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The Sustainable Infrastructure Financing Forum and Summit

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Infrastructure for a Changing World

Summary Report

Content

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I·C·L·E·I Local Governments for Sustainability

C40 CITIES CLIMATE LEADERSHIP GROUP

IDB Inter-American Development Bank

cscp Collaborating Centre on Sustainable Consumption and Production

reeep renewable energy & energy efficiency partnership

reegle

UNEP Finance Initiative Innovative financing for sustainability

GCCA Global Cleantech Cluster Association

World Bank Institute

中国对外承包工程商会 China International Contractors Association

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BASE UNEP Collaborating Centre

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EUROPEAN RESEARCH your Swiss guide to European research

Energiestadt european energy award

ICTSD International Centre for Trade and Sustainable Development

S·E·C·A Swiss Private Equity & Corporate Finance Association

APEC China Association of Plant Engineering Consultants

FT Financial Times

cleantech switzerland Innovative. Reliable. Precise.

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1 Executive Summary

11 Infrastructure: There's no bigger conversation

Over four months in late 2012, Global Energy Basel engaged with a broad range of project developers, investors, financiers and policy-makers as part of a worldwide meeting series focused on "Infrastructure for a Changing World". Kicking off in the heart of London at the Royal Commonwealth Society (21 September), the global series moved onto meetings at Citigroup in New York (27 September), then BoE/Nedbank in Cape Town (26 October) and finally to HSBC in Hong Kong (7 December).

Major assets owners such as the British Telecoms Pension System and the Government Employees Pension Fund of South Africa joined with global banks like HSBC and Citigroup to explore how to accelerate the deployment of capital at scale into resilient, low carbon infrastructure solutions that build better lives. The role and voice of development finance institutions, regulatory agencies and major developers, such as, respectively, the Inter American Development Bank (IADB), the New York Environmental Protection Agency, and the Mass Transit Railway Corporation (MTR) of Hong Kong, were to the fore in the various conversations.

As the series progressed, GEB Foundation Chair, Daniel Wiener, identified ten common themes that ran through the four regional meetings namely: Education; Collaboration; Regulation; Perception; Confidence; Short-termism; Standardisation; New markets; New investment structures; and The Role of Global Energy Basel (the ten "GEB Themes" are revisited in the conclusion section of the report).

Equally, of great value in the global discussion were the opportunities for action that were identified in terms of innovative policy, investment, financial and multi-stakeholder approaches to the infrastructure challenge. The GEB Sustainable Infrastructure tool, presented in the four meetings, also shone light on what is possible and what can be achieved in efforts to plan and deliver sustainable infrastructure.

12 Re-framing investment, Re-making finance

Many of the speakers and participants at the GEB meetings in the four regional financial centres all echoed the need for finance and investment to "re-make or re-invent" itself post the turmoil of the 2007-8 global financial crash and the ensuing economic downturn in many developed markets. Supplying the vision, capital, and expertise to meet the long-term needs of countries, cities, communities, and industries, all with a demand for smart, resilient and efficient infrastructure, was a clear way for modern investment and finance institutions, it was broadly agreed by participants, to highlight their social and environmental utility as well as the fundamental role they play to drive business and industry in the real economy. The crash saw many people, quite understandably, lose sight of the

positive influence that a strong and robust financial services sector can have across society. Backing the world's infrastructure needs is one way for the global investment and financial services sectors to rebuild a trust that has all but disappeared.

The UK, US, South African, and Hong Kong meetings were all framed with the question: how can we adjust the large "tectonic plates" of finance and investment to bring the necessary capital to update, remake, or put in place the infrastructure the world's communities need for the 21st Century? Participants were told that capital is concentrated in vast pools of value with USD 80 trillion plus in global bond markets, USD 60 trillion held in worldwide bank deposits, upward of USD 50 trillion captured in equity markets and USD 47 trillion plus controlled by 10 million high net worth individuals. The geography of capital is also shifting and far more dramatically than many could have envisaged at the end of the 20th Century as the vibrant BRIC economies (Brazil, Russia, India, and China) build financial muscle and seek out offshore opportunities. China's USD 3trillion of reserves is both prudent and hungry in its desire to secure productive investments worldwide. But post-crash capital is timid, scared to move, risk averse and fearful of the next market rupture. At the same time, those institutions controlling capital know that it needs to be put to work to serve the changing demographic needs of ageing populations in the most advanced economies where savings pools are still the most concentrated. Equally, those less developed economies are often starved of "sticky" capital to underpin their advancement. A common rule of thumb is that pension funds need a 4% return plus inflation just to tread water. Some in the markets believe that anything above an 8% return is, in the long run, financially unsustainable.

As those large institutions controlling the deep pools of capital twist and turn to identify safe - or at least safer - assets they are asking new questions of a system, and its institutions, that failed them so badly just a few years ago. How are social risks managed and positive impact prioritised? Is climate change and resource depletion a real threat to the long-term fabric of our societies? How does poor governance across specific sectors or within individual companies or governments impact investment choices?

These questions underpin the reasons why forward-looking capital is turning its attention to hard, tangible assets with lasting value whether those assets are the infrastructure projects underpinning socio-economic development or the natural wealth where real, long-term value accrues.

On infrastructure specifically, and throughout the four regional gatherings, participants also pointed to a broad range of structural, policy, fiscal and technical barriers that impede the smoother flow of institutional capital at scale into early stage infrastructure. Furthermore and exacerbating the early-stage infrastructure financing challenge in the post crash age of austerity, many believe that the "old model of project finance" is broken while the creation of new innovative financing mechanisms to accelerate infrastructure projects faces a broad range of constraints such as misaligned incentives along the investment chain and inconsistent implementation of public policy that shrouds long-term projects in seemingly unmanageable risks, often political in nature. Such challenges undermine deployment of capital for those projects which by their very nature have a drawn out, com-

plex development process followed by a long pay back horizon. Complexity and long-term are typical characteristics for urban, industrial, transport and energy infrastructure. These myriad issues, coupled with risks associated with short-term political cycles in democratic countries and poor governance in many less developed countries, often create the perception of significant risk for those conservative institutional investors which allocate a small percentage of their capital to alternative asset classes where infrastructure is often found.

13 New set of investment values

On the positive side, it is clear that the political, financial and capital market turmoil of the past five years has catalyzed a process that has started to redefine a new set of investment values consistent with the social, economic and environmental needs of communities worldwide. Although nascent, the idea that the "long term" is relevant is gaining support, as witnessed by the 1200 plus institutional investment organizations representing USD 32 trillion in assets now supporting the United Nations-backed Principles for Responsible Investment (www.unpri.org).

Participants in the GEB meeting series were then challenged with the simple question: "So what's next?" if we are to secure the multi-trillion dollar scales of investment required to set in place new resilient infrastructure. Such investment at scale is needed:

1. to rehabilitate old stock in developed countries to re-boost efficiency, improve quality of life across diverse communities, and handle a greater frequency of extreme weather events such as Katrina and Sandy in the USA;
2. to embed resilience in new build infrastructure in emerging and less developed countries to better mitigate the impacts of climate change and to more effectively manage natural disasters such as the Thai Floods of 2011;
3. and to replicate and roll out a different model of urban and industrial development in the vibrant emerging markets where the race for growth and environmental protection are colliding head on.

The different nature of the infrastructure challenges and opportunities across the four regions, where the "Infrastructure for a Changing World" series took stock, were notable. Amongst others, critical issues highlighted in the different regions included:

- **Europe:** The flip-flop of government policy, notably with respect to the old continent's new, clean energy infrastructure, will deter large investors from financing the envisaged, low carbon energy transformation;
- **Africa:** A new infrastructure to open up efficient north-south and east-west transport routes in Africa, as well as providing the continent's fast growing population with energy, information technology, and trade infrastructure, requires good African assets to be invested wisely and ahead of international co-investors. Also, western infrastructure financing and roll out models cannot simply be replicated in Africa. An African infrastructure model is required;

- **Americas:** There is no ideal delivery mechanism for public goods. Many infrastructure assets are classic public goods although trust in government and finance to deliver these goods is diminished and civil society does not have capacity to undertake such a task. The 2012 London Olympic Delivery Authority is an interesting example of possible future public-private collaboration on infrastructure. Another big infrastructure development opportunity is "open data" which is an approach to aggregate data in terms of public information The Open Government Initiative, involving 57 governments, is a good example;
- **Asia-Pacific**: The challenge is to align investor appetite for strong, short-term returns in such an economically and industrially vibrant region with the long-term, illiquid investment realities associated with infrastructure.

14 Infrastructure and disaster risk

A recurrent theme at the regional workshops was the increasingly understood links between infrastructure, disaster risk and destruction of value in a globalized market-place. Appendix 1 presents a set of short case studies presented or referenced during the global series exploring the economic and capital market impacts resulting from the Thai Floods (2011), the Great Eastern Japanese Earthquake, Tsunami and nuclear incident (2011), and the BP Gulf Oil Spill (2010).

15 What's next?

So for the question "What's next?" The four regional workshops offered up a broad spectrum of answers and viewpoints covering policy, investment, finance and infrastructure development challenges. As an emerging asset class, the hurdles associated with the take up by mainstream investors of sustainable infrastructure are manifold. Poor interaction between policy communities, developers and investors, misaligned incentives locking in short-termism in the investment chain, lack of a carbon price and full value accounting for a broad swathe of natural resources, and deeply embedded vested interests associated with infrastructure "Business as Usual", create a complex tapestry of issues weighing against adoption of sustainable infrastructure practices along the entire value chain. Despite the challenges, there is a growing realization amongst a forward-looking group of major asset owners that see the community, socio-economic, productivity, competitiveness and environmental benefits of sustainable infrastructure as a support to balanced growth based on robust, resilient and efficient systems. A supportive policy environment with clear price signals, smart regulations and city-level incentives, coupled with low carbon technological and mobility innovation, will be the most effective set of mechanisms to mobilize capital at scale into sustainable infrastructure. On-going education on sustainable infrastructure for mainstream investors is critical.

2 Introduction

The GEB "Infrastructure for a Changing World" meetings took place between September-December 2012 and consisted of a roundtable (London, 21 September), three investor breakfasts (New York, 27 September; Cape Town, 26 October; and Hong Kong, 7 December) and, in the case of the South African event, fed into an infrastructure day as part of the first Sustain our Africa (SoA) Summit (www.sustainourafrica.org).

During the GEB global series, more than 220 participants drawn from the investor, financier, infrastructure developer, policy-maker and civil society communities took part in the discussions. Each event was unique in style, format and focus although with a common and binding question of "how do we mobilize capital at scale and pace into smart, resilient, low carbon infrastructure?". The idea of sustainable infrastructure as a new, stand-alone evolving asset class also advised the international discussions.

This report presents a summary of the formal presentations and subsequent moderated discussions that took place in the UK, USA, South Africa and Hong Kong. Much of the material presented, including videos, were made available on the GEB web site in the weeks following the 2013 GEB Summit in Basel (January 22-23, 2013). Neither through the GEB report or the web-based materials is it suggested than any parties make or base investment decisions or other business related decisions. The report and associated materials are presented to further the broad discussion and debate around sustainable infrastructure issues.

21 The speakers

A number of speakers participated in more than one event and their presentations are summarized in the event to which they were most relevant with a simple reference to the other GEB event at which the material was also presented. One speaker, John Oliphant of the Government Employees Pension Fund (GEPF) of South Africa, at USD 145 billion the largest pension fund in Africa and one of the largest in the world, was a feature, either in person (Cape Town) or through a video presentation at all four events. The GEPF approach to both responsible investment and its focus on Pan African infrastructure is recognized as world leading and, as such, Mr Oliphant's presentation describing the GEPF vision, policies and investment decision-making and focus, acted as a global reference that ran through the entire GEB meeting series.

For the four meetings presented in each section of the report, a standard format is utilized:

- firstly, the formal presentations, "The Inputs" are briefly summarized;
- secondly, the essence of the broad discussion at each event is captured as the "Overarching Discussion" and;
- finally relevant "Closing Comments" from individuals who took part are presented.

Throughout the series it became clear that ten common themes emerged as underpinning global discussions around sustainable infrastructure and, in many ways, these themes captured the broad challenges and opportunities that we face if we are to achieve a sustainable infrastructure that

serves the global community's needs for the future. These themes were identified by GEB Foundation Chair Daniel Wiener and are highlighted in the report's Conclusion's section. At the same time, a set of unique and regionally specific issues were drawn out during the discussions in Europe, North America, Africa and Asia-Pacific, and it is hoped these are highlighted in each regional section. GEB intends to continue the discussion catalyzed by the "Infrastructure for a Changing World" series and we welcome your participation and contribution in the months and years ahead. (A full list of participants in the Infrastructure for a Changing World meeting series is provided in Appendix 2).

3 Section A: The London Meeting 21 September, 2012

Moderator: Paul Clements-Hunt, GEB Board/The Blended Capital Group

31 Inputs

311 John Oliphant, Chief Investment Officer, Government Employees Pension Fund, South Africa (Via Video)

The Government Employees Pension Fund (GEPF) is the largest pension fund in South Africa. It controls approximately US $140billion and has 1.2 million active members. There is a broad representation of stakeholders on the Board. Similar to European pension funds, infrastructure is one of the key areas of investment, and 50% of investments are domestic. The GEPF are one of biggest investors in the South African economy.

The African economy is small but rapidly growing. Some13% of the global population live in Africa, but the continent has only a 2% share of global GDP. Africa wants to increase their contribution to global economy.

The economy has grown rapidly in recent years and of the top 20 fastest growing economies, 7 are in Africa. This is due to a greater support for democracy and there is far less conflict now than 20-30 years ago. For example, since its first elections in 1994, South Africa's economy has experienced a fast rate of growth. The growth is also due to the implementation of some excellent economic policies. So, Africa is in a good position but there is a pressing need to focus on infrastructure in order to keep this trend going. [1]

312 Arthur Wood, Founding Partner, Total Impact Advisors: "Impact investing: a potential tool for development."

The aim of this presentation is to shake up the current ideas about investing and to undo any preconceptions about profit and not for profit.

[1] The full video presentation by Mr Oliphant of GEPF SA, is available at www.globalenergybasel.org. Also, a fuller summary of his in-person presentation in Cape Town is given under Section C below.

The current social capital market is inadequate. The majority of American (and global) investments are not aligned with social capital; there is a lot of money, but very little of it is being invested in climate change, public transport, sanitation etc. This shows that the current system is broken and the industry needs an injection of new capital market tools where the better the social innovation, the better the return.

The key reasons why the system cannot remain in its current form are:

1. **Changing Population;** In the developed world, the population in ageing and as a result, increasing funds for healthcare and pensions will be required. Where will this come from? In the developing world there is an increasing overall population which is leading to increasing political radicalisation;
2. **Private capital has plateaued;** The risk appetite of private investors is very limited due to low interest rates (in parts of the world below inflation) and nearly unprecedented uncertainties in the development of capital markets;
3. **Foreign aid is also hitting a plateau**

Due to the uncertainty in the domestic economies of developed countries, aid to developing countries has fallen and is unlikely to increase in the near future.

There are opportunities to bring about change to the traditional system of socially responsible investing, foundation grants and more mainstream investment by injecting money into impact investment. The potential new capital market opportunities are:

1. Foundation core funds and endowment assets. We need to understand how these can be accessed;
2. Social impact bonds;
3. Local pension funds in developing world. There is a lot of capital in these funds and if they are used to invest in the local area there is no risk from currency conversion;
4. Social finance tools.

At present, 99% of banks funds are invested in areas not aligned with social impact, however if the amount invested in social capital was increased to 5% of total funds then US $29 billion would be available. This is not just theoretical; there are new legal structures in place that make this possible and still generate returns. There is legislation that has been in place since 1970 that allows organisations to profit from social investment, applying to the private sector, government and social sectors.

There is great potential for innovation in the finance sector, but the traditional mind set needs to be challenged. ‘Blended market returns’ is one idea for innovation. Need to move from input models to outcome models where the share in equity is a function of the success in delivering the outcome.

Need to create a secondary market, where the more you collaborate, the quicker outcomes are achieved, and therefore the quicker you get a return on your investment. If one was to combine a guarantor structure with a social impact bond, might it be possible, for example, to pay local elites in their own country on the delivery of a social outcome?

There are a number of challenges: lack of efficient intermediation; lack of enabling structure; lack of sufficient opportunities to deploy capital in risk/impact/return balance; and the track record is still light. We need partnership between private sector and governments, but the legal structure and financial tools have to be there to enable it. Governments or multilateral funds may take the first risk and private investors could build on that. We need to unleash the power of social entrepreneurs.

313 Neil Philcox, Director of Projects, Coast Opportunity Funds (Via video): "British Colombia: Capital markets working for infrastructure"

Moderator: Paul Clements-Hunt, A brief introduction

There is an infrastructure investment focus on British Colombia because it is an area rich in the key resources required for infrastructure such as minerals, timber and energy. It is also exposed to huge global macro-economic flows, both of which the emerging markets in Asia are in need of. However, there are issues that need to be carefully considered; the First Nations (Aboriginal peoples in Canada, excluding Inuit and Métis) have unceded rights to the land in the area, nothing is built without their buy in, but they have trouble accessing the capital. In addition, the economics of investment in infrastructure needs to be carefully balanced with the environmental and social impacts.

314 Video presentation from Neil Philcox of Coast Opportunity Funds

Infrastructure in Canada is one of the driving forces for investment. As such a vast country with extensive resources of coal, oil, gas, minerals and timber, Canada is in a good place to invest in these areas to export these resources to the rest of the world, particularly to the Asian market. It is crucial that there is a balance of the environmental and social and economic impacts of doing this.

Investors in Canada are looking to access this energy and minerals, in particular, the associated assets. There is great interest in the acquisition of the companies, as well as developing partnerships for the resource extraction. There is an expected boom in future investment in the core infrastructure in the energy and transport sectors, including all the auxiliary services.

There is a great need to focus on the role of First Nations and the role that they can play in developing opportunities for infrastructure investment in Canada. There are over 600 First Nations, 200 in British Colombia alone, all with a role to play as they have rights over the land. There are many opportunities for investment in social infrastructure such as water services, schools and healthcare, as well as industrial infrastructure, both of which will benefit the First Nations by increasing GDP and creating local jobs, contributing to the long term development of Canada and leading to economic independence of First Nations.

One key message is that investment in infrastructure in Canada must carefully consider the environmental and social impacts of all projects to meet local, national and international objectives. The way all stakeholders and particularly First Nations have been involved in the process could inspire good practice in other regions of the world where the starting point of infrastructure development is similar.

315 Ian Simm, CEO, Impax Asset Management Group plc: “Creating Europe’s new energy infrastructure”

The opportunities for clean energy infrastructure in Europe seem fantastic on the surface, especially with the new energy efficiency directive. Plus, there is a lot of capital out available for it and the roll out of super grids is on the rise for example, the EU has set the challenging target of US $300bn investment between now and the end of the decade. However, in reality, many countries are actually reducing investment and lots of power stations coming offline as the utilities are keen to offload assets to reduce debt. This is going to create an energy gap in the future, for example, the UK is about to lose about 25% of its power generating capacity in the next 20 years.

The investment community is keen to help fill the gap and invest in utilities and purchase quality assets, but at present, this is just too risky.

The regulatory system across the European energy sector is very volatile at present and subject to hasty changes. For example, the retrospective tariff changes in Spain. The complexity in the regulatory system may work long term for consumers but in the short term it is leading to investors shying away from essential energy infrastructure projects. In addition, Basel continues to push the debate in the wrong direction for mobilising pools of capital.

The key point is that the regulators to decide on targets and be more consistent at national level. Regulators also need to focus on correcting market failure and providing public goods, but the finance community needs to help educate governments in doing this.

316 Donald MacDonald, Trustee, British Telecom Pension System (BTPS) and Chair IIGCC and Former Chair UNPRI: "Getting community and investor needs right in infrastructure"

The issue of policy certainty is hugely important, for example, what kind of signal is the UK government sending by appointing a climate sceptic as head of DECC. The relationship between investors and the energy unbundling regulations are effectively stopping institutional investors in UK from putting money into projects where they could be owners and operators. Less than 1% of global pension funds are invested in infrastructure.

There is an energy crisis looming in the UK and we need more generating capacity. It is unlikely that nuclear will fill this gap, not because of safety, but because the cost is no longer politically acceptable. The change in fuel mix is also leading to uncertainty; Japan is looking for coal, oil and gas to make up the energy gap left from nuclear and the US shale gas market has led to a 10-15% reduction in coal output in the past year leaving many stranded assets.

Looking at the value of the market capitalisation of resource companies, and the proportion of that based on known reserves, we have already invested enough money to increase global temperature by 6°C. This will lead to a lot of money being lost.

The industry needs policy certainty, simple regulation and the development of best practice guidance. One big way of having an impact is to look at your own existing assets for example, the property portfolios of pension funds. By reducing energy consumption and increasing the efficiency of these assets, a real difference can be made, which has positive environmental impacts and makes financial sense.

The SME sector is being hit the hardest as very few banks are lending. An effective and innovative way of raising capital for SME's is crowd sourcing. One example is the not-for-profit organisation kiva.org, where anyone can invest small amounts of money to micro finance small organisations that can't get funding from banks. We need adaptation and clever thinking to meet our objectives.

Key points:

1. Fiduciary duty needs to be redefined. This is already being discussed in the UK. Many people only see this as short-term return on investment rather than long term, but this mind set needs to change;
2. There needs to be more action on regulatory obstacles and energy unbundling;
3. A realistic floor price for carbon is essential so that technologies can compete fairly;
4. Policy certainty is essential to create long-term confidence in investment projects;
5. There needs to be legislative changes to building and planning regulations to incentivise institutional investors, builders and developers to put renewables in at an early stage.

317 Daniel Wiener, Chairman, GEB Global Energy Basel: "Sustainable Infrastructure – new tools and emerging issues"

The world is changing. The global community needs to drastically reduce CO_2 emissions, encourage low carbon growth, reduce localised pollutants, secure our future energy supply, conserve our dwindling resources and expand our social and economic capability.

Infrastructure is the key to this. It allows people to make the right choices and empowers them. For example, when encouraging people to use more public transport and reduce their use of personal cars, a good public transport system needs to be in place. There is a key link between infrastructure and behaviour. GEB wants to mainstream sustainable infrastructure.

Global Energy Basel has an annual summit where good practice is shared. The outcome of discussions from this series of events will feed into the next summit.

The GEB has developed an open source, simple to use, free self-assessment tool that helps measure the sustainability of infrastructure projects and programmes. Various pillars of sustainability are considered such as resource protection, transparency, poverty alleviation, sound financing mechanisms etc. it is designed to be used without the need for consultants which will help funds making investment decisions to easily and cheaply consider sustainability in their decision making process.

318 Paul Clements-Hunt, The Blended Capital Group: "Infrastructure and disaster risk"

The UN International Strategy for Disaster Reduction (UNISDR) is engaging with the finance sector and investors across 130 countries to get a clear, commercially relevant understanding of how disaster risks are affecting investment in infrastructure.[2]

32 Respondents to Presentations

321 Andrew Bainbridge

The key take home message from this section is that society is changing. The current way of doing things is not sustainable and the pace of development is insufficient to match needs of society. There are three key questions that we need to try and answer:

1. How do we mobilise effectively? What can we do to change things? We need long tenor assets, but there are obvious risks;
2. How do we establish the priorities of society as individuals? For example, a hydroelectric dam would generate renewable energy but will flood areas of natural beauty. How do we weigh up the costs and benefits? There has to be opportunity for development and for people;

[2]Paul Clements-Hunt's full presentation is summarised in Section D. covering the Hong Kong meeting and the associated Summary Case Studies are presented in Appendix 1.

3. How can we make it quick and easy for the money to flow? Access and exit mechanisms need to work effectively.

322 Konrad von Ritter

The world has a target of limiting global temperature increase to 2°C. Meeting this will be impossible unless we find the business models to bring finance into low carbon development. There are three mechanisms for doing this:

3221 Micro-level infrastructure

This provides new opportunities, particularly in renewable energy where costs are coming down, creating viable investment opportunities, which can then be scaled up to the macro level. There may also be untapped potential to innovate the investment financing system, for example, crowd sourcing. The micro finance sector also needs to address the low-carbon agenda in their portfolios;

3222 Sub-national level

There needs to be nationally appropriate energy reduction and mitigation expectations. Developing countries should take charge of reducing their emissions at national, sub-national and city level. The finance sector needs to ensure that capital flows to viable subnational investment areas. E.g. energy efficiency in buildings or small scale renewable energy;

3223 Global Green Climate Fund

There is resistance to the idea of private sector capital investments being counted as climate finance and to using public sector resources to leverage or de-risk. There needs to be clear demonstration that mechanisms create tangible local social and environmental benefits in order to overcome this resistance.

33 Discussion: Over-arching Issues

331 Systemic issues

Clearly, there is a large and growing set of increasingly interconnected systemic problems covering myriad social, environmental, political, financial and market-related global challenges. The tension between short-termism and the problems of both thinking and delivering long-term solutions, across our political, financial and social systems, would appear to be intractable in both developed and developing regions. Many political, social and business leaders appear unable to address this fundamental short-term versus long-term “play off” that is central to tackling a broad range of problems including growing needs for infrastructure that supports sustainable livelihoods. After the financial crisis of 2007-8 and the debt crisis that followed, we do not have the deployable resources to deal with the increasing number of interconnected challenges all at the same time. How our large investors and the capital markets, as well as the broader financial system, supports the development of

smart, resilient, socially cohesive and low carbon infrastructure will determine the quality of life for the increasing billions of people who will live in urban communities as the 21st Century progresses.

332 Banking on confidence

In the immediacy, critical issues governed by short-term and long-term tensions, such as the delivery of infrastructure projects and support for social enterprises with an ability to bring grass roots innovation to the delivery of public goods at scale, face many hurdles. These hurdles include:

1. **The first issue** is that the banks are not lending. Since the financial crash, they have lost confidence and this needs to be addressed;
2. **The second issue** is that the banking sector needs new mechanisms in place to facilitate different types of lending. This could potentially be done by regulation and legislation;
3. **The third issue** is that the cost of lending needs to be reduced and the process streamlined. This could potentially be done by providing industry guidance and standard documentation.

There is another key issue that affects long-term deals like those necessary for infrastructure projects. A major barrier to banks having the confidence in these projects is that Governments can change legislation that has the potential to change the rules half way through a project. There needs to be more certainty in the regulatory system.

Also, there are questions related to how fiduciary law restricts pension fund trustees from looking at longer-term investments such as infrastructure. Misinterpretation of fiduciary law in the major capital market jurisdictions, such as the UK, can often constrain how trustees view strategic asset allocations to alternative asset classes where infrastructure often resides.

Also, we see in the political world that governments are often not joined up across different Ministries with climate change being a point in case. Prior to the crash finance ministers of the G8 and G20 were quite vocal stating that they wanted to align environmental, social and financial issues. However, after the financial crash, interest in climate change disappeared. This is a problem relating to the short term thinking of governments that is mirrored in the short-termism in financial and investment markets.

333 Freeing up institutional investment

The issues for pension funds investing in infrastructure are complex and there are many barriers. There is an increasing interest amongst large asset owners to explore infrastructure and there are a wide range of seeming opportunities, but the industry as a whole is, understandably, conservative and cautious. There is a lack of expertise as most pension funds are run on a tight budget with a lot of money going to advisors and consultants so there are limited resources for research into new investments areas. For example, the legal and due diligence costs for a US $10 million project can be the same as they are for a US $50 million project. Pension funds need to look for new channels to invest in things they want to without the serious risk. The interpretation of fiduciary law and related risk issues, as well as a lack of clarity within investment law in various capital market jurisdictions,

needs to be addressed. Uncertainties around legal duties prevent pension fund trustees from exploring a broader range of investment opportunities.

334 Infrastructure and disaster

In a globalized market place where industry value chains are long, there is an increasing degree of interconnectedness in terms of disasters in one part of the world impacting other regions. This has heightened the need for increased resilience in our urban, industrial, energy, transport and agricultural infrastructure. For example, the Thai Floods of 2011 had implications for auto, electronic and consumer goods supply chains globally while the US drought of 2012 had the potential to contribute to a global food price spike - - that would be the third such "spike" in three years - - that could impact vulnerable communities worldwide. Government are not joined up. There is hypocrisy in politics where finance ministers say that we want to align environmental, social and financial issues, but after the financial crash, interest in climate change disappeared. Climate is the biggest driver of price; temperature and rainfall change can have a huge impact if the infrastructure isn't there to cope with it. There is a pressing need to get the insurance industry engaged but their assets have to be liquid and short-term which is a barrier. An increasing carbon price will help to get people to act. Natural disasters are triggers that point out man's stupidity. This is a problem relating to the short term thinking of governments just as much as we are concerned about short-termism in financial markets. The issue is that the urgent wins over the important and the easy over the difficult. Decision- makers need to tackle the complex problems, but they inevitably end up at the bottom of the pile.

Complexity and volatility in the regulatory system is a big problem, but so is the education of investors. We need to find good leadership to ensure that all stages of the investment process work successfully together. There is also an issue and lack of definition around the word "sustainable" in the finance sector which might lead to investors shying away from quality projects. This attitude needs to change.

There is a barrier as a lot of people in finance are only interested if the investment is on a large scale, for example, a US $500 million project with a 10% return and an exit after 20 years (e.g. for private equity investments in wind farms or utilities). We need to change this mentality. In other words: Scaling up might be important in certain cases, but downscaling the expectations of project size may be a challenge, as well. But how can we do this, when we look at the relatively high transaction cost of smaller investments?

There is a cost issue that needs to be addressed regarding the small-scale investments because the relative fixed costs to do small deals is too high. There is an opportunity to streamline the process and reduce these costs by changing the incentives for small investments and replicate the projects to reduce the fixed costs.

34 Open discussion

Chris Vermont, Frontier Markets Fund Manager: There is a need to look at things at the micro level, not just at the billion dollar investments. The growth needs to be bottom up, look at the uptake of mobile phone technology in India and Africa. Usage was small at first but grew naturally, driven by consumer demand. The banks are not used to being socially minded and at present, only look at big profit and big return. There is also not the historic success to be relied on with social projects which would raise the confidence in smaller scale projects, prompting banks to act. A critical question post crash is whether banks are the right place to deal with the infrastructure issue?

Arthur Wood, Total Impact Advisors: Agrees with the need to encourage social entrepreneurs, but it is essential that they are given the opportunity and resources to scale up. A lot of small start-up businesses fail at the early stages even if they have the potential to be huge. There is a cost issue that needs to be addressed regarding the small-scale investments because the relative fixed costs to do small deals is too high. There is an opportunity to streamline the process and reduce these costs by changing the incentives for small investments and replicate the projects to reduce the fixed costs. We need to inject the expertise of the finance sector into this new area of investment for social capital.

Bo J. Hammerich, Citigroup: The starting point to overcoming this barrier is to redefine the target markets for investment. This involves engaging NGO's and re-educating governments how to identify sustainable projects in terms of their viability and environmental impacts.

Andrew Bainbridge, Guarantco Ltd: The key to this is the lack of confidence from the banks to lend to long-term projects, an issue, which stems from the financial crisis. Banks also need to gain the respect of the public again.

Daniel Wiener, GEB: There is also a need to identify new criteria for sustainable investing to help guide the banks. What do we need to do to enable pension funds and other institutional investors to become a solution to the problem? Could this be done through education, policy etc.? This is an issue for politicians to respond to.

Anthony Knap, Parhelion Underwriting Ltd: Could the insurance industry play more of a role if it was more innovative? The equity and debt industry needs to get more engaged with the insurance world to encourage innovation.

Kirsty Hamilton, Royal Institute of International Affairs: The regulatory world isn't connecting up with the investment world. There is a great need for education across the board about the benefits of investment in sustainability and renewable energy and a need to expand the short-term mind set and encourage a longer term approach to investment. The issue of subsidies from fossil fuels and renewables needs to be highlighted and the fundamentals benefits of investment in infrastructure, such as good return and limited volatility need to be highlighted.

Gareth Hughes, Beetle Capital: There is a disconnection in the cycles of investment and a more long-term view is needed. There is a lot of cash out there, but companies are concerned about their ability to invest.

Dima Rifai, Change Capital Partners LLP: There is a gap between things that are long term and short term, these need to be aligned and work together, not against. Many of the sustainability issues are long term ones, the investment is long term whereas the investment return focus and decision-making horizon of elected government officials are short term ones.

Arthur Wood, Total Impact Advisors: One policy idea to combat this is that if it was mandated that 20% of emissions reduction related investment got a tax break then between now and 2020 significant capital could be raised to help meet emissions reductions targets.

Konrad Von Ritter, Kritter Advisory Services: Could insurance companies start a dialogue with their investors to provide an incentive for choosing to invest in sustainable infrastructure? For example, to reduce insurance premiums.

35 Closing comments

Daniel Wiener, GEB

The situation is urgent; we have to do something to address these problems. There will be more floods, hurricanes, heat waves etc. And as a global society, we need more resilience. We have built our wealth on emissions and we need to account for this by looking at historic emissions.

There needs to be a debate about how we should deal with this issue, and there are strong pro's and con's on both sides of the argument.

In order to stimulate investment in sustainable infrastructure that will help us to reduce CO2 emissions, protect our scarce resources (including water, biodiversity and fossil energy) and deal with increasing effects of our misbehaviour, like extreme weather events we need: partnerships, participation, patience and persistence based upon shared vision, shared values & shared incentives for a diversity of stakeholders.

4 Section B: The New York Meeting 27 September, 2012

Moderator: James Cameron, Chairman, Climate Change Capital

41 Inputs

411 John Oliphant, Chief Investment Officer, Government Employees Pension Fund, South Africa (Via Video)

(For a summary of the video contents see: Section A: London meeting. For the full video see www.globalenergybasel.org)

412 James Cameron, Chairman, Climate Change Capital: "Adapting Infrastructure for a Changing World"

Firstly, we know that almost every government in the OECD is struggling to find ways of growing economies at the same time as managing huger inter-generational levels of debt. It is accepted wisdom that investment in infrastructure stimulates economies. However, if you are to use it to stimulate the economy at times of crisis, you need to accept there will be some problems along the way, such as the creation of stranded assets. The risks of such investments must be fully understood and mitigated in order to avoid such problems. There is a chance now to seize the opportunity to re-build the economy and make it fit for a present where there are serious environmental problems to face, climate change, social turbulence and distribution problems, and all at the same time as governments are able to borrow money at historically low rates.

Institutional investors are scared they won't be able to meet the long-term requirements of beneficiaries because of these low rates. We need to create investment structures to meet both the needs of governments and of pension funds. There is an opportunity here to help facilitate the conversion of these problems into economic growth.

I sit in Prime Minister's Business Advisory Group and have found that the Chancellor is often keen to attack the cost of environmental investments. I chose to focus on infrastructure when trying to convince the government to make changes. Another big infrastructure development opportunity is open data which combines data in terms of public information (e.g. Obama and Cameron's Open Government initiative – 57 governments involved, lots of information to do with infrastructure) with other initiatives for open data on corporations, supply chains, Carbon Disclosure Project (CDP), World Economic Forum (WEF), that indicates that infrastructure can be invested in with huge sustainability benefits.

Secondly, we don't yet have an ideal delivery infrastructure for public goods. Many of the things that we want infrastructure to provide are classic public good issues. It is hard to find others than the state to deliver this, however at the same time we have lost confidence in the public authorities. In addition, we also have a lack of trust in the financial sector and we cannot rely on NGOs

to deliver these types of projects. Are there other delivery methods that we haven't yet thought about? For example, the Olympic Delivery Authority for London's 2012 Games appears to have been a good model for public and private collaboration. It attracted excellent talent, and it acted in an efficient way.

Governments around the world compete vigorously to attract investment, for example through providing tax benefits. However, this can create unattractive deals for the public as a footloose investment industry might move on to where the incentives are better. I would like to see better structures to keep that investment. Could organisations such as community corporations, which traditionally operate on a not for profit basis, have the ability to deliver public good and also get financial reward for it? What might the performance metrics for this look like? We need to create conditions where public and business enterprises share the risk: enterprise, with a mission, with risk transferred. We need the same delivery methods for public goods, for which infrastructure would be the most important asset class. There is also an opportunity for green bonds and climate bonds, but with community corporations you would have a public enterprise that was able to raise capital and invest, and was then able to distribute rewards better.

There could be opportunities for this where the existing infrastructure doesn't work and needs to be improved, for example in many African countries where there are no grids or isolated grids, or diesel is the only fuel source. In this case, diesel is the lifeline of the economy but it is very expensive, exposed to price risk and inconvenient to move around. Even without subsidies, infrastructure design to replace diesel is attractive right now.

413 Daniel Wiener, Chairman, Global Energy Basel (GEB)

The main goal of GEB is to go beyond CSR, beyond sustainable impact investment even and get directly into the mainstream. The roundtable last week was very fruitful and we are hoping to build on that today and during the following sessions in Cape Town and Hong Kong, followed by the 3rd GEB Summit in January. Through this process, what we want to understand is: what are the needs of the finance community in order to make a difference in sustainable infrastructure?

We know that the emissions of OECD Countries need to be reduced by 80% over the coming decades, based on the Copenhagen Accord, which means we need to reconstruct the infrastructure of industrialised countries. And we need low carbon development in all other regions of the world. However this is very difficult for some countries as the revenues are not there to attract long-term investment. In addition, progress must be made on reducing localised pollution, securing energy supplies and conserving resources, amongst other things.

The rationale that drives GEB is the following: investors construct lifestyles. If you don't have public transport, you can't get people to use it. Cities such as New York have good public transport, however other big cities, such as Jakarta, still have a very poor public transport network. If people want to behave as they'd like to, and they are not able to, then we find ourselves in a bad situation.

The GEB approach is an enabling one, and through the annual summit we bring together investors, governments, project developers, academia, contractors and many other stakeholders. Our first

finding as an organisation was that there has to be a multi-stakeholder approach. In order to get the long-term view, you need a multi-stakeholder approach, otherwise it just doesn't work. We have also learnt that you need to structure investment so that different organisations and stakeholders take risk on at different stages of the infrastructure project, as they share the benefits, as well.

At GEB we help enable policy dialogue, by bringing together subject matter expertise and a range of partners. If you don't have all the partners together, then you can't get action. For example, there is no use in the government putting sustainability clauses into contracts, if the contractors don't know what sustainability is.

The GEB grading tool uses various criteria to assess the sustainability of infrastructure projects. It works for all types of project and takes into account a wide scope of social, environmental and environmental factors to assess them. GEB has a number of other tools to help educate investors, as well as other instruments.

To date, GEB has found that there is a great variety of interested partners from the financial sector in this debate: insurance, sovereign wealth funds, foundations, private and multilateral banks, green funds, government funds, climate and carbon finance etc., and we aim to bring them together to work through the challenges that exist. The participants in this session today shouldn't be worried about duplicating what was said in London. The key themes that ran through the day were: Education; Collaboration; Regulation; Perception; Confidence; Short-termism; Standardisation; New markets; New investment structures; and The Role of Global Energy Basel.

42 Discussion: Over-arching Issues

421 Post crash financial reality

Since 2008 investors are looking for financial benefits alone. They don't want to spend the time to understand "issues". Clearly, many investors just want to know that an investment is AAA rated and that the dividends are going to come. Since the global financial crash risk perception has been "dislocated" for many investors and the tight management of treasury risk and income factors has become of fundamental importance. In private sector infrastructure funds, the success has been because of treasury management and many funds have not been able to invest in tangible infrastructure projects.

422 The rise of the city

The city is an institutional structure that often works better than the state to deliver investment. You can find that the city is a motor for investment. The importance of allowing municipalities and regions to have access to international markets is a timely idea that needs further attention. A critical question is how can projects, which employ project finance derive benefits from the ability of cities to raise their own finance internationally? There needs to be a modernisation of guarantee instruments and grant countries need to be able to use "enclave loans". Also, policy-makers need to ask the question "what if the fund was wholly private with a contractual agreement with the govern-

ment?" A specialist UK Merchant Bank, focused on climate change, has been exploring such structures to deploy capital and questioned whether a revolving facility might enable for public money to be accessed more readily. The need to avoid extended periods negotiating such facilities, and the negative impacts on prospective private sector investors resulting from drawn out processes, was emphasised.

423 Stakeholder collaboration

Climate finance is attractive to multi-lateral institutions and there is a clear need to cooperate to create structures that bring solutions together from all institutions. In Nigeria, for example, low carbon and clean energy infrastructure needs far outstrip the ability of any one institution to deliver and there is a clear requirement, as there is in other fast growth emerging economies, to create mechanisms to both allow and accelerate collaboration between public and private organisations drawn from multilateral, regional, national and municipal contexts. Drawn out processes kill projects stone dead from the private investor perspective. The type of strategy laid out by the USD 140 billion plus Government Employees Pension Fund of South Africa (GEPF SA) enables people to see that problems are not insurmountable if they are unpacked and broken down. More examples like GEPF are required and must be clearly communicated so that different public and private actors along the investment chain understand each other. Also, it's clear that supporting financial organisations with different strategic approaches, goals and remits - - some to catalyse development of a particular asset or resource and move on quickly while others will stay vested for an extended period - - are required in the mix to stimulate the flow of private investment and build on well targeted public funding. Some organisations will want to stay in for decades, and some will just want to stimulate development of one particular resource. Both are needed though. Recent G20 efforts to bring multiple parties together fell down on who will put the first money on the table. Could the public sector provide seed capital for such projects and, if so, what would such structures look like and how would they deploy? What would private sector and investor expectations be?

A North American institution described how a pool of private investors from different parts of the economy has been created with a 2 to 3 three year window with capital supplied by foundations, trusts, and private funds. Local actors were also encouraged to participate. The pool of capital was described as a flexible tool with a drawdown commitment enabling capital to be taken out of the pool for a particular purpose during points in the project cycle.

It is clear that to achieve such collaborative results that generate new, adaptable, flexible and fast to deploy structures a "vision champion" is required. Participants backing this idea stressed the need for one party, whether commercial or government, who was willing to commit themselves to bringing all the elements together and working through the problems. Without such a "Vision Champion" the various actors in a given infrastructure project find it hard to figure out where the sweet spot is for a common objective. This has been the case with the INGA dam developments where, although INGA 4,5,6, and 7 are being discussed, INGA 3 is difficult to get off the ground. Fundamental-

ly, because of the complexity of these projects they will stall if no one has clout to bring everyone together.

An “origination” and “vision champion” model cited in the London (21 September) Kick Off meeting was described whereby one individual presented an economic development project from Wales. It was his invention, he went to government, found partners, and brought everyone together. More success stories drawn from this approach are needed.

424 Open data approaches critical to public-private success

Open data and open government are a big potential opportunity, particularly considering issues such as African democracy as discussed in the video from John Oliphant of the Government Employees Pension Fund of South Africa. An example would be citizen budgeting in Brazil, where a slice of the city budget is allocated to citizens to spend how they wish. They vote, there is open access, they get all data a mayor would get, and there is even a mobile bus to give access to the information. It has transformed the participation process and the public has made some interesting choices. It has been a stimulus for infrastructure investment, particularly for social or transport infrastructure.

An example of bringing different actors together to enhance delivery and roll out was cited from the telecoms industry. Diesel generators are found at every telecom power station in developing countries. A pilot project has been initiated to convert from diesel to solar energy, which would seem straightforward. However, there has been so much process, so many loopholes, that the problem lies in actually in just getting the project started. Strong learning examples are also clear in existing infrastructure with the Thai Floods of 2011 being a point in case. In Thailand there was infrastructure in place to deal with the rainfall and a maintenance shortfall contributed significantly to the scale of the disaster. The key question there is who has the responsibility for maintenance across many different Thai Provinces and who is involved to ensure accountability and deal with that? These become very national specific issues and there is a clear opportunity to learn and share with others.

Looking now at infrastructure finance with a climate change angle, there is the link between the private sector and the public sector. Both need to be happy that resources are being used to get best returns. Global Energy Basel could develop a set of guidelines to define, quite simply, this is what the private sector requires and this is what the public sector requires. Public and private are currently speaking in different languages and this appears in whatever region or country you are working in.

IADB cited its work to bring sustainable development closer to the city-state with some success. IADB found that political regionalisation has been successful while fiscal decentralisation has not, which impacts government decision-making. Also, the credit-worthiness of sub-national cities is difficult to understand and tough to overcome. IADB has found that investors in the region are really not willing to lend readily at the Sub-national and city level and as a result has now launched a sustainable cities initiative to work with cities on three areas: environment and climate change; social sustainability; and fiscal sustainability. IADB has engaged with Cities to create action plans to prioritise certain infrastructure investments to improve their sustainability. The development bank works

with local government teams, universities, civil society and the private sector to create these action plans. IADB targets an intervention and then seeks to finance it – either privately or publicly often through a lengthy process. IADB has no doubt that creativity in financing with multiple actors is the way for Latin America where development is occurring at a rapid pace.

GEB suggested that the traditional approach of looking at the private sector and the public sector as two separate entities always ensures that the differences between parties are emphasised. GEB suggested that instead policy-makers, financiers, investors and developers should start with the opportunities for identifying shared incentives as everyone wants profit. The key common question then becomes "can we monetise community benefits?" We don't need to monetise everything in an academic manner though. A government can say our incentives are "XYZ" (e.g. public goods, such as health and education benefits), while the investor can say mine are "ABC" (e.g. an 8% return along with reputation and networking benefits). This would be very transparent and allow both parties to overcome an initial lack of understanding. Both would be able to understand the other's incentives which would lead to a transparent and open discussion and could be more productive.

The Clinton Climate Initiative and Word Economic Forum have been playing a role in doing this, to bring the public and private sectors together, to set standards in the context of a policy plan. It can take a very long time though to get the development banks to move projects along. An example cited from Tanzania was the building up of agricultural development there. Mission driven Angel investors who were both idealistic and big risk takers entered first, followed by Silicon Valley, USAID and EURAID, but the development banks were very slow as they felt the project was too risky. In reality, the project is doing incredibly well from a development point of view, but does not give quick returns. It should be possible to hang on through the project, for example through a revolving facility, to ensure that it is finished; that the capital is raised and then deployed.

Participants echoed the sentiment that an effective "framework can be put together" but that they have to be "branded" in a bite-size manner in order to create a development cycle that allows people to engage. Most people are not aware of or do not understand the complexity of large scale, long term projects. This is exacerbated by institutional ignorance or misunderstanding, for example, the private sector does not understand the World Bank, the IFC and other multilateral institutions so they cannot engage. The mandate for funding within multilaterals can be as complicated as private sector deals even before you factor in the social and environmental benefits to be achieved. We need to create an architecture and package it in a manner that incentivizes different actors to use it. Also, we need to de-mystify the process of raising money.

425 Understanding risk

Projects are very complex, risks often misunderstood or perceived incorrectly and unless you simplify infrastructure projects so that all stakeholders deepen their understanding then they don't get funded. The range of risk transfer instruments that different actors can use is not clear nor well understood by different actors.

Public policy risk is a big issue, particularly with government incentives such as feed in tariffs. Participants asked whether the insurance industry could work more creatively alongside the government or multilateral providers of finance? What are the instruments that can guard against risk? New instruments need to be created, tested and applied in a manner that enables investors and developers to go back to government and hold them to their commitments.

An example was cited from Haiti whereby US $5bn grant money targeted for the devastated country was put up as a guarantee for the private sector to invest. In part the grant was used to police the government to get over complications in the investment cycle and the money protected the private sector, almost like a private equity bond. A public-private committee was established to manage the process but, even then, not all the public money has been spent. It is clear that most donors actually want to get a picture of a tangible asset but when you get into the reality of "red-tape" then each donor gets very complicated. It was commonly agreed that such concepts are great but in reality it is hard to disperse funds.

426 Getting money out of the door

The lack of dispersal of funds is a big issue for the World Bank. There is money tagged for particular projects but it cannot be dispersed for one reason or another and WB-backed studies have been looking at the amount of money earmarked for projects that goes nowhere. It is clear that there are pockets of money everywhere that never go anywhere. It would be a low hanging fruit to create a fund of these funds to bring this money together. Participants agreed that to drive such a process you would need to put legal stopgaps in place.

Participants explored the realities of applying fixed income approaches and products to low carbon infrastructure needs. It was agreed that the successful evolution of a range of bond offerings with a mainstream profile for the market place beyond those currently on offer were needed to facilitate flows of institutional capital at scale into a future low carbon, infrastructure asset class. It was asked whether we could we realise a sustainable infrastructure fund that would trade as a bond? It was stressed that such a product would need to look like any other fixed income instrument that bond market actors buy and trade. It would not be business as usual but it would have all the appearance of a typical transaction. Was it realistic that in future it should be routine for institutional investors (and for debt and capital markets in general) to deal with sustainable infrastructure, as they do for any other asset class? What actions are needed for such a transformational change in the way sustainable infrastructure is seen as an investable asset class in its own right? It was agreed that such a transformation is needed to redress situations whereby, for example, massive insurance businesses invest in areas that are creating and deepening the risk that they then have to pay for, which means that premiums then go up in long term.

It was agreed that enabling infrastructure investment, through, for example, the deepening of bond markets for "new, low carbon" infrastructure allowed the smaller deals to flourish. Then you don't have to have a discussion about which technology is best. It was noted that a challenge for the existing clean-tech, renewables and broader sustainability technologies sectors (e.g. mobility, waste

management, water resources management) is that there are no large pure-play companies for capital markets to invest in. As such, there is currently nothing in the renewable energy sector that has potency in the debt or capital markets. The evolution of sustainable infrastructure as an asset class would drive a transformational re-assessment of how capital is deployed into the technologies supporting a move to low carbon, more efficient infrastructure.

Many challenges with fundamental questions attached exist if we are to achieve such a transformation. For example, how do you get a Bechtel and the world's largest developers to play ball with standards that will support a new, evolving asset class? Is it possible for a multi-lateral to impose them? Do governments have to say: "if you comply then you get the contract?" What sort of partnerships do you need to start with to do this? You have to meet the standards to get the contract to get the funding? How do you create a cottage industry to drive this change from the bottom up. Regional challenges and variations are also to the fore. For example, in Latin America, when you talk about climate change and sustainability, it's only seen as an environmental problem, not an economic one. The problem is there for both the public and the private sector. The current attitude is: "if it's an environmental problem, then it's the environmental industry that has to deal with it." They need to understand that it is a security and economic problem, not just an environmental one. It is also a competitiveness problem.

Examples from North American were given. In Los Angeles they have raised capital to do retrofit programmes, which is then paid back to the municipality through the housing tax bill. This then enables the municipality to raise funds. Some places will issue a tax assessment bond, which they can place with an individual investor. Could they impose a standard for the energy savings to be achieved? They were told that, on average, for commercial buildings a 20% energy saving could be achieved, however they then decided not to impose a threshold because the financing has not yet happened to allow companies to achieve this energy saving. It is still seen as a heavy lift for many companies. They thought about imposing an environmental outcome because it was thought that they would get more up-take, for example through US $1 – 4m projects, i.e. on major projects, however there are still barriers that need to be knocked down to make the process as simple as possible.

Participants agreed that fundamental questions remain. For example, how can you create enterprises where there's a single outcome and their reward comes from the delivery of the outcome? You avoid losing the saving in the general public administration pot and do not link them to shareholder returns. There are fixed income products to achieve this, which provide cheap capital. It was agreed that there's increasing experimentation around the world to create new institutions to deal with these environmental and energy initiatives. Clean Energy Finance Corporation for example, or the Green Fund, if and when it is launched.

427 Red-defining target investment markets

You have to be tactical about how you approach investment. You must assess the private sector in a particular country and find a way to create a push for government. The private sector needs to be incentivised to be a part of it. You need political and business intelligence capabilities, to understand

how the two relate to one another and then create the necessary incentives. This would allow you to do things like taking technologies to frontier markets.

South Africa was cited several times as an example of a country where a policy environment supportive of development and clean energy investment was evolving. South Africa has a substantial set of incentives for renewables: they have a renewable energy plan, tariffs for solar (including building integrated solar), and they also have a nuclear programme. The country also has a new policy on the books to enable sub-national regions and cities to invest themselves and Johannesburg already has an agreement with the finance ministry. Cities have different needs to the rest of the economy, and other regions, and this would enable them to access bond markets without needing to go to government first. An example was cited of work with Johannesburg to implement energy efficiency retrofits where local banks were not interested to finance the projects. The International Finance Corporation was then approached but they wanted a guarantee that there would be a sufficient deal volume. In this case, there was both a credit risk worry and a market size worry. If the Johannesburg project is rolled out then it will be the first retrofit project done using an energy performance contract.

428 Changing the public-private risk mix

Participants presented several examples to highlight public-private collaboration:

1) An interesting example of risk sharing is highlighted by the Shepherds Flat project, a 845MW wind farm in Oregon. Developers were able to take a Department of Energy loan guarantee and pass it on enabling different investors to contribute capital with different amounts of risk covered. As such, it became possible for the project to gain access to middle and long term market;
2) In the case of bonds, the Pennsylvania State Treasury recently have been able to collect energy efficiency projects for its own buildings and go through the markets to offer bonds that were highly rated. The *Homeowners* Energy Efficiency Loan Program (HEELP) was a tool developed for residential retrofits. The Pennsylvania Treasury will underwrite loans to individuals and will provide a guarantee on those loans, Citibank then warehouses it and builds up a portfolio of investments. There is one point of contact and one interest rate. Homeowners have to comply with some particular requirements in order to be able to qualify for the loan. Focus has been on single family residential units first. These types of projects need to be very focussed. The state is playing the role of the underwriter, so the subsidy is the guarantee;
3) A Mexican example for public lighting and public office buildings was cited. The approach is to issue a bond to provide funding for the retrofit investment although the challenge is to see how you trap the savings, in terms of consumption. Work is underway with a national utility to design a scheme where the savings are on a declining scale. It takes 5 years to get savings and in the meantime, you trap money into a trust and provide a credit guarantee. To move such a project forward there is a need for collaboration between the utility, the

state, trusts and banks. The bond is issued by the trust and is rated AAA. The challenge is on legal infrastructure because as soon as savings go into public pot, they are gone;

4) BASE highlighted an example through its work with the development banks to finance hybrid busses in Bogota. We did a cost-benefit analysis that indicated that both the hybrid and the conventional busses have same IRR. The project highlighted just how complicated it is to deal with the local government in such a case. For example, one challenge for the project was that if you have two options with same IRR, and you don't have a legal framework to give confidence in the new technology, then local government will always go with the old one. It is clear that there is a need for education and awareness to go with new options. Also, project managers met with the local development bank to show that there was a market potential, to bring soft loans to the table from banks, for the long-term, and to bring a guarantee of 80% from the national development bank. The banks say that they like the new technology option, but that they: a) don't have the internal capacities to deal with this, i.e. they don't understand it; and b) where are the clients that are asking for this? The issue is education and awareness, not a lack of guarantee.

43 Closing Comments

Katherine C. Baragona, The World Bank: Based on what was heard today, it is clear that there is certainly the means out there to create the processes and instruments that the market needs. There needs to be a closer dialogue between stakeholders. We should look at examples such as the Equator Principles (EPs) to say: how did development agencies and development banks get the commercial banks on board, which then had a trickle-down effect on investors? How did they figure out the economic benefits and process to do this? What can we learn? The WB should participate in this, as it did with the EPs. Shawn Miller, Citi's Global Director of Environmental and Social Risk Management (ESRM) did presentations to explain the benefits. We need another process that takes a WB principle, turns it into a standard, which is taken into banks, that then customers take as normal practice. We need to make a roadmap for how to meet our obligations.

Davida Heller, Citigroup: The money is there, but the question is how to disperse it. We're not looking at business as usual in this case. We need to redefine how the public sectors and banks can lead the way into places like Africa.

Katy Mixter, Citigroup: As with the EPs and other types of risk, it is best to address the issues as a sector. One of the challenges is that if we want to work with our clients to address risk, if the other banks don't have the same standards, then people can walk away and do the deal with someone else. The best way to look at risk is with standards that our peers are using as well. People aren't currently talking to each other to offer many different instruments to market. Banks need one point of contact for each issue, and also access to experts who are cross-functional.

Susannah Fitzherbert-Brockholes, WSP Energy & Environment: There is a need for simple, even basic education for the different parties involved. Everyone appears to be talking in a different lan-

guage meaning that the public sector doesn't understand the private sector and vice versa. Education in areas such as how to purely go about accessing finance, for example from the multi-laterals, is necessary to ensure that everyone understands each other's processes and requirements.

Reza Bundy: If we are able to prove the model with one team who has a strategic capability then we can go to market and structure investments to achieve strategic outcomes. We need to work with the private sector and with governments to quantify the result so that we can say: this is it. Then you can create the necessary standards. How do you then apply them and bring them to the market? On a deal by deal basis.

Daniel Wiener, GEB: We don't only need peer groups to work together, but we also need leadership, as happened with the EPs. Could new credit rating requirements be an opportunity? This could be a path to be employed in the long run (Basel IV), however we need to see proof that it works first.

Felix Cardenas, greenTEK Ventures: We need innovation to create an environment where the multi-laterals and the private sector can create such funds. The reality of fund raising today is that it takes a long time and can fall apart even after a year and half of process. We have seen funds fade because they just can't get up and running.

Hannah De Boffe, Portigon: Developing countries don't have to be convinced not to use the old system because they don't have it. We need to map how to create development directly and simply how to invest.

Andrew Simmons, ARUP (Former): We need to understand the different frameworks, and then the delivery mechanisms. Should this be outcome or process driven? For cities it needs to be led by an urban design team that understands financial methods. If it is finance led then they need to understand how it plays out on the ground. We need to look for a case study where it is not just best practice in terms of urban design, but specifically those where the governance structure has facilitated a successful project. Also, we need to look at how projects didn't work. In Bogota, for example, we looked at how similar projects were done elsewhere and we changed our approach accordingly. How do you tie this in with land use and pedestrian use? We need reports that are specific on public-private partnerships etc. that people can then put into practice.

Daniel Wiener, GEB: The GEB grading tool is based on this type of analysis, taking an integrated approach.

Carlos De Paco, IADB: Firstly, de-mystifying: how do you open up these processes to make private sector comfortable? We could do with some pilots and case studies. Secondly, partnerships with private and public: the people must also be included to deal with the challenges faced by climate change, cities, biodiversity loss.

Scott Henderson, C40: For all the parts of the infrastructure ecosystem that are customer focused, for example lighting etc., there is an acute need to understand the end market. Multi-family real estate owners will think very differently from a mall owner or commercial building owner. In the past there has not been enough outreach from building owners even though there are the financial mechanisms in place.

Ellis Juan, IADB: As a global financial community we don't have a critical mass yet for this. The critical issues are: 1) Cities have the largest GDP in a rapidly urbanising world which is politically becoming more local and regional; 2) risk could be better managed with instruments that have financial guarantees for credit; and 3) In order to get a climate change agreement from governments, the financial community needs to think outside the box, as there are people out there developing their own instruments. The financial community needs to be more proactive to try and propose some real mechanisms.

Alan Cohn, NYC EPA: When looking at water infrastructure and climate change we find that there is an increasing regulatory burden to create more infrastructure, and at the same time the environmental risk from climate change, such as storm surges etc. How do we create a programme to pour money into that dealing with the risks presented? At the moment we are in assessment phase, looking at what the monetary value is of failure of infrastructure. How do you pull together and find a place to fund the necessary improvements? At the moment we are reactive not proactive and we need to make our infrastructure energy efficient and climate resilient.

Daniel Magallon, BASE: Firstly, the de-mystification of the role of the multi-lateral is crucial. What role should each actor play? What is each one's capacity to absorb risk? It is not problem of lack of money. Secondly, we need to understand benefits of each project and the consequences of not doing it.

Dave Rutu, World Bank: The two tier approach that the WB takes, for example with regards climate change, threatens to undo development and poses hurdles for others that would like to develop in a climate friendly manner. We need to develop opportunities that can be provided, such as climate credits etc. that have a return on investment. We need to continue to work on other types of projects, such as those in China where you have a toll road for which the private sector provides funds and public sector executes. We can use them to continue conversation within the WB to play role of guarantor.

5 Section C: The Cape Town Meeting 26 October, 2012

Moderator: Paul Clements-Hunt, GEB Board/The Blended Capital Group

51 Inputs

511 Opening Comments: Daniel Wiener, Chair, GEB Foundation:

Continuing our global meeting series, Global Energy Basel has come to Cape Town to listen to African perspectives and to hear African lessons of how the continent intends to set in place a 21st Century infrastructure that supports sustainable development for its dynamic and growing population. As we have learnt in our meetings to date in the UK and USA, sound, resilient, smart, low carbon infrastructure is the key to better lives for people worldwide. It allows people to make the right choices and empowers them. For example, when encouraging people to use more public transport and reduce their use of personal cars, a good public transport system needs to be in place. There is a key link between infrastructure and behaviour. GEB wants to mainstream sustainable infrastructure and we believe that Africa can lead the way as its new cities and communities grow in future decades.

Global Energy Basel has an annual summit where good practice is shared. The outcome of discussions from this series of events will feed into the next summit and we want to take African examples to Switzerland in January 2013.

Also, GEB has developed an open source, simple to use, free self-assessment tool that helps measure the sustainability of infrastructure projects and programmes. Various pillars of sustainability are considered such as resource protection, transparency, poverty alleviation, sound financing mechanisms etc. it is designed to be used without the need for consultants which will help funds making investment decisions to easily and cheaply consider sustainability in their decision making process.

512 Keynote at the Joint GEB/Sustain our Africa Infrastructure Day following the GEB "Infrastructure for a Changing World" Breakfast Meeting: "Global Perspective on Infrastructure – the African view," - John Oliphant, Chief Investment Officer, Government Employees Pension Fund (GEPF), South Africa

The Government Employees Pension Fund (GEPF) is the largest pension fund in South Africa. It controls approximately US $140 billion and has 1.2 million active members. There is a broad representation of stakeholders on board. Similar to European pension funds, infrastructure is one of the key areas of investment, and 50% of investments are domestic. As a result, the GEPF is one of biggest investors in the South African economy.

The economic reality in Africa is that its economic size does not reflect is geographic size. The African economy is small but rapidly growing. 13% of the global population live in Africa, but the con-

tinent has only a 2% share of global GDP. Africa wants to increase their contribution to global economy.

In order to do this, Africa needs support for democracy and good policies in place. The economy has grown rapidly in recent years and of the top 20 fastest growing economies, 7 are in Africa. This has in part been due to a greater support for democracy; there is far less conflict now than 20-30 years ago and, for example, since its first elections in 1994, South Africa's economy has experienced an accelerated rate of growth. The growth is also due to the implementation of some excellent economic policies. If we can continue to combine democracy and good policies in this way, we can continue to accelerate growth. So, Africa is in a good position but there is a pressing need to focus on infrastructure in order to keep this trend going.

Many countries in Africa are land locked, and infrastructure is critical for them to be able to communicate and trade with the rest of the world. The key infrastructure areas for Africa to pursue are as follows:

1. **Energy:** Africa is responsible for only 3% of the global energy consumption (despite having 13% of the global population). The demand for energy is set to rapidly increase in line with population and economic growth. With over 50% of the population living in cities by 2030, and a larger middle class, infrastructure such as power stations, renewable energy generation facilities and transmission networks will be required to meet this demand;
2. **Transport:** The transport infrastructure in Africa needs a great deal of investment, both within cities and to link the key areas around the continent. Africa has a lot of landlocked countries, and in order to be able to take advantage of the international and domestic demand for its natural resources it needs an effective transport system. Africa is currently uncompetitive with the rest of the world due to its high transport costs;
3. **Information and communication:** Internet, computer and mobile phone use has exploded in recent years and has become a vital means of communication. Africa is no different and in order for this trend to continue investment is needed in communication infrastructure. Africa needs to be able to able to communicate and interact with the world;
4. **Water and sanitation:** Access to clean water and sanitation services are essential for a productive, wealthy and healthy society. Investment in sewerage and water treatment infrastructure is required.

It is projected that over the next two decades, US $41 trillion will be spent on global infrastructure. The key question is: how this capital can be attracted to Africa?

As mentioned before, support for democracy and strong economic policies are the foundation to doing this, but in addition, the infrastructure that will be built will require the natural resources that come from Africa. Africa needs to both export these resources for other countries, whilst ensuring that it gets the right infrastructure for itself. Using the investment in infrastructure in this way both domestically and to drive exports will create jobs and increase revenues from the sale of resources.

The GEPF recognises that it needs excellent returns whilst transferring away from the traditional asset classes and is therefore pursuing 4 major areas of opportunity for developmental investment in Africa. These are:

5. **Economic infrastructure:** Investment in economic infrastructure gives returns for the economy and the investor. This type of infrastructure includes power generation, ICT and transport. The recent energy crisis had a negative impact on GDP and needs to be avoided in future. Africa currently has a very low power consumption per capita and it is estimated that Africa needs 7,000MWh of new electricity capacity a year, including a transmission network. This would require around US $40bn to be spent per year on power infrastructure, and it is currently estimated that there is a finance gap of US $26 billion per year. GEPF has set aside 5% of its assets for investment in energy. Another key area of investment and growth is the aviation industry, and Africa needs to increase its airspace capacity in order to compete with other regions.
6. **Social infrastructure:** The GEPF is also focussing on investing in healthcare infrastructure such as hospitals, pharmacies and research centres. Affordable housing is also an important area of social investment that the GEPF is targeting because many Africans currently face the problem that they are too poor to buy a house, but they are too rich to quality for government assistance.
7. **Environmentally oriented projects, especially renewable energy:** South Africa has the highest carbon footprint of any country in continent. The GEPF wants to invest in green energy infrastructure to make the transition from a brown economy to a green economy and ensure South Africa's sustainable future.
8. **Enterprise development and job creation:** The majority of people are currently excluded from the ability to participate in the economic development. The GEPF wants to encourage start-up businesses to fuel the economy from the grass roots level. This will create employment opportunities and stimulate the economy and allow the wider population to actively participate in the economy.

The greatest investment opportunities that GEPF currently sees are in energy and ICT infrastructure, for example undersea telecoms cables, and also in the aviation industry. With only around 20,000 aeroplanes currently operating in Africa, it expects to see a doubling of the aviation industry by 2027, and there will be significant infrastructure investment required to enable this.

With strong economic policies and changing attitudes, the GEPF sees great investment opportunities going forward in Africa.

513 Michael Carrick, Chief Executive Officer, Aventa Capital: "Africa: Building a pipeline of investable infrastructure projects"

There are some key challenges to investment in infrastructure in the developing world, for example, the low yields discourage private lending and the on-going austerity from governments makes long term planning difficult. However, there is an appetite for asset backed opportunities but in order to

boost investment, confidence needs to be increased and corporate social responsibility (CSR) needs to be integrated into the investment decision-making process.

Fund managers should branch out from the safe harbors such as debt, secondary and liquid markets and investigate new models of alignment and risk. We need to change the model of what we have now and prepare for long and challenging road to funding whilst carefully managing the risk and return of projects.

Strong, innovative examples in one part of the world can play out in other regions although a keen sensitivity to cultural issues and the political, social and operational realities of the local situation are of fundamental importance. For example, there is an evolving and a successful public-private model of funding in a socially deprived area of Wales in the UK. The project has been taken away from the banks, reducing the constraints and legislation. The opportunity has been taken directly to the government based upon ideas and pre-feasibility studies by the private sector initiator, rather than waiting and going through the tender process. Additional benefits include tax breaks and job creation in the area. This “origination” of a project will play out more and more in an era when the ability of banks to lend to infrastructure projects is constrained post crash and because of new technical realities for banks when the cost of capital and capital requirements are higher.

A project with a similar funding model has been done in Africa, where the environmental infrastructure project idea was taken directly to government, creating the deal to increase the level of control and adding value. In Africa there is no competition for transactions but there is huge competition for capital; finding investors who want to invest in Africa in the lengthy timescales is very difficult. Quality project sourcing is essential; the main route for finding a project is missionary work; the projects require rigorous due diligence and an emphasis on environmental, social and accountability/responsibility issues in order to mitigate risk.

These two projects show that new models and new ways of partnering can result in success, but the finance industry just needs to be innovative in how they operate. A few critical points:

1. There are perceptions to deal with. There is a perception of high risk with a poor understanding of the microenvironment;
2. Africa Size and Prize. There are large opportunities available in Africa in proportion of world resources;
3. Securing institutional support is challenging;
4. Raising a new asset class for Africa with involve conflict management, commitment to ESG, clear investable proposition and an investment track record;
5. Barriers to entry include the lack of skill and regulatory hurdles.

514 Paul Clements-Hunt, The Blended Capital Group: "Infrastructure and disaster risk"

The UN International Strategy for Disaster Reduction is engaging with the finance sector and investors across 130 countries to get a clear, commercially relevant understanding of how disaster risks are affecting investment in infrastructure. [3]

52 Discussion: Over-arching Issues

Despite the vibrancy, growth and current potential of Africa, without doubt one of the most resource rich areas of the world with a young and growing population hungry for success, the continent continues to suffer from a huge and over-whelming perceptional problem that sees many mainstream investors bypass Africa.

All of Africa's key indicators across the continent's 53 countries, such as democracy, better governance, reduction in the numbers of wars and internal strife, reduction in hunger and extreme poverty and the emergence of a Pan African entrepreneurial class who are as wired to the global economy as any other community worldwide - - if not more so as witnessed by the "leap frogging" mobile phone use underpinning commerce in Africa - - are improving. However, these undisputed achievements often seem discounted or ignored by a conservative global investment community wedded to the images and perceptions of post colonial Africa of the 1960-70s. In terms of attracting the right sort of long-term, "sticky" investment capital to the continent, as distinct from short-term, opportunistic "hot capital" focused on resource extraction and land grabbing, Africa still faces an uphill battle.

To date across Africa, infrastructure development has often been approached either through the "aid-trade" model - - namely a developed donor country will promise conditional aid to support infrastructure development if an African country opens up its natural resources or other assets - - or through the direct import of public-private funding models developed in and suitable for developed Northern economies. The continent continues to "bare the scars" of projects conceived, funded and delivered employing an approach reminiscent of a Thatcher era Public Private Partnership from the UK. One might cynically say that Western consultants simply repackaged an infrastructure model developed for Europe and North America and re-sold it in Africa. There is a clear and fundamental need for an African infrastructure model customized and explicitly tailored for the actual needs of the continent's diverse countries and communities.

The example now being set by institutions like South Africa's Government Employees Pension Fund (GEPF) to bring "good African assets" to worthwhile African infrastructure projects before seeking international co-investment, if necessary, is game changing. The GEPF example of their ultimately successful investment in Tunis Airport a few months before the tremendous political volatility, as

[3]Paul Clements-Hunt's full presentation is summarised in Section D. covering the Hong Kong meeting and the Summary Case Studies are presented in Appendix 1

well as economic and social upheaval of the Arab Spring, is a case in point. Despite the significant political and social dislocation in Tunisia, just a few months after GEPF acquired the airport, the pension fund held firm and demonstrated that sound investment opportunities do exist for those funders who understand the continent even when it is at its most volatile. The continent is rich with essentially sound infrastructure investment opportunities that continue to be starved of international capital, in part, because of a gross misconception about the reality of risk in Africa.

Also, the changing dynamics of global "economic muscle" with the rise of the BRIC countries, notably Brazil and China in an African sense, as well as the flow of investment from the Middle East into the continent, is dramatically and rapidly changing the investment equation

Having said this, there are elements of the operating and investment reality of Africa, varying on a country by country basis, that remain difficult for investors in terms of assessing, managing and mitigating a range of political, governance, and broader operational risks, that are part of the challenge of developing countries passing through once in a generation transformations.

53 Closing Comments

Robert Tacon, Boundes Sustainability Co.: Investor's perception is absolutely fundamental to our efforts to attract the right sort of investment to the continent. As a South African banker living in Europe for more than 30 years, I have seen numerous times "potential investors" simply switch off when they realize the focus is Africa. There is a deeply ingrained bias that tells many mainstream investors that "Africa means risk". This has proved very hard to shift over decades now and for many the images of the Arab Spring only worked to confirm their worst fears. They forget that the African land mass could swallow Europe, the US, China and India and that it is a vast and diverse continent of unfolding opportunity. As an initial overwhelming priority, there needs to be a change in the perception of Africa.

Gita Goven: There are models for community and infrastructure development in Africa that are innovative and compare with anything being developed elsewhere. For example, David Pearson is a Cape Town-born property developer who is acting on a vision of creating cities that would consist of communities located in walkable, prosperous, and safe neighbourhoods. We are working with David on a "Regenerative Solution to Building Sustainable African Cities" with an over-riding vision that, in time, some two billion people can reinvent on the African continent the way we all live and provide a lesson and example for the world.

William Frater, GSB: Investment needs to focus on Africa's existing strengths and there are many. For example, the opportunities unfolding in the agricultural sector in the continent are abundant. Agriculture is a clear strength in Africa. Critically, investors also need to understand that South Africa is "not Africa" as the diversity of this continent is also one of its strengths. There is a capacity issue in Africa that has to be addressed and cannot be ignored and covers the full spectrum in terms of education, skills, experience. The African infrastructure shows us that barriers include lack of skill as well as governance and regulatory hurdles.

Michael Carrick, Aventa Capital Partners Ltd: Our experience is that there are many investors who are looking for new markets but are not prepared to do the hard work. Yes, there are manifold opportunities in Africa and that is why we have set in place an African Environmental Infrastructure Fund but investors must approach the continent with "eyes wide open" as the operational difficulties are considerable and the problem of the misperception of risk by the mainstream international investment community cannot be underestimated. Quite simply, many investors think they can make money easier elsewhere and, once again, this is an example of short-termism as there are clear opportunities, once in a generation opportunities unfolding in Africa, but you have to invest a great deal of hard work with carefully chosen partners to realize them.

Sean Cleary, Future World Foundation: South Africa is not Africa. We need to understand that. There are very specific challenges and needs in Africa. One size does not fit all. We need to find solutions to individual projects. Again, the idea that a model which worked, sometimes failed, in the developed world over many decades can simply be re-packaged and transported to Africa is a recipe for failure for any investors considering that option. To realize African opportunities you have to be on the ground in Africa and fully vested in the continent's future.

Daniel Wiener, GEB: the GEB Chair closed the Cape Town session stressing the importance of the social cohesion that well planned and implemented infrastructure brings to communities and proposing this as a distinct asset of sustainable infrastructure with significant associated benefits.

6 Section D: The Hong Kong Meeting, 7 December, 2012

Moderator: Paul Clements-Hunt, GEB Board/ The Blended Capital Group

61 Inputs

611 Malini Thadani, Regional Head of Corporate Sustainability, Asia-Pacific, HSBC

HSBC is honoured to host the fourth and final event of 2012 in the "Infrastructure for a Changing World" meeting series sponsored by the Swiss Foundation, Global Energy Basel. It is our privilege to have international business and thought leaders here with us this morning. The world needs huge amounts of thinking to deal with the challenges posed by the fact that by 2050, 70% of world's population will be living in urban areas. For example, in my home country, India, we will need to build 80% of the country's infrastructure in the next 20 years. Hong Kong is a strategic venue for this global thought exchange for a few reasons:

1. It is a financial hub with an extensive network of investors and capital for deployment;
2. It is known for its established infrastructure – the modern skyscrapers and the public transportation system which moves over 7 million people around efficiently. By 2050, 70% of the world's population will live in cities. Infrastructure inevitably becomes a key consideration in supporting this transition. Other major concerns would be climate change impacts and adaptation measures. Corporations and governments must understand these implications and plan accordingly;
3. Resilience and adaptability are definitive qualities of Hong Kong. The City has seen times of change in history. In more recent years, it has survived financial crises and an epidemic and still thrives as a major world economy. Resilience and adaptability are also important qualities for infrastructure in a changing world;
4. Many trends point to the conclusion that the market demand is there for sustainable infrastructure and the public sector is gradually aligning itself through strategic partnerships and complementary policies. I hope global platforms like this GEB series will continue to sustain the dialogue.

612 Moderator Paul Clements-Hunt framed the key issues arising from the "Infrastructure for a Changing World" series meetings in London, New York and Cape Town

A critical question is how do we frame sustainable infrastructure as an attractive asset class so we mobilize more capital towards it and how do we put capital to work so we have a resilient infrastructure? GEB's final global meeting series event in Hong Kong has both a regional and a global dimension. Towards this, John Oliphant of the Government Employees Pensions Fund of South Africa, a fund with USD 145 billion under management, will provide a global perspective on how one of the world's largest asset owners is approaching infrastructure investment.

We will then turn to what works for infrastructure financing in Asia and hard examples are a critical part of this conversation. The G20 have stated that we want a stable, resilient, robust financial system and so this is a bigger conversation than just infrastructure alone. We have to ask how does infrastructure help to contribute to a robust, resilient, stable system and how does it help to build long-term prosperity. How do we capture public-private co-benefits as we make investments in infrastructure?

How do we mobilize and deploy capital at scale since, following the financial crash of 2007-8, many believe that the traditional project finance model based on "huge" leverage is broken and needs to be reinvented. Also, with the reality of the Basel III banking standards in place, to be followed by a future Basel IV standard, there are further challenges to the ability of traditional banks to finance long-term projects? Are there new models of finance and investment structures that enable a sharper, quicker deployment of capital at scale for infrastructure? Who holds responsibility for highlighting the regional or in-country risks ahead of an inflow of investment and framing the requirements for resilient infrastructure to support and protect investments? Critically, investors need to understand how to protect assets, what the interconnected factors are that drive this from an infrastructure standpoint, and how do we develop a robust, resilient infrastructure?

It is estimated that for every USD 30 million ear-marked for infrastructure expenditure there is just USD 100k budgeted to formulate resilient infrastructure. Also, 9 out of 10 of the world's largest infrastructure funds are for late stage infrastructure where the project already has a utility profile. Such a profile suits the needs of large institutional investors that require a minimum return of 4% plus inflation and are "happy to clip coupons for 30 years". How can we mobilize capital into early stage infrastructure in Asia that has resilience built in?

An interesting development is that the United Nations International Strategy for Disaster Reduction is engaging with the finance sector and investors across 130 countries to get a clear, commercially relevant understanding of how disaster risks are affecting investment in infrastructure.

There are huge global pools of capital that are held in equity markets, bank deposits, and bond markets across the world. In addition to this, the insurance industry is one of the world's largest in terms of premium collected annually and the assets it control are around USD 20 trillion. Another vast pool of concentrated capital is controlled by the high net worth (HNW) community of some 10 million people who early in 2012 controlled some USD 47 trillion in assets up from USD 22 trillion in 2000. In effect, the world's rich control almost 25% of global assets and in the next 15 years we will see the largest transfer of private wealth as the fortunes generated by the HNW individuals from the post WWII "baby boomer" generation pass their wealth on to the next generation. How this deep pool of HNW capital is invested will be a significant determinant of whether future development is sustainable or not.

Recent events such as Hurricane Katrina highlight a huge risk from climate change, as these types of events are predicted to become more frequent and more intense. The economic loss from these disasters is huge and will continue to increase. The BP Deepwater Horizon oil spill in the Gulf

has also highlighted an implication for governance as the company has a 40 year plus record of spills, accidents and questionable environmental, health and safety provisions despite becoming the sustainability "poster child" of financial analysts in the early 2000s with the Beyond Petroleum concept. Most of the lawsuits outstanding from the massive ExxonValdez oil tanker spill in 1989 are held against a BP subsidiary company.

The Japanese Tsunami/Fukushima disaster was man made, not natural. There was an inadequate health and safety attitude at the reactor, it was known that the sea wall was too low to cope with a Tsunami. The event has led to a range of other issues, such as the collection of debris that is crossing the Ocean to Canada and a spike in export of shrimp from Canada to Asia due to the local contamination. The floods in Thailand severely effected a Toyota Plant, amongst many others, having major supply chain implications globally.

This leads to the key questions of " will people invest in countries with large risk of natural disasters?" We need to get capital markets and the investment community focus on the disaster agenda. The Government Employees Pension Fund of South Africa, one of the largest assets owners in the world, will now provide their perspective on infrastructure investment.

613 Presentation: John Oliphant, Government Employees Pension Fund of South Africa, A Global Perspective

(For a summary of the video contents see: Section A: London meeting. For the full video see www.globalenergybasel.org)

614 Regional view: "Changing Infrastructure needs for Asia", Melissa Brown, IDFC GA (HK) Ltd.

The speaker introduced herself as a former listed equity analyst with15 years of Asian experience with a focus covering the region's power companies. This period was followed by a five year engagement in environmental, social and governance (ESG) issues across Asia before a move into private equity.

Traditionally in Asia, infrastructure investments have followed government direction to provide capital. Some would say that "as an investor you throw money at what the government wants. Get in early. Monetize your willingness to provide capital by being there and being there prominently."

Projects have been presented to investors on the basis of political support for tariffs and both infrastructure and power companies have grown. However, the performance of infrastructure tariffs in the region has been disappointing and this has been the case over many decades. If you look at the broad range of infrastructure projects set in place in Southeast Asian cities from the early 1990s onwards there is clear evidence that the various types of public private partnerships quite often failed for a variety of reasons. The tension between public and private parties over very large scale projects meant that setting the correct tariff to reward investors was difficult. We have learnt many lessons these past two decades so we have no excuse for repeating those mistakes. For example, in early stage equity opportunities (Chinese Road companies) and in infrastructure trusts (a lot of fee

generation) there have been some challenging stories for investors. Asia will not solve its infrastructure problems that way. However, there are success stories at the municipal and sub-regional level and what is happening in parts of China in terms of city infrastructure is impressive. There are existing interests and opportunities in innovative solutions in Asia. For sustainability focused investors it is clear that some Asian companies have an impressive dedication to the long term but these companies “are not always loved by the public markets.”

Corporate sustainability in Asia has not been fully integrated with investments. Infrastructure sits at the core of sustainability – investments need to consider governance broadly and the roles of all the public and private players involved in these complex, long-term, and critical developments for the region’s future prosperity.

In terms of sustainability, transparency has to increase in Asia, there is a need for greater flexibility in terms of how large projects are approached and financed and we have to remove “limits to our imagination.” Investors have to think long-term for Asia and the tools we have in the region are not working as well as they should for this type of planning.

615 Glenn Frommer, MTRC Co., Ltd (Mass Transit Railway Company of Hong Kong).

Around 5% of Hong Kong’s GDP is spent on transportation (vs: a double digit percentage in some US cities). The MTRC “Rail Plus Property” model attributes to this low percentage. The savings created the possibility to invest more public money in health care and other social welfare.

Water and resource use also cause major issues for infrastructure in Hong Kong. Enterprise Risk Management has been built into the sustainability strategy of MTRC since 2000.

The idea for the "Rail Plus Property” model that MTRC uses dates back to 1974 when the company was a pure governmental company and the model was based on a simple idea. Consultants were not behind it. Team members in the government corporation back in the early 1970s who were working on reclamation projects came up with the idea to put a "roof over the rail depot and put houses/ apartments on top." That idea has grown and now under the "Rail Plus Property" model we purchase land above the stations from the government and this mechanism gives us the capability to keep fares low. MTR cost is 5% compared, for example, with Houston in the US at 14% and that 9% difference pays for health care in Hong Kong.

The region around Hong Kong, Guangdong, is water stressed and as a result we will have issues with water and electrical power generation. For our long-term infrastructure investment perspectives we will have to look at natural resource issues as a matter of risk management.

Annually, MTR reinvests 12.5% of its assets on the basis that if we can't keep our “asset” moving then MTR has got issues. Reinvestment in resilience is critical. Sandy in New York was a Typhoon Class 1 - can you imagine the impact of a Typhoon Class 10 on New York? Just six months before Sandy, the New Jersey Transit Authority stopped a consultant looking at climate change issues as it "was never going to happen." In December 2012, weeks after Sandy, 40% of NJ transport was still out of action.

MTR started its sustainability reports 12 years ago with transparency and Enterprise Risk Management (ERM) used as critical foundations. It took us six years of continuous growth and learning to understand how to embed ERM alongside our sustainability work. There are clear and tangible benefits. A major European reinsurer MTRC works with has made it clear that it will retract premiums for those not looking at environmental, social and governance issues. The company likes MTRC's approach and, as a result, has reduced premiums for five big underground projects.

For infrastructure projects in Asia we need to learn how to deal with vested interests, as that will be one of the biggest challenges. Also, the issue of what is a "fare return" is another issue for Asia where, at times, wealth at any cost, including environmental and social cost, is predominant.

62 Discussion: Over-arching Issues

The dynamism of Asian economies means that investor expectations of short, sharp returns is high and opportunistic. As such, the role that governments and multilaterals play to “kick start” investment in infrastructure in a region where growth, both economically and population-wise, is high is of fundamental importance. Quite often, private investors see easier opportunities to make good returns elsewhere although this underestimates the mid to long-term need to set in place an efficient urban, transport and energy infrastructure to continue to support growth.

Several factors are beginning to change the infrastructure debate in Asia. The impact of recent natural and manmade disasters, notably the Great Eastern Japanese Earthquake, Tsunami and then Nuclear accident at Fukushima and the Thai Floods of 2011 have highlighted the reality of a deficient infrastructure. It has become clear, as acknowledged by the Japanese Government’s own report, that Fukushima was a manmade disaster triggered by a natural disaster and compounded by “cultural failings” related to hierarchical issues. The evidence was already in place that TEPCO nuclear plant’s back up diesel generators were vulnerable to even a medium storm surge or tsunami. The TEPCO corporate culture was steeped in poor transparency and mismanagement of serious nuclear issues over a long period of time. Again, it all comes back to institutional issues, human nature and a far from resilient approach to essential infrastructure. In Thailand, it appears that infrastructure was in place to handle the post tropical storm surge but that maintenance issues compounded by poor response and mismanagement were central to a series of floods that had a devastating short-term economic impact on the country.

A second factor boosting infrastructure issues up the political, economic and social agendas across Asia, notably in China, are the intense environmental and health issues associated with a carbon intensive energy, transport and industrial infrastructure. For many rapidly growing Asian cities the need for better environmental infrastructure (e.g. water supply, sanitation, wastewater treatment (municipal and industrial), municipal solid waste management and hazardous/medical waste management) is paramount and, also, is now seen as a potential brake on growth. The Chinese have taken a lead by embedding sustainability as one of the three pillars in its 12th five year plan and the policy-makers are serious about action given the intense and deepening concerns about air pollution

in major cities. The Chinese Banking and Regulatory Commission set in place several years ago provisions for banks to stop lending to “dirty industries” and each bank is required to have a Board member responsible for reporting on green lending statistics. However, given the intensity of growth there is a long way to go to deal with complex and interconnected environmental issues.

It is estimated that Asia needs somewhere in the region of 40% of the overall global urban infrastructure investment as well as power sector investment just to keep pace with its growing needs. The ability to move the large pots of “Asian Capital”, such as the vast Japanese Government and corporate pension funds, which are the largest in the world, is a huge structural challenge and yet the rewards will be there for investors who move early on this agenda.

63 Open Discussion

B**onnie Landers, HK Family Office**: The family I work for is concerned with consumption issues. If Asia is just about consumption then we have real problems. How do we relate this to infrastructure? We need mass transit but how do we balance the “Rail plus Property” model with sustainable property above?

Glenn Frommer, MRTC: I am not sure how to balance consumption and sustainability. The level of poverty in Asia is quite high and everyone wants a car or two. Properties on top of our stations are 600-1000 sq feet (government standard is 400 ft). Having a compact infrastructure brings some sustainability advantages but we haven't quite closed the loop on recycling to the extent that I'd like to have. Because of MRTC's size we do have leverage through the fact that we have 3000 suppliers and we can try and get issues embedded with them. For example, suppliers have to provide the carbon footprint of all their materials. That helps MTRC track our investment and our management of our carbon footprint. There are many interconnected issues and we are only just beginning to appreciate the multiple dimensions.

Jeanne Ng, CLP: As a project developer it's about risk sharing. But there is a question of whether financiers, technology providers and developers are ready to share the risks and whether government will provide the "landscape" to cover the risks involved such as for a low carbon future. In the past, corporations have lobbied for appropriate policies but now investors need to lobby also to secure a supportive policy environment for sustainability. It seems that the financial community is less focused on these issues and more on coming up with innovative products. How should the finance sector work with project developers to lobby for a better policy landscape that supports sustainability?

Wai-shin Chan, HSBC: The problem we are facing is how much due diligence do we have to do for a given project. Companies are better at "unleashing their imagination." From an investor point of view there's a simple question: that is why do I need to spend more on due diligence for an infrastructure project if I can shift my capital to give me the return I seek elsewhere. It seems that the investment community do not take ownership of the due diligence process - - they just think about

what return do I get out there and, if it's not enough, they can shift industry and or geography to secure that return.

Debra Tan, ADM Capital Foundation/ China Water Risk: On that point, private equity is often looking for a greater return than the 15% you can secure on water infrastructure in China. And that's even though projects are backed with government guarantees and securitisation. At the other end of the scale, we are working in the textile sector where water efficiency and water use are common challenges for small companies. To improve their water performance these small companies require limited capital but quite often that is beyond them even though water-related projects have a 15-20% Return on Investment (RoI). Such companies need free information and the "how to" knowledge of bigger factories. It's the valley of death for smaller or medium sized players to get something up and running to improve their basic infrastructure.

Tobi Doeringer, Virgo Environmental Technologies: Can GEB persuade government to back new technologies? For example, green incinerator technology is available to Hong Kong but government wants to go with what it knows in order not to take the risk. How can investors and developers persuade government to take the risk of new technologies so that the broader market benefits for the long term?

Mark Bidwell, Siemens Ltd: Typically 20% of a building costs goes into the construction phase and sometimes an additional 1 -2% spend at that stage can boost the building's lifetime efficiency, notably energy usage, significantly. There is a concept of "Value Engineering" often employed in Hong Kong where construction companies make their tender fit the budget. Often this value engineering strips out value from the building rather than focusing on things that bring life cycle benefits. We have found that when end users are involved in discussions then good technologies get pushed through but if the end user is not, or there are complex finance arrangements set in place, then the good technologies are not pushed through. If a building is verified against one of the energy or efficiency standards its lifetime operating costs over a 30-50 year cycle will be reduced. The greatest cost of operating a building is through its energy and with an extra 1-2% of costs in the planning and construction stage a developer can generate much "low hanging fruit" in terms of lifetime savings. Some 89% of overall energy usage is in these buildings.

Conrad Wong, Chairman, Hong Kong Green Building Council: It is not fair to say government always looks for the lowest bidder. In many government projects there is a real effort to look for innovation and good ideas from tenders. For instance, we could employ the idea of "green bonds" where a buildings performance is confirmed as Platinum or Gold standard after construction is completed and then the "green bond" is released. Clearly, this is not easy and we need financial institutions to support these innovative approaches.

Paul Clements-Hunt, The Blended Capital Group: A recent global survey suggested that collectively both governments and financial institutions were going backwards in terms of pro-active, forward-thinking about emerging risk issues while corporations were performing better in terms of anticipating the convergence of risks, new and old.

Glen Frommer MTRC: MTR is thinking ahead and we build event systems for 3.5 m storm surge, now if it's a 3.7 m storm surge or a once in a 120 years event then that's an issue. It is the " unknown unknowns" that I am interested in. A key question for MTR has to be what stops people coming to Hong Kong? With SARS visitor numbers dropped by 30% in just 3 weeks. These "unknown unknowns" will happen and that's why we need resilience.

Debra Tan: ADM Capital Foundation/China Water Risk: The region surrounding Hong Kong, Guangdong, is water stressed and we get 70- 80% of our water from there. Despite this reality we use more fresh water per person than Paris or London. Across the border some 40 million people use the same water shed and as prosperity increases their water usage will increase. Who is focused on this?

Speaker Final Points: Glen Frommer MTRC: across Asia we need to look at vested interests in terms of long terms investments. Also, we need to focus on the younger generation and see if they are tied into sustainability. I suggest a "Meatless Monday" - - saves you water and waste.

Melissa Brown, IDFC GA (HK) Ltd.: I cannot stress enough the importance of quality pipeline for investors

Paul Clements-Hunt, The Blended Capital Group: The United Nations International Strategy for Disaster Reduction (UNISDR) is progressing a global effort to create a standardized way of looking at risk in 180 to 200 countries. In time, this will be of great use to institutional investors. That concludes GEB's global "Infrastructure for a Changing World" meeting series and we will take the results of this rich conversation to the 3rd GEB Sustainable Infrastructure in Basel, Switzerland, in little over a month's time in January 2013.

7 The Conclusions

The ten key themes identified by GEB Foundation Chair, Daniel Wiener, arising from the discussions in London, New York, Cape Town and Hong Kong included:

1. Education

There is a need for greater education in a number of different areas:

1. Key stakeholders need to understand the benefits of investing in sustainable and social infrastructure projects. If investors had a better understanding of the importance of sustainability and the need for investment in future infrastructure, then the flow of capital to these projects could increase;
2. Governments also need to be better informed to identify viable sustainable infrastructure projects. Working in conjunction with sustainability-oriented contractors, who should be enabled to understand and cater to sustainability requirements in tenders, will help inform policy-making and create attractive opportunities for the finance sector;
3. Greater effort should be made to learn from previous projects and share that knowledge, whether it be to explain what worked, or equally importantly, what didn't work;
4. De-mystification is required to shed light on processes, instruments and organisations. Basic knowledge, like understanding how to approach the multi-laterals, is often missing and different

stakeholders do not understand each other's roles, incentives and objectives.

2. Collaboration

Stakeholders need to work together because the need is greater than the supply available from just one organisation. A variety of stakeholders are required from the early stages of a project, to ensure shared ownership and a close dialogue to understand each other's incentives. A vision champion is essential to bring all the actors together and see a project through from inception to completion. Once the model has been proven on one project, this could then be replicated and rolled out in the mainstream.

3. Regulation

The regulatory system needs more consistency and long-term certainty. Governments in a number of developed countries have dramatically reformed regulation with little or no notice, particularly in the energy sector. This changes the goal posts and leads to a lack of confidence in a market. In addition, the regulations are complex requiring additional resources navigate the regulatory landscape. Investors also need to understand the regulatory system before committing capital to a project, and the more complex it is, the less likely the investment.

4. Perception

A clearer definition of the term "sustainable" in terms of infrastructure projects could help to drive investment forward (cf. e.g. the GEB Sustainable Infrastructure Grading and Rating Tool). The finance sector is fairly conservative and the current perception of the word could be a barrier for investment. Fund managers and investors need to see the benefits of a sustainable project in real economic terms and the great opportunity it presents, rather than shying away from it due to lack of understanding.

5. Confidence

Since the financial crash, the perception of risk in the banking and investment sector has become disjointed and as a result investors are reluctant to lend, in particular large sums to long-term projects and to new sectors. The banks must start lending again, to both big, long-term projects and to SME's to boost entrepreneurial development and innovation, particularly in the area of sustainability.

6. Short-termism

A shift from short term to long-term thinking is required. Banks, fund managers, investors and governments are only thinking about short-term gain. It is less risky and combined with the lack of confidence from the banks, few long term projects are being funded. Long term investment is the only way that the global economy is going to be able to deal with the key sustainability issues such as climate change, resource security, erosion of biodiversity, rapidly growing cities and population.

7. Standardisation

The investment community must learn from examples such as the Equator Principles, which took a concept developed by the World Bank, turned it into a standard, implemented it across the banking sector, and is now considered to be normal practice by customers. Greater such standardisation of practices would help to put peers on a level playing field so that customers cannot just walk away and do an unsustainable deal with some other organisation.

8. New markets

New markets and regions need to be explored for their investment potential:

1. Fund managers and investors should look to developing countries, especially in Africa, and to new technologies in order to deliver returns on sustainable infrastructure, even if it is only a small percentage of their portfolio. There is often a perception of risk associated with these new mar-

kets, which must be overcome to unlock their potential.

2. Cities and sub-nationals can be more effective at delivering sustainable infrastructure than national governments, and therefore need to be able to access international capital markets. However, whilst there has often been political decentralisation, fiscal decentralisation has not always followed which can mean that it is difficult to understand the creditworthiness of such regions.

9. New investment structures

1. The investment community needs to collaborate to come up with new investment structures, which distribute the risk among all partners according to their respective ability/willingness to carry it. Some of the new structures and organisations that were suggested to achieve the required investment in sustainable infrastructure were:

2. A revolving facility could be used at the provincial level, with backing from the federal government and would a last through the project to ensure that it is finished;

3. Community corporations, which have traditionally acted on a not for profit basis, could be used to deliver public good outcomes and also get a financial reward. The public and private sector would need to work together to share the risk;

4. Loans to individuals, for projects such as domestic energy efficiency retrofits, could be guaranteed by governments, who then build up a portfolio of investments;

5. There is a need to bring multiple stakeholders together to create a sustainable infrastructure fund which would trade as a bond and look like business usual, whilst delivering sustainable outcomes;

6. Capital could be raised by municipalities through housing taxes which could be reinvested in retrofit and other infrastructure projects;

7. A fund of funds could be created which pulls together money in existing funds that has not been dispersed;

8. Traditional equity funds for infrastructure tend to focus on large projects (over US $500m) in order to reduce transaction cost per dollar invested. Their tendency to avoid diluting the high profitability of large projects by adding smaller ones to the portfolio creates a gap, which needs to be addressed; and

9. Eventually a Sustainable Infrastructure Investment Fund of several billion US dollars could help the market understand the difference between Sustainable Infrastructure and just infrastructure, including the positive effects on the performance of funds.

10. The Role of Global Energy Basel

The participants of the Roundtables in London, New York, Cape Town and Hong Kong clearly saw the need for an entity like GEB to lead a multi-stakeholder process to help overcome the multitude of market failures identified in the joint analysis. Global Energy Basel should:

10. Help differentiate between Sustainable Infrastructure and just infrastructure with the help of a generally applicable tool;

11. Conduct a policy dialogue of multilateral and international organisations, national and subnational governments, the finance sector, technical solution providers, NGOs etc. in order to improve framework conditions for Sustainable Infrastructure;

12. Help with the sharing and dissemination of good practice;

13. Present concrete investment opportunities in the field of Sustainable Infrastructure to investors;

14. Develop approaches to Sustainable Infrastructure that cater to the needs of debt and capital markets; and

15. Educate infrastructure investors, in particular pension funds, sovereign wealth funds, family offices, insurers and other institutional investors, as well as project owners, in order to promote Sustainable Infrastructure

8 Appendix 1

Summaries of Case Studies prepared for the report: “Investment, Finance & Capital Markets Perspectives, “ 12 November, 2012

By The Blended Capital Group for UNISDR

A contribution to: United Nations International Strategy for Disaster Reduction (UNISDR), Global Assessment Report 2013

Presented during the: GEB Global Meeting Series Regional Events (September – December, 2012)

81 Case Study 1: Thai Floods in 2011

Thailand's 2011 floods, the worst in 70 years catalyzed by Tropical Storm Nock-ten , caused an estimated US$41.6 billion of losses and saw GDP growth fall to 0.1% from a corresponding 7.8% in 2010. In addition to nearly 700 deaths countrywide, more than 1,500 industrial facilities were inundated during the floods. The short-term supply shock meant the country's exports fell by 6% compared with 2011 and imports dropped by 4.2%.[4] Of the country's 77 provinces, some 27 were still inundated in late October after the heavy rains, which started in July. More than 1.6 million hectares[5] in the country's north, northeast, and central provinces were submerged for significant periods of time.

By December 2011 the country's Office of Insurance Commission projected[6] that 928 factories would receive US$7.3 billion in insurance payouts. Companies and component manufacturers, sitting at critical nodes for a range of global industrial supply chains covering, amongst others, agro-industry, auto, electronics, and iron and steel sectors, were severely impacted, exporting shock waves around world stock markets. As the floods slowly subsided in December 2011, Intel Corporation, the world's largest chipmaker, estimated a US$1 billion drop in its fourth quarter 2011 revenue forecasts, citing a shortage of hard drives to feed its global computer sales. With Thailand providing nearly 25% of the global hard drive disc supply, as well as being a key chip manufacturer, the floods saw a range of US companies suffer declines in share prices[7] during the week of 20 October, including Dell (down 5.4%), Nvidia (down 5%) and Western Digital (down 9%) being losers. Western Digital's CEO described the Thai floods as "a disaster of unprecedented scale." Japanese auto giants Honda Motor Co. and Toyota Motor Corp. suffered severe business interruption[8] in their global supply chains and both cut profit estimates for 2011. Honda's Brazilian plant faced a reduction of one-third of its production capacity because of the Thai floods cutting off component supplies due to impacts on one of the company's main global manufacturing plants.

The Thai market regulators responded to the floods in several ways, which included[9]: relaxing bond regulations enabling small and medium sized manufacturers, threatened by possible lowered credit ratings or downgrades, to raise debt; promising to explore new water-related derivatives contracts to enable producing and investing companies to hedge against certain aspects of water risk

[4] "After the floods: Thailand's long road to recovery," Pisit Leeahtam and Cynn Treesraptanagul, Chiang Mai University, 12 April 2012.

[5] NOAA National Climatic Data Center, State of the Climate: Global Hazards for October 2011, published online November 2011, retrieved on 07 August 2012 from http://www.ncdc.noaa.gov/sotc/hazards/2011/10.

[6] Worst Floods in 70 Years May Prompt Thai Water Futures Trade," Anuchit Nguyen, 14 December 2011, Bloomberg.com.

[7] "Thailand flooding hits Dell, chip makers," Benjamin Pimentel, MarketWatch, 20 October 2011.

[8] "Firms Draw Scrutiny over Thai Flood's Impact," James Hookway, *Wall Street Journal*, 3 November 2011.

[9] "Worst Floods in 70 Years May Prompt Thai Water Futures Trade," Anuchit Nguyen, Bloomberg.com, 14 December 2011.

including heavy rainfall and flooding; and urging that insurers paid claims within a six-month window. The Bank of Thailand also reduced the interest rate to 3% to facilitate recovery and, ultimately, the government passed three financial decrees totaling US$22.5 billion geared to "rehabilitation and long-term water management systems."10 The government response included the prospect of enhanced flood defenses around major industrial estates. Seven of the country's most important industrial zones were flooded, with that alone reducing economic growth by 2%.11 By April 2012 some 70% of 800 factories12 supported by the Thai Board of Investment (BoI) had restarted operations.

Figure 1 demonstrates the trend of the Stock Exchange of Thailand (SET) during year 2011's persistent flooding. By the corporate reporting season for the SET toward the end of quarter one 2012, a range of listed Thai companies were highlighting[13] the negative impacts of the floods on annual returns as well as future business prospects associated with the construction of adaptive infrastructure. These covered a range of economically important sectors and included companies such as Tata Steel (Thailand) Public Company Limited ("severe business disruption due to worst ever floods in Thailand"); Stars Microelectronics (Thailand) PCL ("damage of buildings and factories"); and Unique Engineering and Construction PCL ("severe flooding of warehouses and construction sites"). Additionally, some companies, such as Chow Steel Industries PCL, saw potential strong growth for their steel products, citing increased "investment by the government for repairing the damaged infrastructure from the flood, including water management projects for preventing floods in the short and long term."

Observers believe mid- to long-term damage to Thailand's reputation as a destination for Foreign Direct Investment (FDI), notably the decades-long association with Japanese manufacturing giants, may be negatively impacted by the severe flooding of 2011. In March 2012 Honda "decided to establish a US$337 million plant in Indonesia, though the company had originally intended to build it in Thailand."[14]

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[10] "After the floods: Thailand's long road to recovery," Pisit Leeahtam and Cynn Treesraptanagul, Chiang Mai University, 12 April 2012.

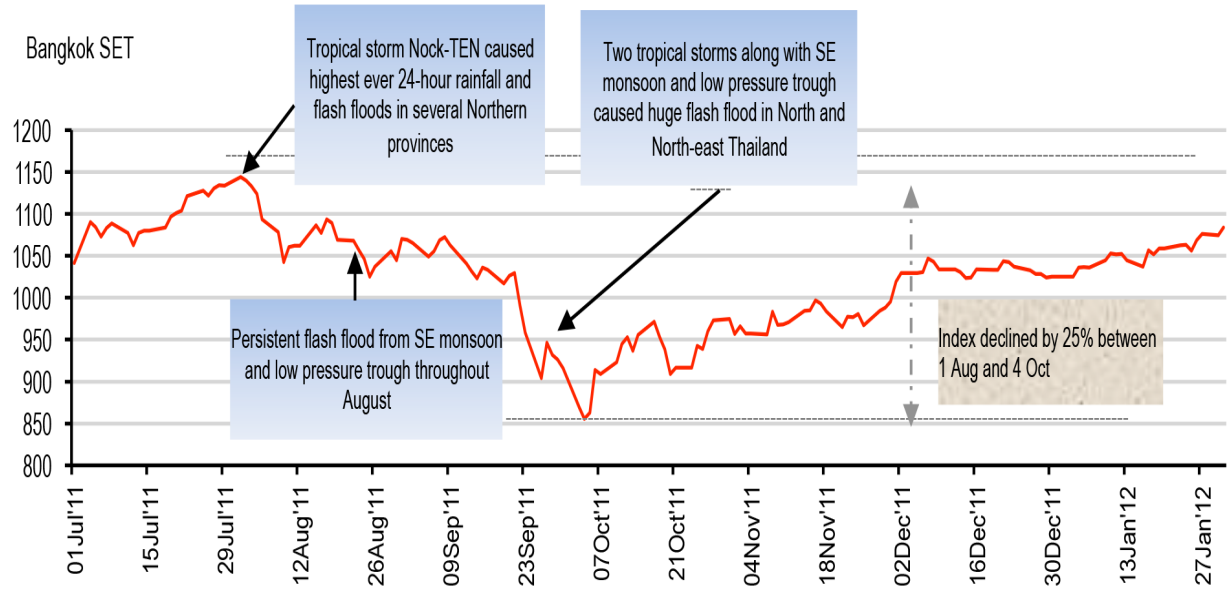
[11] "Firms Draw Scrutiny over Thai Flood's Impact," James Hookway, Wall Street Journal, 3 November 2011.

[12] Thai Board of Investment statistics, July 2012.

[13] Stock Exchange of Thailand web site, 8 August 2012.

[14] "After the floods: Thailand's long road to recovery," Pisit Leeahtam and Cynn Treesraptanagul, Chiang Mai University, 12 April 2012.

Figure 1. Bangkok SET and the Thai flood events of 2011 (Source: HSBC for The Blended Capital Group)



82 Case Study 2: BP and the Gulf Oil Spill

Across the energy and extractive industries, financial services, and the investment sector, there is an increasing focus on issues related to corporate culture and corporate governance to explain a wide range of interconnected failures with severe social, economic, and environmental consequences.

One of the most well documented and forensically explored industrial accidents in history is the April 2010 BP Oil disaster in the Gulf of Mexico. Over 86 days, following a 20 April explosion at the Deepwater Horizon drilling platform that killed 11 workers, some 4.9 million barrels of oil gushed into the Gulf of Mexico before the well was sealed on 19 September 2010.[15] In the weeks following the initial catastrophe, the Standard & Poor's 500 index exhibited a steady decline (see Figure 1). More than two years later, and despite high crude oil prices, in mid-2012 BP "posted a drop in first-quarter profits as the energy giant's asset sales after its U.S. oil spill contributed to a drop in production."[16] Estimates suggest that current costs to BP stand at US$38 billion[17] while the overall cost of the spill in terms of "penalties, damages and clean up costs" may top US$80 billion.

Under intense scrutiny over an extended period following the accident, some observers "blamed BP's woes on a culture of cost-cutting and out sourcing citing previous problems in The Gulf, Azerbaijan, Alaska and Texas City."[18]

There are contradictory aspects to the BP environmental, health and safety narrative in recent decades. Over the past 20 years, while becoming the leading oil and gas company promoting sustainability, BP was implicated also in some of the industry's most serious accidents. Amongst others, these included[19]:

6. **1977–2011:** A history of spills and leaks, including the 2006 Prudhoe Bay oil spill, associated with the 800-mile Trans-Alaska Pipeline System (TAPS), a pipeline transporting 12% of America's oil output and owned by BP;
7. **24 March 1989:** The Alyeska Pipeline Service Company, 50% owned by BP, was the most cited company named in the 200 lawsuits following the Exxon Valdez oil spill. Alyeska, a subsidiary of BP America Inc., operated the oil terminal near the accident site in Prince William Sound;

[15] National Commission Report to the President.

[16] "BP Profit Falls As Gulf Disaster Still Casts Pall," Alexis Flynn, Dow Jones Newswire, Tuesday, 1 May 2012.

[17] "BP adds $847m to Deepwater Horizon costs," The Guardian, 31 July 2012.

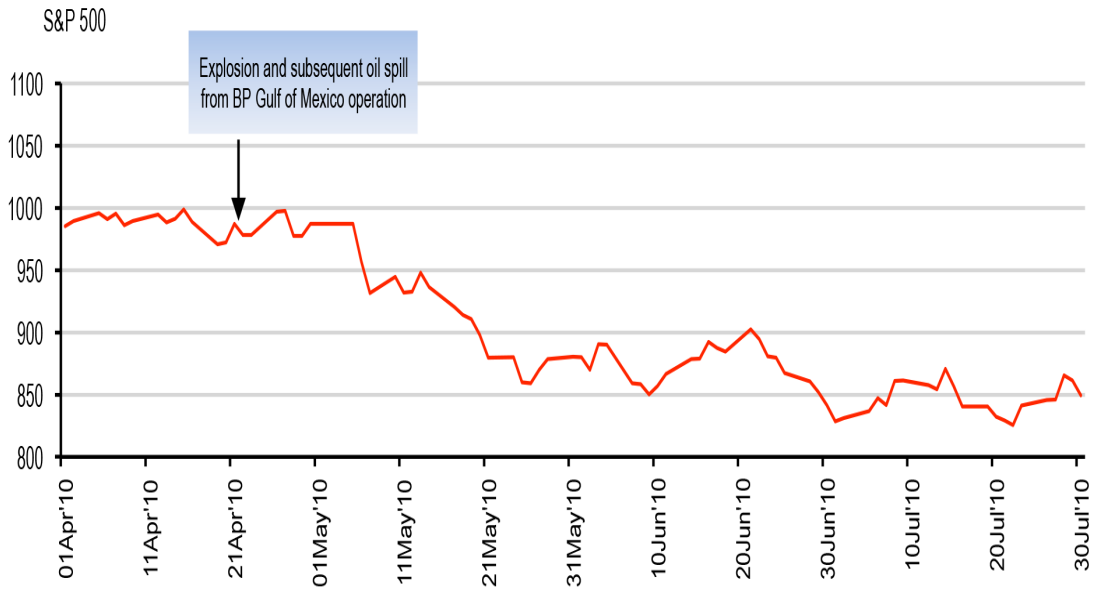
[18] "The BP Gulf Oil Spill: Failed Regulatory and Corporate Governance Systems Analysed through a Regulatory Capitalist Lens ," Patty McNicholas, Monash University, Melbourne, and Carolyn Windsor, Bond University, Queensland, Australia, 2010.

[19] "BP Had Other Problems in Years Leading to Gulf Spill," Abrahm Lustgarten, ProPublica, 30 April 2010.

8. **23 March 2005:** 15 workers killed and 170 injured after an explosion at BP's Texas City Refinery 2005;
9. **7 September 2008:** Blowout of a gas-injection well after a gas leak at a facility in the Azerbaijan Sector of the Caspian Sea; and
10. **20 April 2010:** BP Oil disaster in the Gulf of Mexico.

In January 2011 a report to the President of the United States, presented by a national commission,[20] visited the issue of corporate culture and also touched on the critical interface between public and private sectors: "There are recurring themes of missed warning signals, failure to share information, and a general lack of appreciation for the risks involved. In the view of the Commission, these findings highlight the importance of organizational culture and a consistent commitment to safety by industry, from the highest management levels on down. But that complacency affected government as well as industry. The Commission has documented the weaknesses and the inadequacies of the federal regulation and oversight, and made important recommendations for changes in legal authority, regulations, investments in expertise, and management."

Figure 2. The S&P 500 in the weeks following the BP Gulf of Mexico oil spill (Source: HSBC for The Blended Capital Group)

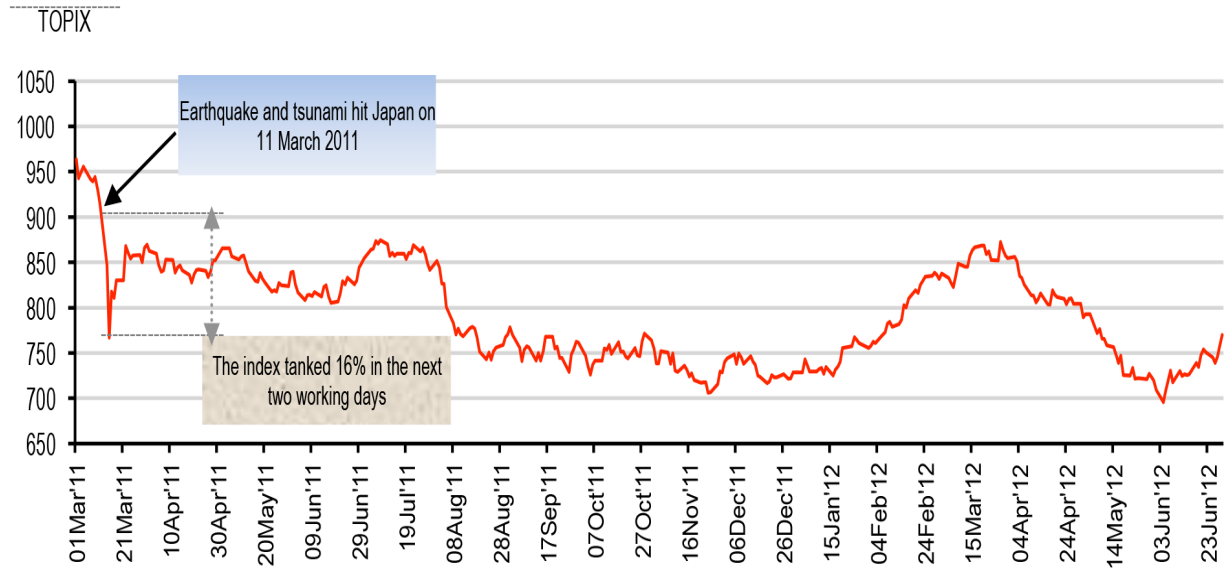


[20] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," Report to the President on the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, January 2011.

83 Case Study 3: Tepco and Fukushima

The parallels with respect to the alleged failings of corporate culture, as well as the failure of regulators and government monitoring agencies, between the BP Gulf oil spill and the disaster that unfolded at the Tokyo Electric Power Company nuclear facility of Fukushima Dai-ichi in mid-late March 2011, following an earthquake and tsunami, are notable. Additionally, the market impacts (see Figure 4) and financial implications for Tepco, as one of Japan's largest energy concerns, were as dramatic as they had been for BP, with estimates in certain worst case scenarios for Tepco of a potential US$112 billion funding shortfall[21] during the coming decade. Reporting on its first quarter in 2011 (April-May), the company lost US$7.4 billion following the nuclear accident. To prevent a Tepco failure, the Japanese Parliament approved in August 2011 the creation of a new public agency backed by US$25 billion of taxpayer money to be paid back by the company over an extended period, but "it could be years before shareholders see dividends from what was once seen as a secure investment."[22]

Figure 3. Tokyo Price Index (TOPIX) after the earthquake, tsunami, and Fukushima nuclear disaster (Source: HSBC for The Blended Capital Group)



In early July 2012, a Japanese Parliamentary Panel published its report, compiled by a nuclear accident independent investigation commission, on the Fukushima disaster. The 641-page report stated[23]:

[21] "Tepco warned over $112bn funding shortfall," Jonathan Soble, Tokyo, *Financial Times*, 3 October 2011.

[22] Ibid.

[23] "Fukushima reactor meltdown was a man-made disaster, says official report," *The Guardian*, 5 July 2012

The Fukushima nuclear power plant accident was the result of collusion between the government, the regulators and Tepco, and the lack of governance by said parties…. They effectively betrayed the nation's right to be safe from nuclear accidents. Therefore, we conclude that the accident was clearly 'man-made.' We believe that the root causes were the organisational and regulatory systems that supported faulty rationales for decisions and actions, rather than issues relating to the competency of any specific individual.

9 Appendix 2: Participants Lists

London

First Name	Name	Occupation	Organisation
Andrew	Bainbridge	Chairman	Guarantco LTD
Michael	Carrick		Aventa Capital Partners
Irina	Dobbs		Parhelion Underwriting Ltd
Keith	Driver	Analyst at Sustainable Development Capital	SDCL-IB
Susannah	Fitzherbert-Brockholes	Senior Consultant - Sustainability and Climate Change	WSP's Energy and Sustainability Group
Peter	George	Manager	GVEP International
Charles	Grime	Investment Director	Aventa Capital Partners
Mark	Halle	Director Europe	IISD
Kirsty	Hamilton	Royal Institute of International Affairs	Chatham House
Bo J.	Hammerich	Global Cheif Credit Officer Public Sector	Citigroup
Gareth	Hughes	Managing Partner	Beetle Capital Partners
Paul	Clements-Hunt	Founder	Blended Capital Group
Roland	Janssens	Banking/Fund Management	Frontier Markets Fund Manager
Anthony	Knap	Director	Parhelion Underwriting Ltd
Donald	McDonald		BTPS
Stuart	McLachlan	Senior Director	WSP
Warren	Pimm	Partner	Sustainable Development Capital LLP
Dima	Rifai	CEO	Change Captial Partners LLP
Ian	Simm	CEO	Impax Asset Management Group plc
Colin	Turner	Investor	greenTEK
Ellen	Upton	Consultant	WSP's Energy and Sustainability Group
CJ	Vermont	Fund Manager	Frontier Markets Fund Managers
Konrad	von Ritter	Economist	Kritter Advisory Services
Daniel	Wiener	CEO	Ecos / Global Energy Basel Foundation
Rob	Winchester		Ernst & Young
Katherine	Wolicki	European Policy Manager	HSBC Holding
Arthur	Wood		Founding Partner of TIA

NYC

First Name	Name	Occupation	Organisation
Katharine C.	Baragona	Infrastructure Finance Specialist	The World Bank
James	Cameron	Chairman	Climate Change Capital
Felix	Cardenas	Partner and Managing Director	greenTEK ventures
Paul	Clements-Hunt	Founder	Blended Capital Group
Alan	Cohn	Director, Climate & Water Quality	New York City Environmental Protection agency
Carlos	de Paco	Principal Outreach & Partnerships	IADB
Hannah	DeBoff		Portigon
Juan	Ellis	Advisor Vice Presideny of Sectors	IADB
Susannah	Fitzherbert-Brockholes	Senior Consultant - Sustainability and Climate Change	WSP's Energy and Sustainability Group
Davida	Heller	Corporate Sustainability	Citigroup
Scott	Henderson	Finance Director	C40
Sandra	Kim-Suk	Partner	Citi Infrastrucutre Investors
Daniel	Magallon		Base
Shawn	Miller	Enivronmental and Social Risk Manag-ment	Citigroup
Katy	Mixter		Citigroup
Dave	Rutu	Climate Change Specialist	World Bank
Arun Kumar	Sharma	Chief Investment Officer, Global Finandial I	The World Bank Group-IFC
Andrew	Simmons	Urban Strategy Consultant	Former Arup
Val	Smith	VP Corporate Sustainability	Citigroup
Walter	Vergara	Climate Change & Sustainability Division C	IADB
Daniel	Wiener	CEO	Ecos / Global Energy Basel Foundation

Cape Town

First Name	Name	Occupation	Organization
David	Bates	Investment Director	Aventa Capital Partners Ltd
Seán	Cleary	Executive Vice Chair	FutureWorld Foundation
Paul	Clements-Hunt	Founder	Blended Capital Group
Derik	Coetzer	CEO	Energy Partners
David	Couldridge	Senior Investment Analyst	Element Investment Managers
Jonathan	DePasquallie	South African Network Manager	UNEP
Bridgit	Evans	CEO	GreaterCapital and GreaterGood
William	Frater		GSB
Pascal	Fröhlicher	Partner	Impact Amplifier
Chris	Loker	Managing Director	Water Financial
Dafne	Nienhuys		UFF Agri Asset Management
Marie	Parramon-Gurney	Head of Programmes: Sustainability and Development	Endangered Wildlife Trust
David	Pearson		PACT
Max	Pichulik	Partner	Impact Amplifier
David	Rudolph		SEF
Robert	Tacon	Founder	Boundes Sustainability Co.
Jeroen	Verhoeff		UFF Agri
Dirk	Visser	Programme Manager	Cambridge Programme for Sustainability Leadership
Daniel	Wiener	CEO	Ecos / Global Energy Basel Foundation

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First Name	Name	Position	Organisation
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Mark	Bidwell	Vice President & Managing Director, Building Technologies	Siemens Ltd
Jean-Christian	Brillant	Consul - Forei Hannahgn Policy and Diplomacy Service	Consulate General of Canada
Melissa	Brown	Director	IDFC GA (HK) Ltd
Kevin	Ch'ng	Financial Adviser	Financial Partners
Wai-Shin	Chan	Climate Change Strategist	HSBC
Cary	Chan	General Manager, Technical Services & Sustainability	Swire Properties
Sylvia	Chan	Managing Director	Entropy Ventures
Thomas H. C.	Cheung, MH	Honorary Consul	Consulate of Sri Lanka
William	Choi	Project Development and Financing Consultant	TSP International Ltd.
Raymond K.C.	Chong	Business Manager	Yung & Au Solicitors
Franklin	Chow	Executive Director, Asia Investment Research	Goldman Sachs
Shirley	Chung	Assistant Treasury Manager, Group Finance Division	Power Assets Holdings Ltd.
Paul	Clements-Hunt	Founder	Blended Capital Group
Tobi	Doeringer	Executive Director	VIRGO Environmental Technologies Ltd.
Jonathan	Drew	Managing Director	HSBC
Sam	Farrands	Partner	Minter Ellison
Glenn	Frommer	Chief Sustainable Development Manager	Mass Transit Railway Corp. Ltd
Wilson	Fung	Executive Director, Corporate Development	Airport Authority Hong Kong
Peter	Greenwood	Executive Director – Strategy	CLP Holdings Limited
Linda	Gross	Founder & CEO, Educational Development Consultant	Linda Gross Training and Educational Services
David	Herratt	Chief Executive	Swiss Insurance Partners
Mike	Kilburn	Senior Manager, Environment	Airport Authority Hong Kong
First Name	Name	Position	Organisation
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Julie	Koo	Director and Head of Institutional Business, Asia Pacific	HSBC Global Asset Management
Calvin	Kwan	Senior Manager - Sustainability	The Link Management Limited
Ronald	Kwok	DIR	New Creative Production Ltd.
Samuel	Kwong	Group EHS Manager	John Swire & Sons (HK) Ltd
Bonny	Landers	CEO	Sterling Private Management Ltd
MK	Leung	Director of Sustainable Design/ Associate Director	Ronald Lu & Partners
Richard	Liu	Programme Office	Oak Foundation
Jeanne	Ng	Director - Group Environmental Affairs	CLP Holdings Limited
Pamela	Mar	Project Director	Fung Holdings
Almis	Povilaitis	CFA, Head of Strategy and Product Development, Asia Pacific	State Street Global Advisors
Tim	Shen	Director Sustainability, Asia	CBRE HK Limited Taiwan Branch
Yiting	Sun	Sustainable Banking & Finance Programme Manager	WWF-Beijing Office
		China for a Global Shift Initiative	
Debra	Tan	Director, Environmental Portals	ADM Capital Foundation
Malini	Thadani	Head of Corporate Sustainability Asia Pacific	HSBC
Eric	Walker	Deputy Director of Integrated Solutions	The Climate Group
Mark	Watson	Head of Environmental Affairs	Cathay Pacific
Sally	Wong	CEO	Hong Kong Investment Funds Association
Kenice	Wong	Teacher	La Vie Learning Centre
Conrad	Wong	Chairman	Hong Kong Green Building Council
Chuck	Xu	CEO	Du Pont Apollo Limited