



Task Force 7
Infrastructure Investment and Financing

Policy brief

SUBNATIONAL GOVERNMENT INFRASTRUCTURE FINANCING FOR CARBON NEUTRALITY

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ABSTRACT

Infrastructure policies, investment and finance ought to be aligned to net-zero emission targets. Nationally Determined Contributions ought to be cascaded down to sub-national government (SNG) levels through (i) harmonising carbon neutral policy agenda backed by legal and regulatory framework; (ii) adopting a fiscal framework that integrates funding support for carbon vulnerabilities, and introduces a carbon and environmental tax with appropriate climate supportive inter-governmental revenue sharing; (iii) strengthening SNG debt capacities backed by enhanced debt sustainability frameworks, while facilitating deployment of sovereign debt restructured for SNGs climate projects and (iv) engaging global community and domestic financial markets to leverage financing for SNG low-carbon projects.



CHALLENGE

Climate change is not inevitable. Impacted by the COVID-19 economic slowdown, greenhouse gas emissions receded by -6.4 per cent in 2020. Maintaining this trajectory can turn the tide on global warming. One hundred ten countries have pledged carbon neutrality by 2050 to 2060: 50 per cent of global GDP is committed to this, representing half of global carbon emissions. Energy-related emissions account for 60–70 per cent, while the remaining 30–40 per cent comes from non-energy-related sources.

Carbon neutrality requires coordinated and synchronised actions across central and sub-national governments (SNGs) constituting provinces/states and cities/towns. Each government tier contributes about one third of carbon neutrality targets (Coalition for Urban Transitions, 2019). To achieve these targets, effective planning and right engineering design to build back better, leveraging private capital and expertise coupled with the right blend of sustainable investment and finance, is critical. Central governments are responsible for national policy, laws and regulation alongside principally nationwide power generation and transmission, inter-regional transport, etc. SNGs handle the bulk of urban infrastructure, construction, utilities, etc. that together contribute to high levels of emissions, and coordinate with national entities to ensure acceptance of national projects by local communities. SNGs of different jurisdictions, including those situated cross-border from different countries, also play important coordination roles for effective implementation of large national and regional infrastructure projects. Adapting local infrastructure and regulating industries towards a low-carbon economy underscores the need for harnessing domestic resource mobilisation. Although COVID-19 has allowed the world to see the potential trajectory toward carbon neutrality due to economic slowdown, its impact on SNGs' priorities, finance and operations is significant, which could hinder their ability to implement carbon-neutral policies. SNGs need to make sure that public-health-related issues are duly considered while pursuing carbon neutrality projects.

Implementation of carbon neutrality has been uneven at SNG levels. Compared to national timelines of carbon neutrality, major cities have announced their own accelerated timelines of carbon neutrality. In some countries the target of carbon neutrality has been cascaded down to the subnational level. Meanwhile, many SNGs in developing countries are treating climate targets as long-term commitments, but, in the near term, are focused on tackling short-term challenges or are busy pursuing business-as-usual practices.

Generally, most SNGs are unclear on how to act, what engineering and technological solutions to deploy, and how to measure their impact and ensure results. Globally, carbon neutrality requires \$50 trillion in investment by 2050 (Morgan Stanley, 2019). Requirements for climate-resilient infrastructure are beyond the financing strength of most developing countries as their own revenue and balance sheets are weak and they lack knowledge of new engineering designs. Some countries, which empower SNGs to raise financing, lack the subnational fiscal prudence and end up overleveraging their weak balance sheets and/or face defaults.



PROPOSAL

Subnational Fiscal Transfer Context: SNGs' investments in low-carbon and climate-resilient infrastructure offer high economic, financial and social dividends to local populations and investors. However, without a coordinated climate action programme and supportive thematic, fiscal and financing strategies, SNGs will remain incapable regarding design and execution of low-carbon pathways. Cooperation and commitment across the national government and SNGs could be fostered through an overarching climate policy, law and regulatory framework that lays out mandates, roles, responsibilities and accountabilities on climate action plans for all tiers of SNGs.

Just as provinces and states depend on federal transfers, cities and lower-level local governments depend on provinces to assign their mandates and revenue-sharing arrangements. Intergovernmental fiscal arrangements however are constitutionally mandated. Typically, political rigidities render it difficult to change the revenue-spending devolution. The economics of climate change calls for assigning due weightage in revenue transfers to the cost of managing climate vulnerabilities within the intergovernmental context.

Cities, accounting for a large proportion of the population in most countries, ought to bear the responsibility for developing climate-resilient infrastructure to mitigate the consequences of high emissions generated by corporates and businesses, energy, transport and carbon-inefficient urban services. Cities should deliver lower than their own emission targets by adopting schemes that have positive spillover beyond their areas and provide adequate fiscal resources to lower tiers of the government to tackle their climate challenges.

Compared to provinces and states, cities are more engaged in low-carbon transformation through innovative investment and financing modalities, instruments and tools to support climate resilience projects (Morgan Stanley, 2019). The C40 (C40, 2021) initiative focuses on development of database and city climate action; the ICLEI (ICLEI, 2021) Local Governments for Sustainability network links more than 1,750 local and regional governments committed to sustainable urban development; the Covenant of Mayors for Climate and Energy Europe (Covenant of Mayors, 2021) is accelerating the decarbonisation of their territories and strengthening their capacities; and the Urban Adaptation Support Tool (European Climate Adaptation Platform Climate – ADAPT, 2021) and the Science-based Targets Network (Science-Based Targets Network – Global Commons Alliance, 2020) offer guidance on methodologies and assist cities in developing, implementing and monitoring climate plans. The network is indeed essential to ensure that the transition to a low-carbon economy is backed by scientific evidence that carbon emissions are curtailed.

SNGs vary in their financing, execution and administrative capacities to tackle climate action and their potential to deliver carbon neutrality. To lift the game there they need to (i) promote harmonised carbon-neutral policies, legal and regulatory approaches; (ii) incorporate the growing carbon vulnerabilities across regions and introduce fiscal measures such as carbon tax and an appropriate revenue-sharing of this tax across federal and SNG levels; (iii) develop comprehensive debt sustainability analysis and address debt distress for SNGs and (iv) engage global community and domestic financial markets to leverage international financing for low-carbon projects.



Climate policy and supportive legislation. Besides responsibility for emission reduction and implementation of carbon-neutral targets, SNGs need to integrate long-term low-carbon pathways and associated action plans, and strategise investment and financing modalities along with supportive incentives for encouraging climate adaptation and resilient infrastructure projects which help achieve inter-connected low-carbon targets. Carbon neutrality will fundamentally change the landscape of the energy market as well as many other sectors. SNGs need to be prepared to assume more roles that are traditionally carried out by nationwide large companies and regulated by the central government, such as being the promotor and regular of the future clean energy market based on distributed networks with thousands or even millions of small renewable energy producers.

To achieve carbon neutrality ambitions, strengthening SNGs' financial health is critical. Besides adjustment in intergovernmental arrangements, carbon taxes would yield double dividends: offering new revenue streams and curbing emissions. SNG–central government political and technical coordination on carbon tax levy requires consideration for the optimal balance of carbon tax from production and consumption sides, irrespective of whether the taxes are treated as local, central or shared tax; and the formula for transfer from central to SNGs and cross-compensation among SNGs between primarily carbon consumption regions and primarily carbon production regions. Beyond carbon taxes, SNGs should also consider projects that create more regional benefits and contribute to higher tax intakes. They can also capture the dividends coming from the transition to low carbon by creating valuable infrastructure contingent on new low-carbon projects, such as developing commercial/residential real estate next to transportation hubs (as direct owner or through property taxes), business parks close to new energy sources (as developer or through business taxes), retrofit of SNGs' infrastructure to low energy consumption, etc.

Sovereign and SNG debt vulnerabilities. Across developing countries, six sovereigns have already defaulted in 2020, and most low-income countries have opted for a G20 debt service suspension initiative (Culverhouse, 2020). Addressing debt vulnerabilities both ex-post through distressed debt resolution and ex-ante in terms of optimal debt portfolio are important for both sovereign and SNG entities to ensure continued and healthy investment in carbon-neutral and climate-resilient projects. A 2020 Fitch analysis found that downgrades of SNGs were larger among regions with sovereign-related downgrades. The resolution of central government debt distress would help leverage financing for SNGs with the support of the central government and debtors to direct proceeds of sovereign debt write-offs into innovative instruments such as the debt climate/SDGs and nature swaps (Nature Conservancy, 2016) subject to SNGs' mounting efforts to strengthen fiscal and financial management capacities and illustrate a strong resolve to implement green recovery and develop climate-resilient infrastructure.

SNGs' climate-resilient investment could attract long-term international institutional investors. Investors' appetite for the value proposition of environment, social and governance (ESG) deals has grown, partly due to regulation and partly in the belief that these are more sustainable investments – SNGs in developing countries also appeal to long-term institutional investors seeking portfolio and risk diversification. They are in a good position to tap institutional investor demand if they strengthen their policy and legal framework for carbon neutrality and have sufficient fiscal capabilities.



Some instructive guidance and lessons:

The **European Union** has taken a proactive role for achieving carbon neutrality by 2035, 2040 or 2045, depending on each country. Seventeen European countries levy carbon taxes at the national level but with different coverage of greenhouse gas and different tax rates (Asen, 2020). Municipal green bonds, mostly revenue bonds, are being explored in many countries to finance green projects. In Europe, SNGs account for two-thirds of total public investments (OECD, 2020). Most SNGs have sustainable energy action plans in place – and the political and legislative support for decarbonising local and regional public services.

China's carbon peaking and neutrality targets have been cascaded to different levels of governments with specific targets and timelines, while domestic regulators have harmonised green standards for financial markets. More than 80 SNGs have announced carbon peaking timelines, 42 of them by 2025, but they lack financing. Low-carbon city plans were launched in 2010. China has not yet introduced a carbon tax. Regional carbon exchange pilots and a national carbon exchange are expected to be in place within 2021. SNGs' annual investments of \$80 billion fall short of the total requirements estimated at \$470–550 billion. To achieve carbon neutrality by 2060, China needs \$21 trillion in investments for new energy, storage, zero-carbon buildings, etc. Provincial governments have powers to borrow through general obligation and revenue bonds, but in the absence of proper due diligence and financial discipline, there have been some misfortunes (Lu and Sun, 2013). Yet, green finance in China is developing strongly. In 2018, China issued \$43 billion in green bonds, mostly by financial institutions and SNGs.

In the **United States**, SNGs are proactively engaged in the carbon transition: 15 states have taken legislative or executive actions to promote 100 per cent clean energy, launch aggregate net-metering programmes for distributed renewable energy, etc. No state so far has levied a carbon tax, yet eight states (including Washington D.C.) have been deemed “promising” for enacting state carbon taxes (Carbon Tax Center, 2021). Public-private partnerships (PPPs) have been structured to establish green banks, clean energy funds, infrastructure financing authority and revolving loan funds. The green municipal bond market is vibrant (Friedland, 2020). In 2019, \$35 billion in green bonds (13 per cent of total international issuance) were floated by government-backed entities. Investors appear comfortable with credit levels of SNGs: states in the US are constitutionally bound to balance their budgets and the federal government must provide resources that sustain and expand state-driven clean energy, infrastructure and conservation successes.

Opportunities to attract global capital. SNGs in developing countries are struggling to access global capital, despite the thematic attraction of green and sustainable investment opportunities, because of (i) weak pipelines of bankable projects, weak analysis of credit risk, risk of convertibility and capital transfers, (ii) currency and maturity mismatches and (iii) low disclosure standards and transparency. Achieving internationally compliant standards of sustainability will allow infrastructure projects to attract high levels of international capital looking to deploy with non-financial objectives.

Disclosure and data requirements are complex for SNGs in developing countries. SNGs can exploit one or a combination of new avenues for investment and financing acceptable to organised markets. The Green Bond Principles (GBP) from the International Capital Markets



Association set the conditions for the selection and management of green projects, while the Climate Bonds Standard (CBS) (Climate Bonds Initiative, 2021) offers criteria to identify sectors aligned with the objectives of the Paris Agreement. The EU Taxonomy for Sustainable Activities (European Commission, 2021) is aligned with these. The Science-Based Target Initiative (Science-Based Targets Network, 2020) offers scientists to contribute to the verification that projects are aligned with the latest scientific developments. Several initiatives are underway across the world for the development of local taxonomies such as in Canada (Taylor, 2020), China (SynTao Green Finance, 2020), ASEAN or Singapore (Association of Banks in Singapore, 2021). Collectively these offer a range of investing options which can be tapped if SNGs strengthen their financial and human capacities.

Investors will seek projects that demonstrate a high level of integrity, not only on the selection of subnationals and projects, but also on their impact. One success of the GBP or CBS has been to encourage green bond issuers to obtain a Second Party Opinion from a third party “verifier”, as well as report annually on the use of proceeds from any thematic bond issued: this is now normal market practice. According to an investor survey in 2019 (Climate Bonds Initiative, 2021), published by CBI and covering European investors, investors value accountability: their investment decision is driven by compliance with green credentials at issuance and post issuance, followed by pricing. Credit rating constraints, currency preferences and issuer/sector constraints appear to be the least important factors in the specific context of green bond selection.

Project preparation facilities. In most developing countries, skills are lacking to identify and prepare climate-aligned projects compatible with the investment requirements of global instruments and institutional investors. The preparation of “bankable” projects at the subnational level is critical to channel capital towards investment opportunities that will benefit SNGs.

In the Philippines, the “Private-Public Partnership Center” manages a Project Development and Monitoring Facility (PDMF) that supports implementing agencies in project advisory and facilitation services, and capacity-building activities (Republic of the Philippines, 2021). PDMF helps SNGs to implement public-private partnership (PPP) programmes and projects. In Pakistan, provinces have enacted PPP legislation and support feasibility of regional infrastructure projects in major cities and secondary towns. PPPs are being bound by environmental, social and governance safeguards. Facilitating access to green finance bonds and facilities can help SNGs progress to the net-zero goal.

Climate finance funds. Several green funds have been launched for climate mitigation and adaptation. In 2020, the Green Climate Fund secured a pledge for \$10.3 billion from 45 countries, three regions and one city across nine developing countries.¹ Green exchange-traded funds have attracted private capital: the Luxor Green Bond UCITS² Fund grew from EUR 5 million in February 2017 to EUR 549 million in December 2020.

Several development finance institutions have launched specific funds for climate finance, like the IFC/Amundi EGO Fund, with \$1 billion of capital, or the ADB’s ASEAN Catalytic Green Finance Facility (ACGF) (Asian Development Bank, 2020), with \$1 billion of capital mobilised from various concessional sources. Both provide a dedicated technical assistance programme to prepare and structure green infrastructure projects. Those that qualify include



not only financial institutions (EGO Fund), but also sovereign-backed projects, cities and state-owned enterprises, mostly for infrastructure in energy, water, transport, urban and multisector projects, in the ASEAN countries (ACGF). These initiatives are demonstration deals, but they do not yet create the scaling effect necessary to respond to the urgency of the climate crisis.

Even though there is ample cash looking to invest globally, most of it tends to be available for short-term investments. Developing countries are confronted with a limitation on the amount of capital available for long-term infrastructure project financing. Developing countries' domestic capital is limited. While global investors tend to prefer to invest in offshore currencies (e.g., USD, EUR or JPY), local infrastructure investment is needed in local currencies. Investments tend to be short-term, while infrastructure financing requires long-term commitments.

A solution exists to bring capital at scale for infrastructure projects in developing countries. Portfolio theory, first proposed in 1952 by Harry Markowitz (Chen, 2021), demonstrates that a portfolio is well-diversified when it reaches 30–40 investments given low correlation between them (Statman, 1987). The same principles apply to a portfolio of diversified investment projects, each being individually risky, offered by subnational governments across developing economies. Admittedly, even such a diversified portfolio would still present a certain level of residual risk. Moody's reports that the long-term average rate of default is 8.5 per cent for project loans from non-high-income countries (Moody's Investor Services, 2020). Several de-risking mechanisms exist, from securing the contracts that support the project by introducing a government guarantee at the national level or reserving the cash flows from the project towards the servicing of the debt (e.g., revenue bond) to introducing a highly rated guarantee, such as Credit Guarantee and Investment Facility of ADB, IFC, GuarantCo or others including local guarantee facility such as InfraZamin in Pakistan.

By introducing a “first-loss” guarantee from a concessional lender, to cover the first layer of risk at the bottom of the risk pyramid, it is possible to further strengthen the quality of the overall investment. A \$50 million guarantee for green infrastructure in 40 low-income countries with a low correlation among each other (across four continents) would result in a \$2 billion investment in one single transaction, with ESG standards and levels of disclosure that will be supported by a programme of technical assistance from selected development finance institutions (such as ADB (Asian Development Bank, 2009) or IFC (International Finance Corporation, 2021)). Such guarantee could even be unfunded, further limiting the cash requirement from such institutions. These institutions enjoy a “Preferred Creditor Status”, ultimately making their guarantee even less risky, and therefore most cost effective (and arguably cheaper). In a default situation, they would be best suited to engage in negotiations with defaulted parties and arrange remediation policies, given their local footprint.

A similar structure has already been closed between IFC and Amundi to invest (Amundi Planet, 2018) in green bonds issued by financial institutions with a \$1 billion size. Replicating this exercise for a \$2 billion portfolio would offer, say, \$50 million for 40 different climate projects across 15–20 developing countries, with a technical assistance programme to support the creation of such a pipeline. Several such transactions could be structured successively and achieve, over several years, a large amount of investment across many low-income countries.



Such a portfolio would be able to “crowd-in” private investors looking for an economic return that has an exceptionally low correlation with their own investment portfolio, thus providing diversification benefits to them. Attracting different classes of investors for different layers of debt makes it possible to significantly increase the amount of capital that is available for financing regional initiatives, for infrastructure prepared by subnational governments in developing countries.

Asset managers, in their fiduciary role as the allocators of capital on behalf of asset owners, play a major role in deciding what risk-return profile is acceptable, but also what constitutes appropriate levels of sustainable finance standards. Convincing asset managers that the local infrastructure is a bankable project will drive new sources of capital and create high levels of resilience for local stakeholders. More than being determined by the asset managers, such capital allocation will be driven by the standards that these asset managers are following. This is where the important element lies.

CONCLUSION AND RECOMMENDATIONS

To reach net-zero emission ambitions, SNGs need multilateral policy and technical support to (i) establish and harmonise the policy, legal and regulatory framework for carbon-neutral growth; (ii) recalibrate revenue and expenditure responsibilities and allow for fiscal transfers to leverage carbon neutrality across infrastructure investments; (iii) strengthen debt capacities backed by enhanced debt sustainability frameworks that also factor in climate risks across different tiers of the governments, while deploying debt restructured for SNG climate projects; and (iv) adopt innovative climate investment and financing modalities to promote low-carbon infrastructure projects.

1. **Cascading Carbon Neutrality** The target of carbon neutrality needs to be mainstreamed across SNGs’ legal, regulatory and finance frameworks and be aligned with nationwide climate legislation and commitments.
2. **Recognize Climate Vulnerability Needs in Fiscal Devolution.** Decentralisation has its virtues, however SNGs under-invest in climate vulnerabilities and given resource limitations they are not able to invest in responses to climate change. The fiscal devolution mechanisms are complex to negotiate, given their anchored constitutionally. However, the political constituencies need to incentivise SNGs to promote climate adaptation and mitigation by adjusting revenues and expenditure allocation.
 - a. **Devolution of revenue/expenditure.** Intergovernmental fiscal transfers, be they federal to provincial/state or between SNGs, depending on the country context, need to assign weightage to the climate vulnerabilities and risks facing SNGs in both revenue transfers and expenditure assignments consistent with the SNGs’ climate action plans. More tax revenues, particularly those from carbon taxes and new value capture models, should be shared with or transferred to SNG regions to encourage the shift away from carbon-intensive industry and investments. A combination of conditional and unconditional fiscal transfers for climate adaptation and resilience, plus new revenues created by climate-resilient investments, should be over and above the SNG development programme being funded by the federal government.



NOTES

¹ Chile, Colombia, Indonesia, Mexico, Mongolia, Panama, Peru, Republic of Korea and Viet Nam.

² Undertakings for Collective Investment in Transferable Securities.



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With 20+-year experience in the fund management industry with more than 10 years at top ranking investment banking firms (JP Morgan, Citi and Credit Suisse), Cedric has been managing fixed income portfolios and analyzing corporate bonds during the most part of his career, most recently as the Head of Emerging Markets Corporate Credit Research at an independent credit research company. He is a CFA charter holder and member of the CFA Society in Singapore. Since relocating for the second time to Asia six years ago (Bangkok and Singapore), he has been developing investable projects in the climate finance space in South East Asia. He's been a consultant for the United Nations Economic and Social Commission for Asia Pacific (including Vietnam, Indonesia and the Philippines) on Green Finance.

