

ACCELERATING CLIMATE FINANCE



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Accelerating Climate Finance

White Paper



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Contributors

U20 ADVISORS

Hitesh Vaidya

Director, National Institute of Urban Affairs (NIUA), India

Nilesh Prakash Rajadhyaksha

Programme Director - Urban Strategy Unit, NIUA, India
Head - U20 Technical Secretariat

Kanak Tiwari

Programme Director - Urban Strategy Unit, NIUA, India
Head - U20 Technical Secretariat

TASK FORCE MEMBERS

Naim Keruwala (Convener)

Program Director, CITIIS, National Institute of Urban Affairs, India

Divya Sharma

Executive Director, Climate Group, India

Emil Anczewicz

Head of Cities and Urban Development Policy, Foreign, Commonwealth & Development Office (FCDO), British High Commission, UK

Hervé Breton

Deputy Director, Agence Française de Développement (AFD), India Office

Neha Kumar

Head - South Asia Program, Climate Bond Initiatives, India

Shruti Narayan

Regional Director - South & West Asia, C40 Cities, India

Vibhuti Garg

Director - South Asia, Institute of Energy Economics and Financial Analysis, IEEFA, India

RESEARCH TEAM

Amasikha Dey

Deputy Team Leader, U20 Unit, NIUA, India

Asif Raza

Senior Program Officer, CITIIS, NIUA, India

Juhi Sah

Program Associate, NIUA, India

Radha Karmarkar

Program Officer, CITIIS, NIUA, India

Shashank Mishra

Senior Associate, NIUA, India

Uttra Dasgupta

Knowledge Officer, CITIIS, NIUA, India

DESIGN TEAM

Kapil Kumar

Associate, Urban Strategy Unit, NIUA, India

Kaveri Bahure

Research Associate, Climate Centre for Cities, NIUA, India

Radhika Baviskar

Intern, NIUA, India

Akarsha Jamuar

Young Fellow, NIUA, India

Abbreviations

CBDR	Common But Differentiated Responsibilities
CCFF	Climate Change Financing Frameworks
CIF	Climate Investment Fund
CIP	Climate Investment Plan
CTF	Clean Technology Fund
DFI	Development Finance Institution
ECB	European Central Bank
EMDC	Emerging Markets and Developing Countries
ESC	Emerging and Sustainable Cities Program
ESG	Environmental, Social and Governance
ETS	Emissions Trading Systems
EV	Electric Vehicle
G20	Group of Twenty
GBP	Green Bond Principles
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse gas
ICMA	International Capital Market Association
ICMA	International Capital Market Association
IFC	International Finance Corporation
LDCF	Least Developed Countries Fund
MDB	Multilateral Development Bank
PPP	Public-Private Partnership
SCCF	Special Climate Change Fund
SCF	Strategic Climate Fund
SFWG	Sustainable Finance Working Group
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

01/

Setting the context

Climate change is primarily driven by the increase in greenhouse gas emissions, leading to a rise in global temperatures. These changes disrupt ecosystems, threaten biodiversity, and impact the availability of resources essential for human well-being. Cities are central to the climate change deliberations, both as one of the major contributors to carbon emissions (almost 75% of global carbon emissions come from cities) as well as the key stakeholders likely to experience the highest impacts of climate change (almost 70% of global population will live in urban areas by 2050). Rising global temperatures and sea-levels, extreme weather events, and changing precipitation patterns are expected to have widespread consequences that will expose urban areas to risks. There is an urgent need for cities to mitigate and adapt to the impacts of climate change, which will require significant investments.

While the exact investment requirements vary based on city size, existing infrastructure, and specific needs, a number of estimates are available for the global investment requirements to support climate action. The International Finance Corporation (IFC) estimated that the investment potential in urban climate-related projects globally is around USD 29.4 trillion by 2030 (IFC, 2021). An estimated USD 1 trillion per year of climate finance¹ will have to be mobilised in external finance by 2030 for emerging markets and developing countries (EMDCs) other than China (Report of the Independent High-Level Expert Group on Climate Finance, November 2022). The sustainable investment opportunities in six urban sectors (waste, water, renewable energy, electric vehicles, public transport and green buildings) in emerging markets alone amount to USD 2.5 trillion annually up to 2030.

The origin of climate finance can be traced back to the United Nations Framework Convention on Climate Change (UNFCCC), established in 1992 to address the challenges posed by climate change. The principle of "Common But Differentiated Responsibilities" (CBDR) was also established that recognised different capabilities and differing responsibilities of individual countries in addressing climate change. The concept of climate finance was further stressed in the Kyoto Protocol, adopted in 1997, and came into force

in 2005. In 2009, the Copenhagen Accord (a non-binding agreement) set a goal of mobilising USD 100 billion per year in climate finance by 2020 to support developing countries in their efforts to address climate change. This was later reaffirmed in the Paris Agreement, which was adopted in 2015 and came into force in 2016 (OECD, 2022). The UNFCCC also recognises the need for international financial assistance to developing countries due to the asymmetry between developed and developing countries in terms of their contribution to climate change and their capacity to manage it.

Several initiatives and mechanisms have been instituted to mobilise climate finance. These include the setting up of the Adaptation Fund, established in 2001 under the Kyoto protocol; the creation of the Global Environment Facility (GEF) that manages two special funds—the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF) focused on projects in developing countries; and the Green Climate Fund established in 2010 at the COP16. Some of the other climate funds include Clean Technology Fund (a multi-donor trust fund), Amazon Fund (set up as a REDD+ fund), the Forest Carbon Partnership Facility, and others. Additionally, there are a range of other climate finance sources, including NBFCs, ECBs, debt from public and private banks, private equity investment, DFIs, etc. that can be accessed by cities.

Climate finance flow has seen a steady increase over the last decade, leading to a total of USD 665 billion of fund flows in 2020 as per the Climate Policy Initiative (CPI). Global climate finance almost doubled in the last decade, with a cumulative USD 4.8 trillion in climate finance committed between 2011 and 2020 (CPI 2022). Public finance contributed around 51%, with Development Finance Institutions, both multilateral and bilateral, accounting for 71% of the public financing. While private sector investments have increased, but this has not happened at a scale or speed that will be required to adequately meet climate objectives. At the 15th Conference of Parties (COP15) of the UNFCCC in Copenhagen in 2009, developed countries committed to mobilising USD 100 billion per year by 2020 for climate action in developing countries. However, as of 2020, the total climate finance provided and mobilised by

¹ The report of the Independent High-Level Expert Group on Climate Finance, November 2022, estimates that emerging markets and developing countries other than China will need to spend around USD 1 trillion per year by 2025 (4.1% of GDP compared with 2.2% in 2019) and around USD 2.4 trillion per year by 2030 (6.5% of GDP).

the developed countries was USD 83.3 billion, falling 16% short of the target. Of this total, USD 48.6 billion (58%) was for mitigation, USD 28.6 billion (34%) for adaptation, and USD 6.0 billion (7%) for cross-cutting activities (CPI, 2022). It must be noted that almost 90% of climate finance has been focused on mitigation activities, with very little finance being directed towards adaptation projects. The mismatch between fund-flows toward mitigation and adaptation sectors has been a longstanding debate.

There are several barriers to investment flows in urban climate-related projects and development. These barriers include (a) lack of awareness of the potential returns and benefits associated with climate-related projects, (b) inconsistent policies, unclear regulations, and a lack of supportive frameworks leading to uncertainties for investors (c) limited technical expertise and capacity within cities that can hinder project conceptualisation, development and implementation. Besides, countries and cities have different administrative setups and jurisdictional limitations. For example, urban development is a state subject in India, and there are layers of jurisdictional enablers and limitations in the functioning of cities. Other countries have different

approaches/ jurisdictions/ mandates. Different countries also have different requirements for lending, financing, or raising funds. This means that every country needs particular and contextual approaches and solutions to access climate finance for urban areas.

There is an urgent need to mobilise investments by creating conducive policy environments. Cities can explore innovative financing mechanisms such as green bonds, revolving funds, and public-private partnerships to fund climate-related projects. These mechanisms can attract diverse sources of capital and facilitate investment flows. Cities must also foster partnerships by collaborating with other cities, international organizations, financial institutions, and the private sector, to facilitate knowledge sharing, capacity building, and access to funding sources. Building partnerships can enhance investment opportunities and create a supportive ecosystem for climate-related projects. This U20 white paper attempts to identify the critical levers for improving climate fund flows to cities, particularly in the developing context, and provide broad recommendations for the way forward to accelerate climate finance.

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Avenues of climate finance

Urban sector climate financing can come from various sources, including government budgets, international development assistance, institutional investors, commercial banks, public-private partnerships (PPPs), municipal bonds, sovereign green bonds, impact investors, philanthropic organisations, and multilateral development banks. Cities can access climate financing for adaptation and mitigation projects from five primary sources:

- A. Grants and subsidies from various sources** such as national governments, international organisations, and philanthropic foundations. These funds do not need to be repaid and can be used to support specific infrastructure projects or initiatives. Use of blended finance mechanisms, wherein such capital can be used as catalytic capital to leverage private sector investment in sustainable development, will become important at the city level especially while financing adaptation and resilience or assets which do not generate adequate commercial returns.
- B. Funding from development banks** such as regional development banks or international financial institutions, for project financing. These institutions provide loans,

grants, and technical assistance for infrastructure development. Commercial banks and financial institutions may also offer loans or credit facilities for urban infrastructure projects. These primarily operate through multilateral/bilateral climate funds established at the global level to support climate-related projects and programs in developing countries. These funds aim to mobilise resources and provide financial assistance to address climate change challenges, promote sustainable development, and help countries transition to low-carbon and climate-resilient pathways. Multilateral climate funds typically operate through a governance structure involving contributions from developed countries and decision-making processes that include representation from both donor and recipient countries.

- C. Issuance of sustainable debt instruments** such as green bonds, social bonds, climate bonds and sustainability bonds, designed to finance projects and initiatives with positive environmental or social impacts. The market for sustainable debt has witnessed significant growth in recent years as more investors and issuers prioritise environmental and social considerations in their financing activities. Climate bonds are a type of financial

Some examples of multilateral climate funds are:

- a. The Green Climate Fund (GCF) is the largest multilateral climate fund established under the United Nations Framework Convention on Climate Change (UNFCCC). It was created to support developing countries in their efforts to mitigate greenhouse gas emissions and adapt to the impacts of climate change. The GCF provides grants, concessional loans, and other financial instruments to fund projects and programs in areas such as renewable energy, adaptation, and capacity building (GCF, 2023).
- b. The Global Environment Facility (GEF) is a partnership between various international institutions, including the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), and the World Bank. It provides grants and concessional funding to support projects in biodiversity conservation, climate change mitigation and adaptation, sustainable land management, and other environmental areas (GEF, 2023).
- c. The Adaptation Fund was established under the Kyoto Protocol of the UNFCCC and serves the specific purpose of financing adaptation projects and programs in developing countries. It provides grants and concessional loans to support initiatives that enhance the resilience of vulnerable communities and ecosystems to the impacts of climate change (Adaptation Fund, 2023).
- d. The Climate Investment Funds (CIFs) administered by the World Bank Group, consist of several funding windows, including the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF). These funds aim to provide resources for climate-related investments in developing countries, particularly in areas such as renewable energy, energy efficiency, and climate resilience. CIF also has a Smart Cities Program which can be modified to mobilise cities climate finance (Climate Investment Funds, 2023)

instrument specifically designed to raise funds for climate-related projects and initiatives. Climate bonds serve as a means for investors to allocate their capital towards projects that address climate change, promote sustainability, and support the transition to a low-carbon economy including climate mitigation and adaptation. Various countries and respective Reserve/National Banks have issued guidelines through which bonds can be issued in the market (Climate Bonds, 2023).

- D. **Partnering with private companies or investors under public-private partnership arrangements** to finance infrastructure projects. In these partnerships, the private sector provides funding, expertise, and resources while the city maintains ownership over the infrastructure. Unlocking the potential of private financing will require formulation of "bankable" projects and programme proposals that have a favourable internal rate of return and are supported by appropriate risk management mechanisms, so that the projects are financeable.
- E. **Accessing Carbon markets** is also a critical avenue for funding climate-responsive initiatives in cities. Carbon markets are mechanisms that facilitate buying and selling of carbon credits issued in lieu of reducing or removing greenhouse gas emissions. These markets provide a platform for entities to trade carbon credits thereby incentivising emission reductions and promoting

the transition to a low-carbon economy. There are two primary types of carbon markets: (1) Emissions Trading Systems (ETS) - a market-based approach where a cap is set on the total amount of greenhouse gas emissions allowed within a specific jurisdiction or industry sector. Under this system, emission allowances or permits are allocated to participating entities, such as companies or industries. These entities can then trade their allowances based on their emission levels. If an entity exceeds its allocated allowances, it can purchase additional allowances from entities with surplus allowances to compensate for their excess emissions. (2) Carbon offset mechanism - allows entities to compensate for their emissions by investing in projects that reduce greenhouse gas emissions or remove carbon dioxide from the atmosphere. These projects can include renewable energy installations, energy efficiency initiatives, reforestation and afforestation projects, and methane capture projects. When an entity invests in such projects, it receives carbon credits equivalent to the emission reductions achieved. These credits can then be traded or sold to other entities, enabling them to offset their own emissions.

03/

Key enablers for mobilising climate finance

Accessing climate finance requires a range of different institutional tools, mechanisms, and modalities, along with specific capacities at various levels (national, provincial and local) to put in place and operate such modalities. Planning for climate actions at the national level must be based on overarching developmental priorities. This requires identification of actions based on robust climate change scenarios and emissions baselines, development plans, projections of impacts of actions, and a review of innovative solutions and practices available. Formulation of risk management mechanisms and other structures that help in creating investible projects and initiatives is also critical.

Relying on private or market funding may not yield sufficient results in all sectors, particularly related to mitigation-related projects/ initiatives due to the difficulties in managing financial bottom lines. Sectors like storm water, heat and flood management, and other local public goods may have to be addressed using public financing and investment solutions. Even though certain Public-Private Partnerships (PPPs) may be practical, particularly in areas like street lighting and electric vehicle (EV) charging stations, they shouldn't be considered the only option. Thus, having a

robust and diversified national framework that enables and activates a diverse range of financing options depending upon project context and needs will be essential to reduce overt reliance on specific funding sources. Key elements of such a national framework are given below:

- A. **Establishing a robust institutional framework** is one key essential. This involves creating clear governance structures, policies, and regulations that support climate action and facilitate the mobilization of financial resources. It includes coordination among various stakeholders, including government agencies, local authorities, community organizations, and private sector entities.
- B. Cities should have **supportive policies and regulations** that incentivise and promote climate action. This includes creating by-laws aligned with climate targets, providing tax incentives, and promoting sustainable practices. Clear policy signals encourage private sector investment and help cities access different financing options.
- C. **Enhancing the capacity of cities** is crucial to access climate finance. This includes building technical expertise in areas such as climate science, renewable energy, urban planning, and transportation. It enables

Elements of Climate Change Financing Frameworks:

UNDP's Climate Change Financing Frameworks (CCFFs) are meant to rationalise climate change policies and national budget processes in a country, thus ensuring a more cohesive and comprehensive approach to incorporating climate finance into the country's public economic and financial management systems. CCFF has been defined by UNDP in its Guidance Note on Climate Change Financing Frameworks, as a "voluntary, whole-of government process to structure a more strategic approach toward the mobilisation, management, and targeting of climate change finance". The basic elements of Climate Change Financing Frameworks (CCFF) are:

- a. The building of integrated climate governance;
- b. Measures and instruments for ensuring accountability;
- c. The identification of institutional entry points that would bring both public and - to some degree - private climate finance into national appraisals and prioritisation;
- d. The identification of institutional entry points to bring public climate finance into the national budget;
- e. A definition of what constitutes climate change related activities;
- f. A costing of planned responses to climate change;
- g. An assessment of available resources and ongoing financial flows to address climate change mitigation.

stakeholders to identify and prioritize climate-related projects, design projects that align with international standards, and effectively monitor and evaluate project outcomes.

- D. **Financial management capabilities and creditworthiness** should be developed to manage climate finance funds transparently and maintain eligibility for financing.
- E. Cities need to identify and **develop a pipeline of bankable green projects** aligned with their climate action strategies. This involves conducting assessments, feasibility studies, and project design to ensure projects meet the requirements of financial institutions and investors. Projects should be prepared in a way that demonstrates financial viability, sustainability, and alignment with climate goals. There will be projects that are crucial from a climate perspective but may not be considered financially viable or bankable in the traditional sense. These projects often face challenges in generating sufficient returns or cash flows to attract private investment. However, cities and governments must recognize the importance of investing in such projects to address climate change and promote sustainability.
- F. **Access to accurate and up-to-date data** is crucial for evidence-based decision-making and project planning. Cities should focus on collecting, analysing, and disseminating climate-related data, including greenhouse gas emission inventories, vulnerability assessments, and impact evaluations. Robust monitoring and evaluation mechanisms allow cities to track project progress, identify areas for improvement, and enhance accountability to funders and local communities.
- G. **Building partnerships and networks** is vital for cities to access climate finance. Collaborating with national and international organizations, financial institutions, and other cities facilitates knowledge exchange, access to funding opportunities, and peer-to-peer learning. Strong partnerships help cities leverage their resources, share best practices, and present a compelling case when engaging with climate finance mechanisms.
- H. **Engaging stakeholders** and the local community in the planning and implementation of climate projects is crucial. This helps build consensus, enhance project acceptance, and ensure that projects address the specific needs and priorities of the community. Active community participation strengthens the social and political support necessary for accessing climate finance.

The next few sections highlight some of the key enablers that can help cities overcome barriers and create an enabling environment that attracts climate finance, facilitates the implementation of sustainable projects, and contributes to global efforts in addressing climate change.

3.1 De-risking Climate Investments

Infrastructure projects typically face risks such as financial risk, political & regulatory risk, technical risk, environmental & social risk, operations & maintenance risk, market risk, project management risk etc. The urban infrastructure sector is perceived as a high risk sector from an investment perspective due to number of adverse characteristics as indicated in the box on next page, and the risk perception and financial concerns are even higher for climate-responsive projects.

Addressing these risks is essential to attract climate finance to urban areas. De-risking climate investments requires proactive actions at various levels from different stakeholders as given below:

- A. **Develop and strengthen policy and regulatory frameworks** that provide a stable and supportive environment for climate investments. This includes clear guidelines, long-term sustainability targets, incentives, and supportive laws and regulations.
- B. **Conduct comprehensive risk assessments** to identify and understand the specific risks associated with climate investments. Develop risk management strategies and mechanisms to mitigate and transfer these risks.
- C. **Utilise financial instruments and innovative mechanisms** to de-risk climate investments. This may involve blending different types of financing, such as public and private funds, grants, concessional loans, and guarantees. Green bonds, climate insurance, and risk-sharing facilities are examples of innovative financial instruments that can help attract private sector investment.
- D. **Enhance the quality of project preparation** and structuring to increase investor confidence. This includes conducting feasibility studies, developing robust business models, conducting thorough due diligence, and ensuring clear project governance. Well-prepared and structured projects are more likely to attract investors and reduce perceived risks.
- E. **Strengthen the capacity of local governments and relevant stakeholders** to effectively manage and implement climate projects. This includes providing technical assistance, and capacity building to enhance project management skills, financial literacy, and risk management capabilities. Increased capacity reduces implementation risks and improves project outcomes.

Factors causing high risk perception in urban climate projects:

- a. Climate projects in urban areas often require integration and coordination across multiple interconnected sectors such as energy, transportation, waste management, and water supply, making them more complex and challenging to implement.
- b. Inconsistent policies, lack of clear regulations, and potential volatility in political priorities can create uncertainties for investors, making them hesitant to commit their financial resources.
- c. Urban climate projects may face challenges in achieving financial viability and generating sufficient returns on investment. Factors such as high upfront costs, long payback periods, and uncertain revenue streams can make projects financially risky, deterring potential investors.
- d. Urban areas often face specific climate-related risks, such as extreme weather events, flooding, or heatwaves. These risks can impact the performance and resilience of climate projects, potentially leading to increased costs, delays, or project failures.
- e. Social and Political Risks such as resistance from local communities, conflicting stakeholder interests, or opposition from influential groups.
- f. Weak governance capacities of cities can lead to higher perception of legal and contractual risks. Legal disputes, contract breaches, or delays in obtaining necessary approvals can increase project risks and affect investor confidence.

- F. **Improve access to reliable data and information** related to climate risks, market opportunities, and project performance. This enables investors to make informed decisions and assess risks accurately. Enhancing data collection, monitoring systems, and establishing platforms for data sharing and transparency contribute to reducing investment risks.
- G. **Foster collaboration and partnerships between the public and private sectors.** Public-private partnerships (PPPs) can leverage the strengths and resources of both sectors, increase opportunities for sharing risks and responsibilities, and create a conducive environment for climate investments. Establishing clear roles, responsibilities, and legal frameworks for PPPs helps build trust and reduces investment risks.
- H. **Facilitate knowledge sharing and networking among stakeholders** involved in climate investments. This includes sharing best practices, lessons learned, and success stories to build a collective understanding of risk mitigation strategies. Platforms such as conferences, workshops, and online forums can facilitate knowledge exchange and collaboration.
- I. **Implement demonstration projects and pilot initiatives** to showcase the feasibility and success of climate investments in urban areas. These projects serve as models and demonstrate the potential returns on investment, attracting further private sector interest and reducing perceived risks for similar projects.
- J. **Foster long-term planning** to facilitate creation of project pipelines aligned with long term climate outcomes, and ensure continuity and stability.

3.2 Developing a Taxonomy of Climate Projects

Green taxonomy is a framework that defines or groups investments that can be called environmentally sustainable. The term green taxonomy has been used in this paper in a much broader sense that includes not only greens aspects, but larger aspects of inclusiveness and sustainability. These taxonomies aim to promote green finance, enhance its growth, and channel more capital into climate responsive projects. Taxonomy is indispensable for enhancing the efficiency of climate finance dissemination and providing valuable guidance for banks, financial institutions, investors, and businesses.

Low carbon and resilient development will require investments at a pace and of a nature conducive to the specific contexts of countries and their long-term development strategies. Taxonomies should therefore be as contextualised as possible in terms of their contribution or consistency with low carbon and resilient development pathways. Different countries also have different levels of decentralisation when it comes to finance. While in some countries, local governments can take on debt independently, in many cases, debt requires the national government's approval. It is therefore important that taxonomies are tailored to the local context so that they can meet the needs of development in respective jurisdictions. The challenge is to make taxonomies explicit, robust, and creditable to guide capital flow towards their intended purpose. Each taxonomy addresses specific user requirements, with some covering sectors others may not include. Some national taxonomies go beyond climate change and prioritise improving local environmental conditions. Moreover, these taxonomies vary in their level of detail.

Developing a universally accepted and well-classified taxonomy can be crucial in effectively addressing environmental challenges. Such a taxonomy would establish a global agenda, foster unified efforts toward sustainable economic activities, and enhance the efficiency of investment decisions. Even in the absence of a universally accepted taxonomy, various regulators, countries, and multilateral banks have taken steps to establish their taxonomies. These initiatives aim to promote environmental sustainability, guide the allocation and management of sustainable funds, and facilitate transparent reporting on the utilisation of these funds (Climate Bonds, 2023).

There are some common principles suggested by the World Bank that could be followed by countries while developing their taxonomies:

- A. Define its strategic goal.
- B. Select environmental objectives relevant to the country's sustainable development priorities and agenda.
- C. Specify sectors that are expected to deliver on the objectives.
- D. Assess and select specific investments in these sectors that contribute to addressing the selected environmental objectives. Whenever possible, the criterion for selection should be the expected performance of these investments in connection with national environmental targets.
- E. Identify intended taxonomy users and beneficiaries, their roles, and, ideally, their respective responsibilities in the implementation and use of the taxonomy.
- F. Outline reporting guidelines for market actors applying the taxonomy.

European Union's "Taxonomy for Sustainable Activities"

The European Union's "Taxonomy for Sustainable Activities", launched in July 2020 sets out six environmental objectives that economic activities must substantially contribute to in order to be classified as environmentally sustainable. The EU taxonomy also sets specific technical screening criteria for each objective. These criteria establish the thresholds that economic activities must meet to be considered environmentally sustainable. For example, in the case of climate change mitigation, the taxonomy defines specific greenhouse gas emissions thresholds that economic activities should not exceed. Annexure 1 gives a brief summary of a few taxonomies.

The development of climate taxonomies is at a nascent stage in most countries. The absence of a clear set of taxonomies at the national level is one major limitation and poses challenges to access financing. The right set of definitions can substantially enable multiple stakeholders to channel their actions and induct confidence in the financing organisations to finance climate projects. Without clear definitions, taxonomies, reliable data frameworks and regulatory mechanisms, there is an opportunity for fraudulent actions, commonly known as 'Greenwashing' of projects, i.e. misleading presentation of an activity, product, or project as more environmentally friendly or sustainable than it is. In the context of sustainable investments, it is a significant concern and can undermine the credibility and effectiveness of various efforts to address climate change challenges. In addition to tackling "greenwashing", taxonomy will help companies and investors make more informed, sustainable choices.

The taxonomy of climate projects at the city scale has its own set of challenges and complexities. The Common Principles for Climate Mitigation Finance Tracking (UNFCC) provides invaluable insights into the sectors that are

probably eligible for global green finance. A cursory examination of these principles reveals a wide array of economic activities generally falling within the purview of cities. This gives cities a unique opportunity to capitalise on these taxonomies and direct green finance towards climate projects. For example, in the context of India, the 12th schedule of the Indian constitution assigns 18 functions to municipalities/corporations, which encompass a diverse range of responsibilities. There are noticeable overlaps between these functions and the sectors identified in the taxonomies established by several Multilateral Development Banks (MDBs). This convergence opens avenues for collaboration and strategic alignment. Convergent sectors include water supply and wastewater management, solid waste management, urban transport, buildings, public installations, information and communication technologies, energy, and capacity building. By ensuring alignments between the functions assigned to the cities in individual countries and globally available taxonomies, cities can effectively tap into green finance opportunities for their project. This synergy will enable them to address pressing environmental challenges while harnessing the benefits of global green finance.

3.3 Creating Country-level Climate Information Architecture/ Framework

There are several initiatives and actions being taken by various stakeholders based on their interest and areas of engagement with the cities. Information and knowledge about these initiatives remains fragmented and most of the time not easily understandable or accessible. This can lead to overlaps and redundancies and reduce the effectiveness of climate financing and climate action in cities. There is a need to develop a country-level climate information architecture to capture, manage, and disseminate climate-related knowledge and information. This can support decision-making, policy development, and climate action at the national, regional, and local levels. The architecture aims to enhance knowledge capitalisation and dissemination to ensure informed decision-making and effective responses to climate change challenges. Although such architecture (even if inadequate) may exist at the country level, such frameworks are largely absent at the sub-national/ city levels. This means that there will be inadequate understanding of the level of transition achieved at sub-national/ city level or whether the transition is aligned with nationally set targets.

A coordinated effort will be required through creation of knowledge hubs of reliable information, at a centralised or decentralised level, considering country specific governance models. This may be in the form of a network of institutions that may resemble "a hub and spoke model". Such a network of institutions focused on climate finance can help bridge the knowledge gap, build capacity, and facilitate the effective mobilisation of climate finance at the national and sub-national levels. Some key functions of the network of institutions can be:

- A. Serve as a knowledge hub for climate finance, gathering and disseminating information on funding sources, financial mechanisms, project design, and implementation. It can compile and analyse relevant research, reports, case studies, and lessons learned to support informed decision-making and capacity building.
- B. Build capacity of the institutions involved to capture, sanitise and disseminate information pertaining to low carbon assets (emissions, benchmarks, etc.).
- C. Provide technical assistance and advisory services to governments, local authorities, and project developers in developing bankable climate projects. This can involve supporting project design, financial modelling, stakeholder engagement, and facilitating access to climate finance instruments.
- D. Design, develop and organise capacity building programs to enhance the understanding of climate finance among stakeholders. This can include training on project preparation, financial analysis, risk assessment,

accessing international climate funds, and integrating climate considerations into investment decisions.

- E. Contribute to policy development and advocacy efforts related to climate finance. Network of institutions can facilitate engagement with policymakers, stakeholders, and international platforms to promote favourable policies and regulations.
- F. Establish partnerships with national and international stakeholders, including financial institutions, development banks, private sector entities, research institutions, and civil society organisations to foster knowledge exchange, leverage resources, and promote collaboration in accessing and mobilising climate finance.
- G. Undertake research initiatives to address emerging issues and gaps in climate finance. The network can conduct studies on innovative financial instruments, explore new financing models, and evaluate the effectiveness of climate finance mechanisms. Research findings can contribute to evidence-based policymaking and facilitate the development of innovative financing solutions.
- H. Support in monitoring and evaluation efforts to assess the impact and effectiveness of climate finance interventions. This can involve developing performance indicators, evaluating project outcomes, and sharing lessons learned to improve future project design and implementation.
- I. Collaborate with other similar institutions globally to exchange knowledge, share experiences, and foster international cooperation in climate finance.

3.4 Enhancing Creditworthiness of Cities

Cities across the world suffer from issues such as low revenue base, inefficiencies in governance, etc. which have a significant impact on their credit worthiness. As per estimates by the World Bank only 4% of the largest 500 cities/ urban local bodies in developing countries (World Bank, n.d.) are creditworthy in international markets and about 20% are deemed creditworthy in local markets (Introduction to Climate Finance, n.d.). Cities with low level of creditworthiness face challenges in raising funds for new/ existing projects. Naturally, such cities remain heavily dependent on grants from provincial or national governments to meet the infrastructure demands and for financing sustainability and climate related actions/ projects. Achieving creditworthiness requires significant reform across a number of parameters and this is a time consuming process. Comprehensive steps are required to be taken to enable cities to make the transition.

By building creditworthiness, cities can enhance their ability to finance low carbon, sustainable and climate resilient projects by facilitating issuance of bonds as well as

unlocking access to a wide range of private investments. Developing the creditworthiness of the cities will benefit multiple stakeholders. For example (a) Lenders can use the creditworthiness assessments for credit extension and risk pricing decisions (2) Cities can get interest rate discounts for green loans against higher creditworthiness (3) Understanding current level of creditworthiness will also enable the cities to prepare a credit enhancement plan in order to access finance.

While national governments will have to create an enabling environment and conduct regular assessments, provincial or city governments will have to undertake actions to enhance practices of accounting and financial management. Higher financial autonomy to cities can further enhance their capacity for revenue generation and enhance their credit rating. A number of global initiatives are supporting local bodies to build their creditworthiness such as the World Bank City Creditworthiness Initiative, the C40 Creditworthiness Academy, or the Emerging and Sustainable Cities Program (ESC) of the Inter-American Development Bank (C40 Cities). Additionally, multi-lateral development banks and financial institutions can help set up programmes to assign green credit ratings to cities.

3.5 Adopting Environmental, Social and Governance Framework

The role of cities in addressing environmental and social challenges will only continue to expand as a result of rising urbanisation trends. Cities and state governments can assess and tackle these socio-environmental concerns using an environmental, social, and governance framework while also ensuring sound overall administration. Dedicated funds and portfolios have been introduced by several investors, and cities can access such funds by developing systems that address environmental, social and governance concerns. This will also help in achieving better green credit ratings and access to climate finance.

Such an approach requires local governments to take actions across three core city government roles (as adapted from the guidance available on the World Economic Forum website) which are: (i) regulations, (ii) strategic planning, and (iii) service provision as given below:

Aspect	Key actions required from city governments
Environmental	<p>Regulations: Adopt regulations that ensure reduced emissions across different sectors such as mobility, energy, water and waste</p> <p>Strategic Planning: Integrate net zero and other core environmental objectives into strategic city planning such as city master plans. This can be in terms of policies for transit-oriented development, mixed use and compact development, net zero buildings, adaptive reuse of built stock, planning for green-blue infrastructure, fostering green economies, etc.</p> <p>Service Provision: Ensure provisioning of sustainable services that help the city achieve net zero targets. This will involve adopting cleaner technologies, nature-based solutions, circular models for solid waste and wastewater management, low carbon mobility, etc.</p>
Social	<p>Regulations: Develop policies and regulations to promote social cohesion and the inclusion of vulnerable groups</p> <p>Strategic Planning: Address social issues by incorporating them into local strategic plans with a clear implementation plan and tangible actions. This will include strategies for implementing universal accessibility, providing equal opportunity to all in the plan making process, etc.</p> <p>Service Provision: Ensure adequate and inclusive provision of municipal services to all members of society across sectors like water, energy, waste management, mobility, etc.</p>
Governance	<p>Ecosystem governance: Facilitate partnerships between different stakeholders such as civil society groups, non-governmental organisations, international multilateral organisations as well as private sector and government entities.</p> <p>Transparency and accountability: Ensure transparency and accountability in the actions taken through timely and open communication of city decisions, budgets and progress updates.</p> <p>Financing and funding: Ensure the efficient allocation of financing and funding to projects and initiatives that promote socio-economic development and environmental protection.</p> <p>Supply chain management: Adopt supply chain management policies (e.g. procurement policies) that consider the social and environmental impact of suppliers and their production/ sourcing/ procurement/ delivery practices.</p> <p>Monitoring and oversight: Provide effective oversight and monitoring into the performance of the city across different environmental and social parameters.</p>

3.6 Identifying a pipeline of Green Projects as part of a Climate Strategy

Cities need to have a Climate Action Strategy complemented by a pipeline of bankable projects aligned with that strategy. This can significantly boost investor confidence. Once bankable projects are identified, they need to be curated as part of a Climate Investment Plan (CIP) to be financed through various available instruments. Many of the core urban services such as water supply, solid waste and wastewater management, etc. have enormous potential for GHG mitigation, that can be realised through

appropriate structuring and design (e.g. capturing methane emissions from waste and wastewater, or adoption of electric vehicles in public fleets). These should be included in the pipeline, thereby also ensuring that public finance will be available for climate-related projects and the overall CIP can have a mix of funds from public, private and other innovative sources. It must be noted that accessing private financial sources is not feasible for all urban projects, except projects which have a higher probability of adequate financial returns. Therefore, a bundle of bankable and non-bankable projects needs to be created as part of the larger climate strategy.

Examples of green bonds issued by cities in G20 countries

- a. INR 3.03 billion (~USD 36.69 million) raised in green bonds by Indore city, India. The proceeds will be used to fund a 60 MW ground-mounted captive solar photovoltaic project in the Khargone district in Madhya Pradesh;
- b. USD 143 million raised by Johannesburg, South Africa, to fund projects across a range of sectors including 150 new dual fuel buses and conversion of 30 buses to biogas. The city's investment-grade credit rating helped them take the bond to market and receive a positive response;
- c. USD 427 million raised via green bonds by Gothenburg, Sweden. The funds are used for climate change projects that promote the transition to low-carbon and climate-resilient growth.

3.7 Exploring innovative climate financing options

A. Green Bonds: are special bonds designed to promote sustainability and support projects related to the environment or climate. Funds generated from green bonds are exclusively utilised to fund initiatives that positively impact the environment, such as renewable energy, carbon reduction and green buildings. Green municipal bonds can potentially open up the market to new investors who specialise in sustainable financing for investment in projects with environmental, social and governance considerations.

Cities can benefit by developing a bond market strategy based on their creditworthiness. Linking the green/low carbon projects to bonds will help build transparency and improved financial management resulting in better creditworthiness of cities. Aligning such city-based projects with the green bond framework will also ensure that the projects follow national/ international performance requirements. Cities need to understand the current green bond market and develop a green bond market strategy based on the current market flows, the city's own issuance power, creditworthiness, and ability to engage with potential bond issuers. Local Bodies may leverage the Green Bond Principles (GBPs) issued by the International Capital Market Association (ICMA 2021) to form a solid case to attract potential private bond issuers.

B. Transition Finance: is a type of funding that supports long-term, strategic GHG emissions reduction measures undertaken by an agency. Transition financial support is provided to transitional assets or activities in hard-to-abate sectors. These sectors typically have a high carbon footprint and face significant challenges in achieving rapid and complete decarbonisation. Transition finance aims to facilitate the transition of these sectors towards more sustainable and low-carbon practices over time. A practical framework for transition financing must be put into place that can support a whole-of-economy transition of GHG-intensive sectors and firms. One such framework has been proposed by the G20 Sustainable Finance Working Group (SFWP) in 2022 for GHG-intensive sectors and firms to adopt transition financing - encouraging international organisations to develop principles for the same. The five pillars and principles associated with transition financing are (1) Identification of transitional activities and investments, (2) Reporting of information on transition activities and investments, (3) Developing transition-related finance instruments, (4) Designing Policy Measures, (5) Assessing and mitigating negative social and economic impact of transition activities and investment. Transition financing has gained momentum during recent G20 presidencies, and the G20 Sustainable Finance Working Group (SFWG) can become a starting point for developing nations.

C. Climate risk insurance: With the increasing frequency of extreme climatic events and disasters worldwide, cities and their assets are exposed to high risk of the impacts of such events. Growing rates of urbanisation and infrastructure development in cities further increase the exposure. The cost of repairing damaged infrastructure due to disasters or climate events add to the cost borne by the government agencies. In low- and middle-income countries natural hazards and poor infrastructure cost households and firms an estimated amount of USD 390 billion a year (World Bank, 2019), due to lower insurance penetration levels and high vulnerability to natural disasters.

In the case of public sector entities, government assets such as infrastructure and utilities are usually not insured, except when infrastructure is developed through private developers such as metro rail transport systems or other PPP projects. Cities can de-risk their assets by opting for insurance and enhancing disaster risk reduction. There could be multiple approaches to buying insurance, which may be nuanced as per the specific

requirement (a) Indemnity-based approach where the insurance payments are made upon the occurrence of an actual loss. Accuracy of loss payment may not be very high and thus may be costly and complex for cities (b) Parametric-based approach that is more suitable for cities, where the payments are not based on the actual loss incurred but, on a trigger, (such as wind speed or precipitation levels, location of a cyclone, etc.). This leads to the disbursement of a predefined payment. Increasing insurance penetration in cities has been a challenge, particularly in developing countries, due to multiple factors such as the short-termism of insurance products, the difficulty of incorporating future climate change into catastrophe models, lack of insurance knowledge and training for government officials, limited data availability on existing risks and vulnerabilities, as well as financial, legislative behavioural, and political barriers. At the national level, active government involvement through policy and regulatory support could contribute to affordable premium rates, comprehensive cover and scaling up of climate risk insurance.

04/ Technical assistance and capacity requirements

The need of the hour is to focus on a sustained transition to an inclusive and green urban economy that prioritises reduction in GHG emissions, public health and socio-economic growth of its citizens. While there are dedicated global funds available to support cities in this transition, particularly from a climate adaptation and mitigation perspective, there are major capacity constraints, particularly in cities from emerging economies. Cities will require a large spectrum of technical capacities for executing the following tasks involved in accessing climate finance:

- A. Developing a legal and regulatory framework that enables and encourages green projects. This includes policies and regulations that promote renewable energy, energy efficiency, waste reduction, and sustainable urban development.
- B. Identifying and prioritising green projects that align with the city's sustainable development goals. These projects may include renewable energy initiatives, energy-efficient infrastructure, waste management systems, sustainable transportation, or green building initiatives.
- C. Developing an action plan (based on the identified priorities) that outlines the goals, targets, and strategies (including budgets and timelines) to achieve them.
- D. Identifying the funding sources including international climate funds such as banks, security markets, institutional investors, Global Environment Facility (GEF), Green Climate Fund (GCF), and other multilateral and bilateral aid agencies etc.
- E. Developing a detailed project proposal for each identified green project, clearly outlining the project's objectives, expected outcomes, timelines, budget, and environmental impact.
- F. Conducting a feasibility study for each green project to assess its technical and economic viability. This includes analysis of the project's potential returns on investment, cost-effectiveness, and risk assessment.

- G. Preparing a comprehensive financial plan and budget for each green project, including a breakdown of costs, potential sources of funding, and the city's contribution. This includes a detailed analysis of the financial benefits and savings that the project can generate in the long term.
- H. Identifying potential partners and stakeholders, such as financial institutions, development agencies, private sector organisations, and community groups.
- I. Establishing a robust monitoring and reporting mechanism to track the progress and impact of the green projects. This includes defining key performance indicators, establishing data collection systems, and ensuring regular reporting to relevant stakeholders and funding agencies.
- J. Ensuring that the green projects comply with relevant environmental and social standards. This includes conducting environmental and social impact assessments and developing mitigation measures to address potential risks and concerns.
- K. Demonstrating transparency and accountability in financial management and project implementation by maintaining accurate and up-to-date financial records and preparing periodic progress reports.

These tasks require a wide range of skill sets ranging from technical know-how, project development, financial management, contract management, etc. Cities need to understand climate taxonomies and prepare projects and programmes that align with such taxonomies so that climate finance resources can be tapped. Besides, accessing climate finance will require various institutional tools and modalities to be put in place at various levels. There is a need for handholding and capacity building to help cities develop and execute a portfolio of identified investable green projects.

Technical Assistance Programs can help cities in climate-responsive project design, identification of climate financing options, and hands-on assistance

during transaction. Various organisations with expertise in the climate finance domain can play a significant role by contributing with their technical expertise, research capabilities, grant funding, demonstrative project funding, etc. and by supporting capacity building at various levels. Support needs to also be provided in the area of comprehensive planning of cities to identify a pipeline of projects that can attract climate financing. By building these capacities, cities can be supported in successfully accessing climate financing, implementing sustainable development projects, and contributing to global efforts in addressing climate change. Many of the G20 countries have a three-tiered governance system, and it is critical that capacity building initiatives cover the entire range from local bodies to provincial or regional governments as well as national governments. It is also observed that credit ratings do not factor the climate risk and mitigation measures being undertaken by the cities. These ratings are not aligned with the climate risks and need to be reformed. Therefore, capacity enhancement of public banks, local banks, and commercial banks will also be required.

There are several 'project preparation facilities' such as those established by Bilateral/ Multilateral Development Banks (MDBs), C40's City Advisor Program, World Bank Group's City Climate Planner Program, UN-Habitat's City Resilience Profiling Program, Global Covenant of Mayors Academy etc. These can be leveraged adequately for enhancing capacities across the urban ecosystem. There is a need for Peer learning to strengthen their institutional capacities. Sustained capacity building efforts on a longer time scale and across different sectors can really bring the much needed change in the urban financing sector. Technical Assistance and Capacity Building can significantly improve the ability of cities, particularly in developing countries, to navigate the complexities of climate finance, improve alignment of projects with national goals and international standards and enhance the long-term effectiveness and sustainability of climate actions.

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Recommendations across G20 nations to access and manage climate finance

The table below summarises the critical actions that will be required for accelerating climate finance to cities:

Barriers	Solutions/Recommendations	Key Participants	Impact	Feasibility
Governance Structures	Establish robust governance structures. Align city-level goals with national and sub-national climate targets, establishing clear roles and responsibilities, and promoting coordination among stakeholders.	Legislative bodies at various level of government	High	Low
Institutional Frameworks	Establish comprehensive institutional frameworks. Define and detail out regulatory frameworks to enable all stakeholders to participate and induct accountability. Development of a well-defined taxonomy contextual to the urban area, which also takes into account the scale and scope of climate projects at the city level.	Regulatory institutions	High	Medium
Financial Management Capabilities	Enhance the financial management capabilities. Ensure transparency, accountability, and effective use of funds by developing expertise in financial planning, budgeting, monitoring, and reporting.	Local bodies, and other city departments, specifically the financial and economic units	High	Medium
Creditworthiness of Cities	Build creditworthiness of cities. Take necessary actions to bring books of accounts in order along with other actions required.	Local bodies	Medium	High
Absence of project pipeline	Identify and develop a pipeline of bankable climate projects aligned with climate action strategies. Conduct comprehensive planning to identify priority areas, assess climate risks and vulnerabilities, and align project proposals with international standards and funding criteria.	Local bodies, other city departments in collaboration with various project preparatory facilities	Medium	High

Barriers	Solutions/Recommendations	Key Participants	Impact	Feasibility
Data management and monitoring systems	Prioritise the development of robust data management and monitoring systems to track progress, measure impact, and enhance accountability. This involves collecting and analysing climate-related data, including emissions inventories, vulnerability assessments, & impact evaluations.	Local bodies and other city departments, Think Tanks, international organisations and MDBs	Medium	Medium
Capacities at the city level	Invest in capacity-building programs to enhance the understanding of climate finance mechanisms, project design, and financial management.	Local bodies, international organisations and MDBs & all other stakeholders	Medium	High
Non-collaborative approaches	Actively engage in partnerships and collaborations. Collaborative efforts can leverage expertise, resources, and funding opportunities.	Local bodies, international organisations and MDBs & all other stakeholders	Medium	Medium
Private Sector Engagements	Actively engage with the private sector to explore innovative financing mechanisms and partnerships.	Government bodies at various levels	Medium	Medium

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Annexure - 1

SUMMARY OF SELECTED TAXONOMIES

Objectives

Categories

European Union Taxonomy

The EU taxonomy is activity based and not broad categories.

- Climate change mitigation
- Climate change adaptation
- Sustainable use and protection of water and marine resources
- Transition to a circular economy, waste prevention, and recycling
- Pollution prevention and control
- Protection of healthy ecosystems

Seven Mitigation categories:

- Agriculture, forestry, and mining
- Manufacturing
- Electricity, gas, steam, and air conditioning supply
- Water, sewerage, waste, and remediation
- Transportation and storage
- Information and communication technologies
- Buildings

Six Adaptation Categories:

- Agriculture, forestry, and mining
- Electricity, gas, steam, and air conditioning supply
- Information and communication technologies
- Financial services and insurance
- Professional, scientific, and technical activities
- Water, sewerage, waste, and remediation

China Taxonomy

- Energy saving
- Pollution prevention and control
- Resource conservation and recycling
- Clean transportation
- Clean energy
- Ecological protection and climate change adaptation

Six categories:

- Energy saving
- Pollution prevention and control
- Resource conservation and recycling
- Clean transportation
- Clean energy
- Ecological protection and climate change adaptation

Bangladesh Taxonomy

- Air pollution prevention
- Renewable energy and energy efficiency
- Water conservation and wastewater management
- Waste management
- Recycling and manufacture of recycled products
- Manufacture of green products
- Others

- Renewable energy
- Energy and resource efficiency
- Alternative energy
- Liquid and solid waste management
- Recycling and manufacturing of recyclable goods
- Environment-friendly brick production
- Green environment-friendly establishments
- Miscellaneous

Indian Taxonomy

India Taxonomy is work in progress, However the Reserve Bank of India and Securities and Exchange Board of India has framed guidelines on sovereign green bonds along with boarder frameworks to discourage green washing of projects.

- Encourages energy efficiency in resource utilization.
 - Reduces carbon emissions and greenhouse gasses.
 - Promotes climate resilience and/or adaptation.
 - Values and improves natural ecosystems and biodiversity especially in accordance with SDG principles.
- Nine categories included under the sovereign green bond framework are**
- Renewable Energy
 - Energy Efficiency
 - Clean Transportation
 - Climate Change Adaptation
 - Sustainable Water and Waste Management
 - Pollution Prevention and Control
 - Green Buildings
 - Sustainable Management of Living Natural Resources and Land Use
 - Terrestrial and Aquatic Biodiversity Conservation.
 - The taxonomy further provides 25 classifications.
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