FACT SHEET

Green finance

Key points

- ***The primary role of governments is to encourage the flow of private finance in green growth through policies and financial instruments.***
- ***Policy frameworks should be predictable, stable and farsighted to encourage green investments.***
- ***Timing and strategy are crucial for the success of promoting policies.***

Green finance explained

There is no internationally agreed definition of green finance. The term describes a broad range of funding for environment-oriented technologies, projects, industries or businesses. A more narrow definition of green finance refers to environment-oriented financial products or services, such as loans, credit cards, insurances or bonds.[1] Green investing recognizes the value of the environment and its natural capital and seeks to improve human well-being and social equity while reducing environmental risks and improving ecological integrity.[2] Other terms used to describe green finance include "environmentally responsible investment" and "climate change investment".

How it works

Green industries and technologies are all at different levels of maturity, thus, requiring different levels of funding from different sources of capital. There are generally three sources: domestic public finance, international public finance and private sector finance. Domestic public finance refers to the direct funding by a government while international public finance refers to funding from international organizations and multilateral development banks; private sector finance consists of both domestic and international funding sources. Green financing can be packaged in different ways through various investment structures.

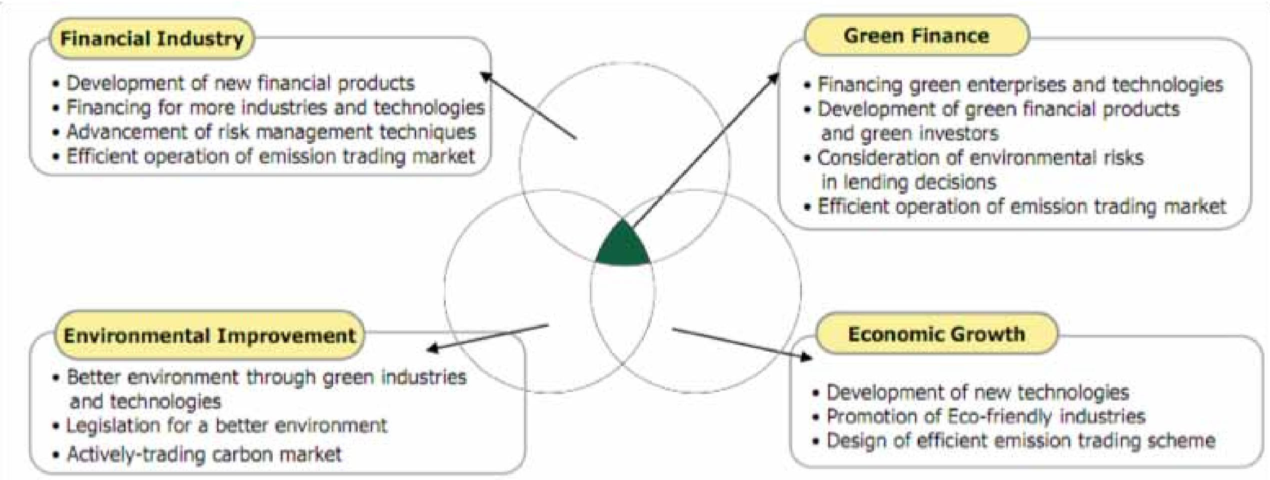
Green finance is a core part of low carbon green growth because it connects the financial industry, environmental improvement and economic growth (figure 1): "One missing link between 'knowing' and 'doing' in the transition to green industry is 'green finance'. All green industrial propositions cost money, and many green industry business models are more often than not untested or unconventional. Therefore, traditional finance may find it difficult or commercially unattractive to finance these green industrial propositions."[3]

[1] For more information on financial products and services, see United Nations Environment Programme Finance Initiative, *Green Financial Products and Services: Current Trends and Future Opportunities in North America* (Geneva, 2007). Available from www.unepfi.org/fileadmin/documents/greenprods_01.pdf (accessed 26 January 2012).

[2] United Nations Environment Programme, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication* (Nairobi, 2011). Available from www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf (accessed 26 January 2012).

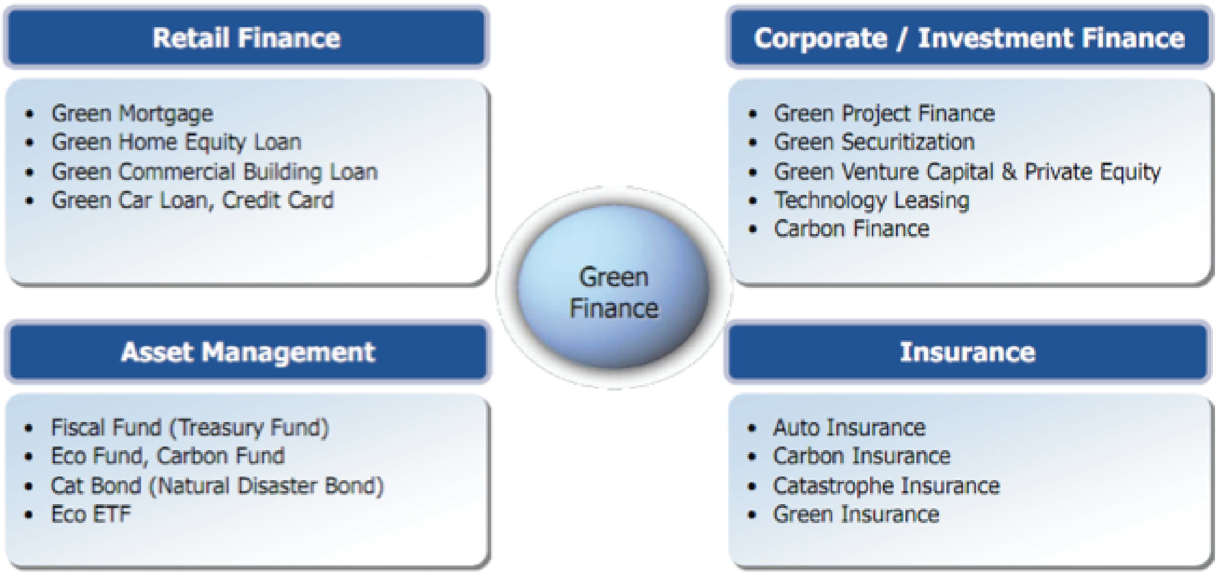
[3] Victor Zhikai Gao, *Green Finance for Green Industry and Green Economy* (Manila, 2009). Available from www.unido.org/fileadmin/user_media/UNIDO_Header_Site/Subsites/Green_Industry_Asia_Conference__Maanila_/Gao_pres.pdf (accessed 13 February 2012).

Figure 1: The green finance interface



Source: Jin Noh Hee, *Financial Strategy to Accelerate Innovation for Green Growth* (2010).

Figure 2: Green finance products



Source: Jin Noh Hee, *Financial Strategy to Accelerate Innovation for Green Growth* (2010).

Green finance spans many sectors and products (figure 2). Three categories for green finance are: infrastructure finance, financial assistance for industry or firms and financial markets. Green financing related to climate change includes mitigation and adaptation investments.

Many private investors perceive the risks of environmentally sustainable projects as not justified by the expected returns. Public financing mechanisms can tilt this balance in favour of perceived profitability; for example, by offering soft loans or guaranteeing loans from private banks. Public funding can help spur private investment. The United Nations Environment Programme estimates that US$10 billion of public funding for climate mitigation could leverage US$50–$150 billion of private investments.[4]

Even if public investment is small relative to private funds, it can catalyse corresponding private-sector activities. Direct government financing for green growth can also take place through sustainable public procurement and eco-efficient investment in public buildings and enterprises.

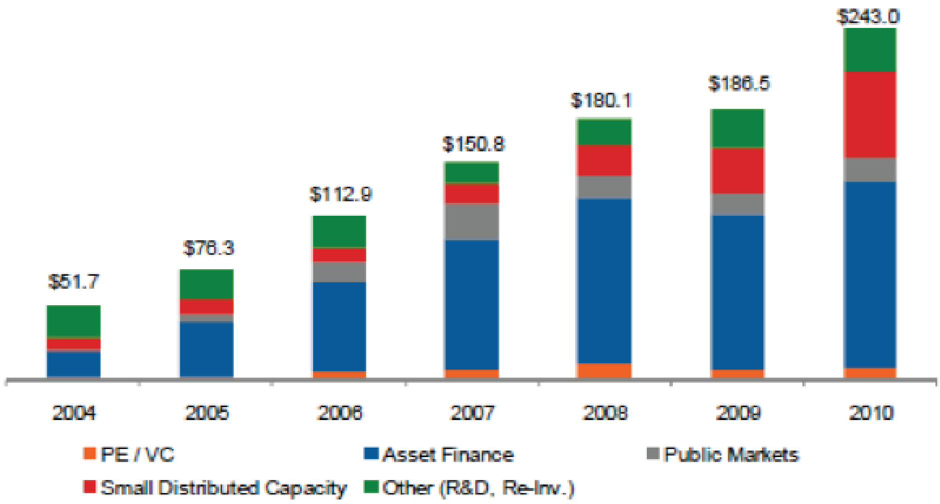
[4] United Nations Economic and Social Commission for Asia and the Pacific, Financing an Inclusive and Green Future: A Supportive Financial System and Green Growth for Achieving the Millennium Development Goals in Asia and the Pacific (Bangkok, 2010). Available from www.unescap.org/66/documents/Theme-Study/st-escap-2575.pdf (accessed 13 February 2012).

Generally, governments pursue the following objectives through green financing measures:[5]

- Establish and secure funding for green industries and green growth
- Support low carbon green growth by developing new financial products
- Attract private investments to build and sustain green infrastructure
- Strengthen corporate disclosure of green management practices and expand financial support for those businesses that apply them
- Set up markets for environmental goods and services, such as carbon markets featuring carbon credits.

If past trends can be taken as an indicator, then green investments possess great potential for growth in the future, especially for promoting clean energies (figure 3).

Figure 3: Total global investment in clean energy 2004–2010, including all asset classes (billions of US dollars)



Source: Deutsche Bank Climate Change Advisors, *Investing in Climate Change 2011* (2011).

Infrastructure finance

Much of the public investment in green growth relates to infrastructure. Governments of developing countries now have the opportunity to put infrastructure in place that will result in a better long-term management of resources, which will, in turn, channel private-sector capital into those investments. Infrastructure financing is generally project-based, with renewable energy and energy efficiency projects taking up the largest share of financing capital.[6]

Financial assistance for industry or firms

Some green industries need government financial assistance to mature or to become more competitive against well-established "brown" industries. Governments can give financial assistance to encourage businesses to invest in emerging green industries. They can also develop regulatory policy frameworks to help ease the access to financing from private investors or financial markets.

[5] Jin Noh Hee, *Financial Strategy to Accelerate Innovation for Green Growth* (Seoul, Korean Capital Market Institute, 2010). Available from www.oecd.org/dataoecd/4/4/45008807.pdf (accessed 13 February 2012).

[5] Deutsche Bank Climate Change Advisors, *Investing in Climate Change 2011* (Frankfurt, Deutsche Bank AG, 2011). Available from www.igcc.org.au/Resources/Documents/ExploringRiskAndReturn.pdf (accessed 13 February 2012).

Country experience: Geothermal investments in Indonesia

Indonesia houses 40 per cent of the world's known geothermal resources. Currently, it has 1.05 GW of geothermal capacity. The Government plans to add 9.5 GW of geothermal capacity by 2025, equivalent to about 33 per cent of the country's electricity demand. To increase private and international investment, the Indonesian Government announced a feed-in tariff for geothermal power and a 30 per cent net income tax reduction for six years for renewable energy. In addition, the Government created a US$400 million fund for the development of geothermal resources. Investment in geothermal projects in the country is estimated to amount to more than US$30 billion until 2025.[7]

Source: International Trade Administration, *Renewable Energy Market Assessment Report: Indonesia* (Washington, D.C., US Department of Commerce, 2010).

Promoting financial markets

Financial markets are an important source of green finance for publicly traded firms. Many institutional investors have adopted responsible investing, especially related to climate change, as part of their investment process.[8] Government support for environmental social governance schemes provides credibility to programmes, such as the Carbon Disclosure Project and eco-label initiatives, and encourages firms to become more environmentally responsible and thereby benefit from green financing schemes.

Box 1: Environmental social governance

Environmental social governance describes the environmental, social and corporate governance issues that investors consider in the context of their corporate behaviour. Although there is no definitive list of such issues, they typically display one or more of the following characteristics:

- Issues that have traditionally been considered non-financial or non-material
- A medium- or long-term horizon
- Qualitative objects that are readily quantifiable in monetary terms
- Externalities (costs borne by other firms or by society at large) not well captured by market mechanisms
- A changing regulatory or policy framework
- A public-concern focus

Source: United Nations Environment Programme and WBCSD, *Translating ESG into Sustainable Business Value* (Nairobi, 2010).

Institutional investors

Institutional investors often provide the largest source of funds for green investment. They are thought to control US$110 trillion in funds globally, including more than US$12 trillion from pension funds.[9] Generally, institutional investors have limited tolerance for risk, so they look for long-term policy stability in the countries where they aim to invest their money. Institutional investors invest in companies whose attitude to corporate social responsibility suggests that they have the potential for stable, long-term and sustainable growth. Additionally, they often take positions on the boards of larger companies to encourage them in this direction.

[7] Stuart Biggs, "Harnessing the heat of Indonesia's volcanoes", *Bloomberg Businessweek*, July 7, 2011. Available from www.businessweek.com/magazine/harnessing-the-heat-of-indonesias-volcanoes-07072011.html (accessed 16 February 2012).

[8] Deutsche Bank Climate Change Advisors, *Investing in Climate Change 2011* (Frankfurt, Deutsche Bank AG, 2011). Available from www.igcc.org.au/Resources/Documents/ExploringRiskAndReturn.pdf (accessed 13 February 2012).

[9] United Nations Economic and Social Commission for Asia and the Pacific, *Financing an Inclusive and Green Future: A Supportive Financial System and Green Growth for Achieving the Millennium Development Goals in Asia and the Pacific* (Bangkok, 2010). Available from www.unescap.org/66/documents/Theme-Study/st-escap-2575.pdf (accessed 13 February 2012).

Country experience: A carbon fund in Thailand

Thailand's market regulatory body, the Securities and Exchange Commission (SEC), approved the establishment of carbon credit funds in September 2011. The SEC also issued a set of guidelines for creating a carbon fund, aimed at asset management companies. The carbon funds can be used for investing in clean development mechanism projects and to buy carbon credits and carbon credit futures. The funds must invest at least 85 per cent of their net asset value in greenhouse gas reduction projects or carbon credits. In addition, investment in Thailand's carbon reduction projects must make up at least 65 per cent of the net asset value.[10] The carbon fund scheme provides an additional financing vehicle for institutional investors who are interested in supporting the reduction of emissions through certified emission reduction or voluntary emission reduction processes.

Source: Securities and Exchange Commission, *Request for Public Opinion Document on the Establishment and Management of Carbon Fund* (Bangkok, Government of Thailand, 2011).

Strengths of green finance

- **Promotes technology diffusion and eco-efficient infrastructure:** Investment in environmentally sound technologies, such as clean energy, may help bring down their costs and expedite wider technology diffusion. Developing countries can avoid the development model of "grow first, clean up later" because a great part of the green investment flows into infrastructure. This situation provides the opportunity for a country to leap ahead to eco-efficient infrastructure. The responsibility then falls on governments to develop infrastructure that will result in better long-term management of resources, which will in turn increase a country's competitiveness and channel private-sector capital into domestic green markets.

- **Creates comparative advantage:** Low carbon green growth may inevitably change from the current voluntary nature to a mandatory strategy in response to the rising pressures emanating from climate change and other environmental and economic crises. Expanding green finance today will mean a comparative advantage once environmental standards become stricter.

- **Adds value:** Businesses, organizations and corporations can add value to their portfolio by enhancing and publicizing their engagement in green finance. Thus they can give their business a green edge and thereby attract more environmentally conscious investors and clients alike.

- **Increases economic prospects:** Governments promoting green finance help buffer their societies against the time when resources become scarce by establishing and promoting domestic markets for alternative resources and technologies. They increase their economic prospects further by dipping into the new markets that possess great potential for employment generation. Because governments are primarily interested in maximizing the welfare of multiple generations, green financing mechanisms are particularly appealing in that they foster projects and developments that bear sustained benefits, especially in the medium and long terms.

Challenges to green finance

- **Present and projected Competitiveness:** Private investment in green growth in developing countries is constrained by both activity-specific and country-specific barriers that adversely affect the attractive ness of such investments, both in terms of investment returns and risk management. Increasing private investment in green growth will depend on the extent to which these investments become attractive relative to other opportunities, both domestically and internationally. Because international investors can look across different countries for opportunities, governments may need to implement a series of public interventions to make green investment opportunities more attractive.

[10] Securities and Exchange Commission, *Request for Public Opinion Document on the Establishment and Management of Carbon Fund* (Bangkok, Thailand, 2011).

- **Mispricing and no pricing of risks:** The overall investment and policy environment of a country contributes to its effectiveness in attracting private investors. The capital markets in some countries are not effective in pricing green growth-related risks. The extent to which the market misprices these risks or refuses to price them represents a barrier. In general, these risks include those associated with new technologies or processes that are not well understood and those related to the design, stability and transparency of domestic policies.

Country experience: Green Investment Bank in the United Kingdom

In 2010, the UK Government announced that it would create a Green Investment Bank that will invest in the green infrastructure projects that the market currently cannot adequately accommodate due to fear of the perceived associated risks. In March 2011, the UK Government published a report on several structures and models for a Green Investment Bank. The report notes that the UK Government committed 3 billion pounds in 2011 to fund the bank until 2015.[11] The Green Investment Bank will help accelerate additional investment in the green economy by complementing other green policies already set up by the Government. Investments will be made in various sectors, such as renewable energy, transport, waste and water. The Green Investment Bank aims to reach a "double bottom line of both achieving significant green impact and making financial return."[12] The institution is still in its preparation phase and will begin operating in April 2012.[13]

Source: House of Commons, European Scrutiny Committee, *Second Report of Session 2010–11* (2010).

- **Market distortions and shortcomings:** As long as subsidies for fossil fuels and the failure to internalize environmental externalities continue to distort the market price of energy, investment in green energy will have a hard time yielding attractive returns for investors. Adding to that is the limited number and diversity of green finance products and respective markets in which they can be traded.

- **Competing objectives:** While private investors aim to maximize the risk-adjusted returns for their investments, public green finance providers seek to achieve the highest possible environmental improvement and host-country policymakers are interested in achieving the best development prospects.[14]

- **Limited capital and limited awareness:** Many small- and medium-sized businesses are characterized by limited liquidity and access to capital, which hinders their participation in the green financing sector. The prevailing myopic time horizon of business strategies, which ignore benefits of green industries that lie in the far future, is another fundamental hurdle to private investments. Adding to that is the lack of experts who understand the complex relationship between environmental issues and financial markets.

- **Regulatory gaps:** Another barrier to the expansion of green finance is the gap in adequate regulatory and technical infrastructure to measure, assess and analyse green business strategies and financing.

[11] European Scrutiny Committee, *Second Report of Session 2010–11* (London, House of Commons, 2010). Available from www.publications.parliament.uk/pa/cm201011/cmselect/cmeuleg/428-ii/428ii.pdf (accessed 13 February 2012).

[12] Her Majesty's Government, *Update on the Design of the Green Investment Bank* (London, 2011). Available from www.bis.gov.uk/assets/biscore/business-sectors/docs/u/11-917-update-design-green-investment-bank.pdf (accessed 13 February 2012).

[13] Mark Kinver, "Clegg: UK Green Bank to Begin Investing in April 2012", *BBC News*, May 23, 2011. Available from www.bbc.co.uk/news/science-environment-13502121 (accessed 13 February 2012).

[14] United Nations High-Level Advisory Group on Climate Change Financing, *Work Stream 7 Paper: Public Interventions to Stimulate Private Investment in Adaptation and Mitigation* (2010). Available from www.un.org/wcm/webdav/site/climatechange/shared/Documents/AGF_reports/Work_Stream_7%20_Public_Private.pdf (accessed 13 February 2012).

Implementing strategies

Although there is no single best solution for the various situations and projects that demand green financing, there exist a number of interventions and measures that may be appropriate for common constraints and levels of development. In general, when businesses compare enabling environments for trade and investment, they look for: macroeconomic stability, potential for conflict and the degree of good governance, among other factors. Public interventions must address these topics and be applied in a manner that is transparent, long lasting and consistent if they want to stimulate private investment.

The following describes the various policy options that can improve the regulatory landscape to overcome investment challenges:

Information-building policy: Consumers, producers and investors all need to understand the positive economic and environmental effects of low carbon green growth. It is important they realize that this strategy poses an opportunity rather than a burden and that it will most likely transform from a voluntary path to a mandatory one in the long run. To improve the transparency needed for promoting a green financial market, impetus along the lines of corporate social responsibility needs to be expanded, such as the Carbon Disclosure Project or the UN Principles for Responsible Investment. It is also important to adopt stringent verification schemes for green technologies and green businesses to avoid confusion among consumers, to ensure that only those companies benefit from the green industry image that are truly part of it and to provide investors with the necessary information to make prudent investment choices.

Environmental regulations:[15] Environmental regulations include pollution standards and controls, public disclosure of information about environmental impacts, elimination of implicit subsidies for environmentally harmful or unsustainable growth (such as land use controls, building standards, land use planning, protection of natural buffer zones and water management and pricing) and improved sector governance and monitoring.

Markets for green finance products and environmental goods and services:[16] An often-cited example of a green market launched and developed by governments is the carbon market. In many countries so far, an emissions trading scheme was set up first; this included usually the enacting of legislation to govern membership, trading conditions and market surveillance for emissions trading. To ease the transition, governments can introduce pilot projects or voluntary trading schemes first and then slowly move to a mandatory trading system, encompassing lessons learned from the pilot phase, a legal base shift to "cap and trade" and the diversification of traded products.

Public financing: Because the cost of green investment projects, such as a renewable energy facility, is generally higher than conventional projects, governments should subsidize a portion in order to attract investors. Financing mechanisms include public competitive bidding, public procurement and public loans, grants or funds, like venture capital funds. In 2009, the carbon funds around the world held a total of US$16.1 billion in assets, which meant a 20 per cent increase compared with the previous year.[17]

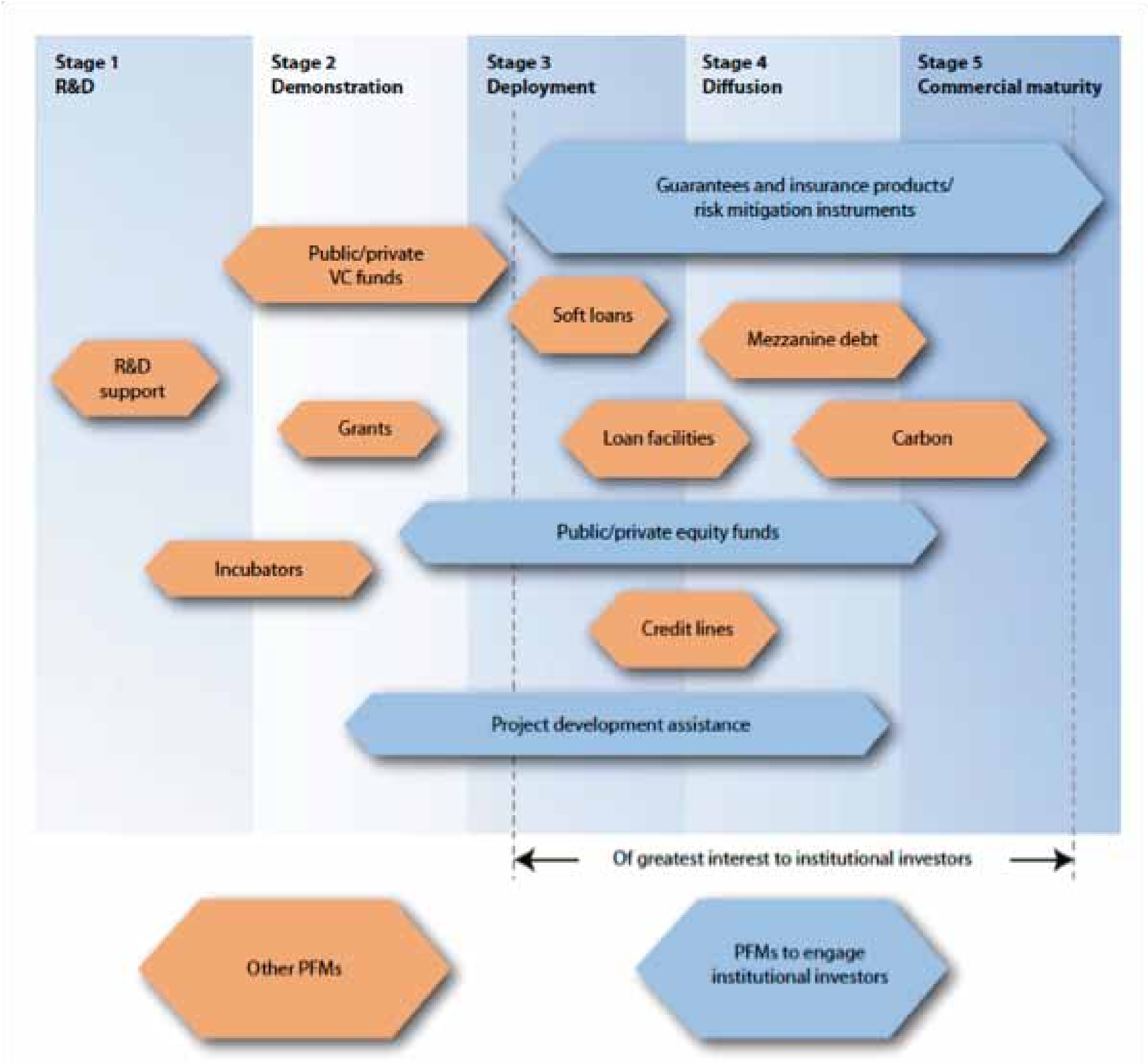
Government support targets only the early stages of development: Due to the risks associated with the use of new technologies and their relatively weak stance against the well-established brown technologies, which externalize environmental costs and profit from a fitting infrastructure system and well-developed supply chains, green businesses need government support, especially in the initial stages of their development. However, governments should aim to attract and empower other financial institutions to take over their role as active facilitators of green businesses once they enter a mature stage (figure 4).

[15] United Nations High-Level Advisory Group on Climate Change Financing, *Work Stream 7 Paper: Public Interventions to Stimulate Private Investment in Adaptation and Mitigation* (2010). Available from www.un.org/wcm/webdav/site/climatechange/shared/Documents/AGF_reports/Work_Stream_7%20_Public_Private.pdf (accessed 13 February 2012).

[16] Jin Noh Hee, *Financial Strategy to Accelerate Innovation for Green Growth* (Seoul, Korean Capital Market Institute, 2010). Available from www.oecd.org/dataoecd/4/4/45008807.pdf (accessed 13 February 2012).

[17] Orlando Fernández, *Carbon Funds at the Crossroads* (Practical Law Publishing Limited, 2010). Available from www.practicallaw.com/cs/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1247280598680&ssbinary=true (accessed 13 February 2012).

Figure 4: Public financing mechanisms across the stages of technological development



Source: United Nations Environment Programme, *Renewable Energy Investing in Energy and Resource Efficiency* (Nairobi, 2011).

Green finance policy measures for Asia and the Pacific

The Korea Capital Market Institute has summarized appropriate policy measures for promoting the green financing sector in the Republic of Korea (table 1) – although these policy points are easily transferable to other countries in Asia and the Pacific that are pursuing low carbon green growth.

Table 1: Policy measures promoting the green finance sector

Policy measure	**Description**
Environmental requirements reflected in statutes for investment, lending, credit rating, accounting, etc.	• Require financial institutions to address environmental concerns: fiduciary and lender's liability on the environment • Reflect environmental factor in credit rating and accounting procedures
Corporate disclosure of environmental information	• Put environmental information as a requirement for listing and disclosure • Shift from voluntary to mandatory disclosure gradually o Finance institutions in industrialized countries already are required to disclose comprehensive environmental information pursuant to voluntary guidelines, such as the Global Reporting Initiative
Certification of green Technology, enterprise and industry to guide investment and lending	• Introduce green business certification programmes, which are specific to industry, technology, business type and size o Leading financial institutions, such as Goldman Sachs, rate environmental performance; for example, categorizing green and non-green businesses
Green indices	• Develop a green enterprise index to promote green investment • Develop a green (carbon) risk index to promote investment in green bonds o JPMorgan and Innovest co-developed the JPMorgan Environmental Index-Carbon Beta (JENI-Carbon Beta Index), the world's first bond index that reflects climate change risk of businesses
System for green information provision	• Build a mechanism to access essential green information o Information for financial institution's credit and investment decisions: license and approvals from the environment ministry and other authorities, regulatory compliance, green enterprise designation, participation in voluntary agreements, etc.
Green enterprise rating agency	• Promote green company rating agencies o Three major rating agencies that specialize in corporate environmental performance are Innovest (US), EIRIS (UK) and SAM (Switzerland)
Green financial professionals	• Train professionals for research, review and investment to provide green financial services o Introduce professional training programmes and promote expertise
Green financial consumer education	• Initiate public and consumer education to promote awareness of: o The need for green growth o Green bubbles, environmental risks and other issues
Conference on green finance in Asia	• Organize an annual conference on green finance in Asia o One example is the Conference on Sustainable, Responsible, Impact Investing in North America (also known as SRI in the Rockies)

Source: Jin Noh Hee, *Financial Strategy to Accelerate Innovation for Green Growth* (2010).

Further reading

An Inclusive and Green Future: A Supportive Financial System and Green Growth for Achieving the Millennium Development Goals in Asia and the Pacific (Bangkok, United Nations Economic and Social Commission for Asia and the Pacific, 2010). Available from www.unescap.org/66/documents/Theme-Study/st-escap-2575.pdf

Green Investing: Toward a Clean Energy Infrastructure (Geneva, World Economic Forum, 2009). Available from www.weforum.org/reports/green-investing-2009-towards-clean-energy-infrastructure

Translating ESG into Sustainable Business Value (Geneva, United Nations Environment Programme and World Business Council for Sustainable Development, 2010). Available from www.unepfi.org/fileadmin/documents/translatingESG.pdf