



**IFC**

**International  
Finance Corporation**  
WORLD BANK GROUP

# **Role of IFC in Financing Greener Cement Projects**

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**7<sup>th</sup> CBC Sao Paulo, 22 June 2016**

# Discussion Contents

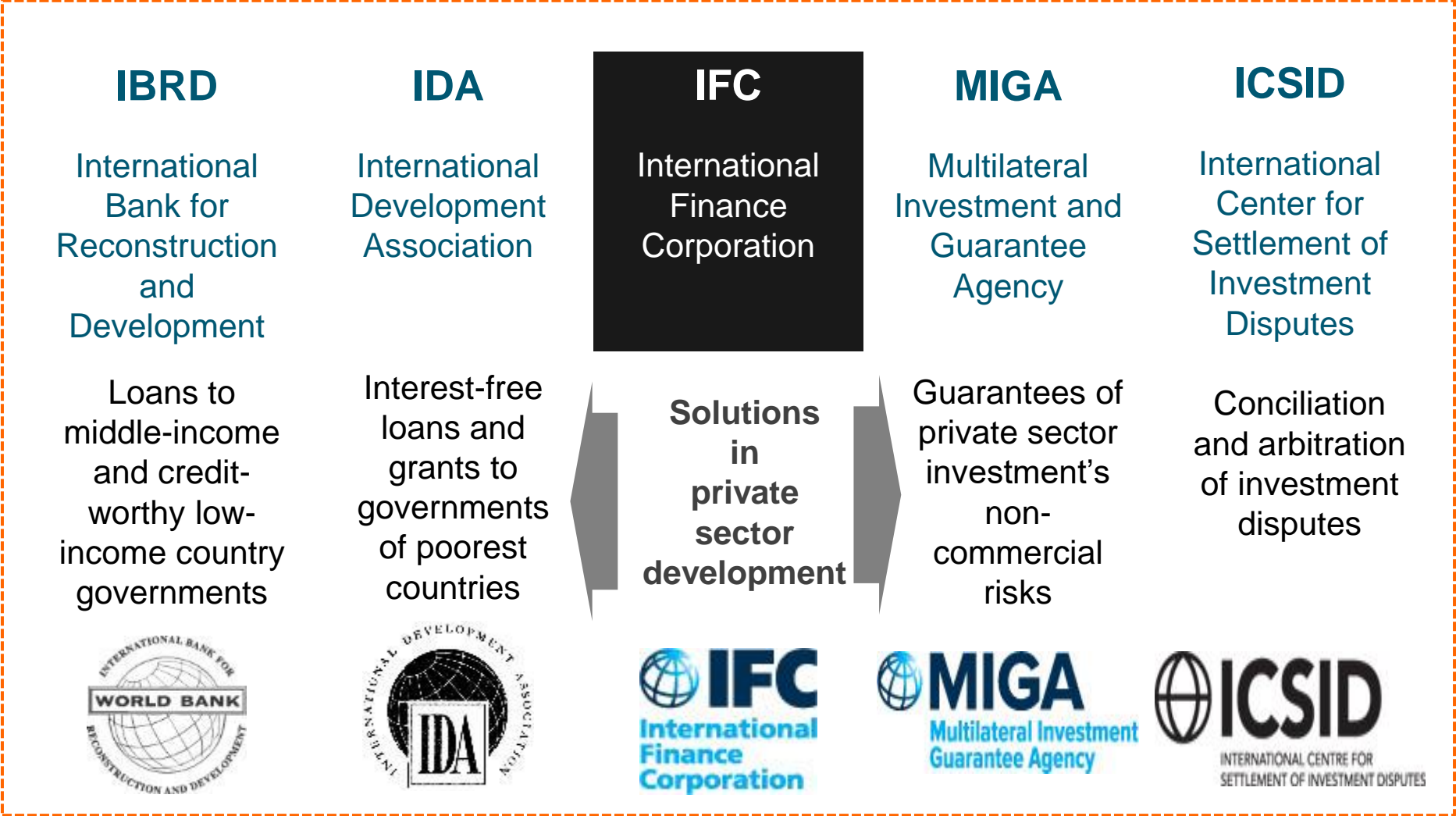
- IFC in Emerging Markets
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- Cement Post COP 21
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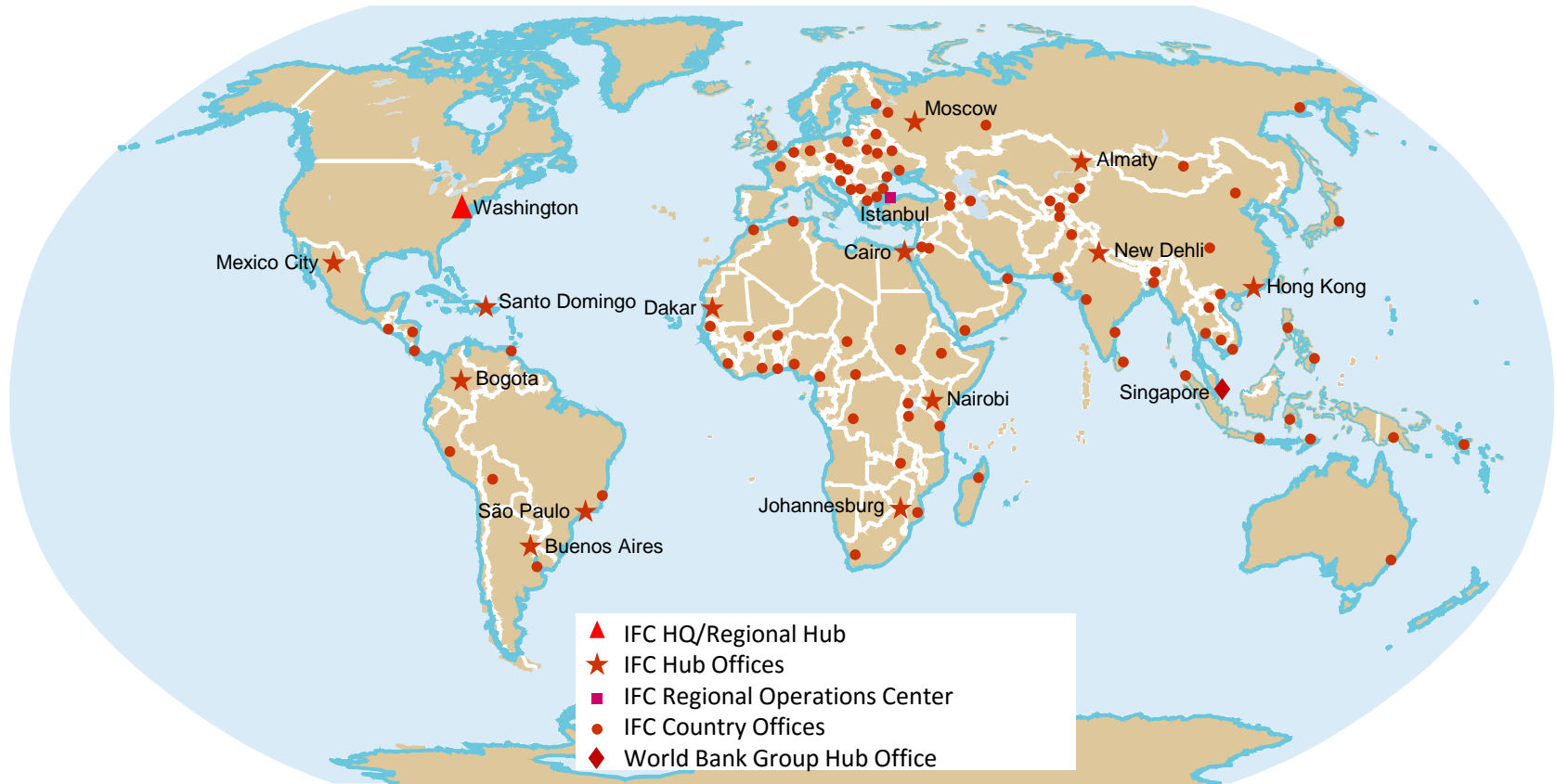
# IFC in Emerging Markets



# IFC: Private Sector Arm of the World Bank Group



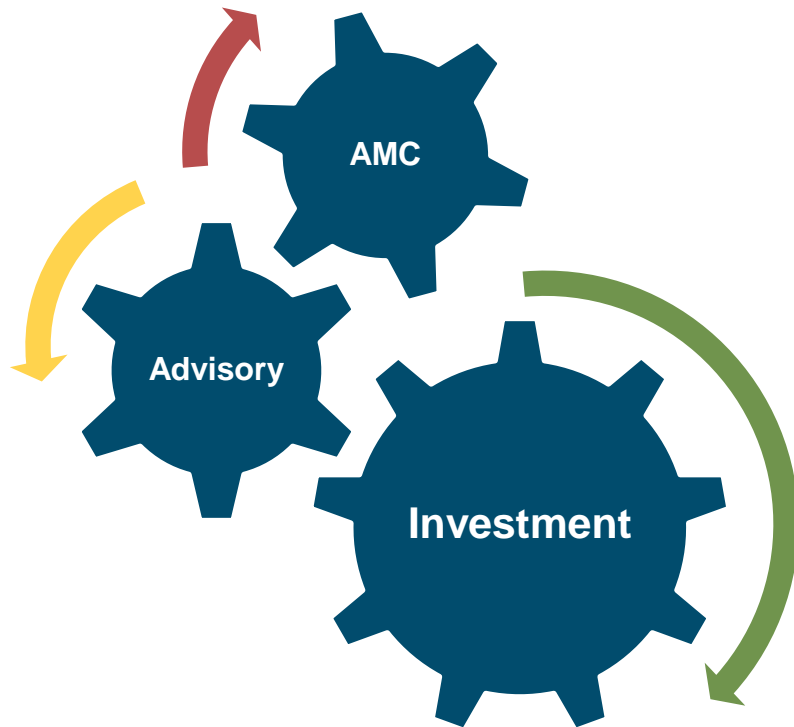
# IFC's Global Reach



- ❑ More than 108 offices in 98 countries, with over half of IFC's 3,900 staff based outside Washington
- ❑ Staff with specializations in financial services, industry, environment & social, policy, corporate governance, advisory services and more

# IFC: Three Businesses

- ❑ **IFC provides more than money. We blend investment with advice** to help the private sector find solutions to today's greatest development challenges.
- ❑ **IFC's three businesses – Investment Services, Advisory Services, and IFC Asset Management-** are **mutually reinforcing**, delivering **global expertise to clients** in more than 100 developing countries. IFC provides both **immediate and long-term financing**, and we **combine it with advice** that helps companies grow quickly and sustainably.



## IFC Advisory Services

- ✓ Advice
- ✓ Problem-solving
- ✓ Training

## IFC Investment Services

- ✓ Loans (long and short term)
- ✓ Equity, Quasi-equity
- ✓ Guarantees
- ✓ Mobilization
- ✓ Other forms of financing

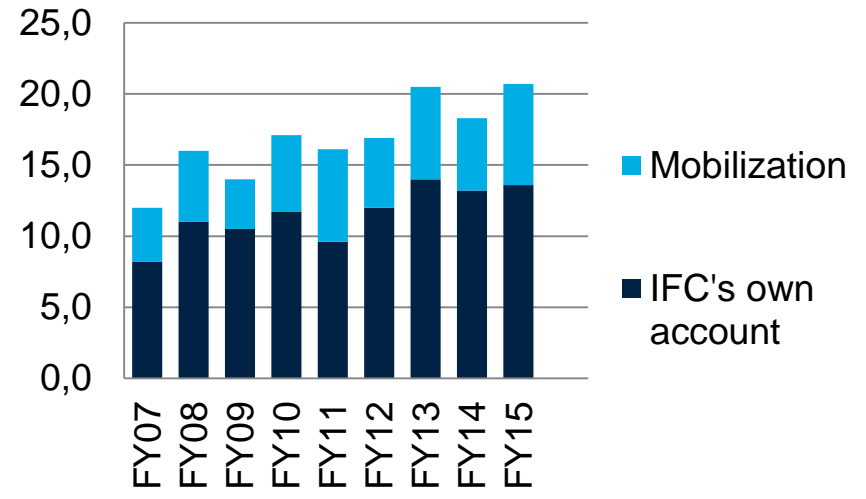
## IFC Asset Management Company

- ✓ Wholly owned subsidiary of IFC
- ✓ Private equity fund manager
- ✓ Invests third-party capital alongside IFC

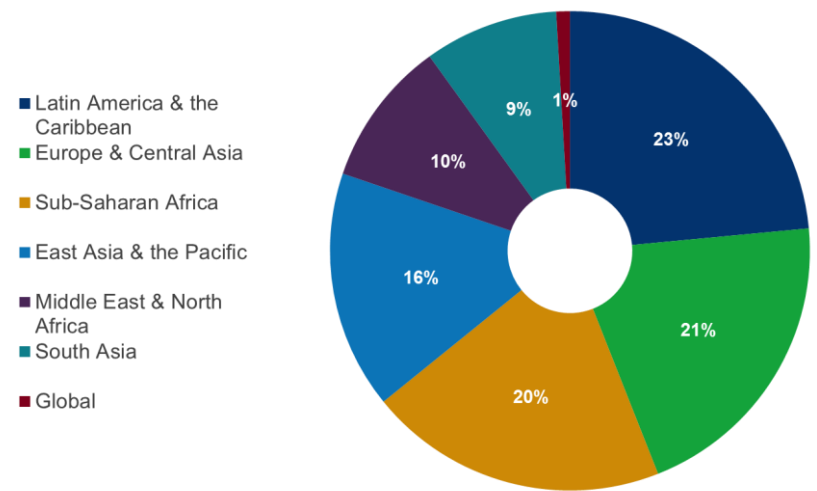
# Over US\$140 billion Invested in Emerging Markets

Shareholders	184 member countries
S&P & Moody's Rating	AAA
Total Assets	US\$87.5 billion
Portfolio	US\$65.7 billion*
Committed in FY15	US\$20.7 billion
- Number of Projects	- 406
- Own Account	- US\$13.6 billion
- Mobilized	- US\$ 7.1 billion
# of Active Projects	2,033
# of Countries	98

## FY15 Investment Commitments: US\$20.7 Billion



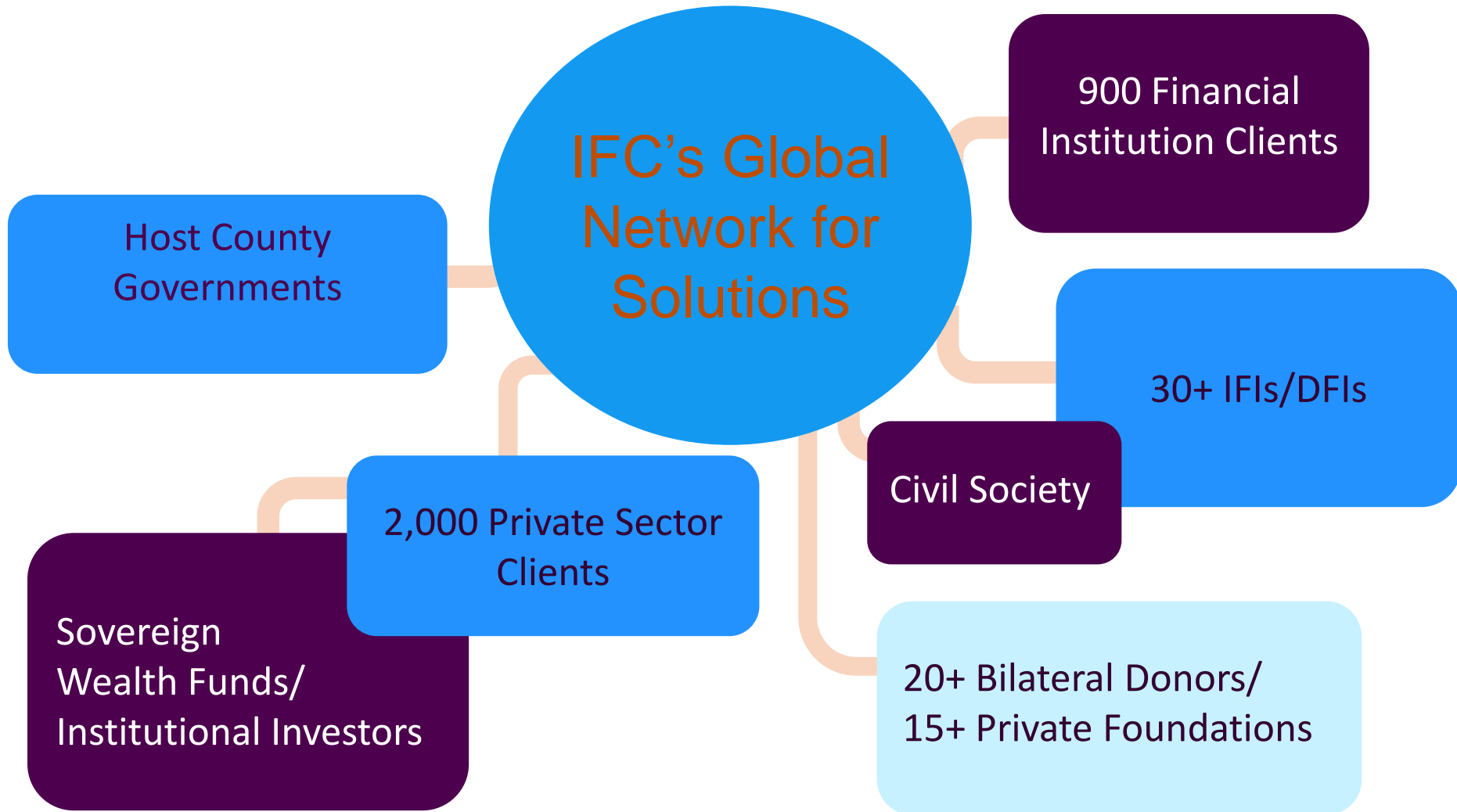
## FY15 Long Term Commitments by Region: US\$17.7 Billion



- Take market risk with no sovereign guarantees
- Promoter of environmental, social, and corporate governance standards
- Focus on development impact
- What we look for from clients:
  - Commitment to project (equity)
  - Successful track record & long-term strategy
  - Integrity

\* Of which US\$14.8bn equity type investments and US\$15.3bn syndicated loans

# The Power of Partnerships





# IFC Experience in Cement

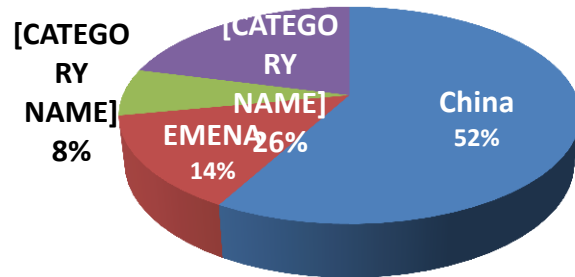


# Cement Industry Global Trends

Emerging markets account for >90% of cement consumption worldwide (4 Billion tons in 2015)  
Worldwide per capita consumption of 570kg (360kg without China)

## Market Trends

2015 Cement Consumption per Region: LAC 185Mt (4.6%)



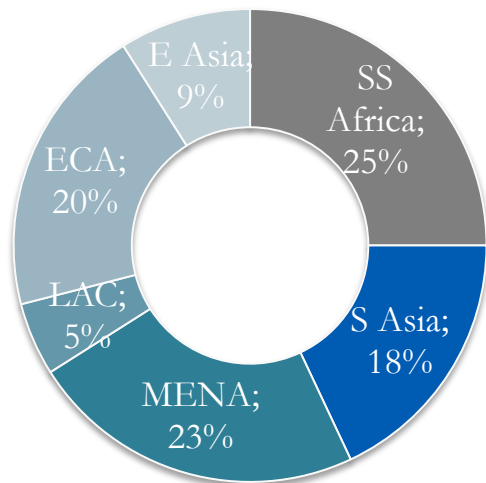
- Slower growth of 3-8% p.a. in emerging markets expected over the next 5-10 years
- China expected to reduce its cement consumption by over 20-30% during the next 10-15 years, concentration to continue, export capacity should remain limited to <45Mtpa
- While consumption would more than double in the Indian subcontinent, Indonesia and Africa
- Regional oversupply situations and low sea freight rates are making available cheap clinker and cement, sea trade (120 Mtpa) represents 3% of world consumption
- Low oil prices and strong US\$ support more aggressive export policies

## Business and Environment

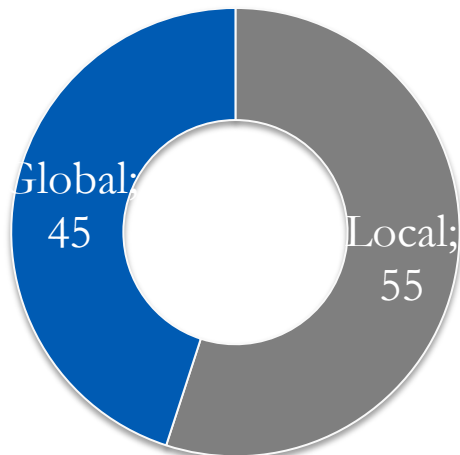
- LafargeHolcim merger (8% of world capacity) to spur new wave of M&A activities (CRH, Heidelberg-Italcementi, CNBM-Sinoma...)
- New large players rising regionally (Dangote in Africa) and internationally; Conch expanding outside China; UltraTech outside India, Argos outside Colombia, Cement Indonesia, Siam Cement... Quid of Votorantim/Intercement?
- Energy (30-40% of cash cost): coal, petcoke, gas, and power cost stabilizing; WHR cogeneration and Renewable taking off?
- Increasing use of (a) alternative fuels and raw materials and (b) cementitious additives (slag, fly ash, pozzolana)
- Increasing Environmental Regulations; cement contributes to 6% of man made GHGs emissions, moving towards >10%?
- Introducing innovative low carbon cement and concrete products

# IFC is a Key Partner and Financier in the Cement Sector

FY 2015 Cement Portfolio By Region



FY 2015 Cement Portfolio by Clients



## Cement & Lime Track Record:

- Cumulative Investment: \$4.5Bn
- Current Portfolio: \$0.8Bn
- 27 projects in 26 countries

- In-house industry expertise
- Close relationship with most global majors
- Advice sought by key industry stakeholders
- Long experience financing cement projects worldwide
- Leader in advocating more climate friendly production processes (including blended cement)

# Applying IFC Experience in Cement: Key Lessons and Success Factors (1)

## Market/Industry Competitiveness Factors

- Markets are regional or local in nature with clear regional price differentials, high entry barriers due to capital intensity and expensive transportation/logistical costs
- Careful analysis of country and regional supply-demand balance, and of competitors strategy & cost
- Import parity price in target markets; avoid projects with >20-30% exports volume
- Location of facility in relation to the target markets, raw materials and cement additives, infrastructure for transportation, and energy supply

## Technical Competitiveness Factors

- Proven Reserves (land surface and mining rights, geological investigation, environment clearance): limestone (>40-50 years), clay (>20-30 years), and Pozzolana, taking into consideration doubling the plant capacity
- Thermal and Power Energy efficiency (about 40% of production cash cost); flexibility to use AF; WHR
- Proven technology

## Low Capital Investment Cost

- <175\$/ton outside of China and India
- Recommended turnkey EPC; assistance during tendering and contracting phases
- Technical support for quality assurance during engineering, equipment fabrication and installation, civil works construction, commissioning, and performance tests

# Key Lessons and Success Factors (2)

## Sponsor Commitment and Values

- Due to capital intensive and cyclical nature of the industry, Sponsor's strong commitment (cash injection >20% of project cost) and financial strength are critical to a project's ability to survive adverse conditions
- Conservative gearing and financial structure for greenfield projects (40-50% equity)
- Good governance principles and reputation, and environmental and social commitment to sustain economic success
- Broad community support, quality ESIA

## Sponsor Management and Experience

- Experienced management team with good industry and technical knowledge
- Greenfield project may require a strong technical partner
- HR hiring and training plan
- Commercial and logistics/distribution plan
- Technical support during commissioning and ramp-up of commercial operations

# Performance Standards Overview



**PS1: Assessment and Management of E&S Risks and Impacts**



**PS2: Labor and Working Conditions**



**PS3: Resource Efficiency and Pollution Prevention**



**PS4: Community Health, Safety and Security**



**PS5: Land Acquisition and Involuntary Resettlement**



**PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources**



**PS7: Indigenous Peoples**



**PS8: Cultural Heritage**

# IFC Climate Approach to Cement

## Deal-breakers

- Vertical shaft kiln (“VSK”)
- Wet kiln or long-dry kiln
- Exceptions to the above only if the client commits to close kilns upon commissioning of replacement best practice technology

## Best Practice Technology

- 5-stage or 6-stage pre-heaters
- Vertical roller mill, Horomill (FCB), or pre-grinding (roller press) for raw, coal and cement grinding
- Waste-heat recovery co-generation system
- Use of alternative sources of fuel and raw materials

## Sector Benchmarks

### 1. Maximize Use of Blended Cement

- **Target:** Clinker/cement factor between 0.65 to 0.85, in line with local regulations (<0.5 for slag cement)

### 2. Minimize Fuel Use in Clinker Production

- **Target:** Fuel use of 2,900 -3,300 MJ/ton of clinker, matching 2011 European Integrated Pollution Prevention and Control (IPPC) Bureau’s Best Available Techniques (BAT) for the cement sector

### 3. Minimize Use of Electricity in Cement Production

- **Target:** 80 – 105 kWh/ton of cement based supplier guarantees

### 4. Encourage Use of Renewable and Alternative Fuels Wherever Locally Available

- **Example:** WHR; Biomass(wastes and plantations); Municipal Solid Waste; Wind farm; Solar

**Limit CO<sub>2</sub> emissions to maximum of 650-750 kg/ton cement produced  
(including electricity emissions)**

Cement Post COP21





# Paris Agreement in Numbers

**2** degrees

**2050**



**1.5** degrees

**As soon as possible**

**Adaptation  
Resilience**



**Carbon Pricing**



**Climate Finance**



**>\$100B annual target  
GCF >\$10B pledges**

# Cement Sector Footprint / Challenges



=5%?  
Or 6-7-10%



- Cement consumption still growing towards 5 billion tons (+20-25%)
  - Ownership of Electricity Emissions?
  - Slower global growth / loss of confidence in EM
  - Low energy prices – Longer payback?
  - Low or No carbon prices
  - Regulations, standards, access to good quality AF
  - Full building value chain, LCA, ETP,
- Assessment of implementation efforts: 2018 voluntary, 2023 mandatory.
- IFC/WB targeting 28% of long term investment as climate (+50% 2020/2015)

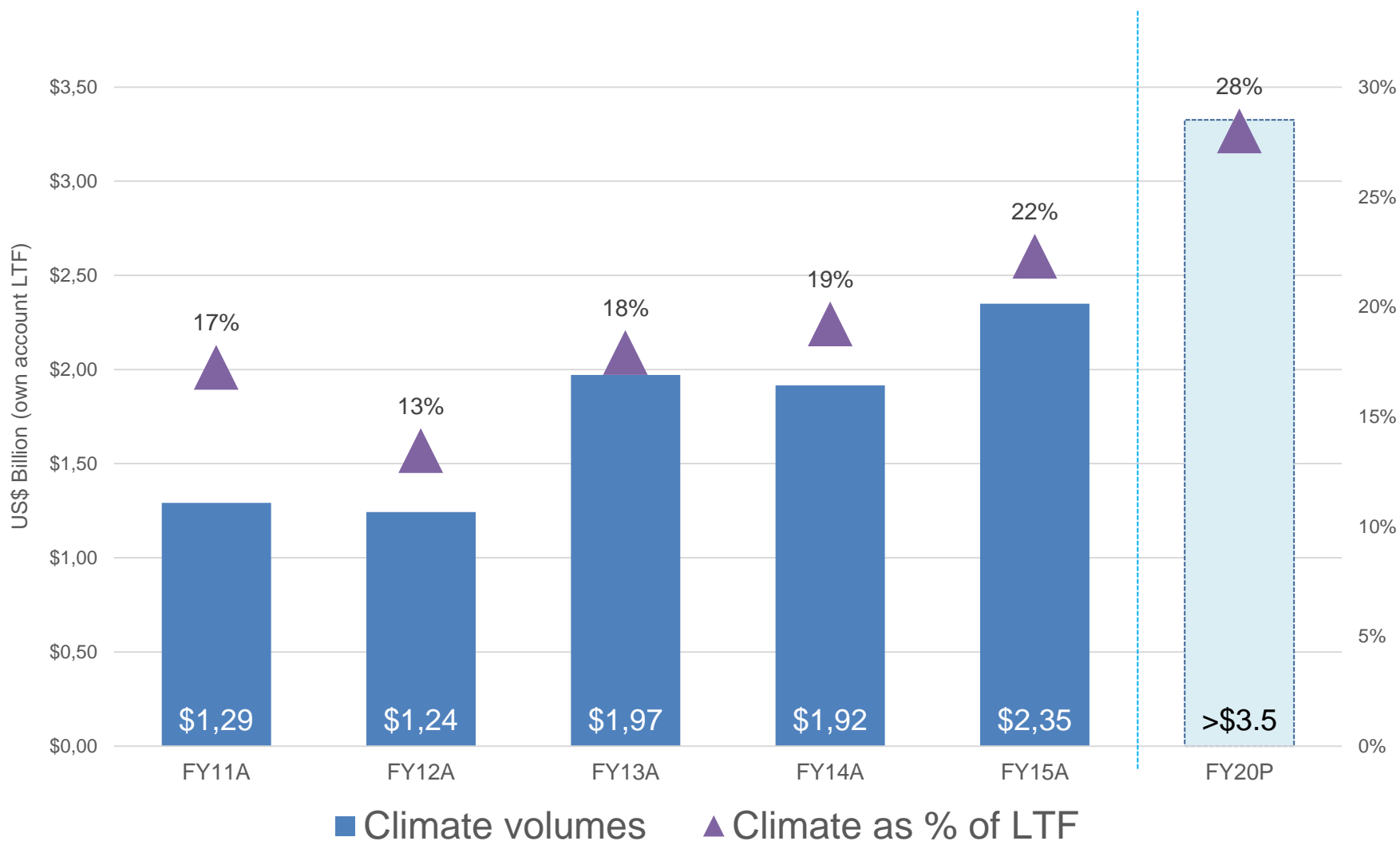
# What/Where are the Innovative technical solutions?

- Less carbon intensive clinker/cements
- AF, fuel switching
- LCA, Green Buildings,
- Shift to Climate-Smart Cities
- EDGE tool
- Collaboration on R&D?
- Stricter coal criteria?
- Little renewable energy and WHR (except Asia)
- Protecting & Restoring Forests, biomass
- CCS-U?



# Scale?

# IFC is ready to step-up its support to green projects



## Carbon Related Initiatives

- WHR and renewable energy use in cement generally qualify for carbon credits
- IFC supporting carbon financing options, considering carbon price in decision making
- CO2 emissions are calculated and benchmarked for all IFC cement projects
- Green Bonds
- Very Energy Efficient Greenfield methodology (<3GJ/ton CK, <90kWh/ton Cem)

## International Cooperation

- Support local clients to join WBCSD/CSI and contribute to the GNR data base, particularly in China
- Participate to global cement industry's Climate Change action plan, focusing on WHR, AF and other green options for the cement industry
- CSI/IEA Low Carbon Technology road map for the cement industry, Global, India, Brazil...
- IEA-led road map, UNIDO to promote the implementation of carbon capture and storage/reuse

## Advisory Services

- Cleaner Production and Energy Efficiency audits
- Support market uptake of new technologies, for ex. IFC IIP WHR global market study
- Specific studies on AF mapping and barriers in Egypt, Africa, Latin America
- Affordable Housing, Green Buildings, Edge tool
- Support local SME and community development
- Corporate Governance



## Others

- Share IFC experience on climate change with cement companies and stakeholders
- Tap available and donor funding to support IFC climate change projects - Clean Technology Fund ("CTF"), Earth Fund, CP Facilities
- CleanTech venture capital funding
- Leverage IFC and World Bank experience with other Multilateral Development Institutions; encourage international collaboration
- Off-balance sheet structures, Escos

# Carbon Pricing is gaining momentum

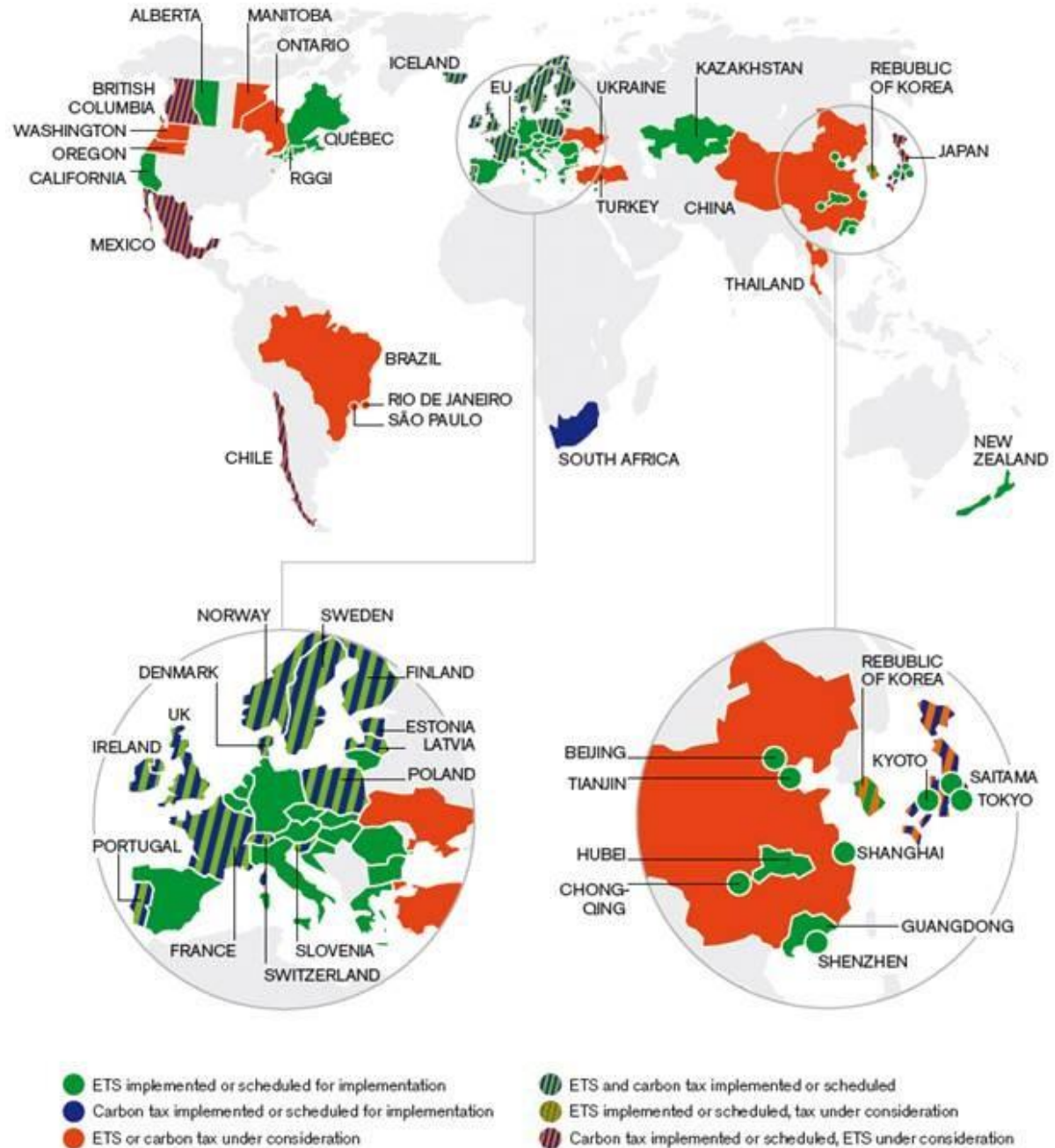
Current carbon pricing systems represent

## \$48 billion

and account for

## 25%

of global emissions



## Why Green Bonds?

### The Need

Climate change is not just an environmental challenge. It is a fundamental threat to development in our lifetime, with a disproportionate effect on emerging markets and their jobs and growth. Ensuring that the infrastructure built is low-carbon amounts to investing USD 6.2 trillion annually between 2015 and 2030 or a total of USD 93 trillion.



### The Solution

Financing the transition to a global green economy is challenging; to keep global temperatures below two degrees warming, we have to find ways to finance the climate gap. Green Bonds promote economic climate finance globally and are an ideal instrument for issuers and investors to promote sustainable development.



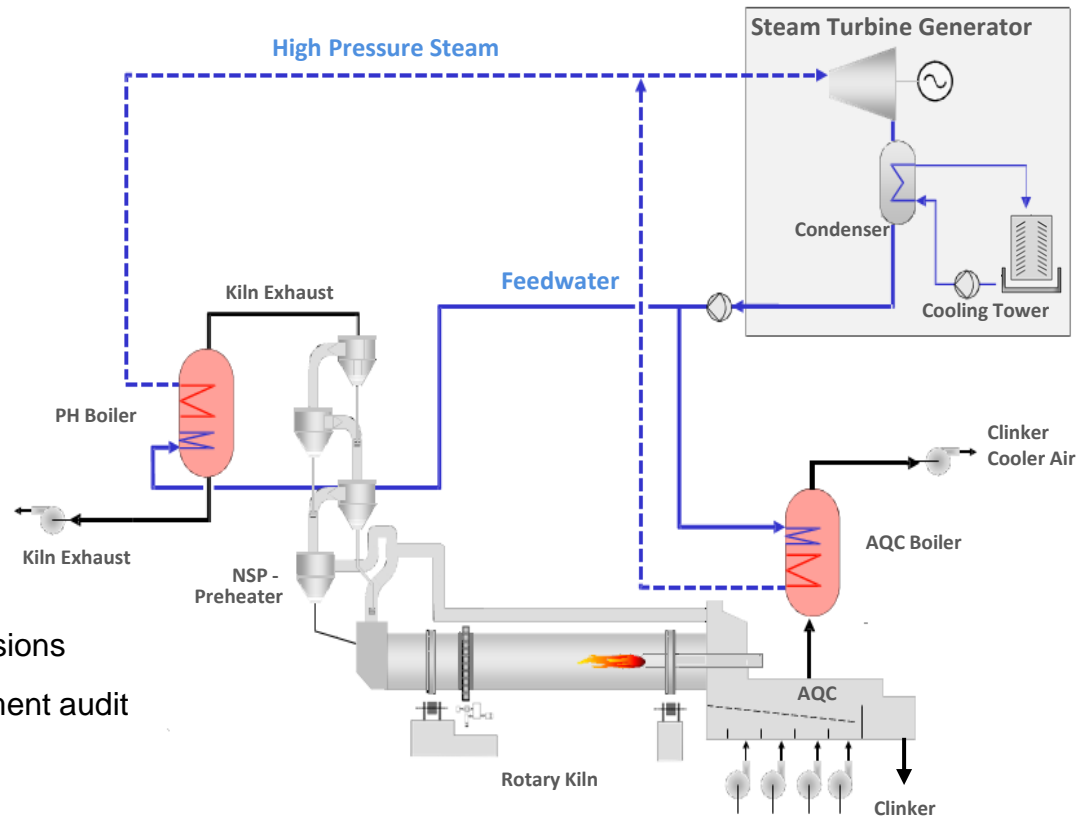
### What are Green Bonds?

Green Bonds are Corporate or Project Bonds issued exclusively to fund qualifying projects and activities that promote a sustainable environment.

# Waste Heat Recovery

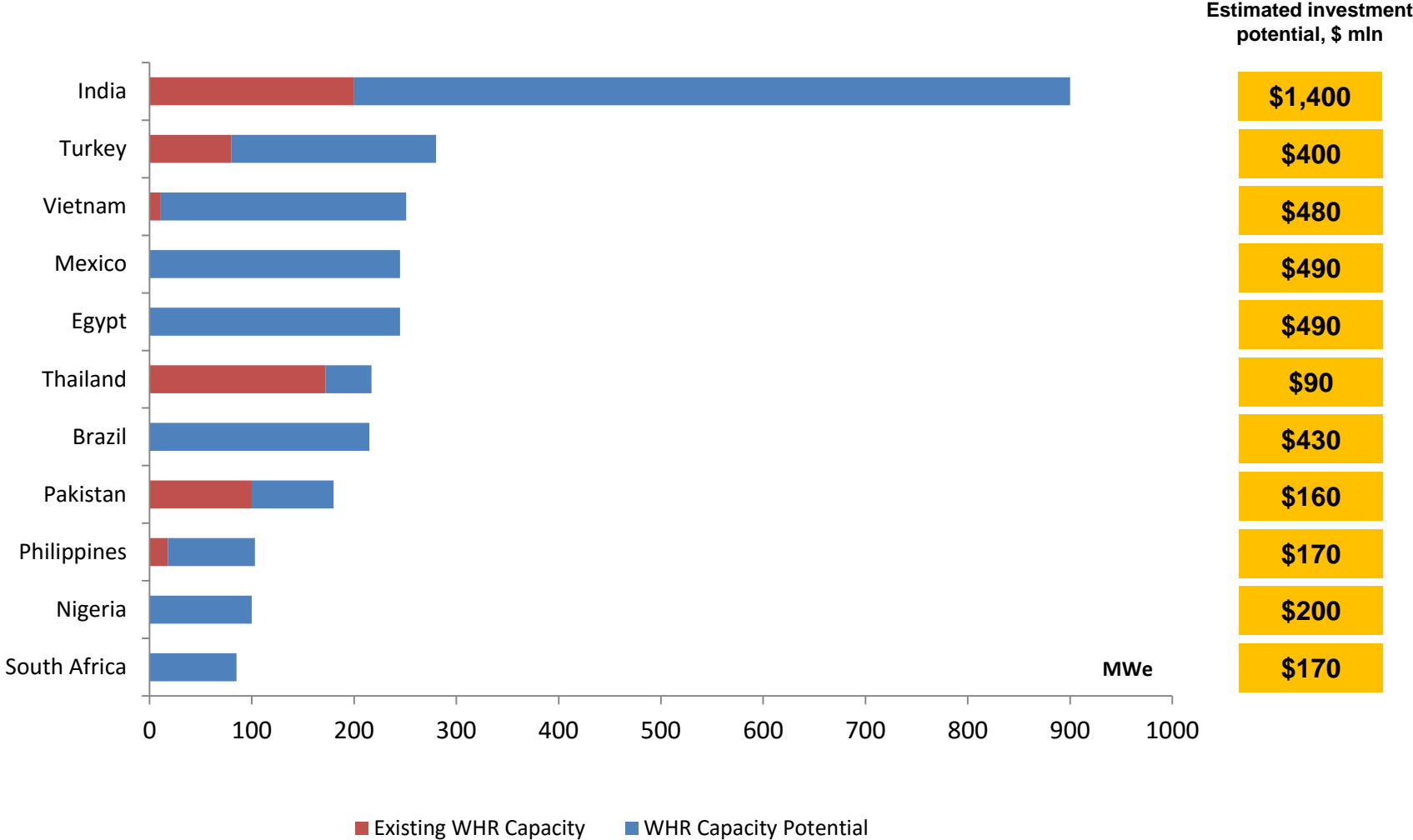
- Potential to generate **20% to 30%** of plant power requirements (reducing purchased/captive power needs)
- Reduces operating costs
- Protects against rising electricity prices
- Enhances power reliability
- Improves competitive position
- Lowers specific energy consumption

- Reduces overall greenhouse gas emissions
- IFC provides consultant for pre-investment audit

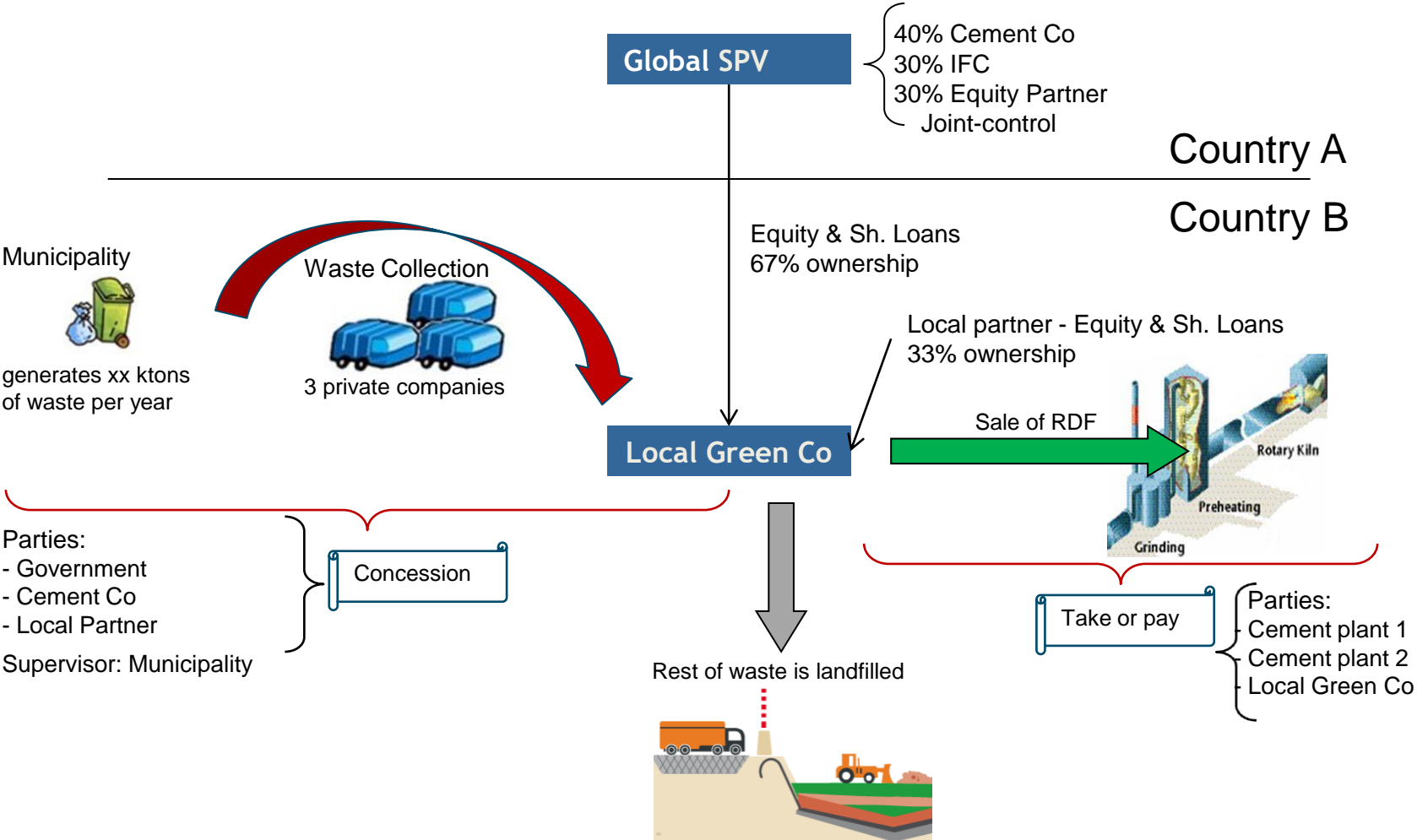




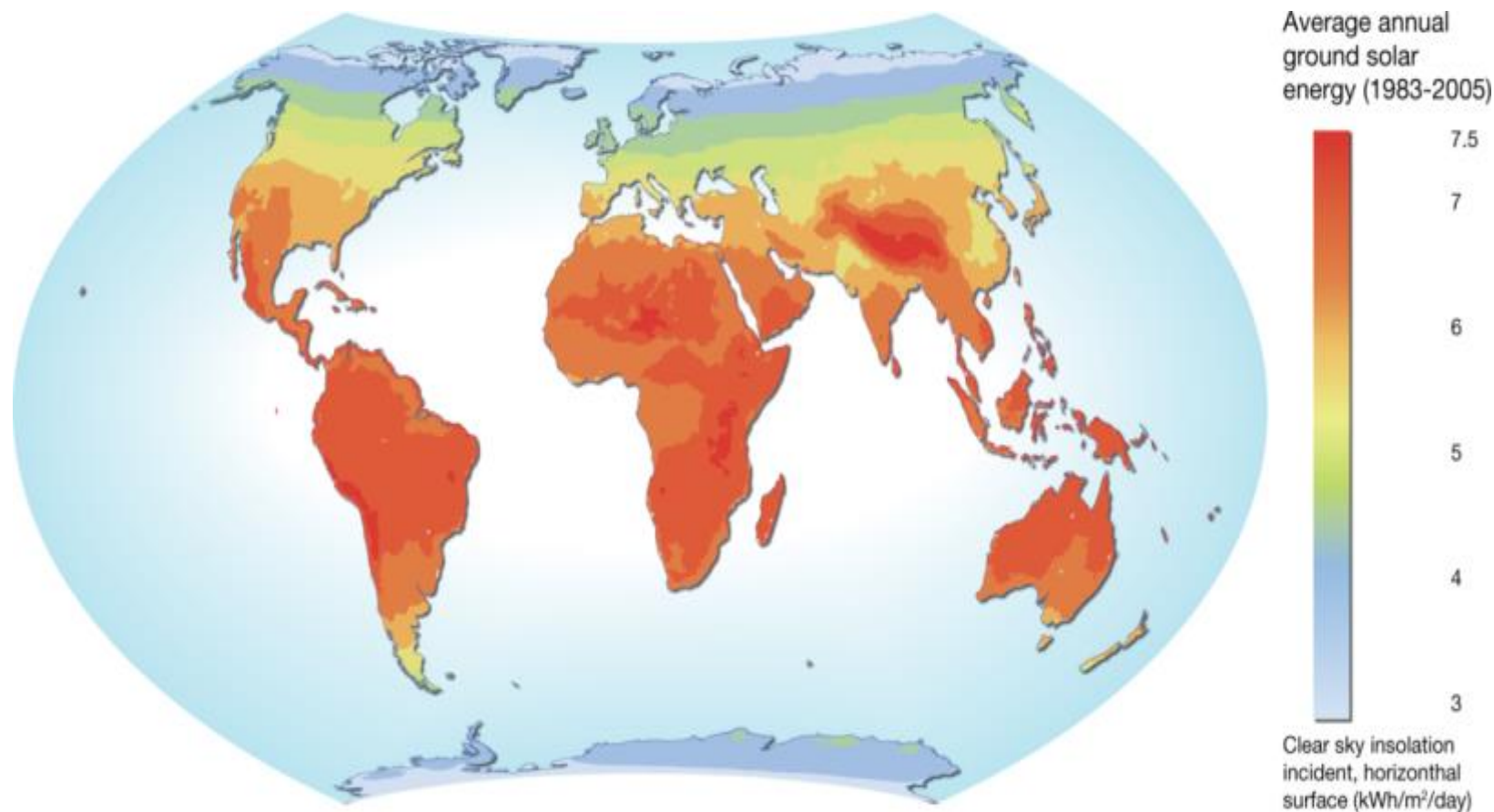
# WHR Investment Potential



# Municipal Waste - RDF Structure



# SOLAR Opportunity in Emerging markets



- Emerging market plants in regions with strong solar radiation
- Solar Resources > 1,800 kWh/m<sup>2</sup> p.a., resulting in LCOEs of 0.06-0.12\$/kWh
- Compare to industrial electricity prices between 0.06-0.15\$/kWh

# Thank You



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# Annexes



# Selected Cement Transactions

**Philippines**  
Holcim




\$27 million  
Loan, Equity

**Egypt**  
Titan




\$120 million  
Equity

**Ethiopia**  
Midroc




\$55 million  
Loan

**Kazakhstan**  
Vicat/Jambyl Cement



\$185 million  
A/B Loan, Equity

**Africa (7 countries)**  
HeidelbergCement



\$250 million  
Loan, Equity

**Algeria**  
ACC Cement



\$45 million  
Loan

**Global**  
Italcementi



\$200 million  
Loan, Equity

**Ghana**  
DiamondCement



\$6 million  
Loan, Equity


**Yemen**  
AYCC

الشركة العربية اليمنية للأسمنت المحدودة  
Arabian Yemen Cement Company Ltd.




\$125 million  
A/B Loan

**Bangladesh**  
Lafarge Surma



\$60 million  
A/B Loan, Equity

**Albania**  
Fushe Kruje / Seament




\$30 million  
Loan

**Bosnia and Herzegovina**  
Lukavec / FCL



\$12 million  
Loan

**Turkey**  
Sanko Cement



\$175 million  
A/B Loan

**Trinidad and Tobago**  
TCL Group



\$37 million  
Loan, Risk Management

**Dominican Republic**  
Domicem



\$56 million  
Loan

**China**  
Anhui Conch



\$86 million  
Loan

**China**  
Shanshui Cement




\$58 million  
Loan, Equity

**China**  
TianruiCement



\$71 million  
Loan, Equity

**India**  
OCL India Ltd.



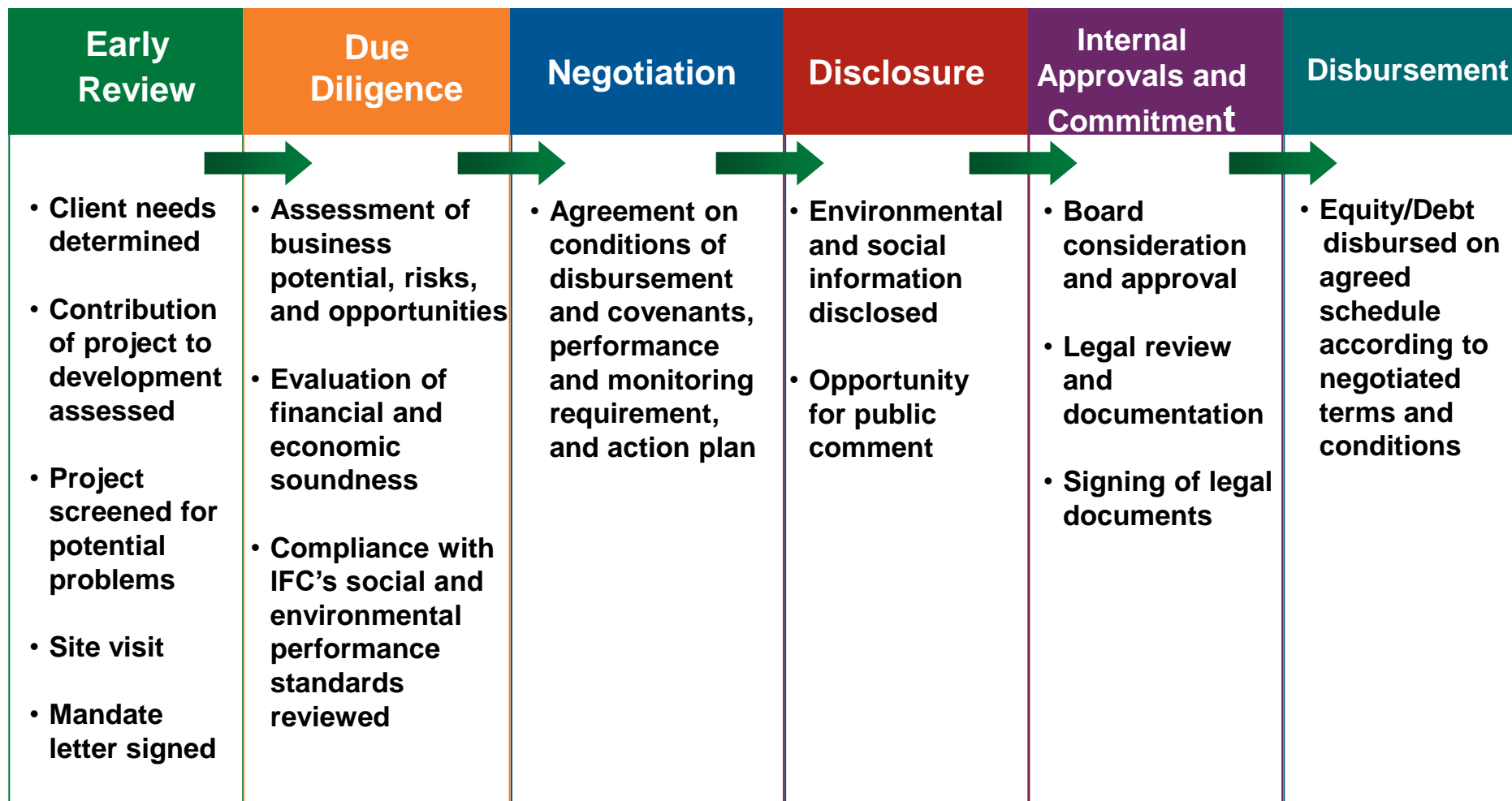
\$50 million  
Loan

**Vietnam**  
Nghi Son Cement (Taiheyo)



\$56 million  
A/B Loan

# IFC Project Cycle (4-8 months to reach commitment)



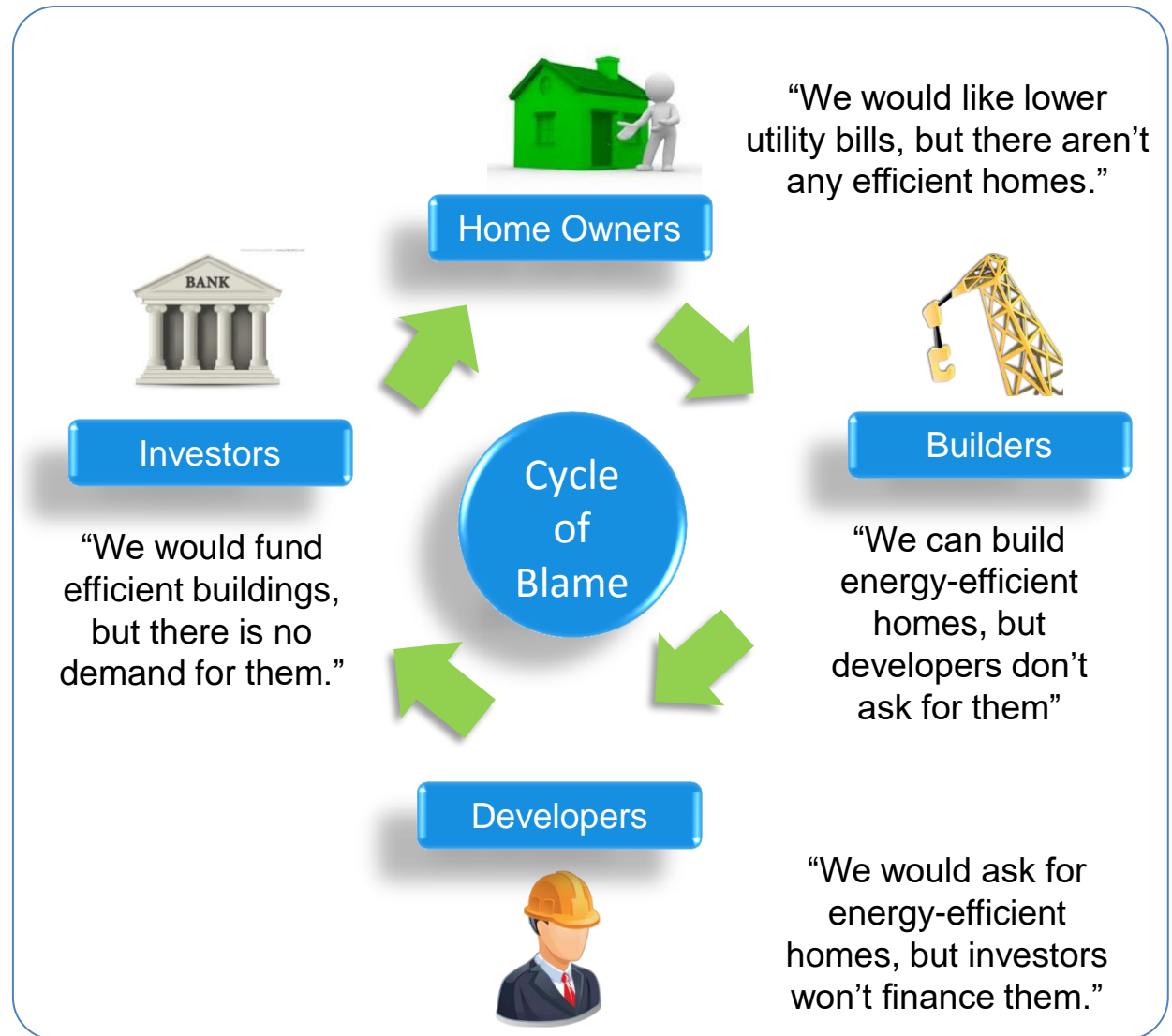
# Unlocking the potential for green building requires a multi-pronged approach

**Technologies and know-how are available.**

**Economic benefits are well documented.**

**But barriers remain:**

- Marginally higher upfront costs
- High perceived market risk
- Weak enabling environment





## Why would an Industrial Company Issue Green Bonds?

### Benefits to the Issuer

- Enhancement of Franchise value
- Tapping a wider investor base (new investors) and creating a value added offering for the existing investor base
- External pressure especially for high GHG sectors like cement, steel and glass – demonstration effect – good publicity
- Greater focus on GHG mitigation
- Establishment of improved monitoring and reporting requirements to better capture positive impacts
- Over time, increased demand is likely to drive increasingly favorable terms and a better price for the issuers, compared to a regular bond from the same issuer

#### Investor's view on green bonds:

“As strong believers in the change green bonds can achieve, we think corporations across all industries should consider issuing [them]”

Enrico lo Giudice – MainStreet Partners

#### Issuer's view on green bonds:

“Being the first Australian corporate to issue a green bond has confirmed that investors recognize our leading sustainability credentials and are confident in our commitment and ability to consistently deliver sustainable outcomes on our projects.”

Tiernan O'Rourke, Chief Financial Officer – Stockland

#### Market's view on green bonds:

“Green bonds also attract new investors. When Unilever, a consumer-goods company, issued a £250m (\$416m) green bond in March, 40% of the issue was snapped up by people outside Britain—an uncommon response to a sterling bond” – Economist

# WHR Potential Structure

Heat supply agreement: Cement Plant supplies heat to Power Co (at a cost to be defined). This contract can include liquidation damages in case of significant drop of heat supplied.

Off-take agreement : Cement Plant purchases power from Project Co at a discount to market.

