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An Assessment of the Impact of Policy on the Financing of Clean Energy

CPI Insight Series: Project Overview

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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 at Tsinghua, affiliated with the School of Public Policy and Management at Tsinghua University; CPI Berlin, affiliated with the Department for Energy, Transportation, and the Environment at DIW Berlin; 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.

Project Overview

According to the International Energy Agency (IEA), the global economy will need to invest over $30 trillion[1] in energy infrastructure over the next 25 years, $6 trillion of which will need to be dedicated to the renewable electricity and biofuels sectors alone just to meet current commitments. More ambitious greenhouse gas mitigation targets are likely to increase the investment required.

Financing this level of investment will challenge local, national, and global economies and governments, both to make this money available and to ensure that it is invested efficiently in support of appropriate policy objectives. This challenge is not unprecedented, as major investment in energy infrastructure has been a feature of economic development for many years. As it has in the past, policy will help shape the energy industries and markets in which these investments are made, influencing in particular:

- which technologies receive investment and where;
- how the investment is sourced and from whom;
- the cost of financing the various projects; and
- the risk associated with different types of investment and, crucially, who bears that risk.

CPI's assessment of the impact of policy on the financing of clean energy aims to investigate the effectiveness of policy in promoting efficient investment. In June 2011, we plan to complete the first stage of this project, publishing a short paper describing the important role of finance in explaining and diagnosing policy effectiveness outcomes. We will then move on to a series of case studies that develop a more detailed understanding and draw relevant conclusions for policy makers and other interested parties.

To set the stage for this project we will describe some of the key questions that face the clean energy community.

[1] In 2009 US dollars; see 2010 World Energy Outlook (WEO) 99 77, 275.

1 Questions for Policymakers

Annual investment in clean energy grew by more than four-fold between 2004 and 2008 and is approaching the annual level required to meet the $6 trillion figure cited above.[2] It is thus tempting to ask whether financing clean energy presents a problem at all. While the increasing investment is encouraging, it says nothing about the cost, efficiency, and long-term sustainability of this level of investment. In other words, policy has been shown to be effective in encouraging investment, but more assessment is needed to determine:

- whether the policy has led to the right mix of investment, and,
- whether the policy has resulted in low cost and efficient investment at appropriate levels of risk.

With respect to the **investment mix**, longer term climate goals are likely to require a mix -- in terms of technologies employed and where they are used – that is significantly different from the current mix. As in many industries, clean technology investment flows more easily to projects that use a proven technology within an established and credible regulatory or market environment. Where there are numerous technologies and markets at different stages of development, the result is a pattern of investment that favors certain types of projects[3], but excludes others that, while expensive or risky today, might be part of a long term, cost effective clean energy industry. A key lesson for policy makers will be to understand how policy motivates investment across a wider range of technologies and markets.

The efficiency of investment concerns both the risk of a project and the reward, the return required by the investors. Policy is crucial in determining and allocating both. Policy allocates risks between taxpayers, energy consumers and investors, and may or may not create incentives for various parties to reduce these risks. A guaranteed offtake price for renewable generation, for example, allocates risks to end consumers or taxpayers, including the risk of that generation becoming more or less expensive than conventional generation when the price of gas or coal varies. The allocation of risk will also influence how renewable energy projects are financed - that is, how much debt, equity and other types of finance can be employed and at what required return. The financial mix and perceived risk of a project will then determine the overall financing cost of the project. The resulting cost can be so high as to make a project uncompetitive and unattractive.

Thus, the question of how policy has enabled or restricted clean energy investment translates to a more diffuse and nuanced question of how policy has affected:

- different categories of finance (debt, equity, venture capital and mezzanine finance);
- clean energy technologies at different levels of maturity and cost competitiveness; and
- various geographies and the related market and regulatory environments.

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[2] According to Bloomberg New Energy Finance, investment in clean energy reached roughly $160 billion in 2009. As per the WEO, $220 billion (in 2009 US Dollars) would be required be required on average between 2010 and 2035 to meet existing commitments.

[3] In particular, projects that are eligible for project financing – that is, projects that can procure debt based only on the financial strength of the project with no recourse to the parent company assets and cash flows – enjoy significant advantages, even when a company decides not to use project financing.

The aim of this project is to develop a fact base by building evidence and identifying the issues along each one of these three axes.

As a starting point for this work, debt markets are a key indicator. Debt can be required to enhance returns to levels attractive to equity investors and many project sponsors require that a project be eligible for project financing – that is, investment grade debt with no recourse to the parent company cash flows - even if the sponsor intends to use internal funds for financing. Our analysis will extend to other important investment classes including equity (from project sponsor/developers), venture capital and mezzanine (or passive) equity and extend across several regions. We will look at successes and failures to secure attractive financing across different investment classes for various technologies under different policy regimes and market conditions.

From this starting point, there are a number of key questions that should interest policy makers:

1. **How does policy facilitate or deter access to project financing or low cost debt?**
   What characteristics and types of risk enable or deter access to project finance or attract low cost debt? Investment grade debt rating criteria can serve as a useful metric, as project financing often requires an investment grade debt rating, or at least project characteristics that merit an investment grade rating.

2. **How does finance for clean energy projects differ from conventional projects?**
   Are there special considerations for clean energy projects that policy makers need to consider? Or are all of the rules applicable to conventional projects also applicable to clean energy? To achieve similar ratings, are there differences between clean energy projects and conventional projects and for the same rating, do clean energy projects experience different debt costs, shorter (or longer) loan/bond durations, or other different loan requirements?

3. **What is the impact when a project is not eligible for low cost project financing?**
   Is the burden associated with ineligibility for project finance sufficient to deter investment and, therefore, is the project financing response an important consideration for policy design? When project financing is unavailable, there are three possible outcomes: 1) the sponsor could choose to finance the project on its balance sheet, which could transfer project risks to the parent company and affect company valuations; 2) the sponsor could seek other financing arrangements, including partnerships, additional equity investors, and more expensive types of debt; or 3) the sponsor could drop the project. While the cost and impact of being ineligible for project finance will depend on the specifics of particular projects, understanding the potential range of impacts will be important for developing policy.

4. **How can policy help project types move towards project financing eligibility?**
   If the impact of technologies or project types being ineligible for more attractive financing is significant, policy makers will need to identify the most effective way to move these projects towards eligibility. The investment community will often describe reaching investment grade status as “path dependent.” That is, if the first project of a technology or within a policy regime is successful, attractive financing might be available for subsequent projects very soon. However, if there are early examples of failed projects or other early-stage problems, then projects will become increasingly difficult to finance. Path dependency can be a very important lesson for policy makers seeking to move technologies forward efficiently.

5. **How do these answers differ by country and region?**

The financial attractiveness of a project is influenced by a multitude of factors, many of which are policy related, others of which are not. Fortunately, the world has given us many different sets of policy regimes to evaluate and compare.

2 Project Scope

For this project, we will look at:

Technology / Project Type Maturity	Geography	Finance Sources
Mature renewables - e.g. Onshore wind	**Europe**	**Debt** - Investment grade bonds - Bank loans - Government loans - Junk bonds
Maturing renewables - e.g. Solar PV	**US**	**Project equity** - Sponsorship / project finance equity - On-balance sheet finance
Developing renewables - e.g. Offshore wind or CSP	**China**	**Mezzanine** - Tax equity - Preferred equity - Convertible debt - Passive equity
Mature non-renewables - e.g. CCGT or Coal (for comparison)	**Brazil**	**Venture capital / private equity** - At project level - At company level
Equipment manufacturers - e.g. Facilities and factories	**India**	
Others - Research		

For each technology type/geography/finance source combination we will describe the general availability and cost of finance, as well as specific issues and policy questions that arise.