CLIMATE POLICY INITIATIVE

What is climate finance? Definitions to improve tracking and scale up climate finance

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Descriptors

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Related CPI Reports	Global Landscape of Climate Finance 2013 San Giorgio Group case studies

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About CPI

Climate Policy Initiative is a team of analysts and advisors that works to improve the most important energy and land use policies around the world, with a particular focus on finance. An independent organization supported in part by a grant from the Open Society Foundations, CPI works in places that provide the most potential for policy impact including Brazil, China, Europe, India, Indonesia, and the United States.

Our work helps nations grow while addressing increasingly scarce resources and climate risk. This is a complex challenge in which policy plays a crucial role.

Summary

- Policy makers, investors, financial intermediaries and analysts do not always have the same understanding of key climate finance terms and concepts. **Building a common understanding of key climate finance terminology** would improve ongoing discussions on how best to track climate finance, clarify efforts to measure its effectiveness, and help identify where public sector interventions can best impact the scale up of climate finance.
- In its *Global Landscape of Climate Finance* studies, CPI applies a **definition of climate finance** which counts public and private **investment costs plus public framework expenditures** but excludes revenue support. We use this to track current climate mitigation and adaptation financing, while **reducing double counting as far as possible**. In detailed case studies, we also analyze other costs and public revenue support provided over the lifetime of investments.
- Clarifying project-level climate finance terminology can help policymakers better understand the **range of options available for public actors to both reduce the costs and boost the revenues** of low-carbon and climate-resilient projects in order to make investment more financially attractive for the private sector. It also helps to show that **public framework expenditures are an essential part of the transition towards low-carbon and climate-resilient economies.**

1. Introduction

'Climate finance' typically refers to the financial resources paid to cover the costs of transitioning to a low-carbon global economy and to adapt to, or build resilience against, current and future climate change impacts. The term has gained prominence in climate policy discussions, due to increased appreciation of the need for and the challenges of mobilizing finance for climate related investments, and the role of the public sector in addressing risks, improving returns and closing knowledge gaps, to incentivize private investment at scale.

Every year Climate Policy Initiative (CPI) publishes its *Global Landscape of Climate Finance*, the most comprehensive overview of global climate finance flows available. It provides an inventory of how much and what types of climate finance flow in, to, and between countries.[1] In addition, we have published national landscapes of climate finance for Germany and Indonesia.[2]

Our landscape reports develop understanding of who is investing in the low-carbon economy around the world, where they are investing, through what instruments, and what they are investing in. By identifying what is already happening on the ground, they not only provide a baseline against which to measure progress and plan scale up but also reveal investment patterns that allow us to pinpoint where the biggest barriers and opportunities lie.

The process of producing these reports has repeatedly highlighted that 'climate finance' and related terminology are often understood in different ways by different stakeholders. It has also developed our thinking on our aims in tracking climate finance and which definition best serves these aims.

This brief seeks to explain CPI's understanding and definition of key climate finance terms and to explain the reasons for these definitions to inform the debate and build a common understanding among stakeholders. It is structured as follows: we start with a simplified project developer perspective to introduce basic cost and revenue terminology. We then move to the whole economy perspective, and discuss how public sector interventions can influence different project costs and revenue streams, and thereby unlock investments. Once we have defined our terms and concepts, we conclude by clarifying the definition of climate finance used by CPI in its *Global Landscape of Climate - Finance* and why it suits the purposes of that report.

2. From a project developer perspective: costs and revenues

Costs to a project developer can be broken down into the three key phases in a project's lifecycle: development & construction, operations, and decommissioning. Table 1 summarizes the different costs incurred at each

[1] See Buchner et al. 2011, 2012, 2013.

[2] See Juergens et al., 2012 and Ampri et al., 2014 respectively.

Table 1: Breakdown of typical project developer costs and revenues over its lifetime

Phase	Project costs	Project revenues	CPI work stream analyzing these costs / revenues
Development & Construction	**Pre-investment costs**, including exploration and feasibility studies, project design; planning and environmental studies.	N/A	SGG case studies
	Investment costs or capital expenditures (CAPEX), including construction; land acquisition; taxes.	N/A	Landscape of climate finance + SGG case studies
Operations	**Operating and maintenance costs,** or operational expenditures (OPEX) including renovation; fees for land, utilities, insurance. **Cost of capital** including cost of debt equity and risk instruments* **Taxes**, including sales tax, value added tax, corporate tax*	Market returns and avoided costs in the case of e.g. energy efficiency and adaptation projects.	SGG case studies
Decommissioning	Deconstruction; site rehabilitation; planning, feasibility, environmental and monitoring studies.	N/A	Not yet analyzed by CPI

Cost of capital and taxes also occur in the development and decommissioning stage but for simplicity we include them in the operation phase here, where they mainly occur.

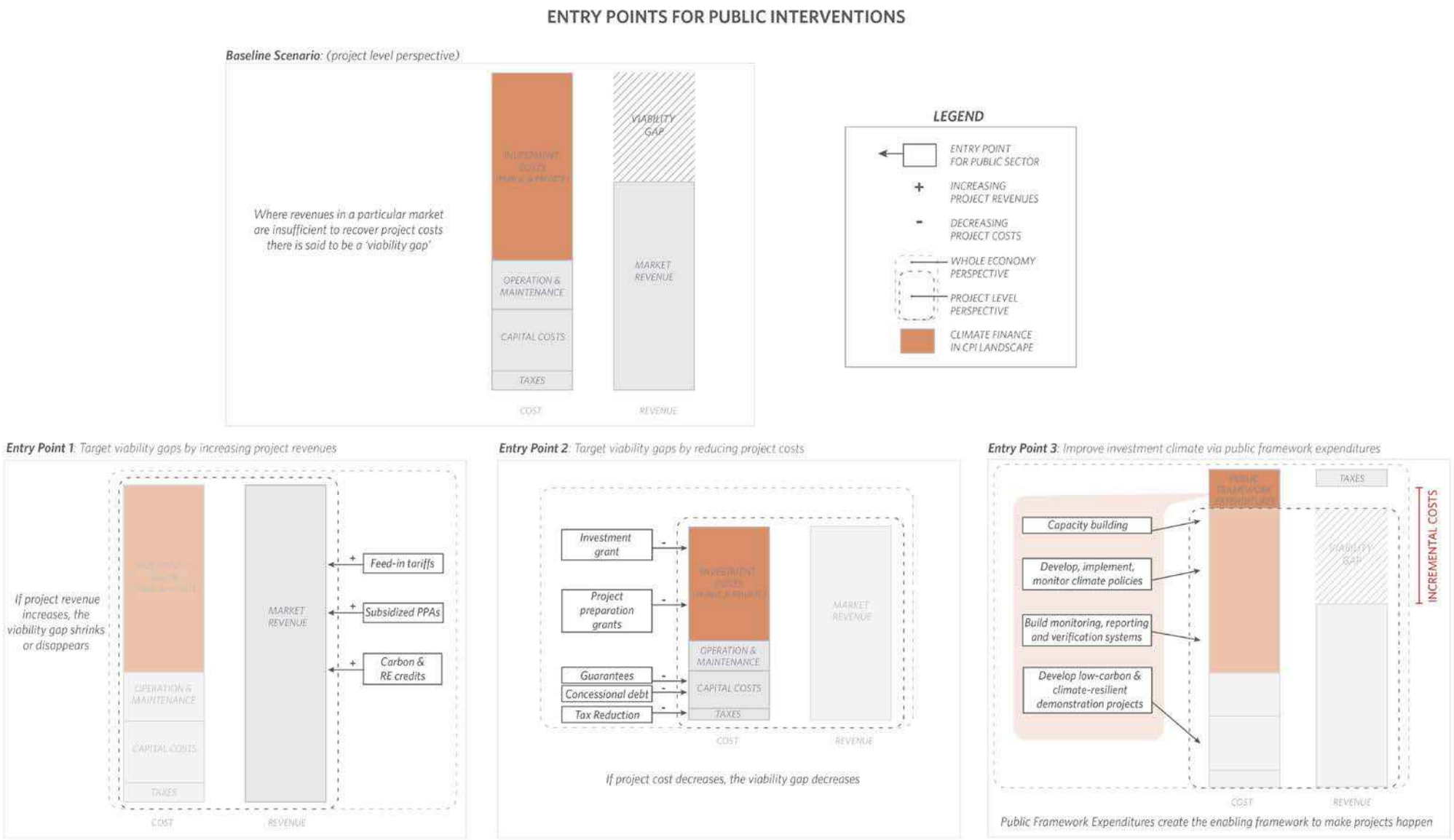
stage and highlights which CPI work stream analyzes which of these costs. CPI's Global Landscape of Climate Finance reports focus on capturing **investment costs**, while San Giorgio Group (SGG) case studies analyze other project costs and revenues.

For simplicity and due to lack of operational cost data, we do not consider costs beyond investment costs in the *Global Landscape of Climate Finance*, nor do we consider revenues to avoid double counting. CPI case studies do, however, look in detail at the full range of project costs and how public sector interventions fill the viability gap by increasing revenues and/or by reducing developers' financing or investment costs.

Most climate-friendly projects have high investment costs.[3] To capture this investment barrier, we use the term **'Incremental investment costs'**: the difference between the investment costs of a 'green' project, and the investment costs of a 'brown' project, i.e. between a low-carbon and a comparable high-carbon project. For example, adaptation projects' incremental investment costs include all investment costs associated with adapting to climate change that are additional to a scenario without man-made climate change.

[3] Most renewable energy project costs come at the beginning of a project, during construction. In contrast, operation and maintenance costs are low since there is no significant fuel expenditure. Agriculture and forestry projects in contrast, typically have low investment costs and high operation and maintenance costs. This means that the cost of capital makes up a larger part of project costs for renewable energy than for fossil fuel and agriculture and forestry projects.

Figure 1: CPI's climate finance definition in context: a discounted cash flow illustration of project costs and revenues (project perspective), plus entry points for public intervention (whole economy perspective)



Note: For a definition of public framework expenditures, see full text. Interventions such as a guaranteed feed-in tariff can also reduce financing costs by mitigating the revenue risk of investments, and thereby improving access to finance at better terms for projects. MRV = measuring, reporting and verification. RE = renewable energy. PPA = power purchase agreement.

The flip side of the costs are **revenues**, which are typically earned through selling a product to the market and must usually equal or exceed total costs in order to make a project worthwhile from an investors' perspective.[4] In the case of adaptation and energy efficiency projects, the **avoided costs** of climate impacts or of buying fuels can be considered as "revenues". Where revenues in a particular market and avoided costs are insufficient to recover project costs, as in the case of an expensive renewable energy technology, for example, there is said to be a '**viability gap'.** This gap is the difference between the total costs of a project and the total revenues it can generate. Viability gaps are the key impediment to profit-oriented public or private investment and may be closed via public intervention either on the cost or revenue side.

Clarifying project-level climate finance terms can help policymakers better understand public actors' options to intervene and make low-carbon and climate-resilient projects financially attractive for the private sector.

3. From a project to a whole economy perspective

The project perspective is helpful to identify the viability gap of individual climate finance projects but it does not capture the full costs of climate policy for the whole economy. As shown in Figure 1, the full **incremental cost** of climate change mitigation or adaptation consists not only of the viability gap of project but also of broader **public framework expenditures,** which are defined as public expenditures that meet sector, system or economy-wide climate finance needs but are not part of the investment costs of individual projects and do not constitute revenues needed to pay back investment costs.[5]

This means that policymakers have to understand both the project developer and a broader whole-economy perspective when designing public interventions to mobilize low-carbon and climate-resilient investments.

Figure 1 shows the **three main entry points for public interventions to scale up climate finance**. They are:

- **Targeting viability gaps by increasing project revenues**, e.g. through carbon credits, feed-in tariffs, or subsidized power purchase agreements.[6]
- **Targeting viability gaps by reducing (public and private sector) project costs** through different measures. Traditional instruments include investment grants to reduce private investment needs,[7] concessional loans to reduce the cost of capital,[8] and tax reductions. More innovative instruments to reduce private sector costs are project preparation facilities to lower pre-investment costs, and a range of

[4] When making investment decisions, project developers will usually discount future costs and revenues to present day value.

[5] An even wider societal point of view would consider the full macroeconomic costs and benefits of mitigation and adaptation policy caused by reallocating investments to different activities, commonly measured by discounted impact on Gross Domestic Product (see, e.g., Carraro et al., 2012).

[6] See, e.g., CPI San Giorgio Group case study on Rajasthan CSP, Stadelmann et al. 2014

[7] See e.g. Prosol case study, Trabacchi et al. 2012

[8] See e.g. Ouarzazate I. case study, Falconer and Frisari 2012

risk mitigation instruments (e.g. guarantees, risk-sharing facilities).[9]

- **Improving the investment climate via public framework expenditures**, Such framework expenditures include capacity building for closing knowledge gaps; developing, implementing and monitoring climate policies to remove technical, legal and administrative barriers to investment; building monitoring, reporting and verification systems; and developing low-carbon and climate-resilient demonstration projects.[10]

4. CPI's definition of climate finance

In the *Global Landscape of Climate Finance*, we define climate finance as **total investment costs plus public framework expenditures** (as shown in orange in Figure 1). We define it this way for three main reasons:

- We look at **total and not incremental investment costs** because we want to track the progress of current total climate mitigation and adaptation investment, not investment above a hypothetical higher carbon alternative.
- We also track public framework expenditures to account for the fact that many project-level interventions would not be possible without the **public coverage of costs that are not seen at the project level** (e.g. development of national climate strategies, and specific regulations). Tracking public framework expenditures is warranted as they constitute costs that go beyond investment costs (e.g. grants) and they do not pay back investment costs (e.g. as revenue support mechanisms do)**.**
- In our landscapes we do not track policy-induced revenues such as those generated by feed-in tariffs and carbon credits. These **revenue support mechanisms pay back investment costs,** so including them would constitute double counting.

Our definition distinguishes itself from other climate finance concepts, as we include both public and private finance, as both sources contribute to meeting the overall climate financing challenge. In contrast to other definitions of climate finance, we do not include any revenues, such as carbon market payments or feed-in tariff, as this would lead to double counting.

5. Next Steps

This brief is one of a series of short briefs being prepared by CPI to focus on specific points of interest raised by our Landscapes of Climate Finance. CPI welcomes comments and feedback on this brief as part of this process and improving its future analysis on climate finance.

[9] See e.g. the PPCR case study, Trabacchi and Stadelmann, 2014. Note also that Frisari et al (2013) concluded that currently available public instruments do not fully address all major investment risks, and that first loss or policy risk insurance may be particularly helpful for risk mitigation.

[10] See e.g. case study on the Kalimantan Forests and Climate Partnership, Rosenberg and Wilkinson 2013

6. References

Ampri I, Falconer A., Wahyudi N., Rosenberg A., Ampera B., Tuwo A., Glenday S., Wilkinson J. 2014. The Landscape of Public Climate Finance in Indonesia. An Indonesian Ministry of Finance and CPI report (forthcoming). Executive Summary available from: http://climatepolicyinitiative.org/publication/landscape-of-public-climate-finance-in-indonesia-3/.

Buchner B, Falconer A, Hervé-Mignucci M, Trabacchi C, and Brinkman M. 2011. The landscape of climate finance. Venice: Climate Policy Initiative.

Buchner B, Hervé-Mignucci M, Falconer A, and Trabacchi C, 2012. Global Landscape of Climate Finance. Venice: Climate Policy Initiative.

Buchner B, Hervé-Mignucci M, Trabacchi C, Wilkinson J, Stadelmann M, Boyd R, Mazza F, Falconer, A. Micale V. 2013. Global Landscape of Climate Finance 2013. Venice: Climate Policy Initiative. Available from: http://climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2013/

Carraro C, Favero A, Massetti E. 2012. Investments and public finance in a green, low carbon, economy. Energy Economics, 34. P. S15–S28. Available from: http://uscib.org/docs/carraro.pdf

Falconer A, and Frisari G. 2013. San Giorgio case study: Ouarzazate I. Venice: Climate Policy Initiative. Available from: http://climatepolicyinitiative.org/sgg/publication/san-giorgio-case-studies-ouarzazate-i

Frisari G, Hervé-Mignucci M, Micale V, and Mazza F. 2013. Risk Gaps series. Venice: Climate Policy Initiative. Available from: http://climatepolicyinitiative.org/europe/publication/risk-gaps/

Juergens I, Amecke H, Boyd R, Buchner B, Novikova A, Rosenberg A, Stelmakh K, & Vasa A. 2012. The Landscape of Climate Finance in Germany. Berlin: Climate Policy Initiative. Available from: http://climatepolicyinitiative.org/publication/german-landscape-of-climate-finance/

Stadelmann M, Frisari G, Konda C. 2014. San Giorgio Group Case Study: Rajasthan Sun Technique, India. Venice: Climate Policy Initiative. Available from: http://climatepolicyinitiative.org/publication/san-giorgio-group-case-study-the-role-of-public-finance-in-csp-india-rajasthan-sun-technique/

Trabacchi C, Micale V, and Frisari G. 2012. San Giorgio Group case study: Prosol Tunisia. Venice: Climate Policy Initiative. Available from: http://climatepolicyinitiative.org/venice/files/2012/06/Prosol-Tunisia-SGG-Case-Study2.pdf

Trabacchi C, and Stadelmann M. 2013. San Giorgio Group Case Study: Making climate resilience a private sector business. Empirical evidence from the agricultural sector of Nepal. Venice: Climate Policy Initiative. Available from: http://climatepolicyinitiative.org/wp-content/uploads/2013/12/SGG-Case-Study-Pilot-Program-for-Climate-Resilience-in-Nepal.pdf

Rosenberg, A. and Wilkinson, J. 2013. Demonstrating Approaches to REDD+ Lessons from the Kalimantan Forests and Climate Partnership (KFCP). Venice: Climate Policy Initiative. Available from: http://climatepolicyinitiative.org/wp-content/uploads/2013/11/SGG-Case-Study-Lessons-from-the-Kalimantan-Forests-and-Climate-Partnership.pdf