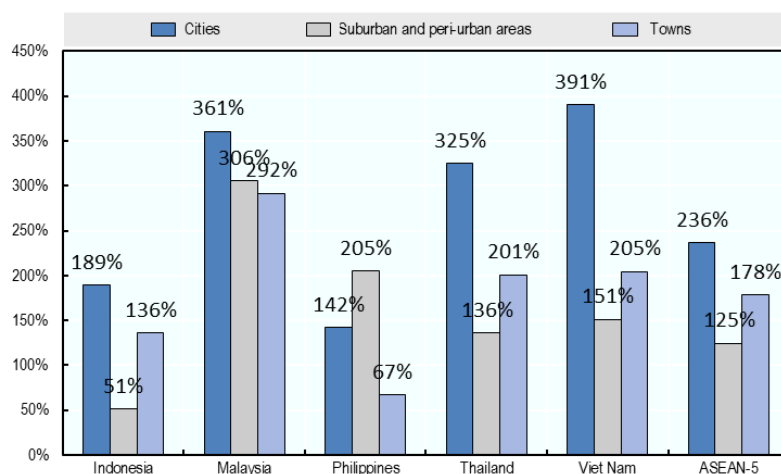
Figure 2.10. Growth rates of CO₂ emissions in ASEAN-5 countries and the OECD, by settlement type (1990-2015)

Average annual growth rates (%)



Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2021^[14]).

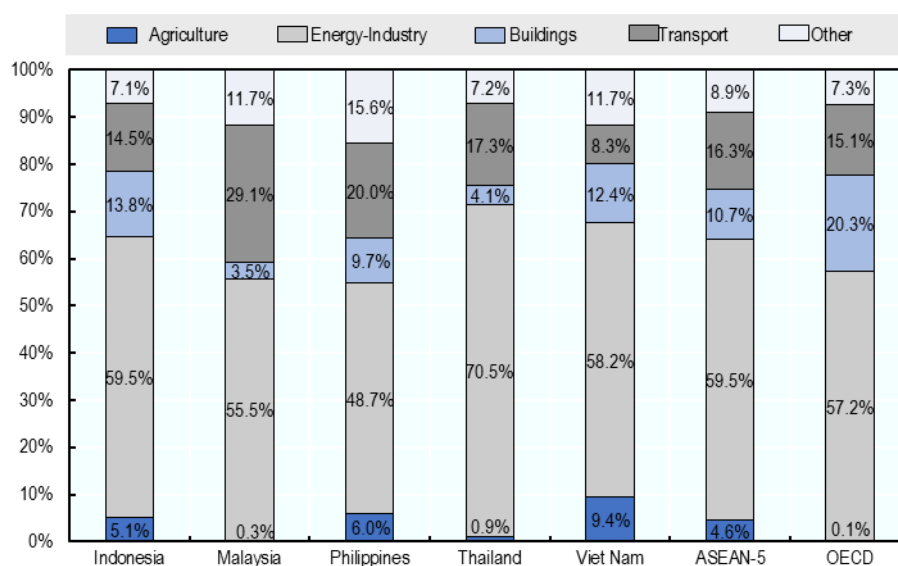
Figure 2.11. Growth rates of CO₂ emissions in ASEAN-5 countries in urban settlements, by settlement type and by country (1990-2015).



Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2021^[14]).

The energy and industrial processes (from here onwards the energy-industry sector) is the largest CO₂ emitting sector in cities, responsible for 59.5% of emissions (compared to 57% in OECD cities), followed by the transport sector (16%). The share of the energy-industry sector is particularly high in cities in Thailand (70.5%), while the transport sector has higher shares in cities in Malaysia (29.1%), and the Philippines (20%). The share of the residential sector is relatively high in cities in Indonesia (13.8%) and in Viet Nam (12.4%) (Figure 2.12).

Figure 2.12. Sectoral composition of CO₂ emissions in cities in ASEAN-5 countries and OECD (2015)



Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2021^[14]).

Regarding the growth rate of emissions by sector, it is the transport sector that grew the fastest. Between 1990 and 2015 the transport sector's emissions grew by 375.2% in ASEAN-5 countries (in contrast to the OECD average of 61.9%) (Table 2.5). This is due to rapid motorisation and high levels of traffic congestion that characterise ASEAN-5 cities (OECD, 2019^[16]); (OECD, 2018^[17]).

Table 2.5. Share, growth rate and contribution to the growth of CO2 emissions in cities in ASEAN-5 countries and OECD, by sector (1990-2015)

	ASEAN-5			OECD		
	Share (2015)	growth rate	contribution to growth	Share (2015)	growth rate	contribution to growth
Transport	16.30%	375.2%	43.3%	15.1%	61.9%	6.7%
Other	8.88%	358.3%	23.3%	7.0%	7.6%	0.6%
Energy and industry	59.54%	306.3%	151.0%	57.2%	12.7%	7.5%
Waste	0.03%	192.5%	0.1%	0.3%	-9.0%	0.0%
Agriculture	4.58%	98.7%	7.6%	0.1%	70.3%	0.1%
Residential	10.67%	44.3%	11.0%	20.3%	6.9%	1.5%
<i>Total</i>		236.3%	236.3%		16.3%	16.3%

Note: Sectors are ordered according to the growth rate between 1990 and 2015 in ASEAN-5 countries. Contribution to growth of CO2 emissions is measured as the product between the sectoral share on total emissions in 1990 and the growth rate of sectoral emissions between 1990 and 2015.

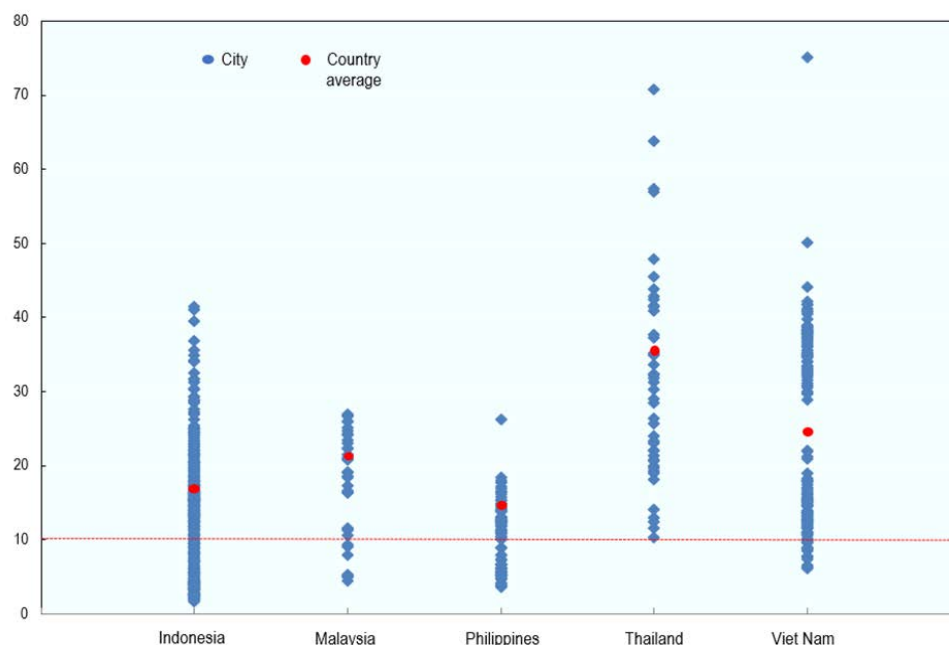
Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2021^[14]).

2.2.3. Air pollution and congestion are compromising the quality of the urban environment

Air pollution is one of the most urgent challenges for ASEAN-5 cities to tackle. At present, air pollution is the largest environmental threat to health, having caused 2.4 million premature deaths in Southeast Asia in 2016 (World Health Organization, 2022^[18]). The impacts are particularly strong on the most vulnerable populations, such as children (Luong et al., 2019^[19]). In terms of the concentration of PM2.5 (fine suspended particles of less than 2.5 microns in diameter), Viet Nam ranks 22 out of 240 countries worldwide in 2022. Thailand ranks 24, Indonesia ranks 52, the Philippines ranks 58, and Malaysia ranks 87 (EPIC- University of Chicago, 2022^[20]). Beyond national averages, urban areas are more intensely affected by air pollution. In 2014, 86% of the urban population experienced living in a city with an average mean concentration of PM2.5 exceeding the maximum value proposed by the WHO for safety at the time (10 µg/m³) (compared to 83% in the OECD). Exceeding the WHO guideline for pollution is expected to reduce life expectancy by 1.5 years (EPIC- University of Chicago, 2022^[20]). In 2014, all cities in Thailand had estimated concentration levels above 10 µg/m³. The share of the population with estimated concentration levels above 10 µg/m³ in 2014 was 96% in Viet Nam, 89% in Malaysia, 83% in Indonesia, and 82% in the Philippines, compared with 83% in OECD countries (Figure 2.13).

Figure 2.13. Average concentration of PM_{2.5} in cities in ASEAN-5 countries, 2014

Micrograms per cubic metre



Note: Country averages are weighted by population. A red line shows WHO's safety standard.

Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2019^[5])

Rising temperatures and heatwaves in cities call for adaptation efforts

From 1990 to 2015, the average temperature of cities in ASEAN-5 countries increased from 26.2 to 26.6 degrees Celsius (Table 2.6). This increase presents a serious challenge for cities, with extreme heat events posing a danger to public health, well-being, and national economies. The real impacts to urban citizens may be even stronger, as the data may not consider micro-climates in urban areas (European Commission - Joint Research Centre, 2019^[21]). Urban areas are more affected by heatwaves than rural areas, because “urban heat islands” amplify extreme heat events (Rodas, Lombardi and Ledesma, 2022^[22]). Most importantly, heatwaves are most strongly affecting the poorest urban neighbourhoods in ASEAN-5 cities, as reported in Bangkok, Thailand (Arifwidodo and Chandrasiri, 2020^[23]), and the Philippines (Zander et al., 2018^[24]). Rising temperatures and heat waves in cities also affect energy consumption in cities, putting strong pressures on electricity and greenhouse gas emission, as most of the adaptation strategies to heat events rely on installing air conditioning units in buildings.

Table 2.6. Average temperature in cities in ASEAN-5 countries (1990-2015)

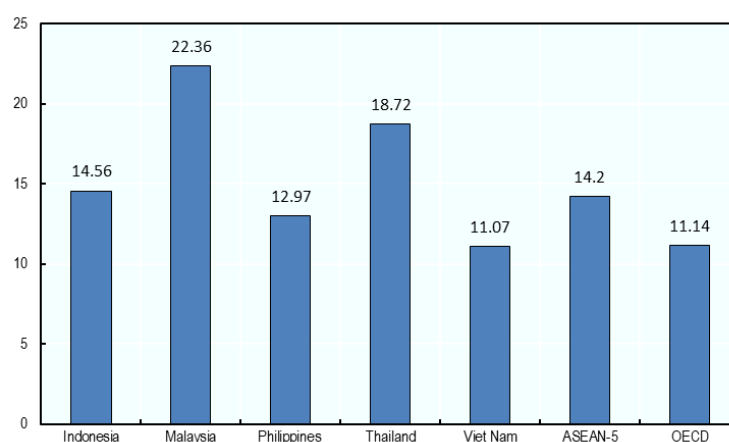
	1990	2000	2015
Indonesia	26.2	26.4	26.7
Malaysia	26.4	26.7	26.9
Philippines	26.7	26.7	26.8
Thailand	27.4	27.6	27.8
Viet Nam	25.5	25.7	25.9
ASEAN-5	26.2	26.4	26.6
OECD	13.1	13.4	13.7

Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2019^[5]).

The heat wave magnitude index (HWMI), which sums up the excess temperatures beyond a normalised threshold and synthesises duration and temperature anomalies in a single number, shows that ASEAN-5 cities are more severely affected by heatwaves than OECD cities (Figure 2.14). An analysis conducted in Southeast Asia for the period of 1983-2016 found that heat waves have become more frequent, longer lasting, more intense, and have affected larger land areas across most parts of the region (Li, Yuan and Hang, 2022^[25]). Furthermore, global warming is expected to increase the frequency of extreme heatwaves, making events that typically occur only once every 50 years more common (Dong et al., 2021^[26]). This underscores the need for proper planning to enhance preparedness and adaptation, ensuring that cities in ASEAN-5 countries become heatwave resilient (Sharma, Andhikaputra and Wang, 2022^[27]).

Figure 2.14. Heatwave magnitude index in cities in ASEAN-5 countries

Average 1980-2010



Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2019^[5]).
ASEAN-5 cities are increasingly exposed to floods, storm surges, and sea level rise

ASEAN-5 cities are heavily affected by floods, storm surges, and sea level rise. Urbanisation patterns in cities in Southeast Asia, which often occurred in river deltas (e.g., Thailand, Viet Nam) and floodplains, have amplified flood risks (Tierolf, de Moel and van Vliet, 2021^[28]). About one-fifth of the built-up area in cities (22%) and population in cities (20%) was faced flood risks (measured as the built-up area and population exposed to a 100-year flood in ASEAN-5 countries) in 2015, which is double the OECD average. In Thailand, 81% of the urban population (53 million) and 72% of the urban built environment are at risk of floods. In Bangkok, the exposure reaches 99% of the population, while in Viet Nam, over half of the population faces flood risks (Table 2.7), with Hanoi's exposure at 85%. Significantly, data also shows that such risks are increasing over time. Further urban expansion, coupled with climate change, is likely to increase flood risks in the region (Winsemius et al., 2015^[29]), illustrating the need for better and more effective urban planning and greater investment in flood protection infrastructure.

Table 2.7. Shares of built-up areas and population exposed to floods in cities in ASEAN-5 countries (1975-2015)

Shares of built-up areas exposed to floods				
	1975	1990	2000	2015
Indonesia	7%	8%	8%	8%
Malaysia	4%	5%	5%	5%
Philippines	4%	5%	5%	5%

Thailand	66%	71%	70%	72%
Viet Nam	42%	47%	52%	53%
ASEAN-5	17%	20%	21%	22%
OECD	12%	11%	11%	11%
Shares of population exposed to floods				
	1975	1990	2000	2015
Indonesia	10%	10%	9%	9%
Malaysia	9%	7%	6%	5%
Philippines	6%	5%	5%	5%
Thailand	68%	74%	77%	81%
Viet Nam	59%	56%	55%	53%
ASEAN-5	20%	20%	20%	20%
OECD	12%	12%	12%	11%

Source: Author's elaboration based on data from the (European Commission - Joint Research Centre, 2019^[21]).

Storm surges are another key challenge for ASEAN-5 cities. In 2015, 19% of built-up areas and 22% of inhabitants in cities across ASEAN-5 countries were exposed to the risk of storms, which is higher than the average of OECD cities (16% and 15%, respectively). The share of built-up areas exposed to storm surges has slowly declined between 1975 and 2015 in ASEAN-5 cities while the share of population has remained stable. The Philippines is particularly vulnerable, where 68% of its built-up areas and 69% of population are exposed to risks of storm surges (Table 2.8).

These data underscore the urgency for ASEAN-5 cities to enhance urban development resilience to climate impacts. This involves integrating strategies to address climate risks (adaptation) and measures to reduce greenhouse gas emissions (mitigation), while at the same time preserving natural resources and enhancing community well-being.

Table 2.8. Share of built-up areas and population exposed to storm surges in cities in ASEAN-5 countries (1975-2015)

Shares of built-up areas exposed to storm surges				
	1975	1990	2000	2015
Indonesia	17%	17%	16%	16%
Malaysia	3%	4%	4%	4%
Philippines	71%	70%	69%	68%
Thailand	7%	6%	6%	6%
Viet Nam	30%	27%	23%	22%
ASEAN-5	21%	20%	19%	19%
OECD	19%	18%	17%	16%
Shares of population exposed to storm surges				
	1975	1990	2000	2015
Indonesia	16%	16%	16%	16%
Malaysia	5%	6%	6%	7%
Philippines	72%	71%	71%	69%
Thailand	3%	3%	4%	3%
Viet Nam	19%	19%	18%	17%
ASEAN-5	20%	22%	23%	22%

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3 Key findings and future policy directions

This chapter presents the results of the analysis of 129 sustainable urban development projects (both public and private) and a desk-based review of institutional and legal frameworks and suggests future policy directions. The key findings and future policy directions are grouped into three themes: (i) improving public finance and other financial frameworks to enable private investment in sustainable urban development, (ii) removing barriers and providing incentives to broaden the range of funding sources and financing instruments for sustainable urban development, (iii) strengthening urban planning and legal systems to leverage private investment for sustainable urban development. These insights aim to inform policymakers and stakeholders on effective strategies for fostering sustainable urban development.

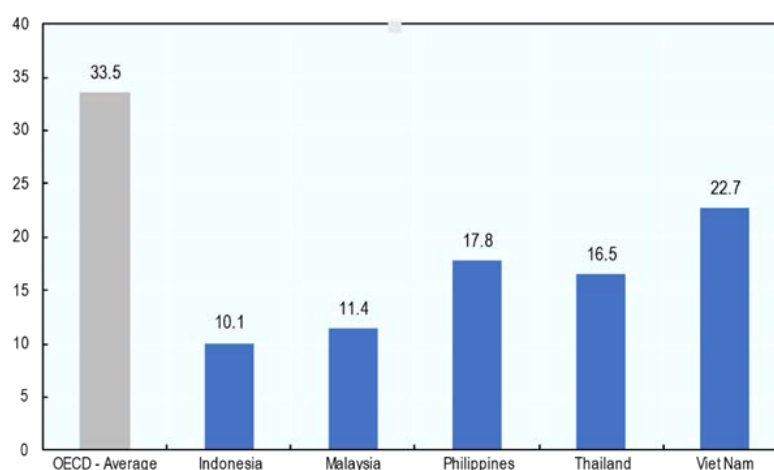
3.1. Improving public finance and other financial frameworks to enable private investment in sustainable urban development

3.1.1. Fiscal capacity of city governments

Rapid urbanisation and environmental challenge such as climate change in Southeast Asia are creating strong and increasing demands for investment in sustainable urban development. ASEAN-5 countries are facing a persistent gap in public finance to meet such demands. At the national level, public expenditures are growing faster than public revenues, and countries are highly dependent on public debt (OECD/ADB, 2019^[1]). On the revenue side, in 2020, average national total tax revenue was 18.7% of GDP across ASEAN-5, significantly below the OECD average (33.5%). Viet Nam reported the highest level of total tax revenue as a share of GDP (22.7%) followed by the Philippines (17.8%), Thailand (16.5%), Malaysia (11.4%) and Indonesia (10.1%) (Figure 3.1). Such limited public revenue will constrain the national government's ability to support local infrastructure investments. While this implies opportunities to improve budget resources by increasing taxes, it also underscores the limited public sector budget to meet the growing need for quality infrastructure investment, highlighting the necessity to leverage private investment.

Figure 3.1. Tax-to-GDP ratio in ASEAN-5 countries (total tax revenue as % GDP), 2020

% GDP



Source: Author's elaboration based on data from the Global Revenue Statistics Database (OECD, 2022^[2]). Global Revenue Statistics Database.

This financial challenge is further compounded by varying levels of economic development and infrastructure needs across the region, necessitating innovative approaches to bridge the expenditure-revenue gap. Governments are increasingly exploring avenues such as public-private partnerships (PPPs), sustainable finance instruments like green bonds, and fiscal reforms aimed at enhancing revenue generation and efficiency in public spending. For example, Indonesia has enhanced PPP infrastructure projects through improved regulations and subsidies, and has shown strong commitment to GSS bonds aiming to create a robust market ecosystem (Box 3.6), while reforming its VAT system through the 2021 Tax Harmonization Law. Despite these efforts, achieving fiscal sustainability continues to be a significant challenge for ASEAN-5 countries.

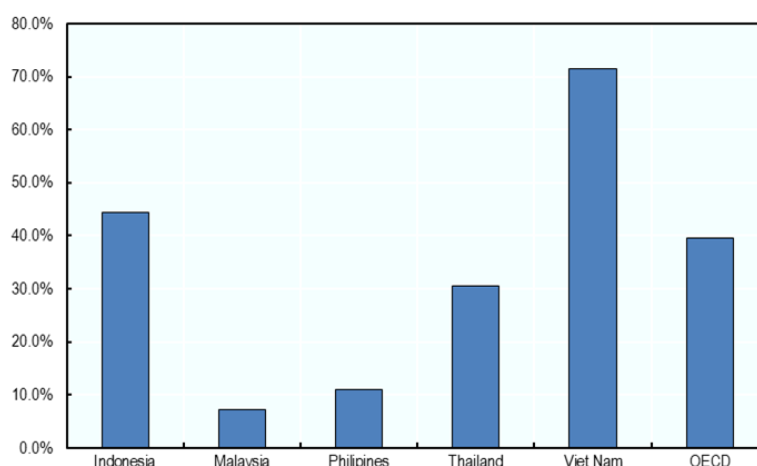
City governments are pivotal in leading public sector efforts due to their proximity to and understanding of local needs. Their capacity to respond effectively is largely shaped by national fiscal decentralisation

frameworks. Decentralisation processes enable city governments to better respond to local needs through place-based policy and infrastructure investment, also increasing spending responsibilities (OECD, 2019^[3]). For example, in Thailand, the COVID-19 pandemic led to fiscal decentralisation by the national government, aimed at strengthening the ability of local governments to more rapidly respond to the pandemic with local, tailored initiatives.

In 2020, across OECD countries, subnational governments have been found to be responsible for 39.5% of total public investment, on average (OECD-UCLG, 2022^[4]). This figure varies across ASEAN-5 countries, as some exceed the OECD average, including Viet Nam (71.4%) and Indonesia (44.3%) (Figure 3.2). On the other hand, local governments' spending responsibility remains limited in Malaysia (7.2%), the Philippines (11.1%), and Thailand (30.5%) – all below the OECD average – indicating a stronger reliance on national governments in these countries.

Figure 3.2. Subnational government investment as a percentage of total public investment, 2020

% of total public investment

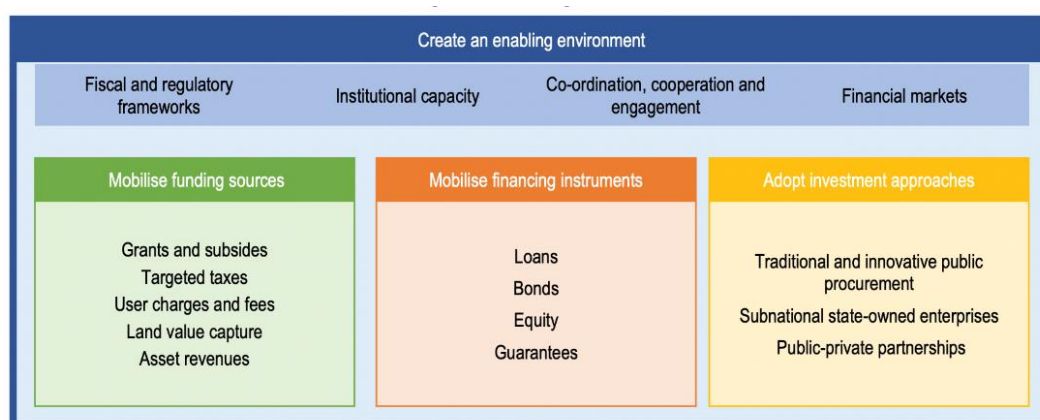


Source: Author's elaboration based on (OECD/UCLG, 2022^[5]) World Observatory on Subnational Government Finance and Investment.

A common challenge across the region is the underutilisation of local own revenue generation. In many cases, local governments have limited authority to set fees and charges, adjust local tax rates, or access borrowing options, constraining their ability to finance needed infrastructure. To help overcome the challenges posed by constrained public budgets, ASEAN-5 countries need to increase the fiscal capacity of city governments for sustainable urban development projects. For instance, given the fiscal risks associated with excessive subnational government borrowing, it is essential to expand city governments' access to finance in a fiscally responsible manner. This requires implementing appropriate fiscal rules, ensuring adequate institutional capacity, and supporting transparent borrowing practices (G20-OECD, 2022^[6]).

The 2022 G20-OECD Policy Toolkit offers an overview of potential funding sources and financing instruments that subnational governments can leverage (Figure 3.3).

Figure 3.3. Areas for innovation to support sub-national government infrastructure investment



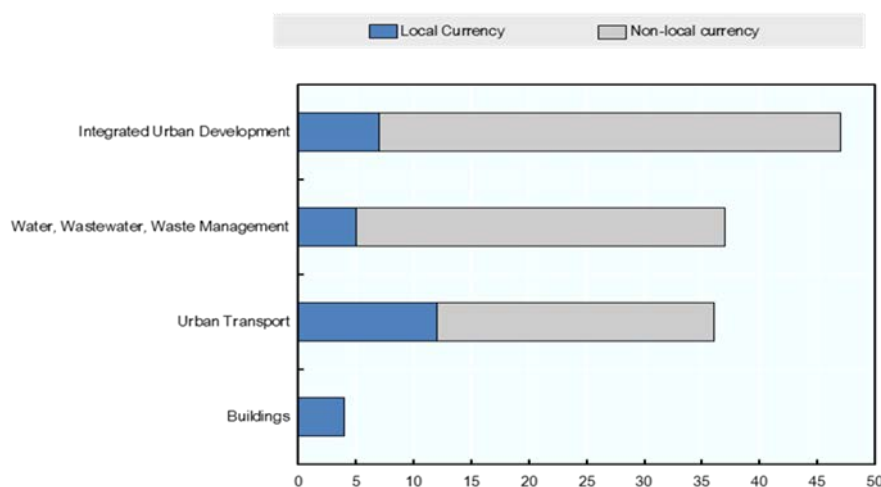
Source: (OECD, 2022^[7]). G20-OECD Policy Toolkit to Mobilise Funding and Financing for Inclusive and Quality Infrastructure Investment in Regions and Cities. OECD Publishing, Paris.

3.1.2. Currency risks in sustainable urban development financing

An over-reliance on non-local currencies for funding and financing exposes sustainable urban development projects to foreign exchange risks

The majority of the sampled projects (96 projects, 74%) are funded and financed in hard (non-local) currencies, either in US Dollars, Euros, Australian Dollars, or Japanese Yen. Funding and financing currencies differ across groups (Figure 3.4). For example, 86% of water, wastewater, and waste management projects (32 projects) are funded and financed in hard currencies. This number includes all the projects that are supported by international donors and those financed by joint ventures. Half of the building projects (4 projects, 50%) are financed in local currencies. The only building project financed by hard currency was the Bangkok Sathorn Project, funded in Japanese Yen by a Japanese consortium.

Figure 3.4. Currencies used in selected projects by group

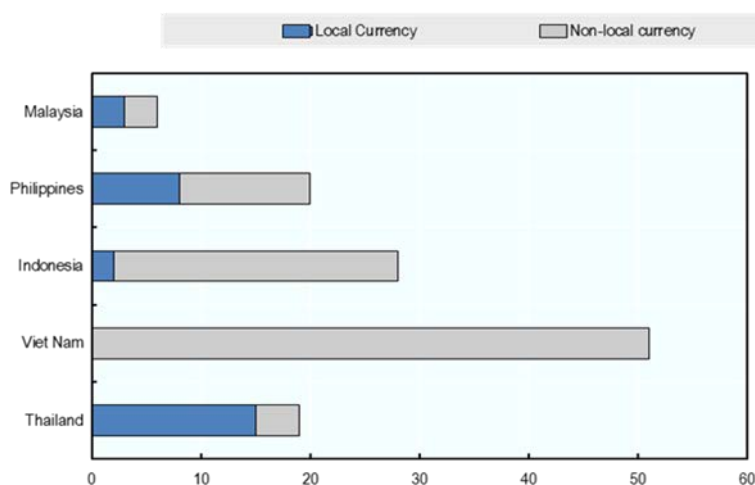


Note: Results are based on a sample of 129 sustainable urban development projects collected (cf. Annex C).

The practice of financing in non-local currencies accommodates the needs of financial institutions, who prefer investment in more stable currencies. However, it entails a risk of currency mismatch as urban projects receive business income in local currencies, while the debt obligations associated with the projects are in non-local currencies. There is a need to alleviate the foreign exchange risk, which arises from the volatile foreign exchange rates over the long term (World Bank, 2019^[8]).

Funding and financing currencies also varied across countries (Figure 3.5). All the sampled projects in Viet Nam are funded and financed in hard currencies. Sampled projects in Indonesia are also heavily funded and financed in hard currencies (26 projects, 90%). More than half of the projects from the sample in Thailand (15 projects, 68%) are funded and financed in the local currency. These findings from the selected sample could potentially represent the complexity and variability in funding and financing mechanisms across ASEAN-5 countries, highlighting the importance of understanding and managing currency risks.

Figure 3.5. Currencies used in selected projects by country



Note: Results are based on a sample of 129 sustainable urban development projects collected (cf. Annex C).

Measures to minimise foreign exchange risks

Fostering the development of local capital markets and encouraging domestic financial institutions to provide long-term financing solutions can reduce reliance on external currency hedges like TCX and governmental guarantees, which can help to mitigate currency risks in emerging markets. In countries with sound capital markets, future cash flows could also be hedged with currency derivatives (OECD, 2015^[9]). A currency swap, for instance, allows two transaction parties to exchange principal and/or interest payments of a loan in one currency for an equivalent loan in another currency. In doing so, lenders or borrowers can hedge their loans/investments at least partially. In some emerging markets where these derivatives are not available, Currency Exchange Fund (TCX), a special purpose fund, provides currency hedge functions (IISD, 2015^[10]). TCX provides over-the-counter (OTC) derivatives to hedge the currency and interest rate mismatches that emerge when international investors provide financing in emerging economies (OECD, 2016^[11]). By offering the FX hedge products to emerging countries where the derivative markets do not exist, the fund enables borrowers in such economies to access long-term financing. Borrowers are protected from growing debt burdens or financial losses.

However, there are some shortcomings related to TCX. The services are only available to investors, the majority of which are international financing institutions and their clients, limiting the opportunity for small-scale investors. Moreover, one single large transaction can easily exceed the country limit, reducing the hedging opportunities of remaining transactions. Another downside is its core principle to offer

‘additionality’; TCX can only offer hedging products should there be no commercial alternative available (IISD, 2015^[10]). FX risk arising from currency mismatches can also be mitigated through public guarantees. The ‘Guarantee of Access to and Remittance of Foreign Exchange’ enables unlimited exchange of local currency into foreign currency and the dispatch of such foreign currency out of the country. This guarantee is especially important in high demand in countries where the foreign exchange reserves are inconsistent and foreign exchange earnings are low. With this guarantee, the guaranteed holders will receive prioritised foreign exchange reserves from the government.

In Viet Nam, the local currency, Dong, is not a convertible currency, which means that the guarantee of foreign currency on availability, convertibility and remittance is key to project bankability. In the early 2000s, infrastructure projects in Viet Nam were fully reliant on the governmental guarantees of convertibility and repatriation. However, the practice was modified over time. In line with the Vietnamese government’s interest in reducing obligations derived from governmental guarantees and protecting its foreign currency reserves, the government introduced new regulations to lower the foreign currency convertibility rate and enforce stricter criteria for receiving government guarantees. Amidst this emerging distress on investors, the Vietnamese domestic financial market has continued to grow, with a few domestic banks showing interest in providing long-term finance for infrastructure projects. The market development of Viet Nam implies that the development of local banking and capital markets is the ultimate solution to address potential currency mismatches associated with long-term urban development projects (World Bank, 2019^[8]). Governmental guarantees, a conventional approach to mitigate the future FX risk associated with long-term urban projects, are accompanied by surging concern over enlarging contingent government liabilities and decreasing foreign currency reserves. In the long run, nurturing the domestic capital market and investors to provide LCY financing is the ultimate solution to avoid future currency mismatches.

3.1.3. Underdeveloped domestic capital markets

Limited roles of domestic financial institutions

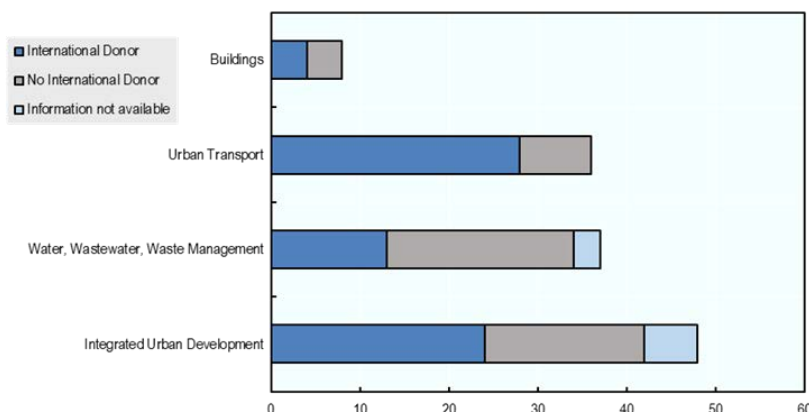
The review of the sampled urban development projects found that international donor loans from multilateral development banks and bilateral development agencies are an important source of financing for sustainable urban development projects. Of the 129 projects, 69 (53%) were supported by international donor loans. However, the degree of dependence on such financial sources varies across groups. Only 13 (35%) out of 34 water, wastewater, and waste management projects were financed at least partially by international donor loans, compared to 24 (50%) out of 48 integrated urban development projects, and 4 (50%) of the 8 building projects (Figure 3.6).

In Viet Nam, 24 (46%) out of 52 of the sampled projects are at least partially financed by international donors. This could be due to the high ratio of large-scale urban development projects across several municipalities and water, wastewater, and waste management projects. In Indonesia, 20 (69%) out of 29 projects are at least partially financed by international donors, and in Thailand 10 (45%) out of 22 projects. Private-led urban development projects, including emerging smart city projects and green buildings, are also common in the Thailand projects sampled.

While the ASEAN-5 countries have a bank-centred financial system, the dominant players and systems vary across the countries. Viet Nam and Indonesia are characterized by a public-reliant banking system, where state-owned banks play a significant role. The Philippines provides a contrasting landscape, where commercial banks are vital to the financial market.

Figure 3.6. International donor loans in selected projects, by group

Number of projects receiving international donor loans



Note: Results based on a sample of 129 sustainable urban development projects collected by the OECD

Source: Author's elaboration based on the project list Annex C.

The analysis of the projects sampled shows that foreign private investors also play an important role in finance instruments such as public-private partnerships, special purpose vehicles, and joint ventures. Out of 31 projects that use private-only or mixed investment models, 12 (39%) projects are financed by foreign investors through foreign direct investment or joint venture. The types of foreign investors include construction engineering companies such as Singapore's Surbana Jurong, China's Gezhouba Group, China Communications Construction Company, Ltd, Japan's Nishimatsu Construction, Australia's Lendlease, the Netherlands' Tahal Group, Japanese multi-sectoral conglomerates (Marubeni, Mitsubishi Corp, Mitsui & Co., and Sumitomo Corp), and France's utility company, SUEZ Environment. They arrange joint ventures with other international players or local enterprises to finance urban projects in ASEAN-5 countries.

The potential for national development banks to promote sustainable urban development in the region has not yet been maximised; only three projects were identified with the engagement of a national development banks. In the project Makassar-Parepare Railway Line in Indonesia, the Indonesian National Development Bank, PT Sarana Multi Infrastruktur, was a lender. The provided financing was used for the construction of the railway and its infrastructure, which will ultimately reach 144 kilometres and 16 stations. In the Philippines, an urban water and sanitation project was co-ordinated by the national development bank with a government guarantee (Box 3.1).

Box 3.1. Urban Water and Sanitation Project APL2 (2002 – 2008) in the Philippines

The project aimed to assist selected 40 Local Government Unit (LGUs) to provide sustainable water and sanitation services and to strengthen their institutional and technical capacity for planning, budgeting and financial management of local services. It contributed to improving water supply systems in LGUs, water utilities where the partnering private operators were selected, and to the physical infrastructure in household toilets, as well as on-site sanitation facilities including soakaway pits or the disposal of wastewater flows.

A USD 7.48 million loan from the World Bank's International Bank for Reconstruction and Development (IBRD) was channelled through the Development Bank of the Philippines. Following the selection of sub-projects (construction, rehabilitation and expansion of the water supply system, on-site sanitation facilities and micro-drainage infrastructure) and participating entities (an LGU, a private operator or a financial institution), the aforementioned IBRD loan was sub-loaned to the participating entities. The loan from IBRD extended to DBP was guaranteed by the Government of the Philippines. In addition, DBP also contributed US\$ 0.97 million to the project by itself.

The project showcased the critical role of the national development bank, which (i) channelled the international development fund and (ii) redistributed financing to the participating subnational governments.

Source: (World Bank, 2022^[12]). LGU Urban Water and Sanitation Project APL2.

Establishing solid investor base support in the development of domestic capital markets

Reinforcing investor base is a crucial pillar to develop domestic capital markets, especially in ASEAN-5 countries, given the limited number of regional investors and low market liquidity. Pension funds and foreign investors are two primary institutional investors:

- Expanding pension funds would be a strategic move to strengthen domestic financial institutions in sustainable urban development. Compared to the other four countries, Malaysia has a sizeable pension fund. The Employee Pension Fund was launched in 1951, and the Retirement Fund (KWAP) in 2007. At the end of 2016, aggregated assets under management amounted to up to 70% of national GDP. In light of the renewal of social security systems, the pension fund is expected to grow in countries such as Indonesia and Thailand (Kitano, 2018^[13]). The development of pension funds in ASEAN-5 countries will provide larger and longer-term investments in the capital market, benefitting infrastructure sectors that need long-term finance.
- Foreign investors could play a vital role in the diversification of ASEAN-5's investor base. Their risk and return preferences tend to be different from those of domestic investors, and they also buy and sell more frequently, which contributes to improving the market liquidity. The reduced country risk, enhanced sustainability awareness, and gradual deregulation of the risk hedge instruments across the five countries allow more foreign investors to participate in the ASEAN-5 market. However, foreign exchange regulation restricts offshore transactions. Foreign investors could withdraw their money abroad in case of market disruption, which implies a potential capital reversal in the macro-region. The development of the domestic market is a foundation to expand foreign investors in the region (Kitano, 2018^[13]).

In addition, since new emerging international climate finance is geared towards financial support to national governments, it is critical to rethink and establish new forms for vertical collaboration between tiers of government. It has to be noted that access to green financing does not necessarily raise challenges that

are radically different from former attempts to leverage private investors for infrastructure investments. The general need to ‘fix the fiscal fundamentals’ in the relationship between tiers of government is related to the need to build a robust funding base to engage with private sector investments (White and Wahba, 2019^[14]; OECD, 2021^[15]). For example, enabling municipalities to raise their own revenues or to engage in debt financing or Public Private Partnerships (PPPs) requires significant and often controversial reform of national regulations, such as those determining the degree of fiscal autonomy of local governments. Indeed, there are borrowing limits for municipalities in Malaysia and Thailand (ADB, 2024^[16]). In this context, the OECD has formulated a set of recommendations around four key areas that policymakers could focus on to create an enabling environment for subnational governments to leverage innovative funding and financing for infrastructure investment. These four areas are: (i) reinforcing subnational government fiscal autonomy and financial capacity, (ii) building subnational government investment capacity, (iii) enhancing co-ordination and cooperation among and across levels of government, and (iv) establishing enabling regulatory and legal frameworks (OECD, 2021^[15]).

3.1.4. Non-financial risks in urban development

Interviews with experts in Southeast Asian countries highlighted that urban development projects in Southeast Asia often face non-financial project risks that hinder their feasibility and attractiveness to investors. Frequent institutional changes result in uncertainty regarding regulations, inconsistent policy implementation, and shifting government priorities that leave investors unsure about long-term project viability. Complex legal frameworks surrounding land ownership and usage create challenges such as ambiguous land rights, conflicting ownership claims, and lengthy legal procedures that can stall project timelines and lead to potential disputes. Further, the rigidity in scheduling land development projects, characterised by inflexible timelines and bureaucratic hurdles, often leads to delays in securing necessary approvals and limits adaptability to changing market conditions. These cumulative factors contribute to a broader perception among investors that urban development projects in the region are riskier than other investment opportunities. Such project risks commonly observed in Southeast Asia prevent investors from participating in urban development projects, as they are relatively riskier than other investment options.

By minimising risks such as frequent institutional changes, complexity in the legal system regarding land, and rigidity in scheduling land development projects, the financing of sustainable development projects could be supported. Good project design and governance is a pre-requisite for successful project delivery. For instance, in Viet Nam, there are three types of development approvals: (i) investment approval, (ii) issuance of land use right certificate, and (iii) development approval and building or construction certificates. Most projects require all three types of approval. After attaining investment approval and favourable appraisal of the environmental impact, the proponent must submit a request for land allocation to the local Department of Natural Resources and Environment. A construction permit based on a detailed design of the project is also required (OECD, 2018^[17]).

Options to reduce project risks could include:

- Simplifying the permit/approval system,
- Introducing “one-stop” service for development and building permits,
- Establishing and enforcing standard processing times for different types of permits/approvals, enabling private developers to anticipate the timelines for application results,
- Enhancing inspections and enforcement to ensure that permitted/approved developments are completed as planned (OECD, 2018^[17]), and
- Maintaining and strengthening the capacity of developers/contractors through construction licences, technical and financial audits, and performance guarantees.

3.2. Removing barriers and providing incentives to broaden the range of funding sources and financing instruments for sustainable urban development

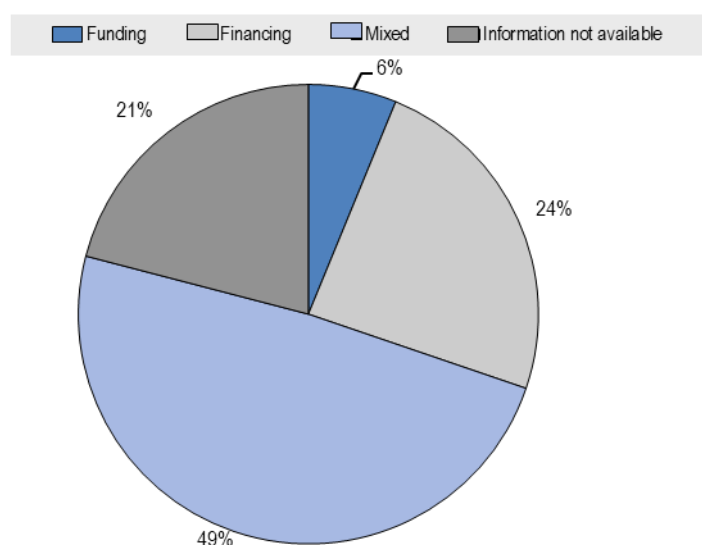
3.2.1. The use of financial instruments for urban sustainability: an overview

The sampled sustainable urban development projects often combine funding and financing. Of the 129 projects, 63 (49%) utilised a combination of funding and financing (often pairing loans with general budget resources), 31 (24%) relied solely on financing, and 8 (6%) used only funding. Information on the specific financial instruments used was unavailable for 27 projects (Figure 3.7).

Public loans – predominantly sourced from bilateral and multilateral donors – emerged as the predominant financing instrument in 73 of the 129 projects. These loans are commonly paired with public general budget resources by the national or subnational governments (used in 63 projects). Public Capital Expenditure are the second most utilised funding instrument employed in 66 projects. Figure 3.8 offers a detailed breakdown of these funding and financing instruments. None of the projects on the list employed an infrastructure fund or real estate investment trusts (REITs) as private financing instruments, which suggests potential to diversify financing options for sustainable urban development projects. However, it is possible that this finding is reflective of the sample inclusion criteria. Of the 129 projects sampled, 75% used public sources only, 14% used private sources only, and 10% used mixed (i.e., both public and private) sources (Figure 3.9).

Figure 3.7. Projects by type of instrument

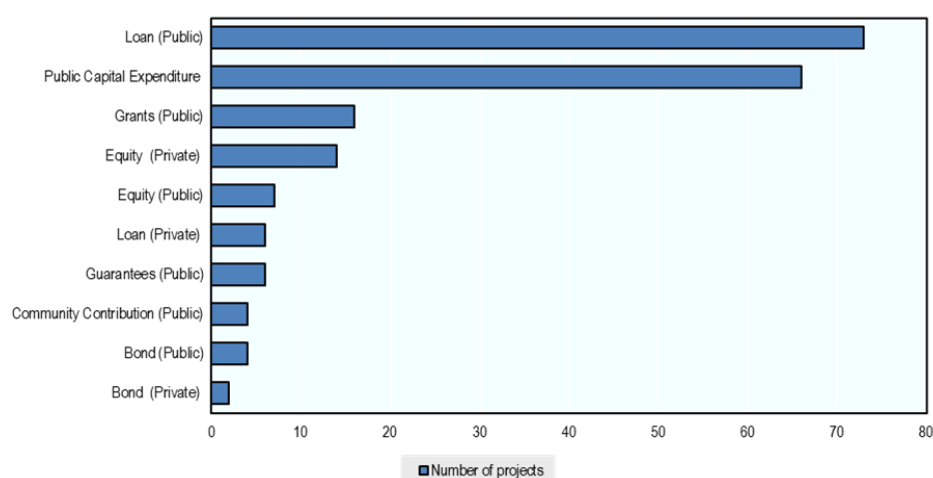
Number of projects expressed as a percentage of the total (n=129)



Note: Results based on a sample of 129 sustainable urban development projects collected by the OECD

Source: Author's elaboration based on the project list Annex C.

Figure 3.8. Projects by type of funding and financing instrument

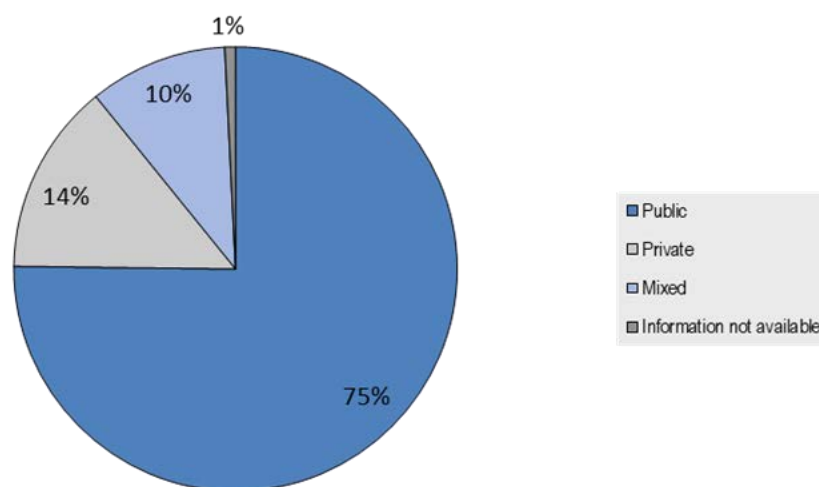


Note: Results based on a sample of 129 sustainable urban development projects collected by the OECD, some projects have two or more funding or and financing instrument sources

Source: Author's elaboration based on the project list Annex C.

Figure 3.9. Projects by source of investment

Number of projects by sources of investment expressed as a percentage of the total (n=129)



Source: Author's elaboration based on the project list in Annex C.

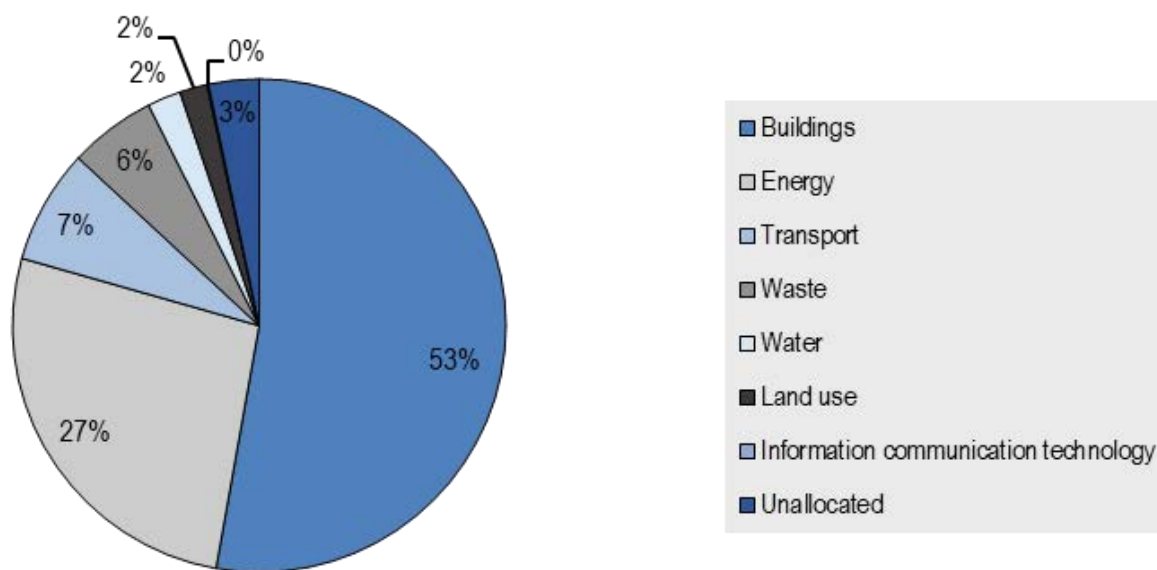
While ASEAN-5 countries generally have relatively underdeveloped domestic capital markets, their economies have traditionally relied on robust banking systems. ASEAN-5 countries have bank-centred financial systems due to a weak institutional capacity to comply with global accounting standards and carry out administrative tasks, as well as underdeveloped infrastructure and rules and regulations. For example, in Viet Nam, the State Bank of Viet Nam oversees approximately 45 domestic banks, including five dominant state-owned banks: (i) Agriculture Bank, (ii) Joint Stock Commercial Bank for Investment and Development of Viet Nam (BIDV Bank), (iii) Joint Stock Commercial Bank for Industry, (iv) Trade of Viet Nam (Vietin Bank), and (v) Joint Stock Commercial Bank for Foreign Trade of Viet Nam (Vietcom Bank) (Asian Development Bank, 2014^[18]). The banking sector contributes around 16-18% of the national annual

GDP (Tu D. Q. et al., 2022^[19]). Urban projects are, therefore, unable to fully capitalise on bonds. These findings highlight the important need for enhancing financial infrastructure and regulatory frameworks to promote more diverse and resilient financing mechanisms for sustainable urban development in ASEAN-5 countries.

In recent years, green financing has gained a slightly more prominent role in policy frameworks. However, investment decisions are principally based on project profitability, rather than the projects' potential environmental and social impact. Private investors tend to invest in more profitable projects, such as building and energy sectors, where the future financial return is stable. Taking the case of green bonds, the majority of 'use of proceeds' from ASEAN-5 green bond issuers is allocated to the buildings (52.8%) and energy (26.6%) sectors, totalling almost 80% (Figure 3.10). Arthaland, the Philippines-based local property developer, issued a PHP 3 billion (equivalent to USD 142.7 million) debut green bond to fund its building portfolio (CBI, 2020^[20]), including Cebu Exchange and Lucima. Many urban development projects remain underfunded due to their lower profitability, a fact which highlights the need for policies or incentives to attract private capital to these essential but less lucrative sectors.

Many urban and infrastructure projects are not lucrative for commercial investors, who prioritise financial returns and favour short- and medium-term investments. To mitigate this, it is essential to improve public-private partnerships and risk-sharing mechanisms that help private investors engage in long-term urban infrastructure projects. Despite growing demands by investors to align their portfolios with societal values, sustainable investment has yet to become a primary investment channel. For example, even in the US, ESG investment accounts for only 20% of all professionally managed assets (at over USD 11 trillion), and is concentrated in non-urban sectors with higher relative project profitability (OECD, 2020^[21]).

Figure 3.10. Use of Proceeds of Green Bonds from ASEAN-5 issuers



Source: Author's elaboration based on (Climate Bonds, 2021^[22])

3.2.2. Unlocking the full potential of bonds for sustainable urban development

Scaling up the use of GSS bonds through incentives and stronger regulatory frameworks

Despite their increasing presence as financing instruments, GSS and sustainability-linked bonds have yet to become common instruments for financing sustainable urban development projects in ASEAN-5 countries.

Malaysia established a Green Sustainable and Responsible Investment (SRI) Sukuk Grant Scheme in 2018. This scheme is one of the first global examples of incentive structures to support green bond issuance, providing tax exemption benefits for green Sukuk issuers. Green Sukuk is an Islamic bond whose proceeds are dedicated to environmental purposes. It has attracted increasing interest in Indonesia and Malaysia (CBI, 2019^[23]). Indeed, the Indonesian government is a large green Sukuk issuer, but their green Sukuks are not included in the selected list of projects for this paper as their use of proceeds covers a range of projects and are not dedicated to specific urban development projects. The Malaysian government aims to encourage more companies to finance green, social, and sustainability projects through GSS bond issuances.

Sustainable finance initiatives date back even further in Indonesia. Following the Sustainable Finance Roadmap Phase I (2015–2019), the Financial Service Authority of Indonesia (OJK) launched Phase II for the period from 2021 to 2025. This second phase incorporates plans for the development of a complete market ecosystem for sustainable finance and the co-ordination of appropriate taxonomies with other institutions. Combined with a few other initiatives on sustainable finance, the Indonesian government is paving the way to advance sustainability through finance (Climate Bonds Initiative, 2021^[24]).

Deploying sustainable finance, including GSS bonds, is not a simple task, as issuers have several hurdles to consider. For the projects to be categorised as either ‘green’, ‘social’ or ‘sustainable’, an issuer must build its own green/social/sustainability bond framework, grounded in the existing International Capital Market Association (ICMA) GSS bond principles and ASEAN Standards. Even after its successful bond issuance, a GSS bond issuer has to continuously provide reporting to the market participants on the actual use of proceeds. These challenges are being tackled through several initiatives, including the ASEAN Taxonomy for Sustainable Finance and the ASEAN SDG Bond Toolkit (Box 3.2).

Box 3.2. The ASEAN Taxonomy for Sustainable Finance and the ASEAN SDG Bond Toolkit

The ASEAN Taxonomy for Sustainable Finance

The Association of Southeast Asia Nations (ASEAN) released its ‘Taxonomy for Sustainable Finance’ draft (Version 1) in November 2021. Version 1 stipulates a list of focus sectors: agriculture, forestry, and fishing; electricity, gas, steam, and air conditioning supply; manufacturing; transportation and storage; water supply, sewerage and waste management; and construction and real estate. All these sectors have significant implications on GHG emissions and gross added value. The draft also incorporates sector-specific guidance for member countries and their entities. It positions itself as a benchmark to guide capital and funding for more sustainable societal transformation. It includes urban development projects for zero-emission transport as activities that could potentially be automatically classified as green, which would simplify the selection process

ASEAN SDG Bond Toolkit

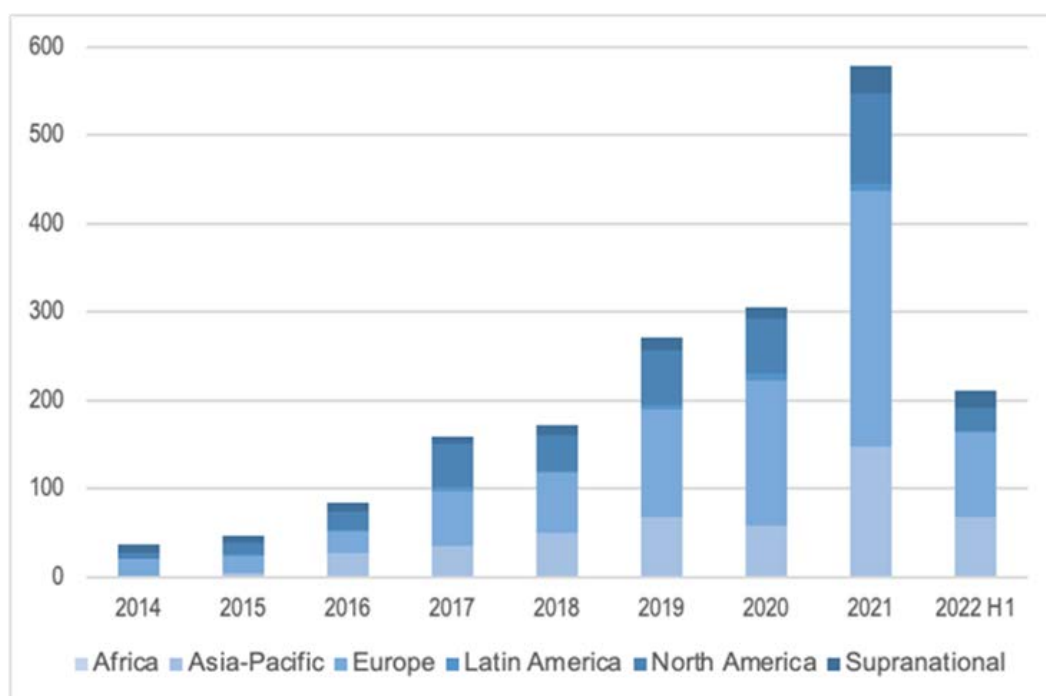
SDG bonds are GSS bonds linked to specific Sustainable Development Goals (SDGs). The ‘ASEAN SDG Bond Toolkit: A Practical Guide to Issuing SDG bonds in ASEAN’ was prepared to address the rising concern that none of the ASEAN-5 SDG 2030 targets will be met. It guides issuers by delineating the key principles and processes.

Source: (ASEAN Taxonomy Board, 2021^[25]; ACMF, 2021^[26])

ASEAN-5 governments have developed policy frameworks to accelerate sustainable investments following this trend. Indonesia, for example, introduced the “Application of Sustainable Finance (No. 51/POJK. 03/2017)” in 2017, obliging financial services agencies, issuers, and public companies to provide the funding needed to achieve sustainable development goals and ensure adequate financing for the efforts to address climate change. The regulation also requires targeted entities to prepare sustainable finance action plans and ensure adequate environmental and social management policies and processes are in place (OJK, 2017^[27]). This indicates a significant shift towards institutionalising sustainability in financial systems, which is crucial for achieving long-term sustainable development goals.

Globally, the size of the sustainable finance market has grown significantly in the past decade and was estimated to exceed USD 35.3 trillion in the five major global markets at the beginning of 2020, with a 55% increase in the period 2016-2020 (Global Sustainable Investment Alliance, 2021^[28]). Almost USD 1 trillion of assets were held in sustainable funds at the end of 2019. ESG assets are estimated to reach USD 53 trillion by 2025, and the debt market is forecasted to reach USD 11 trillion simultaneously (Clifford Chance, 2022^[29]). Europe has been the leading market in the arena of green finance, having made a commitment to becoming the first climate-neutral continent by 2050, underlining the role of finance in achieving this goal (Clifford Chance, 2022^[29]). Following Europe's prolific green bond market, Asia-Pacific became the second-largest green bond market in 2021, with the largest YoY growth of 16% (Figure 3.11).

Figure 3.11. Green bond issuances in volume (USD billion) by region



Source: Author's elaboration based on CBI Interactive Data Platform (Bonds Climate Initiative, 2021^[30]).

The maturity of bond markets varies across ASEAN-5 countries. While bond markets in Thailand and Malaysia are relatively well-developed, the markets in Viet Nam, the Philippines and Indonesia are still in the early development stage, with governments as the primary bond issuers. Corporate bonds, issued by commercial players, used to finance infrastructure, are repaid from the user charges collected by the operating company. Public bonds issued by national or subnational governments are also used to finance infrastructure.

In Malaysia, the outstanding bond amounts exceed nominal GDP by 25%. Corporate players are actively issuing bonds, predominately in the construction, infrastructure, communication, and energy sectors. The country possesses the largest Sukuk market, representing 45% of the global Sukuk issuances as of 2020. This signifies Malaysia's robust and diversified bond market, which can effectively channel private capital into critical infrastructure projects and sustainable development initiatives.

Corporate bonds are gradually acknowledged in some countries, such as Viet Nam. With the 2005 amended corporate law and the 2020 new PPP regulation, a corporate bond has become an official financial instrument for infrastructure projects (ASEAN/UNDP, 2021^[31]); (MLIT, 2022^[32]). This indicates a growing acceptance and use of corporate bonds in financing instruction, which could contribute to diversifying funding sources for sustainable urban development.

To fully capitalise on the potential of sustainable finance, ASEAN-5 countries should seek to expand the use of GSS bonds beyond their current focus on buildings and transport. Governments can create incentives, such as tax exemptions or subsidies, to encourage more widespread issuance of GSS bonds. Malaysia's Green Sukuk Grant Scheme serves as a successful example of how targeted incentives can foster growth in green bond markets—similar models could be adopted by other ASEAN-5 nations to accelerate sustainable urban development across various sectors.

Strengthening regulatory frameworks to support the development of bond markets provides an important opportunity, especially in countries where capital markets remain underdeveloped, such as Viet Nam, the

Philippines, and Indonesia. These nations could focus on creating the legal and institutional infrastructure necessary for robust public and corporate bonds issuances. Clearer taxonomies for green finance, better reporting standards, and more transparent oversight mechanisms will help attract investors to sustainable projects.

Creating intermediaries dedicated to subnational sustainable infrastructure financing could provide a valuable mechanism to address the limited range of financial instruments in ASEAN-5 countries. These intermediaries could bridge the gap between governments and private investors, thereby facilitating the financing of smaller, often overlooked, urban projects that are vital to the long-term sustainable development but are typically seen as less profitable. By acting as a link between supply (private capital) and demand (public projects) intermediaries could help shape incentives on both sides and unlock new sources of funding for sustainable urban growth.

For example, the People's Survival Fund in the Philippines is providing grants to integrate local disaster risk reduction and planning for climate adaptation, including the development of infrastructure. Priority is given to the areas that have a strong presence of multiple, climate-related hazards and high poverty incidence, and that present key biodiversity challenges. Proponents of the fund are not only asked to provide suitable proposals but also an updated annual investment plan, as well as a local development plan considering climate risks. Despite the fund's difficulties in attracting enough proposals, by 2020 the fund had approved around USD 5.5 million worth of projects, benefiting six municipalities in the Philippines (Department of Finance, 2020^[33]).

Fostering the development of capital markets to provide long-term financing is essential. Governments across ASEAN-5 countries can focus on building the institutional capacity and regulatory environments necessary to support more resilient capital markets. By offering alternatives to bank-centred financial systems, these countries could unlock new streams of financing for urban development projects. This could allow them to scale up infrastructure investments without relying exclusively on short-term loans.

Promoting local currency bond markets

Following the 1997 Asian Currency Crisis, in which foreign investments were withdrawn from Asian countries, the Asian Bond Market Initiative (ABMI) was launched in 2002 under the collaborative leadership of ASEAN, the People's Republic of China, Japan, and Korea (ASEAN +3). This initiative aimed to develop local currency (LCY) bond markets, enabling ASEAN economies to mobilise domestic savings to finance their long-term investment needs and reduce their vulnerability to the sudden reversal of capital flows. The initial phase of the initiative (2002–2007) focused on creating a supply of LCY-denominated bonds by improving access to the bond market for a wider range of potential issuers, developing bond market infrastructure (such as settlement systems, rules and regulations related to its transactions), and strengthening the capacity of domestic credit rating agencies (Table 3.1).

In response to several policy dialogues and discussions among the stakeholders, the initiative later refocused its agenda around four main areas: (i) promoting the issuance of LCY-denominated bonds, (ii) facilitating demand for LCY-denominated bonds, (iii) strengthening the regulatory framework, and (iv) improving bond market infrastructure. Using long-term LCY bonds to finance urban projects, instead of short-term bank loans in foreign currencies, can be advantageous, because it makes projects less vulnerable to foreign exchange and financing risks, especially in cases where infrastructure projects generate revenues in local currencies (ADB, 2017^[34]). Integrating LCY-denominated bonds into the financing of urban projects supports efforts to diversify financing instruments and mitigate currency risks, potentially enhancing financial stability and sustainability across ASEAN-5 countries.

Table 3.1. Focused areas and actions of AMBI

Focused areas	Actions
Promote the LCY- denominated bond issuances	The establishment of a regional credit guarantee and investment facility to facilitate potential issuers' access to debt market. The promotion of an Asian currency note program, to enable an issuer to issue bonds in the ASEAN +3 region using a single unified framework with a common set of documents governed by common law. The establishment of Credit Guarantee and Investment Facility (CGIF) as an ADB trust fund in 2010b to provide credit enhancement to increase the access to LCT bond markets and realise longer bond maturities.
Facilitate demands for LCY- denominated bonds	Policy makers' shared interest in broadening and diversifying the investor base to promote demand for LCY bonds. The establishment of Asian Bonds Online (website) which provides data and analysis on LCY bond market, as well as a step-by-step process to buy and trade Asian government securities.
Strengthen the regulatory framework	The improved regulations concerning facilitation and collaboration among securities dealers' associations and self-regulating organisations on capital flows and foreign exchange transactions to enhance cross-border transactions and the dissemination of information on the regional bond market development. The establishment of a Group of Experts on Cross-Border Bond Transactions and Settlement Issues (GoE) in 2008 to provide advice to governments on cross-border clearing and settlement issues to foster regional bond market development and integration. The establishment of the ASEAN + 3 Bond Market Forum (ABMF) in 2010 to foster standardisation of market practices and harmonisation of regulations, as per GoE's recommendations.
Improve bond market infrastructure	The improvement for securities settlement, market liquidity, and improved credit rating practices among domestic credit rating agencies.

Source: (ADB, 2017^[34]). The Asian Bond Markets Initiative: policymaker achievement and challenges.

Manage default risks while expanding subnational borrowing

Cities are major investors in infrastructure. It is estimated that subnational governments – state, regional, and local – are responsible for almost 60% of general budget resources in G20 countries. In ASEAN-5 countries, around 75% of infrastructure investments is financed by a public source, with the remaining 25% financed by the private sector, mainly in the form of commercial loans (direct lending) (Climate Bonds Initiative, 2019^[35]). In ASEAN-5 countries, it is estimated that the government share in infrastructure accounts for 90% in the Philippines, 80% in Thailand, 65% in Indonesia, and 50% in Malaysia (Goldman Sachs, 2013^[36]).

ASEAN-5 countries could also increase city governments' capacity to access the capital market through GSS bonds. GSS bonds provide opportunities for subnational governments to access private capital for urban projects, alleviating budgetary constraints. In some OECD countries, such as France, Japan, Sweden, and the United States, subnational governments have become significant GSS bond issuers (Climate Bonds, 2021^[37]) (Box 3.3). Unlike these countries, ASEAN-5 countries have yet to capitalise on subnational GSS bond issuances.

Box 3.3 Green and social bond issuance by sub-national governments in France, Spain, and the United States

Green and sustainable bond issuance framework, Île-de-France, France

The Île-de-France Region is an early adopter of sustainable finance and globally, was the first to issue a sustainable bond in a public format (in 2012). More recently, the region has developed a framework for green and sustainable bonds that is compliant with the International Capital Market Association Green Bond Principles, Social Bond Principles and Sustainability Bond Guidelines. This framework defines what proceeds from green and sustainable bonds may be used for, the process for project evaluation and selection, the management of proceeds and the reporting and review requirements. In 2021, Île-de-France issued its first tranche under the updated framework for GSS bonds in April 2021 and achieved a negative yield, highlighting its attractiveness.

The first social bond in Spain by the Autonomous Community of Madrid

The Community of Madrid, for the first time in Spain, turned to capital markets to raise funds to promote initiatives in support of the region's health system, given the impact of COVID-19. It devoted the EUR 52 million raised through a social bond to support the regional health system, under the umbrella of its recently renewed Sustainable Financing Framework, which envisages earmarking funds from the General Budget to finance social and environmental projects.

Environmental impact bond in Washington DC, United States

In 2016, Washington DC's water and sewer agency issued an environmental impact bond, which pays investors a higher rate of return if key environmental objectives are achieved (or charges them a premium if they are not achieved). The bond's USD 25 million proceeds are for the installation of 'green infrastructure' to absorb surges of storm water during heavy rains, ultimately reducing the frequency and volume of sewer overflows that contaminate local rivers. The bond return is linked to the level of runoff reduction. If the reduction exceeds 41%, compared to a baseline level, the agency will pay investors a bonus of USD 3.3 million. If at the end of a designated period the level of runoff reduction is less than 18.6%, investors will make a 'risk share payoff' to DC Water totalling USD 3.3 million.

Source: (OECD, 2021^[15]). Unlocking infrastructure investment: Innovative funding and financing in regions and cities. OECD Publishing, Paris.

Finally, risk can be transferred in the form of guarantees and credit enhancement. Investment 'de-risking' requires that the risks to private investors generated by suboptimal regulatory regimes and below-investment-grade municipalities are transferred to other entities, typically national governments, MDBs, or donor agencies. This may be done through various forms of guarantees or credit enhancement.

Credit enhancement aims to improve access to finance, reduce financing costs, and enhance financing terms and conditions for subnational governments. It transfers the risk from financial investors to the providers of credit enhancement, which are, in most cases, multilateral financial institutions, higher-level governments, or other public finance institutions. Credit enhancement providers will assume funding risks in case of default by subnational governments or projects. Guarantee is one common mechanism of credit enhancement, provided to cover specific risks, including revenue assumptions, availability payments, and responsibility for assuming debt obligations upon contract termination (OECD, 2021^[38]). For example, the European Investment Bank (EIB), provides guarantees to support loan or bond issuance by subnational governments and project authorities, or offers low-interest finance for projects in Europe (EIB, 2020^[39]); (Government of UK, 2022^[40]); (Mayor of London, n.d.^[41]).

Aligning finance infrastructure investments with sustainable urban development objectives

To foster greater private sector involvement in sustainable urban development, it is recommended that ASEAN-5 nations direct investors and financial institutions towards sustainable investment. In early 2022, the European Banking Authority (EBA) – an independent EU Authority that ensures effective and consistent prudential regulation and supervision across the European banking sector – published the final draft to implement technical standards on Pillar 3 disclosures on ESG risks. The newly drafted standards delineate comparable disclosures and key performance indicators (KPIs), including a green asset ratio (GAR) and a banking book taxonomy alignment ratio (BTAR) to illustrate how financial institutions have sustainability considerations embedded in their risk management, business models, and strategy to achieve the Paris Agreement goals. The new framework was built on the existing initiatives, including the Task Force on Climate-related Financial Disclosures (TCFD) and the Financial Stability Board (FSB), but went beyond by setting out disclosure timelines, granular templates, tables, and instructions to ensure consistency and comparability for better disclosures (European Banking Authority, 2022^[42]). With the introduction of these new standards, EBA aims to reveal how climate change risks are mitigated by financial investments. Following the example of the EBA, ASEAN-5 countries could consider launching a macro-regional initiative to define KPIs and deliver specific guidelines for financial institutions to follow. Disclosing the sustainability performance across financial institutions in the region with the same set of KPIs would pressure banking sectors in the macro-region to advance their contribution to sustainability.

To effectively enhance green financing instruments in ASEAN-5 countries, clear guidance on GSS bond issuances, sustainability-linked bonds, and the use of proceeds is crucial. Bonds entail a unique difficulty compared to bank loans. At the time of bond issuance, the bulk of the funding will flow in without any flexibility for multiple disbursements in accordance with the evolving funding needs of the projects. The bulk of incoming cash flow at the initial investment implies the deterioration of working capital. Furthermore, bond investment in ASEAN-5 projects is often considered as unstable, as the projects conducted in the macro-region tend to oversee profit deterioration and delayed construction periods, exacerbating the risk of delayed cash flow. Bonds could be more appropriate to help refinance the projects that generate stable revenues (MLIT, 2022^[43]).

Clear guidance on the process of GSS and sustainability-linked bond issuances and the applications of the use of proceeds, as well as the appropriate deployment of bonds in stable revenue-generating projects, could enhance green financing instruments.

3.2.3. Leveraging private equity for urban development

Within ASEAN-5 countries, private equity has been increasingly leveraged to finance infrastructure and development. As a result, the prevalence of financial instruments such as corporate bonds, infrastructure funds, and Real Estate Investment Trusts (REITs) has increased. These instruments could provide opportunities to accelerate investment in sustainable urban development in Southeast Asia. However, the use of such alternative financial instruments, as opposed to conventional bank lending, remains relatively low in the region's bank-centred financial markets.

Private Equity (PE) including Infrastructure Funds and REITs are increasing in Southeast Asia to varying degrees

PE investors have demonstrated increasing interest in Southeast Asia in recent years, leading to a record high deal value in the region at the end of the year 2021. The region also marked the largest growth in deal volume in all Asia except Japan (Akhtar, Usman; Kidd, Tom; Varma, Suvir, 2022^[44]). Viet Nam and Indonesia saw soaring investor interest, which accounts for 50% of total deal value, up from 11% in 2017 (Varma and Boulton, 2019^[45]). PE channels foreign and regional funds for investment into ASEAN-5-based companies (ASEAN and UNCTAD, 2022^[46]).

Sustainability has increasingly become a mainstream investment focus. In Southeast Asia, 56% of companies met the sustainability criteria of Bain & Company in the first half of 2019, compared to 30% in 2017. The company's survey also revealed that 96% of Southeast Asian investors had accelerated their commitment to incorporate ESG criteria into their decisions (Varma and Boulton, 2019^[45]). These numbers highlight a significant shift towards sustainable investment practices, indicating a growing recognition of environmental, social, and governance factors in driving long-term value and resilience.

In most ASEAN-5 countries, urban development projects are generally led by public sectors and financed through Official Development Assistance (ODA) and Public-Private Partnership (PPP). Private companies and private equity funds make direct investments in PPP projects, along with urban developers. In the Philippines, large conglomerate companies strongly influence urban development by investing directly in infrastructure projects (MLIT, 2022^[43]). This demonstrates the critical role that local private sector entities play in mobilising resources and driving progress in infrastructure development.

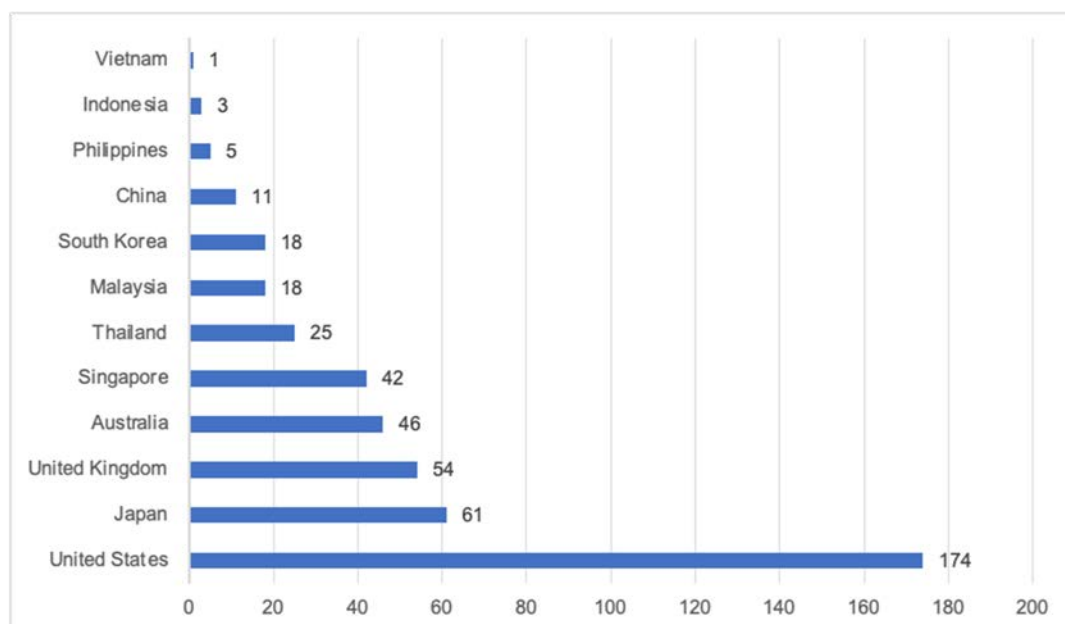
The Asian Development Bank estimates infrastructure investment is the backbone of Southeast Asia's economic growth, but the region faces a huge investment shortfall of more than USD 100 billion. To bridge this gap, private capital could play a much larger role in financing infrastructure projects (Asian Development Bank, 2022^[47]). The region requires trillions of dollars in new infrastructure over the next two decades to keep pace with current urbanisation trends. It is estimated that the ASEAN-5 region will require about USD 7 trillion in new urban infrastructure and housing investment through 2035 (Lin, 2015^[48]). The OECD estimates that globally around USD 95 trillion of investments will be needed between 2016 and 2030 in energy, transport, water, and telecommunications infrastructure to sustain growth, or around USD 6.3 trillion per year, even if governments take no further action on climate change (OECD, 2017^[49]).

Climate-resilient infrastructure will play a key role in driving sustainable urban development. In Southeast Asia, countries need to invest 5.7% of GDP in infrastructure to face climate change impacts through 2030 (Asian Development Bank, n.d.^[50]). However, securing finance for such investment remains a key challenge. Globally, out of USD 30.8 million in investments in climate adaptation between 2017-2018, only 3-5% had an urban component (Richmond, Upadhyaya and Pastor, 2021^[51]).

Furthermore, while international climate finance is progressing, the goal set under the Paris Agreement has not yet been achieved. Developed countries pledged to mobilise USD 100 billion per year by 2025 to support climate action in developing countries, yet mobilised only USD 83.3 billion in 2020, marking only a 4% increase from 2019, and still USD 16.7 billion short (OECD, 2022^[52]). In addition, it is estimated that approximately USD 6.9 trillion annually is required to achieve climate and development objectives from 2016 to 2030 (OECD/The World Bank/UN Environment, 2018^[53]). Aligning public and private investments in low-emission and resilient infrastructure is an effective strategy to enhance resilience, prevent further emissions lock-in, and achieve both climate and the Sustainable Development Goals.

Urban development is often realised through real estate investment, including by intermediaries such as REITs (Kim Min, 2020^[54]). REITs have become particularly important in the housing market. A REIT is an emerging financial instrument in countries such as Viet Nam, the Philippines, and Indonesia, while Malaysia and Thailand have relatively developed REIT markets. Malaysia, for example, has 18 listed REITs, 4 of which are complied with Islamic finance principles (Figure 3.12). This highlights the growing significance of REITs as a versatile funding mechanism, which could be pivotal in diversifying the financial landscape and enhancing sustainable urban development across the region.

Figure 3.12. Number of listed REITs in ASEAN-5 and selected OECD



Note: The numbers are as of November 2021 for Australia, Thailand and Malaysia, December 2021 for Japan and the United Kingdom, January 2022 for Singapore, Philippines and Indonesia, and February 2022 for the United States, South Korea, China, and Viet Nam.

Source: Author's elaboration based on MLIT (2022^[43])

The real estate industry is one of the largest GHG-emitting sectors, representing 30% of the global GHG reported by UNEP (UNEP, 2021^[55]). Considering the magnitude of the impact of real estate on the environment, there is a growing trend to promote investment in properties that exhibit high green and environmental considerations.

Despite the potential of utilising private capital in real estate development, the analysis found that none of the 129 sustainable urban development projects sampled deployed REITs as a funding mechanism in ASEAN-5 countries. Even in Thailand and Malaysia, where REITs are more prevalent, their full potential does not seem to be leveraged for green or sustainable projects, including buildings.

The level of REIT market development varies significantly across ASEAN-5 countries. A high level of taxation imposed for an exchange of a real estate property for a REIT, double taxation on dividends, and a potential loss of ownership regulated by free float weight are major obstacles preventing the development of REIT markets (MLIT, 2022^[32]).

Strengthen private equity for sustainable urban development

The increasing presence of Private Equity (PE) and infrastructure funds in Southeast Asia presents a significant opportunity to drive sustainable urban development. However, for these financial tools to make a meaningful impact, governments and private sector stakeholders need to create enabling environments and foster sustainable investment practices.

Governments could incentivise PE and infrastructure funds to direct capital toward climate-resilient urban development projects. This could be achieved by offering tax breaks, subsidies, and other financial incentives for investments that prioritise environmental, social, and governance (ESG) criteria. Expanding the focus beyond traditional infrastructure could help bridge the gap in sustainable urban infrastructure, including housing, transportation, and renewable energy systems.

Establishing dedicated infrastructure funds with a sustainability focus could be an effective strategy for closing the significant infrastructure investment gap in Southeast Asia. Governments could set up or expand such funds that prioritise projects aligned with national development goals and international climate commitments, including those outlined in the Paris Agreement. Collaborating with multilateral organisations like the Asian Development Bank (ADB) could help design innovative financing mechanisms that encourage long-term private investment in infrastructure.

Enhancing collaboration between public and private sectors is another vital step. Public-Private Partnerships (PPP) remain a strategic mechanism for financing large-scale infrastructure projects in Southeast Asia. Governments could thus focus on improving the institutional frameworks for PPPs by creating clearer guidelines, fostering investor confidence, and offering risk-sharing mechanisms that make such partnerships more attractive to PE investors.

Moreover, further promoting the use of Real Estate Investment Trusts (REITs) in sustainable urban development is an important step to take advantage of private capital while propelling sustainability. Governments could promote further use of REITs in Southeast Asia by reducing taxation and regulatory barriers. By unlocking the potential of REITs for financing green buildings and environmentally sustainable real estate developments, ASEAN-5 countries could draw inspiration from successful models like Singapore's UOB APAC Green REIT ETF and Germany's green dividend initiative:

- The world's first Asia-Pacific (APAC) Green REITs Exchange Traded Funds (ETF), UOB APAC Green REIT ETF (hereafter the 'fund') became listed on Singapore Exchange (SGX) in November 2021. Investments are made in the higher-yielding REITs that exhibit better environmental performance. In doing so, the fund aims to contribute to sustainability outcomes and the greening of the real estate sector (UOB Asset Management, 2022^[56]). This is a forefront example of REITs for the sustainable real estate industry in the ASEAN-5 macro-region.
- Alstria AG, a Germany-based REIT, launched the 'Green Dividend' concept in 2020, offering investors two options: receiving full dividends or keeping a partial dividend in the portfolio to be re-invested in sustainable projects. This 'Green Dividend' initiative has allowed the company to implement sustainable measures in properties currently in its portfolio and to acquire more sustainable properties, contributing to a transition to a net-zero society (Alstria, 2021^[57]).

Tax benefit schemes from Japan and Türkiye can also be instrumental to advance REITs for sustainable urban development projects (Box 3.4).

Box 3.4. REITs market in OECD countries: Japan and Türkiye

In Japan, policies at both national and local levels have created an attractive rental housing market. In the midst of urban shrinkage, the Tokyo municipal government promotes residential intensification in the capital region. The government promotes the condominium as a new residential model in central wards of Tokyo. The development of the REIT market in Japan has been supported by generous tax treatment and planning liberalisation from the central government. Most importantly, dividends distributed to investors are deducted from taxable income if the distributed portion exceeds 90% of the profits. This arrangement enables REIT investments to be exempted from income tax, avoiding double taxation.

In Türkiye, the tax advantage is another incentive for REITs. Portfolio administration gains of REITs in Türkiye are exempt from corporate tax. At the investor level, the sale of shares is subject to a 0% of withholding tax for domestic and foreign investors. This may provide an incentive both at the supply side and the demand side.

Source: (Erol and Ozuturk, 2011^[58]). An Alternative Model of Infrastructure Financing Based on Capital Markets: Infrastructure REITS (InfraREITs) in Türkiye.

The development of Thailand's REIT market suggests a potential lesson for such emerging REIT markets. The REIT market in Thailand dates back to the Property Fund for Public Offering (PFPO), which was introduced in 2002. PFPO was first listed in 2003 to invite investment into the real estate industry, but due to its low global recognition and liquidity, it did not become a popular financial instrument. To overcome these challenges, Thailand introduced a new regulation on REITs, encouraging conversion from PFPO to REIT, which has higher market liquidity. Following the success of Singapore, Thailand provided preferential treatments related to value-added tax, income tax, transfer cost and registration fees to promote this newly introduced financial instrument. With these tax merits, Thailand's REIT market has grown to 25 listed REITs, in addition to 51 PFPOs as of October 2021.

The development of Malaysia's REIT market was steered by introducing guidelines. Following the success of REIT markets in Japan and Singapore, the Securities Commission Malaysia introduced guidelines on REITs to improve market liquidity and monitoring. Furthermore, the country implemented "Guidelines for Islamic REITs", paving the way for REITs to be aligned with Islamic finance principles (MLIT, 2022^[43]).

The Philippines revised its act on REITs in 2020, favouring investors and corporations to promote more investment in REITs and to establish REITs. The enforcement of the new act lowered the minimum public ownership to 33% from the previous 40% (which needs to be increased to 67% within the initial 3 years upon listing), and gave property trusts access to tax incentives, including the exemption to a 12% value-added tax for the transfer of properties to REITs (Ramintas, 2020^[59]). However, the new act simultaneously raised a constraint, requiring all REITs to reinvest any proceeds from the sale of shares or other securities issued in exchange for income-generating real estate, in the Philippines. For this aim, REITs must now submit a reinvestment plan (Securities and Exchange Commission Philippines, 2020^[60]). This requirement reflects the SEC's goal to promote the development of the local capital market and nurture Filipino participation in the local real estate industry (Bar and Moises, 2020^[61]). While this requirement encourages local developers to found and manage REITs in the Filipino market, it stands as an obstacle to multinational REITs, who tend to make (re)investments in more than real estate markets. Following this new regulation, 5 REITs including Ayala Land, Inc, a subsidiary of Ayala Land, are publicly listed as of January 2022. The cases of Thailand, Malaysia and the Philippines highlight the potential role of tax incentives and alleviated regulation on public ownership to develop local REIT markets.

Emerging REIT markets in Viet Nam and Indonesia may follow the path of these countries, by implementing regulatory amendments to mitigate the complexity of the market and taxation policies.

3.2.4. Promoting land value capture tools to raise additional funding for sustainable urban development

Land value capture (LVC) tools could help raise additional funding and support sustainable urban development in cities. The main objective of LVC is to generate new capital for investment in public infrastructure – whether through fees, taxes, or additional building rights (OECD, 2019^[62]). This could be done through policies that allow subnational governments to recover increases in land values through the alteration of land use regulation and infrastructure deployment. The recovered land values could enable sustainable urban development by generating additional funding for welfare-enhancing infrastructure that would otherwise not be constructed due to budget constraints. Several LVC instruments are systematically used in Singapore, such as land readjustment and charges for development rights. Especially noteworthy are Singapore's practices in land readjustments and expropriations for the purposes of urban expansion, urban development, or renewal. Compensation is paid based on the property values practiced at the market, property owners rarely appeal against the decision of readjustment or the compensation (OECD, 2022^[63]).

The recent evolution of tax law in Thailand illustrates potential obstacles to promoting the use of LVC in ASEAN-5 countries. Thailand enforced the New Land and Building Tax Act in January 2020. This Act replaces the regressive and outdated property tax law under the Household and Land Tax Act, B.E. 2475 (1932), the Local Land Development Tax Act, B.E. 2508 (1965), the Notification of the National Executive Council No. 156 of 1972 and the Royal Decree Designating the Medium Price of Land for Land Development Tax Assessment of 1986 (ASEAN, 2020^[64]). Residential properties, which were previously exempted from taxation, are now taxable assets under this act (Charoenkitraj and Amonpiticharoen, 2019^[65]). However, due to long-abandoned regulations related to land and building taxation, many Thai taxpayers found the new property tax charges abrupt and unfamiliar. It might therefore take some time for the general public to accept LVC, which is based on a similar concept of charging land or properties for tax collection and greater public benefits. Consensus building among a wide range of stakeholders, public and private actors, and communities, is important for the success of LVC (Mabrutunnisa and Aditya Iskandar, 2021^[66]).

Digitalisation could offer a solution to enhance public trust in the government and improve transparency and accountability, which is essential to consensus building. The introduction of electronic platforms could help eliminate the risk of corruption, collusion, and nepotism during the valuation process, by removing face-to-face interaction with government officials. E-platforms would also allow stakeholders to monitor the implementation process and ensure transparency. Further, their introduction would help mitigate the risks related to frequent personnel changes in governmental bodies LVC (Mabrutunnisa and Aditya Iskandar, 2021^[66]).

Establishing clear and fair rules for LVC through legal definitions, legislation, and effective law enforcement is important to tackle the challenges related to the lack of transparency and accountability. LVC is better accepted by landowners when charges are derived from the amount of land value uplift a public improvement generates, as opposed to being charged based on public costs. Taking into consideration the socioeconomic status of landowners by differentiating LVC charges based on income levels could help improve public acceptance while fulfilling equity goals.

The successful implementation of LVC also requires developing stronger local government capacity. In most countries, local governments have the responsibility of determining which landowners are affected by LVC, setting fee tariffs, negotiating with landowners and developers, and managing land assets, among others. However, in many cases, local governments lack the capacity to carry out these tasks. National governments need to provide local governments with adequate administrative support, policy guidelines,

and accurate cadastre and land transaction data for LVC implementation. At the local government level, training city officials on the benefits of LVC and how to use market forces to capture increases in land value could help derive public benefits and achieve more equitable outcomes (Mahendra et al., 2020^[67]).

In addition, spatial planning frameworks could clearly define the roles of different levels of government in preparing plans and land-use regulations that serve as the baseline for LVC administration. As a potential source of inspiration, this report provides examples of how OECD countries implement different types of LVC instruments (Table 3.2).

Adequate and fair land valuation before and after the use of general budget resources or a change in land use is another challenge (The Global Land Tool Network, 2021^[68]). It is a pre-requisite to put in place an appropriate cadastral system, which keeps up-to-date information on values and owners of the land. Roles and responsibilities of the LVC implementing agency need to be clearly defined. It is also indispensable to ensure adequate training and capacity building for the agency officers to carry out an accurate analysis of the costs, benefits, and risks of LVC.

Table 3.2. Land value capture (LVC) mechanisms in OECD countries

LVC mechanism	Description	OECD countries in which the instrument is used
Impact fees	A one-time fee required from the land developer to help pay for new public infrastructure and other services, as well as infrastructure to sustain the new construction by the developer	Australia, Austria, Estonia, Finland, France, Germany, Greece, Israel, Italy, Japan, Korea, Netherlands, New Zealand, Slovak Republic, Sweden, Switzerland, United States
Joint developments	A private public partnership, where public action can be attached to private development, for instance a transit facility, and both parties (private and public) share the costs, revenues, and risks	Austria, Czech Republic, Denmark, Estonia, Finland, Israel, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Slovak Republic, Switzerland, United States
Property tax (only countries that update tax base regularly) ¹	Property or land value taxes automatically capture a share of the increase in property values as long as the assessed property price on which they are based is regularly updated to reflect market values	Australia, Chile, Denmark, Finland, Japan, Korea, Mexico, New Zealand, Portugal, Türkiye, United States
Land banking/pre-emptive purchase rights at unimproved valuations	The practice assembling plots of undeveloped or underdeveloped for further development or sale; land banks make profits by reselling land at higher prices than they bought it	Austria, Finland, Germany, Japan, Korea, Norway, Spain, United States
Tax increment financing	An accounting technique through which investments are financed by borrowing against expected increases in future tax revenues	Canada, Finland, France, Korea, Spain, United States
Betterment levy or special assessment	Similar to impact fees, a betterment levy can be charged to capture the increase in property values due to a public action (e.g., rezoning of land or provision of infrastructure)	Israel, Poland, United States
No value captures		Belgium, Hungary, Ireland, Slovenia, United Kingdom

Note: (1) lists only those countries whose property taxes have characteristics that make them effective value capture instruments. Due to the high degree of fiscal decentralisation in federal countries, the availability of any of these instruments may vary significantly from state to state. Source: (OECD, 2019^[12]). "Financing climate objectives in cities and regions to deliver sustainable and inclusive growth", OECD Environment Policy Papers, No. 17, OECD Publishing, Paris, <https://doi.org/10.1787/ee3ce00b-en>.

National subsidies and joint financing models between national and local governments could also bridge financing gaps and increase local general budget resources associated with sustainable urban development. In principle, Transferrable Development Rights (TDR) unbundle the development potential of a given property or land, and make the development rights a separate commodity, which an owner can choose to sell (OECD, 2021^[15]). In this way, TDR allows land or property owners in low-density development zones ("sending areas") to sell their development rights to other property owners or real estate developers for use at a different location ("receiving areas"). With the "transferred" development

rights, purchasing owners can develop their “receiving” parcel at a higher density than it would otherwise be legally possible (World Bank, 2015^[69]); it could come in the form of additional buildings, additional height, additional density, or some other form established by jurisdiction. The landowners in the sending areas can realise a financial return by selling development rights (Land Use Solutions for Colorado, n.d.^[70]). Local governments can also buy development rights to control prices and design details or restricting growth. The TDR programme allows local governments to control land use while simultaneously compensating landowners for restrictions on the development potential of their properties.

Communities can use TDR programmes to preserve open space, farmland, historic buildings, or housing. With the compensation linked to the sale of development rights, TDR makes such preservation more equitable and politically palatable by compensating landowners who lose the right to develop their property. TDR is more commonly used for conservation purposes, including farmland communities, open spaces, or other natural or cultural resources by redirecting development that would otherwise occur on that land (Pennsylvania Land Trust Association, 2019^[71]).

Another benefit of TDR is that it takes advantage of private capital. Compensation for landowners in ‘sending sites’ are determined by the real estate market. Instead of relying on scarce public budgets, the compensation comes from the private real estate market with capital from other landowners and real estate developers. From a community’s perspective, the preservation of the neighbourhood is achievable without reliance on taxes.

There are several key elements to the success of TDRs. Designation of the “sending” and “receiving” areas is the first step. Development constraints (such as limited infrastructure, poor soils, steep slopes, and other physical constraints) incentivise landowners in sending areas to participate in TDR. Conversely, receiving areas with more opportunities, jobs, education opportunities, shopping, public services, and other urban amenities, are more suitable for TDRs, with potential for more growth (Pruetz and Pruetz, 2007^[72]).

Establishing the valuation and costs of development rights is pivotal. The additional profits must exceed the cost of the development rights to make TDR work. Meanwhile, the financial return of the development rights needs to compensate landowners in sending sites. The valuation and cost analysis needs to be consulted with valuation experts to determine the appropriate rates for the transactions to take place (Land Use Solutions for Colorado, n.d.^[70]).

3.2.5. Strengthening public development financing

To support urban development financing, ASEAN-5 governments can consider establishing dedicated funding mechanisms that blend public and private capital sources, facilitating access to diverse financial products and advisory services for local infrastructure projects. There are various types of financial intermediaries specifically designed to support subnational governments for development.

The closest to a fully-public option would be a subnational development bank or fund that is fully owned and managed by the government. Such entities can mobilise grants and subsidy programmes for infrastructure investment by subnational governments, and support the effectiveness of these programmes to deliver quality infrastructure – in line with national, regional, and local priorities. National infrastructure banks and funds can also play a key role in improving access to finance for subnational governments’ urban development projects. They can provide a wide range of financial products, including debt, equity, credit enhancement support, as well as advisory services (OECD, 2021^[15]).

Moving further towards the private sector side, a subnational development bank or fund could be co-owned and operated by the national (or a regional) government and private investors. Such entities would likely blend funds from public sources (e.g., contributions from national and subnational government general budgets as well as money secured from international development and financial institutions) and private sources (e.g., private investors, individual deposits, etc.). In Indonesia, for example, PT Sarana Multi Infrastruktur (PT SMI) is a state-owned enterprise that specialises in infrastructure financing (SMi, 2022^[73]).

PT SMI allocates equity and debts from the central government, loans from multi-lateral institutions and private financial institutions, and bond issuances, to provide financial support, advisory services, and project development to subnational governments and specific infrastructure projects (OECD, 2021^[38]). Indonesia's Regulation on the Application of Sustainable Finance (No. 51/POJK.03/2017) includes a classification into 12 sustainable business activities to encourage financial institutions to improve their sustainable portfolio (PwC, 2021^[74]). The government of Indonesia intends to foster sustainable development by enforcing this regulation that builds and strengthens the foundation for green financing (Smoke, 2019^[75]).

Municipal development funds can function as a catalyst both for investors and local governments, balancing demand and supply. In the Philippines, the Municipal Development Fund (MDF) was created in 1984 as a way to offer Local Government Units (LGUs) access to capital finance for social and economic development projects. It is a revolving fund consisting of grants and loans from international donors and financial institutions. Since 1998, MDF has been managed by the Municipal Development Fund Office (MDFO) in the Department of Finance. The objective is to harmonise disbursements for LGU funding, but also to allow the central government to monitor the use of international financing. MDF acts as an alternative infrastructure financing for LGUs that cannot access private capital. In addition to project evaluations, MDFO provides technical assistance for LGUs to carry out projects in a financially sustainable way. As a result, MDFO improves the financial capacity and creditworthiness of LGUs, equipping them to directly access the private capital market. The Local Government Unit Guarantee Corporation (LGUGC) is another mechanism used for subnational lending. It was incorporated in 1998 as a private financial guarantee institution that provides financial guarantees for LGUs and other public/private entities, in case of borrower defaults. On the basis of the provided guarantee, partner financial institutions provide loans or underwrite bond issuances. MDF and LGUGC are successful examples where the intermediary institutions enable LGUs and other entities to access financing for urban projects.

3.2.6. Considering operation and maintenance in financing sustainable urban development projects

It is not always clear how the quality of urban spaces (including buildings) is maintained after a project has been financed and completed. It is therefore necessary to integrate regulations related to proper maintenance into the conditions of green financing.

“Operation and maintenance” has become a commonly used term in urban projects. It refers to the long-term maintenance that guarantees the safety and efficiency of urban infrastructure and building projects. Amidst ageing infrastructure and buildings in Asian countries, including the targeted five countries, there is a growing recognition of the significance of “operation and maintenance”. However, despite the rising interest in this topic, funding for such a long-term operation remains challenging for property owners and developers.

A new perspective on “operation and maintenance” is to view it as a potential avenue for generating additional returns for the neighbourhood, rather than as a financial burden, as well as a pathway to engage with stakeholders, thereby ensuring the long-term sustainability of urban projects. Japan and the United States provides examples of alternative solutions to ensure the long-term sustainability of urban projects (Box 3.5).

Box 3.5. Ensuring long-term sustainability projects in Japan and United States

- Japan:** The Otemachi, Marunouchi and Yurakucho district (the OMY district) in Tokyo, Japan, endeavours to generate new values, attraction, and excitement in their neighbourhood, in collaboration with public and private sectors. To guarantee the sustainable urban growth of central Tokyo city, the OMY district aims to enhance the neighbourhood values by collaboration among commercial actors, community organisations, and members of the public, making use of the urban space. This initiative is a signature example of ‘area management’, which means voluntary neighbourhood management among residents, developers, and landowners to preserve the natural environment and boost the neighbourhood economy. ‘Area management’ has become popular in urban development. However, securing financial sources has become a shared challenge to expand and promote its activities, given the potential free-rider problem; some businesses can benefit from area management activities without making a contribution. The renewed guideline of area management in Japan allows municipalities to collect contributions from local enterprises, subject to more than two-thirds of their consent, which will then be donated to area management organisations, who will manage and oversee the activities in their neighbourhood. This donation system aims to alleviate the potential free-riders by making local stakeholders accountable while securing sufficient funds for activities. The activities include community clean-up, neighbourhood watch, local events, and emergency and disaster training to boost local economies, enhance security, and provide spaces for social interaction.
- The United States:** The quality of urban neighbourhoods is enhanced via schemes such as Business Improvement Districts (BID). A BID is a type of PPP in which property and business owners make a collective contribution to maintaining, developing and/or promoting their commercial districts. The model is based on the shared maintenance programs implemented in shopping centres, where tenants of the shopping centres make a commitment to jointly maintain common spaces. The objective of this BID structure is to secure additional funding sources for the purpose of common goods, including public safety and cleanliness. BIDs are founded and deployed in cities in Canada, South Africa, the UK, and the US. Having land and business owners directly in charge of their districts, the BID system encourages long-term maintenance and upgrades, even years after the completion of building projects.

Source: Author’s elaboration based on (World Bank, n.d.^[76]). Business Improvement Districts; (Council for Area Development and Management of Otemachi, n.d.^[77]). For city planning that will prosper for the next 100 years; (MLIT, 2010^[78]). Recommendation of Area Management (エリアマネジメントのすすめ) In Japanese; (Cabinet Secretariat of Japan, 2020^[79]). Guidelines for Local Regeneration Area Management Contribution Framework.

3.2.7. Enhancing public-private investment co-ordination

There is insufficient co-ordination between private investment and government budget resources in sustainable urban development projects

While private investment in sustainable projects is often constrained by profitability concerns in certain sectors, it is also constrained by the lack of co-ordination between the public and private sectors. For example, in Thailand, private companies that lead public transport projects can only make investments directly linked to transport services. They cannot, for instance, simultaneously make decisions regarding-or invest in - public areas, parks, car parking, or housing developments in the urban spaces surrounding stations. Allowing a broader scope of decision making and investment by these companies could enhance

the profitable of the overall transport project by, for instance, increasing ridership and user charges, especially for parking spaces. Conversely, a similar challenge arises when real estate developers invest in (bankable) housing development without providing sufficient (non-bankable) urban infrastructure to guarantee the quality of public services (e.g., parks, schools, hospitals).

The 129 cases analysed for this report highlight the importance of local PPP policies and guidelines for unlocking private participation in urban projects across ASEAN-5 countries. In the Philippines, Executive Order No. 8 (2010) revitalised PPP initiatives by establishing a PPP Centre to drive the national development strategy forward. The PPP Centre co-ordinates and monitors all PPP projects in the country, facilitates implementation agencies, and manages the Project Development and Monitoring Facility (PDMF). It offers project advisory services and facilitation and enhances agency capabilities through various capacity-building training programs. The Centre provides technical assistance to a number of institutions, including national government agencies, government-owned and controlled corporations, government financial institutions, state universities and colleges and local government units (LGUs), to help them implement essential infrastructure and development projects. The Centre also advocates for policy reforms to improve the legal and regulatory frameworks that govern PPP projects (Republic of the Philippines, 2022^[80]). The Centre, for instance, works with the Securities and Exchange Commission (SEC) on policy and process enhancements to facilitate the entry and participation of international institutional investors and pension funds in financing PPP Projects. The PPP Centre in the Philippines serves as an enabling hub that oversees the pipeline of PPP projects and provides capacity-building for stakeholder institutions.

In Indonesia, the government has implemented a series of initiatives: improved regulations for PPP infrastructure projects, subsidises for PPP projects and credit enhancement for PPPs and State-Owned Enterprises (SOEs) by sovereign guarantees, gap viability funding, and availability payments (Climate Bonds, 2018^[81]).

The selection process across proposed PPP projects needs to be aligned with the country's national development strategy. National and subnational governments can collect project data and assess emerging trends and needs of sustainable urban development projects. National hubs, such as the PPP Centre in the Philippines, can serve as a platform for expertise that can provide appropriate technical assistance and guide project stakeholders to an adequate funding source. To calculate and recalculate contingent risks and implement and monitor the projects, implementation agencies and LGUs need to advance their technical capacity through capacity-building and advisory support. As long-term PPP projects often involve renegotiation, making clear and transparent rules and processes for success, with institutionalised frameworks, is important.

Box 3.6. Strengthening Indonesia's Path to Sustainable Finance and Green Investment

Indonesia is actively exploring avenues to channel private investment into sustainability-focused projects. One approach is the mandatory inclusion of sustainability considerations, which encourages private investment beyond profitability. This is supported by sustainable investment criteria, national regulations, and regional initiatives, such as those from the European Banking Authority. Entities like the People's Survival Fund also provide grants to high-impact disaster risk reduction projects.

The government has enhanced Public-Private Partnership (PPP) infrastructure projects through improved regulations, subsidies, and credit enhancements, such as sovereign guarantees and gap viability funding. The alignment of PPP project selection with national development strategies is key. National hubs, similar to the PPP Centre in the Philippines, can offer technical support and guide stakeholders to suitable funding sources. Capacity-building initiatives are essential for implementation

agencies and local governments to manage risks and monitor projects effectively. Clear frameworks and transparent processes are vital for successful renegotiations in long-term PPPs.

Indonesia has shown strong commitment to GSS bonds, with the Sustainable Finance Roadmap Phase II (2021-2025) aiming to create a robust market ecosystem. Challenges in deploying GSS bonds include the need for frameworks aligned with international standards and maintaining rigorous reporting. Indonesia's "Application of Sustainable Finance (No. 51/POJK. 03/2017)" requires financial institutions and public companies to develop action plans for sustainable finance and ensure the integration of environmental and social management policies.

Improve co-ordination between private investment and government budget resources in sustainable urban projects

In order to enhance co-ordination between private investment and government budget resources in sustainable urban projects, several options can be considered. The first option is to require the private sector to make additional investments (e.g., investment surrounding stations), while offering them incentives to do so. In some cases, a public authority provides its private counterpart with public assets, including the right to use public land for free or at a reduced cost. Commonly used practices include the concession of public facilities for refurbishment and/or operation for a defined period and reduced or suspended property tax on investment revenues (OECD, 2015^[9]).

The second option is to create a mechanism where the public and private sectors can make co-ordinated investments to ensure the long-term sustainability of urban development, thereby taking the wider urban spaces into consideration. For example, in the United Kingdom, the Community Infrastructure Levy (CIL) enables local governments to levy private developers, with the revenue raised used to deliver co-ordinated infrastructure to support development – such as public transport and parks (OECD/Lincoln Institute of Land Policy, PKU-Lincoln Institute Center, 2022^[82]).

An additional strategy to improve the co-ordination between private investment and general budget resources in sustainable urban development is through the increased use of Public-Private Partnership (PPP) frameworks. To enhance the effectiveness of PPP initiatives, it is imperative to actively engage stakeholders through consultation and ensure a balanced understanding of public and private sector approaches in service delivery. Furthermore, defining project scope and monitoring project quality requires the involvement of end-users, to align the service specifications with user expectations. Involving end-users in designing and monitoring increases the chance of the projects being viewed as legitimate, fair, and understandable, contributing to the accountability of the country's PPP initiatives (OECD, 2012^[83]). Moreover, robust competition for the projects is fundamental to successful PPP delivery. Guaranteeing market competitiveness is vital, particularly in the ASEAN-5 contexts, where foreign participation is restricted. Having a number of competitive bids, instead of a handful of the same large conglomerates competing all the time, would help ensure value for money (OECD, 2016^[84]). A clear and transparent regulatory framework is a foundation for market competitiveness, mitigating risks of regulatory capture, corruption, and unethical behaviour to ensure a low barrier to entry (OECD, 2012^[83]).

3.3. Strengthening urban planning and legal systems to leverage private investment for sustainable urban development

3.3.1. Urban development at the national and subnational level of ASEAN-5 countries is not sufficiently climate proof

The analysis of institutional frameworks found that over the last decade, ASEAN-5 countries have made progress in establishing and implementing NUPs (Table 3.3), which can help shape, guide, and promote investments in sustainable urban development. More specifically, ASEAN-5 countries could use the NUP process to collect data, assess needs for sustainable urban infrastructure, prioritise different infrastructure projects and define the role of different actors.

Table 3.3. National Urban Policies (NUP) in ASEAN-5 countries

Country	Name of the NUP	Year	Explicit NUP	Stage	National Urban Agency	Link
Indonesia	National Policies and Strategies for Urban Development towards Sustainable Competitive Cities for 2045	2015	Yes	Implementation	Ministry of National Development	Link
Malaysia	4th National Physical Plan	2021	Yes	Implementation	Ministry of Housing and Local Government	Link
Philippines	National Urban Development and Housing Framework (NUDHF)	2017	Yes	Implementation	Department of Human Settlements and Urban Development (DHSUD)	Link
Thailand	The Twelfth National 2017- 2021	2017	No	Monitoring and evaluation	Office of the National Economic and Social Development Council of Thailand (NESDC)	Link
Viet Nam	Urban Development Management Law	In progress	Yes	Formulation	Ministry of Construction	Not available

Source: Author's elaboration

In addition, NUPs are increasingly used to define how to finance urban development to achieve the goals set in the NUPs, which also helps mobilise different financing institutions including the private sector. Global monitoring of national urban policy found that diverse sources of funding and financing are being mobilised for NUP implementation, including national-subnational co-financing arrangements, public-private partnerships, private financing, and initiatives led by communities or co-operatives (OECD/UN-HABITAT/UNOPS, 2021^[85]) (Table 3.3).

NUPs are also deployed to secure adequate funding for effective implementation of responsibilities for urban policy at all levels of government by:

- Promoting a diversified, balanced, and sustainable mix of resources to finance urban development, infrastructure, and services across levels of government.
- Utilising funding instruments such as taxes or fees to generate necessary revenues and foster behavioural change to build sustainable and inclusive cities.
- Providing subnational governments with sufficient leeway to adjust and manage their revenues to respond to urban development needs.
- Mobilising innovative funding and financing tools such as borrowing, land value capture mechanisms, and financing vehicles such as infrastructure funds; and
- Leveraging private sector financing where appropriate to maximise related opportunities and address risk (OECD, 2019^[86]).

ASEAN-5 countries are facing severe impacts from the changing climate, including rising temperatures, exacerbated heat waves, and increasing risk of environmental and disaster risks. However, the analysis illustrated that urban development is not always guaranteed to be climate-proof, not only due to a lack of funding and financing but also, to a large extent, by a lack of regulations and planning frameworks.

The review of institutional and legal frameworks found that ASEAN-5 countries, except Viet Nam, have made good progress in renewing national spatial plans and frameworks towards sustainable urban development. For instance, Malaysia's third National Physical Plan has focused on improving the country's strategic planning capacity and instruments to ensure sustainable physical development and effective and efficient town and country planning. Malaysia also established a special climate change trust fund, where infrastructure and technologies to address climate change were identified as one of the key areas of need. Similar initiatives to use national planning as a policy lever can be found in Thailand's 12th National and Economic and Social Development Plan, which stipulates the revision of regulations in support of green urban infrastructure and encourages city planning and ordinances to scale up existing orientations towards "green cities" (Office of the National Economic and Social Development Board, 2017^[87]). In a similar vein, the Ministry of Public Work in Indonesia fast-tracked strategic infrastructure investments in various cities as part of the National Spatial Plan (Tobing, 2017^[88]).

Despite such planning frameworks, their implementation often lags behind due to fragmented institutional co-ordination (UNESCAP and UNHABITAT, 2019^[89]). For instance, in Thailand, each province has its own land use regulations. Due to the lack of co-ordination between the central and municipal governments, as well as among municipal governments, the use of land and land ownership are complex.

3.3.2. Utilising national and subnational planning frameworks to increase climate action in ASEAN-5 countries

National urban initiatives can pave the ground for future sustainable urban development financing by shaping for urban planning, fostering partnership building, and channelling investment into sustainable urban development finance. In particular, the development and implementation of NUPs promoting sustainable urban development can send a strong signal to the market and consequently accelerate funding and financing for sustainable urban development.

For example, in Ireland, the recently launched Project Ireland 2040 (via its National Planning Framework 2018 – 2027) provides a brownfield/infill development target. The plan stipulates the country's target for a minimum of 40% of all new housing to be built within the existing settlements, rather than built on the greenfield sites. The reuse of brownfields for further residential housing is based on the 'circular economy' concept, to utilise land use management by recycling the existing building stock (Government of Ireland, 2018^[90]); (Dept of Rural and Community Development and Dept of Housing Local Government and Heritage, 2022^[91]). By having a 'circular economy' as an overarching national principle, Ireland ensures that the country minimises natural resource use and reduces waste generation, thereby achieving sustainable growth (Irish Environmental Protection Agency, 2021^[92]).

In the wider European context, strategic documents such as the New Leipzig Charter – The transformative power of cities for the common good and the Territorial Agenda 2030 – a future for all set forth visions for sustainable urban development and encourages national governments to use NUPs and multi-level governance frameworks to implement these visions. For instance, intermediary cities are emphasised in these documents, highlighting "the important role of medium-sized cities as part of polycentric urban systems" (European Commission, 2020^[93]) and the "underexploited potential of small and medium-sized settlements to face the issue of the spatial polarisation of activities within Europe" (Council of the European Union, 2022^[94]). These documents call for polycentric development models that accommodate all locales. Such strategic orientations guide national policymakers in adapting their NUPs to local contexts and foster mutual learning across countries.

In Malaysia, The National Low Carbon Cities Masterplan (NLCCM) was published in 2021 (KASA, 2021^[95]). Built on the legacy of the Low Carbon Cities Framework (LCCF) introduced by the National Government, NLCCM provides guidance for subnational governments and businesses on how to drive the transition to low-carbon cities. The Masterplan adopts three key areas for its approach: measuring, managing, and mitigating GHG emissions to reduce environmental impacts, with 33 local governments in its scope.

In addition to establishing a clear national urban strategy, co-ordination and collaboration between national and subnational governments are necessary to securing financing for urban projects. Countries such as Viet Nam, Indonesia, and the Philippines do not have systematic mechanisms and criteria for prioritising urban projects, which leads to a lack of co-ordination of financial plans for subnational urban projects.

3.3.3. Utilising land use regulations to facilitate climate resilience

Land use regulations can be a powerful tool to facilitate climate resilience. The enforcement of local land use planning and zoning regulations has significant impacts on mitigation efforts –such as controlling urban sprawl, integrating renewable energy on rooftops or at urban peripheries, and improving transport planning and service delivery in cities, between rural and urban areas, and in low-density regions – as well as on how climate-related extreme weather events affect local communities and economies. Climate-friendly and risk-sensitive land use (e.g., denser urban areas, mixed-use development, home-job proximity, land use restrictions in hazard-prone areas) can further enhance the resilience of urban infrastructure (OECD, 2023^[96]). Therefore, regulating land use is an important prerequisite to attract investment in sustainable urban development.

An option for ASEAN-5 countries could be to strengthen institutional co-ordination in the implementation of national spatial plans. Stronger alignment between national and local spatial planning is needed to ensure effective national spatial planning frameworks. While the creation of clear vertical implementation and co-ordination bodies—such as Special Committees, as done in Korea (OECD, 2019^[97])—could facilitate stronger alignment national and local planning systems could be beneficial as well. The German ‘Counter Flow Principle’ is one illustrative example, in which lower levels of government must adapt their plans to align with higher levels, while at the same time providing input and shaping those higher-level plans (OECD, 2017^[98]). This approach could be particularly well-suited to federal systems or those that seek stronger decentralisation as this principle could help ensure a mutually agreed upon, aligned, and swift implementation of national planning decisions. The experience of the National Housing and Land-use Regulatory Board in the Philippines in mainstreaming comprehensive land use and development plans illustrates the effective combination of decentralisation and a framework for vertically integrated climate action in cities (UNESCAP, 2020^[99]).

Another important policy lever is to strengthen low-carbon building certifications and guidelines to generate conditions for green investments. It is estimated that the construction sector and its use of current building materials account for nearly 40% of global energy-related carbon emissions (UNEP, 2021^[55]). The built environment therefore has great potential to drive the net-zero transition in cities (OECD, 2022^[100]). A range of reforms in building regulation have been recently carried out across ASEAN-5 countries, which could provide inspiration for policymakers.

An important policy option is to increase the engagement with the private sector on new green building regulations. A desk review of green building codes in ASEAN-5 countries underscores that the private sector is usually not consulted in the development of new regulations, which often creates an implementation gap after their adoption, with the exception of the Philippines Green Building Code (GB Code) that was developed by the Department of Public Works and Highways (DPWH), with the assistance of the World Bank-IFC, and the technical support of the Philippine Green Building Initiative (PGBI). The latter is composed of accredited professional organizations in the building industry. Dedicated engagement mechanisms are needed to address this gap in consultation. In addition, it is recommended that governments establish centralised hubs to address all matters related to energy efficiency in buildings.

Such dedicated institutions could serve as incubators for new policies, accelerate the information sharing on new schemes, and to verify funding opportunities that overall could reduce the time for approval processes, as well as increase uptake by private developers (ASEAN Centre for Energy (ACE), 2018^[101]).

Green areas in cities are key assets that provide urban residents with amenities, promote biodiversity, and help adapt to climate change (e.g., by helping cool down cities). For example, in dense cities, the presence of green areas is vital for enhancing health, facilitating social and leisure activities, as well as encouraging a sense of belonging among citizens. Amid the COVID-19 pandemic, urban residents “re-discovered” the importance of proximity and walkability to open spaces such as parks (OECD, 2020^[102]). Access to safe, inclusive, and accessible green and public spaces is a target under Goal 11 of the Sustainable Development Goals. However, implementation measures to achieve such a target, such as nature-based solutions (NbS), remain largely underdeveloped. This is an important area for policy intervention for ASEAN-5 cities.

3.3.4. Establish capital investment planning to link a municipality’s strategic spatial plan to investment

To ensure effective urban development, municipalities could integrate their strategic vision, land use plans, and annual budgets through comprehensive capital investment planning. This process involves the city reviewing a multiyear capital improvement plan that identifies anticipated public infrastructure and investment projects, as well as the required financing. It assesses the city’s policies and financial capacity to manage the investments needed for the development of its spatial and built environment.

A fiscal capacity assessment of the city is an important part of the capital investment plan, which involves estimating future revenues, future operating expenditures, and the amount of funds available. The annual review of capital investment plans considers the fiscal impacts of capital investments. For instance, should the upgrade of the transit hub increase the value of the surrounding neighbourhood, municipal property tax revenue would also increase. Comprehensive, multiyear capital plans allow municipal governments to i) ensure effective management of public capital assets; ii) consider funding requirements, the likely timing of major required investment, future costs, and major upgrades; and iii) bundle anticipated projects together to pursue external funding sources to supplement any potential shortfalls. By combining the capital budget and the city’s spatial planning, municipal governments are able to anticipate future general budget resources and plan ahead to apply for transfers or external funding sources with lower transaction costs (World Bank, 2015^[69]).

3.3.5. Aligning national urban initiatives to climate financing initiatives

The lack of sustainable urban development projects reaching an advanced level of project maturity to become attractive for green financing is well acknowledged. Apart from raising funding for the project preparation to cover pre-feasibility and feasibility studies, building up the necessary planning capacity at the subnational level requires comprehensive Technical Assistance Programmes (TAP). Despite the proliferation of multilateral platforms providing funding for these purposes to cities by Multilateral Development Banks, such as the Asian Development Bank, the Asian Infrastructure Investment Bank, and the World Bank, the demand for support is greater than the availability of funding, especially for small and medium-sized cities (CCFLA, 2021^[103]). Against this background, national urban initiatives as illustrated above, may benefit from being more closely aligned with existing national and international instruments for green urban financing. Benefits may be greatest if this alignment focuses on enhancing local capacity for green project preparation. This includes prioritising capital investment projects, initiating urban sector studies to guide future pre- and feasibility studies, and establishing an updated urban planning framework based on essential evidence.

3.3.6. Promoting nature-positive cities

Nature-positive cities represent an innovative and holistic approach to urban planning that emphasises the integration of natural elements into the built environment (World Economic Forum and Oliver Wyman, 2024^[104]). This strategy not only enhances biodiversity and ecosystem services but also contributes to the overall sustainability and resilience of cities. By incorporating green infrastructure and nature-based solutions, cities could address a multitude of urban challenges, including climate change adaptation, air and water quality improvement, and the enhancement of citizens' well-being (World Economic Forum and Oliver Wyman, 2024^[105]).

Furthermore, nature-positive urban development could lead to significant cost savings in the long run, making it an economically viable strategy for sustainable urban growth. For instance, green infrastructure including parks, green roofs, and urban forests helps mitigate the urban heat island effect, reducing energy consumption for cooling and lowering greenhouse gas emissions. These natural elements also enhance the ability of cities to adapt to climate change by managing stormwater runoff, reducing flood risks, and improving their overall climate resilience. By integrating nature-based solutions into urban planning, cities could achieve the dual benefits of mitigating climate change impacts and adapting to its inevitable consequences.

Traditional grey infrastructure, such as concrete stormwater systems, can be expensive to build and maintain. Nature-based solutions, like wetlands and bioswales, offer cost-effective alternatives that provide similar or superior performance in managing water and improving urban resilience. Investing in green infrastructure reduces the need for expensive retrofitting of existing infrastructure, leading to significant long-term savings for city governments.

Adopting a nature-positive approach in urban planning is a forward-looking strategy that aligns with the sustainable development goals. By leveraging the benefits of green infrastructure and nature-based solutions, cities not only improve their environmental performance but also achieve significant economic and social gains.

3.3.7. Fostering transit-oriented development projects

Transit-oriented development (TOD) is a key area of urban development that could enhance the bankability of public transport projects. Transport is not necessarily an attractive option for investors, due to uncertain ridership. TOD clusters jobs, housing, services, and amenities around public transport hubs. The improved proximity from offices and residential houses to the transport hubs reduces the reliance on private vehicles, leading to better public transport connectivity and increased fare revenues (C40, 2021^[106]). TOD operating companies could also supplement their revenues with more stable revenues from rental payments associated with the surrounding offices and housing. Having TOD at the core of an urban planning strategy could help attract private financing.

3.3.8. Promoting inclusiveness in large-scale infrastructure investment in cities (e.g., use of inclusionary zoning)

Implementing regulatory benchmarks for affordable housing and encouraging REITs focused on social inclusion may allow municipalities to foster social inclusiveness in urban spaces. With the regulatory implementation of the minimum benchmark of affordable housing and REITs focused on social inclusion, infrastructure development projects could drive social inclusiveness in urban spaces.

In addition to the 'greenness' of the projects, urban development could also drive social inclusion through the use of inclusionary zoning. In the UK, for instance, the national benchmark for affordable private rent is 20% for all Built-to-Rent homes. In all newly-built large housing complexes, a minimum of 20% of units need to be affordable (Government of the UK, 2018^[61]). In this context, Civitas Social Housing (CSH) and

Triple Point (SOHO) are two examples of how the potential role of REITs in promoting social inclusiveness. Civitas Social Housing (CSH) was launched in 2016 as the first REIT that specialises in social housing investment with a focus on specialised support housing for vulnerable people with care needs. In addition, CSH makes investments in properties for vulnerable people who are at risk of homelessness (CSH, 2022^[107]). With a mission to raise private capital to invest in social homes across England and Wales, CSH aims to tackle the chronic shortage of social housing in the UK (CSH, 2022^[107]). REITs that invest in properties prioritising social considerations, such as those targeting excluded or marginalised populations, could advocate for social inclusion alongside environmental sustainability, to further drive urban sustainability efforts.

3.3.9. Strengthening sustainability criteria in financing to ensure project quality in the long term

The G20 Principles for Quality Infrastructure Investment (G20 Principles) of 2019 highlight the importance of infrastructure quality and sustainability. They identify infrastructure as "a solid basis for strong, sustainable, balanced and inclusive growth and sustainable development" and advocate for scaling up sustainable infrastructure investments (Ministry of Foreign Affairs of Japan, 2019^[108]).

The 2022 G20 Sustainable Finance Report issued by the Indonesia G20 Presidency is an example of a policy that stipulates sustainability criteria in financing in ASEAN-5 countries. The report addresses three workstreams, including one on developing a transition finance framework. This workstream has emerged from the rising concern that the limited focus on pure "green" or "sustainable" activities has hindered capital flow towards a wider range of activities that support a transition to a low/no-carbon economy. The singular focus on the narrow interpretation of "green" and "sustainable" projects may have restricted capital flow towards certain business activities, including transition efforts by greenhouse gas (GHG)-intensive sectors and firms. To ensure the effectiveness of the framework, the report proposes recommendations in five key areas for the transition finance framework: (i) identifying transitional activities and investments, (ii) reporting information on transition activities and investments, (iii) developing transition-related financial instruments, (iv) designing policy measures, and (v) assessing and mitigating the adverse social and economic impacts of transition activities and investments. Clear definitions of transition activities and robust institutional guidance will reduce the risk of "green and SDG washing", while effectively channelling capital towards activities that promote climate action (G20, 2022^[109]).

The OECD further encourages countries to advance sustainable infrastructure through the dissemination of best practices and practical guidance. This approach extends to sustainable urban development, leveraging resources such as the OECD Compendium of Policy Good Practices for Quality Infrastructure Investment and the OECD Implementation Handbook for Quality Infrastructure Investment.

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4 A deep dive into the ASEAN-5 countries

This Chapter examines sustainable urban development financing in ASEAN-5 countries through deep dives into Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam. It highlights positive developments (e.g., the increasing use of Green, Social, and Sustainability (GSS) bonds, and other innovative financing instruments), identifies ongoing challenges (e.g., complex regulatory frameworks, limited market size for sustainable finance instruments, and difficulties in project prioritisation), and presents emerging opportunities (e.g., the development of green building standards, public-private partnerships, and the potential of Real Estate Investment Trusts). The chapter emphasises the importance of aligning national net-zero commitments with sector-level initiatives and explores the role of international financial institutions in facilitating private investment in sustainable urban development.

Key Findings

Indonesia

- **Recent developments:** Indonesia's urban transport projects are primarily financed by the national government, which in turn relies greatly on international donors. The country has been actively utilising Green Sukuks—Islamic bonds dedicated to environmental purposes—as a green financing instrument.
- **Challenges:** A major challenge in sustainable urban development finance in Indonesia is the lack of systematic mechanisms for prioritising urban projects, leading to poor co-ordination of financial plans for subnational projects. Furthermore, the complexity and enforcement of local land use planning and zoning regulations pose significant hurdles.
- **Opportunities:** There are emerging opportunities to direct private investment towards sustainability-focused projects in Indonesia. This includes making sustainability considerations mandatory, improving regulations for PPP infrastructure projects, and leveraging incentives and pilot projects, such as grants from the People's Survival Fund, to drive sustainability in urban development.

Malaysia

- **Recent developments:** Malaysia has pioneered the use of green Sukuks, exemplified by the Merdeka PNB 118 Tower project. Additionally, Malaysia has established the Green Sustainable and Responsible Investment (SRI) Sukuk Grant Scheme, offering tax exemption benefits to green Sukuk issuers, and encouraging the issuance of GSS bonds under ASEAN Standards.
- **Challenges:** Issuing GSS bonds in Malaysia is complex and costly, requiring comprehensive frameworks based on International Capital Market Association (ICMA) principles and ongoing reporting. Furthermore, the market for these bonds remains relatively small, limiting their impact on sustainable urban development.
- **Opportunities:** Malaysia's commitment to net-zero emissions by 2050 presents significant opportunities for driving sustainability in urban development. The National Low Carbon Cities Masterplan (NLCCM) provides guidance for subnational governments and businesses to transition to low-carbon cities, focusing on the measurement, management, and mitigation of GHG emissions, covering 33 local governments.

Philippines

- **Recent developments:** The Philippines supports sustainable urban development through the Municipal Development Fund (MDF), which provides Local Government Units (LGUs) with access to capital for social and economic projects. Managed by the Municipal Development Fund Office (MDFO), the MDF offers grants and loans from international donors and financial institutions, improving the financial capacity and creditworthiness of LGUs.
- **Challenges:** The Philippines faces challenges in sustainable urban development financing due to fragmented institutional co-ordination and the complexity of integrating climate action with land use regulations. The decentralisation issues make it difficult to mainstream comprehensive land use and development plans.
- **Opportunities:** There are significant opportunities for sustainable urban development financing in the Philippines through the implementation of regulations for green buildings. Policies like the Building Energy Code (2009) and the Green Building Code (2015), along with the Energy Efficiency Conservation Act (2019), aim to enhance energy efficiency in buildings and reduce

emissions. Public-Private Partnerships (PPPs) also present opportunities, with the PPP Centre co-ordinating and facilitating infrastructure and development projects.

Thailand

- **Recent developments:** Thailand has successfully leveraged various funding mechanisms for sustainable urban development, notably through the development of its REIT market and the issuance of sustainability bonds, which contribute to the growth of capital markets in the ASEAN-5 region.
- **Challenges:** A significant challenge in Thailand's sustainable urban development finance is the lack of co-ordinated institutional frameworks and enforcement of local land use planning and zoning regulations, leading to fragmented land use and ownership regulations across provinces.
- **Opportunities:** There are significant opportunities for enhancing sustainability in urban development through co-ordinated public-private investments and mechanisms like the Community Infrastructure Levy (CIL), which could help fund necessary urban infrastructure and align with private investment. Additionally, cascading the national net-zero commitment to sector-level initiatives could further drive sustainability in targeted projects.

Viet Nam

- **Recent developments:** Viet Nam relies heavily on international donor loans for urban development, with 98% of projects financed by international donors. However, there is a shift towards developing the domestic financial market, with local banks beginning to offer long-term financing for infrastructure projects as part of the government's strategy to reduce dependency on foreign currency reserves and government guarantees.
- **Challenges:** The major challenge for urban development in Viet Nam is the lack of systematic mechanisms and criteria for prioritising projects, compounded by a complex and ambiguous legal and regulatory framework for land management, involving multiple laws and regulations from different sectors.
- **Opportunities:** Significant opportunities exist in simplifying the permit and approval system, including centralising development and building permits under one institution, and strengthening inspections and enforcement. Additionally, developing the Real Estate Investment Trust (REIT) markets could follow successful international models through regulatory amendments to address market and taxation complexities.

4.1. Indonesia

4.1.1. Recent developments in funding sources and financing instruments

Indonesia has been actively implementing urban transport projects, with 12 out of the 37 sampled transport projects occurring within this country (Figure 4.1). All but one of these projects are funded and managed by the national government. Notably, international donors have partially financed 24 (77%) out of the 31 Indonesia projects sampled, highlighting the country's dependence on external financial support.

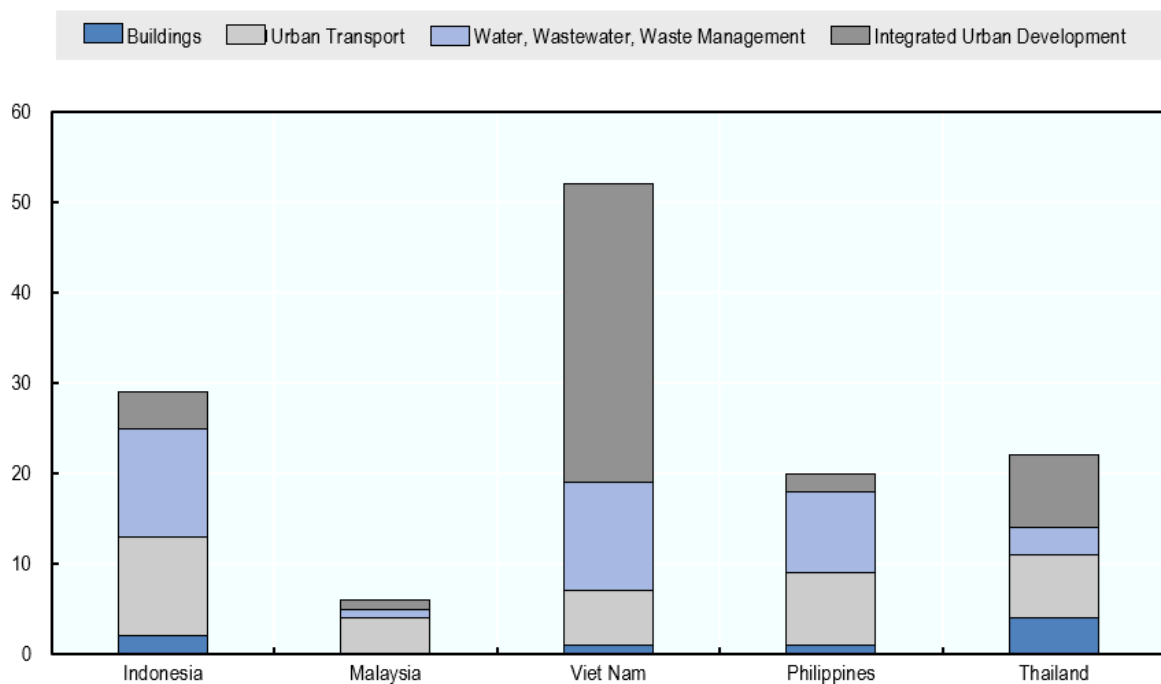
Among the green financing instruments emerging in Indonesia are Green Sukuks, Islamic bonds dedicated to environmental purposes, which have gained attention in both Indonesia and Malaysia (CBI, 2019^[1]). The Indonesian government is a major issuer of Green Sukuks, although these are not confined to specific urban development projects. Furthermore, the national development bank PT Sarana Multi Infrastruktur (PT SMI) plays a role in infrastructure financing, as seen in the Makassar-Parepare Railway Line project,

which spans 144 kilometres and includes 16 stations. PT SMI allocates equity, debt, and loans from various institutions to support subnational governments and specific infrastructure projects (OECD, 2021^[2]).

Cities are major investors in infrastructure. It is estimated that subnational governments – state, regional, and local – are responsible for nearly 60% of general budget resources in G20 countries. In ASEAN countries, approximately 75% of infrastructure investments are publicly funded, with the remaining 25% financed by the private sector, primarily through commercial loans (direct lending) (Climate Bonds Initiative, 2019^[3]). In Indonesia, the government's share of infrastructure investment is estimated to be 65% (Goldman Sachs, 2013^[4]).

Figure 4.1. Selected projects by country and sector

Number of projects by sector in each country (n=129)



Note: Results based on a sample of 129 sustainable urban development projects collected by the Source: Author's elaboration based on the project list Annex C.

4.1.2. Challenges in diversifying instruments and leveraging private investment.

Despite the progress in renewing national spatial plans and frameworks, systematic mechanisms for prioritising urban projects are lacking, leading to poor co-ordination of financial plans for subnational urban projects (Tobing, 2017^[5]).

In addition to establishing a clear national urban strategy, co-ordination and collaboration between national and subnational governments are crucial to securing financing for urban projects. Indonesia does not have systematic mechanisms or criteria for prioritising urban projects, which leads to a lack of co-ordination of financial plans for subnational urban projects.

Furthermore, the Ministry of Public Work in Indonesia fast-tracked strategic infrastructure investments in various cities as part of the National Spatial Plan (Tobing, 2017^[5]). Land use regulations can be a powerful

tool to facilitate climate resilience. The enforcement of local land use planning and zoning regulations have large impacts on mitigation, for instance, through its impact on urban sprawl, renewable energy on rooftops or at the urban periphery, transport planning and service delivery in cities, between rural and urban areas, and in low-density areas. It also affects the degree to which climate-related extreme weather events affect local communities and economies. Climate-friendly and risk-sensitive land use (e.g., denser urban areas, mixed-use development, home-job proximity, land use restriction in hazard-prone areas) can further enhance the resilience of urban infrastructure (OECD, 2020^[6]). Therefore, regulating land use is an important prerequisite to attract investment in sustainable urban development.

The complexity of deploying sustainable finance instruments like GSS bonds also poses a challenge. Following the Sustainable Finance Roadmap Phase I (2015–2019), the Financial Service Authority of Indonesia (OJK) launched Phase II for the period of 2021 to 2025. This second phase incorporates plans for the development of a complete market ecosystem for sustainable finance and the co-ordination of appropriate taxonomies with other institutions. Combined with a few other initiatives on sustainable finance, the Indonesian government is paving the way to advance sustainability through finance (Climate Bonds Initiative, 2021^[7]).

Deploying sustainable finance, including GSS bonds, presents several challenges for issuers. To classify projects as ‘green’, ‘social’ or ‘sustainable’, issuers must develop their own frameworks aligned with the International Capital Market Association (ICMA) GSS bond principles and ASEAN Standards (Table 4.1). Even after issuing bonds successfully, GSS bond issuers are required to consistently report on the actual use of proceeds to market participants.

One of the challenges in Southeast Asia is to diversify funding and financing methods for sustainable urban development projects. In Indonesia, for example, PT Sarana Multi Infrastruktur (PT SMI) is a state-owned enterprise that specialises in infrastructure financing (SMi, 2022^[8]). PT SMI allocates equity and debts from the central government, loans from multi-lateral institutions and private financial institutions and bond issuances to provide financial support, advisory services and project development to subnational governments and specific infrastructure projects (OECD, 2021^[2]). Indonesia’s Regulation on the Application of Sustainable Finance (No. 51/POJK.03/2017) includes a classification of 12 sustainable business activities to encourage financial institutions to improve their sustainable portfolio (PwC, 2021^[9]). The government of Indonesia intends to foster sustainable development by enforcing this regulation to build and strengthen the foundation for green financing (Smoke, 2019^[10]).

Table 4.1. ICMA Green, Social, and Sustainability Bond Principles

	Use of Proceeds (commonly used projects)
Green Bond Principles	- Renewable Energy - Energy Efficiency - Pollution prevention and control - Environmentally sustainable management of living natural resources and land use - Terrestrial and aquatic biodiversity - Clean Transportation - Sustainable water and wastewater management - Climate Change Adaptation - Circular economy adapted products, production technologies and processes and/or certified eco-efficient products; - Green Buildings
Social Bond Principles	- Affordable basic infrastructure - Access to essential services - Affordable housing - Employment generation - Food security - Socioeconomic advancement and empowerment

Sustainability Principles	Bond	Sustainability Bonds are any type of bond instrument where the proceeds or an equivalent amount will be exclusively applied to finance or re-finance a combination of both Green and Social Projects
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Source: (ICMA, 2022^[11]). ICMA. Accessed at: <https://www.icmagroup.org/sustainable-finance/>.

4.1.3. Emerging opportunities and instruments for green financing

Indonesia is exploring various opportunities to direct private investment towards sustainability-focused projects. One approach is making sustainability considerations mandatory, which is one way to direct private investment in sustainability-focused projects rather than focusing solely on profitability. Such initiatives are reinforced by Indonesia through sustainable investment criteria, regulations on sustainable finance, and regional initiatives such as those introduced by the European Banking Authority. Entities such as the People's Survival Fund could help provide grants to projects that demonstrate a high contribution to disaster risk reduction. The use of such incentives and pilot projects could further drive sustainability in urban projects.

In Indonesia, the government has implemented a series of initiatives including improved regulations for PPP infrastructure projects, subsidies for PPP projects, and credit enhancements for PPPs and State-Owned Enterprises (SOEs) through sovereign guarantees, gap viability funding, and availability payments (Climate Bonds, 2018^[12]). The selection process across proposed PPP projects needs to be aligned with the country's national development strategy. National and subnational governments could collect project data and assess emerging trends and needs of sustainable urban development projects. National hubs, such as the PPP Centre in the Philippines, could serve as a platform of expertise that could provide appropriate technical assistance and guide project stakeholders to an adequate source of funding. To assess contingent risks, as well as to implement and monitor projects, implementation agencies and LGUs need to advance their technical capacity through provided capacity-building and advisory support. Long-term PPP projects often involve renegotiation possibilities. Clear and transparent rules and processes are therefore crucial for successful renegotiation, with institutionalised frameworks playing a significant role.

The Indonesian government has demonstrated a strong commitment to GSS bonds and sustainability-linked bonds, particularly through the Sustainable Finance Roadmap Phase II (2021-2025). This initiative aims to develop a complete market ecosystem for sustainable finance and align taxonomies with other institutions (Climate Bonds, 2018^[12]).

Deploying sustainable finance instruments like GSS bonds involves several challenges. Issuers need to establish frameworks based on International Capital Market Association (ICMA) GSS bond principles and ASEAN Standards and maintain ongoing reporting on the use of proceeds. Following this trend, ASEAN-5 governments have developed policy frameworks to accelerate sustainable investment. Indonesia, for example, introduced the "Application of Sustainable Finance (No. 51/POJK. 03/2017)" in 2017, obliging financial services agencies, issuers, and public companies to provide the funding needed to achieve sustainable development goals and ensure adequate financing for the efforts to address climate change. The regulation also requires targeted entities to prepare sustainable finance action plans and ensure that they have adequate environmental and social management policies and processes in place (OJK, 2017^[13]).

4.2. Malaysia

4.2.1. Recent developments in funding sources and financing instruments

Green financing instruments, such as GSS bonds, are emerging in the ASEAN-5 countries. Malaysia's first green Sukuk, an Islamic bond dedicated to environmental purposes, was used for the Merdeka PNB 118 Tower (CBI, 2019^[14]). Furthermore, Malaysia has established a Green Sustainable and Responsible

Investment (SRI) Sukuk Grant Scheme. This scheme is one of the first global examples of incentive structures to support green bond issuance, providing tax exemption benefits for green Sukuk issuers. It expanded its scope in 2021 to cover all Sukuks or bonds issued under ASEAN GSS bond standards (ASEAN Standards). The Malaysian government aims to encourage more companies to finance green, social, and sustainability projects through GSS bond issuances.

Malaysia has made significant strides in sustainable urban development through the use of green bonds. An exemplary project is the Green Building initiative at Gateway@klia2 (Chandra and Ng, 2017^[15]) (Box 4.1).

Box 4.1. An urban development project using a green bond as a refinancing option.

Green Building in Malaysia (corporate green bond) – Gateway@klia2

Segi Astana Sdn Bhd (“Segi Astana” or the “Issuer”), a joint venture company between WCT Holdings Berhad (“WCT” or the “Group”), a Malaysia-based construction engineering company, and Malaysia Airport Holdings Berhad (“MAHB”), issued a Green Bond of MYR 415 million (USD equivalent 103.7 million) in January 2018. The issuer established a Green Bond Framework in accordance with the transparency and disclosure requirements of the ASEAN Green Bond Standards and globally recognised Green Bond Principles.

The issuer was founded to develop gateway@klia2 (“the complex”), an integrated complex in Sepang Selangor of Malaysia. Gateway@klia2 was certified by LEED Silver, characterised by energy-efficiency measures, rainwater harvesting, and centralised waste disposal systems. Segi Astana also has a tenant engagement programme to make sure that the tenants play an active role in the building’s sustainability management. The complex is a key infrastructure component of the Kuala Lumpur International Airport 2. The building was opened to the public in May 2014.

The green bond was issued to refinance the outstanding MYR 400 million Medium-Term Notes (MTN), issued in January 2012, including any accrued interest and to repay the related company’s advances that were entirely used to finance the construction and development of the complex. The MYR 400 million MTN was guaranteed by Danajamin Nasional Berhad, jointly owned by the Ministry of Finance (50%) and Credit Guarantee Corporation Malaysia Berhad (50%), which functions as a financial guarantor for enterprises to access the debt security market. The use of the green bond framework allowed the issuer to address the needs of sustainability-conscious investors, and to access the debt security market without a guarantee.

UoP	All proceeds will be immediately used to repay the outstanding Medium-Term Notes Programme and related company advances.
Reporting	
Impact Reporting	Energy Use Intensity (kWh per square meter) Carbon Emissions (metric tons of CO ₂ per square meter) Water Intensity (cubic meter per square meter) Sale of Recyclable Items (Kg)

Source: (Chandra and Ng, 2017^[15]). SEGI ASTANA SDN BHD ASEAN GREEN BOND PROPOSED MEDIUM-TERM NOTE FACILITY OF RM415.0 MILLION.

4.2.2. Challenges in diversifying instruments and leveraging private investment

Despite the progress in utilising green financing instruments, Malaysia faces several challenges in sustainable urban development. One major issue is the complexity and cost associated with issuing GSS bonds. Issuers need to establish comprehensive frameworks based on International Capital Market Association (ICMA) principles and maintain ongoing reporting on the use of proceeds. Additionally, the market for green and sustainability bonds is still relatively small, with only a few projects funded through these instruments (CBI, 2020^[16]).

Additional challenges hindering the development of REIT markets include the high level of taxation imposed on the exchange of a real estate properties for REITs, double taxation on dividends, and potential ownership restrictions regulated by free float weight¹ (MLIT, 2022^[17]). Simplifying taxation and policies could, therefore, help promote further use of REITs in Southeast Asia.

The development of Malaysia's REIT market was steered by the introduction of guidelines. Following the success of REIT markets in Japan and Singapore, the Securities Commission Malaysia introduced guidelines on REITs to improve market liquidity and monitoring. Furthermore, the country implemented "Guidelines for Islamic REITs", paving the way for REITs to be aligned with Islamic finance principles (MLIT, 2022^[17]).

In Malaysia, where REITs are more prevalent, their full potential for financing green or sustainable projects, including buildings, does not seem to be fully leveraged. However, capitalising on real estate investment in green and sustainable urban projects is an emerging trend evident in developed financial markets.

4.2.3. Emerging opportunities and instruments for green financing

Malaysia has several opportunities to enhance sustainable urban development through innovative financing and policy measures. The introduction of tools like the Carbon Reduction and Environment Sustainability Tool (MyCREST) (Box 4.2) in 2016 has helped quantify carbon emissions and sustainable impacts on the built environment. This tool has been successfully applied in projects such as the Kementerian Kerja Raya Tower (KKR Tower) in Kuala Lumpur, which aims to reduce environmental impacts (Climate Bons Initiative, 2021^[18]).

Box 4.2. Building regulations in ASEAN – Malaysia

The Carbon Reduction and Environment Sustainability Tool (MyCREST) was introduced in 2016 as a comprehensive tool to quantify carbon emissions and sustainable impacts on the built environment. Focused on building design, construction, and operation, the tool has been successfully applied in practice. The construction of the Kementerian Kerja Raya Tower (KKR Tower) in Kuala Lumpur has been reported as one of the first projects to implement this tool set. This tool builds upon the experiences of Malaysia's Green Building Index (GBI), providing guidance for certifying green buildings. By the end of 2020, over 500 projects had been awarded GBI, covering a total gross floor area of 24.7 million square metres. In addition to GBI, Malaysia also adopted Green Real Estate (GreenRE) in 2013, under the leadership of the Real Estate and Housing Developers' Association. With the full support and recognition of the governmental bodies, GreenRE aims to drive the sustainability of the real estate industry in Malaysia. Certified projects by GreenRE are qualified for income tax allowances and incentives under the Green Tax Incentive Scheme. Green certifications such as GBI and GreenRE raise

awareness about environmental issues as a way of promoting green design and construction in the built environment and encouraging private buildings to comply with certain standards.

Source: Author's elaboration based (Climate Bonds Initiative, 2021^[7]). Green Infrastructure Investment Opportunities, Malaysia, GIIO Report. The viability of green bonds as a financing mechanism for green buildings in ASEAN; (Climate Bonds Initiative, 2020^[19]). Green Infrastructure Investment Opportunities Philippines. 2020 Report.

The Malaysian government's commitment to net-zero emissions by 2050 provides a significant opportunity to drive sustainability in urban development. Cascading the national net-zero commitment to sector-level actionable initiatives and guidance could drive sustainability in targeted sectors and guide investments in more sustainability-focused projects. Green Technology Financing Scheme in Malaysia helps energy-efficient and/or energy-performance contracting projects to secure financing. It focuses on the sectors beyond energy, including buildings, transport, waste and water and manufacturing, to drive the national net-zero strategy.

The National Low Carbon Cities Masterplan (NLCCM) was published in 2021 (KASA, 2021^[20]). Built on the legacy of the Low Carbon Cities Framework (LCCF) introduced by the National Government, NLCCM provides guidance for subnational governments and businesses on how to drive the transition to low-carbon cities. The Masterplan is structured around three areas: measurement, management, and mitigation of GHG emissions to reduce environmental impacts, with 33 local governments falling within its scope.

Additionally, foreign investors play a vital role in solidifying ASEAN's investor base. The Malaysian government introduced the Bond + Sukuk Information Exchange platform to share bond prices and credit information with potential investors, promoting market transparency and attracting foreign investment (Kitano, 2018^[21]). Streamlining policies and improving market accessibility could further enhance foreign investor participation, thereby driving more investments into sustainable urban projects.

4.3. The Philippines

4.3.1. Recent developments in funding sources and financing instruments

The Philippines has implemented various financing mechanisms to support sustainable urban development. One significant initiative is the Municipal Development Fund (MDF), established in 1984 as a way of providing Local consisting of grants and loans from international donors and financial institutions. Since 1998, MDF has been managed by the Municipal Development Fund Office (MDFO) in the Department of Finance. The objective is to harmonise disbursements for LGU funding, but also to allow the central government to monitor the use of international financing. MDF acts as an alternative infrastructure financing for LGUs that are unable to access private capital. In addition to project evaluations, MDFO provides technical assistance for LGUs to carry out projects in a financially sustainable way. In this way, MDFO improves the financial capacity and creditworthiness of LGUs, enabling them to directly access the private capital market. The Local Government Unit Guarantee Corporation (LGUGC) is another mechanism used for subnational lending. It was incorporated in 1998 as a private financial guarantee institution that provides financial guarantees to LGUs and other public and private entities in case of borrower defaults. On the basis of the provided guarantee, partner financial institutions provide loans or underwrite bond issuances. MDF and LGUGC are successful examples where the intermediary institutions enable LGUs and other entities to access financing for urban projects.

Furthermore, the utilisation of a USD 7.48 million loan from the World Bank's International Bank for Reconstruction and Development (IBRD) was channelled through the Development Bank of the Philippines

for the Urban Water and Sanitation Project. This project involved financing sustainable water and sanitation services and strengthening the institutional and technical capacities of LGUs (Box 4.3).

Box 4.3. A project co-ordinated by the national development bank with a government guarantee

Local Government Unit (LGU) Urban Water and Sanitation Project APL2 (2002-2008) in the Philippines

The project aimed to assist selected 40 LGUs to (i) provide sustainable water and sanitation services and (ii) strengthen their institutional and technical capacity for planning, budgeting, and financial management of local services. It contributed to improving water supply systems in LGUs, water utilities where the partnering private operators were selected, and to the physical infrastructure in household toilets, as well as on-site sanitation facilities including soakaway pits or the disposal of wastewater flows.

A USD 7.48 million loan from the World Bank's International Bank for Reconstruction and Development (IBRD) was channelled through the Development Bank of the Philippines. Following the selection of sub-projects (construction, rehabilitation and expansion of the water supply system, on-site sanitation facilities, and micro-drainage infrastructure) and participating entities (an LGU, a private operator or a financial institution), the aforementioned IBRD loan was sub-loaned to the participating entities. The loan from IBRD extended to DBP was guaranteed by the Government of the Philippines. In addition, DBP also contributed US\$ 0.97 million to the project by itself.

The project showcased the important role of the national development bank, which (i) channelled the international development fund and (ii) redistributed financing to the participating subnational governments.

Source: (World Bank, 2022^[22]). LGU Urban Water and Sanitation Project APL2.

Another example is grants to integrate local disaster risk reduction and planning for climate adaptation, including the development of infrastructure. Priority is given to the areas that have a strong presence of multiple climate-related hazards and high poverty incidence and that present key biodiversity challenges. Proponents of the fund are not only asked to provide suitable proposals but also an updated annual investment plan, as well as a local development plan considering climate risks. Despite the fund's difficulties in attracting enough proposals, by 2020, the fund had approved around USD 5.5 million worth of projects, benefiting six municipalities in the Philippines (Department of Finance, 2020^[23]).

4.3.2. Challenges in diversifying instruments and leveraging private investment

The Philippines faces several challenges in sustainable urban development financing. One major issue is the fragmented institutional co-ordination that hinders the implementation of sustainable urban development frameworks. Despite progress in renewing national spatial plans and frameworks, the lack of integrated climate action and land use regulations remains a significant barrier. The Philippines' experience with the National Housing and Land-use Regulatory Board highlights the difficulties in mainstreaming comprehensive land use and development plans due to decentralisation issues (UNESCAP, 2020^[24]).

The complex taxation and policy requirements for Real Estate Investment Trusts (REITs) also pose a challenge. However, in 2020, the Philippines revised its REIT Act to favour investors and corporations, thereby promoting increased investment in REITs and facilitating their establishment. The enforcement of the new act lowered the minimum public ownership to 33% from the previous 40% (with a requirement to increase to 67% within the initial 3 years upon listing). Additionally, property trusts gained access to tax incentives, including exemption from a 12% value-added tax for the transfer of properties to REITs (Ramintas, 2020^[25]).

However, the new act simultaneously raised a constraint, requiring all REITs to reinvest any proceeds from the sale of shares or other securities issued in exchange for income-generating real estate, in the Philippines. For this aim, REITs are now obliged to submit a reinvestment plan (Securities and Exchange Commission Philippines, 2020^[26]). This requirement reflects the SEC's goal to promote the development of the local capital market and nurture Filipino participation in the local real estate industry (Bar and Moises, 2020^[27]). While this requirement encourages local developers to found and manage REITs in the Filipino market, it stands as an obstacle to multinational REITs, who tend to make (re)investments in more than real estate markets. Following this new regulation, 5 REITs including Ayala Land, Inc, a subsidiary of Ayala Land, are publicly listed as of January 2022. In the case of Philippines highlight the potential role of tax incentives and alleviated regulation on public ownership to the development of local REIT markets.

4.3.3. Emerging opportunities and instruments for green financing

Despite these challenges, there are significant opportunities for sustainable urban development financing in the Philippines. The introduction of a series of new regulations for green buildings are in place. In 2009 a Building Energy Code (BEC) was introduced, followed by the Green Building Code adopted in 2015, both of which were formulated to reduce emissions through enhanced energy efficiency in building design and construction. Recognising the energy efficiency potential in this policy field, the Philippines Energy Efficiency and Conservation Roadmap (2017-2040) adopted in 2017 commits to reducing energy consumption in commercial buildings by 25% and in residential buildings by 20%, against a 2014 baseline, by 2040. The adoption of the Energy Efficiency Conservation Act swiftly followed in 2019, regulating energy-efficient technologies in buildings, and a new Standard for Climate Smart Buildings is currently under development (Climate Bonds Initiative, 2021^[7]).

Public-Private Partnerships (PPPs) offer another opportunity, with Executive Order No. 8 (2010) revitalising PPP initiatives and placing the PPP Centre at the forefront of the national development strategy. The PPP Centre co-ordinates and monitors all PPP projects in the country by enabling implementing agencies and managing the Project Development and Monitoring Facility (PDMF). It provides project advisory and facilitation services, and it monitors and empowers agencies through various capacity-building training programs. The Centre provides technical assistance to a number of institutions, including national government agencies, government-owned and controlled corporations, government financial institutions, state universities and colleges, and local government units (LGUs), to help them implement critical infrastructure and development projects. The Centre also works for advocating policy reforms to improve the legal and regulatory frameworks that govern PPP projects (Republic of the Philippines, 2022^[28]). The Centre, for instance, works with the Securities and Exchange Commission (SEC) on policy and process enhancements to facilitate the entry and participation of international institutional investors and pension funds in financing PPP Projects. The PPP Centre in the Philippines serves as an enabling hub, which oversees the pipeline of PPP projects and provides capacity-building for the stakeholder institutions.

The Philippines' PPP framework overview also highlights the need for better funding co-ordination across LGUs. An encompassing body for funds could help facilitate and allocate the necessary funds among LGUs for PPP projects that involve more than one LGU (OECD, 2016^[29]).

4.4. Thailand

4.4.1. Recent developments in funding sources and financing instruments

Thailand has made significant strides in leveraging various funding and financing mechanisms for sustainable urban development. The development of Thailand's REIT market suggests a potential lesson for such emerging REIT markets. The REIT market in Thailand dates back to the Property Fund for Public Offering (PFPO), which was introduced in 2002. PFPO was first listed in 2003 to invite investment into the

real estate industry, but due to its low global recognition and liquidity, it did not become a popular financial instrument. To overcome these challenges, Thailand introduced a new regulation on REITs, to encourage conversion from PFPO to REIT, which has higher market liquidity. Following the success of Singapore, Thailand provided preferential treatments related to value-added tax, income tax, transfer cost and registration fees to promote this newly introduced financial instrument. With these tax merits, Thailand's REIT market has grown to 25 listed REITs, in addition to 51 PFPOs as of October 2021.

Thailand has also seen successful issuances of sustainability bonds, further highlighting the facility's contribution to developing capital markets in the ASEAN region. Furthermore, pension funds, despite being a significant player in the financial markets of OECD countries (OECD, 2006^[30]), are not widely employed in Southeast Asia. However, the potential growth of pension funds in countries like Thailand is expected to provide larger and longer-term investments in the capital market, benefiting infrastructure sectors that require long-term finance.

4.4.2. Challenges in diversifying instruments and leveraging private investment

Despite these funding and financing mechanisms, Thailand faces several challenges in sustainable urban development finance. One significant hurdle is that it hasn't made good progress in renewing national spatial plans and frameworks towards sustainable urban development and in the enforcement of local land use planning and zoning regulations. Fragmented institutional co-ordination and the complexity of land use and ownership regulations across provinces create barriers to effective implementation. For example, in Thailand, each province has its own land regulations. Due to the lack of co-ordination between the central and municipal governments, as well as among municipal governments, the use of land and land ownership is complex. An option for ASEAN-5 countries could be to strengthen institutional co-ordination in the implementation of national spatial plans. Stronger alignment between national and local spatial planning is needed to ensure effective national spatial planning frameworks.

Another challenge is the public acceptance of new tax laws. The introduction of the New Land and Building Tax Act in January 2020. This Act replaces the regressive and outdated property tax law under the Household and Land Tax Act, B.E. 2475 (1932), the Local Land Development Tax Act, B.E. 2508 (1965), the Notification of the National Executive Council No. 156 of 1972, and the Royal Decree Designating the Medium Price of Land for Land Development Tax Assessment of 1986 (ASEAN, 2020^[31]). Residential properties, which were previously exempted from taxation, are now taxable assets under this new act (Charoenkitraj and Amonpiticharoen, 2019^[32]). However, due to long-abandoned regulations related to land and building taxation, many Thai taxpayers found the new property tax charges abrupt and unfamiliar. It might, therefore, take some time for the general public to accept LVC, which is based on a similar concept of charging land or properties for tax collection and greater public benefits. Consensus building among a wide range of stakeholders, public and private actors and communities is an important prerequisite for the success of LVC (Mabrurotunnisa and Aditya Iskandar, 2021^[33]).

Moreover, while the REIT market has been revitalised, its full potential for green or sustainable projects, including buildings, has yet to be fully leveraged. Simplifying taxation and policies related to REITs could help promote further use of these instruments for sustainable projects.

Not all sustainable projects can generate profits. Thus, private investment is limited to certain sectors. However, a lack of co-ordinated investment between the public and private sectors can create sub-optimal urban development outcomes. For example, in the county, private companies that lead public transport projects can only make investments directly linked to transport services. The decision-making power over the urban space surrounding stations (e.g., public spaces, parks, and parking lots) would increase the bankability of the overall transport project via increased ridership and user charges, in case of parking spaces. A similar challenge can be observed when real estate developers make investments in (bankable) housing development without providing sufficient (non-bankable) urban infrastructure to guarantee the quality of public services (e.g., parks, schools and hospitals) in such urban neighbourhoods.

4.4.3. Emerging opportunities and instruments for green financing

Thailand's commitment to net-zero emissions presents significant opportunities for driving sustainability in urban development. To address the challenges, presented in the case of private investment, two options can be considered. The first option is to encourage the private sector to provide additional investment (e.g., investment surrounding stations) by providing incentives. In some cases, a public authority provides its private counterpart with public assets, including the right to use public land for free or at a reduced cost. The concession of public facilities for refurbishment and/or operation for a defined period is an illustrative example. A reduced or suspended property tax on investment revenues is another commonly used practice (OECD, 2015^[34]). A second option could be to use developer levies, like the United Kingdom's Community Infrastructure Levy (CIL) (OECD/Lincoln Institute of Land Policy, PKU-Lincoln Institute Center, 2022^[35]), to raise revenue to deliver co-ordinated infrastructure that supports the long-term sustainability of urban development, taking the wider urban spaces into consideration.

Cascading the national net-zero commitment to sector-level actionable initiatives could drive sustainability in targeted sectors and guide investments in more sustainability-focused projects. For example, the Green Technology Financing Scheme in Malaysia helps energy-efficient and/or energy-performance contracting projects to secure financing. It focuses on the sectors beyond energy, including buildings, transport, waste and water and manufacturing, to drive the national net-zero strategy. Thailand announced Bio-Circular Green Economic Model to drive the national 'green growth' strategy. However, the model has a limited focus on food and agriculture, health and medicine, energy, materials and biochemicals, and tourism and creative economy. This model has been more widely used in community-based businesses rather than in urban development.

Furthermore, the ACGF's efforts in improving project bankability and providing technical support demonstrate the role of public funds in catalysing private financing for green and sustainable urban projects. The successful issuance of sustainability bonds in Thailand underscores the potential of such innovative financing instruments to develop capital markets in the ASEAN region.

4.5. Viet Nam

4.5.1. Recent developments in funding sources and financing instruments

Among ASEAN-5 countries, Viet Nam relies heavily on international donor loans for urban development projects. Specifically, 50 (98%) out of 51 projects are financed by international donors. This can be due to the high ratio of large-scale urban development projects across several municipalities and water, wastewater, and waste management projects. In addition, the development of Viet Nam's domestic financial market has shown promise, with local banks beginning to offer long-term financing for infrastructure projects. This shift is part of the Vietnamese government's strategy to reduce dependency on foreign currency reserves and government guarantees.

In the early 2000s, infrastructure projects in Viet Nam were fully reliant on the governmental guarantees of convertibility and repatriation. However, the practice was modified over time. In line with the Vietnamese government's interest in reducing obligations derived from governmental guarantees and protecting its foreign currency reserves, the government introduced new regulations to lower the foreign currency convertibility rate and enforce stricter criteria for receiving government guarantees. Amidst this emerging distress on investors, the Vietnamese domestic financial market has continued to grow, with a few domestic banks showing interest in providing long-term finance for infrastructure projects. The market development of Viet Nam implies that the development of local banking and capital markets is the ultimate solution to address potential currency mismatches associated with long-term urban development projects (World Bank, 2019^[36]). Governmental guarantees, a conventional approach to mitigate the future FX risk

associated with long-term urban projects, are accompanied by surging concern over enlarging contingent government liabilities and decreasing foreign currency reserves. In the long run, nurturing the domestic capital market and encouraging investors to provide LCY financing is the ultimate solution to avoid future currency mismatches.

4.5.2. Challenges in diversifying instruments and leveraging private investment

Urban development projects in Viet Nam face several significant challenges. One major issue is the lack of systematic mechanisms and criteria for prioritising urban projects, which hampers co-ordination of financial plans at the subnational level. Additionally, the complex and often ambiguous legal and regulatory framework for land management presents substantial hurdles. For example, in Viet Nam, land use is governed by various laws and regulations from different sectors, including the Ministry of Natural Resources and Environment (MONRE) and the Ministry of Construction (MOC) (Box 4.4).

Box 4.4. Viet Nam's complex land management system

In Viet Nam, land usage is determined by the multiple requirements and regulations of plans from different sectors: the Land Use Plans under the responsibility of Ministry of Natural Resources and the Environment (MONRE), the spatial plans of the Ministry of Construction (MOC), and of plans under a large number of other sectoral laws such as the Housing Law, the Law on Real Estate Business, the Investment Law, the Law of Residence, the Law of Enterprise, and the Law of Commerce. This variety of laws, regulations, plans, and institutions reveals a key limitation of the land policy framework: its lack of co-ordination and consistency. Not only are the institutions divided at the subnational level into departments and branches at the provincial and city levels, but more importantly, land and land use planning issues are regulated by multiple plans administered by entirely different agencies.

These different agencies approach land from their own policy perspectives and follow different schedules and processes. They use different definitions, classifications, and projections for decision-making, often resulting in contradictory or incoherent requirements for land use. For instance, the land use plans of MONRE and construction plans of the MOC define urban land differently and employ inconsistent classifications of land that are informed by distinct criteria. The Land Law lists different land use purposes, classifying it between agricultural, non-agricultural, and non-used land, while the Law on Urban Planning is concerned with “urban planning land” – it distinguishes civil, non-civil, and other lands, with uses classified as residential, public, commercial, service, and industrial. These classifications and plans serve as a basis for land use transfer, transaction, and leasing, and yet their relationship is not specified. This complexity and ambiguity lead to delays in project development, as actors cannot decide which one takes precedence, or how to harmonise both classifications. It also creates a serious administrative burden for city officials who operationalise land use changes, building ownership and land use certificates (BOLUCs) and land use rights certifications (LURCs).

Such complexities also lead to informal developments that undercut efforts to make rational sense of the system. Following the formal procedures, development projects must wait for, and comply with, a series of land use plans at different scales and from different institutions. Under intense development pressure, many projects eventually go ahead without waiting for the finalisation of all relevant plans. Furthermore, the complexity and opaqueness of the current system opens the door to corruption, with informal gifts or payments being requested for the granting of BOLUCs, LURCs, and other construction-related permits.

Source: Author's elaboration based on (OECD, 2018^[37]).

4.5.3. Emerging opportunities and instruments for green financing

Despite the challenges, there are significant opportunities for improving sustainable urban development in Viet Nam. Simplifying the permit and approval system, introducing a "one-stop" service for development and building permits, and enforcing standard processing times for different types of permits could make the approval process more efficient. Strengthening inspections and enforcement to ensure that permitted developments are completed as planned, as well as enhancing the capacity of developers and contractors through better construction licenses, technical and financial audits, and performance guarantees, could also reduce project risks.

Additionally, emerging Real Estate Investment Trust (REIT) markets in Viet Nam have the potential to follow successful international models by implementing regulatory amendments that address market and taxation complexities.

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Note

¹ A percentage of the listed shares available for trading in the market.

Annex A. Project background

Why focus on financing the sustainable cities in the Southeast Asia?

The growing needs for quality infrastructure investment in cities

Urbanisation is globally recognised as a megatrend transforming cities' socio-economic landscape. Cities are already home to half the world's population and continue to attract people. By 2050, the global population living in cities is projected to reach 5 billion people, growing from 3.5 billion in 2015 (OECD/European Commission, 2020^[1]). This urban growth presents opportunities and challenges, highlighting the need for quality urban infrastructure to promote well-being and economic prosperity and mitigate agglomeration costs such as traffic congestion, overcrowded public transport, and environmental issues (G20/OECD, 2023^[2]).

Massive investment in infrastructure will be needed to accommodate this growth, particularly given the necessity to adapt existing and new infrastructure to climate change and benefit from the digital transition. The global investment needed to support this growth is estimated at USD 94 trillion between 2016 and 2040. Additionally, the International Finance Corporation (IFC) has estimated that cities in emerging markets will need USD 29.4 trillion in cumulative climate investment between 2018 and 2030 to mitigate and adapt to climate change effectively (IFC, 2018^[3]). These figures reflect the magnitude of financing required to ensure cities not only grow but do so sustainably and resiliently in the face of future challenges.

This need for substantial investment is underscored by the benefits of high-quality urbanisation, which offers not only economic prosperity and improved well-being for urban residents, but also helps to address (or at least mitigate) significant agglomeration costs that cities face, such as traffic congestion, crowded public transport, unaffordable housing, and pollution (air, noise, and water), as well as biodiversity loss and disaster risk exposure (OECD, 2015^[4]).

The need for investment in sustainable urban development is particularly evident in countries that have experienced fast and strong economic, demographic, and urban growth, such as Southeast Asia. Southeast Asia has represented one of the most dynamic areas in the world in the last decades, showing high growth patterns in population and Gross Domestic Product (GDP). At the same time, keeping up with the pace of urban infrastructure investment and public service provision with urbanisation has been a major challenge, causing multi-faceted problems, including power outages, chronic traffic congestion, low of quality of life, and air and water pollution. These problems, in turn, have made cities in Southeast Asia particularly vulnerable to “extreme” events, amplifying the risks and the impacts of natural disasters. Urbanisation will not stop in the coming decades; urban areas are expected to grow in the ASEAN region by 90 million inhabitants by 2030 (ASEAN Smart Cities Network, 2018^[5]).

Call for diversifying financing instruments and leveraging private investment

Traditionally, infrastructure investments—including those for sustainable urban development—have been financed with public funds such as taxes, subsidies, and grants (OECD, 2015^[6]), and these spending decisions have often been made by subnational governments. In 33 OECD and EU countries, subnational governments accounted for 69% of total climate-significant public expenditure (0.4% of GDP). This confirms that subnational governments are key investors in climate-related sectors and infrastructure

(OECD, 2022^[7]). However, public deficits and budgetary constraints imposed by COVID-19 and the ongoing global uncertainties may put the resources for such investments at risk. The capacity of governments to finance quality infrastructure investments, already strained before COVID-19, has become even more challenged by monetary policy tightening in key markets and fiscal policy issues worldwide. In response to this need, there has been a call for more innovative financing mechanisms and investment models involving the private sector.

In addition, while there is a strong demand from the private sector for urban development (e.g., housing, offices), these developments may not always consider urban sustainability sufficiently. Guiding the private sector to make their developments more equitable and sustainable will require effective policy frameworks and planning. The good news is that sustainable finance has become a leading investment approach for investors seeking to pursue diverse investment options (Patalano, 2020^[8]).

The ecosystem of actors and various approaches to financing sustainable urban development

Diverse actors in the landscape of financing sustainable urban development

Financing sustainable urban development involves multiple levels of government, other public sector actors, including multilateral and domestic financial institutions, and various private actors:

- National governments establish strategic orientations and frameworks to guide urban development and infrastructure investment. They can also directly fund, finance, and provide urban infrastructure, as well as stimulate investment from other sources.
- City governments are often responsible for essential city infrastructure such as public buildings, community spaces, and public transit. They are pivotal in providing local urban services and identifying long-term investment needs for quality urban infrastructure. They can leverage their influence over urban development strategies, local land use planning, and development controls to optimise the use of urban assets and reduce investment costs. Additionally, cities can engage early with key stakeholders, including potential investors, to renew urban plans and stimulate future infrastructure investments. Effective local and urban policies are important for addressing urban infrastructure challenges and enabling the use of appropriate financing mechanisms by city governments. Effective urban governance and planning are also important for shaping clear visions and strategies that guide urban investments towards sustainable long-term development.
- Multilateral institutions, such as multilateral development banks (MDBs), are key financing actors in many emerging markets and developing economies. They can support subnational governments directly through loans, technical assistance, capacity building, and credit enhancement instruments (e.g., guarantees). Indirect support for subnational government investment can come through MDB loans to national development banks or other financial institutions, which lend to subnational governments and other actors investing in urban infrastructure.
- The private sector plays a crucial role by investing directly in urban infrastructure, such as private buildings, or participating in public-private infrastructure projects.

Effective co-ordination across government levels, jurisdictions, and sectors is essential, given the multiple actors involved in providing urban infrastructure (G20-OECD, 2022^[9]; OECD, 2014^[10]). Vertical co-ordination across levels of government enhances the efficiency and effectiveness of infrastructure investments. It helps align planning and implementation actions, ensure investments achieve their intended benefits, identify shared investment opportunities, manage joint responsibilities, and minimise contradictory investments. Vertical co-ordination mechanisms can include city deals or contracts, regional or local development strategies, platforms for inter-governmental dialogue, and dedicated regional development agencies. Horizontal co-ordination between jurisdictions is also vital, as many infrastructure

investments span multiple jurisdictions. Such co-ordination ensures that investments harness economies of scale, promote efficiencies, and enhance policy synergies. Inter-municipal cooperation is particularly important in urban agglomerations involving neighbouring local authorities. Financial and non-financial incentives and agreements between jurisdictions, such as inter-municipal co-operation arrangements (common in France), can encourage cross-jurisdiction co-ordination.

Co-ordination across sectors is also necessary to adopt a place-based approach that maximises the long-term benefits of infrastructure investment. This involves identifying and co-ordinating the timing of different investments needed for high-quality urban development, such as the use of general budget resources utilities or roads and private investments in buildings. Engaging private sector and civil society stakeholders in the design and implementation of development strategies could support this process.

Various approaches to financing sustainable urban development

Innovative financing and funding mechanisms for cities could potentially bridge these gaps. Insufficient financing often limits cities' ability to deliver the necessary infrastructure for development.

General budget resources are a cornerstone of urban infrastructure development, accounting for a significant portion of total investment in cities worldwide. Subnational governments, including municipal and regional authorities, are responsible for approximately 60% of general budget resources in G20 countries and 40% globally (G20-OECD, 2022^[9]). This investment is critical for providing essential services such as transportation, water supply, waste management, and public housing. However, general budget resources alone are often insufficient to meet the growing infrastructure demands of rapidly urbanising areas. Recent economic shocks and tightening monetary policies have further strained governments' capacity to finance these projects. Therefore, effective co-ordination across various levels of government and innovative public financing mechanisms are necessary to ensure that public funds are utilised efficiently and sustainably, to address immediate and long-term urban infrastructure needs.

Subnational governments can better attract investment by maintaining a balanced mix of revenues, such as grants, taxes, and user charges (OECD, 2019^[11]). Borrowing by subnational governments is generally deemed appropriate, provided the fiscal risks inherent to subnational governments can be managed (IMF, 2020^[12]). Subnational borrowing helps meet investment needs and can enhance accountability, strengthen financial management practices, and improve overall capacity. User charges and fees can provide an equitable revenue source to fund infrastructure, provided low-income users' accessibility is considered. These charges create a direct link between beneficiaries and payment; for many types of infrastructure, it is appropriate for beneficiaries to bear the costs (OECD, 2021^[13]). However, efforts should be made to align 'willingness and ability to pay' with 'willingness and ability to offer services'.

Private investment can help supplement public funds and bridging the infrastructure financing gap in cities. By attracting private capital, cities can leverage additional resources to finance large-scale infrastructure projects vital for economic growth and urban development. Cities can collaborate with higher levels of government to create incentives for private investors to finance urban infrastructure and other urban assets. Engaging early with potential investors and stakeholders allows cities to develop robust urban plans that align with market opportunities, stimulating future infrastructure investments.

Both funding and financing are necessary for supporting urban infrastructure investment. Financing is necessary to spread the substantial upfront capital costs of infrastructure over time and bridge the gap between the timing of construction payments and future revenues. Adequate and predictable funding sources are essential for covering operational expenses, including maintenance, and for repaying financing. Insufficient funding often presents a significant barrier to investment for subnational governments, as it restricts access to finance. Indeed, the availability of sufficient and reliable funding sources is a key factor considered by credit rating agencies when assessing a subnational government's creditworthiness (G20-OECD, 2022^[9]).

Definitions of key terms

Cities and urban areas

Where possible and unless otherwise specified, this report uses the Degree of Urbanisation for the statistical analysis of urban areas. This methodology identifies different types of settlements and allows for comparing settlement structures and trends across and within countries (OECD/European Commission, 2020^[14]) (Box A A.1). According to the Degree of Urbanisation, cities are defined as high-density places with at least 50 000 inhabitants, and there are 731 cities in ASEAN-5 countries.

Box A A.1. Internationally harmonised definitions of cities

The Degree of Urbanisation is a harmonised method to allow for international statistical comparisons on urbanisation, to complement the definitions used by national statistical offices. It was developed by the European Union, the OECD, the World Bank and several United Nations agencies. It uses population size and built-up areas estimated at global coverage with a high degree of detail, i.e., a grid with cells of 1 km² (European Commission - Joint Research Centre, 2019^[15]), and applies thresholds both to population size and density to identify three main spatial types:

- Cities (or densely populated areas, or ‘urban centres’) have a population of at least 50 000 and are made up of contiguous grid cells that have a density of at least 1 500 inhabitants per km² or are at least 50% built up.
- Towns, suburban and peri-urban areas (or intermediate density areas) have a total population of at least 5 000 and are made up of contiguous grid cells that have a density of at least 300 inhabitants per km² and are at least 3% built up.
- Rural areas and villages (or thinly populated areas) are cells that do not belong to a city or to a town or semi-dense area.

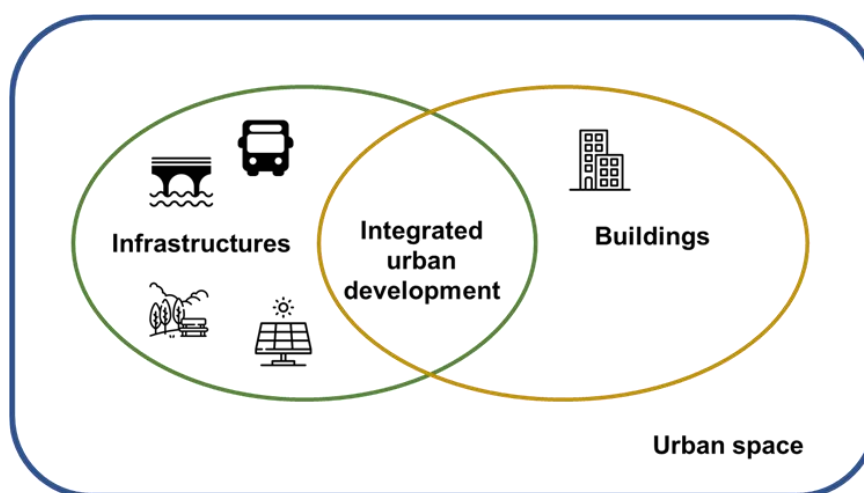
Source : (European Commission - Joint Research Centre, 2019^[15]) Global Human Settlement Layer; (UN-HABITAT, 2022^[16]) World Cities Report 2022; (OECD/European Commission, 2020^[11]) Cities in the World: A New Perspective on Urbanisation. OECD Publishing, Paris.

Urban development

In this report, the term “urban development” refers to a man-made process that introduces changes to urban space (or built-up areas¹⁴). It includes the development of buildings (e.g., houses, offices, factories), which account for the majority of urban assets, and infrastructure in urban space (Figure A A.1).

Urban infrastructure is commonly understood as any physical asset or system that helps the city function, such as urban transport, energy, water and green spaces. It is often developed and maintained by the public sector, while private investment can also complement the public sector through public-private partnerships (PPP).

Figure A A.1. Components of urban development



Source: Author's elaboration

“Sustainable” urban development projects

Sustainable urban development is related to the process that creates a built environment with norms, institutions and governance systems that enable individuals, households and societies to maximise their potential and optimise a vast range of services. It requires that cities and towns are planned, built, renewed, and consolidated while restraining adverse impacts on the environment and safeguarding the quality of life, needs and livelihood of its present and future populations (UN, 2015^[17]). The United Nations New Urban Agenda put forward a strong call for action to accelerate sustainable urban development through different transformative commitments focusing on social inclusion and environmental sustainability (UN-Habitat, 2017^[18]).

This report focuses on the projects that help advance environmental protection and social inclusion in cities. It draws on two of the OECD Principles on Urban Policy (OECD, 2019^[19]) that underline key aspects of sustainable urban development. Principle 5 recommends “leveraging the potential of cities of all sizes for advancing environmental quality and the transition to a low-carbon economy”, while Principle 6 advocates for “promoting inclusive cities that provide opportunities for all by improving access for all urban residents and users”.

Sustainable urban development projects can also help advance urban green growth – which is defined as fostering economic growth and development through urban activities that reduce negative environmental externalities and the impact on natural resources and environmental services (OECD, 2013^[20]).

In sum, sustainable urban development projects identified in this research aim to:

- Promote efforts to reduce or limit GHG emissions or enhance GHG sequestration can help stabilise GHG concentrations in the atmosphere (OECD, 2016^[21]).
- Reduce the vulnerability of human or natural systems to the current and expected impacts of climate change by maintaining or increasing resilience, increasing the ability to adapt to or absorb climate change stresses, shocks, and variability, and/or helping reduce exposure to them (OECD, 2016^[21]).
- Protect, restore, and sustainably manage areas important for biodiversity and ecosystem services (e.g., ecologically sensitive and/or biologically rich); maintain and strengthen ecological connectivity; promote large contiguous areas of nature; identify areas and integrate plans for nature restoration; and promote biodiversity-rich green spaces (OECD, 2021^[22]).

- Improve access for all urban residents and users—regardless of their gender, age, ethnic background, or health status—to drive social inclusion, such as local public services, affordable quality housing, urban transport, education, health, employment and economic opportunities, cultural heritage and amenities, leisure, and safe public spaces (OECD, 2019^[19]).

Following the above-mentioned focus, the sustainable urban development projects analysed in this report are categorised into the following four groups:

- **Buildings** refer to “green (sustainable) building” projects whose design, construction, or operation reduces negative environmental impacts and generates benefits for the climate and the natural environment. A sustainable building is a building that maximises energy efficiency, characterised by low energy consumption, good indoor environmental quality, low carbon emission, and efficient waste management, and is built with environmentally friendly materials (Sin, Yusof and Osmadi, 2021^[23]). The scope of buildings ranges from residential and commercial buildings to public facilities (e.g., governmental buildings, hospitals, and schools) (World Green Building Council, n.d.^[24]). This research looks at buildings whose area is above 80 000 square metres certified by the following international standards and country-specific building rating systems (listed in the order of global certifications, other multi-country certifications, and domestic certifications):
 - International Finance Corporation’s Excellence in Design for Greater Efficiencies (EDGE)
 - WELL Building Standard (WELL)
 - Leadership in Energy and Environmental Design (LEED, USGBC)
 - Building Research Establishment Environmental Assessment Method (BREEAM, UK)
 - Deutsche Gesellschaft für Nachhaltiges Bauen e. V. (The DGNB, Germany)
 - Comprehensive Assessment System for Built Environment Efficiency (CASBEE, Japan)
 - Green Star (Australia)
 - Green Mark (Singapore)
 - GREENSHIP (Indonesia)
 - Green Building Index and Green Real Estate (GreenRE) (Malaysia)
 - Building for Ecologically Responsive Design Excellence (BERDE) (Philippine’s Green Building Council)
 - Thai’s Rating of Energy and Environmental Sustainability (TREES, Thailand)
 - LOTUS (Viet Nam)
- **Urban transport** refers to projects that contribute to reduced dependency on privately owned vehicles (cars and motorbikes), easing traffic congestion and curbing air pollution. This research investigates investments mainly related to mass rapid transit (e.g., metro, railways, tramways, bus rapid transit, including extensions and renewals), but also non-motorised urban transport (e.g., cycling infrastructure and walkability improvement).
- **Water, wastewater, and waste management** refer to projects related to improving water supply, wastewater management, and municipal waste management to improve the sanitation of urban dwellers. Water and sanitation projects include constructing, upgrading and optimising sanitation facilities, sewage and drainage systems (tanks, pipelines, pumping stations, and connections), wastewater treatment plants and landfills. It also includes waste management facilities (i.e., landfills built based on modern and efficient standards, sorting and composting plants) serving urban populations. Evidence shows that enhanced connectivity of appropriate water and waste treatment minimises the adverse effects on ecosystems and biodiversity that is caused by soil, air and water contamination (UNEP, 2017^[25]). Such improvements also reduce the risk of flooding and enhance urban resilience to disasters.

- **Integrated urban development** refers to large-scale urban renewal/development projects featuring one or more of the following elements: transit-oriented development (TOD), smart cities, neighbourhood improvement, nature-based solutions (i.e., green areas), brownfield re-development, mixed-used development and city-level disaster risk reduction initiatives (construction of embankments). This also includes projects that provide co-location of utility services, reducing the need for construction, maintenance and operational costs. With a combination of several components – upgraded infrastructure, enhanced connectivity, and increased green space – projects positively impact biodiversity, climate mitigation through minimised air pollution, higher energy efficiency and use of renewable energy, and improved urban disaster resilience.

Funding sources and financing instruments

This report adopts the definitions of funding and financing as they are presented in the G20-OECD Policy Toolkit to Mobilise Funding and Financing for Inclusive and Quality Infrastructure Investment in Regions and Cities (Box A A.2). Funding and financing are interrelated but distinct concepts that are important to define in the discussion of infrastructure investment.

Box A A.2. Definitions of funding and financing

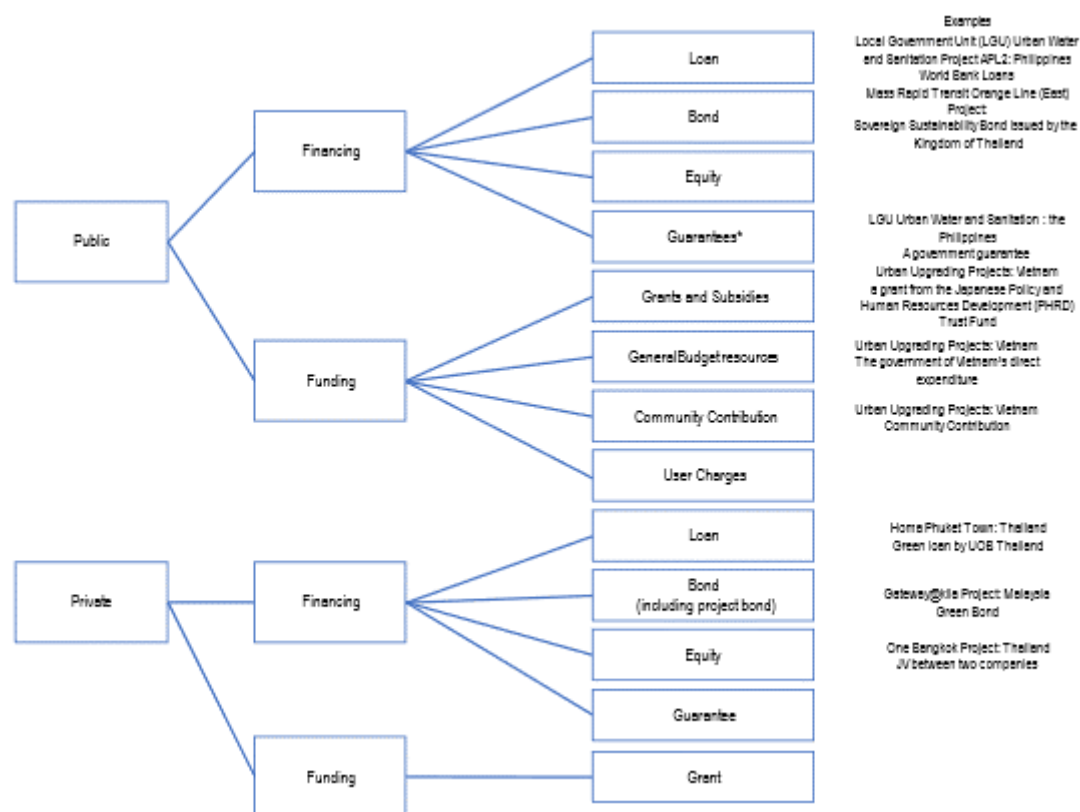
Funding refers to the money ultimately used to pay for an investment. It may come through various consolidated subnational government revenue sources (i.e., grants and subsidies, taxes, various user charges and fees, reserves, property income, etc.) or from a specific user-charge paid by a user to a public or private infrastructure operator (e.g., under a concession agreement). While funding is not required to pay up-front investment costs, it is always required to pay for operations, maintenance, and the repayment of financing.

Financing refers to money from private or public financiers used to pay some or all of the up-front investment costs, which comes with an obligation for future repayment. In most countries, financing for subnational governments is only permitted to cover investment needs (e.g., capital expenditure) and cannot be used to cover current expenditure (e.g., operating costs). Financing may be debt (loans, bonds) or equity, particularly in the case of a Public Private Partnership. Financing is repaid from funding sources.

Source: (G20-OECD, 2022^[9]). G20-OECD Policy Toolkit to Mobilise Funding and Financing for Inclusive and Quality Infrastructure Investment in Regions and Cities. OECD Publishing, Paris.

To illustrate funding sources and financial instruments this report further separates them into the categories of public and private (Figure A A.2) and offers some important definitions below:

Figure A A.2. Taxonomy of funding sources and financing instruments and vehicles for sustainable urban development



Note: *Guarantees are not a direct source of finance, but rather a financial instrument that de-risks financing from other sources via credit enhancement or credit substitution.

Source: Author's elaboration based on (OECD, 2022^[26]). G20-OECD Policy Toolkit to Mobilise Funding and Financing for Inclusive and Quality Infrastructure Investment in Regions and Cities.

Funding:

- **Grants and subsidies:** transfers from upper levels of government (national and regional), international organisations and, in some cases, philanthropy.
- **General budget resources:** governmental spending on infrastructure using their own budgets. This research classifies the governmental spending that does not specify its financial sources, either from subsidies, grants, and taxes among others, as general budget resources.
- **Community contribution:** cash or material contribution (such as land) from the intended beneficiaries of urban projects, provided that communities are well-informed and engaged in the project development. It can help subnational governments raise funds for local community infrastructure projects.
- **User charges:** fees collected by public entities (e.g., governments, local authorities) from individuals or organisations in exchange for access to infrastructure. These charges are a mechanism to directly fund the costs of providing public services.

Financing:

- **Loan:** refers to borrowing that is given to a borrower in exchange for the repayment of loan principal and interest, including those from multilateral development banks (MDBs), bilateral Official Development Assistance (ODA) (international development banks) and private financial institutions (private banks). This can include concessional and non-concessional loans from MDBs and bilateral ODA.
- **Bond** (including Sukuk¹): refers to borrowing from investors in the capital market given to a borrower (i.e., issuer). Issuers can be sovereign governments, subnational governments and private enterprises that finance their projects and operations or refinance existing projects. Green bonds, climate bonds and other similar instruments are structurally akin to normal vanilla bonds, but through the labelling and adherence to relevant standards, provide a signalling function for investors in search of investment opportunities with sustainability features.
- **Equity:** refers to capital-at-risk that is provided in return for an ownership share of an asset or entity. Investors can make equity investments via Private Equity (including infrastructure funds), REIT, SPV, Foreign Direct Investment or Joint Ventures.
- **Guarantees:** Although not a direct source of 'finance', these financial instruments provide credit enhancement or credit substitution for debt instruments, helping to improve the credit worthiness of subnational government debt for investors.

Sustainable finance and investment

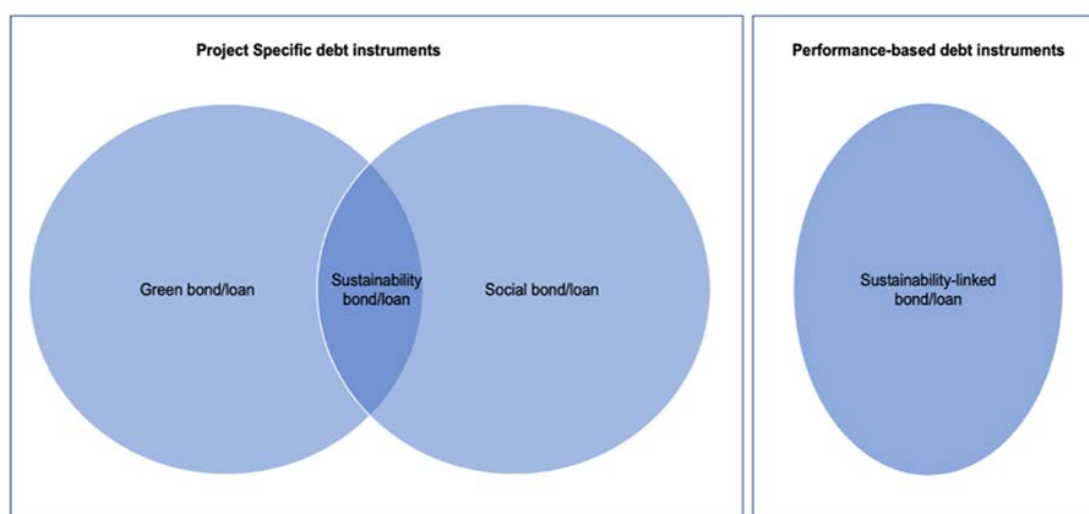
Sustainable finance is generally referred to as the process of considering environmental, social and governance factors when making investment decisions, which in turn leads to increased longer-term investments into sustainable economic activities and projects (OECD, 2022^[27]). Environmental factors might include climate change mitigation and adaptation, biodiversity, pollution prevention and the circular economy. Social factors could refer to issues such as inequality, inclusiveness, labour relations and human capital. Governance factors could include public and private institutional management structure, employee relations and executive remuneration (European Commission, n.d.^[28]). Investors have become aware of the significance of climate change to their portfolios, referring to such risks by investing in ESG-focused projects. Investors are increasingly pressured to consider ESG elements in their financial investments. Sustainable investments have successfully disincentivised the high carbon-emission projects (World Bank, 2021^[29]).

Sustainable investing has evolved to become a leading investment approach for investors seeking to make positive impacts through their investments. Yet, there is little clarity on what ESG investing is in concept or practice, and a range of objectives, approaches and metrics that are all loosely associated with the term ESG raises attention to the integrity of the investment process (OECD, 2022^[27]) (Figure A A.3).

- Green bonds/loans raise capital and invest in new and existing projects with environmental benefits. The Green Bond Principles encourage the financing of environmentally sound and sustainable projects that foster a net-zero economy and protect the environment. Examples of the eligible projects include renewable energy, pollution prevention and control, ecosystem restoration, environmentally sustainable management of living natural resources and land use, clean transportation, sustainable water and wastewater management, climate change adaptation and green buildings (ICMA, 2018^[30]; ICMA, 2021^[31]).
- Social bonds/loans raise funds for new and existing projects with positive social outcomes. The target projects include, but are not limited to, affordable basic infrastructure, access to essential services, affordable housing, job creation, food security and sustainable food systems, and socioeconomic advancement and empowerment (APLMA and LSTA, 2021^[32]; ICMA, 2021^[33]).

- Sustainability/GSS bonds (green, social and sustainability bonds) are a hybrid of the aforementioned green and social bonds, whose proceeds will be used for both green and social project (LMA, APLMA and LSTA, 2022^[34]; ICMA, 2021^[33]). Unlike GSS bonds whose proceeds are allocated to specific projects, sustainability-linked bonds/loans are performance-based instruments.
- Sustainability-linked instruments are linked to the issuers' sustainability objectives within a predefined timeline (ICMA, 2020^[35]). They can also be used as working capital or short-term financing to achieve the issuers' organisational sustainability objective (LMA, APLMA and LSTA, 2022^[34]; Deloitte, 2022^[36]).

Figure A A.3. Mapping of green financing instruments



Source: Author's elaboration

Analysis of urban development projects

The findings presented in this report are supported by analysis of 129 sustainable urban development projects in the ASEAN-5 countries: Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam. These projects encompass both public and private initiatives, spanning the four categories defined in the previous section: (i) integrated urban development, (ii) urban transport, (iii) water, wastewater and waste management, and (iv) buildings. The analysis focused on understanding the funding and financing mechanisms used in these projects and identifying legal and institutional obstacles that hinder the flow of private investment into sustainable urban development.

The 129 projects were identified through desk-based research. Primary sources include project databases from international organisations and initiatives (Table A A.1), while secondary sources include several individual resources from national and local institutions and project websites (Annex B). All resources consulted in this research are publicly available online.

Table A A.1. Primary sources used to develop the list of sustainable urban development projects.

Name of database	Organisation	Type of data used	Additional details
Climate Change: DAC External Development Finance Statistics	OECD	Recipient/Provider-based development finance data	Track development finance with recipients, providers, funding agency, financing amount and project descriptions.
Sovereign Project Database	Asian Development Bank	ADB-involved projects in low- and middle-income countries	Provide project summaries, progresses, sources of fund, financing amount (estimates and actual if available), project-related documents and news releases.
Private Participation in Infrastructure Database	World Bank	Information on infrastructure projects with private participation in low- and middle-income countries	Track contractual arrangements, sources and destination of investment flows and information on the main investors.
Project & Operations ("What we do")	World Bank	World Bank-involved projects in low- and middle-income countries	Provide project summaries, progresses, sources of fund, financing amount (estimates and actual if available), project-related documents and news releases.
Sustainable Bonds Database	International Capital Market Association (ICMA)	A list of sustainable bonds issuance (green, sustainable and social) database	Track issuers, bond categories and jurisdictions.
Certified Bonds Database	Climate Bonds Initiative	A list of certified bonds and loans by Climate Bond Initiative	Track issuers, issuance date, size, tenor, jurisdictions, verifiers, and sector criteria.
Project Database	U.S. Green Building Council	A database of projects certified with LEED rating system.	Track buildings certified with any LEED certification including location, project size and type of certification.

Source: Author's elaboration

Projects were selected for inclusion per the following criteria:

- Location: this report focuses on the ASEAN-5 countries (Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam), which have relatively developed yet fast-growing economies compared to the other ASEAN countries (bar Singapore, which was excluded from the scope of this report given its status as a 'high-income' country, characterised by a developed financial market).
- "Hard" or "physical infrastructure" projects, rather than projects dedicated to capacity and institutional development (e.g., staff training, roadmap development, etc.).
- Timeframe: this report focuses on "planned", "under construction", and "completed" projects within a 20-year period (2002-2022).
- Availability of information: the list only includes projects whose cost, adopted financial instruments, and types were publicly available. The project list is also limited to projects with a financial commitment already in place within the defined period.

For each selected sustainable urban development project, the following information was collected and summarised in the project list (Annex C) featuring the main characteristics of the projects:

- Project name
- Project categories: referring to the sector (i.e., buildings; urban transport; water, wastewater and waste management; and integrated urban development)
- Location
- Leading entity
- Project status (planned, ongoing or completed)
- Timeframe (from project initiation to the actual/estimated completion)
- Source of investment (private, public or mixed)

- Funding and financing information
- Instruments (subsidy, grant, general budget resources, community contribution, loan, bond, equity and guarantee)
- Total project cost
- Project cost breakdown (if available)

It is important to note that, although efforts were made to identify a broad breadth of projects, the final project list analysed for this report, available in Annex C, is not representative of all sustainable urban development projects in the ASEAN-5 countries. Due to information availability constraints and reliance on sources from international organisations, such as the OECD, ADB, World Bank, ICMA and CBI, (Table A A.1), large-scale projects that have a component of international donor funding and financing are likely over-represented in the final project list. However, given the current dearth of information on the financing of sustainable urban development projects in Southeast Asia, the findings drawn from analysis of this project list are still valuable.

Analysis of institutional and legal frameworks

The analysis of this report also draws on desk research on institutional and legal frameworks shaping urban development in the region. Table A A.2 outlines major legal instruments, guidelines and initiatives studied in this report.

Table A A.2. Major legal instruments, guidelines and initiatives studied in this report

Country	Name	Type of Intervention	Geographical scale	Plans, strategies and initiatives	Link
<i>Improving public finance and other financial frameworks to enable private investment in sustainable urban development</i>					
Indonesia	Policy framework for PPP	Subsidies, guarantee, regulation	National	Policy framework, including improved PPP regulations for infrastructure, the provision of subsidies for PPPs, and credit enhancement for PPPs and SOEs in the form of sovereign guarantees, gap viability funding, and availability payments, was introduced to support more participation from the private sector, with an increased focus on green finance.	Link
Indonesia	Sustainable Finance Roadmaps	Guidance	National	The Sustainable Finance Roadmaps (Phase I, 2015 – 2019 and Phase II, 2021 – 2025) incorporate plans for the development of a complete market ecosystem for sustainable finance and co-ordination of appropriate taxonomies with other institutions.	Link
The Philippines	Public-Private Partnership (PPP) Center	Capacity building	Local	Public-Private Partnership (PPP) Center of the Philippines intensified its technical assistance in the development and implementation of climate change-resilient PPP projects, particularly at the local and regional levels outside Metro Manila. Supported by ADB's Urban Climate Change Resilience Trust Fund (UCCRTF), the PPP Center helps assist the capacities of local implementing agencies (IAs) to prepare and identify projects that can be considered as green.	Link
The Philippines	Resolution 2018-12-02 on Safeguards in PPP	Guidance	National	PPP Governing Board (PPPGb) passed a resolution in 2018 that aims to integrate environmental and other safeguards into the entire PPP project cycle. Such integration can serve as a robust benchmark for the Philippines' effort in accelerating the development of green infrastructure projects. In the future, the Philippines could potentially use a sectoral approach to identify how different infrastructure sectors contribute to reducing GHG emission and to further align the growth of green projects with its national climate targets.	Link
<i>Removing barriers and providing incentives to broaden the range of funding sources and financing instruments for sustainable urban development</i>					
Malaysia	Green SRI Sukuk Grant	Tax exemption	National	The Green Sustainable and Responsible Investment (SRI) Sukuk Grant Scheme was introduced in 2018. It represents a case of	Link

	Scheme			incentive structures that provide tax exemption benefits for green sukuk issuers. The scheme expanded its scope in 2021 to cover all Sukuk or bonds.	
Indonesia	Measures to promote private investment	Deregulation	National	The government furthered simplified regulation and fiscal incentives to enable investments in urban projects. Changes include streamlining approval and procurement procedures for infrastructure projects; removing the withholding tax on interest payments in foreign-currency denominated government bonds; opening up direct lending from multilateral organisations to SOEs; as well as the creation of the Investment Coordinating Board of Indonesia (BKPM), a centralised service, responsible for issuing more simplified foreign investment licences, and the government's non-budget financing scheme (PINA), a scheme that encourages private involvement in infrastructure development.	Link
Indonesia	Sustainable Finance (No. 51/POJK. 03/2017)	guidance	National	Sustainable Finance was applied in 2017 to enforce financial services agencies, issuers and public companies to provide the funding to achieve sustainable development goals and ensure adequate financing for the efforts to address climate change. It also requires targeted entities to prepare sustainable finance action plans and ensure that they have adequate environmental and social management policies and processes in place.	Link
Strengthening urban planning and legal systems to leverage private investment for sustainable urban development					
ASEAN countries	ASEAN Taxonomy	New guidance	Cross-border	The version 1 of ASEAN Taxonomy was released in November 2021. It stipulates a list of focus sectors: agriculture, forestry and fishing; electricity, gas, steam and air conditioning supply; manufacturing; transportation and storage; water supply, sewerage and waste management; and construction and real estate. It also incorporates sector-specific guidance for the member countries and entities, positioning itself as a benchmark to guide capital and funding for more sustainable societal transformation.	Link
ASEAN countries	Asian Bond Market Initiative (ABMI)	New guidance New policy Capacity-building	Cross-border	Asian Bond Market Initiative (ABMI) was launched in 2002, under the collaborative leadership of ASEAN, the People's Republic of China, Japan and the Republic of Korea. The initiative aims to develop local currency bond markets, which in turn would enable ASEAN economies to mobilise domestic savings to finance their long-term investment needs and vulnerability to the sudden reversal of capital flows.	Link
Indonesia	Governor Regulation No.38 on Green Buildings	Regulation	Provincial / Local (Jakarta)	In 2012, Provincial Government of DKI Jakarta has issued Governor Regulation No.38 concerning Green Buildings. It serves as a reference for the implementing apparatus and building owners in meeting the requirements of green building construction. New buildings must meet green building requirements.	Link
Indonesia	Presidential Decree No. 59/2017	Plan	National	The Decree commits to launch National Action Plan to achieve Sustainable Development Goals (NAP SDGs), a comprehensive and integrated development plan developed in a collaboration between governmental and non-governmental stakeholders. It also mandates the establishment of a National Coordinating Team (NCT) to take part in the implementation of SDGs.	Link
Malaysia	Green Building Index (GBI)	Certification	National	Pertubuhan Akitek Malaysia (PAM) and the Association of Consulting Engineers Malaysia introduced Green Building Index (GBI) in 2009. It provides guidance for certifying green buildings based on six criteria, including Energy Efficiency, Indoor Environment Quality, Sustainable Site Planning and Management, Materials and Resources, Water Efficiency, and Innovation. As of the end of 2020, 563 projects have been awarded GBI, covering a total gross floor area of 24.7 million square metres.	Link
Malaysia	Penang Green Office Assessment Tool	Guidance	Local (Penang)	The Penang state government established the Penang Green Council in 2011, which then founded the Penang Green Office Assessment Tool. The tool focuses on the daily practices of the office buildings, namely, the purchase of office furniture & stationary, waste management and recycling, energy saving, water conservation, paper use, printer, photocopier, fax & cartridges, indoor air quality as well as employee and community engagement.	Link
Malaysia	Malaysia	Certification	National	Malaysia Carbon Reduction and Environment Sustainability Tool	Link

	Carbon Reduction and Environment Sustainability Tool (MyCREST)			(MyCREST) was introduced in 2016 to quantify carbon emissions and sustainable impacts on the built environment. It is considered to be the most comprehensive of all tools, as it takes into account both a criteria checklist and a carbon calculation. MyCREST is focused on buildings design, construction and operation and offers 4 rating tools: (i) New Construction, (ii) Existing Building, (iii) New Construction for Non-Air-Conditioned Buildings and (iv) New Construction (Healthcare). Kementerian Kerja Raya Tower (KKR Tower) is the first building to achieve a MyCREST rating of five.	
Malaysia	Low Carbon Cities Framework	Guidance	National	The Low Carbon Cities Framework (LCCF) was introduced by the then Ministry of Energy, Green Technology and Water in 2011. It provides guidance for local authorities, residents and businesses on how to transition their cities into low-carbon cities; and looks at addressing carbon emissions in four main areas: Urban Environment, Urban Infrastructure, Urban Transportation and Buildings. One of the pioneering and flagship green townships is the Federal Government Administrative Centre of Putrajaya. It is taking the lead with a goal to reduce its GHG emissions intensity by 60% by 2025 compared with 2012 levels, making the city cooler by two degrees Celcius.	Link
Malaysia	National Physical Plan	Plan	National	National Physical Plan was prepared and reviewed in every five years. The plan intends to translate the sectoral policies involving socio-economic development, conservation, climate change and resource management into spatial form; establish a spatial framework for planning at regional, state and local levels which serve as the main reference for any planning; provide physical planning plans for the implementation of sustainable development strategies; guide the actions of sectoral implementing agencies in supporting the national spatial framework; and identify programmes and key actions to further improve the spatial planning of the nation.	Link
The Philippines	National Urban Development and Housing Framework 2017-2022	Guidance	National	The newly developed "National Urban Development and Housing Framework 2017-2022" provides an overarching framework for urban development and housing, consisting of a vision, policy statements and strategies, and encompassing core development sectors and spatial elements. It intends to guide the national government, private sector and other stakeholders in improving the performance and efficiency of the country's urban systems.	Link
The Philippines	Green Building Code	Regulation	National	The Green Building Code (GB Code) was introduced by the government in 2015, aiming to reduce emissions through increasing energy efficiency in building design, construction, land operation. It sets the minimum green standard related to energy efficiency, water and wastewater management, solid waste management, site sustainability, and indoor environmental quality. The scheme is consistent with existing international green building certification entities.	Link
The Philippines	Standards for Climate Smart Buildings	Certification	National	Standards for Climate Smart Buildings is currently under development. The developing standards are intended to integrate green designs and climate resilience with the end goal of providing support and recommendation to national government agencies on appropriate standards for implementation.	Link
The Philippines	National Urban Development and Housing Framework 2017-2022	Policy	National	This newly developed national framework provides an overarching framework for urban development and housing, consisting of a vision, policy statements and strategies, and encompassing core development sectors and spatial elements. It intends to guide the national government, private sector and other stakeholders in improving the performance and efficiency of the country's urban systems.	Link
The Philippines	Philippines Energy Efficiency and Conservation Roadmap	Guideline; regulation	National	The Philippines Energy Efficiency and Conservation Roadmap (2017 - 2040) provides a trajectory for the Philippines to achieve its energy efficiency goal by 2040. The Philippines commits to reduce energy consumption in commercial buildings by 25% and in residential buildings by 20%, against a 2014 baseline, by 2040. One of the key outcomes of the roadmap was the passing of the Energy Efficiency Conservation Act, which was signed into law on 12 April 2019, aiming to standardise energy efficiency and conservation measures by regulating energy efficient technologies in buildings.	Link

The Philippines	Ecological Solid Waste Management Act No. 9003	Law	National	Ecological Solid Waste Management Act No. 9003 of 2000 makes provision for the efficient solid waste management, for the volume reduction of the waste, its environment friendly disposal, composting, recycling, re-use, recovery, green charcoal process. It also concerns the protection of groundwater from pollution. The act promotes the national research and development programs for improved solid waste management and resource conservation techniques.	Link
Thailand	Building Energy Code	Regulation	National	The Building Energy Code (BEC) was introduced in 2009 as a ministerial regulation under the 1992 Act. BEC sets the minimum energy efficiency standards for new and renovated buildings.	Link
Thailand	Green Bangkok 2030	Guidance	Local (Bangkok)	The Green Bangkok 2030 project was launched at the end of 2019, as the national commitment to the GHG reduction by 20-30% by 2030. The project aims to increase the number of sustainable, quality green spaces across Bangkok, targeting 1) increase the ratio of green space in the city; 2) trees covering 30% of a city's total area; and 3) ensuring footpaths meet international standards.	Link
Viet Nam	LOTUS	Guidance	National	LOTUS, a voluntary green building rating system, provides a holistic assessment of environmental performance over the life cycle of buildings. It provides an integrated approach for evaluating buildings in terms of energy consumption, water use and waste management, as well as indoor environmental quality. The key areas of performance include: Energy, Water, Materials & Resources, Health & Comfort, Site & Environment, Project Management, Exceptional Performance.	Link
Viet Nam	National Strategy on Green Growth for 2021 – 2030	Guidance	National	Following the previous strategy for 2014 – 2020, the National Strategy on Green Growth for 2021 – 2030 was approved, aiming to accomplish green growth, contributing to the restructuring of the economy in conjunction with renewing the growth model. It is to achieve economic prosperity, environmental sustainability and social equality; strive towards a green and carbon neutral economy; contribute to the realisation of the goal to reduce global warming. The green growth is imagined through the development of investment guidelines and methodologies for prioritising investment opportunities and mobilising public & private finance into green economic recovery projects.	Link

Source: Author's elaboration based on desk research and interviews.

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Note

¹ Sukuk is an Islamic variation of a bond. An issuer will procure the funding by selling a certificate. Following Islamic finance principles, instead of paying interests, an issuer buys back the bond at a future date.

Annex B. Individual resources consulted to build the list of sustainable urban development projects

Table A B.1. Individual resources consulted to build the list of sustainable urban development projects

Name of Database	Organisation/Countries	Type of data used
Indonesia Water and Sanitation Hibah: Independent review	Australian Government	Australian Government-funded project in Indonesia
Promoting Bus Rapid Transit Systems in Indonesian Cities (INDOBUS)	German Agency for International Cooperation (GIZ)	Germany-funded project in Indonesia
Our Investments	Japan Overseas Infrastructure Investment Corporation for Urban transport & Urban Development (JOIN)	Overseas projects in which JOIN (partially) invested
Millions against Rubbish	Kreditanstalt für Wiederaufbau (KfW: German development bank)	Germany-funded project in Indonesia
Vietnam: A New Metro Line Paves the Way to a Greener City	Agence Française de Développement (AFD: French development agency)	France-funded project in Viet Nam
The First Subway in Indonesia Starts Operation: Opening Ceremony for Jakarta Mass Rapid Transit (the Jakarta MRT South-North Line)	Japan International Cooperation Agency (JICA)	Japan-funded project in Indonesia
Project Evaluation (Second HCMC Water Environment Improvement Project (IV)) (In Japanese)	Japan International Cooperation Agency (JICA)	Bilateral donor-funded projects in low- and middle-income countries
Project Evaluation (Ho Chi Minh City Water Environment Improvement Project) (In Japanese)	Japan International Cooperation Agency (JICA)	Bilateral donor-funded projects in low- and middle-income countries
JBIC Signs Japanese ODA Loan Agreement for New Project in Thailand	Japan International Cooperation Agency (JICA)	Bilateral donor-funded projects in low- and middle-income countries
Feasibility Assessment: Da Nang Bus Rapid Transit	Ministry of Economy, Trade and Industry of Japan	Project's feasibility assessment in Da Nang, Viet Nam
DMAS Achieved Rp995 Billion Marketing Sales in the First Semester of 2022	Kota Deltamas	The leading company information of the Kota Deltamas Smart City
PNB Merdeka Ventures an Early Adopter of ASEAN Green SRI Sukuk	PNB Merdeka Ventures SDN, Berhad	Press release on Green Sukuk issued to finance the project in Malaysia
Sunway City Kuala Lumpur	Sunway Property	The company-led project information
About us	Segi Astana SDN Berhad	The leading company and project information of Gateway@klia 2 in Malaysia
Project introductions	MRT Corp, Malaysia	The company-led project information
MRT Project	Mass Rapid Transit Authority of Thailand	The company-led project information
Project List	UEM Sunrise Berhad	The company-led list of projects
KL's Future-Ready Central Business District	TRX CITY SDN Berhad	The company-led project information
Zuellig Building	SOM	The company-led project information
East Coast Rail Link (ECRL)	China Communications Construction Company Sdn Berhad	The company-constructed project information

New Clark City	Republic of the Philippines Bases Conversion and Development Authority	The Authority-led project in the Philippines
List of Projects	Republic of the Philippines Public-Private Partnership (PPP) Center	PPP infrastructure projects in the Philippines
About Arthaland	Arthaland	The leading company information of green buildings in the Philippines
Green Bond	BTS Group	The project leading company's Green bond framework
One Bangkok, Thailand's Largest Fully Integrated District, Unveils Masterplan	One Bangkok	The company-led project information
Management's Discussion and Analysis (MD&A) Quarterly Financial Results: 2 Q22	Central Pattana	The company's financial information of 2 nd quarter, 2022
History of Metro Rail Transit 3	Metro Rail Transit 3	The project leading company's initiatives
Hanoi Smart City Project (In Japanese)	Sumitomo Corporation	The company-led project information in Viet Nam
Official Breaking Ground and Announcement Ceremony for the Smart City Project in the North of Hanoi	BRG Group	The company-led project information in Viet Nam
Hanoi Metro Line 2A, Vietnam	China Railway Group Limited	The company-constructed project information
The Green Bangkok 2030 Project	C40 Cities	Project summary
The Greening of Bangkok	United Nations Climate Change	Project summary
Order Received from the Philippines for Rehabilitation and Maintenance of Manila MRT-3	Mitsubishi Heavy Industries	The company-led project information in the Philippines
Findings on smart city needs in developing countries and possible participation of Japanese municipalities and private enterprises (In Japanese)	Nomura Research Institute	List of smart city projects in ASEAN countries
Understanding infrastructure opportunities in ASEAN Infrastructure Series Report 1	PwC Singapore	Summaries of smart city & infrastructure projects in ASEAN (planned & under construction)
Giant Sea Wall Jakarta: National Capital Integrated Coastal Development (NCICD)	Indonesia – Investments	News article on the project summary in Indonesia
BSI channels IDR 693.83 billion for Makassar-Parepare railway	IDN Financials	News article on the project summary in Indonesia
Tower Developer Upbeat Despite Slow Demand in Jakarta's CBD	Jakarta Globe	News article on the project summary in Indonesia
Cebu Exchange set to welcome more occupants	Cebu Daily News	News article on the project summary in the Philippines
BMA invites all sectors to push forward Green Bangkok 2030 Project	Bangkok Post	News reports on the project summary in Thailand
Khon Kaen a 'model' smart city	Bangkok Post	News reports on the project summary in Thailand
Yellow and Pink lines to begin trial runs this year	Bangkok Post	News reports on the project summary in Thailand
MRTA readies bidding for Purple Line extension	Bangkok Post	News reports on the project summary in Thailand
Construction of QSNCC on course despite lockdown	Bangkok Post	News reports on the project summary in Thailand
MoF to raise up to RM50b to fund MRT	The Edge Markets	News reports on the project summary in Malaysia
UOB Thailand Extends Green Loan to ACRE for Eco-Friendly Residential Development in Phuket	Bloomberg UK	News reports on the project summary in Thailand
Hanoi Metro 2022 construction update	Future Southeast Asia	News reports on the project summary in Viet Nam
Malaysia's MRT3 project to become fully operational by 2030	Railway Technology	News reports on the railways, with a global scope
Manila Light Rail Transit Line 1 (LRT-1) Cavite Extension	Railway Technology	News reports on the railways, with a global scope
MRTA Pink Line, Bangkok	Railway Technology	News reports on the railways, with a global scope
Bangkok Mass Rapid Transit-Purple Line	Railway Technology	News reports on the railways, with a global scope
Dusit Central Park's breath-taking Roof Park to help create a cleaner, greener Bangkok	Hospitality Net	News reports on the hospitality industry.

Manila Water inks JV deals for Lambunao, Calbayog districts	Business World	News reports on Southeast Asia's business
MRT Jakarta (North – South Corridor)	Komite Percepatan Penyediaan Infrastruktur Prioritas (KPPIP)	Collected priority infrastructure projects in Indonesia
Dusit Thani Starts Selling Luxury Bangkok Residential Project To Singapore Buyers Amid Hotel Losses	Forbes	News reports on Southeast Asia's business
Nishimatsu Construction to start hotel development in Bangkok, with Okura Nikko Hotel Management for the amount of JPY 24 billion (In Japanese)	Nikkei Newspaper	News reports on the project where Japanese companies are involved

Annex C. List of sustainable urban development projects sampled

Note category acronyms: BLD = buildings, IUD = Integrated Urban Development, UT = Urban Transport, WWWW = Water, Wastewater, Waste Management

Table A C.1. List of sustainable urban development projects sampled

#	Project	Category	Location	Leading Entity	Timeframe	Public / Private	Funding / Financing	Instrument(s)	Total Project Cost	Project Cost Breakdown
Indonesia										
1	Bali Urban Infrastructure Project	IUD	Bali	Central government	1997 - 2004	Public	Financing	Loan	USD 104.7m	IBRD: USD 72.1m
2	Emission Reduction in Cities Solid Waste Management	WWWM	Jambi	Ministry of Public Works and Housing	2021 - 2023	Public	Financing	Loan	EUR 75m	EUR 75m from KfW
3			Jombang							
4			Sidoarjo							
5			Malang							
6	Indonesia Mass Transit Project	UT	North Sumatra	Central government	2022 - 2027	Mixed	Mixed	Loan Equity Public capital expenditure	USD 364m	IBRD: USD 224m Agence française de développement (AFD): USD 40m Indonesian government: USD 50m Private Sector Equity: USD 50m
7			Bandung							
8			West Java							
9			Medan							
10	Indonesian Bus Rapid Transit Corridor Development Project (INDOBUS)	UT	Batam	Ministry of Transportation	2016 - 2022	Public	Funding	Grant	EUR 21m	SECO: EUR 7m Department for Business, Energy & Industrial Strategy (UK): EUR 14m
11			Bandung							
12			Semarang							
13			Makassar							
14			Pekanbaru							
15	Jakarta Mass Rapid Transit	UT	Jakarta	Ministry of	2006 - 2019	Public	Financing	Loan	JPY 151b	Japanese ODA in full

	North-South Line Project		Central Business District	Transportation, Directorate General of Railways						
16	Jakarta Urgent Flood Mitigation Project	WWWM	Jakarta	The Republic of Indonesia	2012 - 2019	Public	Mixed	Loan Public capital expenditure	USD 189.8m	IBRD: USD 139.64m The Indonesia Government: USD 50.2m
17	Metropolitan Sanitation Management and Health	WWWM	Kota Yogyakarta (province of Yogyakarta) including neighboring Kabupaten Sleman and Kabupaten Bantul	The Republic of Indonesia	2010 - 2020 (revised but not yet completed)	Public	Mixed	Loan Public capital expenditure	USD 69.28m	ADB (Ordinary Capital Resources): USD 35m The Indonesian Government: USD 34.28m
18			Kota Medan (province of North Sumatra)							
19	Mix-ed use urban development project in Bumi Serpong Damai (BSD) Smart City	IUD	Bumi Serpong Damai City (25 km from Central Jakarta)	Mitbana Pte. Ltd. Joint Venture between Mitsubishi Corporation of Japan (50%) and Surbana Jurong in Singapore (50%)	2017 -	Private	Financing	Equity	JPY 200b	
20	MRT Jakarta (North – South Corridor)	UT	Jakarta	Jakarta City Government	2013-2019	Public	Funding	Public capital expenditure	IDR 39.5t	
21	Pacific Century Place	BLD	Jakarta		Information not available	Information not available	Information not available	Information not available	Information not available	
22	Palembang City Sewerage Project (PCSP)/Waste Water Treatment Plant (WWTP)	WWWM	City of Palembang	Central government	2017 -	Public	Funding	Grant Public capital expenditure	AU\$ 108.85m	The Australian ODA: AU\$ 45m (USD 31.3m) the Indonesian Government: AU\$ 32.8m (USD 22.8m)

										the City of Palembang: AU\$ 31.05m (USD 21.6m)
23	Sequis Tower	BLD	Jakarta	PT Farpoint Realty	2017 - 2019	Private	Information not available	Information not available	IDR 2.5t	
24	The National Capital Integrated Coastal Development	IUD	Jakarta	Central government	2015 - 2018	Public	Information not available	Information not available	USD 40b	Seeking Private participation in addition to the national/local governmental budgets (details undecided)
25	Urban Development The Plaza Indonesia Complex and fX Sudirman shopping mall	IUD	Jakarta Central Business District	PT Plaza Indonesia Realty Tbk Indonesian-based property developer	2019 -	Private	Financing	Equity	JPY 8.4b	JPY 8.4b by Japanese consortium, from Hankyu Hanshin Property Co., Ltd. and JOIN Other equity investment from Bumi Serpong Damai, Indonesian Paradise Property
26	Urban Water Supply and Sanitation	WWWM	Muara Enim	Central government	2009 - 2014	Public	Mixed	Loan Public capital expenditure	USD 29.27m	IBRD: USD 20.49m The Indonesia Government: USD 8.78m
27			Kuala Kapuas							
28			Kota Bogor							
29	Water and Sanitation Hibah – Phase 2	WWWM	124 district governments (Water Hibah) and 4 district governments (Sanitation Hibah)	SMEC—a managing contractor—in partnership with the Indonesian Ministry of National Development and Planning (Bappenas), Ministry of Public Works and Housing and Ministry of Finance	2012 - 2019	Mixed	Financing	Loan	USD 95m	The Australian ODA: USD 85m USAID: USD 10m
Malaysia										
30	Iskandar Malaysia Bus Rapid Transit (IMBRT)	UT	Johor Bahru	Iskandar Regional Development Authority (IRDA)	2021 - 2023	Public	Information not available	Information not available	MYR 2.56b	Public Private Partnership Malaysia Government: MYR 1b

31	KAJANG LINE	UT	Kuala Lumpur Kwasa Damansara to Kajang	Mass Rapid Transit Corporation Sdn Bhd (MRT Corp), a state-owned company	2012 - 2017	Public	Financing	Bond Guarantee	MYR 21b	
32	MediniSmart City, Iskandar	IUD	Johor Bahru	Iskandar Regional Development Authority (IRDA)	2007 - 2025	Mixed	Financing	Equity	USD 28.8b	Public Private Partnership between IRDA and Medini Iskandar Malaysia Sdn Bhd - a joint venture among Jasmine Acres Sdn Bhd (60%), United World Infrastructure (20%) and Mitsui & Co Ltd (20%)
33	MRT Circle Line 3 Project	UT	Kuala Lumpur	Mass Rapid Transit Corporation Sdn Bhd (MRT Corp), a state-owned company	2023 -	Public	Financing	Bond Guarantee	USD 9.4b	
34	MRT Putrajaya Line Project	UT	Kuala Lumpur	Mass Rapid Transit Corporation Sdn Bhd (MRT Corp), a state-owned company	2016 - 2023	Public	Financing	Bond Guarantee	MYR 30.53b	
35	the Kota Kinabalu Composting Project for Malaysia	WWWM	Kota Kinabalu	MS Smart Recycling Sdn Bhd.	2008 - 2016	Public	Financing	Loan	USD 9.2m	World Bank managed Carbon Fund for Europe Carbon Finance
Philippines										
36	CEBU - Bus Rapid Transit Project	UT	Metro Cebu	Ministry of Transport and Communications Cebu City Government	2015 - 2023	Public	Mixed	Loan Public capital expenditure	USD 228.50m	IBRD: USD 116m Clean Technology Fund: USD 25m The Philippine Government: USD 87.5m
37	Cebu Exchange	BLD	Cebu	Arthaland Corp. Philippine-based real estate developer	2018 - 2022	Private	Financing	Bond	PHP 8b	
38	Dagupa W2W waste-to-energy project	WWWM	Dagupan	Local Government of	2021- 2046	Private	Information not	Information not available	USD 11 million	

				Dagupan City Private proponent: Sure Global W2W1 PTE, Ltd			available			
39	Epifanio de los Santos Avenue Greenways Project	UT	the Balintawak, Cubao, Guadalupe, and Taft mass transit stations, along Epifanio de los Santos Avenue (EDSA)	Department of Transportation	2020 - 2023	Public	Mixed	Loan Public capital expenditure	USD 179.3m	ADB (Ordinary Capital Resources): USD 123m the Philippine Government: USD 41.3m ASEAN Catalytic Green Finance Facility: USD 15m
40	IRI Philippines, Inc. solid waste recycling and reclamation facility	WWWM	Calamba City	IRI Philippines, Inc	Information not available	Private	Information not available	Information not available	USD 7m	
41	Joint Venture Agreement for the Lambunao Water District Joint Venture Project	WWWM	Lambunao	Lambunao Water District (LWD) Private proponent	2019-2054	Mixed	Information not available	Information not available	PHP 78.98m	
42	Joint Venture Project on Bulk Water Supply (JV1) 170 MLD Bulk Water Supply Project	WWWM	Metro Iloilo	Metro Iloilo Water District (MIWD) Private proponent: MetroPac Water Investments Corporation (MWIC)	2016-2041	Private	Financing	Equity	PHP 2.8b	
43	LGU Urban Water and Sanitation	WWWM	10 municipalities	DEVELOPMENT BANK OF THE PHILIPPINES (DBP) a state-owned development bank	1999 - 2003	Public	Mixed	Loan Public capital expenditure Guarantee	USD 8.81m	IBRD (loan): USD 4.75m The Development Bank of Philippines: USD 1.01m guarantee from the Government of the Philippines
44	LGU Urban Water and	WWWM	40 Local	DEVELOPMENT	2002 - 2008	Public	Mixed	Loan	USD 8.45m	IBRD: USD 7.48m

	Sanitation Project APL2		Government Unit outside of Metro Manila	BANK OF THE PHILIPPINES (DBP) a state-owned development bank				Public capital expenditure Guarantee		DBP: USD 0.97m guarantee from the Government of the Philippines
45	LRT Line 1 Cavite Extension Operation & Maintenance	UT	Metro Manila	Department of Transportation (DOTr) Light Rail Transit Authority	2017-2022	Mixed	Financing	Loan Equity	PHP 64.915b	Japanese ODA: PHP 25.35b Private Sector Investment: PHP 39.565 b
46	Manila Third Sewerage Project	WWWM	Metro Manila	LAND BANK OF THE PHILIPPINES (LBP) a government-owned bank in the Philippines	2005 - 2012	Public	Mixed	Loan Public capital expenditure Guarantee	USD 51.9m	IBRD (loan): USD 40.56m LBP, the borrower: USD10.48m guarantee from the Government of the Philippines
47	Metro Manila BRT Line 1 Project	UT	Metro Manila	Department of Transportation	2017 - 2023	Public	Mixed	Loan Public capital expenditure	USD 109.4m	World Bank: USD 40.7m Clean Technology Fund: USD 23.9m The Philippine Government: USD 44.8m
48	Metro Manila Flood Management Project	WWWM	Metro Manila	Central government	2018 - 2024	Public	Mixed	Loan Public capital expenditure	USD 500m	IBRD: USD 207.6m AIIB: USD 207.6m the Philippine Government: USD 84.79m
49	MRT Line 3 renewal project	UT	Manila	Department of Transportation	2018 - 2025	Public	Financing	Loan	JPY 35.5b	Japanese ODA in full
50	MRT Line 3 renewal project (initial construction)	UT	Manila	Department of Transportation	Information not available	Public	Information not available	Information not available	USD 655m	
51	MRT Line 7 Manila	UT	Metro Manila	Department of Transportation	Information not available	Public	Information not available	Information not available	PHP 77b	
52	New Clark (Smart) City Development	IUD	New Clark City 120 km Northwest of Manila	Bases Conversion and Development Authority (BCDA)	Phase 1 2016 - 2022 Whole project is expected to	Mixed	Financing	Equity	USD 14b	BCDA, JOIN, Subarna Jurong, Alloy MTD, Filinvest, China Gezhouba, JV among Meralco, Marubeni, BCDA, JV between Prime Water Infrastructure & Tahal Group and NLEX Corporation

					complete in min. 30 years					
53	South Commuter Railway Project	UT	Laguna Province around 50 km south of Manila	Department of Transportation	2022 - 2028	Public	Mixed	Loan Public capital expenditure	USD 8b	ADB: USD 4.3b JICA: USD 1.697b The Philippine Government: USD 2.1b
54	South Integrated Transport System (ITS) Project (Taguig Integrated Terminal Exchange)	IUD	Metro Manila	Department of Transportation	2022-2057	Public	Information not available	Information not available	PHP 5.2b	
55	Tagum Water District Bulk Water Supply Project (Bulk Water Sales and Purchase Agreement Project)	WWWM	Tagum	Tagum Water District Private proponent: Davao Del Norte Water Infrastructure Company, Inc.	2019-2034	Mixed	Information not available	Information not available	PHP 527.00m	
Thailand										
56	AIA Capital Center - Bangkok	BLD	Bangkok	AIA Group	2011-2014	Private	Information not available	Information not available	THB 10.3b	
57	Amata Smart City	IUD	Chonburi	Amata Corporation	2017 - 2022	Private	Information not available	Information not available	THB 40.6b	Information not available
58	Chonburi Clean Energy Plant (CCE), 2019428	WWWM	Eastern Economic Corridor (EEC) zone, Chonburi	SUEZ ^CCE	2019	Private	Financing	Equity	USD 59.3m	
59	Construction of the CLS Dam Project and wastewater collection system at Saen Saeb Cana	WWWM	Bangkok	Bangkok Metropolitan Administration	2022-2026	Public	Funding	Public capital expenditure	THB1.8bn	
60	Dusit Central Park	IUD	Bangkok	Joint Venture by Dusit Thani, its developer subsidiary Vimarn Suriya	2020 - 2024	Private	Financing	Equity	THB 46b	Dusit Thani: 70% Central Pattana: 30%

				Company Limited and Central Pattana						
61	ENERGY COMPLEX	BLD	Bangkok	EnCo	Information not available	Private	Information not available	Information not available	Information not available	
62	G Tower Grand Rama 9	BLD	Huaykwang	Grand Canal	Information not available	Private	Information not available	Information not available	Information not available	
63	Green Bangkok 2030	IUD	Bangkok	Bangkok Metropolitan Administration	2019 - 2030	Public	Information not available	Information not available	Information not available	
64	Green Line Northern/Southern 2nd extension	UT	Bangkok	Bangkok Mass Transit System Public Company Limited, a core subsidiary of BTS Group, privately-owned conglomerate	2021- 2022	Private	Financing	Bond	THB 10.2b	
65	Khlong Toei Wastewater Treatment Facility	WWWM	Bangkok	Bangkok Metropolitan Administration	2020-2027	Public	Information not available	Information not available	USD 379m	
66	Khon Kaen Smart City	IUD	Khon Kaen	Ministry of Digital Economy and Society Ministry of Transport Ministry of Energy Khon Kaen provincial municipal Khon Kaen City Development Co., Ltd	2018 - 2029	Mixed	Information not available	Information not available	THB 69,893m	
67	Mass Rapid Transit Orange Line (East) Project	UT	Bangkok	MRT Corp - Under the Ministry of	2020-2024	Public	Financing	Bond	THB 30b	
68	Mass Rapid Transit Pink				2017 - 2022		Information	Information	THB 53.5b	ADB: THB 4.95b

	Line Project			Transportation - National Government			not available	not available		
69	Mass Rapid Transit Purple Line (North/South)				2009 - 2016		Financing	Loan	JPY 62,442m	Japan ODA
70	Mass Rapid Transit Purple Line Extensions				2022 - 2027		Information not available	Information not available	THB 78b	
71	Mass Rapid Transit Yellow Line Project				2018 - 2023		Information not available	Information not available	THB 49b	ADB: THB 4.95b
72	MedPark Hospital	BLD	Bangkok	TPP Healthcare International Co., Ltd	Information not available	Private	Information not available	Information not available	THB 7b	
73	One Bangkok	IUD	Bangkok	One Bangkok Co. JV between TCC Assets (Thailand, 80.1%) and Frasers Property Holdings (Thailand, 19.9%)	2018 - 2025	Private	Financing	Equity	THB 120b	
74	Phaholyothin Transportation Center project	IUD	Bangkok	The State Railway of Thailand	2017-ongoing	Public	Information not available	Information not available	THB 1.8b	
75	Rayong/Eastern Economic Corridor of Innovation (EECi) Smart City	IUD	Rayong	The National Science and Technology Development Agency (NSTDA) has partnered with state-run oil-and-gas firm PTT Public Company Limited	2016 - 2022	Public	Information not available	Information not available	THB 4.5b (Phase 1)	
76	Smart Nimman (Smart City)	IUD	Chiang Mai	Ministry of Digital Economy	2016 - 2022	Mixed	Information not	Information not available	THB 354m	

				and Society Ministry of Transport Ministry of Energy Chiang Mai Provincial Municipal Chiang Mai City Development Co., Ltd			available			
77	The Ratchaprasong Walk (R-Walk)	UT	Bangkok	The Ratchaprasong Square Trade Association (RSTA) and the Tourism Authority of Thailand (TAT)	2002 -	Mixed	Information not available	Information not available	THB 715m	
Viet Nam										
78	Can Tho Urban Development and Resilience	IUD	Can Tho	Central government	2016 - 2024	Public	Mixed	Loan Public capital expenditure	USD 402m	IDA: USD 125m IBRD: USD 125m Recipient-Executed Trust Fund from SECO: USD4m Central Government: USD 148m
79	Central Region Urban Environmental Improvement (6 Project Towns located in Viet Nam's Central region)	WWWM	Quang Ngai	Central government	2003 - 2012	Public	Mixed	Loan Public capital expenditure	USD 101.20m	Asian Development Fund: USD 40.4m AFD: USD 35.7m Central Government: USD 25.1m
80			Ha Tinh							
81			Dong Ha							
82			Tam Ky							
83			Thanh Hoa							
84			Lang Co							
85	Coastal Cities Environmental Sanitation Project	IUD	Quy Nhon	Central government	2006 - 2014	Public	Mixed	Loan Grants Public capital expenditure	USD 74.81m	IDA: USD 58.1m GEF: USD 4.3m PHRD: USD 1.3m Central Government: USD 11.1m
86			Dong Hoi						USD 73.71m	IDA: USD 59.63m PHRD: USD 1.4m Central Government: USD 12.7m

87			Nha Trang						USD 80.98	IDA: USD 67.8m PHRD: USD 1.6m Central Government: USD 11.5m
88	Da Nang Bus Rapid Transit	UT	Da Nang	Central government	2016 - 2021	Public	Mixed	Loan Public capital expenditure	USD 14.57m	IDA: USD 9.16m Central government: USD 5.41m
89	Drainage and Wastewater Improvement	WWWM	Da Nang	Central government	2016 - 2021	Public	Mixed	Loan Public capital expenditure	USD 107.47	IDA: USD 73.51m Central government: USD 33.96m
90	Dynamic Cities Integrated Development Project	IUD	Yen Bai (Yen Bai Province)	Central government	2019 - 2025	Public	Mixed	Loan Public capital expenditure	USD 63.27m	World Bank: USD39.46m Central Government: USD 23.81m
91			Tinh Gia (Thanh Hoa Province)						USD 78.96m	World Bank: USD53.29 Central Government: USD25.67m
92			Hai Duong (Hai Duong Province)						USD 78.87m	World Bank: USD 59.12m Central Government: USD 19.75m
93			Ky Anh (Ha Tinh Province)						USD 55.07m	World Bank: USD 42.49m Central Government: USD 12.58m
94	Dynamic City Integrated Development Project - Thai Nguyen	IUD	Thai Nguyen	Central government	2018 - 2023	Public	Mixed	Loan Public capital expenditure	USD 100m	IDA: USD 80m Central government: USD 20m
95	Hanoi Metro Line 2A	UT	Hanoi	The Hanoi Metropolitan Rail Transport Project Board, under the Hanoi People's Committee	2008 - 2021	Public	Financing	Loan	USD 0.8b	Chinese ODA
96	Hanoi Metro Railway System – Line 3	UT	Hanoi	Central government	2012 - 2023	Public	Mixed	Loan Public capital expenditure	USD 1,166m	Ordinary Capital Resources: USD 352m Asian Development Fund: USD 5.8m EIB: USD 95m AFD: USD 143m Direction générale du Trésor: USD 325m Central Government: USD 221.2m
97	Hanoi Smart City Project	IUD	North Hanoi	BRG - Sumitomo	2021 - 2028	Private	Financing	Equity	USD 4.2b	

98	Ho Chi Minh Bus Rapid Transit	UT	Ho Chi Minh	Central government	2015 - 2025	Public	Mixed	Loan Public capital expenditure	USD 137.45m	IDA: USD 124m Central Government: USD 13.45m
99	Ho Chi Minh City Environmental Sanitation (nhieu Loc-thi Nghe Basin) Project	WWWM	Ho Chi Minh City	Central government	2001 - 2012	Public	Mixed	Loan Public capital expenditure	USD 316m	IDA: USD 248m Central Government: USD 68m
100	Ho Chi Minh City Water Environment Improvement Project	WWWM	Ho Chi Minh City	Central government	2001 - 2010	Public	Financing	Loan	JPY 28,321m	Japanese ODA in full
101	Ho Chi Minh City's New Bus Rapid Transit Corridor	UT	Ho Chi Minh	Central government	2020 - 2025	Public	Financing	Loan	USD 10.5m	SECO in full
102	Medium Cities Development Project	IUD	Vinh	Central government	2011 - 2022	Public	Mixed	Loan Public capital expenditure	USD 101.94m	IDA: USD 95m Vinh City: USD 6.94m
103			Lao Cai						USD 92.65m	IDA: USD 84.5m Lao Cai City: USD 8.15m
104			Phu Ly						USD 90.41m	IDA: USD 83.5m Phu Ly City: USD 6.91m
105	Mekong Delta Urban Upgrading Project	IUD	Mekong Delta	Central government	2012 - 2018	Public	Financing	Loan	USD 229m	IDA in full
106	Second HCMC Environmental Sanitation Project	WWWM	Ho Chi Minh	Central government	2014 - 2024	Public	Mixed	Loan Public capital expenditure	USD 495m	IBRD: USD 250m IDA: USD 200m Ho Chi Minh City: USD 45m
107	Secondary Cities Development Project	IUD	Buon Ma Thuot	Central government	2013 - 2021	Public	Mixed	Loan Public capital expenditure	USD 111.73m	Asian Development Fund: USD 69.49 m Central Government: USD 42.24m
108	Secondary Green Cities Development Project	IUD	Ha Giang	Central government	2017 - 2024	Public	Mixed	Loan Grant Public capital expenditure	USD 223.87m	ADB: USD 170m GEF: USD 2m UCCRTF: USD 4m Municipal Funding: USD 47.87m (Ha Giang: USD9.14m, Thua Thien Hue: USD11.83m, Vinh Phuc: USD26.90m)
109			Thua Thien Hue							
110			Vinh Phuc							
111	Sustainable Urban Transport for Ho Chi Minh Mass Rapid Transit Line 2	UT	Ho Chi Minh City (Quan Ba, Quan Mot, Quan Muoi, Quan Muoi)	Central government	2014 - 2020	Public	Mixed	Loan Public capital expenditure	USD 65m	Asian Development Fund: USD 10m Clean Technology Fund: USD 48.95m Central Government: USD 6.05m

			Hai, Quan Tan Binh, Tan Phu)							
112	TechnoPark Tower	BLD	HA NOI	Vingroup	2021	Private	Information not available	Information not available	Information not available	
113	The Second Ho Chi Minh City Water Environment Improvement Project	WWWM	Ho Chi Minh	Central government	2006 - In phases	Public	Financing	Loan	JPY 47,845m	Japanese ODA in full
114	URBAN WATER SUPPLY AND WASTEWATER	WWWM	Binh Duong Province	Central government	2011 - 2019	Public	Mixed	Loan Public capital expenditure	USD356.68m	IDA: USD 310.2m IBRD: USD10m Central government: USD36.5m
115	Viet Nam Coastal Cities Sustainable Environment Project	IUD	Quang Binh PMU	Central government	2017 - 2022	Public	Mixed	Loan Public capital expenditure	USD 273.6m	IBRD: USD 46m IDA: USD 190.2m Central government: USD 37.40m
116			Khanh Hoa PMU							
117			Binh Dinh							
118			Ninh Thuan							
119	Viet Nam Scaling up Urban Upgrading Project	IUD	Vinh Long	Central government	2017-2023	Public	Mixed	Loan Public capital expenditure	USD 54.5m	IDA: USD 35m Central Government: USD 19.5m
120			Bac Lieu						USD 46.3m	IDA: USD 35m Central Government: USD 11.3m
121			Ben Tre						USD 46.0m	IDA: USD 35m Central Government: USD 11m
122			Soc Trang						USD 46.3m	IDA: USD 35m Central Government: USD 11.3m
123			Vi Thanh						USD 36.8m	IDA: USD 25m Central Government: USD 11.8m
124			Long Xuyen						USD 56.2m	IDA: USD 40m Central Government: USD 16.2m
125			Tan An						USD 43.9m	IDA: USD 35m Central Government: USD 8.9m
126	Viet Nam Urban Upgrading Project	IUD	Hai Phong	Central government	2004-2014	Public	Mixed	Loan Grant Public capital expenditure Community contribution	USD 509.3m	IDA: USD 353.7m PHRD: USD 3.8m Central government: USD 151.1m Community's contribution: USD 0.7m
127			Ho Chi Minh							
128			Can Tho							
129			Nam Dinh							

Financing Sustainable Cities in Southeast Asia

Diversifying Instruments and Leveraging Private investment

Countries around the world are rapidly urbanising. The global population living in cities has more than doubled over the last 40 years and is projected to reach 55% by 2050. Financing sustainable urban development has never been more important, but traditional funding and financing mechanisms are proving inadequate to meet growing demand. Drawing on the 2023 OECD-G20 report *Financing Cities of Tomorrow*, this report aims to improve understandings of how sustainable urban development is funded and financed in the rapidly urbanising ASEAN-5 countries of Southeast Asia (Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam). This report identifies ongoing challenges and emerging opportunities through analysis of 129 sustainable urban development projects (both public and private) across four sectors (integrated urban development; urban transport; water, wastewater and waste management; and buildings), and a desk-based review of institutional and legal frameworks. Key findings and future policy directions focus on (i) creating financial, regulatory, and institutional conditions to maximise private investment, (ii) diversifying funding sources and financing instruments, and (iii) refining and integrating planning and legal systems to guide private investment towards urban sustainability.



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