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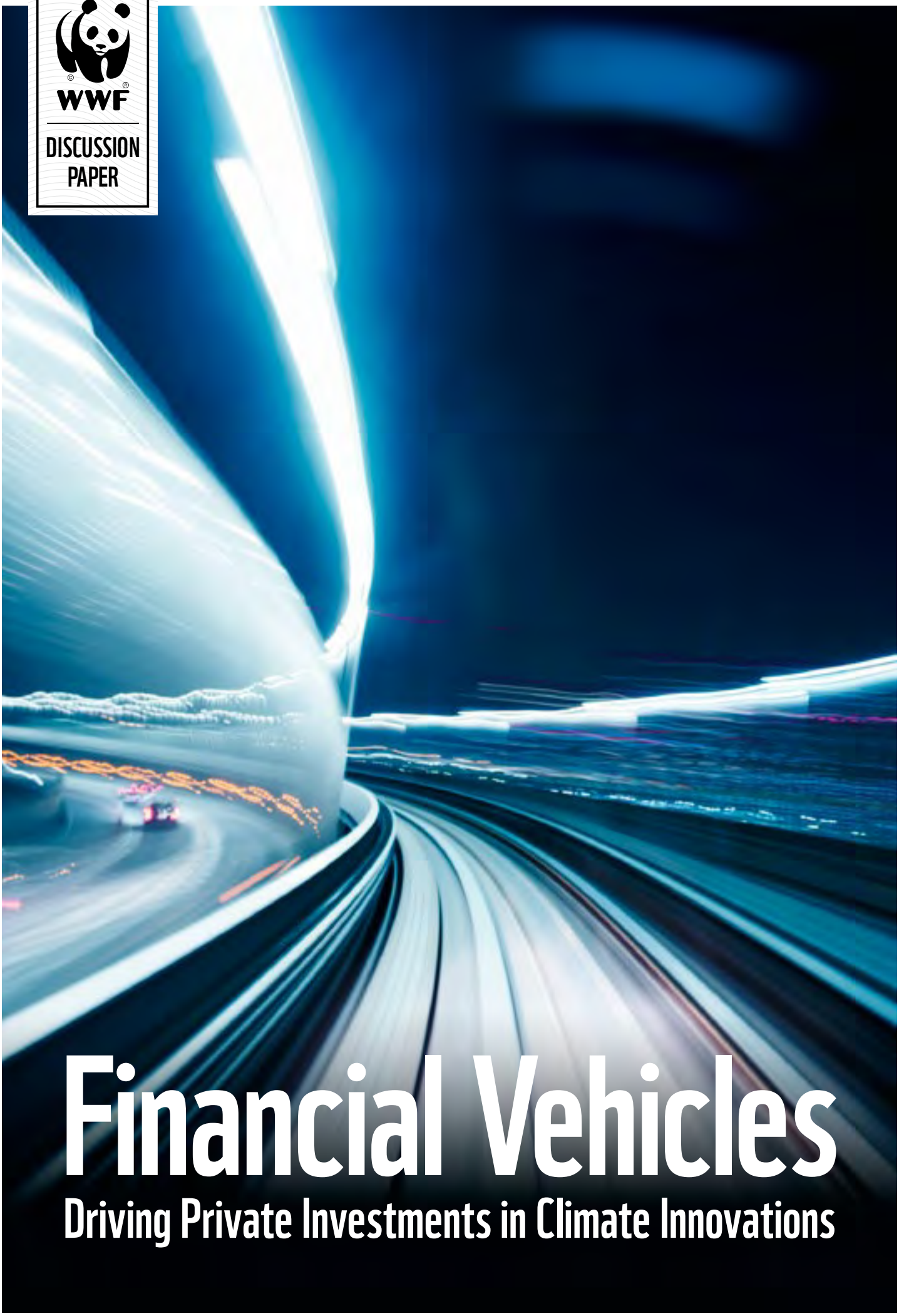
DISCUSSION PAPER



Financial Vehicles

Driving Private Investments in Climate Innovations

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WWF is one of the world's largest and most experienced independent conservation organizations, with over 5 million supporters and a global Network active in more than 100 countries.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by: conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

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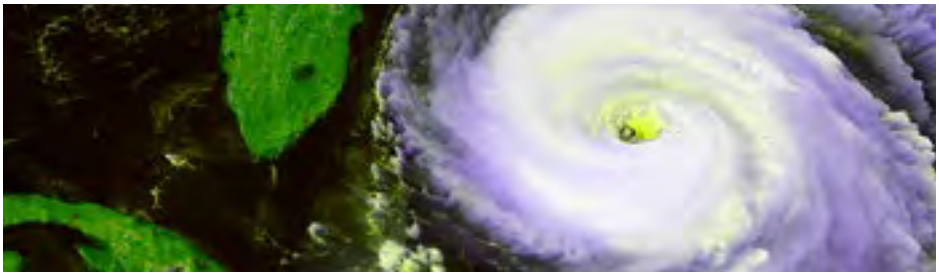
FOREWORD

The phrase "high-carbon development will kill itself" has been echoed by thought-leaders around the world. While most would agree, we cannot afford to wait for this to happen. Leaders of the world must embrace innovations and transformative change to meet the climate challenge. Financial vehicles are powerful drivers for deploying proven solutions for climate change mitigation and adaptation on the global markets.



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Climate change is for real. The message from climate science has been clear for many years: we're on track for runaway global warming which already today have severe consequences for all life on our planet. It has been repeated and supported by civil society organizations for long and increasingly also by corporate leaders, business advisors and city mayors.

While making the final edits on this paper, the International Energy Agency (IEA) released its *World Energy Outlook 2012*, an annual must-read for every leader in global energy markets. This year, the message is even more clear: "(...) the climate goal of limiting warming to 2 °C is becoming more difficult and more costly with each year that passes. (...) No more than one-third of proven reserves of fossil fuels can be consumed prior to 2050 if the world is to achieve the 2 °C goal, unless carbon capture and storage (CCS) technology is widely deployed."

In *The Energy Report* (2011) WWF has shown that an energy system based on 100% renewables is both necessary and feasible. Technology isn't the issue. Climate innovations to enable this transition are available around the world (see for example www.climatesolver.org). However, there's a need for attracting private investments, which is a key message from nine climate innovation system assessments presented by WWF in *Enabling the Transition* (2011).

The purpose of *Financial Vehicles* is to raise investors, policy makers and climate entrepreneur's awareness of the challenges and opportunities for financing climate innovations. We hope that this discussion paper will inspire strategic development in financial markets and facilitate constructive dialogues among its key stakeholders. By presenting ten inspiring examples of already existing financial vehicles we want to encourage investors – especially in private financial markets – to seize the opportunities to invest today for a good life for nine billion people on one planet also in 2050.

NEED FOR SUBSTANTIALLY INCREASED INVESTMENTS IN CLIMATE INNOVATIONS

The need for rapidly increased capital flows to carbon mitigation technologies is strikingly apparent. Take as a primary example the area of energy generation, which is solely responsible for more than 60% of global annual carbon emissions (WEF 2009). A recent IPCC (2012) report highlights the enormous potential of renewable energy technologies to contribute to a transition away from this carbon-emitting system, while accruing other sustainability benefits in addition to climate change mitigation.

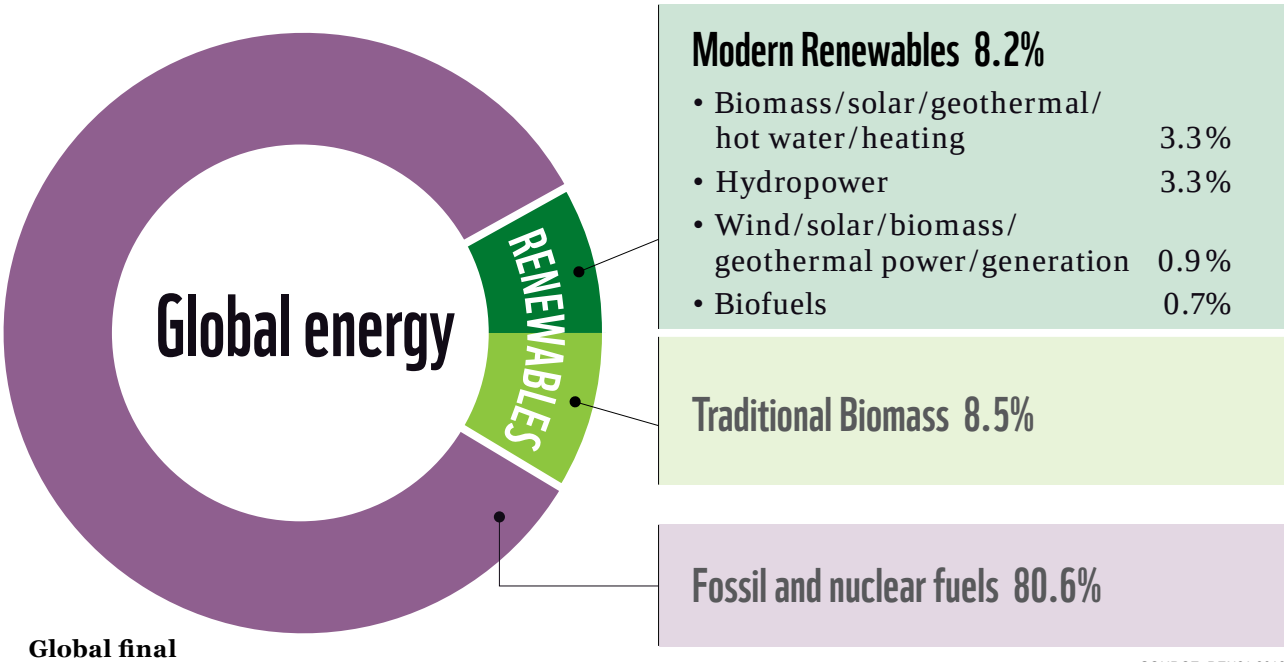
It is clear from the IPCC report as well as WWF's own assessments that we already have access to the technologies needed for enabling this transition. Increased deployment of these existing technologies is what is lacking. And this deployment is largely a question of investment, i.e., of finding ways to attract private capital to finance a rapid growth of these technology areas and at the same time, earn sound returns.

One the one hand, there are positive signs. Investment in renewable energy technology has soared over the last decade. While renewable energy and energy-efficient technology only accounted for around 10% of global energy infrastructure spending in 2008 — according to the World Economic Forum (2009)— annual investments have risen more than 90% since then, to total $ 257 billion in 2011 (REN21 2012). This amount constituted 44% of investments in new capacity in 2011, and that's a record high. However, it also must be said that 56% of investments in new capacity were spent on the same unsustainable energy systems that drive global warming (REN21 2012).

Energy production from renewable sources is now an important part of global primary energy supply. Yet it is nowhere near enough. The 83% of global energy consumption still drawn from non-renewable sources makes this abundantly clear. Clean energy technologies could be deployed faster, and on a much larger scale. This is even more striking when we consider newer technologies used for electricity generation such as solar or wind (IEA 2012) - these currently, account for less than 5% of global electricity.

While recognizing the positive change in climate change-mitigating investment that has occurred over the last decade, we must also acknowledge that the transition to a low-carbon economy requires investment on a completely different scale.

Public financing is essential, playing a key role in the early growth of all renewable energy technologies. In particular, public financing complements private financing,

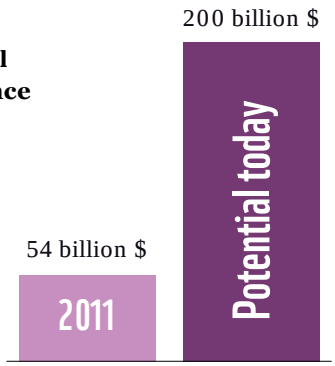


Global final energy consumption

SOURCE: REN21 2012

enabling flows of private finance into new technology areas through tools such as bond underwriting, loan guarantees, and soft loans. Innovative policy solutions, to enable more public and private financing to flow into climate change mitigation, has been addressed in several recent reports from UNEP (2011), the G20 secretariat (2011), and other intergovernmental organizations (NEFCO 2010).

Private investments in developing countries, all climate-mitigation finance



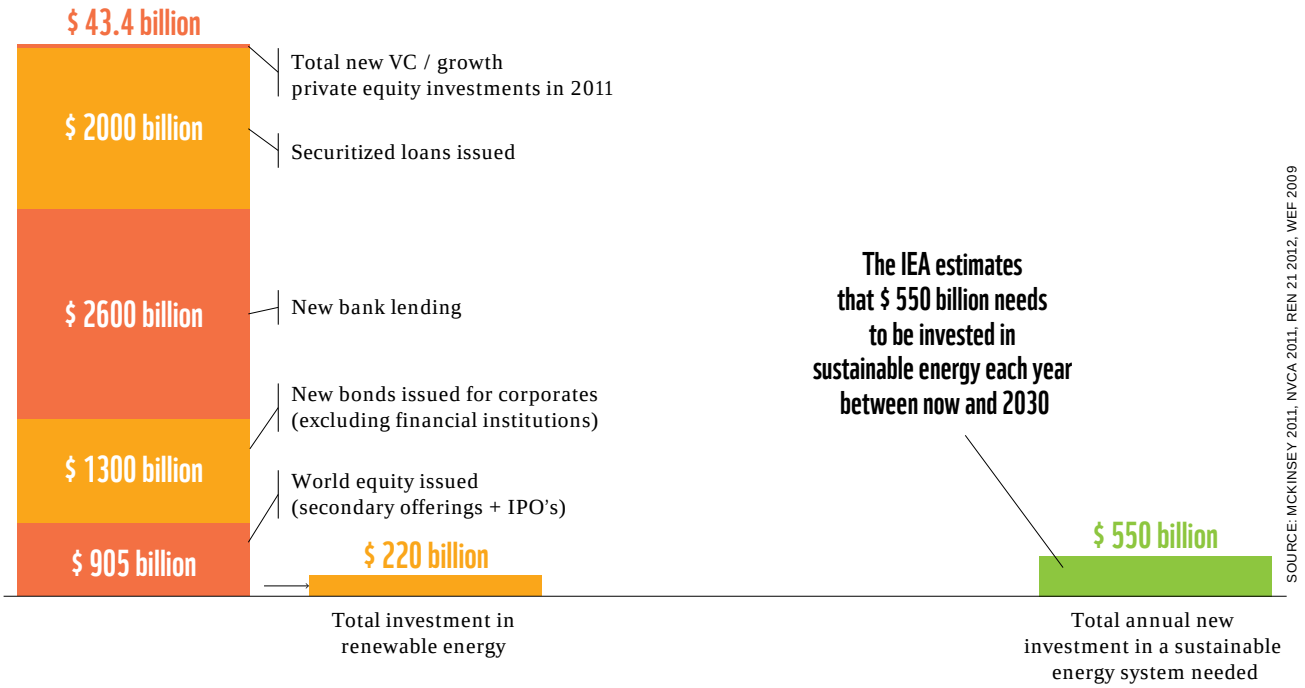
SOURCE: EC 2011 OCH CPI 2011

Yet the bulk of the capital needed to make the transition into a sustainable energy system cannot be expected to come from public sources. Even at today's levels, private sources of capital are more important than public. Out of the $ 97 billion that flowed into all climate-mitigation finance for developing countries in 2011, more than $ 54 billion came from private sources, in the form of loans at market rate, or equity investments (CPI 2011). Even according to conservative estimates, the potential for private capital may be much higher. Compared to the $ 54 billion, reports estimate there would be room for private investments in developing-world climate mitigation of up to $ 200 billion (EC 2011).

Quantifying the amount of investments needed for the global transition to a sustainable energy system is intrinsically difficult. However, to provide some context to the challenge there are estimates available. For example, the International Energy Agency point to a yearly level of roughly $ 550 billion needed to achieve a greenhouse gas concentration of 450 ppm by 2030 (WEF 2009). This is more than $ 200 billion above today's levels. Another reference is provided in The Energy Report (WWF 2011), where the annual additional investments (CapEx costs) are estimated at € 1 trillion per year, growing to € 3.5 trillion per year by 2035. However, in this

scenario the savings (OpEx) are even higher, providing a positive net result. To ignite the shift, investments in clean energy R&D and commercialization need to increase 3-6 times or even more (MEF 2009). But as several clean energy consultancies have warned of flat or declining investment levels in renewable energy in 2012 (Guardian 2012), it is clear the battle is far from won.

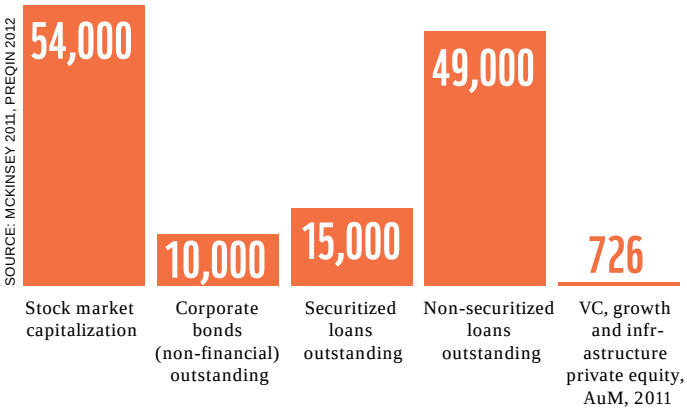
GLOBAL NEW INVESTMENT PER YEAR 2010



Given the scale of the challenge and current investment levels, calling for a doubling of investment in the world's most fundamental infrastructure – the energy system – is not an unreasonable request.

Global total assets

Billion $



Largest capital owners, end 2010

Trillion $

Channeling more private capital towards climate solutions is crucial for the transition to a sustainable energy system. Private capital can be deployed for climate solutions in two principal ways: for firms and for infrastructure projects. Firms are organizations with staff and ongoing activities. Infrastructure projects, on the other hand, are large assets such as wind parks. The word project is used to denote both the construction phase and the functional asset in itself. Infrastructure projects are built and managed by firms, do not employ staff and do not have the ability to expand their operations outside of the purpose they are built for. Capital invested in a firm can be used for any activity that the firm's business model encompasses; capital invested in an infrastructure project is only to be used for the set purpose of that project.

FIRMS	INFRASTRUCTURE PROJECTS
Have staff	Do not have staff – are managed by another party
May perform multiple activities and manage multiple assets	Typically consist of one asset, for example an energy-generating installation
May have shifting strategies and expansion plans	Have predetermined plans for the duration of their operating life

Both firms and projects are funded with a mix of equity and debt. Firms that need to raise capital typically have access to a much larger variety of funding types than projects have – a multitude of equity and debt instruments are available for firms in different stages. Despite this, funding in certain stages of a firm's development is notoriously difficult to find. In particular, the so-called Valley of Death occurs after a firm has finished developing its product (e.g. using small amounts of public grants and/or early seed money) but before it has reached a reliable degree of profitable sales (when other, more mature funding such as bank loans becomes available). In the Valley of Death, a firm needs access to capital in order to create the sort of operation that will entice careful customers to trust it and buy its products. But as it doesn't have revenue yet, the risk-opportunity ratio may be high for larger capital investors.

Typical capital sources and financing instruments for firms and projects.

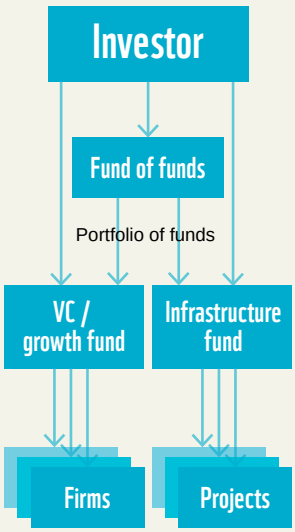
	FIRM CAPITAL SOURCES	PROJECT CAPITAL SOURCES
Equity	Seed capital Venture capital Expansion / growth capital Stock market listing (IPO) Secondary offerings	Project equity
Debt	Bank loans Bonds	Bank loans (for single projects) Project finance Bonds

There's a wide range of available vehicles by which private capital can be deployed to finance climate innovations today, while generating market-based returns. In the following chapter, ten opportunities are presented through which private investors may deploy capital finance. They are open for investments today – regardless of policy change, increased public spending, or a new international regime for pricing carbon – and they have a potential to deliver sound returns. Among them there are opportunities that suit all typical sizes and niches of capital owners, from private individuals to institutions, and from small to large amounts of capital.

10 OPPORTUNITIES FOR DRIVING INVESTMENTS IN CLIMATE INNOVATIONS

How the selection of financial vehicles was made:

- The paper only covers financial investments – i.e., investments made with the purpose to gain returns.
- Hence, investments in products, services or projects meant to be used by the investor are not included.
- Only investment vehicles that constitute asset classes available to a large base of investors are considered. One-off solutions, such as innovative financing schemes for single assets, or first attempts to establish new financial vehicles, fall outside of this boundary.
- This is not a comprehensive list of equity and debt channels in clean technology finance. It is a selection of financial vehicles, aiming for providing inspiration, knowledge, and a basis for constructive dialogues.



1. Cleantech private equity funds

SUITABLE FOR INVESTOR TYPE:	
Private individuals	
High net worth individuals	X
Institutional	X

TYPE OF CAPITAL:	
Firm equity	X
Firm debt	
Project equity	X
Project debt	

Venture capital funds (VC's) invest capital early in the life of firms to help fund development of new products, and overall growth. Sometimes VC's only focus on the growth stage, investing after a new company has fully developed its product and started earning revenue. Such funds are often called **growth capital or expansion capital funds**.

VC's make their money by eventually making an exit (i.e., selling their share in) the company they have invested in, either to the stock market or to a larger firm. As they usually invest alongside the entrepreneur, their interest in achieving a good exit is more or less aligned with that of the entrepreneur. To achieve growth, VC's usually help firms with more than capital. They may share their network of industry decision makers, bring firms new clients, and provide advice.

Compared to the largest private equity funds – so called buy-out funds – VC's and growth capital investors typically only invest new money into firms. That is, their business model is not to buy other owners' shares. Hence most of the money entrusted to cleantech VC funds ends up expanding the capital base of the climate-mitigation area, rather than enriching previous owners of firms.

Cleantech VC's have traditionally been focused on development and manufacturing of new technologies, and are increasingly looking at service solutions within climate-change mitigation. The energy field has been the most important, attracting $ 7.8 billion in VC investments in 2010 (Cleantech Group 2011) from around 800 VC funds active in the area. Water and advanced materials are other popular investment areas.

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In the first half of 2010, cleantech VC investments made up roughly 17% of total VC investments in all sectors (Ernst&Young 2010).

VC funds typically source their capital from large institutional investors, such as pension and insurance funds. In total, about $ 21 billion of capital was entrusted to cleantech VC funds up until 2011 (Gigaom 2011). The opportunity for institutional investors to participate in cleantech VC is significant - in 2010 alone, around $ 1 billion of new capital was raised by cleantech VC funds (Cleantech Group 2011).

As cleantech VC investments are a recent phenomenon, reliable data on the returns of this asset class is missing. Investments often require extended periods before exit is possible, and a majority of investments made by cleantech VC's may still be owned by the funds. One survey shows that it may take more than 5 years on average for a VC to sell a cleantech firm to the stock market (Fortune.com 2011).

Another segment of cleantech private equity is **clean energy infrastructure funds**, which invest their capital in projects (e.g., large wind power plants) rather than firms. Infrastructure funds typically are dependent on using bank debt to complement their equity when investing in projects. In 2011, almost $ 6 billion of equity was invested in European renewable energy projects, about 20% of which came from dedicated clean energy infrastructure funds (HgCapital 2012).

Institutional investors who want to invest capital in a broad portfolio of cleantech VC, growth, and infrastructure funds can use a **"fund of funds"**. Such funds raise capital to invest directly into several private equity funds.

EXAMPLES

Emerald Ventures (Switzerland) is one of the world's oldest cleantech-dedicated VC's. It was founded in 2000 in Zurich, and manages over $ 390 million in investment capital. The firm has invested broadly in the climate-change mitigation area, and has several holdings of water and materials technologies in addition to a large portfolio of energy ventures.

http://www.emerald-ventures.com

Climate Change Capital (UK) is a typical growth or expansion-stage fund, preferring to take larger equity stakes in firms that have proven technologies and revenue. The fund manages around $ 250 m.

http://www.climatechangecapital.com/

HgCapital (UK) manages one of Europe's largest cleantech infrastructure funds, with a strong focus on wind farms and small-scale hydro projects. It has invested more than EUR 1.5 billion into creating over 700 MW of clean energy capacity in Europe since 2006.

http://hgcapital.com/

SAM (Switzerland), a part of Robeco (Netherlands), is a well-established sustainable investment group. The firm has developed an extensive portfolio of investments in cleantech venture capital firms, accessible through their fund-of-funds.

http://www.sam-group.com/

2. Angel investing

SUITABLE FOR INVESTOR TYPE:	
Private individuals	
High net worth individuals	X
Institutional	

TYPE OF CAPITAL:	
Firm equity	X
Firm debt	
Project equity	
Project debt	

Private individuals who have access to large amounts of capital to invest, and who are interested in working closely with entrepreneurs, may find that assuming the role of angel investor can be a good choice.

Angels essentially work in a similar way to early-stage venture capitalists, investing money into early companies to help with development and growth. This type of investment is often called seed financing. Once invested, they may sit on the boards of companies and take an active interest in their work. Angels typically invest in a firm before a VC invests, as the target company may be too small to attract venture capital, or may find that the terms of early-stage angel investors are better than those of VC's. Angel investments are risky – a large survey of US angels in 2011 revealed that only slightly more than half the exits angels made were at a profit (CVR 2012). Still angels are a force to be reckoned with, investing $ 22.5 billion in the US alone in 2011 (CVR 2012). More than 10% of that capital went to cleantech firms (CVR 2012).

Being an angel investor sometimes means just being a person who invests into small companies. However, many angels today follow a more structured approach, and make sure to invest together and to follow a joint process. This is typically done through angel networks or online platforms.

Angel networks organize their angels into communities of mutual support, information, and joint processes. The networks sometimes invite entrepreneurs to use the network's resources, helping them with mentorship programmes and providing them access to the personal connections of the angels.

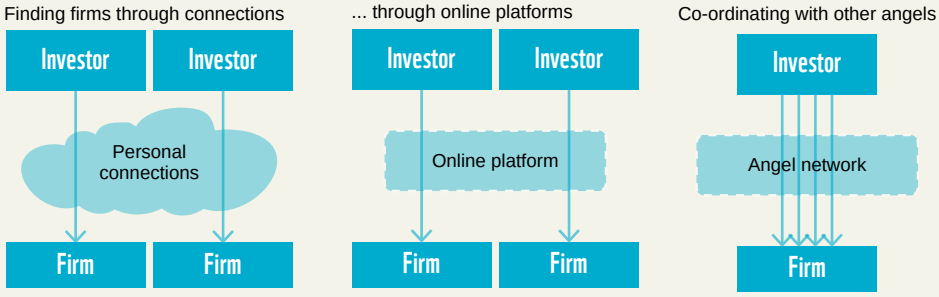
Online platforms for angels are a way to make sure individual firms seeking investments get exposure to as large a group of angels as possible.

More information:

Non-profit information and analysis provider dedicated to information on angel investing.

http://www.angel-resourceinstitute.org/

Ways of angel investing:



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EXAMPLES:

Keiretsu is one of the world's largest networks for angels. For climate-mitigation entrepreneurs, it runs a mentoring program called pitch me green (http://www.pitchmegreen.com/).

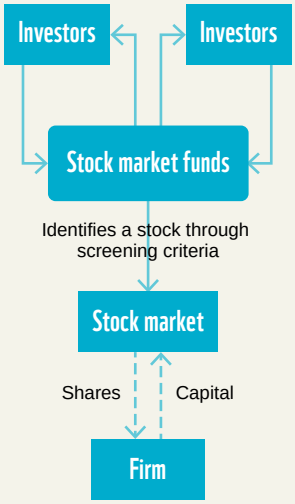
http://www.keiretsuforum.com

The "Put Your Money Where Your Mouth Is Community" is a European network of angels solely focused on investing in companies creating positive social impact, including in the area of climate-change mitigation.

http://www.pymwymic.com/

SeedUps (USA) is an online platform for angels to find start-ups and invest in them. It is similar to the crowdfunding approach described below, but more select in terms of who can invest. Other online angel platforms, such as Angellist (https://angel.co/) are more distinctively focused on building a social community. Over 800 companies have raised more than $ 30 million from around 340 investors through SeedUps (P2P Foundation 2012).

http://www.seedups.com/register/investor.html



3. Stock market investing

SUITABLE FOR INVESTOR TYPE:	
Private individuals	X
High net worth individuals	X
Institutional	X

TYPE OF CAPITAL:	
Firm equity	X
Firm debt	
Project equity	
Project debt	

There are a large number of funds that help capital owners invest in cleantech companies listed on public stock markets. Such funds make sure that when the clean technology sector grows, their investors' capital grows with it. Some funds are specifically targeting clean energy stocks, some target firms with general climate change-mitigation activities, and some practice Sustainable and Responsible Investing (SRI) principles and can invest in any firm fulfilling their screening criteria. A number of funds in this arena also include other assets than stocks, in order to distribute risks, as clean energy stocks have proven to be volatile and sensitive to general stock market developments. The valuation of one portfolio of global clean energy stocks, for example, the WilderHill NEX index, was down 48% in October 2012 measured from its start in early 2006 (WilderHill New Energy 2012).

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However, investment in cleantech stocks or funds does not automatically mean that capital is channeled to such firms. When an investor buys existing shares in a clean technology company, money is paid to the previous owner of those shares, and not to the company. This can still be beneficial for the firm in question – it may help to keep its share price buoyant, and create liquidity in the shares. Liquidity, the ease with which investors can find buyers or sellers of shares, is important when the firm issues new shares. Good liquidity means investors can buy the shares without worrying that they may not be able to sell later.

Investors who want to channel capital directly to cleantech firms can participate in new issues of shares. These can take the form of an Initial Public Offering (IPO), when a firm for the first time lists on a stock market and sells shares to public investors. When shares are sold through an IPO, proceeds can be used to pay previous investors, to pay off debt, or to provide funds to the company.

There are also secondary share issues, when a listed firm acquires capital by issuing new shares. One variety of a secondary issue, open mainly to large investors, is called Private Investments in Public Equity (PIPE), whereby a company issues new shares only to a specific investor.

Subscriptions of new share issues are typically done through an investment bank, but increasingly they are done as auctions directly to the public, as was the case for Google (WSJ 2009). Stock market funds may also participate in offerings.

The opportunity to participate in public share issues in cleantech is significant. $ 12 billion of new clean energy shares was issued in 2011 (BNEF 2012). However, compared to the $ 905 billion (McKinsey 2011) in total new share issues the year before that, it is a number with potential to grow.

EXAMPLES

ImpactAsset's (USA) Calvert Global Alternative Energy Fund is an example of a stock market fund focused only on stocks in renewable energy.

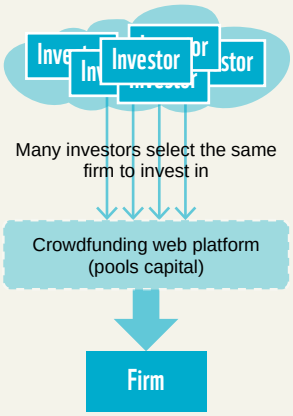
http://www.impactassets.org/

BNP Paribas' (France) L1 Equity SRI World fund is an example of a stock market fund with a broad SRI investment focus, picking stocks in all sectors according to sustainability principles.

http://www.bnpparibas.com/

Cheviot's (UK) Climate Assets Fund is an example of a fund focused on firms with climate-change mitigation technologies, mixed with other types of assets to achieve a lower overall risk.

http://cheviot.co.uk/



4. Equity crowdfunding

SUITABLE FOR INVESTOR TYPE:	
Private individuals	X
High net worth individuals	
Institutional	

TYPE OF CAPITAL:	
Firm equity	X
Firm debt	
Project equity	
Project debt	

For private individuals who are interested in the angel approach, but who have access to less capital, crowdfunding is an option. Crowdfunding is a way to pool money from a large number of small investors (the "crowd") to jointly provide capital to entrepreneurs, early-stage companies, or projects.

There are different types of crowdfunding. Some use the term to denote crowds that make donations, and in other cases the participants of the 'crowd' expect non-financial rewards for their contribution. Crowdfunding with debt is discussed in another chapter of this paper. The type of crowdfunding discussed here is an instrument very similar to the one used by VC's and angels – the money of the crowd buys new shares from an early-stage firm, and the crowd members become long-term equity owners in the firm.

Crowdfunding of equity has emerged and grown rapidly over the last years. In 2011, 21 online platforms were available for equity crowd members, up from 15 in 2010 (Crowdsourcing.org 2012). In total, they funded $ 15 million in 2011 (D&K 2012). Regulatory roadblocks have been an obstacle to growth for the sector, in particular in the US and UK markets. New regulations in the US now open up the sector for business in 2013, and in the UK several new actors have found ways to handle regulatory requirements the last year (Nesta 2012). This means that equity from crowds can be expected to grow even more rapidly as an asset class from 2013.

So far, firms active in digital media have been the most effective at raising funds (Crowdsourcing.org 2012), yet this asset class also reaches firms with cleantech innovations. Firms are seeking significant sums through the platforms – roughly 40% are aiming for more than $ 100.000 (Crowdsourcing.org 2012).

Firms are often assessed to some degree by the online platform that posts their application. The ventures that are approved provide comprehensive information on their activities, and ask for a specified sum. As crowd investors pledge their money, the firms either reach their target, in which case the money is drawn from investors, or they fail to reach the sums they seeks, meaning that no money raised up until that point is transferred from investors.

Investors have to take care to closely examine firm material and use all available information to evaluate it. In contrast to the offering of shares to a public stock market, the firms using equity crowdfunding are small, often pre-revenue, and have not been through the sort of highly regulated and standardized processes (due diligence) that encapsulates stock markets. Also, share liquidity may be non-existent once the investment is made.

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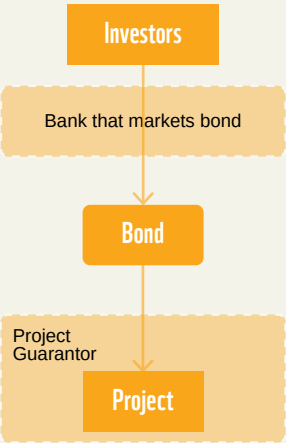
EXAMPLES

Symbid (Netherlands), an online equity crowdfunding platform, helps small firms to find funding up to $ 3.5 m. Starting in April 2011, it managed to raise $ 1.5 million for entrepreneurs during its first year of operation. Among those receiving funds was Wakawaka Light, a manufacturer of low-cost solar-powered LED lights for use in developing countries, which received $ 100,000 from 320 investors.

http://www.symbid.com/



5. Direct lending for institutions: bonds

SUITABLE FOR INVESTOR TYPE:	
Private individuals	
High net worth individuals	X
Institutional	X

TYPE OF CAPITAL:	
Firm equity	
Firm debt	X
Project equity	
Project debt	X

A bond issue is a loan that is taken up from a multitude of counterparties instead of from a bank. The issuer of the bond promises investors a fixed annual return for a number of years, plus repayment of the principal. Hence bonds are often called "fixed income" investments. Investors can trade a bond with other investors, or choose to keep it until maturity to receive the full promised amount.

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In climate finance, bonds are often issued by firms for a specific purpose, typically an infrastructure project in the energy or transportation sectors. Bonds are used for a multitude of project types and sizes. The total sum of bonds that have been issued for climate-related purposes exceeds $ 170 billion (Economist 2012). In 2010, $ 16 billion of bonds were issued – a sizable sum, but only around 0.3% of total global bond issues that year (OECD 2012).

Often, these so-called green bonds or climate bonds have a double or triple bottom line – they promise positive returns, while also guaranteeing that the supported projects achieve certain climate-mitigation and general sustainability targets.

Some of these green bonds are guaranteed by large intergovernmental organizations to deliver all promised returns to investors. This means that even if the project supported by the bond should fail, investors will be fully reimbursed by the guarantor. Around $ 7.2 billion of such bonds have been issued (OECD 2012), mainly by the World Bank and the IFC. The World Bank alone has launched over 50 green bonds denoted in 17 currencies (WB 2012). Green bonds are often issued in co-operation with commercial banks, which market the bonds, while the underlying projects are assessed by independent experts.

Well-guaranteed bonds reach a very high rating of creditworthiness and are suitable for even the most conservative institutional or government investors. Institutional investors who want a broad exposure to green bonds can also use an index product, managed by a third party, which invests in a weighted portfolio of green bonds. Such products may both invest in new bond issues and buy existing bonds.

Bond issues typically require large minimum amounts from investors wishing to participate. For private individuals who want to support projects directly, a range of other opportunities has emerged over the last few years. Two of these — peer-to-peer lending and small bonds — are covered below.

More information:

Climatebonds (UK) is a non-profit organization promoting increased use of bonds as a tool to achieve a low-carbon economy.

http://climatebonds.net/

EXAMPLES:

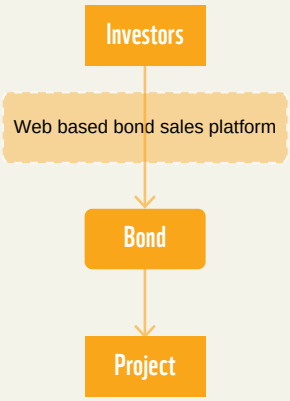
The World Bank Group (including the International Finance Corporation) and the Asian Development Bank are the main issuers of guaranteed green bonds.

http://www.worldbank.org/

http://www.adb.org/

StateStreet Asset Management (USA) offers what they call a "High Quality Green Bond Strategy" product for investors seeking to invest in a broad portfolio of green bonds.

http://www.statestreet.com/



6. Small bonds: direct personal lending to projects

SUITABLE FOR INVESTOR TYPE:	
Private individuals	X
High net worth individuals	
Institutional	

TYPE OF CAPITAL:	
Firm equity	
Firm debt	
Project equity	
Project debt	X

There are bond-like instruments that are created specifically with small private investors in mind. These bonds, or debentures as they are sometimes called, typically raise much smaller sums than the green bonds mentioned previously, and accept small contributions – sometimes down to $ 10. They may, for example, be used to raise money for a single small-scale renewable energy installation.

Such bonds work in a similar way to a large bond – they pay regular interest to the bond holder, and in the end the principal amount invested will also be repaid. However, the market is in an early stage, and small bond offerings are not standardized. Many offer unique structures for investor compensation, making the term bond only loosely applicable.

The shares in a small bond may be illiquid, meaning that it is difficult for a bond owner who wants to sell it before maturity to find a buyer. Typically the bonds are not guaranteed to yield the promised return. In case the underlying project runs into trouble, this means the bond holder may have to take the full cost of failure. As always, private investors must take care that they have gathered enough information about the investment, and that they have understood the risk level.

Some small bond investments can be made through an online portal, linking independent projects with investors. Others are only accessible through the co-operative or renewable energy companies that will run underlying projects.

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EXAMPLES

Ecotricity (UK) is a small renewable energy utility in the UK. It has issued two so-called Ecobonds of £ 10 million each to the public, with a discount for its customers. It uses the proceeds from the bonds to build wind and solar installations in the UK.

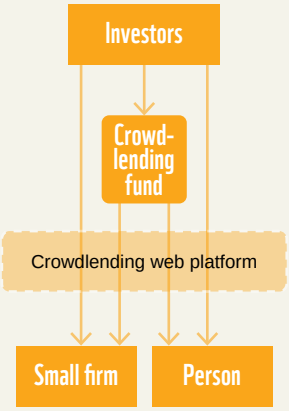
http://www.ecotricity.co.uk/

SolarShare (Canada) offers what they call community bonds, yielding 5% interest over a five year term, to individual investors. So far the non-profit organization has raised over $ 3.5 million to finance 18 solar projects in the city.

http://www.solarbonds.ca/

Abundance (UK) is an online intermediary between small-scale energy projects and private investors. It helps energy projects issue what it calls "Debentures" — hybrids between equity and debt — that resemble a bond but without a fixed rate of interest. Debenture holders share the earnings of the energy project, whatever those earning may be. Debentures can be purchased by investors for as little as $ 10. The firm was launched in 2012 and is currently funding two projects.

https://www.abundancegeneration.com/



7. Peer-to-peer lending: direct lending to entrepreneurs

SUITABLE FOR INVESTOR TYPE:	
Private individuals	X
High net worth individuals	X
Institutional	X

TYPE OF CAPITAL:	
Firm equity	
Firm debt	X
Project equity	
Project debt	

Through several online platforms, individuals can use their funds to directly finance companies and individuals in need of debt financing. This is similar to the equity crowdfunding discussed above – but instead of ownership, the crowd members receive interest payments until loans are paid back. Typically the online platforms have partnered with local organizations that help finding suitable applicants for loans. Although none of the platforms are specific for climate-related lending, many climate innovation projects use them.

There are about 20 online platforms for crowdlending today (Crowdsourcing.org 2012), and there are important differences between them regarding who they reach, how they screen applicants and what other organizations they work with. Also, some are non-profits, and some work exclusively with developing nation lenders. Prospective lenders should take time to compare platforms before deciding what approach suit them best.

Although the peer-to-peer sites are designed for use by individual creditors, there are examples of institutions using them to channel capital to entrepreneurs in developing nations. In 2008, the Danish Investment Fund for Developing Countries used online crowdlending platform MyC4 to lend more than € 1 million to African entrepreneurs (IFU 2008)

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More info:

P2P banking is an analysis site that tracks the performance of peer-to-peer lending firms in the developing and developed world.

http://P2p-banking.com

There are no guarantees for loan repayments, and individuals or organizations using the platforms have to be aware of the risks attached to the sector. Still, two of the largest online platforms claim to have loan repayment rates of 99% (Zidisha 2012) and 98% (Kiva 2012).

For private investors wishing to participate in microlending, yet not have to make choices about each individual loan, there are funds that help channel capital into microloans.

EXAMPLES

MyC4 (Denmark) helps private investors to extend microloans to small businesses in Africa. Since the firm's start in 2006, 19,312 investors from 116 countries have used the service to lend more than $ 20 million.

www.myc4.com

Kiva (USA) is a non-profit online platform for private individuals to provide microloans either directly to recipients (through Kiva Zip) in developing countries, or through an intermediary microfinance firm in the recipient's country of residence. Since its start in 2005, the firm has provided 273,000 loans for a total of $ 200 m.

www.kiva.org

ImpactAsset's (USA) Community Investment Note uses the capital of fund investors to provide microfinance to entrepreneurs in developing nations.

http://www.impactassets.org/giving-fund/investment-options/community-investment-note

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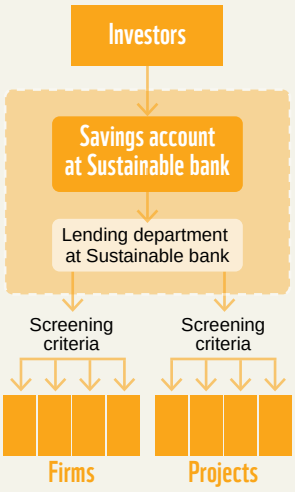


8. Sustainable banks

SUITABLE FOR INVESTOR TYPE:	
Private individuals	X
High net worth individuals	X
Institutional	

TYPE OF CAPITAL:	
Firm equity	
Firm debt	X
Project equity	
Project debt	X

Sustainable banks offer a way to use bank account savings as a channel for sustainability investments. When you deposit money in a sustainable bank's accounts, you increase the potential of the bank to lend money to sustainable firms and projects. In addition to lending exclusively to businesses with triple bottom lines – social, environmental and financial sustainability – sustainable banks also often focus on lending to businesses and co-operatives with good long-term prospects but without the assets or collateral needed by conventional banks to get loan approval. Sometimes a sustainable bank will help individuals to lend directly to one of the bank's creditors through channels similar to peer-to-peer lending.

A sustainable bank can also serve as a channel for managed funds focused on sustainable assets.

Banks, in particular investment banks, have been scrutinized by the public and by regulators in the wake of the financial crisis. Customers of sustainable banks do not need to be concerned about these sentiments. Firstly, sustainable banks are not investment banks – they typically make their money through traditional banking (deposits and lending) rather than through trading and structuration of financial derivatives. Secondly, sustainable banks that belong to the industry association Global Alliance for Banking on Values (GABV 2012) ascribe to clear triple bottom line principles, making sure that the prospect of financial profit alone does not guide their work. Recent research shows that sustainable banks also contribute to the "real economy" – the economy of goods and services, rather than financial derivatives – to a higher extent than similarly sized banks without a sustainability focus (GABV 2012).

Sustainable banking is still a small niche of the global banking system. The 13 banks that were members of the largest industry organization, the Global Alliance for Banking on Values, in 2011 had combined assets of $ 26 billion (World Financial Review 2012) – compared to global banking assets of around $ 100,000 billion (IFSL 2010).

More information:

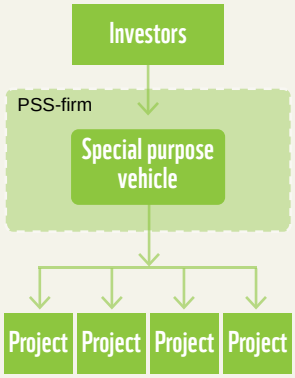
The Global Alliance for Banking on Values is an independent network of sustainable banks which provides analysis and information services focused on the sector.

http://www.gabv.org/

EXAMPLE

Triodos (Netherlands) was founded in 1980 and has focused on what it calls "ethical banking" since inception. With offices in five European countries it has more than 100,000 savers and only lends money to businesses it judges to be of social or ecological benefit. It has pioneered transparent lending, providing public lists of all loans it make. In early 2012, it had $ 10 billion of assets under management.

http://www.triodos.com/



9. Product-service systems (PSS)

SUITABLE FOR INVESTOR TYPE:	
Private individuals	
High net worth individuals	
Institutional	X

TYPE OF CAPITAL:	
Firm equity	
Firm debt	X
Project equity	
Project debt	X

A new category of service firms is deploying increasing sums for cleantech project financing. Their business model, which converts small-scale cleantech products into services for end customers, has been growing rapidly over the last years. This business model is often called functional sales or product service systems (PSS), and has been applied to a large number of sectors, both in cleantech and elsewhere (EC 2008).

For example, some firms sell solar electricity to end customers for a monthly fee. These "solar service" firms install, maintain, and own the solar system on the end-customer's roof. Similarly, some firms offer access to electric vehicles through car-sharing models — the firms own and maintain the vehicles while end-customers use an online service to find and book the cars before each trip.

There are several advantages to the model. First, it removes the upfront investment of the technology for end-customers, a factor known to inhibit growth of many small-scale clean technologies. Second, the firms are incentivized to optimize usage and longevity of their products in a way the end-users typically lack the knowledge or means to do. This last effect is important from a climate change-mitigation perspective as well as when the model is applied to sectors outside of cleantech, as it reduces resource consumption and waste.

In order to pursue this business model, PSS companies need to raise equity and to incur debt to finance special-purpose investment vehicles, through which they will own the products they convert to services. By signing long-term agreements with creditworthy end-customers who guarantee that they are willing to pay regular fees for the services over a long period of time, the PSS firms secure returns to capital providers. These long-term agreements are often called Power Purchase Agreements, or PPA's.

In essence, PSS firms have created a new asset class thorugh which investors may deploy capital. Instead of offering an investment into one infrastructure project, as a bond typically does, PSS firms offer investment into a portfolio of many small assets, with returns guaranteed by a number of different end-users. This creates a new and attractive kind of risk profile for investors.

Most PSS firms are not offering investments into their holding vehicles through open marketplaces. Today, a bank typically leads the financing of a PSS firm, and then invites other banks or institutions to take part. But the asset class is showing signs of becoming more standardized and easily accessible, at least in those sectors that have seen the most growth. This is particularly true in the US solar service sector – last year, more than 70% of the 25,000 residential solar installations made in California was made by solar service firms (Centrosolar 2012). The sector brought in more than $ 600 million in debt and equity financing during the first six month of 2012 (SEIA 2012).

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EXAMPLES:

SolarCity (USA) is one of the largest solar service firms in the world. It offers end-customer a full solar service solution, whereby it finances, owns, installs and maintains the solar installation on the end-customer's roof. End-customers are locked into a power purchase agreement (PPA) or a lease, through which they guarantee long-term repayment of the solar system.

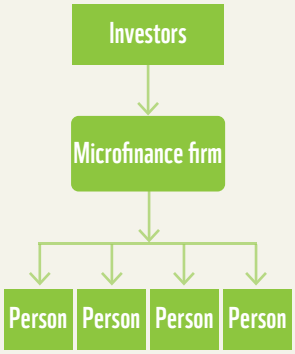
http://www.solarcity.com/

Clean Power Finance (USA) is a business-to-business platform actively working to make the solar service sector more standardized and easily available for capital providers. Via their web page, providers of project equity and debt can get in direct contact with project developers through a process which ensures that projects have followed a strict and standardized process.

http://www.cleanpowerfinance.com/

MoveAbout (Norway) is a Norwegian firm offering electric vehicles as a car-sharing service to corporations and private individuals. It gets leasing capital from leasing firms to purchase its vehicles. It has a fleet of around 100 electric vehicles in several Northern European countries.

http://www.moveabout.net/



Individuals who get loan
to purchase cleantech product

10. Microfinancing of clean technologies

SUITABLE FOR INVESTOR TYPE:	
Private individuals	
High net worth individuals	
Institutional	X

TYPE OF CAPITAL:	
Firm equity	
Firm debt	X
Project equity	
Project debt	X

Microfinancing has emerged as an efficient way to spread clean technologies in developing nations. It is being used for many different applications, from battery-powered solar home lights or solar home systems with capacity to power cell phones, to lighting, and sometimes even radio or TV. Grameen Shakti, an established Microfinancing Institution (MFI), has financed almost a million solar home systems in Bangladesh (Grameen Shakti 2012). However, with 1.5 billion people in the world still lacking access to modern energy services, the task ahead is an enormous one (UNDP 2009).

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MFIs have more than 100 million individual entrepreneurs and small businesses in developing countries as their clients – almost 90% of whom are women (OECD 2010). The MFIs screen end users and distribute loans, while raising capital from outside sources to finance their operations. In the area of clean technology, MFI's sometimes distribute loans directly as pre-paid renewable energy products, after purchasing the products for wholesale prices from manufacturers.

Similarly to the Product Service Systems firms discussed above, most cleantech microfinance companies raise the capital they need directly from banks and institutions. No large-scale, standardized marketplace has emerged for institutional investors wanting to make their capital available to these firms. For private individuals, there are solutions such as Kiva (discussed above, under direct lending for individuals) through which smaller sums can be provided to MFIs for further distribution to entrepreneurs. Institutional investors must rely mainly on direct contact with MFIs they want to invest through. However, several recent reports have pointed to the potential for cleantech MFIs to grow (USAID 2009, WBI 2008), and chances are that a new asset class for investors will emerge over the years to come.

One variety of microfinance is microinsurance, whereby, for example, small-scale farmers can insure their crop. In the farming example, reimbursements would be paid out based on general weather data, such as rainfall, rather than individual assessments, to ensure a lean operation. Microinsurance for weather can be a powerful climate-change adaption strategy for small businesses in base-of-the-pyramid markets, helping them to secure steady cash flows despite volatile weather. Although the phenomenon is currently small, it may grow to become an important investment opportunity alongside microfinance.

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More information:

Seep

Seep Network consists of more than 130 organizations active in microfinance and similar market-based financial solutions for developing countries.

http://www.seepnetwork.org/

EXAMPLES

Selco (India) is an intermediary between cleantech customers and microfinance institutes. Selco was founded in 1995 to provide affordable solar energy solutions to rural communities in India, and the firm has financed more than 115,000 solar systems since. It provides solar energy installation and procurement services, and partners with local microfinance providers to make solutions affordable for end customers.

http://www.selco-india.com/

Kilimo Salama (Kenya) is a pioneering microinsurance firm, providing weather-linked insurance products to farmers in Kenya.

http://kilimosalama.wordpress.com/

FINANCIAL VEHICLES – A POWERFUL DRIVER

A substantial increase in private capital flows into clean and resource-efficient technology is essential to mitigate climate change. Our ten examples above make it clear that the channels needed for radically increasing climate finance are already available. Many of these tools have only been in use for the last five to ten years. Nevertheless most of them are robust and well established, due to the rapid growth of the market.

Partly this growth can be attributed to enabling online technologies, which, for example, allow thousands of entrepreneurs to benefit from crowd loans through fully virtual platforms. Partly it is due to the increased climate change focus of international organizations, which has the ability to establish and support new global investment vehicles – the bonds underwritten by the World Bank are a good example. And partly, it is also due to the maturing of the clean technology sector. Early support from foresighted government has let a host of clean technologies grow into large and commercially viable investment objects.

Most importantly, the surge of climate finance vehicles seems to correlate with demand, with an increasing number of private individuals and institutions wanting to use their money to invest in climate finance – while following sound market principles.

Why the current surge in climate finance vehicles?

- Enabling online technologies
- Climate mandates for intergovernmental organizations
- National policies that enables clean technologies to expand and reach commercial viability
- Market demand from private and commercial investors

... FOR CLIMATE ENTREPRENEURS

This summary of investment vehicles not only serves as a guide to investing. It can also serve as inspiration for how to raise capital for a great variety of firms or project types.

For small and large entrepreneurs in the climate-mitigation area, there are high rewards for thinking carefully about where and how to raise financing. By learning and navigating the growing areas of debt and equity instruments, potential that was previously inconceivable can be unlocked – rapidly.

Given the marked increase in types and depth of climate financing over the last years, entrepreneurs may now face the same bottleneck as potential investors: knowledge. A careful screening of the landscape of funding platforms may reveal opportunities and niches that didn't exist just five years ago. Small "debenture" bonds may not be mentioned in the corporate finance textbooks, or by the investment bankers offering to raise funds for you – but the platforms are out there, online, and may be able to fund you within weeks.

Entrepreneurs may also want to consider opportunities to expand the scope of the investment vehicles. Product service systems, for example, are widespread in certain industrial sectors (such as the solar panel industry), and in certain locations (such as the US). Their growth in those niches is due to the hard work by entrepreneurs, and nothing says the success stories cannot be repeated elsewhere. What is needed is typically not new policy or market developments, but rather determined and skillful entrepreneurs willing to invest the time and effort needed.

Considerations for entrepreneurs:

- Much has happened over the last five years, and navigating the current funding landscape requires a focused learning effort. Are there overlooked ways to fund your firm, or the projects that your firm builds? Out-of-the-box-thinking can be generously rewarded!
- What are the financial vehicle's pros and cons for your company or project?
- What is your strategy for financing? How could it be strengthened to secure access to capital through various financial vehicles?

... FOR CLIMATE POLICY

The cases described in this paper represent a triumph of what financial entrepreneurs can achieve under constrained circumstances. Financial vehicles have proven their potential for enabling major shifts in society. However, this does not mean there is no role for innovative and thoughtful policy making. On the contrary – with such a robust and diversified portfolio of private financing tools out there, it should be easier and more effective than ever to use policies to harness the power of private market initiatives. Policy can provide the lever that climate finance needs to go from a niche to becoming simply – finance. To fully re-allocate the global pools of capital and fulfill the transition into a sustainable world economy, the financial vehicles described above need to grow at a breakneck pace. They will need a helping hand.

Indirect uses of public finance, such as bond underwriting, market making in carbon markets, and tax breaks for energy development, are already doing much to help the sector grow. A mandate for public financial institutions such as public pension funds, to participate actively in market development of these financial instruments has also been important for market growth. And enabling regulation has been important for several categories, especially new financing vehicles such as equity crowdfunding. Still more can be done to enhance regulation and shape market frameworks to attract private investments at scale (G20, NEFCO, UNEP).

Firstly, political leaders are encouraged to ensure a long term (>10 years), stable, and enabling market framework. Secondly, public bodies can seek more ways of co-investing or co-operating with private capital to help mitigate early perception of risk in new types of transaction structures. Thirdly, policy makers can help to diffuse knowledge and analysis of new climate finance instruments to help stimulate their growth. It's clear that, governments and their agencies can have a large impact with limited efforts.

Considerations for policy makers:

- How could you improve knowledge of the width and depth of financial instruments available to mitigate climate change through educational campaigns, addressing individual as well as institutional investors?.
- What role could public agencies take on to create robust market data on private carbon finance flows, suggest standards for what qualifies as a climate-mitigating investment in alignment with scientific recommendations, and act to further increase the sort of market transparency needed to convince mainstream investors?
- What's the most effective role for policymakers, to allocate public funds for direct investments in climate innovations or create enabling frameworks which attract private investments? What's the optimal combination of these roles?

... FOR CLIMATE-PROOF INVESTMENTS

Despite the increase in cleantech investments in recent years, we're currently facing a new challenge. While the ten case studies represent a positive side of the opportunities at hand, investors' knowledge about them is a major bottleneck. There is no need to wait for policy makers, market development, or new technologies. Investors have a palette of sophisticated, proven, and profitable investment tools at their disposal. And these tools offer global outreach, including Base of the Pyramid markets. Investors may pick their preferred risk and return level, and invest now - whether they are cash-strapped local communities wishing to invest in proprietary energy generation, wealthy individuals with an interest in African entrepreneurship, pension fund investment managers needing broad investment strategies, or treasurers of large firms seeking a safe harbor for their cash holdings.

Considerations for investors:

- What barriers – internally and externally – are stopping you from increasing your investments in climate innovations through financial vehicles like the ones presented here? What success factors need to be in place to replicate them? How can you contribute to making this happen?
- Some of the most well-established vehicles, such as stock market funds, mainly use capital to buy shares from other investors, rather than investing new capital in firms. Such vehicles have a limited impact on how much new capital that may reach cleantech firms or projects. On the other hand, each cleantech bond issue results in the construction of a new cleantech project. What impact do your investments have for increasing the capital allocation to climate innovations?
- Take time to study the investment vehicles carefully before investing. Whether you are a private or an institutional investor, there is an abundance of equity and debt vehicles available to you today, many of them not more than a few years old. Where will your capital add the most value? Your investment can make a world of difference!

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Financial Vehicles

Driving Private Investments in Climate Innovations

FSC MIXED SOURCES

GLOBAL INVESTMENTS

Renewables are growing rapidly, but a majority of global spending still goes to conventional energy.

CLIMATE INNOVATIONS

... exist, technology isn't the issue. Need for attracting private investments.

FINANCIAL VEHICLES

Ten inspiring examples of investment opportunities in equity, debt and emerging vehicles.

CLIMATE ENTREPRENEURS

Have you considered all financial vehicles available for your business?

CLIMATE-PROOF INVESTMENTS

What's stopping investors from using existing financial vehicles to increase investments in climate innovations?

CLIMATE POLICY

What's the most effective role for policy makers in stimulating appropriate financial vehicles?

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