Risk Gaps: A Map of Risk Mitigation Instruments for Clean Investments

Climate Policy Initiative

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About CPI

Climate Policy Initiative (CPI) is a policy effectiveness analysis and advisory organization whose mission is to assess, diagnose, and support the efforts of key governments around the world to achieve low-carbon growth.

CPI is headquartered in San Francisco and has offices around the world, which are affiliated with distinguished research institutions. Offices include: CPI Beijing affiliated with the School of Public Policy and Management at Tsinghua University; CPI Berlin; CPI Hyderabad, affiliated with the Indian School of Business; CPI Rio, affiliated with Pontifical Catholic University of Rio (PUC-Rio); and CPI Venice, affiliated with Fondazione Eni Enrico Mattei (FEEM). CPI is an independent, not-for-profit organization that receives long-term funding from George Soros.

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1 Introduction

National budgets tighten, policies change, carbon prices fluctuate, and international financial mechanisms stutter. In each case, risk perceptions mount and the task of encouraging private sector investment in climate change related infrastructure becomes more difficult, and potentially more costly.

Policymakers, who are responsible for encouraging this investment and making sure that it is reasonably priced, may feel that the task is beyond their control; after all, in many cases the cost of raising finance appears to be controlled by the market and its laws of supply and demand. But what drives the supply and demand for finance, is risk; and one thing that policymakers can cause, control, alleviate, or help mitigate, is risk.

Risk — whether real or perceived — is the single most important factor preventing projects from finding financial investors, or raising the returns that these investors demand. Risk and risk perceptions vary significantly from project to project, technology to technology, industry to industry, and country to country. Since higher financial returns are required to cover higher risks, the variation between project risks explains much of the difference in financing costs. Green investments typically suffer higher risk perceptions due to a dependence on public policy and, often, the relative immaturity of technologies, markets, and industries.

Not all risks need mitigation from policymakers; investors may be quite willing to take on some risk, although they might take on certain risk categories only if the price is very good. Understanding which sets of investors will accept which risks at what price is critical to developing policies and instruments to reduce them.

In this paper, we develop a framework for categorizing the risks that may befall green infrastructure projects, match them with available risk mitigation instruments, and identify where gaps between the supply and demand for risk mitigation continue to impede investment. Our findings suggest that:

- There are gaps in risk coverage, particularly for policy risks and financing risks (including investment liquidity risks).
- In developed markets, where policies have undergone frequent changes, there are gaps in risk coverage for policy risk. There are also gaps in coverage for physical and technical risks for the least mature technologies. Project interventions address financing risks for specific projects, but do not address liquidity risks.
- In developing markets, both the perception of risks and the supply of risk instruments are higher than in developed markets. As with developed markets, there is a gap in policy risk coverage. Financing risks are higher than in developed markets due to immature financial institutions and markets and not sufficiently covered by existing instruments. Concessional resources address these financial risks at the project level, but do not address liquidity risks.

Policy makers and new policies should focus on addressing this unmatched demand in order to unlock additional financing for green investments.

In chapter two, we classify the risks perceived most acutely by investors and developers, before matching these risks to the supply of risk instruments at various phases of the investment life-cycle in chapter three. In chapter four, we identify gaps in risk coverage. In related reports, we will address specific risk mitigation instruments against the framework and gaps laid out in this paper.

Our analysis is developed from workshops and one-on-one interviews with investors, insurers, project financiers, and bankers[1] — aimed at identifying which risks and barriers concern them the most when committing resources to green investments — and evidence emerging from the in-depth analysis of financing models for renewable energy infrastructure within the San Giorgio Group case studies.[2] These case studies help us identify the issues and the most effective solutions to mobilize financial resources for low carbon and climate resilient infrastructure.

1 On June 27, 2012, the Climate Policy Initiative and the Climate Bonds Initiative organized a workshop with insurers, project financiers, and investment bankers to kick-start a discussion on which perceived risks had critical bearing on investments in green infrastructure projects, as well as the desired features of risk mitigation tools that might be offered by the industry or policymakers (Climate Policy Initiative, Climate Bond Initiative, 2012). On September 3, 2012, CPI participated in the "Conference call on unblocking clean energy finance" organized by the United Nations Environmental Programme (UNEP) that gathered insurers, investors, and researchers to discuss the key issues that a policy risk insurance facility (currently under development) should be able to face.

2 Throughout 2012, CPI has published three case studies within the San Giorgio Group series:
- Prosol Tunisia, on the financing of small scale solar water heating equipment through governmental subsidies and consumer lending offered by local commercial banks;
- Walney Offhshore Windfarms, on the engagement of institutional investors in the financing of offshore wind in the UK;
- Ouarzazate I Concentrated Solar Power, Morocco, on the structuring of a public-private partnership to finance a large and expensive solar plant, combining both concessional public resources and commercial private ones.

The complete series of case studies is available on CPI's website: www.climatepolicyinitiative.org/venice/publication/san-giorgio-group-case-studies-2/

2 The perception of risks for green infrastructure investing

A reliance on public resources to make low-carbon and climate resilient (green) investments financially viable dramatically increases investors' perceptions of policy risks.

The innovative nature of most renewable energy technologies strongly impacts perceptions about technical risks.

Long investment horizons, coupled with high upfront costs and a lack of dedicated investors, raise the perception of financing and liquidity risks.

The amount of public funds necessary to support green investments, and severe budget constraints, increase the public sector's perception of outcome risks.

There are various types and categories of risk that accompany investment, and more particularly, green investment, which we define here as low-carbon or climate resilient investment. Here, we group[3] risks into four categories according to their different sources and character:

- ***Political, policy, and social risks:*** originate in the social dimension (governments, public opinion, individuals, or groups of citizens). These risks derive from both the legitimate actions of authorities exercising their legislative functions (policy/regulatory risks), and illegitimate and discriminatory acts by authorities and citizens, such as the consequences of repealed contracts, expropriation, and political violence and instability (political risks). The category also includes risks of social unrest and reputation (social risks) and misappropriation of resources (governance risk);[4]
- ***Technical, physical risks***: derive from the physical characteristics of the assets and/or the surrounding environment. They are technology-specific (such as construction and operation risks, environmental impacts, and decommissioning risk[5]) or related to the ongoing availability of natural resources (reliability of output risk);
- ***Market, commercial risks:*** these originate in the economic dimension (the action of markets and commercial counterparties) and relate to the economic value of inputs and outputs (price volatility risks and the value of environmental markets) as well as the costs and availability of financial resources (financing, liquidity, and counterparty risks);[6] and
- ***Outcome risks:*** are perceived by the public sector and are linked to the ability of publicly-supported green projects to meet objectives, whether they be emissions reductions or co-impacts, within expected costs (budget risks).

We present a more detailed analysis of these risks and their characteristics for both conventional and green investments in Annex A.

At first glance, most of these risks do not appear unique to green investments. However, **particular aspects of both low-carbon and climate resilient investments frequently increase the perception of relatively commonplace risks.** For example:

- The reliance on public support amplifies the perception of policy risks by developers and investors while, at the same time, increasing the perception of outcome risks by governments and public authorities;
- The innovative nature of some green technologies and the lack of a track record for their performance raise the perception of technical risks;
- Multi-year investment horizons and long payback periods[7] increase perceived market and commercial risks as well as policy risk.[8]

3 All risks classifications are subjective and different from each other: "Identifying the different types of risks is a varied art that differs between practitioners" (OECD 2008).

4 The clean-cut distinction between political and policy risk that we apply is less obvious in existing and emerging policy risk instruments, which are typically classified under the Expropriation clause of Political Risk coverage.

5 Decommissioning costs may exceed initial projections and/or earmarked reserves, or the infrastructure can be compulsory decommissioned much earlier than expected.

6 Some of the commercial risks stem directly from other risks and translate into market manifestations of political/policy and physical risks. Overlaps and relationships between different risk categories become highly relevant when considering how a risk mitigation instrument can impact on several different risks at the same time.

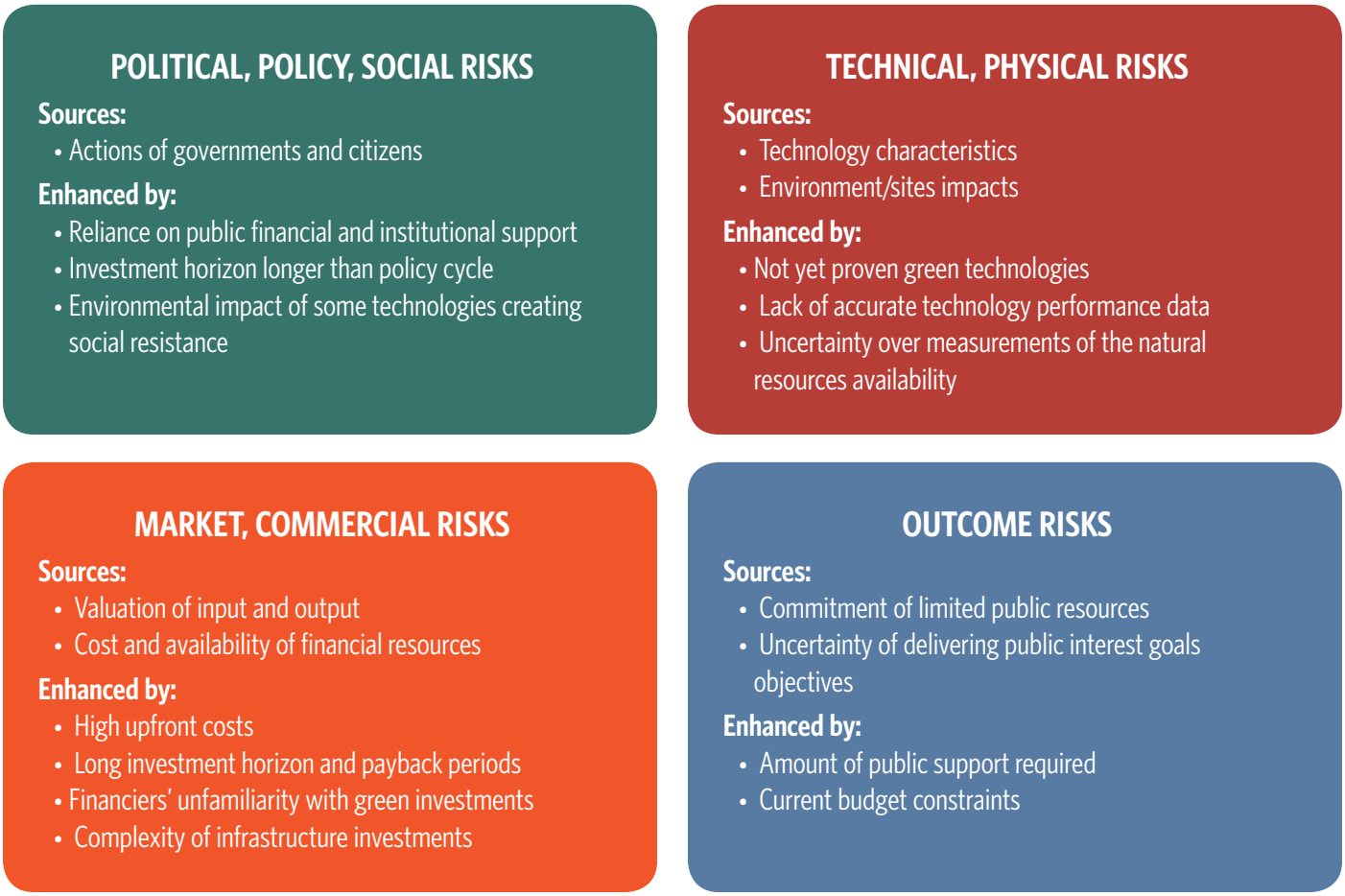
7 The payback period is the time needed by the investor to recover negative cash flows with the cost savings/revenues originated by the investment (Trabacchi et al, 2012).

8 The life cycle of green infrastructure investments largely outlives access to

The confluence of these factors places green investments outside most investors' "comfort zone," i.e. their business-as-usual investment options, requiring the public sector to address the perceived higher investment risks.

Figure 1 briefly summarizes the specific sources of risks and elements that, in the case of green investments, increase their perception.

Figure 1: Perceived Risks Classification



finance (and refinance) and political cycles.

3 The classification of risk mitigation instruments

A variety of organizations offer policies and instruments that attempt to mitigate green investment risk.

Here, we identify six categories of risk mitigation instruments and note whether they are generally provided by the private or the public sector.[9] The private sector is generally the primary provider of bilateral contracts and insurance, while both the public and private sectors provide credit enhancement instruments. Governments and public bodies are the primary providers of revenue support policies, direct concessional investments, and institutional support.

- **Bilateral Contracts** are well-established instruments addressing specific (non-credit-related) project risks. They are usually provided by **private entities** to cover technical risks related to the implementation or the operation phases of projects, and/or output price risks (e.g. Power Purchase Agreements, which secure both the quantity and the price of the power that the project will sell to an off-taker).[10]
- **Credit Enhancement Instruments** are usually developed by specialized entities of both **public and private nature** (e.g. monoline insurers, guarantee funds/facilities), that guarantee partially or in full the liabilities of a project towards its lenders. They improve the quality of loans/bonds issued by the projects, by mitigating the borrower's credit risk and enhancing coverage of debt service obligations.[11]
- **Insurance** is a well-established risk mitigation instrument, typically provided by **private companies**. It is used to transfer risk from one entity to another specialized in pooling risks together, in exchange for a premium and upon verification of the liability of the claim.[12]
- **Revenue Support Policies** are the **public sector's** main tool for promoting low-emission projects by reducing output price risks and offering resources that reduce financing risks (i.e. tax credit/equity). They are widely used in both developed and developing countries but, as technology deployment increases, they tend to become more onerous for public budgets – creating, in a sort of feedback loop, incentive for governments to renegotiate them, and for investors, perception of policy risks.[13]
- **Direct Concessional Investments** from **public entities** (governments' budgets, bilateral and multilateral development banks, dedicated private-equity facilities, and international climate funds) mitigate financing risks by providing loans or equity funding that enhances the financial viability of low-emission projects.[14]
- **Indirect Political/Institutional Support** refers to **public**, non-financial, interventions that usually target multiple risks. This category includes technical assistance for sustainable energy policies, and capacity building activities (e.g., quality certificates).

This list includes both dedicated instruments that directly address specific risks (e.g., contracts and insurance policies), as well as broader or more diffused instruments that address multiple risks at once (e.g., political commitments to environmental protection). It is clear that single instruments may affect several risks simultaneously, directly, and indirectly.[15] In order to better identify areas where supply is limited or inadequate, our analysis only links instruments to the risks they are specifically designed to address.[16] Table 1 lists the main instruments within these six groups and identifies the category or categories of risk they directly aim to address.

9 See Annex B for details on each instrument.

10 For more advanced technologies, contracts can often be highly specific, demanding complex drafting and implying high transaction costs. For example, an Engineering Procurement and Construction (EPC) contract for an offshore wind farm can involve several contractors with very different areas of expertise and responsibilities who need to be coordinated for the different phases of construction (i.e. installation of the monopiles foundation into the seabed, fitting of cables and turbines onto the monopoles, and the construction of the offshore substation from which power is transmitted to shore).

11 Instruments range from market-based tools developed by the private sector, such as securitization, to the use of public resources to allow credit access at concessional terms.

12 Insurance policies are very common in mitigating physical risks but have also become popular in addressing political risks. See for reference policies offered by the Overseas Private Investment Corporation (OPIC) and the Multilateral Investment Guarantee Agency (MIGA).

13 This is the case of the very popular fixed-price Feed-in Tariff (FiT) payment policies (see for reference the case of the Spanish FiT system for solar PV that was renegotiated in 2008 (IEA, 2011b)). Recent examples of FiT include price adjustment mechanisms or an overall cap to total support available.

14 The involvement of concessional finance, while very powerful, is often accompanied by lengthy procedures, heavy compliance and monitoring requests, and stringent requirements.

15 For example a better "direct" mitigation of construction risks does improve "indirectly" financial risks as well, by reducing uncertainty around construction costs and timing.

16 Indirect mitigation of other risks should also be considered when looking in detail at the effectiveness of a single instrument.

Table 1: Risk Mitigation Instruments

INSTRUMENT TYPE	INSTRUMENT NAME	POLITICAL, POLICY, SOCIAL	TECHNICAL, PHYSICAL	MARKET, COMMERCIAL	OUTCOME
		← RISK CLASSIFICATION			
Contracts	1. Engineering, Procurement and Construction Contract (EPC); Operation & Maintenance Contract (O&M)		■		
	2. Emissions Reduction Purchase Agreement (ERPA)			■	
	3. Foreign Exchange Swaps / Futures			■	
	4. Power Purchase Agreement (PPA)		■	■	
Credit Enhancement	1. Interest Rate Subsidy			■	
	2. Letter of Credit			■	
	3. Loan and Credit Guarantee			■	
	4. Securitization			■	
Insurance	1. Private Insurance (general)		■		
	2. Delays in Start-up (DSU)		■		
	3. Private Political Risk Insurance	■			
	4. Public Political Risk Insurance / Guarantee	■			
Revenue Support Policy	1. Feed-in-Tariffs /Feed-in-Premia			■	
	2. Tradeable Permits / Certificates			■	
	3. Tax Credits / Tax Equity			■	
	4. Fossil Fuels subsidy policy			■	
Direct Investment	1. Concessional Loans Funding	■		■	■
	2. Dedicated Private-equity Funds			■	
	3. Equity-investments of Dev Banks	■		■	■
	4. International Climate Funds	■		■	■
	5. Public-Private Partnership (PPP)			■	■
Political / Institutional Support	1. Capacity Building / Technical Assistance	■			
	2. Database / Information tracking tools		■		
	3. Quality Standards	■	■		■

4 Supply and demand for investment risks - Gaps

In order to analyze whether perceived risks are addressed by risk mitigation instruments, we next map the demand for and the supply of risk mitigation instruments in Figure 2, alongside the life-cycle of green infrastructure projects.

We assess the **intensity of perceived risks** (colored boxes from light to dark) by asking investors and project financiers to identify which risks concern them most when assessing potential investments.[17] To assess the **supply of risk coverage**, we consider the availability of several risk mitigation instruments (see Annex B).[18]

In Figures 2 and 3, we combine the classification of perceived risks of Section 2 with the map of the currently available instruments (and the risks they address) from Table 1. We have distinguished our analysis between developed markets (Section 4.1) and developing markets (Section 4.2) because the intensity of risk perception and the availability of instruments differ respectively.

4.1 Risk coverage gaps in developed markets

In developed markets, gaps occur between the demand for, and supply of, a range of risk mitigation tools:

- Budget constraints and governments' revisions of support policies have created demand for coverage of **policy risk** that is not yet met;
- **Physical and technical risks** are highly influenced by the maturity of technologies. Gaps in risk coverage occur in the most prospective technologies; and
- Project-by-project interventions have done little to increase **investments' liquidity** and mitigate **exit risks**.

Political, Policy, and Social Risks

Retroactive cuts to support policies[19] **have significantly increased the perception of policy risks in developed countries. This has been compounded further by the ongoing (mainly European) sovereign debt crises.** Policy risk is primarily perceived by project developers during the phases of development, construction and operation, but also by lenders and investors during the financing stage.[20] **Our outreach suggests that coverage for policy risk is especially inadequate in developed markets.**

Technical and Physical Risks

Though not shown in Figure 2,[21] **physical and technical risks are inversely related to the level of maturity of specific technologies.** Less mature technologies are less likely to be covered by risk mitigation instruments (such as construction and operations agreements), and this can strongly hinder the development of these technologies.

Why does this happen? It originates from difficulties in measuring the impacts of risk and pricing its mitigation.

17 Please see footnotes 1 and 2.

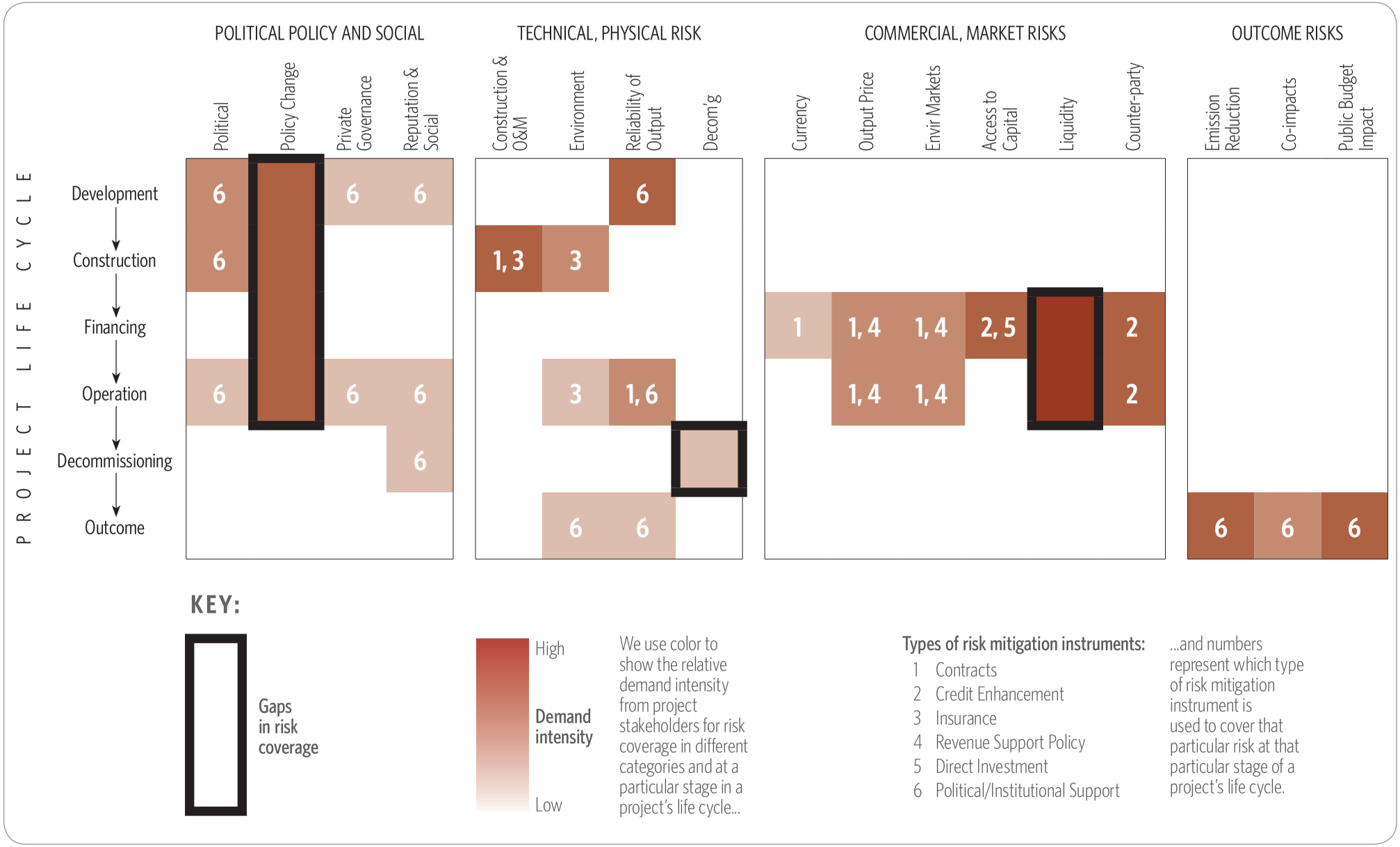
18 Although a detailed analysis of the effectiveness and adequacy of each instrument is outside the scope of this work, we have included into our mapping only the instruments that are "effectively" available to investors (established and proved instruments), while we have excluded those instruments still in their planning or testing phase.

19 Often in the form of Feed-in-Tariffs as in the cases of Spain in 2010 and Czech Republic in 2010 (BusinessGreen, 2012; SolarPlaza. 2010).

20 When financing a RE project underpinned by a pubic revenue support policy, the future state-guaranteed revenues are typically used as collateral for loans and credit lines, hence defined bankable. High levels of policy risks may induce lenders to no longer accept this kind of collateral.

21 Both charts consider the different green technologies in aggregate so that their individual technologies' results are unfortunately hidden.

Figure 2 - Gaps between the demand for risk mitigation instruments and their supply, in developed markets



For the most innovative technologies, loss histories are not available, and providers of mitigation instruments either refuse to cover these technologies outright or charge precautionary, high fees, making the coverage uneconomical for developers and investors. The impossibility of matching demand and supply of risk mitigation greatly increases investors' risk premia and often compromises the overall financing of the projects.[22]

As a technology becomes more commercially mature, uncertainty about its performance decreases and the demand for risk coverage starts to fall. It is perhaps ironic that the supply of coverage instruments actually increases at this stage.

Private parties and insurers are often reluctant to cover the risk that projects will not produce the amount of energy expected (output risks).[23] When committing public resources to support green investments, the public sector also perceives output risks as critical: the amount of physical output produced by the technology directly determines actual emission reductions (and other co-benefits in terms of energy independency, fossil fuels savings), ultimately justifying public budget expenditures. **However, output risks could be mitigated by forms of partnerships between public and private entities,**[24] through, for example, the provision of better quality databases, or policies geared toward offering performance/efficacy for cutting-edge technologies.[25]

Our interactions with investors suggest that decommissioning risks (as defined in footnote 5) for green infrastructure do not rank high among perceived risks, most likely due to the long expected lifetime of assets and the low present value (after discounting) attached to the decommissioning costs.[26] It is then not surprising to see that maturing renewable technologies, and even more established ones such as large hydropower, still lack dedicated instruments to manage decommissioning risks.

Commercial and Market Risks

Power purchase agreements and revenue support policies have had reasonable success mitigating market risks, even though the former may increase the likelihood of counterparty risks[27] and the latter places the burden on rate payers and/or public budgets. **By way of contrast, investors perceive financing risks as high, especially access to capital, counterparty, and liquidity risks.** Most of the relevant mitigation instruments for financing risks are provided by public entities (through loan and credit guarantees, interest rate subsidies, public-private partnerships) although the private sector has a few at its disposal, such as banks' letters of credit.

However, **widespread use of a project-by-project approach of these instruments and the current limited size of the securitization market**[28] **has hindered the development of an investment-grade tradable market sufficient to address liquidity concerns and reduce the cost of capital.** While some investors are able to hold less liquid securities and exploit their liquidity premium,[29] the large majority of investors implementing portfolio strategies have limited appetite for unlisted, non-standard securities that are not actively traded in any market.[30] Current trends in financial regulation

22 Project financiers from a large investment bank reported that, outside of some geographies (e.g. Denmark, The Netherlands) it's challenging to find providers of adequately priced EPC contracts for offshore wind plants.

23 While there are examples of performance guarantees offered by technology producers (and insurers) for more established renewable technologies (Munich RE is offering such a product on the efficiency of solar PV modules), we don't know yet of contracts or insurance protecting from lower wind regimes or irradiation levels. During an interview, an insurer has highlighted the issues they face when covering the availability of wind in some contexts where the quality and granularity of the raw data is not sufficient (though our conversation remained on rather general terms, it's well-known that wind measurements are highly site specific and the geographical coverage of the available databases is spotty). Privately offered weather derivatives can hedge against lower wind speeds or solar irradiaton levels; however the transaction costs involved (most contracts are privately negotiated and priced) and the technical issues involved (correlation between actual measurement and the benchmark in the contract) limit their usage to a small portion of renewable energy generation (Molloy, 2011).

24 In the form of quality standards and accreditation schemes, publicly supported databases (see for reference the IEA R&D database on wind (www.winddata.com).

25 BNEF (2010) proposed an efficacy insurance scheme (insuring the efficacy of cutting-edge and untested technologies) and cited as a potential reference scheme the Massachusetts' Fair Access to Insurance Requirements (FAIR), a scheme to help home-owners in storm-affected areas that have difficulties in obtaining home insurance from private insurers. The scheme is collectively funded by all insurers in the state, aiming to fill a gap in the U.S. insurance market.

26 We note however that most renewable energy infrastructure (wind, solar) are characterized by manageable and predictable decommissioning costs, especially when compared to nuclear plants and fossil fuel extraction infrastructures.

27 "The PPA is the primary revenue stream contract, and as such it is critical the counterparty be creditworthy", Porter Hedges (2011).

28 The Wind ABS issuance Breeze Finance in 2006 is the latest relevant deal in the industry.

29 Liquidity premium is the excess return that a less liquid security needs to offer over an equivalent liquid (quoted and/or traded over active markets) one to compensate the investor for the extra risk.

30 Typically, the offering memorandum of a pension fund, mutual fund, and

will amplify these issues as they point to an increase of disclosure requirements[31] or capital coverage[32] for less liquid assets held by financial companies, banks, and insurers.

Recent issuance of climate and green bonds by the European Investment Bank, the International Finance Corporation/World Bank and Asian Development Bank (among others), seems to signal a shift towards the creation of a more liquid fixed-income market, which should help to address those liquidity risk concerns. However the cumulative size of these initiatives, as of today, represents only less than 2% of the overall global project finance debt market (USD 344.6 billion in 2011 (Eckhart, 2012)).

Outcome Risks

A growing number of public institutions are using public-private partnerships and policies such as volume caps and cost limits to mitigate public perception of outcome risks, specifically the risk that renewable investments could overextend public budgets. Budget constraints and sovereign debt issues in developed countries have placed a strong focus on the cost-effectiveness of public support policies, on the need to limit their burden on public resources, and on involving more private sector resources.

4.2 Risk coverage gaps in developing markets

In developing markets, the overall level of perceived risks is higher than in developed markets, but so is the supply of risk mitigation instruments:

- Instruments only appear to address political risk, not policy risk; and
- Perceptions of financing risks are heightened by the perceived weakness of domestic financial institutions and markets. These risks have been mostly addressed with concessional resources, which do not improve the liquidity of investments or attract private finance.

Investors have long-standing concerns about investing in many developing countries. It is not surprising that the majority of our workshop participants/interview subjects perceive the **overall level of risks in developing markets to be higher than in developed ones.**

Political, Policy, and Social Risks

The perception of both political and policy risk in developing markets is very high. Coverage for political risks is usually bundled together with political risk insurance offered by organizations such as the Multilateral Investment Guarantee Agency (MIGA - World Bank Group) and the Overseas Private Investment Corporation (OPIC).

As with developed countries, there are significant gaps in supply of instruments to address policy risks. The presence of international donors and development institutions in financing green investment projects in developing countries indirectly mitigates policy risk, due to perceptions about their influence or ability to exert 'political leverage' on host country authorities.[33] We explore emerging proposals to mitigate the perception of policy risks in developing countries in a dedicated paper (*Risk Gaps: Policy Risk Instruments*) focused on policy risk insurance instruments.

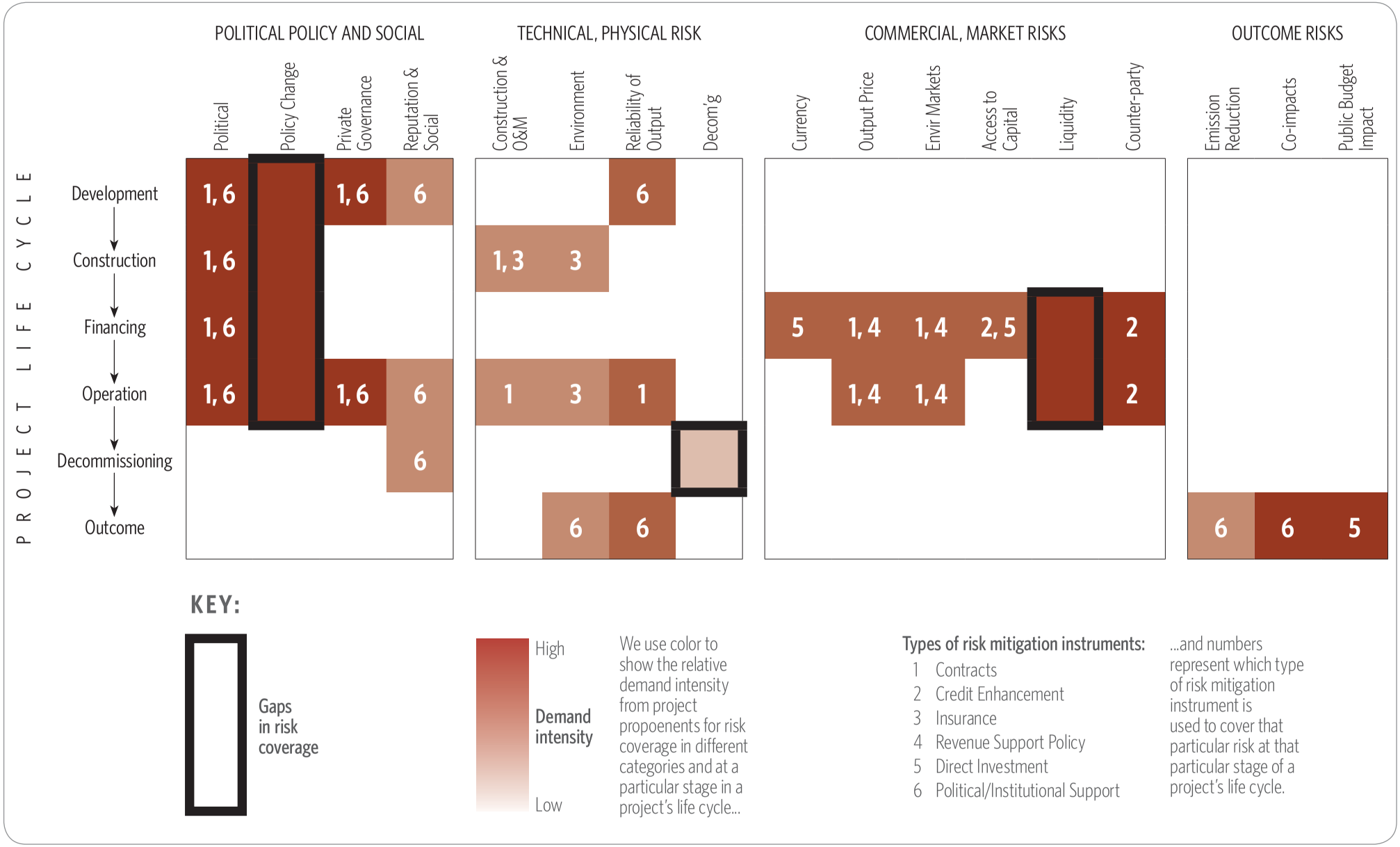
even (as the most unregulated investment vehicle) hedge fund will state an internal limit for illiquid/unlisted securities.

31 The U.S. Financial Accounting Standard Board (FASB) 157 Position paper on Fair Value Measurements, issued in 2007, classifies all securities in a three-level system and requires the inclusion of a risk premium for liquidity in the valuation of securities not ordinarily traded on active markets (Level 2 and Level 3 assets). (DBAM, 2009)

32 As per Basel III requirements.

33 Concessional financing is frequently linked to broader policy reforms and part of complex interactions and financial relationships between local authorities, donor governments and development banks. In such circumstances, it becomes harder (and more expensive) for the host country to recede from agreed policy commitments that would damage both external private investments and concessional financing, as they can have negative effects on the financing received for other purposes.

Figure 3 - Gaps between the demand for risk mitigation instruments and their supply, in developing markets



Physical and Technical Risks

The perception of technical risks is roughly comparable to that in developed countries. The exception is that there is generally a higher perception of output risks in most developing countries arising from the lack of good quality data and sufficiently long track records. This can impact the reliability of projects' financial planning as well as the perception of outcome risk by authorities supporting investments.[34]

Commercial and Market Risks

In less developed financial markets, high volatility (of currencies and power prices), scant liquidity, and high counterparty risks increase the perception that financial risks, already high in developed countries, are higher still in developing markets. Among financing risks, access to capital and counterparty risks are covered mostly by development banks' extensive interventions and by support provided by international donors and local public authorities. Given the shortage of available public resources, there are questions around the sustainability and replicability of approaches that rely heavily on public resources.[35] As with developed markets, project-by-project approaches to mitigate financial risks do little to help establish a tradable market (be it listed or over-the-counter) that would increase investments' liquidity and reduce the risk of unfavorable exit from investments.

Outcome Risks

Most projects supported by public spending aim to achieve key development goals (i.e. poverty reduction, creation of local jobs) but frequently weigh heavily on already tight public budgets and increase the perception of outcome risks. These risks are mostly mitigated through either quality standards imposed on project developers,[36] or by increasing the involvement of private sector actors via private-public financing mechanisms and partnerships. However, we note that some efforts to mitigate outcome risks add to technical and physical risks, for example by imposing local content clauses and/or extensive technical requirements.

34 Lack of good and reliable data increases the uncertainty of production estimates, hence lowering the reliability of financial projections and increasing the risk that public interest goals, underpinning the eventual support from collective resources, are missed.

35 The current efforts in developing public-private solutions (such as Public-Private Partnerships) go towards the combination of private and public resources in delivering services previously supplied by public resources only.

36 An example is the compulsory quality certification system (Qualisol) required for technology installers in the Prosol Residential program in Tunisia for the support of the solar water heaters with households (Trabacchi et al, 2012).

Box: An optimal risk allocation framework

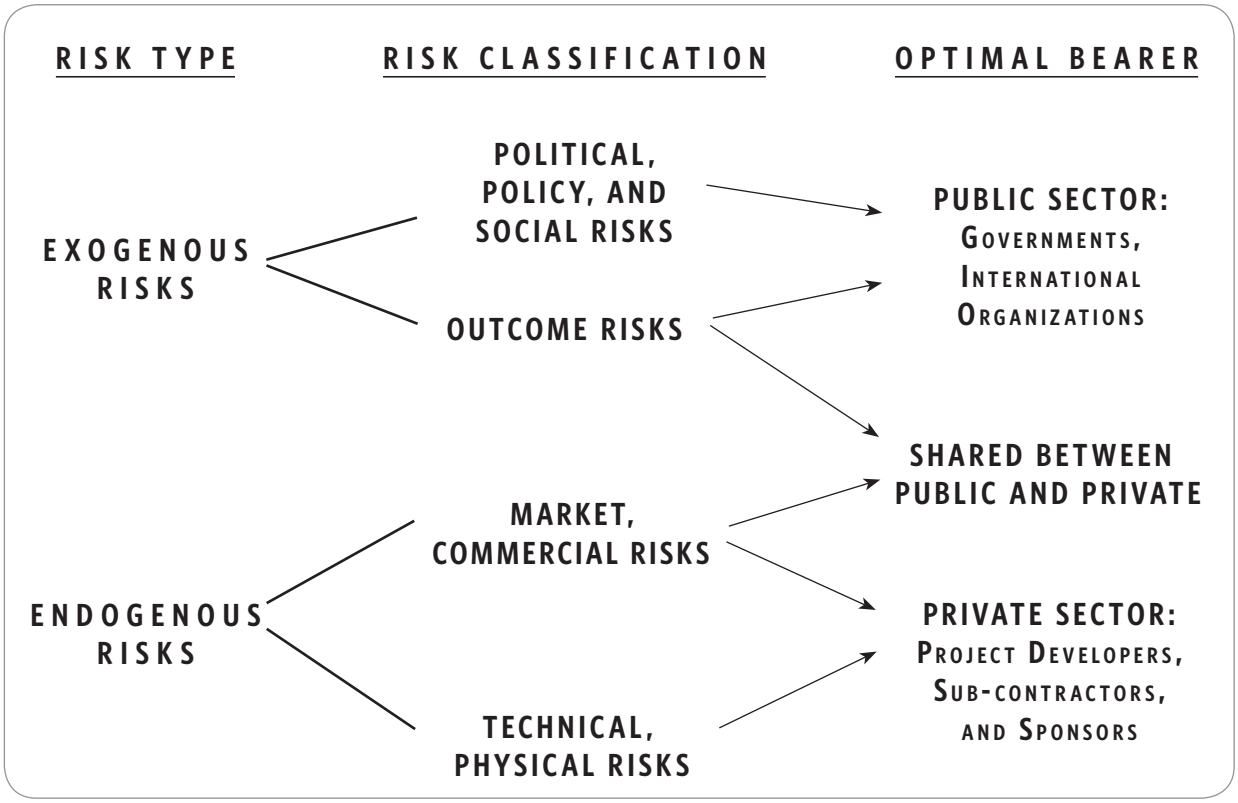
The allocation of risks to parties ill-suited to bear them tends to increase overall project costs (via higher risk premia and required returns) and ultimately, the probability of adverse outcomes (when the risk carrier has low ability to control it). Adequate risk coverage allows parties to reallocate risks to the parties best suited to take them.[1] Optimal risk allocation should satisfy the following three operational conditions:

- *Good information availability*: Where perceptions of risk originate from information asymmetries, less informed parties will typically require a higher premium to carry the risk;
- *Carrying capacity*: A party who is less likely to be financially compromised by a risk event will require lower premiums;
- *Enforcement ability*: A party with high ability to enforce compliance and influence the outcome of the risk will require a lower premium.

The risk allocation framework depicted in Figure 4 builds upon the OECD risk sharing model for public-private partnerships (OECD, 2008). Risks are distinguished as being either endogenous or exogenous:

- **Endogenous risks** are risks which the project developer or sponsor has a certain extent of control over and can directly manage in order to influence the actual outcome (e.g. technology, management of financial resources).
- **Exogenous risks** are risks which the project developer has neither control over, nor ability to mitigate (e.g. political risks, adverse changes in national policies, currency devaluation) and are better managed by the public actor.

Figure 4 - Risk allocation framework



1 The party who can manage the risks at least cost (Corner, 2006).

Political, policy and social risks are exogenous and therefore difficult for private parties — who have limited ability to enforce compliance on public authorities — to manage. Thus, following the OECD classification (OECD, 2008), we note that the public sector (at national or international levels) would be better positioned to enforce compliance and lower the probability of their occurrence.

Technical and physical risks are typically endogenous, and hence often borne more efficiently by the private sector. With proper due diligence and expertise, developers are best placed to control and manage these risks.[2] However, due to high uncertainty about green investments and the lack of good quality data on renewable resources,[3] pooling risk between private and public actors could promote better management of this kind of risk.[4]

Commercial and market risks are normally borne more efficiently by the private sector and shared between different parties, either through bilateral contracts or through exchanges of securities in financial markets.[5] However, in countries characterized by under-developed or non-existent financial markets, the public sector (e.g. governments, development banks, export credit agencies) might be called upon to bridge the gaps and assume some of the risks.

Outcome risks are often seen as exogenous to the project and, according to a theoretical optimal allocation framework, would be managed better by the public sector. That said, their occurrence can also be linked to project-related factors (such as technical performance, implementation, and project design), suggesting that a shared allocation between public and private might actually be more suitable.

2 Evidence from the San Giorgio Group case studies shows that, even in projects with extensive public support such as the Ouarzazate I CSP one, private developers and investors take full charge of technical and physical risks. These risks are managed with in depth due-diligence on the available resources in situ and careful determination of technology's specifications before the completion of the bidding process and signing of concession arrangements (Hervè-Mignucci, 2012; Falconer, Frisari, 2012).

3 On previous performance, on availability of natural resources in situ, etc.

4 Through, for example, contractual specifications in the Power Purchase Agreement (PPA) for the uncertainty on the output, or through pooled funds for environmental damages. In the Guerdane Water Project in Morocco the hydrological risk (i.e. risk of availability of a certain amount of water) shouldered by the private investor has been capped at 15% of revenues, with the excess borne by the government and the farmers (Head, 2006). However, in nascent industries still far from commercial maturity, developers may struggle to find private counterparties willing to accept those risks, calling upon public ones to step in.

5 We refer here to trading of exchange-listed contracts (derivates such as options, swaps, futures) to allocate risks such as currency and prices' volatility; or to trading of equity and debt securities to allocate financing risks according to investors' own risk appetite.

5 Bridging the gap: recent developments on new risk mitigation instruments

Within this framework for demand and supply of risk mitigation, we will explore existing and new instruments designed to address those instances of unmet demand. In particular, in two complementary papers, we investigate two new sets of instruments — first loss protection and policy risk insurance — conceived to mitigate financing and liquidity risk, and policy risk respectively. We aim to assess how well they contribute to effective risk management, considering the following elements:

- **The risks addressed**: At a minimum, effective instruments need to address the specific risks for which they been created, but they can also indirectly mitigate other risks as well;
- **Their costs:** Both explicit fees and implicit transaction costs need to be lower than the benefits/savings that the instruments yield;
- **Complexity and availability/accessibility:** Complexity usually impedes wide utilization of instruments and increases transaction costs, making the instruments less accessible;
- **The suitability of the party bearing the risk**: An ill-suited risk bearer would either fail to effectively control the risk or charge very high risk premia for mitigation;
- **Secondary/indirect effects**: The instrument itself, can, in some extremes, compromise its own effectiveness (the most typical example is through moral hazard); and
- **Timeliness of the remedy**: Excessively lengthy procedures and untimely remedies greatly compromise instruments' effectiveness by reducing the perceived benefit of the mitigation.

6 Final remarks

The scarcity of capital available from traditional providers, together with political and financial constraints faced by governments, has significantly increased the perception of different kinds of risk that, if placed on parties unwilling or unsuited to carry them, hinder the flow of resources towards much needed low-carbon, climate resilient investments. Some of these risks are very specific to green infrastructure. Others are commonplace for infrastructure investing in general but face particularly high perception for green investments.

While public and private entities provide several risk mitigation instruments, the current supply only partially covers these risks. In particular, policy risk and financing risks are not fully covered by existing instruments and prevent the flow of finance in both developed and developing markets. We believe public resources have a role in addressing those instances of unmet demand for risk mitigation.

In complementary papers, we conduct a structural analysis of new risk mitigation instruments aimed at highlight the critical issues for designing effective risk solutions for low-carbon investments, to lay the foundation for a productive conversation among practitioners, investors, and policymakers.

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Annex A: Classification of demand of risk coverage

Political, policy, and social risks

- **Political risks** are due to illegitimate actions of public authorities that affect, in a discriminatory way, foreign companies/ investors.
- **Policy risks** involve legitimate actions of local authorities that affect all agents (local and foreign) in a sector. They originate from local governments simply exercising their power to rule the activities under their jurisdiction.
- **Social risks** are due to actions of private individuals or groups in the public opinion. They may take the form of private governance issues or public reputation and social resistance issues.

Table 2 - Political, policy, and social risks

RISK TYPE		TRADITIONAL FEATURES	GREEN INVESTMENTS ADDITIONAL RISK	IMPACT	RESPONSE	INITIAL BEARER	OPTIMAL BEARER
Political, Policy and Social	Public Governance / Corruption	Corruption and bribes; Unreliability of government's liability; Repeal of contracts; Capital controls	High as most green projects need to be developed together with the public sector	Project unfeasibility / Higher Costs	Abandon	Project Sponsor	International Organization
	Legal and Ownership rights claims	Risk of property expropriation; Ownership claims; Land tenure claims		Project unfeasibility	Abandon	Project Sponsor	Domestic Public Sector/ International Organization
	Permitting / Siting	Permitting delays, denial or repeal; Forced relocation	Some technologies (Wind, Hydro, Concentrated Solar) are highly site-specific	Project unfeasibility	Abandon	Project Sponsor	Domestic Public Sector
	Policy	Change of support to tariffs or to overall level of subsidization	High reliance on public support for technologies not yet commercially mature	Lower revenues	Increase Req Return / Abandon	Project Sponsor	International Organization / 3rd party Insurance
	Private Governance	Resources misuse and misappropriation		Project unfeasibility / Higher Costs	Abandon	Project Sponsor	Project Sponsor / 3rd party Insurance
	Reputation / Social Opposition	Reputation damages ; Protest from local citizens	Some technologies (Wind, Hydro) face high social resistance	Damage costs and delays / Unforeseen Liabilities	Abandon	Project Sponsor	Domestic Public Sector

Technical and physical risks

- **Construction and operation risks** are due to uncertainty over the cost and timing of construction and over the cost of operations.
- **Physical output risks** originate from uncertainty over the effective availability of the natural resource on the specific site. These risks are increased by the lack of highly accurate, site-specific data.
- **Environmental impact risks** relate to unexpected adverse impacts of the green infrastructure on its surrounding environment.
- **Decommissioning risks** relate to the potential need to dismantle assets earlier than planned or at higher costs.

Table 3 – Technical and physical risk

RISK TYPE		TRADITIONAL FEATURES	GREEN INVESTMENTS ADDITIONAL RISK	IMPACT	RESPONSE	INITIAL BEARER	OPTIMAL BEARER
Technical, Physical Risk	Construction	Construction delays ; Substandard construction	Increased risk due to novelty of some technologies	Higher costs	Increase Required Return	Project Sponsor	Sub-contractor / Insurance
	Environmental (impacts, acceptance)	Unforeseen impacts on environment ; Clean up liabilities	Uncertainty due to novelty of most RE technologies	Unforeseen Costs	Increase Req Ret / Abandon	Project Sponsor	Sub-contractor / Insurance
	Reliability of Output	Actual production regimes below projections	Increased due to natural variability, intermittency etc	Lower revenues	Increase Required Return	Project Sponsor	Project Sponsor / Off-taker
	Operation and Management	Inability to operate and manage the asset as budgeted	Increased risk due to novelty of some technologies	Higher costs	Increase Required Return	Project Sponsor	Sub-contractor
	Decommissioning	Forced anticipated dismantling ; Inability to dismantle at planned costs	Technology specific - higher and uncertain for some RE (Offshore Wind)	Higher Costs / Liabilities	Increased Req Ret / Abandon	Project Sponsor	Sub-contractor / Public authorities

Market and commercial risks

- **Currency risks** occur when projects are financed with loans denominated in foreign currency but have revenues denominated in local currency.
- **Market risks** relate to the uncertainty on the demand for the project output, and on the price at which the output can be sold and/or the inputs can be purchased.
- **Financing risks** relate to uncertainties in access to capital for financing and re-financing, in terms of availability and cost of investment capital.
- **Counterparty and credit risks** refer to the ability of counterparties to honor contracted obligations.
- **Liquidity / Exit risks** refer to uncertainties about the realized value when monetizing the investment before the end of the asset's life cycle (for equity sponsors), or maturity of loans (for lenders).

Table 4 – Market and commercial risks

	RISK TYPE	TRADITIONAL FEATURES	GREEN INVESTMENTS ADDITIONAL RISK	IMPACT	RESPONSE	INITIAL BEARER	OPTIMAL BEARER
Commercial, Market Risks	Currency Risk	Unfavorable currency fluctuations		Uncertain financial performance	Increase Required Return	Project Sponsor/ Debt Investor	Development and Commercial Banks/ Currency Funds
	Output Price Volatility	Uncertainty on realized output price; excessive market volatility, lack of demand	High risk due to long horizon of investments and lack of commercial maturity	Lower / unstable revenues	Increase Required Return	Project Sponsor	Power Off-Taker, Public Authorities
	Market-based Environmental Instruments Volatility		Uncertainty on realized GHG/ pollutant externality price, excessive market volatility	Lower revenues	Increase Required Return	Project Sponsor	International Carbon Market / Carbon off-taker
	Access to Capital	Shortage of required capital; capital charges higher than budgeted	Lack of understanding of RE in financing communities; Long investment horizon	Excessive cost of capital / capital shortage	Increase Req Ret / Abandon	Project Sponsor/ Debt Investor	Market/ Development and Commercial Banks / Export Credit Agencies
	Counterparty / Credit Risk	Lack of enforceable collateral; Unreliable counterparties (public/private)	Lack of established investment networks	Full or partial loss of capital	Increase Req Ret / Abandon	Project Sponsor/ Debt Investor	Market / Development and Commercial Banks / Export Credit Agencies
	Investment Liquidity/ Exit	Significant mark-down on secondary markets; Excessive transaction costs	Niche and specialized market; Lack of dedicated investors/ markets	Uncertain financial performance	Increase Req Ret / Abandon	Project Sponsor/ Debt Investor	Market / Development and Commercial Banks

Outcome risks

- **Emissions reduction risks** relate to projects, once financed and commissioned, failing to deliver renewable energy that displaces fossil fuel based energy.
- **Co-impacts risks** can occur when projects fail to deliver on indirect impacts such as the creation of green jobs, the improvement of air pollution, or energy security.
- **Budget impact risks** refer to the possibility that public commitments to green infrastructure significantly increase above budget capacity.

Table 5 - Outcome risks

RISK TYPE		TRADITIONAL FEATURES	GREEN INVESTMENTS ADDITIONAL RISK	IMPACT	RESPONSE	INITIAL BEARER	OPTIMAL BEARER
Outcome risks	Emission Reduction Targets		Failure of policies to achieve direct benefits and primary effects (Emission Reduction)	Primary targets missed	Amendment / repeal of policy	Governments and public backers	Shared between Governments and Private Sector
	Co-impacts	failure of policies to achieve in-direct benefits and second-ary effects	Secondary targets of Green Growth / creation of local jobs-industries / energy security	Secondary targets missed	Decrease of public backing for policy	Governments and public backers	Shared between Governments and Private Sector
	Public Budget Impact	Policies' costs overruns	Production support policies spur excessive growth that inflates policies' costs	Costs greatly above budget's projections	Renegotiation / amendment / repeal of policy	Tax-payers and rate-payers	Shared between Governments and Private Sector

Annex B: Classification of supply of risk coverage

INSTRUMENT TYPE	INSTRUMENT NAME	DESCRIPTION
Contracts	Engineering, Procurement and Construction Contract (EPC); Operation & Maintenance Contract (O&M)	**Provider:** Private
		Risk type: Technical, Physical Risk
		Description: : EPC and O&M contracts transfer the project risk for schedule changes, changing prices for materials, and labor (EPC), as well as risk related to the maintenances of the asset (O&M) to the contractor, in exchange for a fixed price. Payments can be done in mutually agreed installments, while contracts may include penalty clauses for failure to achieve performance parameters
		Payments can be done in mutually agreed installments, while contracts may include penalty clauses for failure to achieve performance parameters.
	Emissions Reduction Purchase Agreement (ERPA)	**Provider:** Private
		Risk type: Commercial, Market Risk
		Description: An Emissions Reduction Purchase Agreement is an agreement between the buyer and the seller of carbon credits from CDM/JI Projects. An ERPA identifies responsibilities, rights, and obligations to manage risks, related to price fluctuations and delivery of emissions reductions.
	Foreign Exchange Swaps / Futures	**Provider:** Private
		Risk type: Commercial, Market Risk
		Description: A Foreign Exchange Swap is a contract in which one party borrows one currency from, and simultaneously lends another to, the second party. The purpose of a currency swaps is to hedge against risk exposure associated with exchange rate fluctuations, ensure receipt of foreign money, and to achieve better lending rates.
	Power Purchase Agreement (PPA)	**Provider:** Public/Private
		Risk type: Technical, Physical Risk
		Description: A Power Purchase Agreement is a legal contract between an electricity generator (provider) and a power purchaser (typically a utility). It is used to cover uncertainty of the seller related to expected revenues of the project (which hamper its viability), or when the purchaser wants to secure supply of power at a predefined price (to know of any potential constraints for budget in advance).
	Decommissioning Contract	**Provider:** Public/Private
		Instrument type: Technical, Physical Risk
		Description: Decommissioning contracts may include clauses for the distribution of risks related to the decommissioning phases of the project, in proportion to relative rewards and for minimizing potential for dispute.

1 The party who can manage the risks at least cost (Corner, 2006).

2 Evidence from the San Giorgio Group case studies shows that, even in projects with extensive public support such as the Ouarzazate I CSP one, private developers and investors take full charge of technical and physical risks. These risks are managed with in depth due-diligence on the available resources in situ and careful determination of technology's specifications before the completion of the bidding process and signing of concession arrangements (Hervè-Mignucci, 2012; Falconer, Frisari, 2012).

3 On previous performance, on availability of natural resources in situ, etc.

4 Through, for example, contractual specifications in the Power Purchase Agreement (PPA) for the uncertainty on the output, or through pooled funds for environmental damages. In the Guerdane Water Project in Morocco the hydrological risk (i.e. risk of availability of a certain amount of water) shouldered by the private investor has been capped at 15% of revenues, with the excess borne by the government and the farmers (Head, 2006). However, in nascent industries still far from commercial maturity, developers may struggle to find private counterparties willing to accept those risks, calling upon public ones to step in.

5 We refer here to trading of exchange-listed contracts (derivates such as options, swaps, futures) to allocate risks such as currency and prices' volatility; or to trading of equity and debt securities to allocate financing risks according to investors' own risk appetite.

INSTRUMENT TYPE	INSTRUMENT NAME	DESCRIPTION
Credit Enhancement	First Loss Insurance	**Provider:** Public
		Risk type: Commercial, Market Risk
		Description: First loss insurance funds can be made available (by i.e. multilateral agencies) to cover part of the project losses in the event of its failure.
	Interest Rate Subs	**Provider:** Public
		Risk type: Commercial, Market Risk
		Description: An Interest Rate Subsidy is provided to lower the cost of borrowing by reducing the amount of each payment for interests. This makes the project more affordable and, at the same time, allows banks to keep loans in line with their commercial rates.
	Letter of Credit	**Provider:** Private
		Risk type: Commercial, Market Risk
		Description: A Letter of Credit is a guarantee to a seller that goods or services will be paid for by the issuer of the letter of credit - usually a financial institution - regardless of whether the buyer ultimately fails to pay. In this way, the risk that the buyer will fail to pay is shifted from the seller to the issuing bank.
	Loan and Credit Guarantee	**Provider:** Public/Private
		Risk type: Commercial, Market Risk
		Description:
		Loan Guarantees - Contractual obligation by which a guarantor assumes the responsibility of assuring payment or fulfillment of a borrower's debt or obligation, in case of default. Loan guarantees can refer to a private agreement with a bank, or to an agreement in which the government is the guarantor of the debt's obligation. They can be direct, to intermediaries that provide finance directly to project developers, or counter-guarantees, to intermediaries that issue guarantees for the benefit of lending institutions. Partial Credit Guarantees - Provided by Development Financial Institutions (both multilateral and some bilateral) at commercial rates to cover private lenders against the risk of debt service default by government or public (and recently private) sector borrowers, versus the payment of a guarantee-fee. "Partial" is intended for a guarantee coverage amount lower than 100% of the principal and/or interest. PCGs can be used for any commercial debt instruments (loans, bonds) provided by any private institution, and are flexible with regards to the balance of risk sharing of the borrower's credit. Export Credit Guarantees - Insurance policies provided by Export Credit Agencies, usually governmental agencies, which ensure that exporters are paid for goods shipped in the event the customer defaults, thus allowing exporters to keep their prices competitive.
	Securitization	**Provider:** Private
		Risk type: Commercial, Market Risk
		Description: When raising financing through a project bond, the company or Special Purpose Vehicle will issue senior and subordinated tranches of debt. The subordinated tranche will take first losses and the credit standing of the senior debt will be enhanced because it will carry less risk.
		Asset-backed securities - Securities which are based on pools of underlying assets, usually illiquid and private in nature. The "pooling" of assets makes the securitization large enough to be economical and to diversify the qualities of the underlying assets (diversifying risk).
		Credit Tranching - Senior/Subordinated structures are the most popular technique to create internal credit enhancement. The subordinated tranches function as protective layers of the more senior tranches.
		Green Bonds – Broadly defined as fixed-income securities that raise capital for a project with specific environmental benefits. Green bonds are backed by the assets they fund, the issuing institution, mortgages, or public sector loans (covered bonds), or guaranteed by a third party.

INSTRUMENT TYPE	INSTRUMENT NAME	DESCRIPTION
Insurance	Private Insurance (general)	**Provider:** Private
		Instrument type: Technical, Physical Risk
		Description: Insurance is a risk management tool used to address the risk of a contingent, uncertain loss. Insurance consists in the transfer of the risk of a loss, from one entity to another, in exchange for payment of a predefined amount of insurance coverage, called a premium.
	Delays in Start-up (DSU)	**Provider:** Private
		Instrument type: Technical, Physical Risk
		Description: Also referred as delayed completion coverage, Delays in Start-up insurance indemnifies the insured in respect of ascertained income loss or specified additional expenses (i.e. additional interest charges, or advertising expenses) that result from a delay in the completion of a project when the delay is caused by an insured event.
	Private Political Risk Insurance	**Provider:** Private
		Instrument type: Political, Policy, and Regulatory
		Description: Private political risk insurance policies generally guarantee asset coverage in the events of confiscation and expropriation, as well as contracts coverage such as license cancellations, currency inconvertibility, trade embargoes, strikes, riots, and loss of income following expropriation. Compensation is usually based on book value, while premiums are relatively higher than for public insurers, but still attractive for investors falling outside eligibility requirements for government-sponsored insurance.
	Public Political Risk Insurance / Guarantee	**Provider:** Public
		Instrument type: Political, Policy and Regulatory
		Description: Public political risk insurance providers include multilateral banks, export credit agencies and multilateral and bilateral organizations and corporations that promote private investmentPremiums are lower than for private insurers, but provision of insurance depends on the satisfaction of eligibility requirements. Risk guarantees are also designed to mitigate perceived risk related to the investment in a foreign country. This is done by providing support to project companies against a government's failure to meet specific contractual obligations to a private or public project due to sovereign risks or political force majeure events which are usually under government control..

INSTRUMENT TYPE	INSTRUMENT NAME	DESCRIPTION
Revenue Support Policy	Feed-in-Tariffs (FiT) / Feed-in-Premia (FiP)	**Provider:** Public
		Risk type: Commercial, Market Risk
		Description: FiT are policies that provide price certainty and long-term contracts to energy producers in order to help investment in renewable energy. Usually FiTs are accompanied by a "tariff digression" mechanism that decreases the tariff over time. FiP are composed of both a premium (like FiT) and the market value of electricity, exposed to market fluctuations. Risks related to market fluctuations are thus only partially addressed.
	Tradable permits	**Provider:** Public
		Risk type: Commercial, Market Risk
		Description: Market-based transferable permits give a value to environmental goods. This value can either be based on emissions reduction targets or renewable energy reduction targets. Credits can be allocated based on historical emissions (grandfathering) or actual emissions compared to projected business-as-usual emissions (baseline and credit). Although tradable permits are a valuable instrument for addressing revenue concerns from investors, they may generate new risks associated to price fluctuations in related markets. Central authorities can mitigate these risks by establishing price floors or allowing the banking of instruments.
	Tax Credits / Tax Equity	**Provider:** Public
		Risk type: Commercial, Market Risk
		Description: A tax credit is a sum deducted from the total amount a taxpayer owes to the state. A low-carbon technology tax credit is any tax credit offered by a governmental authority as an incentive for the installation and operation of low-carbon technologies.In the US, Tax equity in particular is a mezzanine investment instrument generated by the structure of tax incentives for renewable energy.
	Fossil fuel subsidy policy	**Provider:** Public
		Risk type: Commercial, Market Risk
		Description: Fossil fuel subsidies are governments' actions that lower the cost of fossil fuel energy production, raise the price received by energy producers, or lower the price paid by energy consumers. They include energy prices control measures, direct government outlays or purchase requirements, tax breaks, and loans and insurance at favorable rates. Any action that removes fossil fuel subsidies very often narrows the viability gap for low-carbon technologies.

INSTRUMENT TYPE	INSTRUMENT NAME	DESCRIPTION
Direct Investment	Concessional Loans Funding	**Provider:** Public
		Risk type: Commercial, Market Risk
		Description: In a concessional loan, while the principal loan amount needs to be paid back, the interest rate payments are still significantly reduced and can include a longer repayment period or even a gracing period. A concessional loan is classified as Official Development Assistance when it conveys a grant element above 25% and has an interest rate below the prevailing market rate.
	Dedicated Private-equity Funds	**Provider:** Public
		Risk type: Commercial, Market Risk
		Description: A dedicated private equity fund is a collective investment scheme used for making investments in specific equity securities according to the investment strategy of the managing private equity firm. The aim of these funds is to provide equity capital to attract, in particular, commercial investors that normally would avoid risky investments in developing countries.
	Equity-investments of Development Banks	**Provider:** Public
		Risk type: Commercial, Market Risk
		Description: Development Banks can invest in project equity. This enhances the capital base of the project and reduces its overall perceived risks by giving investors increased comfort. Equity-investments typically correspond to about 5%-15% of a company's total equity as the aim is not to take control of the company.
	International Climate Funds	**Provider:** Public
		Risk type: Commercial, Market Risk
		Description: International Climate Funds are operating entities whose mission is to finance projects, programs, and policies, mainly in developing countries, related to global climate change mitigation and adaptation.
	Public-Private Partnership	**Provider:** Public/Private
		Risk type: Commercial, Market Risk
		Description: A Public-Private Partnership is a contractual agreement between a public agency and a private sector entity for the execution of a project, service, or facility for the use of the general public. Public-Private Partnerships provide for the sharing of resources (skills and assets), risks, and rewards between the public and the private sector.

INSTRUMENT TYPE	INSTRUMENT NAME	DESCRIPTION
Political / Institutional Support	Capacity Building / Tech Assistance	**Provider:** Public
		Instrument type: Political, Policy, and Regulatory
		Description: Capacity building grants can help reduce information barriers, provide technical assistance to projects, or help develop financial markets. The purpose of capacity building is to remove the obstacles that inhibit people, governments, international organizations, and non-governmental organizations from realizing their developmental goals and achieve measurable results.
	Database / Information tracking tools	**Provider:** Public/Private
		Instrument type: Political, Policy and Regulatory
		Description: The lack of objective databases makes it difficult to comprehensively assess the risk of innovative investments. Data tracking and project classification tools make it possible to know the historical risk-return performances of similar infrastructure investments thus reducing uncertainties.
	Quality Standard	**Provider:** Public
		Instrument type: Technical, Physical Risk
		Description: Minimum quality requirements in infrastructure specifics at national level orbetween different countries help address many construction and operational risks. Quality standards are provided by national / international public and private organizations, and are usually based on best practices.