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FINANCIAL INSTITUTIONS TAKING ACTION ON CLIMATE CHANGE

A report on how climate leadership is emerging in the finance sector - and on how public and private actors need to work together to grow leadership into a new normal

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This report would not have been possible without the contribution of case studies by numerous financial institutions. Unfortunately it has not been possible to identify every instance of leadership in this report. We also acknowledge the work of Dr Danyelle Guyatt for her invaluable contribution in the drafting of this document.

About the World Bank Group

The World Bank Group is one of the world’s largest sources of funding and knowledge for developing countries. It comprises five closely associated institutions: the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA), which together form the World Bank; the International Finance Corporation (IFC); the Multilateral Investment Guarantee Agency (MIGA); and the International Centre for Settlement of Investment Disputes (ICSID). Each institution plays a distinct role in the mission to fight poverty and improve living standards for people in the developing world. For more information, please visit www.worldbank.org, www.miga.org, and www.ifc.org.

About the United Nations Environment Programme

United Nations Environment Programme, established in 1972, is the voice for the environment within the United Nations system. UNEP acts as a catalyst, advocate, educator and facilitator to promote the wise use and sustainable development of the global environment. The UNEP Finance Initiative (UNEP FI) is a global partnership between UNEP and the financial sector. Over 230 institutions, including banks, insurers and fund managers, work with UNEP to understand the impacts of environmental and social considerations on financial performance. UNEP FI’s membership consists of private and public financial institutions from around the world and is balanced between developed and developing countries. For more information, please visit www.unep.org and www.unepfi.org.

ABOUT AIGCC

The Asia Investor Group on Climate Change (AIGCC) is an initiative set up by the Association for Sustainable and Responsible Investment in Asia (ASRIA) to create awareness among Asia’s asset owners and financial institutions about the risks and opportunities associated with climate change and low carbon investing. AIGCC provides capacity for investors to share best practice and to collaborate on investment activity, credit analysis, risk management, engagement and policy. With a strong international profile and significant network, including pension, sovereign wealth funds insurance companies and fund managers, AIGCC represents the Asian voice in the evolving global discussions on climate change and the transition to a greener economy. Visit www.asria.org/page/aigcc_about.

ABOUT IGCC

IGCC is a collaboration of 52 Australian and New Zealand institutional investors and advisors, managing approximately \$1 trillion and focussing on the impact that climate change has on the financial value of investments. The IGCC aims to encourage government policies and investment practices that address the risks and opportunities of climate change, for the ultimate benefit of superannuants and unit holders. Visit www.igcc.org.au.

ABOUT IIGCC

The Institutional Investors Group on Climate Change (IIGCC) is a forum for collaboration on climate change for investors. IIGCC’s network includes over 90 members, with some of the largest pension funds and asset managers in Europe, representing €7.5trillion in assets. IIGCC’s mission is to provide investors a common voice to encourage public policies, investment practices and corporate behaviour which address long-term risks and opportunities associated with climate change. Visit www.iigcc.org.

ABOUT INCR

The Investor Network on Climate Risk (INCR) is a North America-focused network of institutional investors dedicated to addressing the financial risks and investment opportunities posed by climate change and other sustainability challenges. INCR currently has more than 100 members representing over \$13 trillion in assets. INCR is a project of Ceres, a nonprofit advocate for sustainability leadership that mobilises investors, companies and public interest groups to accelerate and expand the adoption of sustainable business practices and solutions to build a healthy global economy. Visit www.ceres.org.

ABOUT PRI

The United Nations-supported Principles for Responsible Investment (PRI) Initiative is an international network of investors working together to put the six Principles for Responsible Investment into practice. Its goal is to understand the implications of Environmental, Social and Governance issues (ESG) for investors and support signatories to incorporate these issues into their investment decision making and ownership practices. In implementing the Principles, signatories contribute to the development of a more sustainable global financial system. Visit www.unpri.org.

ABOUT UNEP FI

UNEP FI is a global partnership between UNEP and the financial sector. Over 200 institutions, including banks, insurers and fund managers, work with UNEP to understand the impacts of environmental and social considerations on financial performance. Through its Climate Change Advisory Group (CCAG), UNEP FI aims to understand the roles, potentials and needs of the finance sector in addressing climate change, and to advance the integration of climate change factors - both risks and opportunities – into financial decision-making. Visit www.unepfi.org.

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1. Key messages

There is a growing community of financial institutions taking action and demonstrating leadership on climate change. Some institutions are allocating capital and steering financial flows towards more low carbon, climate resilient activities. Others are taking steps to change corporate behavior, influence policy outcomes and build the data, tools and transparency required to embed climate change into how the market functions.

This report details finance sector leadership actions and their contribution to solving the climate change challenge across the following six areas:

- 1. Low carbon and energy efficiency finance and investing:**
 - **Pension fund allocation to low carbon and energy efficiency:** Some pension funds are increasing their allocation to low carbon and energy efficiency assets, thereby playing a vital leadership role.
 - **Supporting renewable energy projects:** Some institutional investors are investing in renewable projects via private equity and infrastructure opportunities. Some banks are shifting their loan books towards financing renewables projects. These actions are having a direct impact on the availability of capital for renewable energy projects.
 - **Partnerships in developing countries:** Unique partnerships are forming between governments, development banks and financial institutions to finance and invest billions of dollars into renewable energy and energy efficiency opportunities in emerging markets.
 - **Growing green bond market:** A flourishing green bond market exists and is growing, which is integral to providing the debt capital needed to finance the low carbon transition.
 - **Reducing real estate emissions and energy use:** The industry is utilizing new tools, setting targets and steering portfolios and financing activities towards lower carbon, higher rated energy efficient buildings, a core pillar for achieving the energy efficiency improvements needed to avoid dangerous climate outcomes.
- 2. Emissions reducing finance and investing:** New techniques are being implemented by financial institutions to reduce the carbon emissions of loan books and investment portfolios; an indirect but potentially powerful mechanism for reducing global emissions. In addition, new strategies and approaches are being implemented by institutional investors to manage the risks stemming from exposure to fossil fuel companies.
- 3. Adaptation finance and investing:** Banks and insurance companies are developing financing solutions to support adaptation projects, primarily in developing countries, with significant potential for more financial institution involvement in partnership with governments, development banks and developing country agencies.
- 4. Measurement and transparency:** The industry is collaborating to improve carbon and climate change risk/performance measurement and reporting by companies and by the finance institutions themselves, a crucial building block for managing and reducing carbon emissions.

5. **Engagement with companies:** Growth in proxy voting action related to climate change as well as extensive company engagement is having a direct impact on corporate reporting of carbon emissions and strategies to respond to climate change.
6. **Engagement with policy makers:** The industry is collaborating to engage with policy makers to influence policy and regulatory outcomes that encourage greater participation from the finance industry in the transition to a low carbon, climate resilient economy.

The formulation of international and national policy measures provide the backdrop against which some of these leadership actions have emerged.

There is an opportunity to build on these actions and embed climate change into mainstream finance in the following ways.

Implementation of government policies that provide the industry with more transparency, longevity and certainty are critical. A supportive policy environment needs to include reliable and economically meaningful carbon pricing to help redirect investment commensurate with the scale of the climate change challenge. Intertwined with this is a need for strong measures to support energy efficiency and renewable energy to facilitate deployment. Removing any direct or indirect subsidies in favor of fossil fuels is of particular urgency. To encourage more private sector involvement in adaptation financing there will need to be public/private partnership strategies that are designed to deliver solid investment outcomes. Finally, a coherent policy framework should also take into account any knock-on effects that changes to financial regulations might have on low carbon transition investments.

Develop capacity of the financial industry to assess the risks and opportunities of climate change. Finance institutions are taking action on climate change and allocating capital. For these actions to become more widespread finance institutions need to build an assessment of climate change risk and opportunities into core processes, engage with companies and policy makers, measure and report exposure to carbon emissions and develop strategies to reduce emissions across financing and investment activities.

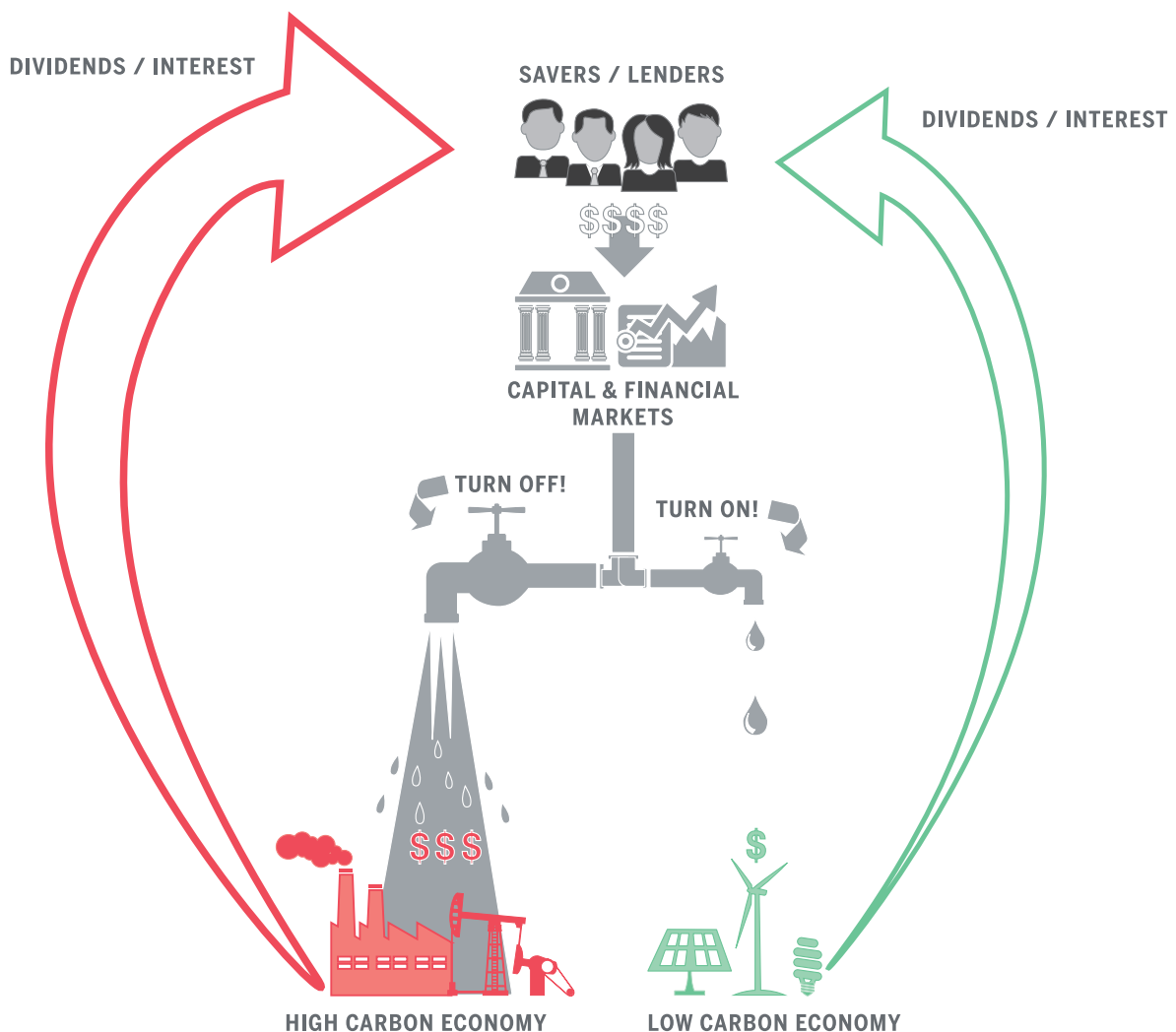
Collaborate to unlock further capital flows. A shared understanding needs to be built between policy makers and the finance sector, based on a mutual recognition of the climate change challenge as well as an understanding of the finance and capital allocation decision-making process. This will help the finance industry and governments to work more closely together to mobilize private sector capital. This report demonstrates examples of successful partnerships between finance institutions, development banks, international financial institutions and governments are useful mechanisms that could be built upon to finance both mitigation and adaptation needs, particularly in developing countries. There is an opportunity for further collaboration of this kind, to build momentum and spur more private sector investment.

2. The role of the finance sector in achieving a low carbon, climate resilient world

The finance sector presides over a large pool of capital, more of which could be steered towards low carbon, climate resilient activities. The core participants in the finance sector include banks, insurance companies, pension funds, fund managers, mutual funds, sovereign wealth funds, charities and endowment funds. In aggregate the value of the assets these groups manage, as measured by the value of equity-market capitalization, corporate and government bonds, and loans, was estimated to be worth US\$225 trillion in 2012¹.

Capital flows need to shift from high to low carbon activities. There is growing recognition that the world needs to shift capital and investment from high to low carbon activities if we are to avoid dangerous climate change outcomes. As Figure 1 highlights, the finance sector acts as the mechanism by which capital flows through and is distributed to different parts of the economy.

Figure 1. Turning the financial flows from high to low carbon outcomes



¹ McKinsey Global Institute (2013) Financial globalization: Retreat or reset?

In section 3 of this report we discuss the leadership the industry is taking to divert capital to the low carbon economy, and identify enablers that would facilitate a diversion of larger capital flows to accelerate the transition to a low carbon economy.

Climate change is a systemic risk that is impacting the finance industry, as it is impacting all sectors of the global economy. While the industry is varied in its functions and specific activities, all agents have in common a fiduciary duty to act in the best interests of the individuals or organizations whose assets they are responsible for overseeing. Some financial institutions recognize that climate change increases uncertainty and investment risk, whilst also producing new opportunities. Managing these risks and capturing new opportunities is therefore crucial if the industry is to carry out its functions successfully.

There is also increasing concern about the shortcomings of the financial market system. In the wake of the credit crisis there is growing concern that financial markets must respond better to managing systemic risks such as climate change. Short-term tendencies, agency problems and behavioral biases in the financial system can be very costly to society and thereby to the ultimate beneficiaries of finance institutions². The UNEP Inquiry into the Design of a Sustainable Financial System will work on this issue with financial regulators, investors, the broader business community and other concerned stakeholders³.

2 Rotman ICPM <http://www.rijpm.com/journal/journal>

PRI Report on long-term mandates <http://www.unpri.org/whatsnew/pri-focuses-on-long-term/>

3 <http://www.unep.org/greenecomony/financialinquiry>

3. Finance sector leadership is building momentum

Financial sector leadership on climate change spans a range of activities.

While financial institutions share common ground in that they have fiduciary responsibility for the capital of others, their individual objectives and functions are diverse. For this reason, the actions that they are taking in managing the risks and opportunities associated with climate change are wide ranging. The leadership actions presented in this report are categorized into the following six areas:

1. **Low carbon and energy efficiency finance and investing**
2. **Emissions reducing finance and investing**
3. **Adaptation finance and investing**
4. **Measurement and transparency**
5. **Engagement with companies**
6. **Engagement with policy makers**

The remainder of this paper provides finance sector leadership examples for each of these six areas, highlighting throughout the key factors that supported leadership action to occur ('enabling factors'), a range of finance sector leadership actions that have been taken ('leadership actions'), the contribution of these actions to a more low carbon, climate resilient world ('positive outcomes') and what is needed to mainstream these leadership actions across the wider finance industry ('pathways to mainstream') (Figure 2).

Figure 2. Building Momentum in Financial Sector Leadership Action



Finance sector leadership actions produce a range of positive outcomes that contribute to the shift towards a low carbon, climate resilient world, as depicted in Figure 3.

Figure 3. Positive Outcomes from Financial Sector Leadership Actions

Finance Sector Leadership Actions	Positive Outcomes						
	Capital deployment	Reducing emissions	Improving transparency	Changing corporate behaviour	Supporting better policy	Knowledge development	
Low carbon investing and financing	✓	✓	✓			✓	
Emissions reducing investing and financing	✓	✓	✓			✓	
Adaptation finance and investing	✓	✓	✓			✓	
Measurement and transparency		✓	✓	✓		✓	
Engagement with companies			✓	✓		✓	
Engagement with policy makers					✓	✓	

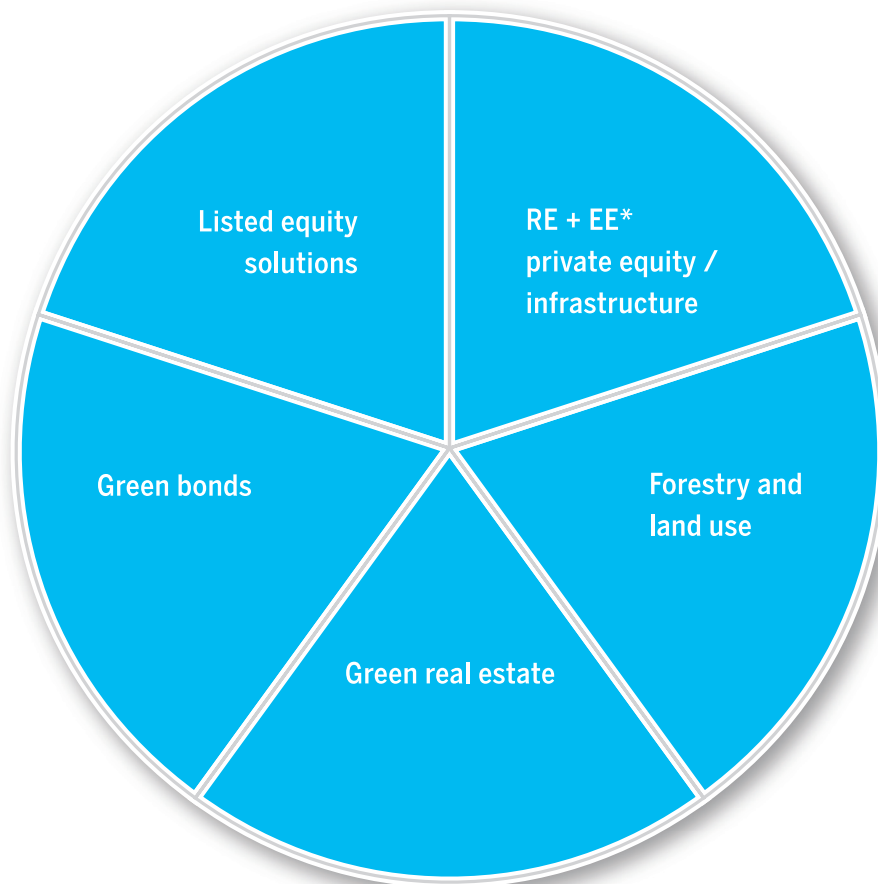
As the leadership examples in this report will highlight, some financial institutions are taking action and are making a positive contribution to address the climate change challenge. This report will also highlight the pathways to mainstream these leadership actions across the wider financial sector that requires further action by governments, by financial institutions and by governments and financial institutions in partnership together.

3.1. Leadership in low carbon and energy efficiency finance and investing

This section highlights some of the actions the financial sector is taking in low carbon and energy efficiency investing. This is important given the scale of the clean energy financing challenge that we face. The IEA (2014) in its Special Report on the World Energy Investment Outlook updated its estimates of the scale of investment required to keep the world on a 2°C scenario trajectory. It estimated that annual investments in low carbon energy and energy efficiency need to double to reach almost US\$790 billion per annum by 2020 and to increase by nearly six times current levels to reach US\$2.3 trillion per annum by 2035. It is clear the financing needs are large and growing. The Ceres Clean Trillion report set out 10 recommendations for investors, companies and policymakers to increase annual global investment in clean energy⁴.

Figure 4 depicts some of the areas where financial institutions are demonstrating leadership in both developed and developing countries, segmented according to the different asset classes that financial institutions use in their capital allocation decisions⁵.

Figure 4. Low carbon investing and energy efficiency across asset classes



⁴ Ceres (2014), Investing in the Clean Trillion: Closing the Clean Energy Investment Gap

⁵ For the definition used in this document as to what constitutes low carbon investing see the Low Carbon Investing taxonomy: <http://globalinvestorcoalition.org>

* Refers to renewable energy and energy efficiency

Within these areas of financial sector action in low carbon investing and financing, a few key themes emerged that will be highlighted. Firstly, some pension funds are taking action and allocating a proportion of their assets under management across all of these asset classes (Highlight One). Secondly, some of the leadership actions in developing countries are taking a partnership approach to attract and deploy private sector capital in renewable energy and energy efficiency projects (Highlight Two). Finally, the leadership actions most sensitive to government policy, in particular institutional investment in renewable energy projects (Highlight Three) and forestry and land-use (Highlight Four) are those that have the greatest need for policy action to attract more private sector capital.

3.1.1 Listed equity solutions

Listed equity markets refer to publicly listed companies on stock exchanges around the world. The global market capitalization of listed equity companies is in excess of US\$64 trillion⁶ and represents a large portion of global financial securities. Pension funds are large investors in these securities, managing some US\$22 trillion of assets globally (OECD, 2013) and allocating on average between 10% and 65% of their portfolios to listed equities across the OECD countries⁷ (see Highlight One). In addition to pension funds, the major investors in global equities include insurance companies, sovereign wealth funds, charities, endowments and or course, individual investors.

Within listed equity markets, there are companies that are high and low emitters of GHGs and those that are contributing more than others in the shift towards a low carbon economy. Investors typically gain exposure to listed equities either through passively managed products that track an index of companies (passive funds), or through investing in portfolios that are actively managed by asset managers (active funds). The passive fund market is growing in importance and as the examples below illustrate, the leadership actions encompass both active and passive solutions.

What are the enabling factors?

Expectations of the value at risk of fossil fuel reserves in a carbon constrained world.

Growing engagement by beneficiaries about climate risk.

Development of investment solutions and products that meet risk/return objectives.

- **Fund managers develop investment products to invest in companies that make a positive contribution to addressing the climate change challenge.** *Various fund managers have developed products that research and invest in companies that are the leaders in their sector in relation to environmental and sustainability management practices⁸. Examples of some fund managers that have listed equity product solutions with a particular focus on environmental issues include Impax Asset Management, Calvert, Climate Change Capital, WHEB, Generation Investment Management, RobecoSAM, Sarasin and Partners, Pictet Asset Management, Allianz and Pax World to name but a few.*
- **The Swedish pension fund AP4 and French asset manager Amundi implement new techniques to decarbonize investment portfolios across passive equity portfolios.** *The process involves reducing the weights of carbon polluting companies in portfolios while at the same time exhibiting a very low tracking error to the index that the fund is benchmarked against⁹. AP4 has implemented this approach for strategies representing approximately US\$2 billion, and is in the process of decarbonizing its entire portfolio (US\$20 billion). This approach could also be extended to the bond market.*

⁶ World Federation of Exchanges (2014), 2013 Market Highlights report

⁷ Mercer, <http://www.fsc.org.au/downloads/file/ResearchReportsFile/MercerResearch.pdf>

⁸ Broadly defined as managing Environmental, Social and Governance (ESG) risks and opportunities

⁹ Tracking error is a measure of the volatility of the difference in returns between a portfolio and the index against which it is benchmarked

What are the pathways to mainstream these leadership actions?

Government Action: Economically meaningful carbon price; phase out subsidies for fossil fuel.

Financial Institution Action: Wider adoption of low carbon, energy efficiency solutions; support for disclosure of carbon emissions and energy efficiency by companies.

Partnership Approach: Targeted policy design to support increased capital flows into development and deployment of low carbon, energy efficient solutions.

- **UK asset manager Legal and General Investment Management develops a pooled fund seeded by its client BT Pension Scheme, tilted in favour of lower carbon companies.** *The fund alters the weights of companies in the FTSE 350 Index according to their carbon footprint. The overall sector weightings of the fund are kept the same as the FTSE 350 Index, and within each sector holdings are re-weighted to reflect a company's carbon footprint. Companies with a lower carbon footprint will have a higher weighting. The companies in the fund are reviewed and amended quarterly in line with the FTSE Index reviews.*
- **Environmental indices are developed as an alternative benchmark for portfolios.** *Over the past decade some of the major index companies including MSCI, Dow Jones, S&P, FTSE, Dax, JSE, Nasdaq, Euronext and STOXX have developed indices that embed sustainability principles into the weighting of companies¹⁰. These principles encapsulate ESG considerations and are not only focused on low carbon and climate resilience. However, some of the index companies offer more narrowly defined environmental benchmarks that relate specifically to low carbon and energy efficiency criteria. This is an emerging field that is helping to build new expertise and tools for the industry to utilise.*

10 Source: World Federation of Exchanges, <http://www.world-exchanges.org/sustainability/m-7-0.php>

HIGHLIGHT ONE: *Pension funds invest in low carbon, energy efficient assets**

There has been increased focus on the potential role that pension funds can play in shifting more assets towards low carbon, energy efficient assets (Mercer, 2011¹). As one of the major groups within the finance industry, pension funds around the world represent the world's savers and retirees and preside over US\$22 trillion of assets globally (OECD, 2013).

Some pension funds have been shifting exposure to low carbon, energy efficient assets for many years, and have set future targets that they wish to reach in terms of their total portfolio. Others do not set targets but invest when appropriate opportunities arise.

The examples demonstrate that some pension funds are able to find suitable investment opportunities that meet the risk/return hurdles whilst also supporting the low carbon transition. This shows the potential for other pension funds around the world to follow suit.

US public pension fund CalSTRS invests over 3% of its portfolio in low carbon investments including private equity renewable energy investments, LEED and Energy Star Real Estate and green bonds.

CalSTRS has a green initiative taskforce that is mandated to manage the risks and capture the opportunities associated with global sustainability issues by identifying environmentally focused strategies to enhance the risk-adjusted returns of the investment portfolio.

Australian superannuation fund Local Government Super (LGS) Scheme invests approximately 8% of assets in low carbon investments. *The fund's investments include equities with low carbon activities, property, private equity and green bonds. It is committed to sustainable investment as both a risk management strategy and a belief that ultimately it is in the best interest of its members and beneficiaries.*

The Environment Agency Pension Fund (UK) is on track to have 25% invested in companies and assets that make a positive contribution to a low carbon and climate resilient economy by 2015. *The strategy includes investments in companies with significant revenues (in excess of 20%) involved in energy efficiency, alternative energy, water and waste treatment and public transport, together with property and infrastructure funds with a low carbon, climate resilient focus. Another core component is the recent allocation of £250 million to real assets covering real estate, infrastructure, forestry and agricultural land.*

The Danish pension fund PensionDanmark has US\$3 billion or approximately 9% allocated to low carbon investment including low carbon and grid infrastructure. Its goal is to have 10% allocated to the asset class. *The fund is expanding its portfolio of renewable energy infrastructure in developing markets, north west Europe and North America. It seeks solid, reliable long-term cashflows as well assets that have a positive impact on the climate.*

Australian superannuation fund Catholic Super invests approximately 8% of its portfolio in low carbon, climate resilient assets. *The fund invests in private equity solar generation in the US, low carbon and energy efficiency related activities in private debt, energy and emissions efficient buildings and a renewable private equity fund of fund focused on developing markets.*

Australian superannuation fund HESTA invests approximately 3% of its portfolio in low carbon assets. *Its investments include private equity, real estate, forestry and renewable energy infrastructure assets. The fund believes integration of climate change into its investment processes results in higher long-term returns for members.*

¹ See Mercer's (2011) report on climate change and strategic asset allocation

* *These examples are a subset of the pension fund industry and therefore must be interpreted in that vein. The estimates do not include the composition of company emissions within listed equities; this is an area for future work.*

3.1.2. Green bonds

The global bond market is estimated to be US\$78 trillion¹¹ and represents a core part of the global financing and capital allocation mechanism. The emergence of the so-called 'green' bond market is playing an important role in helping to divert capital towards activities that support a low carbon, climate resilient world.

Throughout this report, the term 'Green Bonds' refers to instruments in which the proceeds will be exclusively applied (either by specifying Use of Proceeds, Direct Project Exposure, or Securitization) towards new and existing Green Projects – defined here as projects and activities that promote climate or other environmental sustainability purposes¹². The term 'Climate bond' is also widely used across the industry and refers to labeled as well as unlabeled bonds when proceeds are specifically intended to finance projects and activities that contribute to a low carbon and climate resilient economy.

According to the Climate Bonds Initiative (CBI), climate bonds are used to finance – or re-finance - projects that in some way address climate change. Examples of the types of projects supported by green bonds include renewable energy plants, energy efficiency projects, new technologies in waste management and agriculture that reduce greenhouse gas emissions, forest and watershed management and infrastructure to prevent climate-related flood damage.

As at August 2014, US\$22.2 billion in labeled green bonds had been issued in 2014. The market is growing rapidly and BNEF estimate that total volume in 2014 will surpass US\$40 billion by the end of the year, triple the volume of 2013 issuance¹³. Some examples of finance sector leadership action in green bonds are provided below.

What are the enabling factors?

Development of green bond principles.

AAA credit rating of benchmark issuers by MDBs.

Comparable yield and terms offered as traditional bond issues.

- **Swedish Bank SEB and World Bank IBRD partnership ignites development of green bond market.** *In 2008 SEB partnered with the World Bank (IBRD) as underwriter in issuing the world's first independently reviewed green bond. The product was designed to respond to specific investor demand for a triple-A rated fixed income product that supported projects in developing countries that address the climate challenge. As at July 2014, the World Bank (IBRD) had raised US\$6.4 billion equivalent in green bonds through 68 transactions and 17 currencies.*
- **Public pension funds CalSTRS, AP2, AP3, UNJSPF and California State Treasurer are early supporters of green bond market.** *The 2008 World Bank (IBRD) green bond of US\$130 million attracted public sector pension funds including the US pension fund CalSTRS, Swedish pension funds AP2 and AP3 and the United Nations Joint Staff Pension Fund. Since the first bond, these and other investors have participated in purchasing green bonds from other issuers as the market has grown.*
- **KfW, IFC and World Bank IBRD kick-start local markets.** *The World Bank IBRD issues an Australian green bond, IFC issues a local currency bond in Peru, and German development bank KfW issues a EUR 1.5 billion green bond aimed at German investors. Agence Francaise de Development has announced it will issue a climate bond later in 2014. All these banks have explicitly stated their commitment to generating new green bond markets.*

11 Bank of International Settlements Quarterly Review, March 2014 - International banking and financial market developments

12 International Capital Market Association, Green Bond Principles

13 Source: Bloomberg New Energy Finance, "Green Bonds Market Outlook", 2014

What are the pathways to mainstream these leadership actions?

Government Action: Economically meaningful carbon price to bolster investor demand for green issuance

Financial Institution Action: Market depth and breadth across the yield curve; liquidity; transparency

Partnership Approach: Implement industry principles

- **Zurich Insurance Group to invest up to US\$2 billion in AAA rated green bond funds.** *Nearly 30% of the group's investment portfolio is in government or supranational bonds. Zurich hopes that its contribution can have the additional benefit of developing scale and liquidity in the green bond market and encourage new issuers to come to market, while promoting robust and transparent project selection and the reporting standards for impact.*
- **US firm Bank of America Merrill Lynch (BoA) joins in corporate green bond issuance and sets ten year goal to reach US\$50 billion environmental business.** *The proceeds are used to finance renewable and energy efficiency projects via loans and credit lines. Investors include State Street Global Advisors, TIAA-CREF, CalSTRS and Swedish pension fund AP4.*

HIGHLIGHT TWO: Low carbon, energy efficiency projects in developing countries

In addition to climate change policy and the need to reduce global emissions, there are a number of factors driving the rapidly developing countries towards renewable energy sources. On the demand side, economic growth and a rising middle class together with continued population growth is pushing up demand for energy. At the same time, the cost of renewable technologies are falling while many fossil fuel projects face upward cost pressures due to environmental policies and standards being introduced. For the developing countries that might not be growing as fast, there are equally strong drivers for investing in renewable energy technology as a means to alleviate poverty and provide cheaper access to energy, especially for populations not served by electric grids and lacking energy access.

Despite the imperative to deploy capital into renewable energy in developing countries, the cost of financing such investments from international sources is often much higher than the same investments in developed countries, with estimates pointing to as much as a 30% difference in some instances¹. The reasons for this are complex but relate largely to the higher perceived risk of investing into emerging market projects with high interest rates, high inflation, high levels of government debt and potential risks around government stability and policy changes that could undermine projects. Currency risk is also reflected in the required rate of return.

Whilst significant barriers exist, the enabling conditions seem to be improving in developing countries, where for instance 95 countries had renewable energy support policies in place by 2013, up from only 15 in 2005². Increasing finance sector leadership is now emerging both within developing country markets and between developed and developing country markets. These activities either result in capital flowing from developed to developing countries, or within developing countries. They all contribute to building market capacity and local expertise in delivering on renewable energy and energy efficiency projects. They also demonstrate the high level of collaboration that is taking place between finance institutions, governments, MDBs and IFIs to build local capacity and market depth.

- **Danish pension funds partner with the Danish state and the Investment Fund for Developing Countries (IFU) to invest as much as EUR 1 billion in renewable energy projects in developing countries.** *The Danish state, IFU and a number of institutional investors have established the Danish Climate Investment Fund. The public funds come from the Danish state and IFU, who have contributed DKK 275 million and 250 million respectively. The private funds primarily come from PensionDanmark (DKK 200 million), PKA (DKK 200 million), PBU (DKK 125 million) and Dansk Vækstkapital (DKK 150 million). The vehicle funds investment in renewable energy projects in developed and developing economies. The fund also invests in adaptation projects such as disaster preparedness and coastal management. The first investment was made in the first quarter of 2011. The current total commitment to the Danish Climate Investment Fund is DKK 1.2 billion.*
- **European banks partnered with IFC and GEF to support renewable energy and energy efficiency projects generating investment of US\$330 million across 829 projects in Eastern Europe.** *The program, called Commercializing Energy Efficiency Finance (CEEFF), launched by IFC with support from the Global Environment Facility (GEF). The partner banks include Ceska Sporitelna; CSOB; GE Money Bank; Dexia; Swedbank; SEB Vilnius Bankas; Hansabankas; Raiffeisen Leasing; Raiffeisen Bank; OTP; Erste; K&H; HV/Unicredit. The program enabled total investment of US\$330 million through the provision of partial credit guarantees supporting 829 projects in Eastern Europe. The projects were geared towards small-scale RE projects and EE projects with small-to-medium enterprises and households.*

1 Climate Policy Initiative (2014) Finance Mechanisms for Lowering the Cost of Renewable Energy in Rapidly Developing countries

2 REN21 Global Status Report 2014 <http://www.ren21.net/REN21Activities/GlobalStatusReport.aspx>

- Chinese banks participate in China Energy Efficiency Finance Program providing loans worth US\$790 million, financing 226 projects and reducing emissions by 19 million tons of carbon dioxide/year.** *This program has enabled key players in China's economy — banks, utility companies, government agencies, and suppliers of energy efficiency equipment and services— to collaborate in creating a sustainable financing model. One example to highlight the cooperation model is Chongqing Pawai Energy company, it received a 5Y loan of US\$1.5 million via a Chinese bank, Industrial Bank, to implement energy efficiency savings on its 3 coal power plants. The resulting emission reduction was estimated at 12,000 tons of CO₂ per year.*
- Finance institutions invest EUR 112 million into European Investment Bank's Global Energy Efficiency and Renewable Energy Fund (GEEREF).** *The European Investment Bank (EIB) GEEREF is a developing market fund-of-funds, started in 2008 with public funding of EUR 112 million from Germany, Norway and the European Union. It was established to catalyze private investment into its target markets. In mid-2013, GEEREF set out to raise an additional EUR 112 million from private investors. At the time of writing GEEREF was close to reaching its private sector fund raising target (the investors are not yet public). This hybrid approach whereby public funds are invested to attract private sector investors (with over EUR 50 million mobilized into new clean capacity for each euro of public money), demonstrates leadership from all those involved, helping to bring capital to low carbon opportunities in developing countries and build market expertise and track record.*
- HSBC Armenia partners with IFC to finance 9 SME Energy Efficiency and Renewable Energy projects in Armenia.** *Through a US\$15 million loan facility provided by IFC, HSBC Armenia was able to build a portfolio of 9 small-medium size enterprise energy efficiency projects in Armenia totaling around US\$25 million with aggregate energy saving of 34,991 MWh/year, resulting in GHG emission reduction of 6,614 tCO₂e/year.*
- The State Oil Fund of the Republic of Azerbaijan (SOFAZ) invests in IFC Catalyst Fund focused on renewable energy and energy efficiency in developing countries.** *SOFAZ joined IFC, Canada and other investors in the IFC Catalyst Fund. The fund is designed to stimulate the development of funds and projects focused on renewable energy and climate-friendly solutions in developing countries. The IFC Catalyst Fund raised over US\$400 million of which US\$50 million is committed by SOFAZ. The target sectors include low-carbon power generation (including renewables), energy efficiency, water efficiency, sustainable land use, and associated supply chains in emerging markets.*
- Norwegian life insurance company KLP commences its renewable energy co-investment program with Norwegian DFI Norfund aimed at investing US\$160 million in developing countries.** *KLP and Norfund each invested NOK 35 million in Scatec Solar's two PV projects in South Africa. KLP is the first institutional investor in Norway to make this type of investment. Scatec Solar is the first investment in an agreement between KLP and Norfund aimed at co-investing NOK 1 billion (US\$160 million) in projects in developing countries to promote sustainable development. The investments will be made over a period of five years and will be based on commercial risk and return assessments with strict requirements for environmental and social sustainability.*

3.1.3. Green real estate

The size of the investable commercial property market was US\$26.6 trillion at the end of 2011¹⁴. There are estimates that the direct commercial real estate transactional market will exceed US\$1 trillion per annum by 2030, compared with 2012 annual volumes of nearly US\$450 billion¹⁵. Real estate accounted for more than a third of the total assets under management by the world's 100 largest asset managers in 2013, according to a survey of the investment industry by Towers Watson.

In addition to their large monetary value, according to the IEA¹⁶ buildings are the largest energy-consuming sector in the economy, with over one-third of all energy and half of global electricity consumed there. As a result, they are also responsible for approximately one-third of global carbon emissions.

From the perspective of financiers and investors, green real estate – defined as energy efficient, low carbon buildings – has advantages over conventional buildings. It has lower energy consumption as well as lower operating and maintenance costs. Over the life-cycle of a building these savings often offset higher initial upgrade and retro fitting costs and result in lower CO2 abatement costs.

Government regulation at the national and local level has also been a significant driver for green buildings in developed and developing countries through implementing measures such as setting minimum standards for new construction through building codes; efficiency of existing buildings; transparency regarding efficiency rating; and phasing in escalating sustainability standards for all residential and commercial buildings.

Some examples of finance sector leadership in real estate are listed below.

What are the enabling factors?

Premium for green buildings generating more stable income stream, lower operating costs, higher yield.

Industry standards and ratings.

Minimum standards in building codes.

Energy efficiency targets.

- **Global Real Estate Sustainability Benchmark (GRESB) established by investors and assesses sustainability of 55,000 buildings valued at more than US\$2.1 trillion.** *In 2009, Dutch pension fund managers APG and PGGM, Britain's university pension scheme USS and Maastricht University founded GRESB. It has become the global standard for assessing the sustainability performance of property portfolios. 637 listed property companies and non-listed funds representing 55,000 buildings participated in the 2014 GRESB survey. Over 45 institutional investors representing US\$5.5 trillion of institutional capital use GRESB for monitoring the sustainability performance of their real estate investments. The sustainability criteria include, inter alia, performance indicators related to energy, GHG emissions, water and waste management and energy efficiency metrics.*
- **The US finance and insurance company Prudential implements a framework for identifying energy efficiency solutions for its US\$55 billion property asset portfolio.** *Prudential Real Estate Investors (PREI) created a proprietary manual of Sustainable Standard Operating Guidelines. It is based on an assessment of more than 200 properties and takes a bottom-line approach to identify efficient solutions for lighting, water, temperature settings, management of vacant space and self-assessments for potential*

14 Source: Prudential Financial

15 Global Capital Flows Research, January 2013. Jones Lang LaSalle

16 Source: IEA "Technology Roadmap: Energy efficient building envelopes"

What are the pathways to mainstream these leadership actions?

Government Action:

Disclosure, labeling and reporting standards; implement green building regulations and upgrade existing builds

Financial Institution Action: Solutions to reduce initial upgrade costs; improve knowledge and take up of green building retrofit technology

Partnership Approach: Review and clarify incentives re tenant/ownership responsibility

environmental certifications. As a result Prudential has achieved total value added of \$100 million. Globally, PREI has green certified buildings valued at US\$12.7 billion of its US\$59 billion global portfolio, or 21.5%, including US\$8.1 billion in US LEED certified buildings. PREI calculated a total value add to tenants and investors from their sustainable buildings initiative of over US\$100 million in 2012 and 2013, and in 2013 reduced energy use and GHG emissions by 3.1% across 652 properties in 16 countries.

- **US pension fund CalPERS exceeded its energy reduction goal of 20% in its core real estate portfolio.** In 2004, the CalPERS Investment Committee established a goal of reducing the energy consumption of the underlying assets in its Core Real Estate portfolio by 20% by 2009. At the end of this five-year program, the investment managers exceeded this target, reporting a total energy reduction of 22.8%. The cumulative energy reduction is equivalent to preventing an estimated 126,000 metric tons of CO₂ emissions, the same effect as removing around 22,000 cars from U.S. roadways or powering approximately 9,750 homes for a year. CalPERS continue to work with its real estate managers on improving the efficiency of its real estate portfolio.
- **Australian superannuation fund Cbus has over 5% of its total AUM invested in 5* or 6* NABERS rated energy efficient buildings.** Cbus Property is an in-house capability with a mandate to develop highest Green Star ranked property. Cbus invests over A\$2 billion in building projects which reflect a strong commitment to sustainable development. Cbus Property aims to achieve at least a 5 star Green Star rating on all new commercial development as well as retro fitting existing properties to improve sustainability. Its flagship property at 1 Bligh Street, Sydney achieved a 6 star Green Star rating and won the 2012 'The International High-rise Award' as the world's most innovative high rise building.
- **US insurer and pension fund provider TIAA-CREF reduces the carbon footprint of its real estate portfolio by 17%.** In 2007 the fund launched a Global Real Estate Sustainability Initiative. The results of this initiative are measured annually. In 2013 electricity consumption was reduced by 124 million kilowatt hours and 57,897 metric tons of GHG emissions were cut across the commercial real estate portfolio. The initiative is being implemented across TIAA-CREF's U.S. and international real estate portfolio, which includes 35 million square feet of office buildings, 11,900 multifamily units and tens of millions of square feet of other properties.

HIGHLIGHT THREE: Institutional investors and renewable energy and energy efficiency projects

It is clear that energy markets must undergo a substantial transformation and shift towards renewable energy sources if we are going to avoid dangerous climate change outcomes. Some financial institutions are actively involved in financing renewable energy projects, particularly project developers and commercial financial institutions via project debt. Some institutions are also partnering with development banks, governments and IFIs in developing country projects. There are some examples where institutional investors have allocated capital, either by investing directly in companies and projects, or by investing through private equity and infrastructure funds, a few of which are provided below.

The Dutch pension fund manager APG invests up to €500 million investment in hydropower plants. APG partnered with Aquila Capital to invest a targeted €500 million in the acquisition and development of European hydropower plants. Aquila Capital will provide the operational management of the hydropower assets as well as portfolio management services to the partnership. APG is expanding its infrastructure portfolio and has a preference for sustainable energy generation. It considers hydropower as suitable from a risk/return perspective, with visible cash flows, a strong sustainability profile and comparatively low exposure to government policy changes.

The sovereign wealth fund China Investment Corporation (CIC) invests US\$710 million in green energy supplier GCL-Poly Energy Holdings. CIC and GCL entered a joint venture in 2009 to invest in and develop the GCL photovoltaic electricity generation business, taking CIC's holding of GCL to 20%. GCL is the world's leading supplier of solar PV materials and system solutions. GCL also owns and operates several large-scale solar farms globally.

The New Zealand Superannuation Fund takes a stake in US wind turbine designer Ogin. The fund has invested US\$55 million in US company Ogin Inc., a privately owned developer of wind turbines. Ogin has used aerospace technology to develop a smaller, high-performance wind turbine, and aims to help wind energy developers bring clean energy production closer to customers. This investment complements the fund's strategy to increase investment in alternative energy and energy forms with lower carbon intensity, where a strong business case could be established.

The Danish pension fund PKA is looking to increase its new and existing offshore wind farm investments to EUR 1.5 billion. PKA believe that offshore wind investments align with their goal to generate a solid investment return, with long-term stable cash flows whilst also having a positive impact on the climate.

Fund managers develop products to invest in renewable energy and energy efficiency projects. In addition to direct investing into projects, a number of investment funds have been developed by fund managers that provide investors with the opportunity to allocate capital to renewable energy and efficiency projects. These are typically offered as private equity funds, infrastructure funds or private equity fund of funds. Some examples of these funds include Capital Dynamics, Armstrong Asset Management, HarbourVest, North Sky Capital, Unigestion, PCG, Hudson, Riverstone, VantagePoint, Element, Rockport, US Renewables Group, Braemar, Virgin Green, Craton Equity, Khosla Ventures, Zouk, Generation, Kleiner Perkins, Impax New Energy, Hg Renewable Power and Foresight Group to name a few.

Despite this progress, a number of obstacles need to be addressed to enable more capital flows. The OECD has said that energy policy and climate change policy are both vital for attracting private sector capital, as these policies directly impact on the pricing of assets, the cash flows and hence the riskiness of such investments. It also identified market conditions that limit capital flows, such as the illiquid nature of the investments and the high costs associated with accessing the opportunities. The market can in time solve the latter two conditions, and the examples above illustrate that some investors are taking steps in this direction. The question of climate and energy policy is therefore a key obstacle that needs to be addressed to attract more institutional capital.

3. 2. Leadership in emission reducing finance and investing

Reducing carbon emissions is essential if we are to avoid dangerous climate change outcomes. In addition to the low carbon investing and financing activities discussed earlier in this report, there are further actions that relate directly to targeting and reducing carbon emissions. Firstly, there is innovation in the banking sector with some banks shifting their lending criteria toward low emissions activities. Secondly, there are efforts by institutional investors to reduce their exposure to fossil fuel assets.

In terms of bank lending, bank loans are the most important source of external finance for companies and will play a crucial role in steering businesses towards lower emission activities¹⁷. The credit crisis and the Basel III Accord make lending and capital adequacy rules more stringent and have reduced banks' appetite for risk. This, in turn, has encouraged a reallocation of investments towards more liquid shorter-term assets, while low carbon initiatives typically require long-term credit¹⁸. Some possible solutions that are being debated include introducing special conditions and rules relating to low carbon activities into regulatory requirements¹⁹.

Some examples of actions that banks are taking to shift their lending criteria towards lower emissions activities are highlighted below.

What are the enabling factors?

Carbon pricing schemes.

The value of fossil fuel reserves in a carbon constrained world.

Growing societal concern about high carbon activities.

Product innovation to facilitate capital deployment.

- **The global banking firm ING Group grows its renewable energy project loan portfolio to more than US\$1.5 billion.** *ING has reduced its project loan portfolio exposure to coal power from 63% in 2006 to 13% in 2013 and at the same time increased its exposure to renewables from 6% to 39%. ING Commercial Banking's Sustainable Lending strategy strives to embed sustainable development at the core of its business. It has achieved this transformation in its loan book as a result of its own efforts (sector knowledge & risk appetite) and external factors (economic and political influences on market).*
- **Dutch bank Triodos finances 376 renewable energy projects with renewable energy accounting for 33% of its total loans.** *By the end of 2013 Triodos Bank and its climate and energy investment funds were financing 376 projects across Europe (2012: 346), contributing to a generating capacity of 2,280 MW of energy (2012: 2,038 MW), or enough energy to meet the electricity needs of the equivalent of 1,480,000 European households during the year. In addition, it estimates 33% of its loans are to the renewable energy sector, with the majority of the loans in solar and wind, and a smaller amount going to biomass and hydro.*
- **The Australian bank Westpac commits up to A\$6 billion for lending and investment in clean technology and environmental services by 2017.** *This will double the Group's investment in the sector and includes renewable energy, the property sector, water efficiency and environmental services. Progress to date has been primarily in renewable energy, including two major wind farms and a solar farm, and the greening of the property sector.*

17 Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy. Emanuele Campiglio/Grantham Research Institute – London School of Economics

18 Liebreich, Michael and McCrone, Angus (2013), 'Financial regulation - biased against clean energy and green infrastructure?', Clean energy - White Paper (Bloomberg New Energy Finance).

19 Rozenberg, Julie, et al. (2013), 'Funding low-carbon investments in the absence of a carbon tax', Climate Policy, 13 (1), 134-41.

- **The Indian bank YES BANK builds its expertise and exposure to clean energy projects.** YES BANK's Corporate Finance unit covers clean energy, transportation, water and waste management. The unit has within it a specialized investment advisory team that has worked on several key advisory deals during the reporting period. The cumulative exposure of YES BANK to clean energy is 1500 MW (installed capacity). One deal of note in which YES BANK was a consortium member was the Welspun Neemuch solar PV project, India's largest project at a capacity of 130 MW. This helped the bank to strengthen its portfolio and gain more experience for future projects.
- **The Dutch bank ASN Bank develops carbon P&L methodology to measure and achieve carbon neutrality across all of its activities by 2030.** The bank believes the problem of climate change is highly urgent, requiring everyone to contribute to a solution. The Bank has set a target that the ASN organization and all of the investments on the ASN Bank balance sheet and under management at the ASN Investment Funds to be carbon neutral by 2030. A methodology has been developed to include all investments, loans, mortgages, bonds and equity investments. The methodology is unique as it calculates the emissions of projects as well as organizations.
- **The South African Bank Standard Bank provides US\$ 1.6 billion for implementation of South Africa's Independent Power Producer's Programme.** In the past three years the Standard Bank Group, which is the largest bank in Africa by assets and turnover, has underwritten renewable energy projects in Angola, Ghana, Kenya, Nigeria. In South Africa, it has supported projects to the value of R16.1 billion (US\$ 1.6 billion) in South Africa's Independent Power Producer's Programme. A fourth round of bids has recently closed with the bank supporting a further tranche of projects. Renewable Energy has become a significant portion of Standard Bank's energy portfolio and has earned it top 10 international ranking for renewable energy funding.

Some financial institutions are increasingly concerned about their exposure to fossil fuel assets, with a risk that the value of these assets will decline over time as the economy shifts toward a low carbon trajectory. The debate in part reflects research that has provided new information and tools for the industry to assess the potential decline in the value of some fossil fuel assets, both in terms of existing operations and future expansions²⁰. There has been a corresponding increase in concern across civil society about the link between their retirement savings supporting fossil fuel company activities. As the examples below illustrate, some financial institutions are placing a cap on their exposure to fossil fuel companies and activities, some companies are being excluded altogether, and as we will see later in this report, others are being targeted for engagement to make their operations less CO2 emissions intensive.

- **The Stanford University endowment fund will no longer invest in publicly traded companies whose principal business is the mining of coal for use in energy generation.** The resolution means that Stanford will not directly invest in approximately 100 publicly traded companies for which coal extraction is the primary business, and will divest from any direct holdings in such companies. Stanford also will recommend to its external investment managers that they avoid investments in these public companies.

²⁰ This includes research by organisations such as the International Energy Agency, the Oxford University Stranded Assets Program, and the Carbon Tracker Initiative on fossil fuels and stranded assets.

What are the pathways to mainstream these leadership actions?

Government Action:

Economically meaningful carbon price; phase out fossil fuel subsidies; energy policies that internalize full costs of fossil fuel activities; consider the effects of unintended constraints from financial regulation.

Financial Institution Action:

Engage with end beneficiaries and stakeholders; develop and deploy tools to measure and manage carbon exposure; develop and implement strategies to reduce emissions exposure.

Partnership Approach:

Review fiduciary duty requirements as they relate to lower carbon emission financing and investing activities; develop and implement industry risk disclosure of high carbon and fossil fuel activities.

- **The Dutch asset manager ACTIAM sets 70% cap for coal usage by utility companies.** *If a company is at or exceeds this limit, ACTIAM requests to see a plan and targets in place for the company to reduce coal usage over time. It also monitors company's carbon emissions for signs of increase. If an increase is observed it triggers an engagement process with the company and potential exclusion from the fund's portfolio.*
- **The Norwegian life insurance company Storebrand announces that the 10% of the fossil fuel sector with the highest share of power generation from coal will no longer be eligible for investment.** *Companies with the highest share of power generation from coal are excluded from the portfolio. At the time of writing the company had divested from 23 fossil fuel companies. An exception is made for companies that have an above average share of power generation from renewable sources (above 4%), as this is considered to be a way to increase the relative share of renewables in portfolios.*
- **The Australian asset manager AMP Capital's Responsible Investment Leaders Fund places a 20% limit on company exposure to fossil fuels.** *A company will be excluded if it has more than 20% exposure to either mining thermal coal, exploration and development of oil sands, brown-coal (or lignite) coal-fired power generation, transportation of oil from oil sands, or conversion of coal to liquid fuels/feedstock in both its equity and fixed interest portfolios. AMP Capital believes that having a formal limit on fossil fuels more clearly reflects investors' growing interest and concern regarding fossil fuel investments.*
- **The US faith community Unitarian Universalist Association passed a resolution to cease purchasing the securities of 200 major fossil fuel companies.** *The resolution allows the UUA to retain existing investments in fossil fuel companies with which it is engaged in shareholder actions seeking environmental justice. It believes that any effort that can change the current trajectory of climate change is a welcome improvement.*
- **The Australian superannuation fund HESTA to restrict its investment in thermal coal assets.** *HESTA will not allow new investments in unlisted companies, or in any newly listed companies, that derive more than 15% of revenue or net asset value from exploration, new or expanded production, or transportation of thermal coal. In addition, the fund will not allow participation in the provision of direct funding via rights issues or share placements to already listed companies for expenditure on business expansion in any of these activities.*

3.3. Leadership in adaptation finance and investing

It is already too late to avoid some serious impacts from climate change. There is a growing need to support adaptation measures, particularly in the poorest countries and communities where the physical risks are high and the capacity to respond insufficient. The estimates of the annual adaptation costs in developing countries alone range from US\$9-41 billion by the World Bank up to US\$86 billion per year by UNDP.

The finance sector's involvement in this area is currently very small, with the main sources of finance coming from adaptation funds under the UNFCCC umbrella, supported to varying degrees by governments, development banks and IFIs. The link between development aid and adaptation financing can often make the involvement and role of the private sector more complex.

Nevertheless, there are some innovations and opportunities unfolding for the finance sector. As the examples illustrate, insurance and reinsurance companies are the most active participants in adaptation, as many responses require insurance solutions to help communities manage weather related risks. Going forward, there will also be a need for private sector involvement in infrastructure spending on adaptation to not only insure against climate change, but to help societies adapt. This is an area that could attract institutional investor capital allocation if such projects were designed to produce reliable, long-term cash flows.

Some examples of financial sector leadership action in adaptation financing and investing are provided below.

What are the enabling factors?

Modelling capabilities of historical and future weather variability.

Catastrophe risk capability.

Financial engineering skills.

International financial institutions, government, insurance and finance sector partnership.

Weather risk products.

Better and more accurate climate information & services.

- **The Swiss reinsurance company Swiss Re, the World Bank and Uruguay government partner to complete US\$450 million hydroelectricity insurance transaction.** *The transaction uses rainfall data and oil prices for settlement and provides the Uruguayan government compensation for the combined risk of drought conditions and an increase in the price of energy. Swiss Re Corporate Solutions is taking a significant portion of the risk from the World Bank Treasury. The World Bank's platform is designed to transfer weather and catastrophe risks from governments to private sector risk takers. Climate change makes weather increasingly unpredictable. Transferring a portion of that uncertainty to insurers such as Swiss Re is a way to smooth cash flows, increase Uruguay budgeting predictability and support investment in renewable energy. This example shows that new forms of public-private partnerships can help countries absorb the financial consequences of weather, natural disasters and other unpredictable events and can make them more resilient.*
- **The German insurance company Allianz issues a catastrophe bond, offers micro-insurance products against climate impacts and launches crop insurance.** *Allianz issued its first flood catastrophe bond as part of a US\$1 billion program to disperse the risk of severe regional floods across a global fund. Allianz also offers micro-insurance products in 6 countries including India, Indonesia, Egypt, Cameroon, Senegal and Colombia to help build capacity against climate change. A crop insurance product developed together with HSBC and offered in Brazil offered farmers protection against extreme weather events.*

What are the pathways to mainstream these leadership actions?

Government Action: National adaptation policies; institutional and legal frameworks

Financial Institution Action: Localized research and data on weather patterns

Partnership Approach: International cooperation to implement adaptation strategies; knowledge sharing; partnerships between IFIs, governments, insurance, finance and local agencies; sustainable infrastructure initiatives

- **Extreme El Nino Insurance Policy offers flood protection.** *This is a product developed by The Insurance for Climate Change Adaptation Project, which is part of the International Climate Initiative (ICI) of the German Federal Ministry. It protects against the extra costs and losses associated with catastrophic flooding that follows a buildup of extreme levels of sea surface temperatures (SSTs) in the Pacific. It is the world's first index "forecast" insurance, designed to pay stakeholders as they incur costs in preparation for the extreme consequences that are coming. Payouts are triggered by extreme increases in Pacific SSTs that occur during an extreme El Niño year. The SST indicator is observed months before the onset of heavy rainfall on land, triggering payouts that enable the insured stakeholders to finance and to implement loss prevention and risk management strategies before the catastrophic flooding reaches full force.*
- **Australian insurer contributes to assessment of community vulnerability to natural disasters.** *Insurance Australia Group Limited (IAG) is a principal sponsor and contributor to the Australian Business Roundtable for Disaster Resilience & Safer Communities (other members are Australian Red Cross, Investa Property Group, Munich Re, Optus and Westpac). In 2013 the Roundtable released a White Paper 'Building our Nation's Resilience to Natural Disasters' which estimated that the economic cost of natural disasters in Australia would rise to A\$23 billion annually by 2050, up from the current cost of A\$6.3 billion a year. The paper estimated that targeted resilience investments of A\$250 million per annum could reduce the cost of natural disasters by more than 50% and generate economic savings of A\$12.2 billion by 2050. The Roundtable further recommends a national open platform be developed by the Australian Government to provide a single point of access to critical data to ensure prioritised mitigation investments.*
- **The global bank HSBC develops tools, partnerships and products to manage climate adaptation risks.** *HSBC released the HSBC Climate Vulnerability Assessment, which maps risk for the G20 in 2020 from expected climate impacts in terms of food losses, water stress, and rising healthcare costs. This assessment is intended to advise both the bank and its clients on looming risks, but can also help to shape future products. It also established a climate change research facilitation program with the UK Met Office, which will allow fund managers to make more accurate assessments of the climate risks that impact their investment portfolios.*

3. 4. Leadership in measurement and transparency

One of the key components of building market capacity to promote low carbon, climate resilient outcomes is measurement and transparency. Without knowing the level of exposure to carbon intensive activities, it is difficult to be able to manage or reduce these risks. As we saw in Section 3.2, there are examples that demonstrate some finance institutions are taking action to reduce their carbon footprint. More investors are reporting on emissions across their investment activities. In addition, some institutions are developing approaches to measure the exposure of their assets to the physical impact of climate change; an area that is well developed in the insurance sector but not within banks and institutional investors.

Some finance institutions are showing leadership to develop these measurement capabilities, as the following examples demonstrate.

What are the enabling factors?

Improved company reporting and disclosure.

GHG measurement standards and protocols.

Collaboration to encourage better reporting.

Emergence of data providers to collate information.

Emergence of service providers and tools to undertake risk analysis.

Growing support from wider population to manage climate risk.

- **CDP requests information on GHG emissions, energy use and the risks and opportunities from climate change from the world's companies on behalf of 767 institutional investors with US\$92 trillion in assets.** *CDP in a not for profit organization that has been working with market participants for more than 10 years to motivate companies to disclose their impacts on the environment and natural resources and to take action to reduce them. This has bolstered the number of companies reporting their emissions with over 4,500 companies responding to its annual climate change questionnaire in 2013, representing 82% of the Global 500 and 69% of the S&P 500.*
- **Pension funds assess and report on carbon risk.** *Some pension funds including the French pension fund ERAFP, the Australian pension fund Local Government Super and the Environment Agency Pension Fund (EAPF) in the UK, have taken steps to measure the GHG emissions of their listed equity portfolios. ERAFP measured the carbon footprint of its portfolio, which was found to be 19% lower than the MSCI World Index, and since 2008 EAPF has reduced the carbon footprint of its active equities portfolio by 38%. To varying degrees the funds are using this information to better understand their exposure to carbon emissions and how these can be managed.*
- **The superannuation fund AustralianSuper measures the physical risk of climate change to its largest infrastructure assets.** *The fund identified large assets in infrastructure and real estate as having the highest exposure to the physical risks associated with climate change. To better understand those risks and as a component of good risk management practice, the fund commissioned an engineering firm to complete an in depth risk assessment of its larger infrastructure assets. The study improved the fund's knowledge of and ability to manage the climate change risks to these assets and also supported the development of new tools and knowledge in the industry.*
- **The Pensions Trust, a pension scheme for charities and voluntary organisations in the UK, requires its hedge fund managers to report exposure to climate change risk.** *Hedge funds typically offer poor transparency on the underlying holdings of their portfolios, a fact further complicated by a fund of hedge fund structure. The Pensions Trust introduced a requirement for its fund of hedge fund manager to report quarterly on the Fund's underlying exposure to companies in six of the most carbon intensive sectors. The information helps The Pensions Trust to understand how exposed the portfolio is to climate change risk and more actively participate in climate related engagements.*

What are the pathways to mainstream these leadership actions?

Government Action: Setting and implementing national emission reduction strategies

Financial Institution Action: Develop capacity to measure and report total portfolio carbon emissions; reduce associated costs through collaborative partnerships; asset management community innovation

Partnership Approach: Design, measure and report carbon exposure of activities and investments for all financial institutions

- **Pension funds release climate risk disclosure reports for their members.** *US pension funds CalPERS, CalSTRS and NYS Common have all filed "Green Investment Reports" that report on their climate friendly, sustainable investments, corporate engagements on climate and the greening of their own operations. This provides comprehensive disclosure and is reflective of the growing demand from pension fund members and other stakeholders to learn more about the risks to their savings from climate change.*
- **Global investors representing US\$1.5 trillion team up with consulting firms to deepen understanding and build capacity to integrate climate change into asset allocation decisions.** *The current study is a follow-up to an earlier one that aimed to help build institutional investors' knowledge and understanding of the investment impact of climate change scenarios on their portfolios; to develop ways to embed climate change considerations into decision making processes; and to identify specific actions they could take. Research suggests few investment tools exist to enable investors to identify, assess and manage this risk exposure. There are 12 institutional investors involved, led by Mercer, along with NERA Economic Consulting and Guy Carpenter.*
- **Dozens of financial institutions collaborate with stakeholders in the development of a standard for disclosing their climate performance in a process co-convened by UNEP Finance Initiative and the Greenhouse Gas Protocol.** *Leading banking, investment, and insurance organisations from developed and developing countries are engaged in a multi-stakeholder process involving over one hundred organisations; its aim is to enable greater transparency, and harmonized disclosure, on the climate-performance and -progress of financial actors. Delivery of a suite of guidance documents is expected for late 2015 and early 2016.*

3.5. Leadership through engagement with companies

An important contribution that the finance industry can make to address climate change is to engage with the companies in which they invest. Companies are integral to the activities of finance institutions, both as a customer for their services, as well as issuers of debt and equity securities that are core components of a global investor's investment portfolio.

There is a lively debate in the industry about whether financial institutions should sell companies that are not acting responsibly in relation to climate change or stay invested and exercise their ownership rights to change the way the company behaves. In truth, both approaches (and a blend of the two) are important for shifting the way companies behave and the level of importance they attach to climate change.

The following examples highlight how finance institutions are using their ownership rights to put climate change firmly on the agenda with companies. This is taking place in three ways: direct engagement with companies; collaborative engagement with companies; and through exercising their active ownership rights as shareholders. Indeed, one of the new developments that has emerged recently is an increase in the number of shareholder proposals being filed that relate to climate change, as the examples below highlight.

What are the enabling factors?

Emergence of collaborative groups such as CDP, PRI, INCR/Ceres, IIGCC, IGCC.

Service providers specializing in engagement.

Proxy resolutions that relate to climate change.

- **Collaborative groups and specialist service providers bolster the industry's capacity to engage with global companies.** *The emergence of collaborative groups and/or specialist service providers has facilitated engagement between investors and corporations. A number of collaborative membership based groups have emerged to support this, including CDP, the PRI, IIGCC, INCR/Ceres, IGCC and ACSI. Some financial services companies provide company engagement services such as Hermes Equity Ownership Services (EOS), F&C Responsible Engagement Overlay (REO) and Regnan. At present Hermes EOS engages with 54 companies globally on 60 objectives and issues relating to climate change. To date, significant progress – which is measured in milestones – has been made at 14 companies. In 2013, F&C engaged with 716 companies, in 47 countries, discussing climate change specifically in 187 cases and overall achieved 293 instances of change. In the past three years, Regnan has recorded around 85 instances of company engagement on climate change and has made at least six submissions to domestic policy consultation processes.*
- **International investors engage 45 fossil fuel companies on carbon asset risk.** *An international group of 75 institutional investors representing more than US\$3 trillion in assets launched the Carbon Asset Risk initiative, by sending letters to 45 of the world's largest oil and gas, coal and electric power companies asking them to assess and report to their shareholders on the risks posed by climate change and climate policy. This is an ongoing initiative, with responses from companies coming in and further discussions underway. The goal is to obtain credible analyses of climate risks and reduce fossil fuel companies' capital expenditures on high carbon, high cost, high-risk resources.*

What are the pathways to mainstream these leadership actions?

Government Action: Support carbon emissions and reporting standards by companies; support measurement and reporting of fossil fuel risk exposure

Financial Institution Action: More shareholder resolutions and/or investor engagements related to climate change; collaboration between finance institutions to include more banks, insurance companies; development of processes for setting engagement targets and measuring outcomes

Partnership Approach: Design and implement industry reporting templates to standardize reported information and data

- **Collaborative engagement requests high emitting Global 500 companies to set reduction targets.** *The PRI and CDP have teamed up to embark on a joint effort called Carbon Action. The group is engaging with Global 500 companies in emissions-intensive sectors with emissions of more than 1 million metric tonnes per year. In 2012-13, the group met with 22 companies, 8 of which have subsequently disclosed a target or demonstrated progress toward setting one.*
- **More than 800 shareholder proposals have been filed with US companies that relate to climate change.** *Over the last ten years, INCR members and other investors coordinated by Ceres, collaborating as part of the Shareholder Initiative on Climate and Sustainability have filed more than 800 shareholder proposals with U.S. listed companies related to climate change. As a result, more than 350 major companies have made commitments to address climate-related risks and opportunities. In 2013-14 alone, investors filed 148 climate-related resolutions, resulting in 64 agreements for corporate action indicating the growing momentum behind this activity.*
- **Investors achieve commitments to source sustainably produced palm oil to reduce tropical deforestation.** *Investors have collaborated to raise the issue of unsustainable palm oil production and its impact on tropical forests with numerous companies that source and use palm oil in their products. As a result, at least 17 companies have committed to source sustainably produced palm oil that does not contribute to deforestation. INCR members including the NYS Comptroller and Green Century filed shareholder proposals at over 20 companies since 2011 and have engaged many others through dialogue or letters. The PRI also has a working group devoted to this issue. Investors are achieving commitments from companies to ensure that their supply chains will cease sourcing palm oil resulting from deforestation. This is an ongoing engagement activity producing direct results and benefits for the climate.*

HIGHLIGHT FOUR: Sustainable forestry and land-use markets need economically meaningful carbon price to attract finance sector

The land use, land-use change and forestry sector is responsible for approximately 17% of global anthropogenic GHG emissions and is recognized by the UNFCCC as an important sector for stabilizing concentrations of GHG in the atmosphere. It is estimated that US\$17–40 billion per year is required to halve emissions from the forest sector by 2020¹. There is a particularly strong focus on developing countries and their potential contribution to mitigation actions by undertaking activities relating to reducing emissions from deforestation and forest degradation, conservation of forest carbon stocks, sustainable management of forests and enhancement of forest carbon stocks (REDD+).

Some finance institutions are getting involved in sustainable forestry and land use but these are at the margin in terms of capital flows required². Traditionally, timberland or forestry assets have constituted a relatively small, or non-existent allocation within institutional investment portfolio. This has started to change over recent years as more investment products have become available and the long-term, inflation protection benefits of these assets has attracted capital flows.

It is estimated there is US\$48-60 billion invested in timberland by pension funds, insurance companies, foundations, endowments, and sovereign wealth funds³. Some pension funds are starting to encourage their timberland investments to be managed in a sustainable way, but not all of them are there yet. In addition to investment activities, some pension funds are engaging with companies on deforestation in developed and developing countries (see Company Engagement on Palm Oil).

In terms of involvement by other finance institutions, as the examples below illustrate there have been some funds launched that focus on REDD+ and other efforts to promote sustainable land-use and deforestation. The debate continues about the need to underpin the REDD+ framework with a carbon price that is economically meaningful to ensure there is sufficient demand for carbon credits.

Althelia Ecosphere pioneers investments in sustainable land use and REDD+. *The first closing of its Althelia Climate Fund at EUR 60 million (about US\$80 million) in 2013 can be regarded as a much-needed incubator that invests in activities that address the drivers of deforestation⁴. This public-private partnership includes leading private and public sector institutions, such as the Church of Sweden, the European Investment Bank, Finnfund and FMO. Over the next twelve months, Althelia expects to raise additional capital, targeting an overall level of EUR 150-200 million for the Fund. The fund recently made its first investment in 2014 of US\$10 million in Taita Hills in Kenya spread over 8 years. The Taita Hills Conservation and Sustainable Land Use Project is expected to cover an additional 200,000 hectares of natural forest and savannah grassland ecosystems adjacent to Wildlife Works' existing REDD+ sites – which currently span already 225,000 hectares. The investment represents an important step towards terrestrial carbon accounting at a jurisdictional scale, whilst empowering sustainable economic development of rural communities in the area.*

1 <http://www.unepfi.org/work-streams/redd-and-sustainable-land-use/>

2 http://www.iisd.org/pdf/2012/redd_private_sector_report.pdf

3 Source: "Institutional investment in sustainable forestry", David Brand and Mary Kate Hanlon

4 https://althelia.com/wp-content/uploads/2014/07/ACFclose_PR_FINAL.pdf

The Moringa Fund believes in viable commercial opportunities linking forestry with agriculture. *The fund is an investment vehicle with a final targeted size of EUR 100 million which invests in profitable larger scale agroforestry projects with high environmental and social impacts. Moringa invests in Latin America and sub-Saharan Africa via equity and quasi-equity investments of EUR 4-10 million⁵. The fund leverages the fact that agroforestry is inherently a sustainable practice to distinguish itself from other land-based investment approaches and to ensure that its projects are genuinely sustainable. This land use structure can lead to higher volumes of sequestered carbon and additional multiple ecosystem benefits.*

Permian Global seeks to produce and sell high-quality verified carbon credits, *generated through large-scale conservation and recovery of natural forest. The company seeks to generate co-benefits next to the sequestration of carbon and interesting risk-adjusted returns for investors, to support local development goals including employment and other co-benefits.*

Pioneering commodity traders and financial institutions seek to address deforestation. *A number of companies are taking steps to strip deforestation from their productive and financial supply chains. Rabobank requests companies it finances not to be involved in palm oil operations in areas designed as primary forest, national or international legally protected or preserved areas or in any area required to maintain high conservation values since 7 October 2001⁶. HSBC updated its Forest Policy and Agricultural Commodities Policy, which states that the bank will not knowingly finance operations that are illegal, fail to protect high conservation value forests/land or violate the rights of workers and local people⁷. Cargill, one of the world's largest agricultural commodity producers and traders, recently released a Sustainable Palm Oil policy that states that it will not deforest in high conservation value lands or high carbon stock areas, as well as no development on peat or exploitation of rights of indigenous peoples and local communities⁸. Cargill's policy follows similar ones from Wilmar International and Golden Agri-Resources. Now, combined, approximately 60 percent of global palm oil trade is covered by these No Deforestation policies⁹.*

5 <http://www.moringapartnership.com/web.php/16/en/about-us/organisation>

6 <https://www.rabobank.com/en/images/Palm%20Oil.pdf>

7 http://www.hsbc.com/~/_media/HSBC-com/citizenship/sustainability/pdf/hsbc-statement-on-forestry-and-palm-oil-march-2014.pdf and <http://www.hsbc.com/sustainability>

8 http://www.cargill.com/wcm/groups/public/@ccom/documents/document/palm_oil_policy_statement.pdf

9 <http://chainreactionresearch.com/2014/07/30/breaking-cargill-announces-no-deforestation-policy/>

3. 6. Leadership through engagement with policy makers

The policy environment is integral to the finance community's capacity to undertake financing and investing activities to support a low carbon, climate resilient economy. Climate, land-use and energy policy as well as pension, insurance and banking policy, directly and indirectly influence the extent to which the finance sector is able to price the future risks of climate change and how that feeds through to investment decisions. It creates the backdrop against which finance and capital allocation decisions are made.

The finance sector also recognizes that the public sector cannot address the climate change challenge independently of the finance sector. It is for these reasons that more time and effort is being devoted to engaging with policy makers.

The following leadership examples highlight the collaborative nature of the investor interactions with policy makers via investor coalitions at the national and regional level.

What are the enabling factors?

Emergence and growing membership of investor collaboration groups.

Cross collaboration between national investor groups.

Collaboration between investors and NGOs on climate policy advocacy

- **The European investor group IIGCC actively engages with policy makers on policies to guide the EU's climate and energy policies after 2020.** *The EU 2030 framework includes a 40% carbon emissions reduction target, as well as measures intended to correct the oversupply of carbon allowances within the Emissions Trading Scheme, both of which IIGCC had been urging. In addition, IIGCC has played a key role in the EU's Energy Efficiency Financial Institutions Group, and its contribution has helped shaped the energy efficiency proposals within the EU 2030 framework, including a proposed energy efficiency target.*
- **IIGCC engages with European policy makers' reform of the EU Emissions Trading Scheme.** *IIGCC called for and supported the European Commission's proposal to postpone the auctioning of carbon allowances to address the excess surplus within the ETS that was driving the price down. In representations to policymakers IIGCC was clear that "backloading" could only be a temporary fix and urged the Commission to propose a permanent solution to the issue of surplus allowances. In January, the Commission set out its plans, which included the introduction of a market stability reserve to start in 2021. IIGCC has welcomed this move, while urging the earlier introduction of the reserve to give investors certainty sooner. The proposals are currently being discussed and IIGCC will continue to ensure the investor voice is heard.*
- **The US based climate change investor group INCR supports carbon pollution standards for power plants.** *The US Environmental Protection Agency has used its authority under the Clean Air Act to propose standards for new and existing power plants that will reduce emissions by 30% by 2030. The proposed rules have been challenged by opponents through legislation and are likely to be subject of litigation seeking to invalidate them. INCR members have actively supported these standards, including in their annual meetings with members of Congress, in a letter to President Obama supporting the standards that had almost 50 signatories, and in numerous opinion editorials in major newspapers in key states.*

What are the pathways to mainstream these leadership actions?

Government Action: Market testing regulatory proposals; consultation between policy makers and regulators with finance industry groups

Financial Institution Action: Investor and company engagement with governments on climate change policies

Partnership Approach: Closer ties and partnership approaches between investor groups and regulators on climate change, energy and land use policies

- **The US asset manager Calvert engages with publicly-listed exchanges on climate change matters**, namely the NASDAQ OMX Group, Inc., CME Group Inc., CBOE Holdings, Inc., and the Intercontinental Exchange Group, Inc. (NYSE) - to support the World Federation of Exchanges in issuing global recommendations on climate change reporting transparency for publicly-listed equities. Calvert and other INCR members including BlackRock, CalPERS, BCIMC and NYS Comptroller have also engaged with the World Federation of Exchanges in support of the INCR led Investor Initiative for Sustainable Exchanges seeking consistent global ESG reporting standards for listed companies across the world's stock exchanges.
- **INCR supports state renewable portfolio standards.** These US state standards require that electric utilities procure increasing amounts of electricity from renewable energy resources. They have come under attack by opponents who claim they increase electricity costs, and are advocating their weakening or repeal. INCR members have been active proponents of renewable portfolio standards at the state level, authoring opinion editorials in state newspapers, encouraging companies to support of these standards, and meeting directly with state legislators to encourage the continuation and strengthening of these standards.
- **Australia's investor group on climate change (IGCC) assists in the design of the Clean Energy Finance Corporation (CEFC).** The CEFC is a A\$10 billion government sponsored and funded co-investment vehicle designed to attract and multiply low carbon investment by the private sector. IGCC assisted Government experts to design the corporation and its co-investment products in a way that would be attractive to private sector investments.
- **IGCC assists with carbon pricing policy design in Australia and will do so again.** IGCC conducts ongoing investor collaboration and engagement with policy makers on the need for carbon pricing in one of the world's most emissions intensive developed economies. Public statements, testimony to government hearings and research reports on the cost of a low carbon transition are all features of an ongoing effort to properly price greenhouse gas emissions. These efforts will continue.
- **MunichRe, Allianz, and other insurers have coalesced with other stakeholders under the Munich Climate Insurance Initiative (MCII) to advise governments on insurance solutions for climate change adaptation.** MCII develops and promotes risk management solutions and loss prevention measures for developing countries to help them to better adapt to the impacts of climate change. MCII has been involved in the United Nations climate negotiations process since 2005 and has fed the discussions with several policy papers and technical publications.
- **At the international level UNEP Finance Initiative (UNEPFI) facilitates dialogue between the finance sector and governments involved in the intergovernmental negotiations under the UNFCCC.** Dialogue to date has focused on the design and modalities of the Green Climate Fund and its Private Sector Facility, the role of commercial insurance in addressing loss and damage, as well as the design of the financial mechanism for Phase 3 of REDD+.

- **U.S. Investors help defeat effort to repeal California's Climate Change Legislation.** *In October 2010, 68 U.S. investors issued a statement opposing an initiative petition that would have repealed California's climate change mitigation and clean energy law, AB 32, which set state-wide limits on greenhouse gas emissions, created a cap and trade system and promoted clean energy development. Investor advocacy, including this statement, helped make the business case for maintaining this climate and clean energy policy, and contributed to the defeat by California voters of the "Proposition 23" petition. As a result of the continued implementation of AB 32, California leads the U.S. in renewable energy, energy efficiency and reduction of GHGs.*

4. Taking leadership to the next level

The leadership examples demonstrate the actions that some financial institutions are taking and how these contribute towards a low carbon, climate resilient world. The finance sector is contributing to the low carbon transition not only through direct financial flows, but is involved in developing the conditions that will enable financial markets to embed climate change into how they price risk and make financing and investment decisions.

The finance industry is helping to build new industry practices. This is reflected in different institutions' efforts to allocate capital to low carbon, energy efficient opportunities, to reduce portfolio emissions through implementing carbon tilts or fossil fuel reduction policies, to improve carbon emissions measurement and transparency, to engage with companies on climate change, to participate in the climate policy debate at the local and international level and to contribute to knowledge development that will enable the industry to better price and manage climate change risk.

Financing and investing flows fall short of what is needed. While there is positive momentum building amongst some financial institutions, these activities need to become mainstream if we are to divert the capital needed to achieve a low carbon, climate resilient world. This requires partnership and collaboration not only within the finance industry but also between the finance industry and policy makers.

Some of the barriers to financial flows are transitional. Any new sector of the economy faces transitional barriers when seeking finance to expand its growth. In that sense climate change related finance activity is no different; as the allocation of capital to the low carbon sector grows from the private and public sector, the transitional barriers including lack of data, market depth and liquidity will gradually disappear. Building new markets that are well grounded, liquid, and with the right structures and skills in place takes time. But these are transitory concerns.

The more structural barriers remain stubbornly high, particularly the uncertainty around regulatory and government policy. This has a knock on effect to other risks such as technology development and deployment and the physical impacts of climate change due to delayed policy action, particularly in developing countries. These barriers add to the cost of financing and investing into low carbon opportunities, as a higher rate of return will be required to compensate for the uncertainty.

5. Concluding thoughts

In summing up, the finance sector is increasingly concerned about climate change and some financial institutions are taking action, even in a highly uncertain policy environment. The sector has come a long way but it is clear that much work needs to be done, both by the industry and by governments. The task ahead is to build on these actions and move them into mainstream finance. One of the crucial ingredients for this next phase will be the implementation of government policies that have transparency, longevity and certainty (so-called TLC). In addition, the finance industry needs to build on the momentum that these actions have created to establish new industry norms. Partnerships between governments and the finance sector are also vital for those areas where the blockages to capital flows are greatest. These actions combined, will help to redirect the large pool of private sector financial flows towards activities that support a low carbon, climate resilient world.