GREEN & RESILIENCE BANKS:

HOW THE GREEN INVESTMENT BANK MODEL CAN PLAY A ROLE IN SCALING UP CLIMATE FINANCE IN EMERGING MARKETS

COP22 Side Event: Investing in the Planet

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coalition for green capital

CLIMATE FINANCE ADVISORS

NRDC
NATURAL RESOURCES DEFENSE COUNCIL

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Introduction: The Challenge and Key Findings

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Green & Resilience Banks

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Natural Resources Defense Council
Coalition for Green Capital
Climate Finance Advisors

NRDC NATURAL RESOURCES DEFENSE COUNCIL
coalition for green capital
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NOVEMBER 2016

Major shifts required to meet global climate goals

Investment from Fossil to Clean Implementation of Paris climate pledges will require over US$13.5 trillion in green investment; keeping below 2◦C will require an additional US$ 11 trillion	**OECD to non-OECD** More investment needed in emerging markets, where energy demand is growing rapidly and financial markets are less mature	**Greening Finance** Addressing systemic barriers to LCR infrastructure within the financial system itself, including investors' considering climate in investment decisions	**Centralized to Distributed** Energy resources are increasingly distributed, where access to reasonably priced capital can be limited

Public funding alone cannot enable this transformation

"Green finance" and "greening finance" are synergistic

Specialized green financing institutions should be scaled up, particularly in developing and emerging economies, where exposure to technologies and business models may be limited

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The GIB model is attracting attention

"The key added value of green banks, for example, is their capacity to foster institutional innovations and partner with other financial and regulatory institutions to increase the diversity and depth of local financial markets in order to enhance the domestic supply of green finance."

— UN Inquiry: Design of a Sustainable Financial System report: The Financial System We Need

"…GIBs are making a case that centralising expertise in a new independent institution dedicated to mobilising green private investment can be an effective approach to unlocking larger flows of private capital."

— OECD report: Green Investment Banks: Scaling up Private Investment in Low Carbon, Climate Resilient Infrastructure

"In a number of G20 countries, national development finance institutions (as well as specialist green investment banks) have proved instrumental to improve management of environmental risks and crowd-in funding from the private sector."

— G20 Green Finance Synthesis Report

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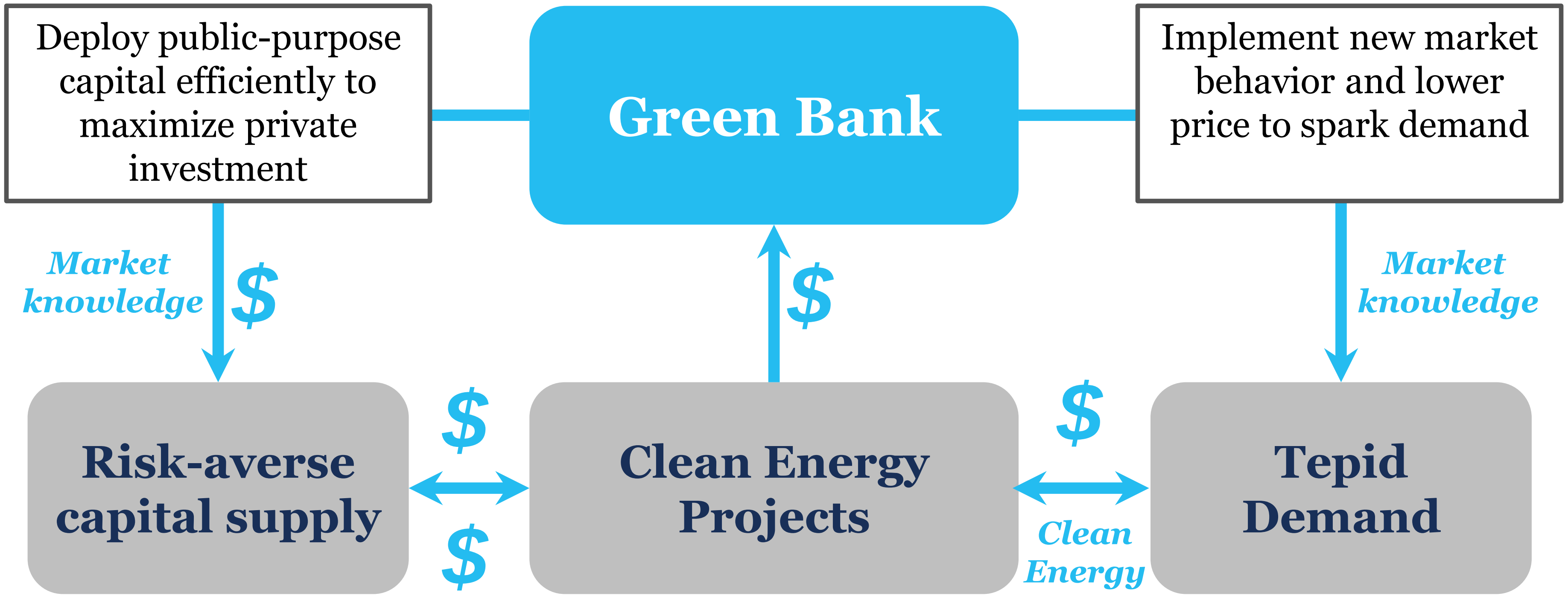
Key Findings

- GIBs can provide a national and local solution to close financing gaps in scaling up low carbon, climate-resilient (LCR) investments
- The GIB model can scale up climate finance in developing and emerging economies by
  - Helping countries achieve climate goals articulated within their NDCs;
  - Being a locus of financial innovation to meet local market needs; and
  - Being a critical partner for international sources of climate finance and Development Finance Institutions (DFIs)
- GIBs can be a conduit between the international and national level (upstream) and local project level (downstream)

The Role of Green Investment Banks

The Green Investment Bank Model

A GIB is a public financing authority that uses limited public funds to work alongside private capital providers to accelerate growth of competitive clean energy markets



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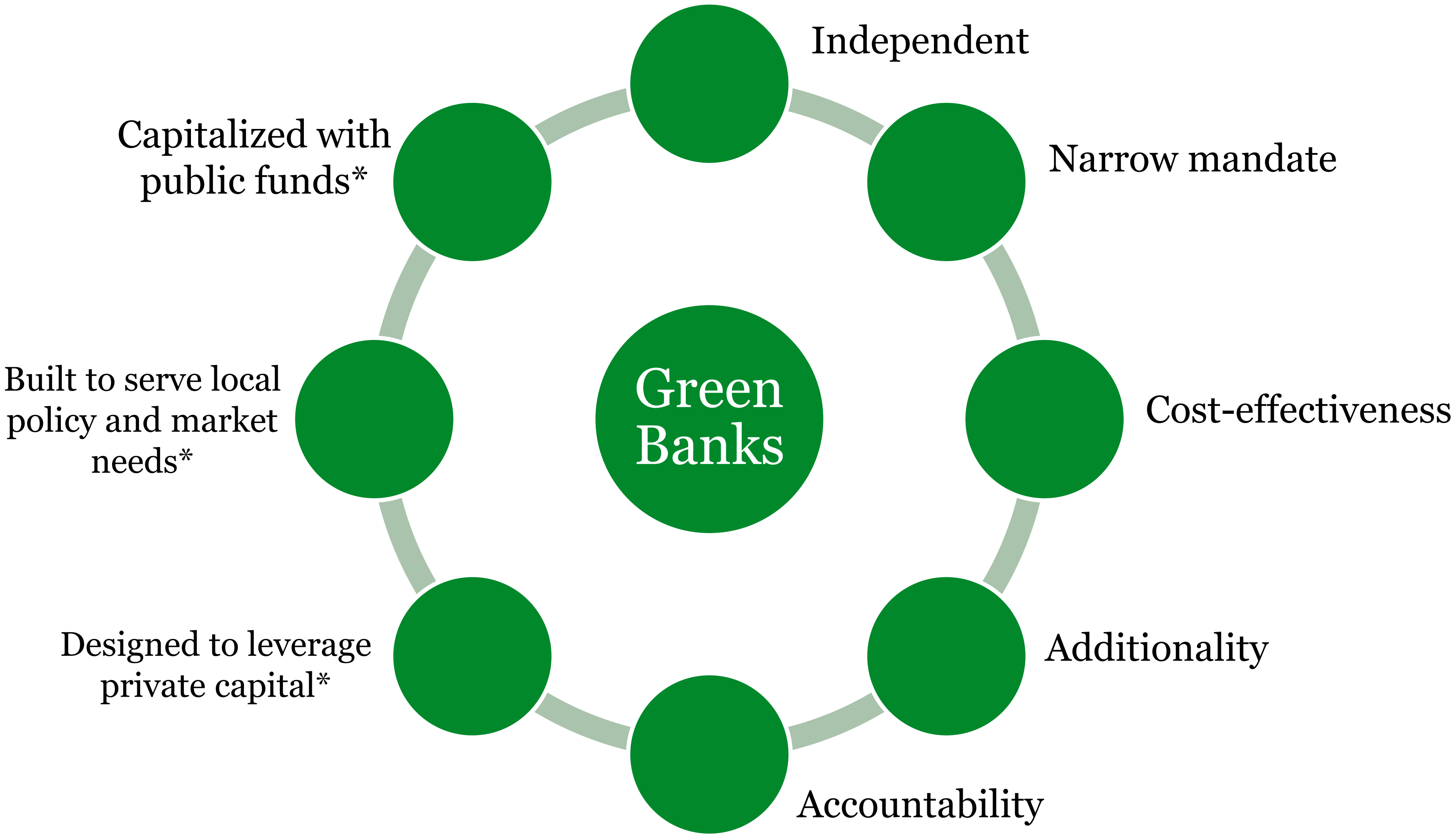
Defining characteristics of Green Investment Banks



Adapted from the OECD report, "Green Investment Banks: Scaling up Private Investment in Low-Carbon, Climate-Resilient Infrastructure", 2016. An asterisk indicates characteristics that have been added to the OECD's list.

Existing Green Investment Banks

- As of year-end 2015, the OECD reported that **13 GIBs[1] have been established** in local and national jurisdictions worldwide
- GIBs have been established by policy makers as **part of a broader set of solutions** to address market failures and barriers preventing LCR investment

[1]GIBs or “GIB-like institutions”

GIB address common challenges

Utility and Large Commercial and Industrial Renewable Energy Projects

SME-sponsored projects:

Lack of ability to provide guarantees or equity, lack of track record, high cost of structuring financing

Innovative technologies:

Projects considered risky due to unfamiliarity with technology, lack of liquidity

Distributed Small and Medium Scale Renewable Energy Projects

- Lack of interest from financial institutions due to small size
- Inability to provide guarantees, equity , etc. due to the size of the sponsor
- High cost of structuring financing
- Unfamiliarity with technical and operational profile of the technologies
- Difficulty perceiving the economic benefits
- Lack of specific financial instruments

Energy Efficiency Projects

- Difficulty perceiving the economic benefits
- Perception that payback periods are too long
- Lack of specific financial instruments
- Incipient level of development of ESCOs

GIBs have locally specific missions

Australia: Clean Energy Finance Corporation

Accelerate the transformation of Australia into a more competitive economy in a world with less carbon, to catalyze greater investment in reducing emissions.

Malaysia: GreenTech Malaysia

Develop sustainable and widespread green technology markets and strengthen local green technology industry.

Japan: Green Finance Organization

Support the development of local communities to address the impacts of slow economic growth.

Connecticut, USA: Connecticut Green Bank

Prioritize reducing carbon emissions and reducing energy costs, as it contributes to the creation of local jobs by investing in clean energy.

New York, USA: NY Green Bank

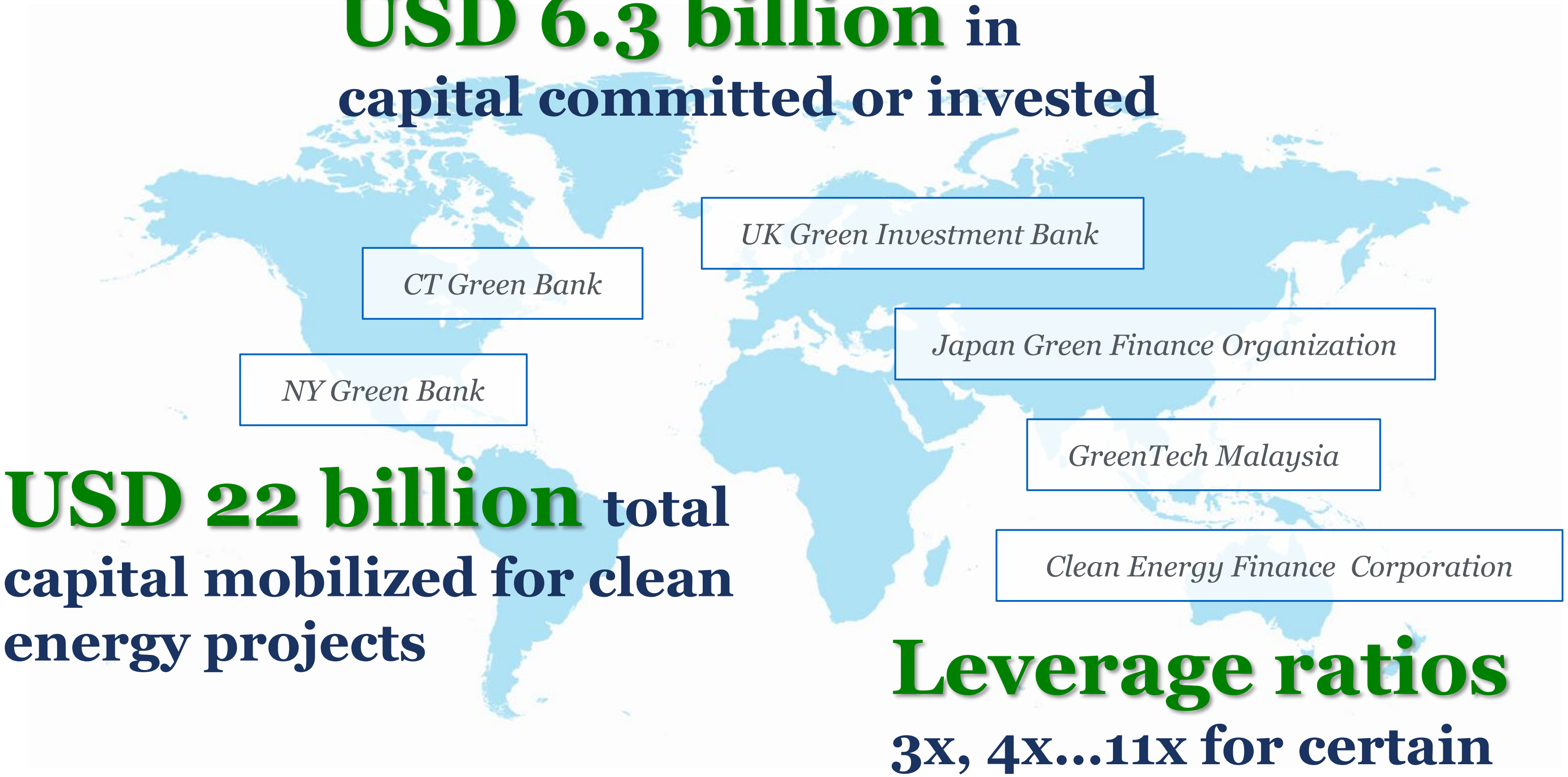
Transform and accelerate the deployment of clean energy in the state of New York through funding and collaboration with the private sector.

UK Green Investment Bank

Accelerate the UK's transition to a greener, stronger economy. Focus on being "green and profitable".

GIBs are already having an impact…

USD 6.3 billion in capital committed or invested

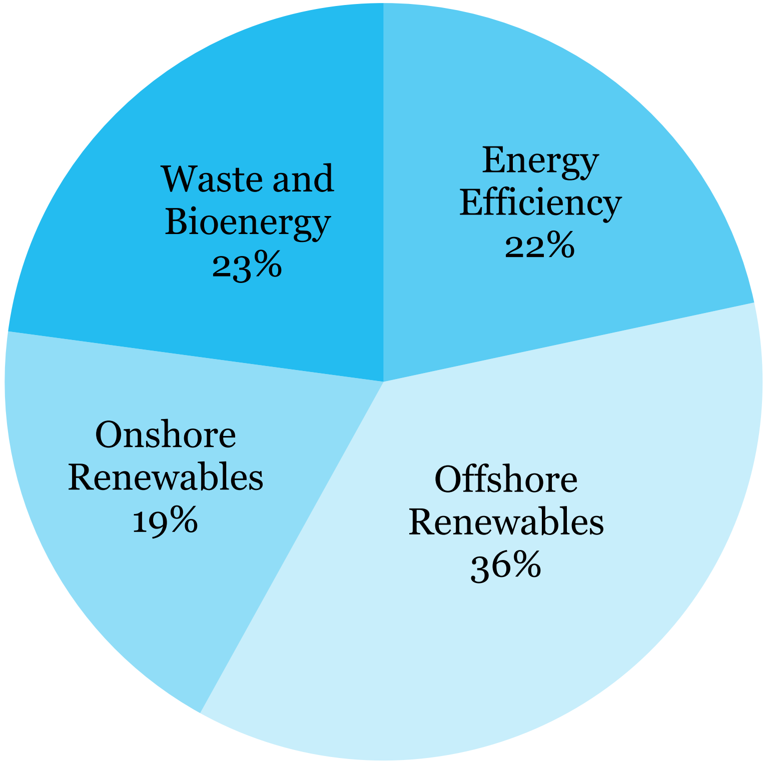


USD 22 billion total capital mobilized for clean energy projects

Leverage ratios
3x, 4x…11x for certain investments

Source: NRDC and CGC calculation

…by scaling diverse technologies



Percent of total GBN members' capital investments and commitments by sector
**Preliminary estimate by NRDC and CGC based on available data*

Energy Efficiency

- Commercial retrofits
- Energy management systems
- LED street lighting
- Low emissions vehicles
- Residential retrofits

Onshore Renewables

- Geothermal
- Onshore wind
- Small hydro
- Solar PV and thermal
- Storage
- Wind

Offshore Renewables

- Offshore wind
- Wave energy

Waste and Bioenergy

- Anaerobic biogas
- Biomass
- CHP
- Landfill gas
- Waste to energy

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Creating and Capitalizing a Green Investment Bank

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Structure and Capitalization of existing GIBs

Institution	Established	Structure/Oversight	Capitalization
Australia CEFC	2012	Independent Board that reports to Parliament through its responsible Ministers. Consolidated entity.	Government funds
Connecticut Green Bank	2011	CT Green Bank is a quasi-public corporation established as part of the Connecticut Legislature. Repurposed entity.	RGGI (cap & trade funds) Utility bill surcharge Federal competitive and non-competitive grants Private sources.
GFO Japan	2013	GFO is a public entity in Japan that uses public dollars to make investments. New entity.	Capitalized by revenue of a carbon tax on fossil fuel consumption (Tax for Climate Change Mitigation)
GreenTech Malaysia	2010	GTM is under the purview of the Ministry of Energy, Green Technology and Water and a Board of Directors. New division.	Government funds
NY Green Bank	2014	Public Service Commission oversight New division of state energy office	RGGI (cap & trade funds) NYSERDA funds (ratepayer funds)
UK GIB	2012	GIB is wholly owned by the UK Government. New entity. In the process of privatization.	UK Government

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Approaches to GIB Creation

Legislative	• The Australian Clean Energy Finance Corporation (CEFC) was created by legislative action through the CEFC Act of 2012 passed by Australian parliament.
Regulatory and Administrative	• New York chose to create their Green Bank through combination of administrative action and regulatory ruling.
Re-purposing and Consolidation	• The Connecticut Green Bank was formed by fully repurposing an existing quasi-public entity, the Connecticut Clean Energy Fund (CCEF).

Approaches to GIB capitalization

Domestic Sources

- Budget Funds
- Cap & Trade / Carbon Tax Revenue
- Utility Surcharge
- National Development Banks/Funds

International Sources

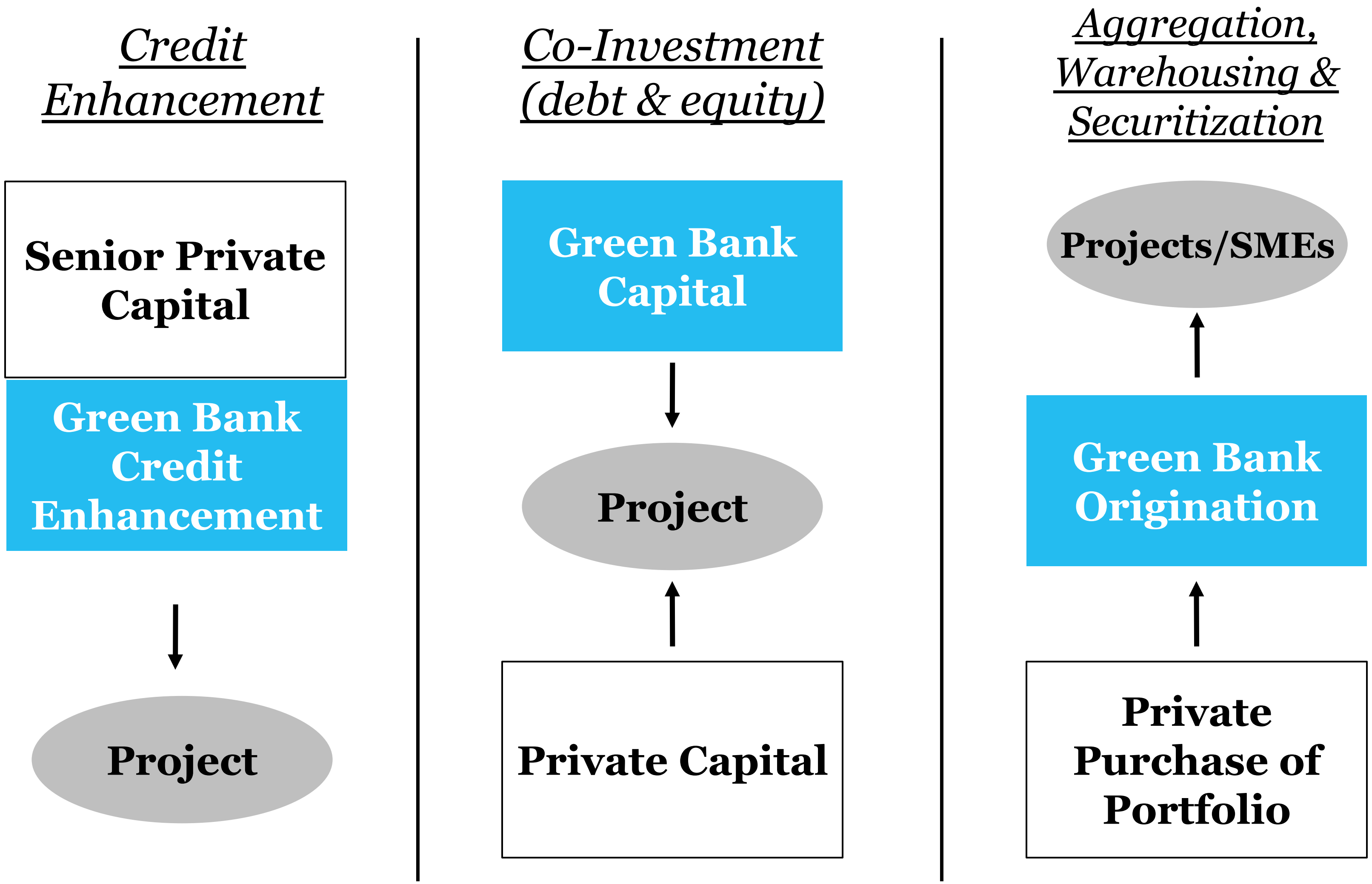
- International donor assistance (bilateral and private philanthropy)
- Institutional investors, pension funds, other private investors and capital markets (green bonds)
- Climate finance funds

Focus on GIB Capitalization with Climate Finance

- There are almost 100 climate funds including the Green Climate Fund (CCF), the Global Environment Facility (GEF), and the Climate Investment Funds (CIFs)
- Capital is concessional and mission-aligned with GIBs
- Each Fund has the ability to support national level GIBs
- Each Fund can on-lend and provide guarantees and other risk-sharing mechanisms
- Using Fund capital to capitalize GIBs can support enabling environment, capacity building and deployment investments tailored to local needs

Products and Tools for Underserved Markets

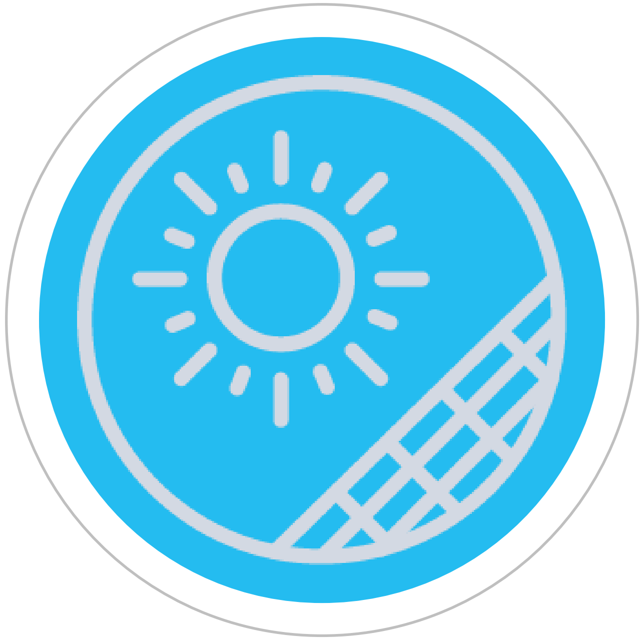
Typology of GIB Strategies



Green Bonds and Green Banks

- Green Bonds have same credit characteristics as any other bond. **Green feature is a plus factor**
- A bond issued by a Green Bank (or any other issuing entity) can be a "Green Bond" if it **meets the market's issuance requirements**
- Green bonds present an opportunity to access domestic and international capital markets who want **sustainable assets**
- GIBs can use green bonds to **refinance development costs** of LCR projects after the construction phase or **sell portfolios**
- GIBs can play a role in **building the green bond markets**, such as by credit enhancing aggregation facilities or aggregating their own loans
- GIBs can **purchase green bonds** to create liquidity

Malaysia: Increase Commercial Bank Lending



Goals: Promote green investments by providing easier **access to financing** and at a lower financing costs.

Investment Type: The scheme provides a **60% government guarantee** on financing provided by financial institutions as well as a **2% rebate on interest/profit rate** charged by the FI.

Result: As of June 2016, **248 projects** have been supported so faugh the scheme, with 80% being renewable energy projects such as solar and biomass.

New Investors: The GTFS has **attracted 27 risk-averse banks and financial institutions** to invest in green infrastructure projects.

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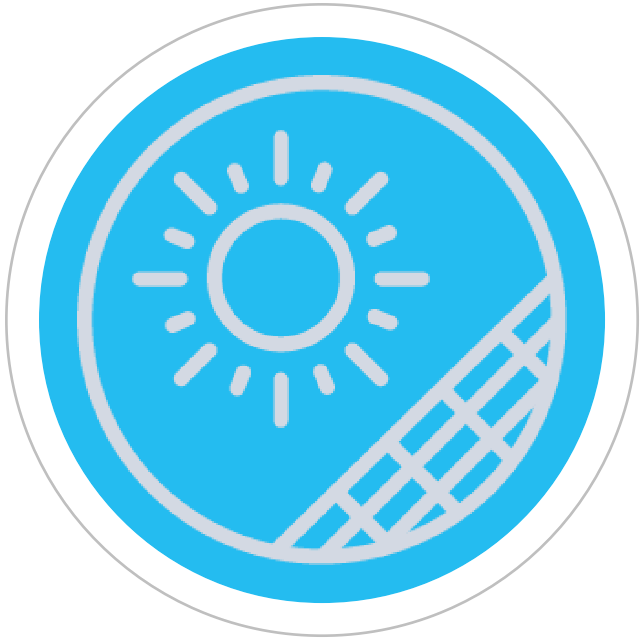
Japan: Increase Distributed RE Development



Goal: Facilitate loan financing for green infrastructure developers in Japan by decreasing debt to equity ratios, and to support the implementation of new business models.

Investment Type: The Green Fund makes equity investments. Investments are made directly in projects as well as indirectly through sub-funds. Equity amount must be less than 50% of total equity, and Green Fund will stay in a project for 10 years maximum.

Results: Since FY2013, the Green Fund has made a commitment to invest a total of USD 78 million into projects totaling USD 664 million for a leverage ratio of over 8:1. Projects GFO invested are expected to offset an estimated 664,000 tons CO2e every year.

New Investors: Undisclosed private financial institutions (including local), private companies, civil funds, and co-ops.

United Kingdom: Draw in Pension Funds

Goals: Attract capital into the UK's offshore wind sector from **new, long-term investors** seeking solid, risk-adjusted returns by investing in operational assets. **Create liquidity/exit to permit re-investment** by sponsors.

Investment Type: **unlisted project equity**. The Fund is managed by an FCA registered subsidiary of GIB – UK Green Investment Bank Financial Services Limited.

Result: As of February 2016, the fund had **five investments in UK OSW farms.**

New Institutional Investors: As of October 2015, the Fund had total committed capital **of £818MM** from UK based pension funds, such as Strathclyde Pension Fund, as well as international institutional investors, including one of the **world's largest sovereign wealth funds and Sweden's AMF Pensionsförsäkring AB, a leading European life and pension company.**

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Australia: Develop Green Asset-Backed Securities

Goal: **Support the development of the green asset-backed security (ABS) market** in refinancing innovative solar and storage products by purchasing AUS$20 million in certified green bonds issued by FlexiGroup Limited.

Investment Type: Investment in **listed green bond (ABS)**.

Results: Expands the types of financial instruments available, combining an innovative financing approach with a focus on rooftop solar and storage. **First use of certification from the Climate Bonds Initiative on a securitization in Australia. Observed 5 bps pricing benefit in green tranche.**

Scaling Up Climate Finance With the GIB Model

Barriers to investment in emerging and developing economies

- Unfamiliarity of private capital suppliers with clean technologies
- Difficultly of assessing credit risk
- Lack of proven business models
- Lack of liquidity for investment exits
- High perceived implementation, political, and currency risk
- Difficulties with aggregation
- Inability to insure against certain climate-related risks
- Energy access/energy infrastructure
- Overall investment climate and policy framework

GIB model can scale up climate finance in emerging markets

- Facilitation: Help countries meet climate goals articulated within their nationally determined contributions
- Mobilization: Serve as a locus of financial innovation to meet local market needs
- Coordination: Serve as a critical partner for international sources of climate and development finance

GIBs as a Locus of Financial Innovation

Currency Hedging Risk Mitigation Facility for Local Currency-Denominated LCR Investment

- KfW Development Bank (Germany) to provide €30million through to hedging specialist TCX to reduce exchange rate risk in emerging-market investment deals

Energy Savings Insurance

- Inter-American Development Bank (IaDB), CTF, Danish Energy Agency implementing pilot US$25 million fund in Mexico with local partners of investment in 190 energy efficiency projects that provide a savings performance guarantee

GIBs as a Locus of Financial Innovation (Cont'd)

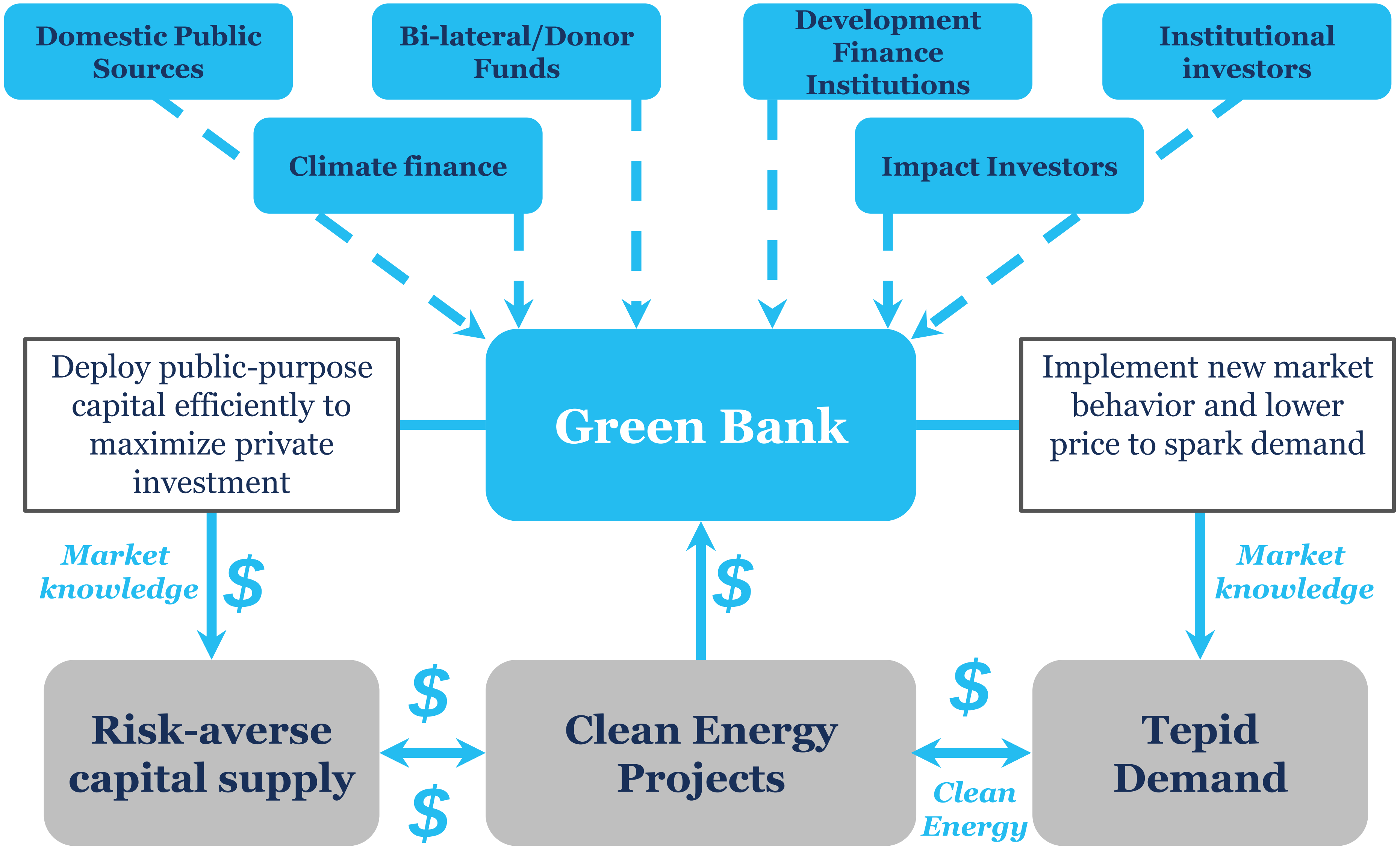
Bottom-of-the Pyramid (BoP) Solar Energy Access Investments

- The Green Climate Fund (GCF) is providing $25M in equity & grants for the Acumen Fund to create the KawiSafi Ventures Fund to invest in access to off-grid solar power in East Africa for low income consumers

Global Renewable Independent Power Supplier (GRIPS)

- GRIPS provides a market-based approach to substitute clean energy for diesel generators. It is of particular interest in emerging economies & developing countries where grid power may be unavailable, limited, or unreliable

GIBs can blend and/or coordinate sources of capital



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