



# Environmental Bonds WEBINAR

Climate action and the capital markets Online, 15 October

## Thanks to our speakers:

**Don Kanak, *Adviser and former Chair,*  
WWF Forest and Climate Initiative**

**Mahesh Jaykumar,  
*Portfolio Manager Global Fixed Income,*  
State Street Global Advisors**

**Sean Kidney, *Chairman,*  
Climate Bonds Initiative**

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## Environmental Bonds WEBINAR

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### Forthcoming Environmental Finance Events:

**Linking the EU ETS to emerging CO2 markets  
webinar, Online, 3 November**

**Pricing Carbon Workshop, London, 14 November**

**Climate Finance 2011, London, 15 & 16 November**

For more information visit

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# Forest Bonds

## Financing for Forests and Climate

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Don Kanak

Adviser & Former Chair, WWF Forest & Climate Initiative

Thursday 27<sup>th</sup> October 2011

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# Forests are...

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## Important

- Vital to regulating our planet's climate and cycling of freshwater
- Home to a wealth of biodiversity
- A source of livelihoods providing food, fuel and fiber for over 1 billion of the world's poorest people

## Yet disappearing

- We are losing forests at a rate of 120,00 sq km a year. This equates to 36 football fields a minute\*- an area larger than Greece or more than 3 times the size of Switzerland
- Forest loss contributes roughly 15% of all greenhouse gas emissions and is the third largest source of carbon emissions after coal and oil

## And expensive to save

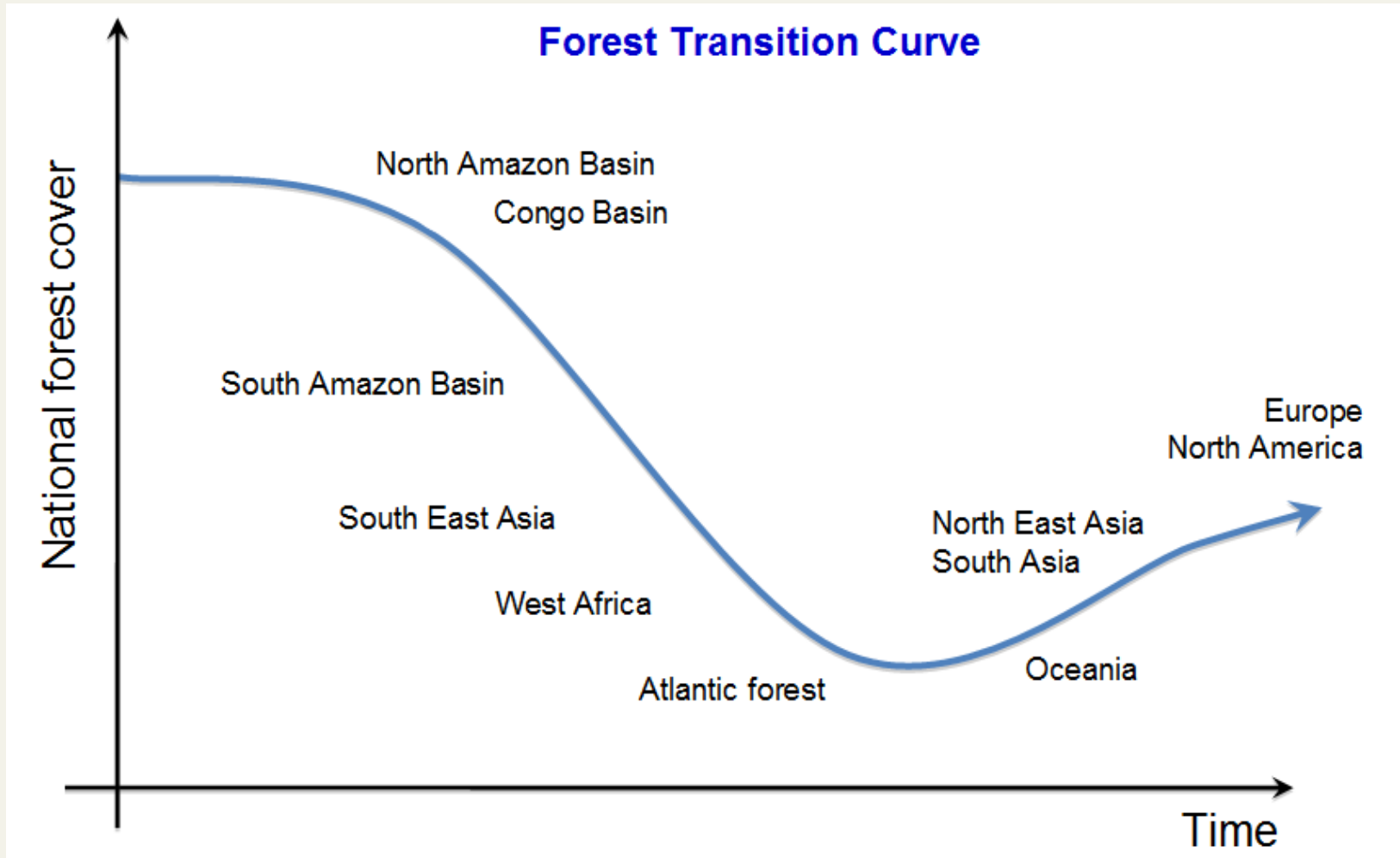
- The world has pledged billions, yet we need tens of billions to save forests worth trillions\*\*

\*Source: <http://www.worldwildlife.org/what/globalmarkets/forests/item3577.html>

\*\*Source: The Eliasch Review, 2008. Estimates commissioned for the review calculated the mean damage costs of the climate change impacts of forest emissions will have risen to \$1 trillion/yr by 2100. These are additional to those caused by emissions from other sectors.

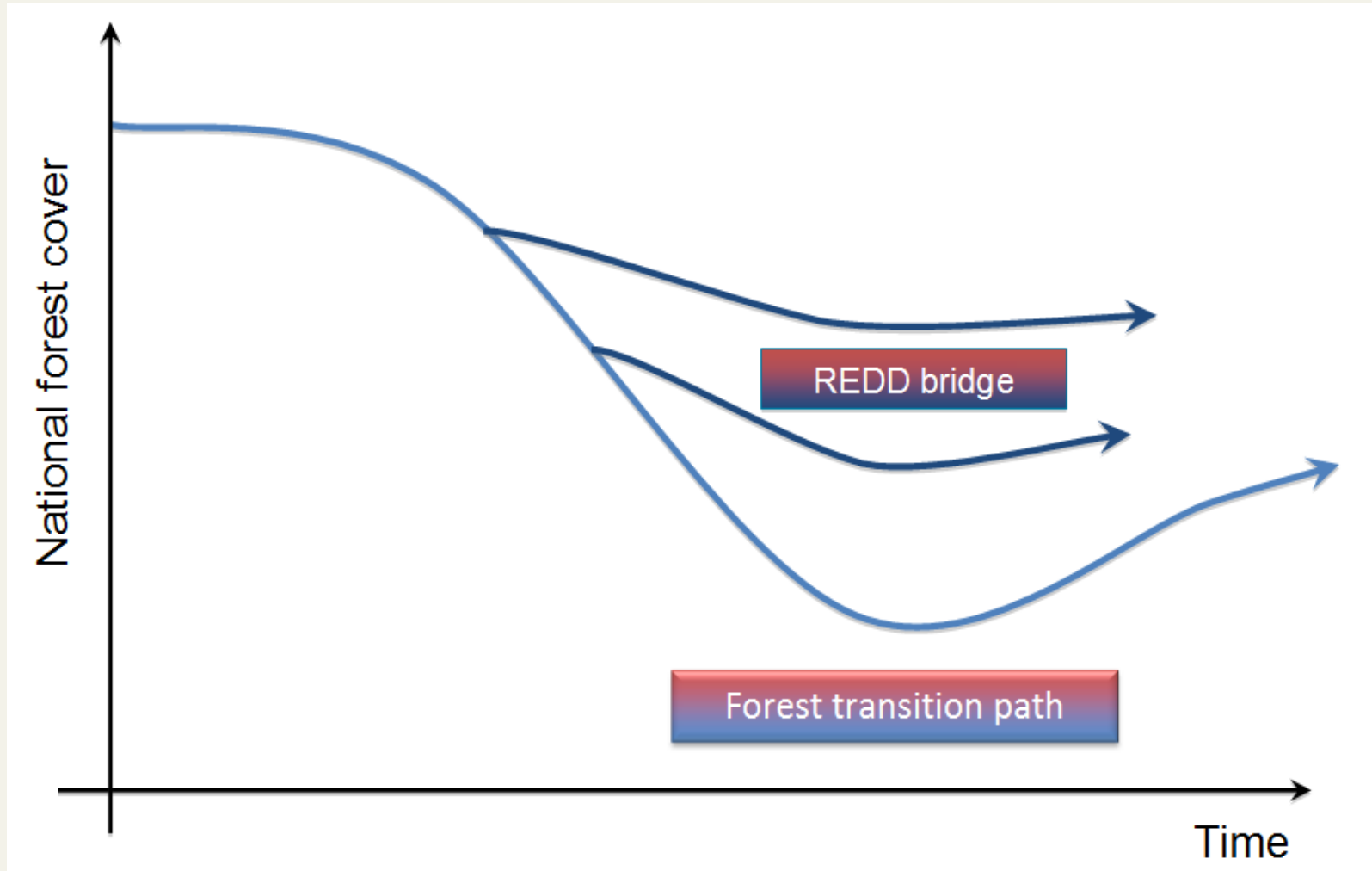


## Following traditional development paths, most countries lose most of their native forests



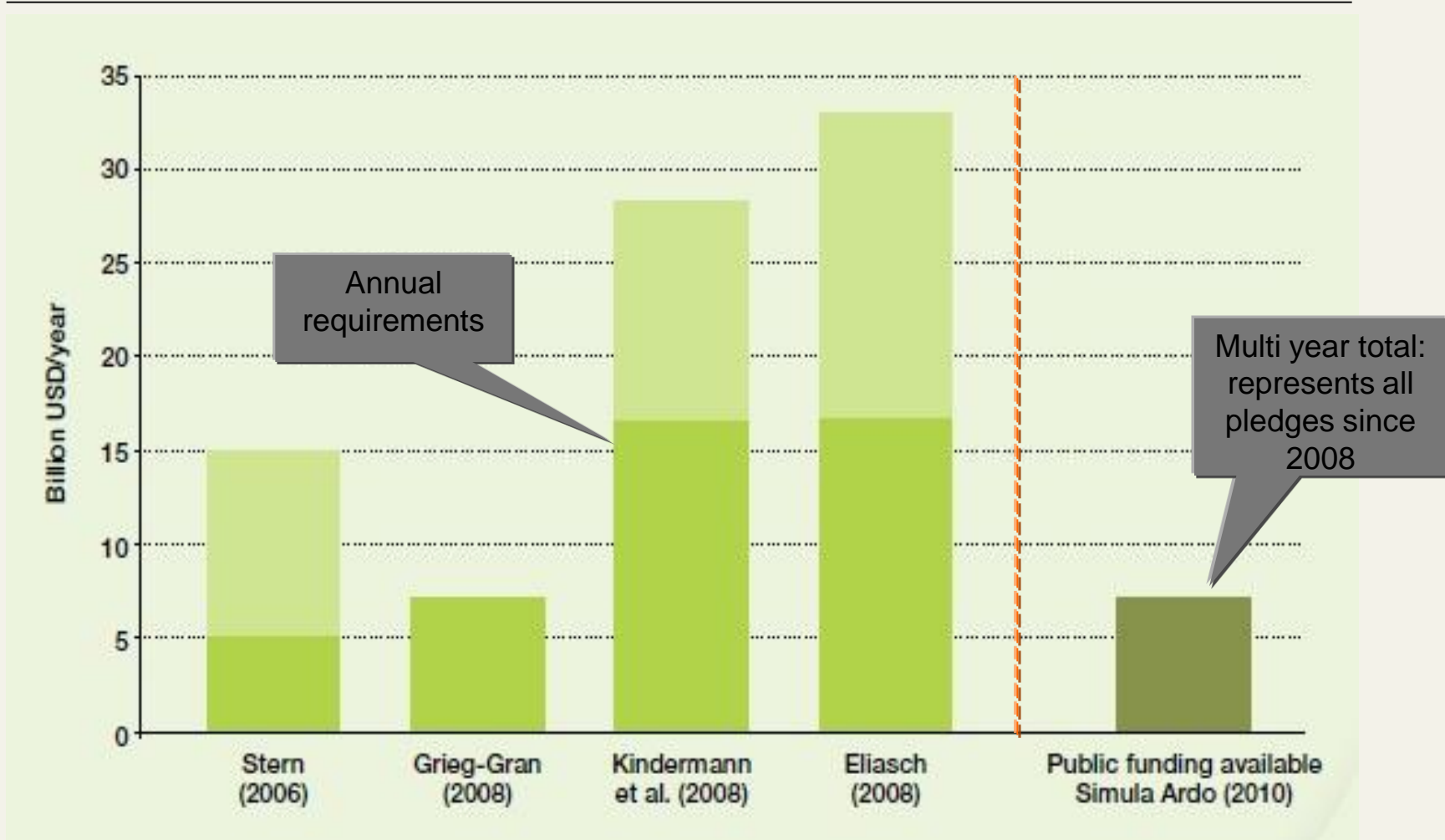


## Can REDD+ create a bridge?



\*Source: Adapted from: Angelsen, 2007- online at : [http://www.cifor.org/publications/pdf\\_files/Books/BAngelsen0801.pdf](http://www.cifor.org/publications/pdf_files/Books/BAngelsen0801.pdf) , and Zarin, 2009, online at; [http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/FCPF\\_Intro\\_Early\\_Lessons\\_Guyana\\_Final%2004-21-10.pdf](http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/FCPF_Intro_Early_Lessons_Guyana_Final%2004-21-10.pdf)

## Cost of funding a 50% reduction by 2030





## REDD+ Finance

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We are currently a long way from these figures

- Only a fraction of pledged fast start funding has reached the forest countries
- Voluntary forest carbon markets remain small: Value of market in 2010 was USD 133 million\* (30MtCO<sub>2</sub>e). This is roughly 1/1000<sup>th</sup> the size of the 2010 global carbon markets\*\*

However

- Global bonds markets: over USD 90 trillion of outstanding issuance
- The private sector is investing if the conditions are right- 2010 Global investment into renewable energy increased 32% to USD 211 billion\*\*\*

**Could forest bonds be a solution?**

\*Ecosystem Marketplace, State of the Forest Carbon Market 2011

\*\* Total value of 2010 global carbon market: \$142 billion. Source: State and Trends of the Carbon Market, World Bank, 2011

\*\*\*UNEP/Bloomberg New Energy Finance, 2011



# Forest Bond Workshop- February, 2011

## UNLOCKING FOREST BONDS A HIGH-LEVEL WORKSHOP ON INNOVATIVE FINANCE FOR TROPICAL FORESTS

*Workshop Report*

Hosts



Climate Bonds

Financial Partners

Goldman Sachs

FONDATION 1798  
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- Bloomberg New Energy Finance
- BNP Paribas
- Canopy Capital
- Clifford Chance
- Climate Bonds Initiative
- Colombian Embassy to the UK
- DeRisk
- Nicholas Institute for Environmental Policy Solutions, Duke University
- E2 Group
- Earth Capital Partners
- EKO Asset Management
- EnviroMarket
- Global Canopy Programme
- GLOBE International
- Goldman Sachs
- Eco System Services Limited
- Harvard Law School Program on International Financial Systems
- Lombard Odier Investment Management
- London School of Economics
- Multilateral Investment Guarantee Agency
- Norton Rose
- Norwegian Environment Ministry
- PwC
- SEB
- State Street Global Advisors
- Terrestrial Carbon Group
- UK Committee on Climate Change
- UK Department for International Development
- UNEP Finance Initiative
- Vivid Economics
- WWF Forest & Climate Initiative
- WWF-International
- WWF-UK



## Reasons for Optimism

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- Large institutional investors have expressed and demonstrated demand for green assets through various channels;
  - WWF/Brunswick 2009 Investor Survey\*
  - IIGCC Global Investor Statement on Climate Change - represents 285 large investors with \$20 trillion AUM\*\*
  - Emergence of new green funds- e.g. State Street Global Advisor's Green Bond Investment Strategy\*\*\*
  - Asset owners are issuing instructions to asset managers to consider environmental investment issues e.g. the CalSTRS programme with its external fund managers\*\*\*\*
- Green Bonds issuance continues- around \$12 billion issued to date
- Increased focus on impact investors as an emerging asset class\*\*\*\*\*
- Forest Countries have articulated a desire for green fixed income\*\*\*\*\*

\* Source: [http://wwf.panda.org/what\\_we\\_do/footprint/climate\\_carbon\\_energy/forest\\_climate/publications/?185661/2009-Forest-Carbon-Investor-Survey](http://wwf.panda.org/what_we_do/footprint/climate_carbon_energy/forest_climate/publications/?185661/2009-Forest-Carbon-Investor-Survey)

\*\* See [http://www.iigcc.org/\\_data/assets/pdf\\_file/0017/15281/2011-Investor-Global-Statement-FINAL-NOT-EMBARGOED.pdf](http://www.iigcc.org/_data/assets/pdf_file/0017/15281/2011-Investor-Global-Statement-FINAL-NOT-EMBARGOED.pdf)

\*\*\* See 19th Oct 2011 press release <http://www.statestreet.com/wps/portal/internet/corporate/home/aboutstatestreet/newsmedia/pressrelease>

\*\*\*\* See <http://www.calstrs.com/newsroom/2011/news060811.aspx>

\*\*\*\*\* See JP Morgan/Rockefeller Foundation report online at: <http://www.jpmorgan.com/pages/jpmorgan/investbk/research/impactinvestments>

\*\*\*\*\* See [http://wwf.panda.org/what\\_we\\_do/footprint/climate\\_carbon\\_energy/forest\\_climate/publications/?201251/Unlocking-forest-bonds](http://wwf.panda.org/what_we_do/footprint/climate_carbon_energy/forest_climate/publications/?201251/Unlocking-forest-bonds)



## Two Basic Categories

### Full Faith & Credit Bonds

<u>Issuer</u>	<u>Year</u>	<u>Type</u>	<u>Amount (USD million)</u>	<u>Notes</u>
IFC	2011	Environmental Sustainability Bond	23	Supporting climate friendly investments in developing countries. 3 year maturities
European Investment Bank	2007-2010	Climate Awareness Bonds	1,630	For investment in renewable and efficient energy. 3-8 year maturities
Asian Development Bank	2010	Water Bond	640	For improving water quality, management and irrigation. 2-3 year terms.
World Bank	2008-2010	Green Bonds	1,897	For climate change projects. 2-10 year maturities

### Investment Dependent Bonds

<u>Issuer</u>	<u>Year</u>	<u>Type</u>	<u>Amount (USD million)</u>	<u>Notes</u>
Breeze Finance SA	2004-2008	Wind ABS	1,604	Mostly 20 year bonds issued against a combined portfolio of 206 wind farms in France & Germany
Destiny USA	2007	Green Property Bond	228	For the construction of a green retail complex. 30 year maturities
Sunpower/Andmeda Finance	2010	Solar Bond	260	Secured on a 44MW solar park- partially guaranteed by Italian Credit Export Agency. 18 year maturity
???	2012	???	???	???



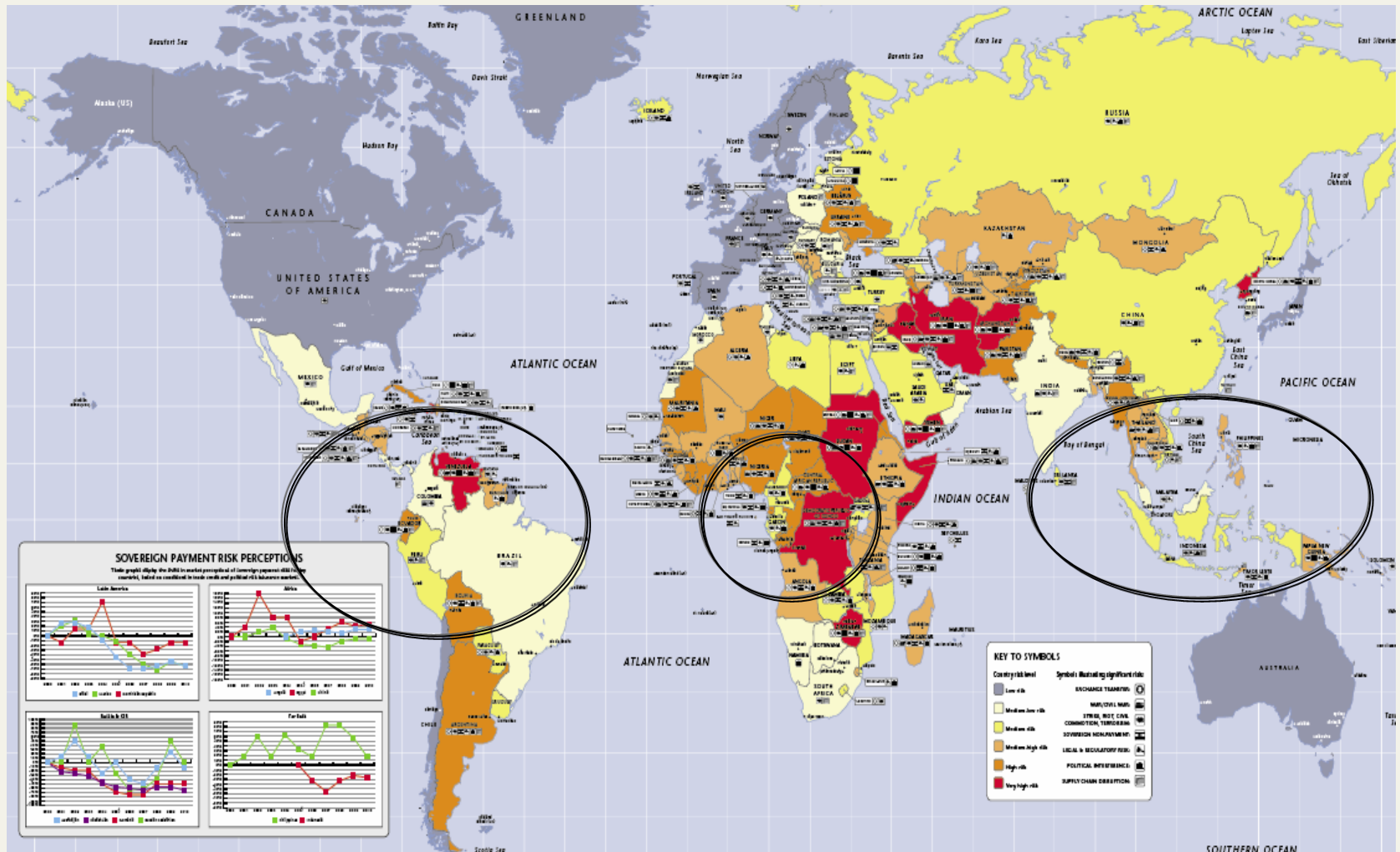
## However, REDD+ Bonds Face Challenges


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Challenges that need to be addressed include:

- Political risk
  - Some forest countries are perceived as risky by investors. Large pools of private sector capital will stay away unless these risks are reduced
- Carbon dependency
  - REDD+ (unlike many activities in the renewable or energy efficiency space) often relies on a single revenue stream-carbon finance
  - There is no large carbon market
  - There is no long term, large scale buyer
- Lack of 'symmetry'
  - There is no symmetrical, enforceable offer on the table providing for long term payments for verified emissions reductions to the forest country, community, or landowners
- The 'communications gap'

# The Political Risk Map vs Carbon Stocks



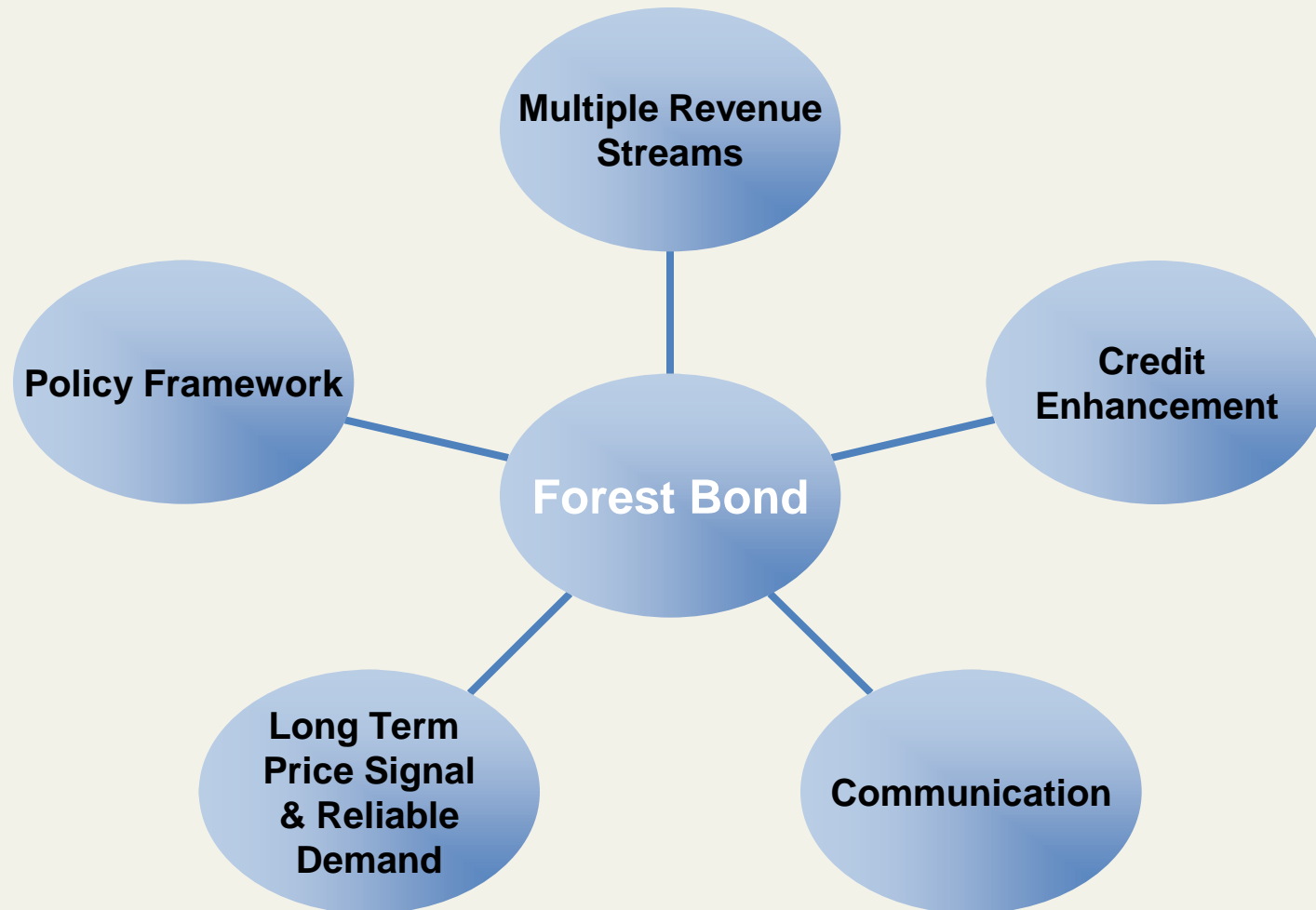
 = High carbon stocks

Source: Aon, Political Risk Rankings 2011. Online at: [http://sites.rnw.nl/pdf/Risk\\_Map\\_2010.pdf](http://sites.rnw.nl/pdf/Risk_Map_2010.pdf)



# Ingredients of a Forest Bond Solution

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# REDD+ Vicious Cycle?

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Large carbon  
buyers/market



## REDD+ Vicious Cycle?

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Large carbon  
buyers/market



Proven by ability of  
REDD+ for permanent  
carbon abatement



## REDD+ Vicious Cycle?

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Large carbon  
buyers/market



Proven by ability of  
REDD+ for permanent  
carbon abatement

Large Scale  
REDD+ demos  
that work



[Climate  
community]

[Social, environmental &  
climate integrity]

## REDD+ Vicious Cycle?

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Large carbon  
buyers/market



Large scale, long term  
financial commitments

Proven by ability of  
REDD+ for permanent  
carbon abatement



[Forest  
countries/  
communities]

Large Scale  
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[Climate  
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## REDD+ Vicious Cycle?

[Investment/ financial community]



Large carbon  
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climate integrity]



# REDD+ Virtuous Cycle?

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1. Large scale, long term financial commitments

[The Forest Finance Facility]



# REDD+ Virtuous Cycle?

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1. Large scale, long term  
financial commitments

[The Forest Finance Facility]



[Forest  
countries/  
communities]

2. Large Scale  
REDD+ demos  
that work

[Social, environmental & climate  
integrity]



# REDD+ Virtuous Cycle?

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1. Large scale, long term  
financial commitments

[The Forest Finance Facility]



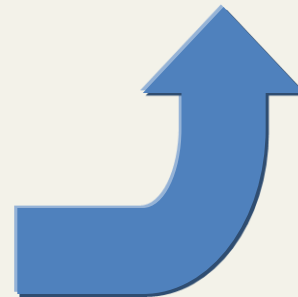
[Forest  
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communities]

2. Large Scale  
REDD+ demos  
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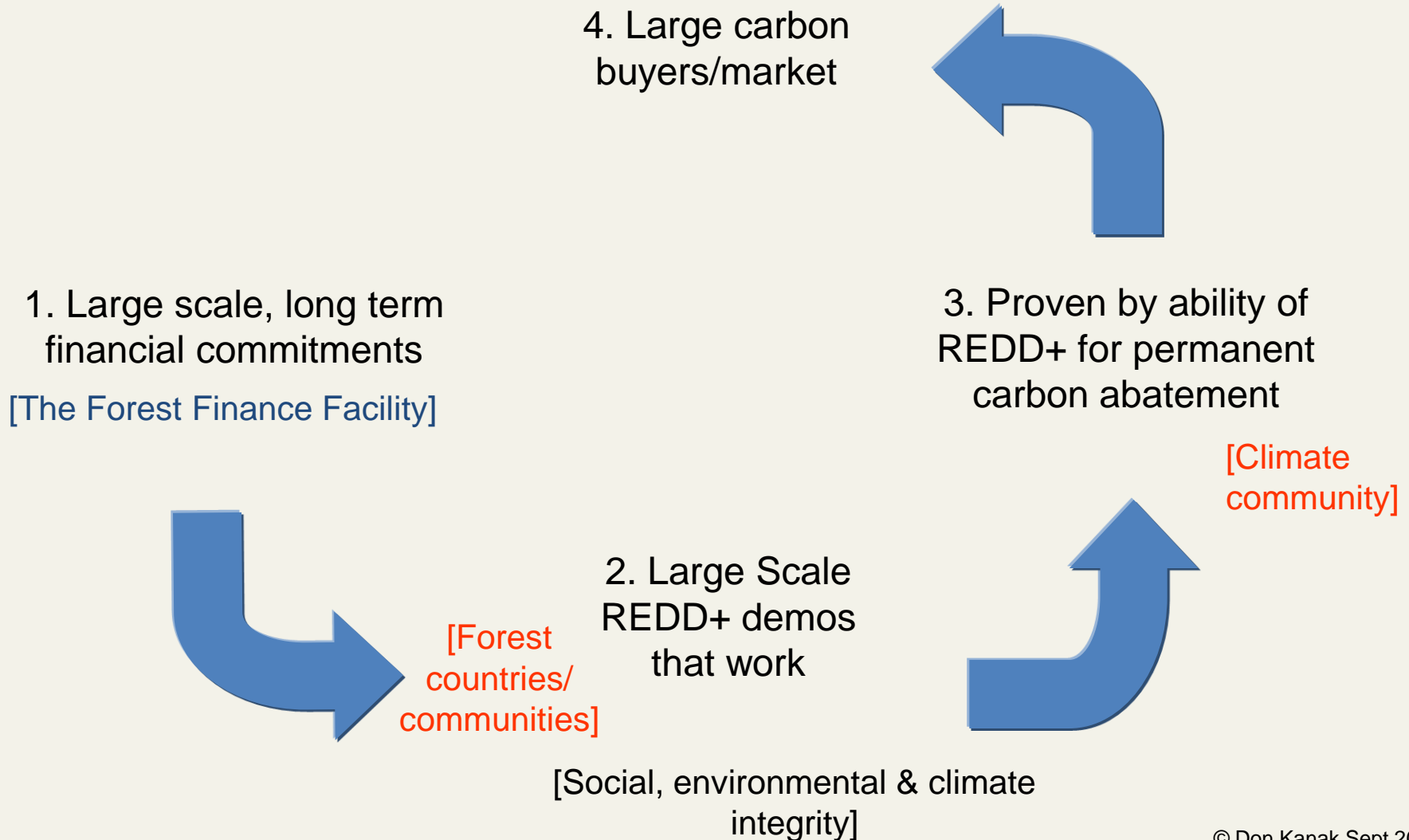
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community]





# REDD+ Virtuous Cycle?

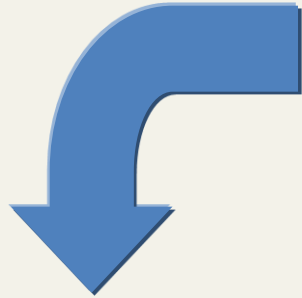
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# REDD+ Virtuous Cycle?

[Investment/financial community]



1. Large scale, long term financial commitments

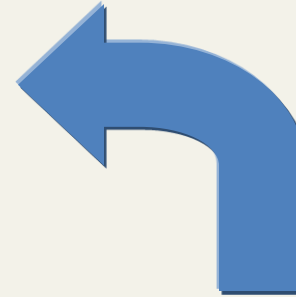
[The Forest Finance Facility]



[Forest countries/  
communities]

2. Large Scale REDD+ demos that work

[Social, environmental & climate integrity]



3. Proven by ability of REDD+ for permanent carbon abatement

[Climate community]





# Thank You

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# Green Bonds

*Theme Bonds to address Renewable Energy and more*

**Mahesh Jayakumar**

*Global Fixed Income*

*State Street Global Advisors*

*Oct 2011*

# Today's agenda

- Bonds for financing renewable energy
  - Green bonds, where they fit in and how they support renewable energy
    - WB and IFC GB's, EIB CAB's etc.
- Who's buying; who's issuing?
  - Issuers
    - Multinationals, Governments, Corporate etc.
  - Buyers
    - Institutional (Pension Funds, Insurance, etc), Retail (Japan, EU & Others) etc.
- Examples of recent issues
  - Climate Bonds Initiative and BNEF List
- Risks and returns
  - Challenges for investors
  - Market Conditions
- What we will not be discussing....

# Why is Green investing through Bonds important?

Asset class	Type of vehicle	Description	Example
Equity	Indices	Include only stocks of companies that have "good environmental practices".	Screening 1. FTSE4Good Environmental Leaders Europe 40 Index 2. S&P Global Eco Index
			Thematic 3. WilderHill New Energy Global Innovation Index 4. S&P Global Water Index 5. FTSE KLD Global Climate Index
	Mutual funds		1. Calvet Large Cap—screening large-cap stocks with good reputation for environmental consciousness 2. Winslow Green Growth—small-cap fund investing in eco-friendly companies 3. Guinness Atkinson Alternative Energy—investing in natural resources
	ETFs		1. PowerShares WilderHill Clean Energy Portfolio (PBW) 2. Claymore/LGA Green ETF (GRN)
Fixed-income	Bonds	Bonds are usually issued by federally qualified organisations to raise capital to solve environmental problems	1. European Investment Bank—Climate Awareness Bonds 2. U.S. Treasury—"Green Bonds" 3. SEB & Credit Suisse—World Bank green bonds to support low-carbon development in developing countries
Alternatives	Real estate	Real estate investment that is environmentally acceptable.	Micro: energy efficiency, recycling, etc. Macro: reducing greenhouse gases, carbon footprinting, less resource depletion, etc.
	Infrastructure/private equity	Funds that invest in, e.g., environmental technology infrastructure	1. Miaoli Wind Macquarie Int'l Infrastructure Fund 2. Carlyle Infrastructure Partners (CIP)

Source : EDHEC 2010

# Green Bonds Issuance as of 2011 – Climate Bonds Initiative List

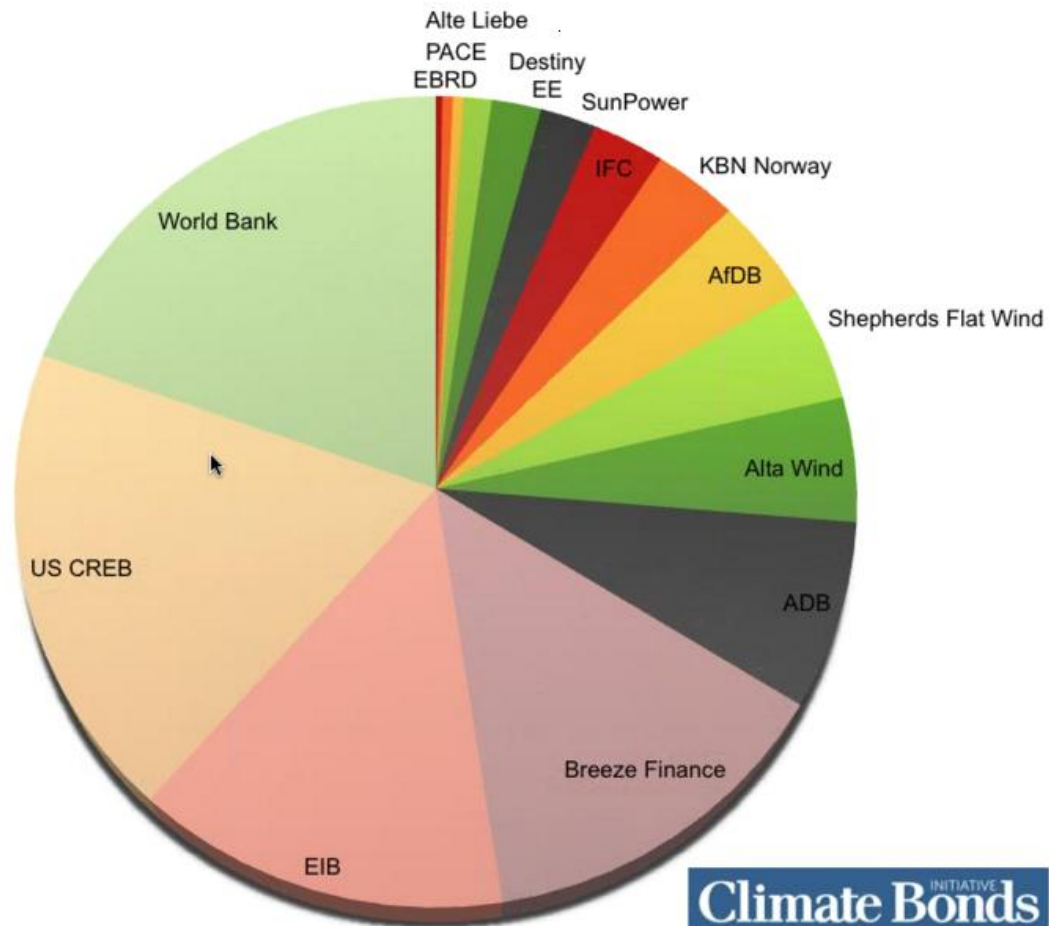
## Issuance to date

\$10 billion

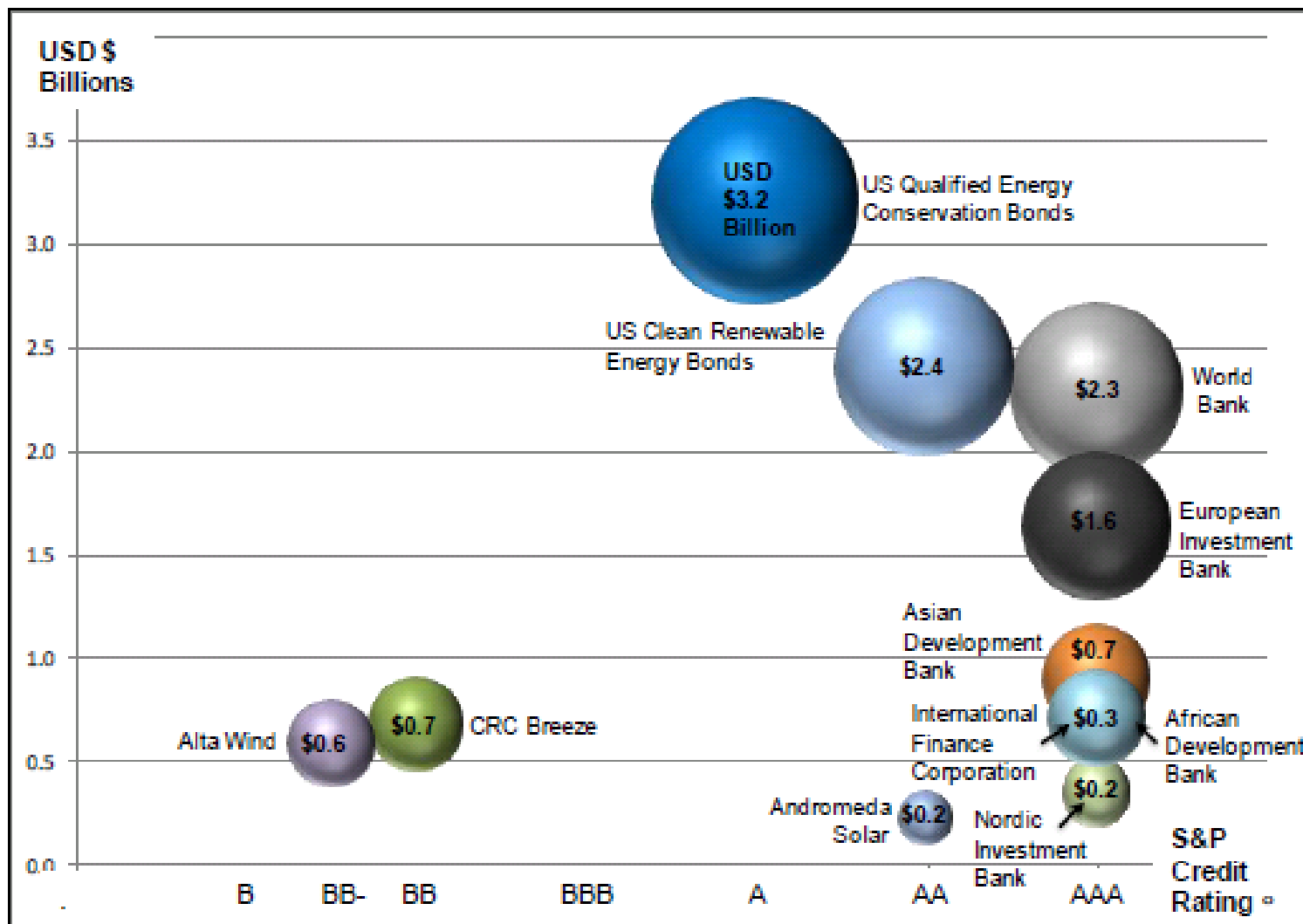
*Only 5% retail, mostly Japan*

+ Build America Bonds used for green projects (\$3bn?)

Clean energy corporate  
\$30 billion



# Green Bonds Issuance as of 2011 – OECD Analysis, BIS List



# Some large issuers of Green Bonds

<b>US Government and Government Backed</b> <ul style="list-style-type: none"> <li>–CREBs</li> <li>–QECSs</li> <li>–BAB's</li> <li>–PACE</li> </ul>	<p>\$800 Million of tax credit Clean Energy Renewable Bonds (CREBs) between Jan 2006 and Dec 200. Additions in \$800 million in 2008 and \$1.6 billion in 2009.</p> <p>\$800 Million of Qualified Energy Conservation Bonds (QECB's) in 2008 that was expanded to \$3.2 billion in 2009 due to ARRA.</p>	<p>The federal Energy Policy Act of 2005 established Clean Energy Renewable Bonds (CREBs) as a financing mechanism for public sector renewable energy projects.</p>
<b>World Bank (IBRD)</b>	<p>Close to \$2.5 billion in Green bonds starting in 2007 (retail) and 2008 (institutional) and currently continuing as one of the largest issuers.</p>	<p>Projects funded include alternative energy installations, funding for new technologies that reduce green house emissions, etc..</p>
<b>European Investment Bank (EIB)</b>	<p>Close to €1.2 billion in Climate Awareness Bonds starting in 2007.</p>	<p>Projects include Renewable Energy and Energy Efficiency.</p>
<b>International Finance Corp (IFC)</b>	<p>Started with \$200 million Green Bond in 2010 and recently issued a \$135 million bond in 2011.</p>	<p>Investments in Clean projects like Solar, Wind farms and fixing inefficient power plants. Targeting Japanese investors with Uridashi bonds.</p>
<b>Asian Development Bank (ADB)</b>	<p>Started with \$232 million Clean Energy Bond in 2010 and plans to grow it to \$2 billion annually by 2013.</p>	<p>Targeting Japanese investors as was as the case with Water Bonds issued in prior years</p>
<b>Other, Securitized etc..</b>	<p>Other IFI 's (EBRD, AfDB, NIB, etc.), ABS (CRC Wind Breeze, FPL, Alte Leibe 1), Solar (SunPower) among a longer list</p>	

# Whose buying?

- Depends on type of bond and investor interest
  - Institutional or Retail
  - Complex structures or straight bullets
  - Project backed (ABS through SPV) or main balance sheet
- Retail
  - Japanese investors in Uridashi bonds
    - World Bank (through Nikko Asset Management), BofA ML Private Wealth etc.
    - IFC and ADB issuance
- Institutional
  - Pension Funds
    - ATP, PGGM, CalSTRS, CalPERS, State of CA Treasurer, AP Funds etc.
  - Insurance Companies
    - Project finance, ABS, longer dated bonds
  - NGO's, Endowments, Foundations etc.
    - Stakeholder pressure and social goals

# Some bonds issued in 2010 and 2011 – An indication of a broader set to come?

Project/Issuer	Sector	Issue Date	Maturity Date	Rate	Amount (USD m)
Alta Wind Farm Portfolio - Phases II, III, IV, & V	Wind	21/07/2010	30/06/2035	7	\$ 579,863,000.00
ReneSola Ltd manufacturing expansion	Manufacturing	15/03/2011	15/03/2018	4.125	\$ 200,000,000.00
McCommas Bluff Biomethane Plant - 2011 Expansion	Bio	31/03/2011		6.596	\$ 40,200,000.00
Indian Renewable Energy Development Agency Ltd portfolio financing	Diversified	14/01/2010	14/01/2020	8.85	\$ 32,876,712.33
Wind points/Wind flats (1 of 18 tranches totaling 290m at 3-18 year terms)	Wind	9/9/2010	1/7/2027	5	\$ 33,765,000.00

# Future issuance and pipeline

- **Government** – National, Municipal, Sovereign bonds
- **Green Investment Banks/Green Banks**
- **Corporate** issuers that are funding internal greening projects or green product lines
- **Real Estate** – Green MBS, Green CMBS, Green REITS
- **Infrastructure** – Lot of potential for Green bonds to become a preferred vehicle
- **Alternate renewable energy excluding Solar and Wind** – Tidal, Geothermal, Biomass, etc..

# Challenges For Green Bond Investors

- To date, projects have not existed on the scale necessary to attract large investors
- Lack of resources and standards for bond investors to identify, screen and monitor individual green finance opportunities
- No “aggregator” has existed to either ring fence existing projects or create captive pools of capital earmarked to fund green projects
- Wide array of project types – scope of “Green Projects” is very wide
  - Low carbon energy production
    - Renewable energy (e.g. wind, solar, geothermal, etc) systems
    - Clean non-renewable energy (e.g. natural gas, nuclear)
  - Reducing, avoiding or capturing Greenhouse Gases
    - Energy efficiency
    - Capture and storage technology
  - Enhancing carbon storage and retention in natural systems
    - Land and soil management
    - Avoiding deforestation and reforestation

# Market Conditions for Green Bonds

- Pricing

- Pricing for green bonds are more in line with private placements due to their smaller sizes than benchmark issuances (\$1 billion+)
- “Green is expensive” myth which can deter certain institutional investors

- Spreads

- Bid-Ask spreads for non-benchmark or private placement issues are wider than comparable benchmark issues

- Liquidity

- Limited secondary markets for these bonds due to buy-and-hold nature of existing client base
- Limited Buy-back provisions at issuer level
- Role of the sell-side in making markets for these bonds

# Current Role of Asset Managers in Green Bonds

- Combination of Fixed income and Green investing still nascent
  - Market size
  - Liquidity of Green Bonds
  - Investor awareness and need for Green bonds
  - Screened investment opportunities are available as is the case with most Equity and Fixed Income ESG investing currently
- Limited number of managers involved in a fund at an institutional level even though this is poised to change in time
  - Nikko Asset Management first to offer green bonds in Feb 2010
  - SSgA is one of the largest institutional asset managers to offer a product
- Managers need to ensure conventional characteristics of fixed income investing while fulfilling green in offering
  - Vehicle
  - Risk/Return profile
  - Asset Allocation – a suitable place for green bonds in client's portfolios

# For future discussions....

- Industry Groups
  - IIGCC, INCR, IGC, P8 etc..
- Green Funds
  - A variety of Climate Change funds backed by the UN, EU, Local governments etc (UNGCF, CP3)
- Renewable energy from Biomass, Geothermal, Tidal etc..
  - A variety of alternative energy sources outside Wind and Solar that are in the works
- Policy Support
  - Government policy and regulation that has helped renewables thus far and the effect of removing them
  - US, EU, China and the rest of the world



# Appendix

# Green Bonds Issuance as of 2011 – Climate Bonds Initiative List

Issuer	Year	Type	Amount (USD Million)	Use Of Proceeds
Breeze Finance SA	2004-2008	Wind ABS	\$ 1,604.00	Mostly 20 year bonds issued against a combined portfolio of 206 wind farms in Germany and France through 4 bond issuances
Georgetown Special Taxing District	2006	EE Green bond	\$ 14.45	For the construction of a green multi-use complex
Alte Liebe 1	2006	Wind ABS	\$ 129.00	19 year term. Issued against 6 wind farms in Germany
Airtricity	2006	RE corporate bond	\$ 300.80	3 year bond to fund wind energy farms in Europe and US
World Bank	2007-2008	Eco 3+ Notes	\$ 360.00	6 year terms linked to environmental equity index.
European Investment Bank (EIB)	2007-2010	Climate Awareness bond	\$ 1,630.00	For investment in RE and EE. 3-8 year term
Destiny USA	2007	EE Green bond	\$ 228.00	For the construction of a green retail complex. 30 year term
World Bank	2008	CER linked 'Cool' Uridashi bond	\$ 31.50	Linked to CERs issued by projects. 5 year term
World Bank	2008-2010	Green bond	\$ 1,896.70	For climate change projects at 2-10 year terms
REC Group	2009	RE corporate bond	\$ 212.50	5 year bond to fund activities of a solar energy company
US municipal governments	2009-2010	Property Assessed Clean Energy (PACE) bonds	\$ 9.69	To fund residential and commercial EE and RE installations
US Government agencies and utilities	2009-2010	Clean Renewable Energy Bonds program	\$ 2,200.00	Tax credit enhanced bonds for RE
Novacem	2010	EE corporate bond	\$ 1.54	To fund the construction of a semi-commercial green cement plant
Ecotricity	2010	RE corporate bond	\$ 15.40	To fund expansion of RE generation capacity. 4 years maturity
European Bank for Reconstruction and Development (EBRD)	2010	Environmental Sustainability bond	\$ 25.00	For a portfolio of green projects aimed at promoting sustainable development. 4 year term
Panachaiko Wind Farm	2010	Wind project bond	\$ 57.62	48.45MW wind farm in Greece developed by Acciona Energie
Kommunalbanken Norway (KBN)	2010	Clean energy bond	\$ 153.00	For climate gas emission reductions in Norwegian municipalities for Japanese retail investors
International Finance Corporation (IFC)	2010	Green bond	\$ 200.00	For RE and EE in developing countries. 4 year term
Nordic Investment Bank (NIB)	2010	Environmental support bond	\$ 200.00	For financing its CLEERE lending facility on climate change, EE and RE investments. 3 year maturity
African Development Bank (AfDB)	2010	Clean energy bond	\$ 220.00	For investment in renewable energy sources and infrastructure. 3.5-7 year terms
Asian Development Bank (ADB)	2010	Clean energy bond	\$ 232.20	4-7 year term tranches for RE and EE investment
Sunpower/ Andromeda Finance	2010	Solar project bond	\$ 260.00	Secured on a 44MW solar park, partially guaranteed by Italian export credit agency SACE. 2 tranches at 18 year terms
Shepherds Flat Wind Farm	2010	Wind project bond	\$ 525.00	845MW wind farm in Oregon. 420million guaranteed by DOE. 22 year maturity
Alta Wind Energy Center	2010	Wind project bond	\$ 580.00	25 year bond to fund the construction of 3GW of wind farms
Asian Development Bank (ADB)	2010	Water bond	\$ 640.00	For improving water quality, management and irrigation. 2-3 year terms
European Bank for Reconstruction and Development (EBRD)	2011	Environmental Sustainability Bond	\$ 23.00	For a portfolio of green projects aimed at promoting sustainable development. 4 year term. 6 year terms
International Finance Corporation (IFC)	2011	Green bond	\$ 135.00	Supporting climate-friendly investments in developing countries. 3 year terms
Kommunalbanken Norway (KBN)	2011	Clean energy bond	\$ 193.00	For climate change projects in Norwegian municipalities for Japanese retail investors

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Source – Climate Bonds Initiative, 2011

# Green Bonds Issuance as of 2011 – OECD Analysis, BIS List

Size Rank	Issuer	Year (s)	Type	Amount (USD) Millions	Notes
1	US Government agencies and utilities	2009-2012	Qualified Energy Conservation Bonds (QECB) program	\$ 3,200.0	Originally tax credit enhanced bonds for EE, changed in 2010 to direct subsidy bonds
2	US Government agencies and utilities	2009-2010	Clean Renewable Energy Bonds (CREB) program	\$ 2,400.0	Tax credit enhanced bonds for RE
3	World Bank	2008-2010	Green Bond	\$ 1,896.7	For climate change projects at 2-10 year terms
4	European Investment Bank (EIB)	2007-2010	Climate Awareness bond	\$ 1,630.0	For investment in RE and EE. 3-8 year term
5	African Development Bank (AfDB)	2010	Clean energy bond	\$ 705.0	For investment in renewable energy sources and infrastructure. 3.5-7 year terms.
6	CRC Breeze Finance (Breeze II)	2006	Wind ABS	\$ 676.0	EUR 470m (\$876m EURUSD 1.44) 20 year bonds issued through SPV against a combined portfolio of wind farms in Germany and France, tranches rated BBB and BB+ (downgraded in 2010 to BB and B due to insufficient wind)
7	Asian Development Bank (ADB)	2010	Water bond	\$ 645.0	For improving water quality, management and irrigation. 2-3 year terms
8	Alta Wind Energy Center	2010	Wind project bond	\$ 580.0	25 year bond to fund the construction of 3GW of wind farms. Rated Ba3 by Moodys
9	Shepherds Flat Wind Farm	2010	Wind project bond	\$ 525.0	845MW wind farm in Oregon. 420million guaranteed by DOE. 22 year maturity
10	FPL Energy American Wind LLC	2003	Wind ABS	\$ 370.0	Bonds rated BBB- secured on the cashflow of 7 US wind projects
11	World Bank	2007-2008	Eco 3+ Notes	\$ 360.0	6 year terms linked to environmental equity index.
12	Airtricity	2006	RE corporate bond	\$ 300.8	3 year bond to fund wind energy farms in Europe and US
13	Sunpower / Andromeda Finance	2010	Solar project bond	\$ 260.0	Secured on a 44MW solar park, partially guaranteed by Italian export credit agency SACE. 2 tranches at 18 year terms
14	Asian Development Bank (ADB)	2010	Clean energy bond	\$ 243.0	4-7 year term tranches for RE and EE investment
15	Destiny USA	2007	EE Green bond	\$ 228.0	For the construction of a green retail complex. 30 year term
16	REC Group	2009	RE corporate bond	\$ 212.5	5 year bond to fund activities of a solar energy company
17	International Finance Corporation (IFC)	2010	Green bond	\$ 200.0	For RE and EE in developing countries. 4 year term
18	Nordic Investment Bank (NIB)	2010	Environmental support bond	\$ 200.0	For financing its CLEERE lending facility on climate change, EE and RE investments. 3 year maturity
19	Kommunalbanken Norway (KBN)	2011	Clean energy bond	\$ 193.0	For climate change projects in Norwegian municipalities for Japanese retail investors
20	Kommunalbanken Norway (KBN)	2010	Clean energy bond	\$ 153.0	For climate gas emission reductions in Norwegian municipalities for Japanese retail investors
21	Max Two Ltd (Breeze I)	2004	Wind ABS	\$ 144.0	EUR 100m (\$144m EURUSD 1.44) 20 year bonds issued through SPV against a combined portfolio of wind farms in Germany and Portugal rated BBB- then downgraded in 2010 to B- due to insufficient wind
22	Alte Liebe 1 (Breeze III)	2006	Wind ABS	\$ 144.0	EUR 100m EUR 470m (\$144m EURUSD 1.44) rated BBB- (downgraded in 2011 B- due to insufficient wind) 19 year term first to be monoline wrapped. Issued against 6 wind farms in Germany
23	International Finance Corporation (IFC)	2011	Green bond	\$ 135.0	Supporting climate-friendly investments in developing countries. 3 year terms
24	Panachaiko Wind Farm	2010	Wind project bond	\$ 57.6	48.45MW wind farm in Greece developed by Acciona Energie
25	World Bank	2008	CER linked 'Cool' Uridashi bond	\$ 31.5	Linked to CERs issued by projects. 5 year term
26	European Bank for Reconstruction and Development (EBRD)	2010	Environmental Sustainability bond	\$ 25.0	For a portfolio of green projects aimed at promoting sustainable development. 4 year term
27	European Bank for Reconstruction and Development (EBRD)	2011	Environmental Sustainability Bond	\$ 23.0	For a portfolio of green projects aimed at promoting sustainable development. 4 year term. 6 year terms
28	Ecotricity	2010	RE corporate bond	\$ 15.4	To fund expansion of RE generation capacity. 4 years maturity
29	Georgetown Special Taxing District	2006	EE Green bond	\$ 14.5	For the construction of a green multi-use complex
30	US municipal governments	2009-2010	Property Assessed Clean Energy (PACE) bonds	\$ 9.7	To fund residential and commercial EE and RE installations
31	Novacem	2010	EE corporate bond	\$ 1.5	To fund the construction of a semi-commercial green cement plant
<b>Total</b>				<b>\$ 15,579.2</b>	

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Source – OECD analysis using Climate Bonds Initiative data, Daiwa Research and Energy Hedge Magazine from OECD Working Paper on Finance, Insurance and Pensions No.10



## Environmental Bonds WEBINAR

Climate action and the capital markets Online, 15 October

### Thanks to our speakers:

**Don Kanak, *Adviser and former Chair,*  
WWF Forest and Climate Initiative**

**Mahesh Jaykumar,  
*Portfolio Manager Global Fixed Income,*  
State Street Global Advisors**

**Sean Kidney, *Chairman,*  
Climate Bonds Initiative**

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Carbon  
finance

# Is it really green?

Introducing the  
*International Standards and  
Certification Project*

Investor-focused not-for-profit, promoting large-scale transition investment



CARBON DISCLOSURE PROJECT

Sean Kidney, Chair, Climate Bonds Initiative

Climate Bonds INITIATIVE

# Assurance



Climate  
Bond  
Certified

# Why thematic?

## **Sales narrative**

US Railway, WW1&2  
Highway & Autostrada Bonds

US Civil War

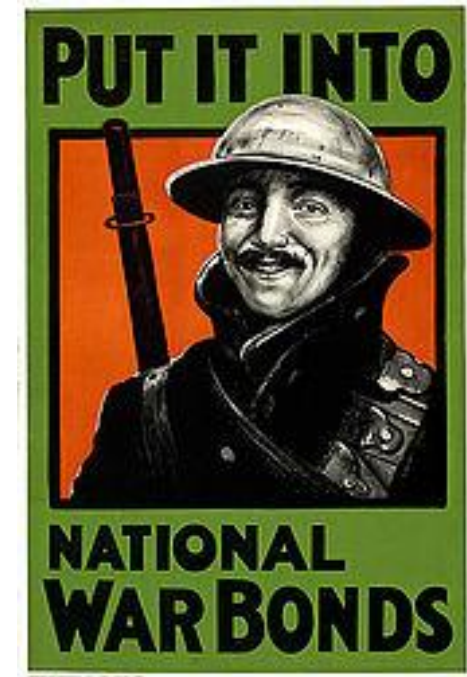
- > Political engagement
- > Lean on institutions: US, GIB

## **Investor preferencing**

CalSTRS and instruction to fund managers

## **Government preferencing**

Tax credits  
Criteria for credit enhancement



# Drivers

## **International Energy Authority says:**

6-7 degrees ... vs ... Opportunity

Investment flow = \$1 trillion p.a. (energy, adaptation)

Clean energy build = high capex

Same EU GDP outcome over 40 yrs (ECF/McKinsey)

OECD Green Growth

Speed / scale

Prize lower cost energy

# Funds are in capital markets

Global bonds outstanding in 2010 = **\$95 trillion+**

Institutional investors = \$75 trillion+

Pension, insurance, sovereign wealth funds

Under-exposed to energy & Infrastructure

19 of world's top 20 pension funds are public sector

“Give me two products with the same risk/reward profile,  
one brown, one green - I'll pick the green”



# The premise

1. Institutional investors are aware of the real macro risks around the impact of climate change, but these are hard to quantify for portfolio management.
2. But, if offered two investments with the same risk/reward profiles, one “brown”, one “green”, they will think of those macro risks and choose green.



3. Assessing enviro integrity is hard work. An authoritative standard will ease decision-making and support *liquidity*. The easier it is to use the faster the market will grow

Our advice was that “authoritative” means:

- Backed by asset owners and NGOs
- Endorsed by a groups like UN PRI, UNEP FI



# Objectives

**Aim:** Allow investors & governments to prioritise 'low carbon' investments.

**Objectives:**

1. Avoid greenwashing / assure investors (+ NGOs) that investments are for climate change solutions
2. A simple preferencing tool
3. Standardization of credentials = liquidity  
Energy, transport, water, etc

It's an *environmental*, not a financial standard.  
Investors still have to do financial due-diligence.



# Low-carbon economy assets

Eligibility criteria per wedge

Wind, solar  
+ supply chains

Energy efficiency

Bio-energy

Broadband

Grid

Shipping

Water for adaptation

Agriculture

*Portfolio-based*

- IFI standard

- Forest bonds

- Sovereign hypothecated  
(Barrier Reef bonds)

*Science-based  
low-carbon  
economy framework*



# Benefits for issuers

New investors

Reputation enhancement

Exposing the market to underlying assets, in preparation for ABS post-Basel III

Need for improved capital ratios will further squeeze business lending

Re-financing allows focus on project development lending



# Structure

## Climate Bond Standards Board

### Members

Asset owners plus  
NGOs from US, EU, China, India.  
First confirmed members:  
US Natural Resources Defence Council  
Carbon Disclosure Project

Endorse Standard  
for publication

### Roles and Responsibilities

Task relevant working  
groups with developing  
new eligibility criteria

Oversee updates  
for the Standard

### Low Carbon Economy Reference Group



1. Develop low carbon economy framework to use in determining project types for certification
2. Make recommendations to Standards Board about particular project types to be included
3. Make recommendations for overcoming technical obstacles in Standard design

### Technical Working Groups



Technical experts developing  
certification eligibility criteria.

Wind, Solar  
Energy Efficiency  
- Commercial  
- Residential  
- Industry  
Low-carbon cities  
Forests  
Transport, Biofuels  
Water/adaptation  
IFI loan programs

### Industry Working Group



Develop and make  
recommendations to the  
Standards Board on:

1. Licensing regime for third party verifiers
2. Verification procedures and documentation
3. Practicability of eligibility proposals

Members include representatives  
of Standard & Poors, IFC,  
KPMG, Arup

### Climate Bonds Secretariat : Research, Coordination and Administration

Funding

Logistics

ISEAL Compliance

Public Consultation

Contracting

Climate Bonds INITIATIVE

# Participants



Certifying wind energy/manufacturing  
Corporate  
Project  
Portfolio / ABS

Solar, bio-energy, energy efficiency +

## Board

**CALSTRS.**  
HOW WILL YOU SPEND YOUR FUTURE?

**CARBON DISCLOSURE PROJECT**



Investor Group on  
Climate Change



Investor Network on  
CLIMATE RISK

Industry working  
group participants

**STANDARD  
& POOR'S**



**Climate Bonds** INITIATIVE

# Process for certification eligibility

Phase 1:  
Prelim

Standards Board signs  
off on ToRs

Research group develop  
background papers to support  
Project Type to be certified

Phase 2:  
Development

Technical Working Group  
develops draft eligibility  
criteria

Industry Working Group review  
practicality of draft criteria

Phase 3:  
Consultation

Public Consultation and Reconciliation Period

Phase 4:  
Publication

Standards Board signs off on eligibility criteria  
for public release

# Key provisions

General requirements applying to all Climate Bonds

- Linked assets matching bond amount

- Assurance around use of proceeds

- Verification requirements

- ESG compliance disclosures (non-verified)

Requirements specific to listed eligible low carbon physical assets

- Wind farms, manufacturing, related infrastructure

Requirements specific to certain bond types

- Traceability

- Settlement period

- Cost centre provisions for corporate bonds



# The process



# Structuring options



# Timetable

Launch	24 November 2011 - wind energy
2012	Roll-out of eligibility criteria for solar, bio-energy, energy efficiency
2013	Roll-out of forest-related and adaptation investment eligibility criteria



# Take-away

New Scheme is here

Backed by some major players

Join us in making it stronger

Consider certification for your issuance

Consider the Standard as a screening and preferencing tool



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