



CLEAN ENERGY MINISTERIAL

Accelerating the Transition to Clean Energy Technologies

FACILITATING LOW-COST FINANCE TO SCALE UP RENEWABLES

Pre-Read for Public–Private Roundtable

Clean Energy Ministerial

12 May 2014

Seoul, Republic of Korea

OUTLINE

- 1 **Objective**
- 2 Current Landscape
- 3 Barriers
- 4 Potential Solutions
- 5 Opportunities for Progress

CEM5 ROUNDTABLE CONTEXT

- The current legal, project development, and performance tracking ecosystem appears insufficient to drive the necessary scale-up in global renewable energy investment, particularly for smaller, distributed assets.
- The focus of this roundtable is how to access greater institutional investment for renewable energy (RE) projects by decreasing transaction costs and lowering investment risk via standardization, robust datasets, and best practices in system deployment and operation and maintenance (O&M).

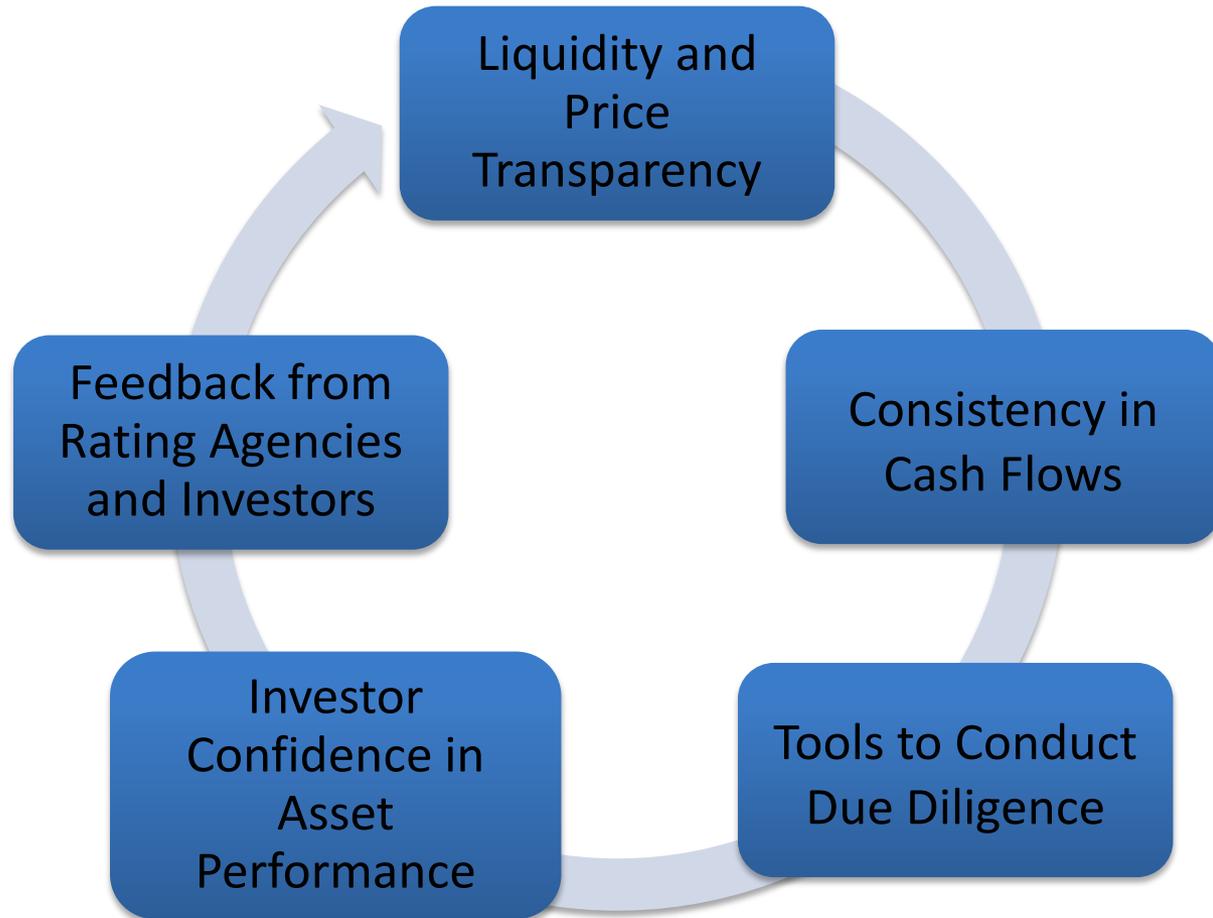
CEM5 ROUNDTABLE CONTEXT, CONT'D.

- Clean energy assets are primarily financed via project-level mechanisms such as bank debt.
- However, only a small subset of global capital is available for project-level finance because of the lack of liquidity and transparency of the investment.
- Instead, the majority of global capital – managed by pension funds, insurance companies, and other institutional investors – is invested in debt and equity securities that are *priced by the market, easily traded, and highly liquid*.

ROUNDTABLE CONTEXT, CONT'D.

Capital market (i.e., institutional) participation in clean energy assets requires an investment ecosystem to meet two primary objectives:

- 1. Asset and contractual consistency to allow project cash flows to be pooled into tradable and highly liquid securities, and*
- 2. Availability of due diligence tools necessary to build market confidence in the asset class.*



Characteristics of a properly functioning investment ecosystem

Objective

INVESTMENT ECOSYSTEM ELEMENTS

Standard contracts reduce transaction costs and allow pooling of cash flows into numerous financial innovations.

Best practices in asset installation and O&M to minimize due diligence requirements and facilitate investor confidence in asset performance.

Robust datasets of technology and customer credit performance facilitate investor research and understanding of long-term cash flows.

Asset performance metrics and risk analysis methodologies are tools to communicate to rating agencies and investors.



ROUNDTABLE OBJECTIVE

- The ecosystem elements are designed to reduce transaction costs, accelerate clean energy deployment, and lower the cost of capital.
- Wide-scale adoption by developers, law firms, financiers and other stakeholders is critical for ecosystem elements to be successful.
- This roundtable will explore the feasibility and potential impact of (i) creating the investment ecosystem elements and (ii) gaining market acceptance of the elements to scale clean energy deployment in CEM countries and the broader international community.

OUTLINE

Unfavorable debt terms add 24%–32% to the cost of renewable energy in India.

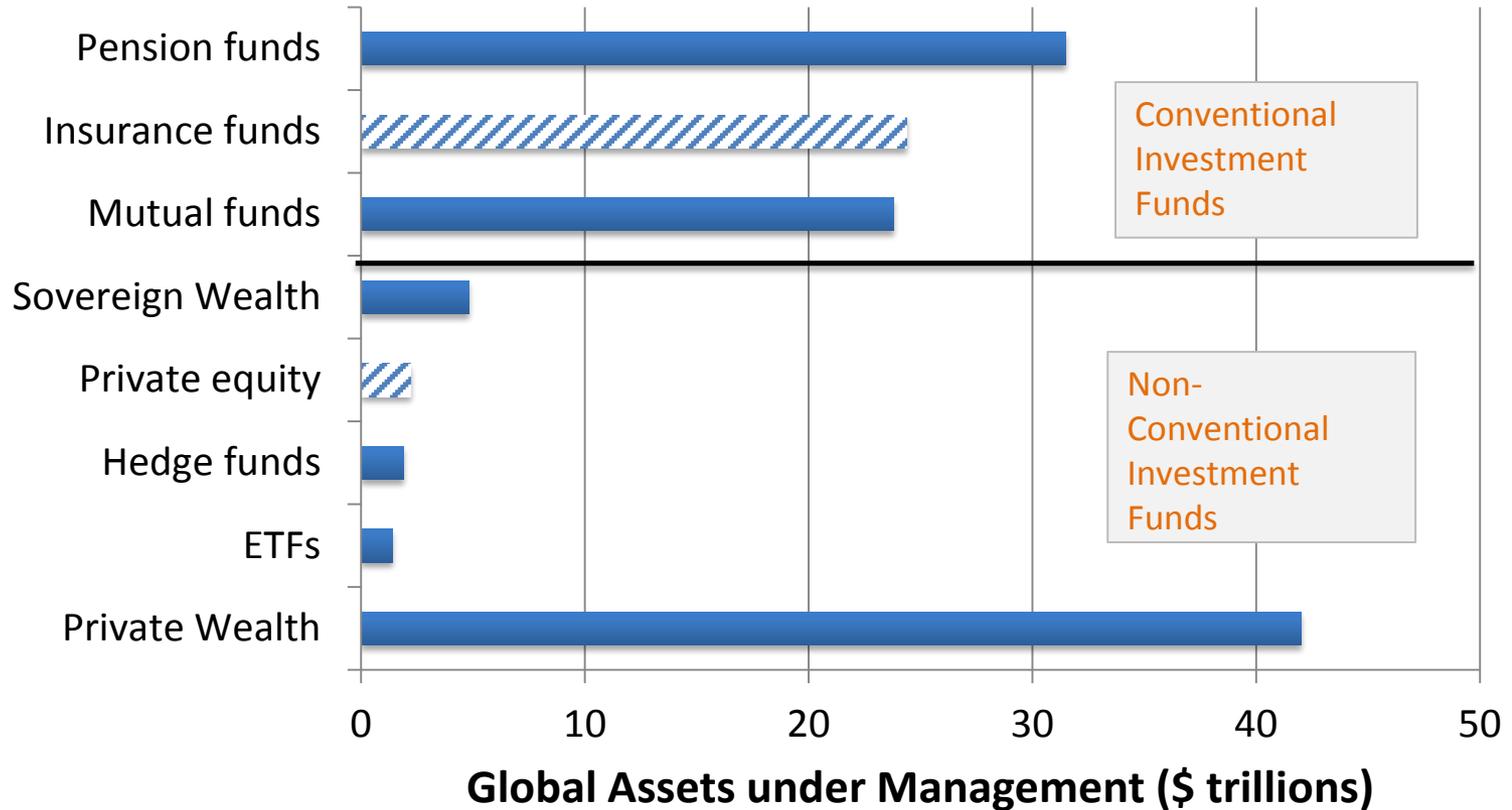
Source: Climate Policy Initiative, 2014

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\$100 TRILLION GLOBAL INVESTMENT MARKET

Most managed funds do not invest in renewable energy.

To tap this capital, investors need a liquid, tradable product priced by the market.



Hatched sources of capital currently invest in RE, but not necessarily from all investment buckets.

Source: The CityUK

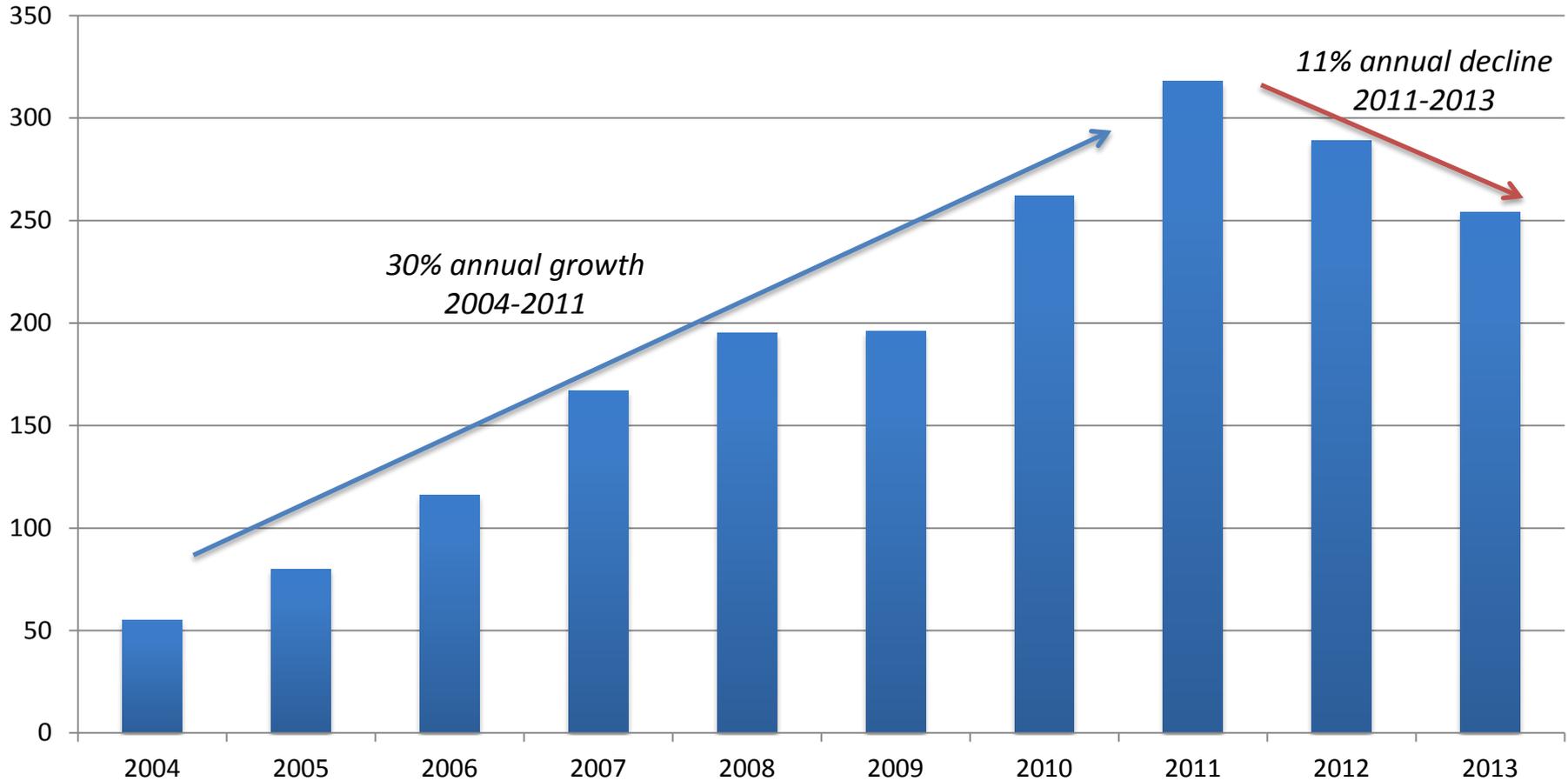
PUBLIC MARKET ACTIVITY – RECENT EXAMPLES SHOW PROMISE

Numerous green bonds and securitizations have been issued or are near-issuance to raise capital at low cost:

Issuer (Country)	Amount (in \$)	Assets	Type (yrs. term)
Iberdrola (Spain)	750 mm Euros (\$1.04 B)	RE, transmission, smart grid	Green bond (8.5 yrs)
Svenska Cellulosa (Sweden)	1.5 B Swedish Kronas (\$232 mm)	RE, biofuels	Green bond
European Investment Bank	500 mm GBP (\$832 mm)	Climate Awareness Bond	Green bond (6 yrs)
Unilever (Sweden)		Water and carbon emissions reductions in manufacturing	Green bond (4 yrs)
SolarCity (U.S.)	\$70.2 mm	Solar leases	Securitization (8 yrs – expected)
SolarCity (U.S.)	\$54.4 mm	Solar leases	Securitization (7 yrs – expected)

BUT OVERALL, CLEAN ENERGY INVESTMENT HAS STAGNATED

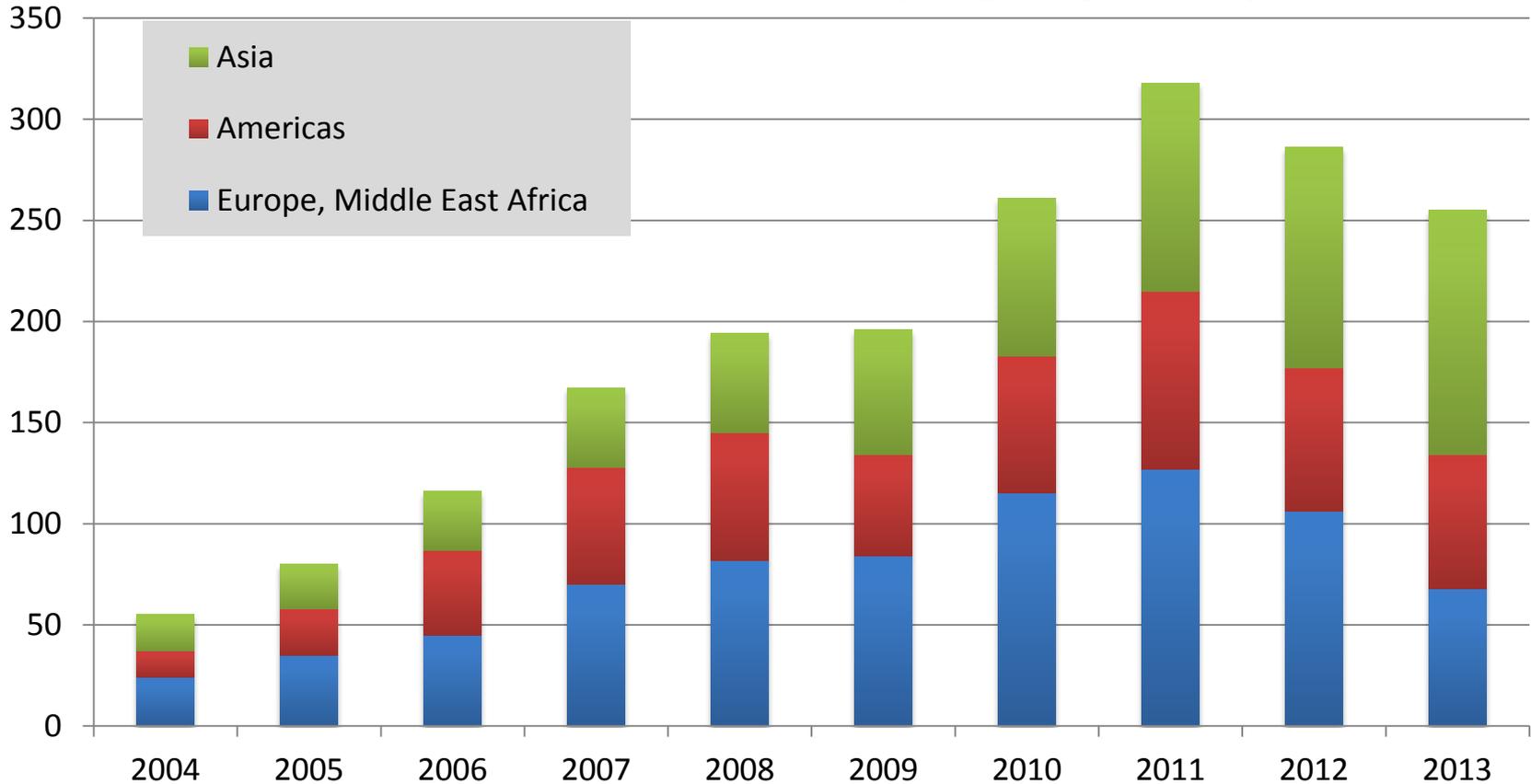
Global Annual RE Project Investment (\$billion)



Source: Global Trends in Clean Energy Investment, BNEF, 2014

FUNDS INVESTED BY REGION

Annual RE Project Investment by Region (\$billion)



Source: Global Trends in Clean Energy Investment, BNEF, 2014

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Investors are clear – they have the capital but need reliable information to decide where and how to invest it.

–Justine Greening,
International Development Secretary

TECHNICAL BARRIERS

Markets are naturally disorganized. This can be beneficial to consumers, as it brings innovation to products and services.

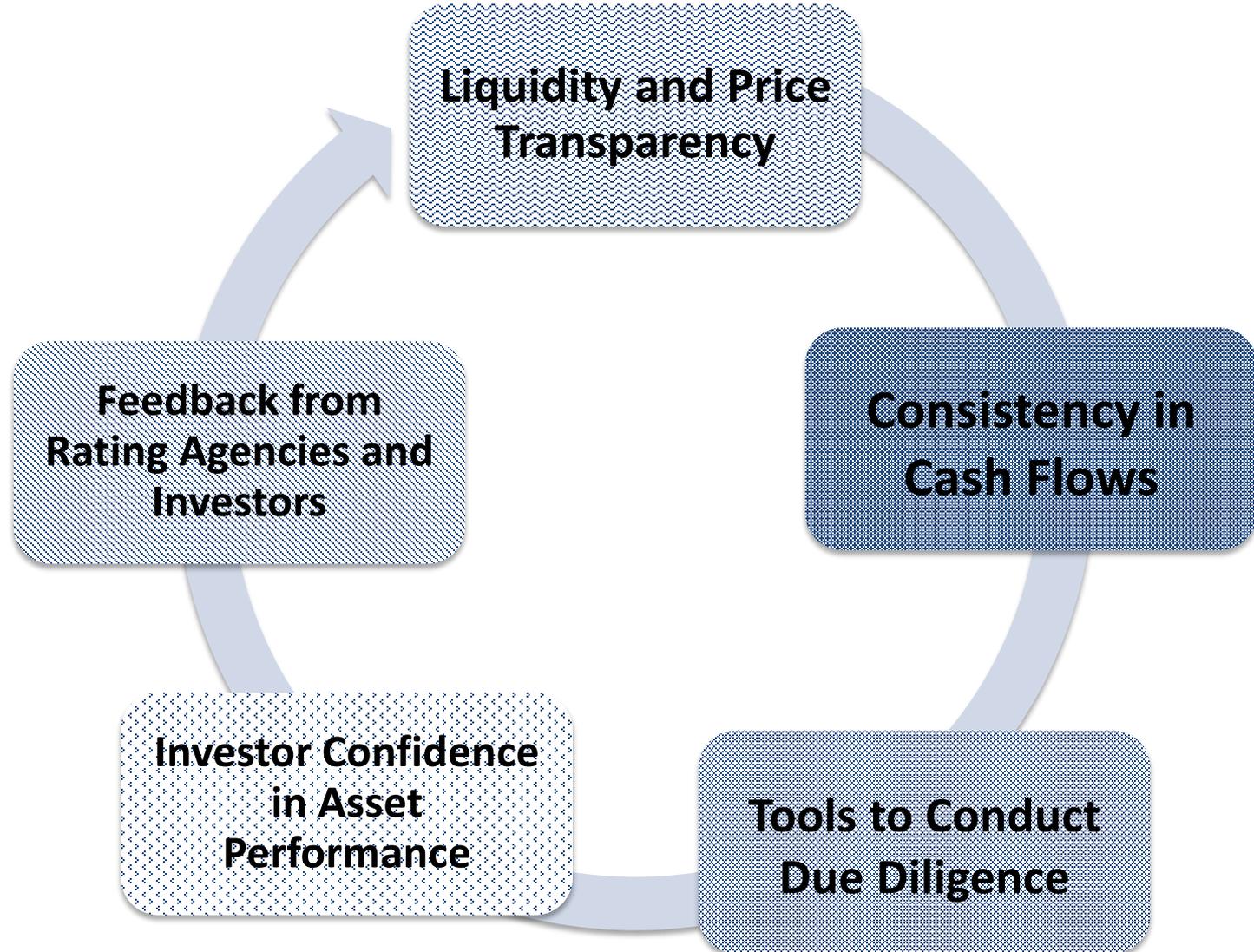
But lack of standardization, industry data and industry-accepted best practices creates cost-increasing friction (unnecessary transaction costs and risk premiums placed on capital):

- *Excess due diligence by investors and customers (i.e., utilities and end-users) to assess risk*
- *Lack of confidence in technical and credit performance (i.e., will systems perform and customers pay their bills?)*
- *Constrained, more expensive capital – especially for smaller, less established developers of generating systems*

LACK OF INVESTMENT ECOSYSTEM

The current clean energy investment ecosystem is missing critical components to attract institutional capital.

Lacking these components increases transactional costs, limits availability of capital, and raises the cost of capital.



BARRIERS EXPLAINED

Issue	Existing or Potential Barrier
Liquidity and Price Transparency	<i>Market liquidity (i.e., securities are easily bought and sold without disrupting supply–demand balances) and price transparency are critical to institutional investors. Liquidity requires economies of scale and portfolios of significant size (e.g., > \$200 million).</i>
Consistency in Cash Flows	<i>To gain economies of scale, projects – particularly distributed generation assets – must be pooled into portfolios of significant size. To achieve this scale, the cash flows (and associated contracts) must be standardized to reduce due diligence by rating agencies and investors.</i>
Tools to Conduct Due Diligence	<i>Investors require tools to conduct due diligence such as robust datasets of historical technology and credit performance in order to comprehend how the asset class behaves over time. Without due diligence tools, investors will assume that systems do not produce or customers do not pay their bills.</i>

BARRIERS EXPLAINED, CONT'D.

Issue	Existing or Potential Barrier
Investor Confidence in Asset Performance	<i>Investors require confidence in the asset class through underwriting and quality assurance practices. Were the systems well-built, and are they operated and maintained properly? Industry best practices are required to ensure projects in the pool will remain functioning.</i>
Feedback from Rating Agencies and Investors	<i>Rating agencies are a critical gatekeeper to investors. However, gaining access to their insights can be very expensive and time-consuming. Lack of rating agency and investor insight can be a critical barrier for national developers without access to these perspectives.</i>

WILL BANKS LOAN AGAINST FIT POLICIES?

- As of early 2013, 71 countries and 28 states/provinces had adopted some form of feed-in tariff (FIT) policy. Developing countries now account for the majority of countries with FITs in place. (REN21, 2013)
- Of import is that end-use customers have access to local capital to install clean energy systems and utilize FIT policies. Banks need tools to analyze historical system performance and be provided quality assurance of specific deployment practices. And banks may need to off-load loans into secondary capital markets to alleviate internal balance sheet and/or regulatory constraints to continue lending practices.
- The investment ecosystem elements are designed to initiate and facilitate ongoing bank activity by providing due diligence tools and a mechanism to pool and resell cash flows into capital markets.

DEVELOPING COUNTRY COMPLEXITIES

Projects in developing countries generally incur far higher costs of debt owing to a range of real and perceived risk factors, such as:

- *Unstable currencies*
- *Less mature banking systems, for example, those lacking bond markets*
- *Energy sectors closely controlled by government*

The investment ecosystem elements cannot counter these complexities, but they can reduce the credit enhancement necessary to counteract overall risk and/or extend the leverage of any public sector investment to attract more private sector (i.e., institutional) capital.

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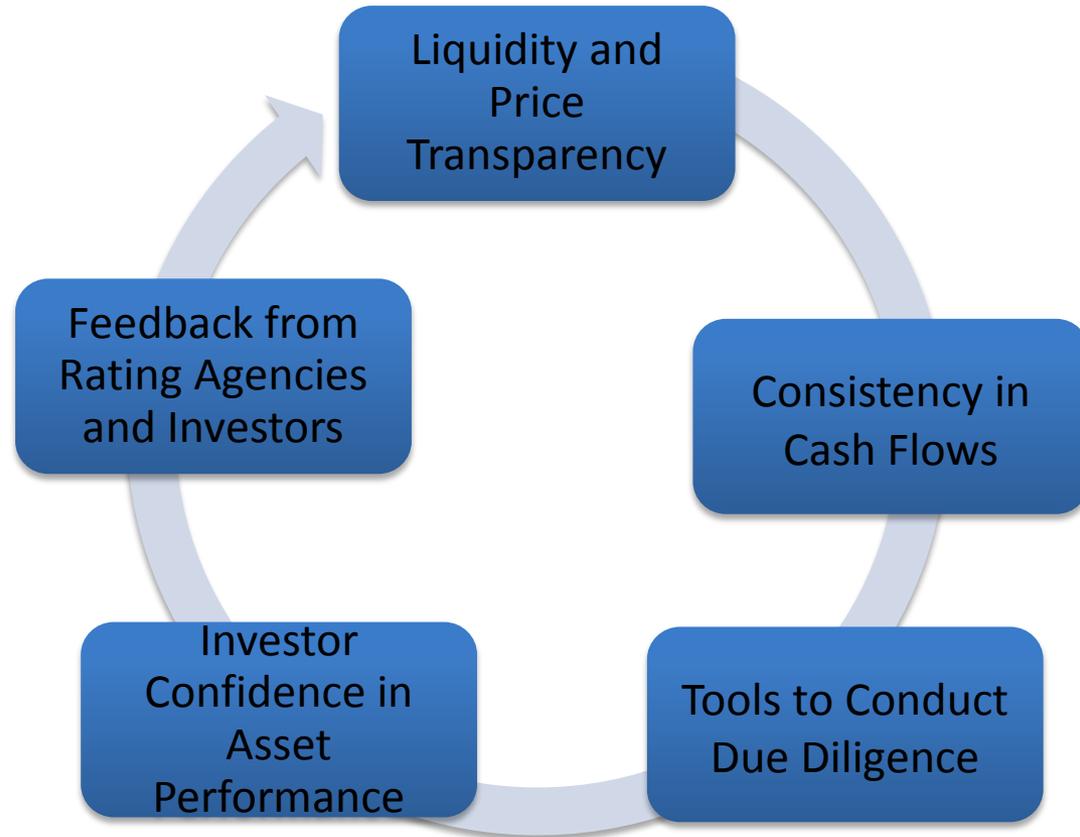
INVESTMENT ECOSYSTEM ELEMENTS

Standard contracts reduce transaction costs and allow pooling of cash flows to reach economies of scale.

Best practices minimize due diligence requirements and facilitate investor confidence in asset performance.

Robust datasets of technology and customer credit performance facilitate investor research and understanding of long-term cash flows.

Asset performance metrics and risk analysis methodology are tools to communicate to rating agencies and developers.



EXISTING EFFORTS TO CREATE INVESTMENT ECOSYSTEM

In 2012, the U.S. National Renewable Energy Lab (NREL) initiated the Solar Access to Public Capital (SAPC) working group designed to bring the development, legal, financial, rating agency, and advisory communities together to facilitate capital market investment in U.S. solar projects.

Since formation, SAPC has developed a suite of informational “elements” to facilitate the investment ecosystem. These elements are fundamental to RE development and not specific to any country-level policy. They are designed to standardize the development process and provide investors tools to gain confidence in RE assets.

The elements of this process are open for consideration and further refinement for international application across CEM countries.

SAPC: 220+ PARTICIPANTS, MANY WITH GLOBAL PRESENCE OFFERING VALUABLE LEVERAGE

Many SAPC members are part of global practices and can provide international exposure for expansion. Regional leaders can assist by organizing relevant stakeholders.

Legal	Investment	Advisory	Manuf. / Other
Akin Gump	B of A Merrill Lynch	Black & Veatch	Enphase
Bingham McCutchen	Barclays	BNY Mellon Trust	Hanwha Q-Cells
Chadbourne & Parke	Citi	Citi Trust Services	KACO
Chapman & Cutler	Clean Power Finance	CohnReznick	SMA
Cooley	Credit Agricole	Corelogic	Solectria
Covington	Credit Suisse	Coronal Management	Energi
Dechert	Deutsche Bank	DNV GL	Coalition for Green Capital
DLA Piper	Energy One Finance	First Associates	TUV Rheinland
Hunton & Williams	Foresight Group	Kroll Bond Ratings	PV Evolution Labs
K&L Gates	Global Capital Finance	KPMG	SEIA & SEPA
Katten Muchin	Hannon Armstrong	Lease Dimensions	Global Cool Cities
Kramer Levin	KeyBanc	Leidos	Demeter Power
Latham & Watkins	kW Financial	Locus Energy	Ballard Spahr
Milbank	Macquarie	Mercatus	Standard Solar
McCauley Lyman	Marathon Capital	Moody's	Amp Solar
Nixon, Peabody	MorganStanley	Novogradac	U.S. Department of Energy
Orrick, Herrington	Nord LB	Power Factors	SunSpec
Patton Boggs	PNC	PwC	Santander
Perkins Coie	Rabobank	Standard & Poor's	C2ES

and many more...

INVESTMENT ECOSYSTEM ELEMENTS EXPLAINED

Element	Reason
Standard contracts, loan documents, and other legal agreements	<i>Standardization allows developers to spend more time deploying assets and less time negotiating. Consistency in cash flows allows them to be pooled into securities or other investment vehicles because capital markets require contract standardization to comprehend and model relevant risk factors.</i>
Best practices in system installation and O&M	<i>To build investor confidence that RE assets are well-built and well-maintained. Best practices represent an important industry stamp of approval that systems are properly installed and maintained, thus lowering investor risk perception and the cost of capital requirement.</i>

INVESTMENT ECOSYSTEM ELEMENTS EXPLAINED, CONT'D.

Element	Reason
Robust datasets of technology and credit performance	<i>To provide investors the tools to conduct due diligence on the asset class. Data are critical to an investor. Quality datasets on technology and credit performance will be very important to engage new and existing investors in new technologies or market sectors (e.g., in distributed assets) and to expand availability of capital.</i>
Engagement with rating agencies and investors	<i>To comprehend rating agency risk perspectives and risk mitigation opportunities via internal and external credit enhancement. The rating process is highly complex and very specific to the deal proposed. Mitigating risk perceptions and lowering cost of capital require communicating with rating agencies and investors, and comparing the asset class against alternatives.</i>

ADDITIONAL EFFORTS TO STANDARDIZE CONTRACTS

Project	Description & Website	Limitations
Renewable Energy Project Resource Center	Online interface to search documents to speed and scale renewable projects in developing countries. https://energypedia.info/wiki/Renewable Energy Project Resource Center	<i>These resources are generally useful but not widely adopted in the marketplace, particularly for distributed assets.</i>
The World Bank's PPP Partnership	Source for checklists and sample documents for projects bidding for international funds or supported solely by private and public sectors. http://ppp.worldbank.org/public-private-partnership/	
Ground-Up Project	Online platform of standardized project information for the purpose of seeking aggregated finance opportunities. http://groundupproject.net/	

Additional wide-scale efforts to develop installation and O&M best practices, wide-scale production and credit databases, or engage rating agencies in specific dialogue are unknown.

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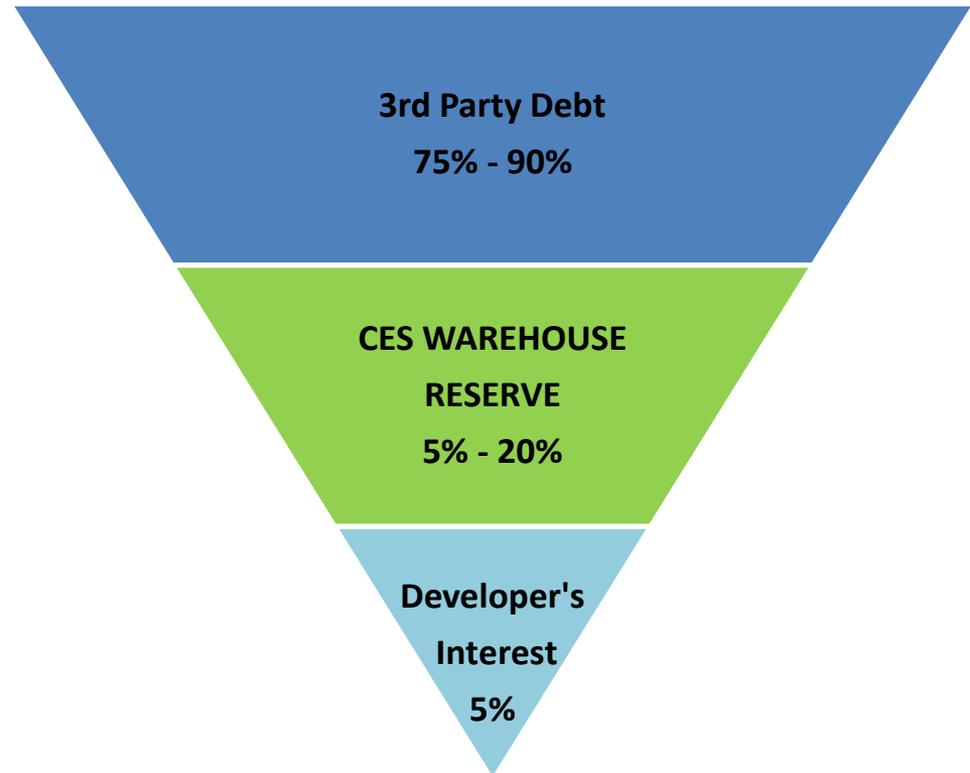
OPPORTUNITY FOR INTERNATIONAL COLLABORATION

- *Organize international stakeholders to develop a suite of standard documents that regional and global stakeholders are free to use. The document suite would differentiate by:*
 - *Legal environment*
 - *Regional practices*
 - *Tax policies*
- *Conduct “aggregation process” among documents available from the international community.*
- *Leverage other organizing efforts to develop global / regional installation and O&M best practices to provide quality assurance of system integrity.*
- *Collaborate to build a dataset of system performance of MLB and private sector deployments and to leverage SAPC database.*
- *Aggregate credit data across industry sources (e.g., securitization documents) to build key insight to credit performance.*
- *Promote use and adoption of elements by legal, finance, and development communities and other stakeholders.*

International stakeholders who have provided initial encouragement for this collaboration include the Climate Bonds Initiative, EIB, Ex-Im Bank, GGGI, IADB, IFC, OECD, OPIC, UNEP, and the World Energy Council.

POTENTIAL POLICYMAKER ACTIONS

- *Participate* in global efforts to build the investment infrastructure necessary to engage wide-scale capital market participation.
- *Promote* the dissemination of the investment ecosystem elements and link them to credit enhancement structures (CES) that leverage maximum private capital.



The example mechanism “warehouses” or pools projects in a financial conduit and provides a mezzanine credit enhancement (i.e., subordinate to the senior debt) from the public sector to facilitate a higher credit rating and investor interest.

POTENTIAL POLICYMAKER ACTIONS, CONT'D.

- *Organize* national and regional stakeholders to provide feedback and expert insight on the investment ecosystem elements.

○ <i>Developers</i>	○ <i>Independent engineers</i>	○ <i>Capital managers & MLBs</i>
○ <i>Investment banks</i>	○ <i>Law firms</i>	○ <i>Bond analytic firms</i>
○ <i>Insurance companies</i>	○ <i>Accounting firms</i>	○ <i>Installers</i>

- *Engage* rating agencies and investors through dialogue and development of rating metrics, e.g.:
 - Analysis of technical and credit performance
 - Mock securities where hypothetical portfolios are offered for comment and insight by rating agencies
 - *Legal term sheets and cash flow analytics are developed just as in normal securitization*
 - *Allows testing of internal/external credit enhancement techniques*
 - *Process utilized by SAPC effort in U.S. – five rating agencies reviewing*

POTENTIAL POLICYMAKER ACTIONS – CREDIT ENHANCEMENTS

The investment ecosystem elements can be combined with a range of credit enhancements that leverage direct country investment or sovereign wealth funds to engage institutional investment:

- **Currency Risk Protection** – currency risk assumed to facilitate investor confidence in cash flow stability
- **Surety Bonds** – insurance policies that reimburse the debt holders for any losses
- **Wrapped Securities / Third Party or Parental Guarantees** – promises to reimburse a trust for losses or buy back defaulted loans
- **Letter of Credit / Cash Collateral Account** – cash to reimburse the trust for any losses actually incurred

OPPORTUNITIES FOR PROGRESS

This roundtable is designed to assess how the proposed elements to facilitate wide-scale institutional investment could be developed in the global context for CEM countries. Questions for discussion include:

- What is the role of CEM governments in organizing the necessary actors to reduce risks for RE project investors and increase access to major institutional funds?
- What investment elements are currently available for use or to be incorporated into a broader aggregation process by industry stakeholders? Are they applicable to numerous market sectors (residential, commercial, municipal, utility-scale) and technology?
- What steps could be taken to implement this process? For example, should the project be centralized, or would regional leaders and assets be more effective?