ENGAGING *PRIVATE SECTOR INVESTMENT AT SCALE FOR CLIMATE CHANGE MITIGATION IN EMERGING ECONOMIES*

Insights from a GtripleC Project funded by the ASIAN DEVELOPMENT BANK and the UNITED NATIONS FOUNDATION

Developed by Murray Ward

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17 June 2010
Framing the mitigation challenge

- **OVER $4 TRILLION** from 2010-2020 ....incl
  - 2.2 trillion in zero and low carbon power generation
  - Over 2 trillion in energy efficiency

- **OVER $10 TRILLION** from 2021-2030 ....incl
  - 4.5 trillion in zero and low carbon power generation
  - Over 5.5 trillion in energy efficiency

- AND THIS JUST IN THE ENERGY SECTOR

- DOESN’T INCLUDE AGRICULTURE OR FORESTS
Investment is critical to 2°C

In the coming decade we need to shift trillions of dollars of investment from a (6°C) business as usual path to a 450 path. IEA call this “a revolution” ....but say it is possible.

Source: IEA WEO2009
In power generation in China

Power generation capacity in the 450 Scenario, GW

- Coal without CCS
- Gas without CCS
- Coal and gas with CCS
- Nuclear
- Hydro
- Wind
- Other renewables

Source: IEA WEO2009
...and in power generation in India

Source: IEA WEO2009
What does a 1 GW increase mean?

The increase from 2007 in “wind and other renewables” is

- In China, ~ 170 GW by 2020, 375 GW by 2030

<table>
<thead>
<tr>
<th>Size, MW</th>
<th># Plants for 1 GW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>1000</td>
</tr>
<tr>
<td>Gas</td>
<td>500</td>
</tr>
<tr>
<td>Nuclear</td>
<td>1000</td>
</tr>
<tr>
<td>Hydro - Small scale</td>
<td>10</td>
</tr>
<tr>
<td>Wind - on shore</td>
<td>50</td>
</tr>
<tr>
<td>Wind - off shore</td>
<td>300</td>
</tr>
<tr>
<td>Biomass-large</td>
<td>200</td>
</tr>
<tr>
<td>Biomass-small</td>
<td>10</td>
</tr>
<tr>
<td>Solar without thermal storage</td>
<td>50</td>
</tr>
<tr>
<td>Solar with thermal storage</td>
<td>15</td>
</tr>
</tbody>
</table>
Finance Needs, Demands and Offers

- Needs for mitigation and adaptation in developing countries in the tens to hundreds of billions per annum – depending on whose numbers you listen to
- Developing countries want fund-based mechanisms, fed by public sources from developed countries
- “Copenhagen Accord” ....offers
  - ‘Fast Start’ $30bn over 2010 – 2012
  - Goal of $100 bn pa in 2020 “from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources of finance”
Framing the investment challenge

~$5 TRILLION by 2020 ....means

- ~ 2 trillion in equity finance
- ~ 3 trillion in debt finance
Through the lens of project finance and investment

Climate Change Mitigation Policy
Hurdles for “green path” projects

Compared with “brown path” projects providing the same services

<table>
<thead>
<tr>
<th>THINGS FAVOURING BAU:</th>
<th>THINGS DISFAVOURING ‘LOW C’ ALTERNATIVE:</th>
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<tbody>
<tr>
<td>• Mature technology, achieved economies of scale</td>
<td>• New(ish) technology, yet to achieve potential economies of scale</td>
</tr>
<tr>
<td>• Installation scale</td>
<td>• Smaller scale installations</td>
</tr>
<tr>
<td>• System interconnections in place</td>
<td>• System interconnections not in place</td>
</tr>
<tr>
<td>• Past experience (so ‘cookie cutter’ savings)</td>
<td>• Limited past experience (so system-wide learning curve costs)</td>
</tr>
<tr>
<td>• Risks well understood and managed</td>
<td>• Risks not understood, still to be managed</td>
</tr>
<tr>
<td>• Known and supporting regulatory environment</td>
<td>• Supportive regulatory environment yet to be put in place</td>
</tr>
<tr>
<td>• Subsidies endemic</td>
<td>• Subsidies not yet in place (or contemplated)</td>
</tr>
</tbody>
</table>
Financing green (or brown) projects

THINGS FAVOURING BAU:
- As-built capital expenditure (capex) costs lower
- Interest on market equity and market debt finance lower – because lower capex costs being financed and at lower interest rates because perceived risks lower
- Cost of risk management financial instruments (for policy risk, currency exchange risk, other project risks) lower – because lower capex costs being financed and perceived risks lower
- But cost of operation and maintenance higher

THINGS DISFAVOURING ‘LOW C’ ALTERNATIVE:
- Opposite of all these
  i.e. replace “lower” with “higher” (and one higher with lower)

COSTS

- Principal on Market Equity
- Principal on Market Debt
- Opportunity cost of Sponsor Equity
- Interest on market equity
- Interest on market debt
- Risk Management Instruments
- Operation and Maintenance (O&M)

INCOME

- Principal on Market Equity
- Principal on Market Debt
- Opportunity cost of Sponsor Equity
- Interest on market equity
- Interest on market debt
- Risk Management Instruments
- Operation and Maintenance (O&M)
Is the policy gem under a different rock?

- Over the last fifteen years, climate policy makers have stressed, in particular, the importance of introducing a cost of carbon emissions into market prices of energy and other carbon-intensive commodities and products. (But struggled to get it.)

- However, the potential effect of carbon pricing and carbon market policy on total project costs (capex plus cost of finance) rather pales by comparison to the effect that major changes in the cost of capital could have if applied preferentially on the green side. Yet this potential has received very little attention by climate policy makers, thus far.
Standard climate policies and “the green gap”

- How are the elements of cost and income affected by:
  - Removing fossil fuel subsidies
  - Providing ‘green side’ incentives
  - Carbon pricing and carbon markets
  - Declaring carbon and climate risks

- Risk is key to costs of capital and total cost ..... so closing the green gap
Risk Clouds
Rolling away the Risk Clouds
Rolling away the Risk Clouds
Rolling away the Risk Clouds
Rolling over the Risk Clouds
Rolling over the Risk Clouds
IT’S NOT WHAT COSTS MORE OR LESS THAT MATTERS IN THE END

IT’S WHAT CAN GET FINANCED (FIRST)
Examples of new and innovative ideas

UNEP FI

World Economic Forum

Meeting the Climate Challenge: Using Public Funds to Leverage Private Investment in Developing Countries

Nicholas Stern / LSE
Key messages from these “idea leaders”

- We know where the money is, and is not.
- There is enough money to achieve the mitigation task – in developed and developing countries.
- We just need to unlock it.
- The private sector can’t do this alone. It needs the public sector to set the framework and play its role within this framework. This involves governments of both developed and developing countries.
KEY QUESTION

Is it possible through smart and targeted public sector interventions (policies and finance mechanisms) to sufficiently lower the risk environment of green investments in infrastructure in developing countries to enable lower cost-of-capital finance from institutional investors to be attracted ...... at scale?
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Why Institutional Investor Capital?
Because here’s where trillions of $s are
BUT .... and it’s a big one!

- Most institutional investors are looking for predictable rates of return, commensurate with energy infrastructure investing (particularly pension funds whose investment requirements are for long term investment horizons to match their long term predictable pension liabilities)

- However, a gap exists between the risk/return expectations of such investors and the risk/return characteristics of clean energy and low carbon technology and infrastructure projects, especially in emerging developing country markets

- Need a comprehensive “de-risk” programme
“De-risk elements” .... a beginning menu

- Host country policies that specifically and directly are supportive of investments in these sectors, including needed support for these to be implemented
- Political and policy risk insurance
- Mechanisms to address foreign currency exchange risk
- In-depth capacity building of relevant public and private institutions and groups that are instrumental to the success, or otherwise, of investments in these sectors in these countries
Pension Funds and Green Investments
Closing the risk spread

PENSION FUNDS
Risk range across asset classes

DEBT (Green Bonds)

EQUITY
Pension Funds and Green Investments
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DEBT (Green Bonds)

EQUITY
Cost of capital and the ‘green gap’
DEBT side

Typical debt finance % in developing countries

Recent ‘coupon rates’ on Green Bonds
A two tier public-private fund for EQUITY

De-risk package ‘wrapping’

Top Fund
- Public (e.g. 20% - from Govts, MDBs)
- Private (e.g. 80% - from Institutional Investors)

Top Fund seeds in-region managed funds that raise additional investors and invest their funds in Projects and Programmes

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"Engaging private sector capital at scale in financing low carbon infrastructure in developing countries"

The Main Report of the
PRIVATE SECTOR INVESTMENT Project

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May 2010
THANK YOU

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