



Climate Finance Industry Primer

FINANCE AND INVESTMENT CELL
SHRI RAM COLLEGE OF COMMERCE

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Introduction

Climate finance refers to local, national, and transnational funding, drawn from public, private, and alternative sources, intended to support actions that mitigate greenhouse gas emissions and help societies adapt to the impacts of climate change. As climate risks increasingly permeate all sectors of the global economy, governments, corporations, and investors are embedding climate risk assessment into mainstream financial decisions. Climate finance instruments have expanded beyond grants and loans to include green bonds, blended finance, carbon markets, and sustainability-linked investments, supported by multilateral institutions and growing private sector participation. Under the UNFCCC, climate finance is intended to support developing countries in meeting the full costs of climate action. This includes funding for mitigation (actions to reduce greenhouse gas emissions and enhance carbon sinks), adaptation (adjustments in ecological, social, and economic systems to manage climate impacts), and, following COP27, the recognition of loss and damage (addressing climate impacts that occur despite mitigation and adaptation efforts).



Together, these three pillars define the scope of climate finance and reflect the responsibility of developed countries to support climate action in vulnerable nations. Guided by its Nationally Determined Contributions (NDCs) and a Net Zero by 2070 target, India estimates a need for approximately USD 2.5 trillion by 2030 to meet its climate commitments. With large investment needs tied to its NDCs and net-zero ambitions, India is using tools such as Sovereign Green Bonds issuance, National Green Hydrogen Mission, and frameworks for green taxonomy and blended finance to crowd in capital.

Evolution of Climate Finance

Year	Event/Summit	Key Developments
1992	Rio Earth Summit	<ul style="list-style-type: none"> • Concept of climate finance introduced. • Global Environment Facility (GEF) established. • Developed nations committed to providing "new and additional" resources.
1997	Kyoto Protocol	<ul style="list-style-type: none"> • Clean Development Mechanism (CDM) created (carbon credits). • Adaptation Fund established. • First legally binding emission targets.
2009	COP 15: Copenhagen	<ul style="list-style-type: none"> • Formal pledge: US\$30 billion (2010-2012) and US\$100 billion/year by 2020. • First explicit quantification of collective finance targets.
2010	COP 16: Cancun	<ul style="list-style-type: none"> • Green Climate Fund (GCF) established.
2015	COP 21: Paris Agreement	<ul style="list-style-type: none"> • Reaffirmed US\$100 billion goal. • GCF, GEF, SCCC, and LDCF formally designated to serve the Agreement. • GCF becomes operational.



2019	GCF Replenishment	<ul style="list-style-type: none"> • First formal resource mobilization for the GCF concluded with US\$9.8 billion in pledges.
2021	COP 26: Glasgow	<ul style="list-style-type: none"> • Decision to establish a dedicated Loss & Damage Fund. • US\$100 billion goal reaffirmed.
2024	COP 24: Baku	<ul style="list-style-type: none"> • New Collective Quantified Goal Agreed: At least US\$300 billion annually by 2035. • Aims for total financing of \$1.3 trillion/year.

Historic Performance

Global climate finance has expanded in scale, but its distribution remains highly uneven across regions. In 2023, private sources accounted for about 53 per cent of total climate finance, exceeding USD 1 trillion, while public finance contributed the remaining 47 per cent. Private investment was largely concentrated in advanced economies and China, particularly in Western Europe, North America, and East Asia, where lower risks and stronger institutions attract capital. In contrast, developing and emerging regions relied mainly on public funding.

Most climate finance is raised and spent domestically rather than flowing across borders. In 2023, 80 per cent of global climate finance was raised domestically, amounting to roughly 1.5 trillion USD, with roughly three-quarters of investments remaining in their regions of origin. As a result, East Asia, Western Europe, and North America received the bulk of funding, while only about 15 per cent reached regions such as Sub-Saharan Africa, South Asia, Latin America, and parts of the Middle East and Eastern Europe. Only 43 billion USD of the climate-related development finance reported to the OECD reached the Least Developed Countries in 2023.

How Does Climate Finance Work

Climate finance operates as a mechanism to direct financial flows toward activities that support climate mitigation and adaptation. Climate finance is raised through both public and private channels. Public resources come from developed-country governments, bilateral aid agencies, and multilateral institutions such as the World Bank Group, the Asian Development Bank, and the African Development Bank. These entities raise capital through government budget allocations, periodic replenishments, and bond issuances in international markets. The Green Climate Fund (GCF) and the Global Environment Facility (GEF) receive direct contributions from developed nations and multilateral institutions, which are then pooled and deployed through accredited implementing agencies. It is mainly concessional, meaning institutions provide capital at below-market rates and on flexible terms to promote investments in climate-aligned projects. In some cases, national governments also provide concessional climate finance domestically to promote low-carbon transitions. Private finance originates from commercial banks, institutional investors, private equity funds, venture capital firms, and

corporate entities. These investors typically participate through blended finance structures, green bonds, or sustainability-linked instruments that align financial returns with measurable climate outcomes. Venture capital and private equity play an increasingly important role in funding early-stage and growth-stage climate technologies such as clean energy, electric mobility, carbon capture, and sustainable agriculture.

Need for Climate Finance

Global climate finance has grown steadily, reaching USD 1.46 trillion in 2022, but current levels remain far below what is required to limit global warming to 1.5°C above pre-industrial levels. Staying within this threshold is essential to avoid severe and irreversible impacts such as extreme heat, floods, sea-level rise, and ecosystem collapse. Current climate finance flows must increase nearly fivefold to align with the 1.5°C pathway. Within mitigation, the largest investment gaps, in absolute terms, are observed in the energy and transport sectors, where an additional USD 2.2 trillion and USD 1.4 trillion per year will be

required, respectively, between now and 2050. In relative terms, the largest gaps are observed in agriculture, forestry, and other land use (AFOLU) and industry, where funding needs to grow by 30 times and 22 times, respectively, compared to 2022 levels. Increasing funding for AFOLU could be especially impactful, as the sector is estimated to have the second-largest mitigation potential, averaging 8 GtCO₂e by 2030. Climate-related losses and damages are expected to rise, making adaptation finance increasingly critical. Adaptation finance reached USD 69 billion in 2021-22, a 40% increase from 2019-20, but this is far below needs. CPI analysis indicates that in EMDEs (emerging markets and developing economies) alone, annual adaptation finance will need to reach USD 212 billion by 2030, and USD 239 billion between 2031 and 2050.



Policy and Regulatory Frameworks

UNFCCC (United Nations Framework Convention on Climate Change, 1992): This is the original treaty where the principle of “common but differentiated responsibilities” was established, meaning developed countries, having contributed more to climate change historically, must take the lead in financing solutions.

Kyoto Protocol: The Kyoto Protocol was an international agreement adopted in 1997 that committed industrialised countries to legally binding targets to reduce greenhouse gas (GHG) emissions. Its central feature was setting binding emission reduction targets for 37 industrialised nations and the European Union, with an average reduction of 5% below 1990 levels over the first commitment period from 2008 to 2012. It established mechanisms like the Clean Development Mechanism, Joint Implementation, and emissions trading to help countries meet these targets.

SEBI ESG Debt Securities framework (2025): Securities and Exchange Board of India (SEBI) introduced a regulatory framework for the issuance and listing of

Environmental, Social, and Governance (ESG) -labelled debt securities, excluding green bonds. Under this framework, ESG debt securities are defined broadly to cover various types of bonds that meet recognised sustainability criteria adapted to Indian market conditions. Social bonds must finance or refinance projects with clear social benefits (such as affordable housing or employment generation), sustainability bonds can support a mix of environmental and social projects, and sustainability-linked bonds tie financial terms to the issuer's achievement of specific ESG performance targets.

Sustainable Finance Disclosure Regulation (SFDR): The Sustainable Finance Disclosure Regulation (SFDR) imposes mandatory ESG disclosure obligations for asset managers and other financial market participants, with substantive provisions of the regulation effective from 10 March 2021. The SFDR aims to bring a level playing field for financial market participants ("FMP") and financial advisers on transparency in relation to sustainability risks, the consideration of adverse sustainability impacts in their investment processes and the provision of sustainability-related

information with respect to financial products.

G20's Global Climate Action (GCA): Aims to build a coalition of willing countries to significantly increase climate finance contributions from all sources. It recognises the need for joint policy initiatives and a major scaling up of finance.

G7 Climate Club: A plurilateral initiative focused on ambitious climate action through policy, industrial decarbonization, and international partnerships. It focuses on matching finance providers with those who need it.

The Global Climate Finance Framework: Introduced at COP28, this framework is a vision to reframe climate finance as an opportunity for economic growth. It is supported by a set of principles endorsed by world leaders and is translated into action through tools like the Climate Finance Reform Compass.

EU Emissions Trading System: The EU ETS is based on a "cap and trade" principle. The cap refers to the limit set on the total amount of GHG that can be emitted by installations and operators covered under the scope of the system. The EU ETS cap is expressed in emission



allowances, with one allowance giving the right to emit one tonne of CO₂ eq (i.e., carbon dioxide equivalent). Allowances are sold in auctions and may be traded. As the cap decreases, so does the supply of allowances to the EU carbon market.

Market Dynamics

Supply of climate finance

Climate finance supply has expanded sharply, reaching about USD 1.3 trillion a year in 2021-22, almost twice the level seen just two years earlier. Part of this increase is due to better data tracking, which explains about USD 173 billion of the rise. Climate finance now comes from both public and private sources, with private actors contributing nearly half, or about USD 625 billion. Within this, household spending plays an unexpectedly large role, especially through purchases of electric vehicles and rooftop solar. On the public side, development finance institutions dominate, providing more than half of total public climate finance. However, climate finance is unevenly distributed, with most funds concentrated in a few major economies such as China, the US, Europe, India, Brazil and Japan.

China alone accounts for over half of all domestic climate finance worldwide. At the international level, most cross-border climate finance comes from developed countries, while developing economies contribute very little.

Factors affecting supply

- R&D for new and improved climate technologies
- Cost of capital
- Use of Targeted Subsidies and Blended Finance
- Regulatory and disclosure frameworks

Demand for climate finance

The demand for climate finance far exceeds today's supply. CPI estimates that the world needs between USD 8.1 and 9 trillion each year from 2023 to 2030, rising to more than USD 10 trillion annually from 2031 to 2050. Against this backdrop, the current flow of around USD 1.3 trillion covers only a small slice of what is required. Most of the investment needs lie in mitigation, particularly in energy and transport, which already attract the bulk of funding. Yet several high-emitting sectors, such as agriculture and industry, receive less than 4 per cent of mitigation finance, despite their enormous potential for emissions reduction.

Adaptation presents an even more glaring gap. Although tracked adaptation finance has grown to USD 63 billion, the estimated requirement for developing countries alone is more than three times that amount, and nearly all existing adaptation investments come from public sources. This imbalance is worsened by geography, as the most climate-vulnerable countries, including least developed countries and small island states, receive less than 3 per cent of global climate finance.

Factors affecting demand

- Behavioural and Incentive Shifts
- Cost of low-carbon transition
- Policy and institutional readiness
- Urbanisation and development patterns

Climate Finance Value Chain

Unlike traditional manufacturing value chains that process raw materials into physical goods, the climate finance value chain processes risk and capital into verified environmental outcomes. The analysis dissects the ecosystem into primary activities: resource mobilisation, intermediation, project preparation, implementation and

monitoring.

1. Inbound Logistics

The first stage of the value chain is the sourcing of capital. Climate finance capital is mobilised from a diverse set of sources, primarily dominated by domestic public finance. These include direct budgetary allocations and outlays by governments, revenues from taxes, subsidies, and cess collections, as well as funds channelled through government-facilitated climate funds. Public Sector Undertakings (PSUs) also play a significant role in financing climate-related infrastructure and projects. In addition, policy-driven instruments such as Feed-in Tariffs (FiTs) and tax-free infrastructure bonds are used to attract investment by improving project viability and reducing financial risk.

2. Financial Structuring

Once capital is mobilised, it is mediated and structured into usable financial products. Development banks, climate funds, and specialised intermediaries package raw capital into loans, guarantees, and blended finance structures that can be absorbed by different classes of investors. Public finance is strategically used to reduce risk through first-loss tranches,

subordinated debt, and credit enhancement mechanisms. These structures are essential for mobilising private capital into projects that would otherwise be considered too risky.

3. Project Preparation and Aggregation

A major bottleneck in climate finance lies in preparing projects for investment. At this stage, projects are taken from concept to bankability through technical studies, legal clearances, financial modelling, and safeguard compliance. Because many climate projects are small in size, particularly in areas such as rooftop solar, clean cooking, and smallholder adaptation, aggregation mechanisms are used to bundle multiple projects into portfolios large enough for institutional investors.

4. Capital Deployment

After projects become bankable, funds are disbursed to the project level through financial institutions, implementing agencies, and developers. This stage represents the physical delivery of climate finance and is often the slowest part of the value chain due to complex approval processes and compliance requirements.

The effectiveness of this stage determines whether financial commitments translate into real mitigation, adaptation, and resilience outcome.

5. Monitoring Performance

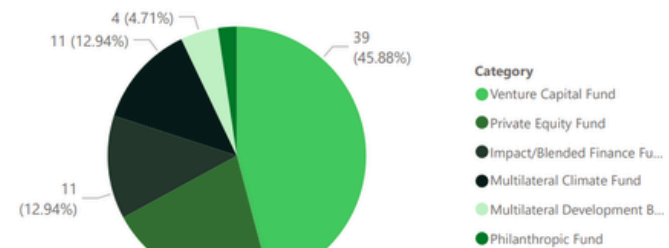
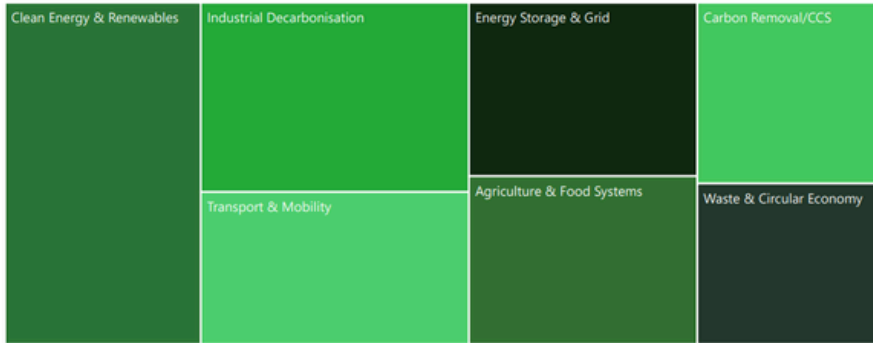
Following deployment, financial flows and climate outcomes are monitored to ensure funds are used as intended and climate objectives are met. Verified data on emissions reductions, resilience outcomes, and financial performance allows financiers to refine future investments, support results-based finance, and recycle capital into new projects.



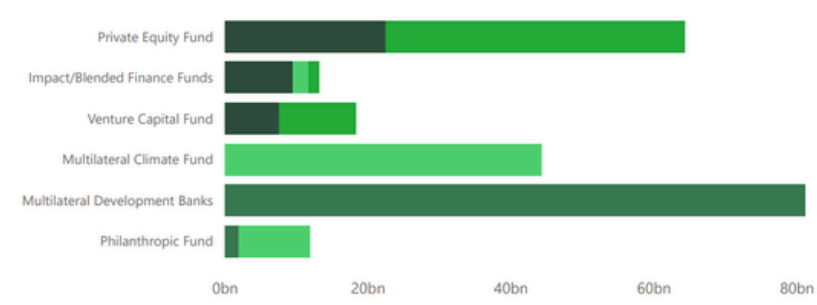
Climate Finance Funds Landscape

Funds Tracked:
85

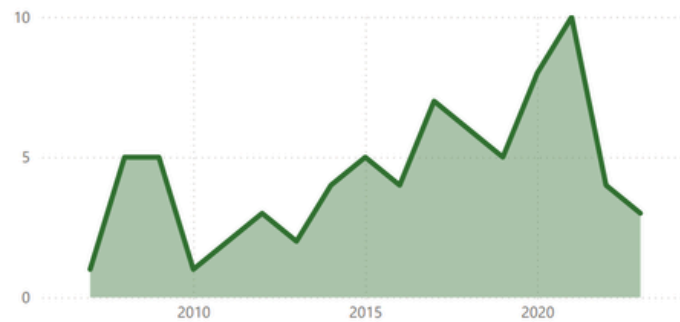
Target Sectors



Sum of AUM Sum of Capital Committed Sum of Capital Pledged Sum of Last Fund Raised



Climate Funds Established Over Years



Future Outlook

Climate finance is growing faster than ever. By 2022, global climate-finance flows have reached about USD 1.46 trillion a year, nearly double the levels seen in 2018. This growth happened even as countries faced inflation, energy shocks, and post-pandemic disruptions, which suggests that climate investment is gradually becoming a core part of mainstream economic planning. Mitigation continues to dominate these flows, driven by major investments in clean energy,

buildings, infrastructure and transport. Adaptation finance has grown too, reaching about USD 76 billion, a sign that countries are acknowledging the rising costs of climate impacts. The outlook, however, is shaped by a stark reality. The stakes could not be higher because failing to scale finance would lead to economic damages far greater than the cost of mobilising capital today.. Looking ahead, one of the biggest shifts will be the growing role of private finance. In wealthy economies, the private sector is already behind most of the



funding for clean energy, buildings and transport. Vulnerable countries, from least-developed economies to small island states, depend heavily on grants and concessional loans, yet they receive only a tiny share of global climate flows compared to their level of risk. This imbalance is one of the biggest challenges shaping the future of climate finance. The CPI report makes it clear that the next decade will require not just more climate finance, but smarter finance. Scaling up is essential, but so is building the right policy environment: better regulations, clearer climate targets, stronger institutions and more predictable pipelines of bankable green projects. Diversifying the tools used, from guarantees to blended finance, will help unlock private capital for areas that currently struggle to attract investment, especially adaptation and climate resilience. The future of climate finance hinges on choices made this decade. Beyond numbers and charts, the outlook is ultimately about whether countries, institutions and markets can align finance with a safer and more resilient future.

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