Growth, Investment and the Low-Carbon Transition

Growth, investment and the low-carbon transition : OECD contributions, G20 and APEC

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Recent OECD work on long-term investment

Institutional investors and long-term investment project

www.oecd.org/finance/lti

- Large Network of LTI Investors (>3,000 members)

G20-OECD work on long-term financing

http://www.oecd.org/finance/private-pensions/g20-oecd-long-term-financing.htm

- the G20/OECD Task Force on Long-term Investment Financing by Institutional Investors
- Recent key deliverables:
  - G20/OECD Guidance Note on Diversification of Financial Instruments for Infrastructure and SMEs and accompanying Support Note
  - Annual Survey of Large Pension Funds and Public Pension Reserve Funds (last published 2016)
  - Infrastructure Financing Instruments and Incentives – A Taxonomy (2015)
  - High Level Principles for Institutional Investors and LTI (2013)

Financing low-carbon infrastructure - Report to G20 Overview of analysis and findings

Finding the money – financing low carbon infrastructure content

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7.1. Introduction

7.2. Financing trends and recent changes in infrastructure financing

7.3. Private financing of low-carbon infrastructure: the role of corporates, banks, institutional investors and capital markets:

7.4. Public financing for low-carbon, climate-resilient infrastructure - the role of development banks and development finance institutions

7.5. Mobilising Private Investment for low carbon and climate resilient infrastructure

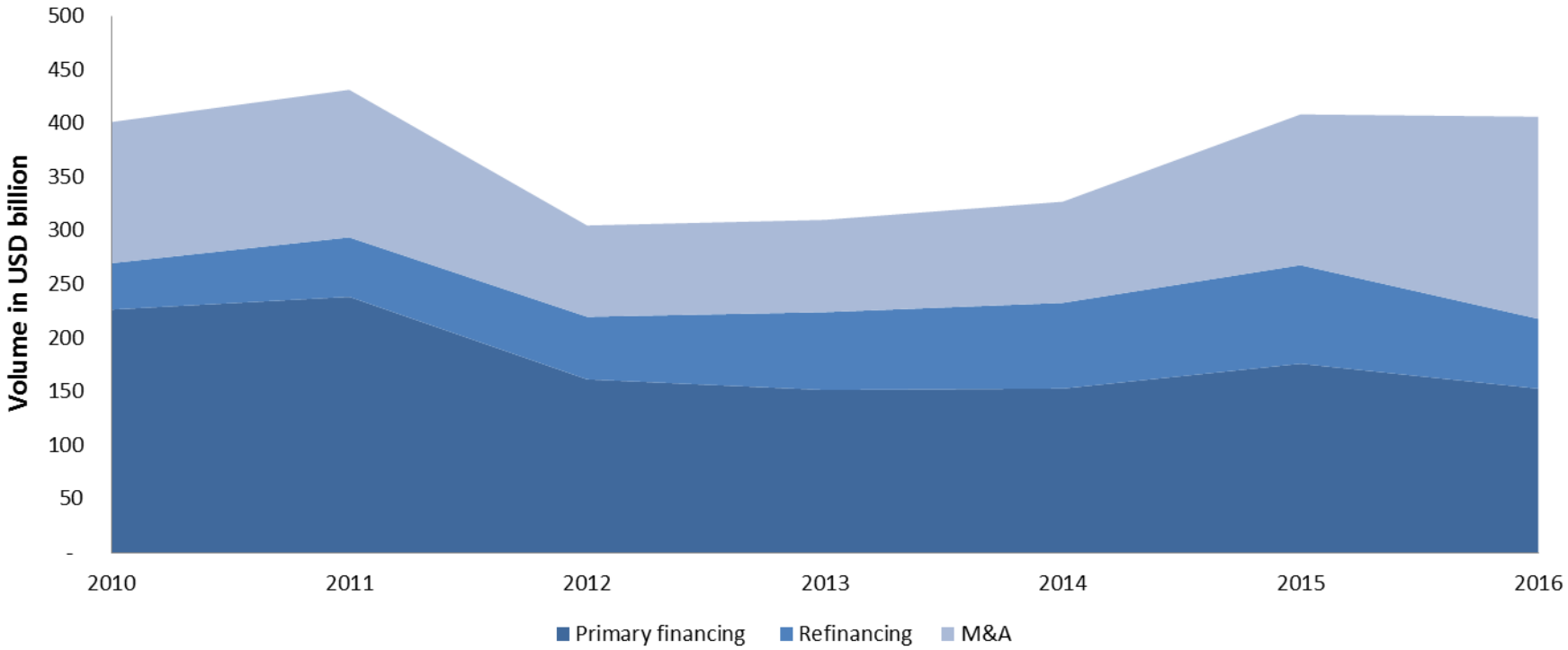
7.6. Greening the financial system: enabling opportunities for green investment within the financial system and mainstreaming climate change risk management practices

7.7. Policy Recommendations

Trends in infrastructure finance

Infrastructure Investment Trends

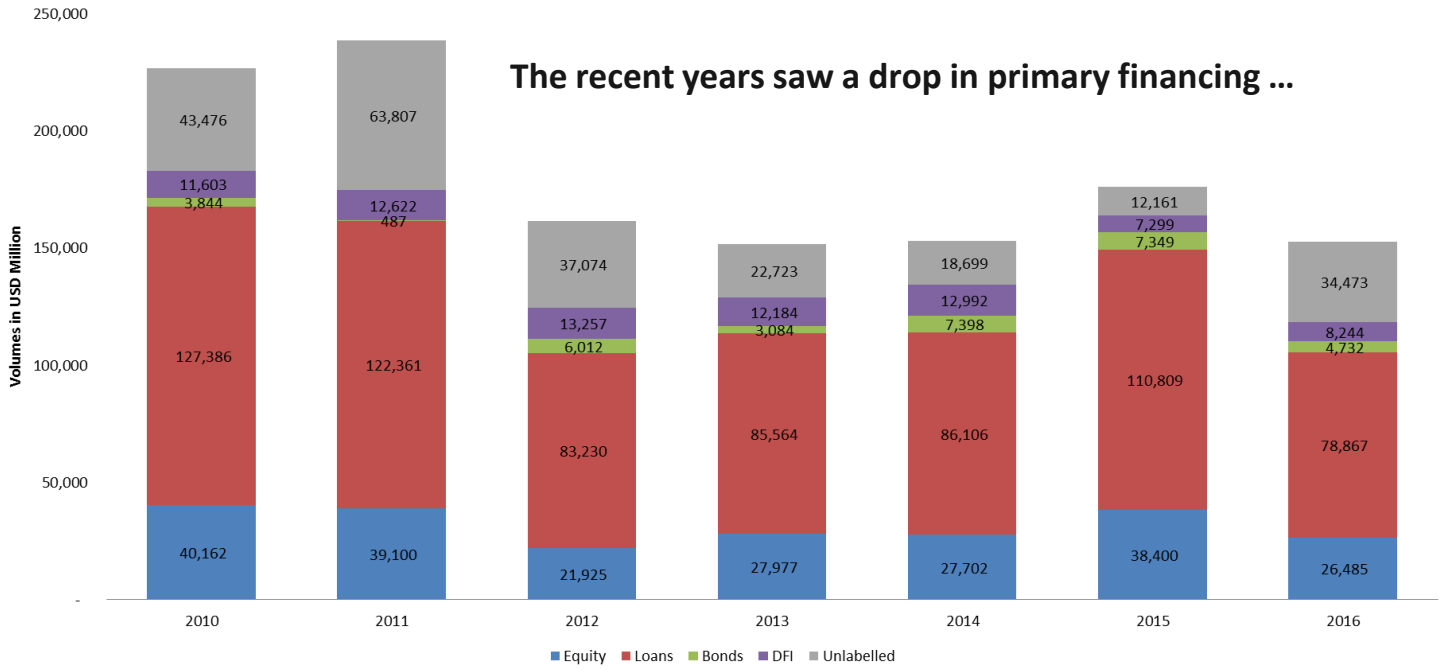
In 2016, 3,507 transactions reached financial close for a global infrastructure financing volumes of USD 406 billion, in line with the previous year.



Source: *IJGlobal Transactions, BNEF*. OECD calculations.
Note: The data only includes the financing of the Renewable Energy, Power, Transport and water infrastructure sectors.

Transactions Trends

Primary financing activity



Activity **declined for all regions from USD 226 billion to USD 152 billion in 2016**

Over the period from 2010 to 2015 primary financing was characterised by a **stable financing mix** with an **average debt / equity ratio around 70:30**

Source: *IJGlobal Transactions* and *Bloomberg New Energy Finance*, OECD Calculations. Note: For an important share of the renewables energy sector transactions, the transaction amounts are not disclosed. The above figures do not include estimates for these undisclosed amounts.

Transactions Trends

Secondary Market – M&A

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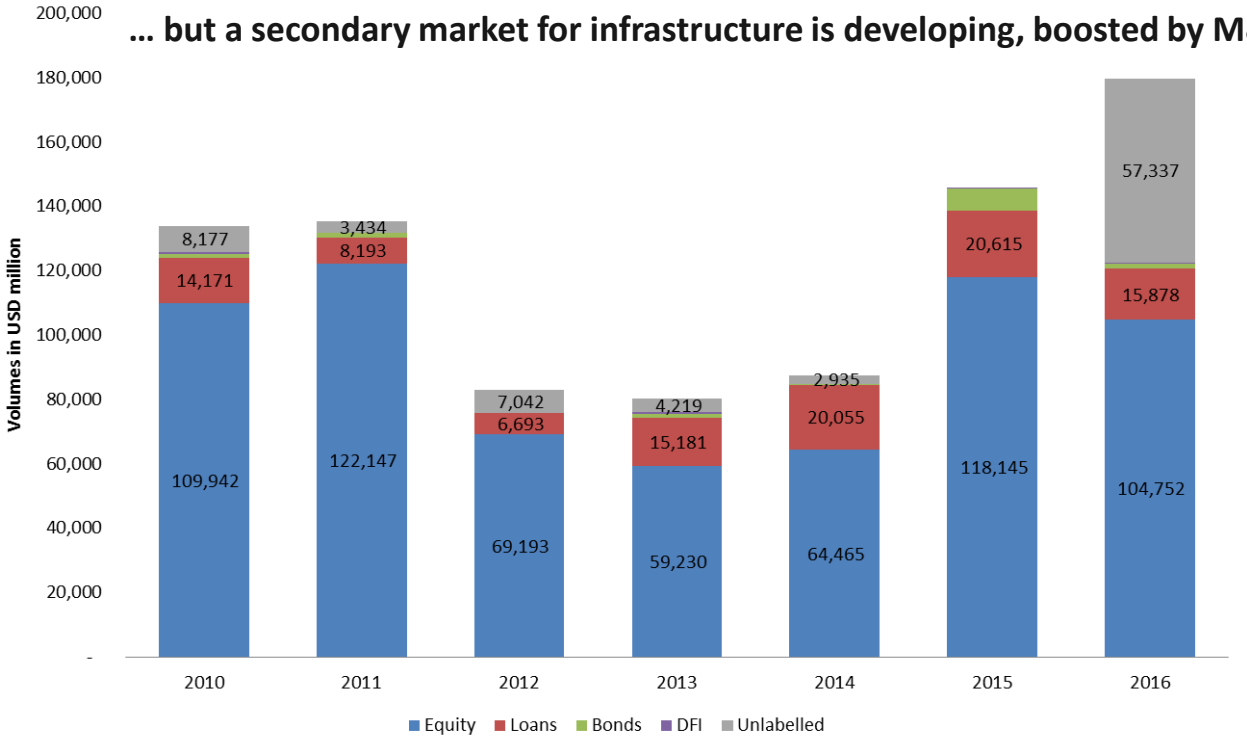
… but a secondary market for infrastructure is developing, boosted by M&A activity



Global infrastructure M&A (asset and corporate acquisitions) has been growing over the period from 2010 to 2016 to reach **USD 179 billion**…

… the activity is largely dominated by **equity markets that represent 82**% of the total financing mix.

Source: *IJGlobal Transactions* and *Bloomberg New Energy Finance*, OECD Calculations. Note: For an important share of the renewables energy sector transactions, the transaction amounts are not disclosed. The above figures do not include estimates for these undisclosed amounts.

Transactions Trends

Financing Clean Tech Innovation – Venture Capital and Private Equity

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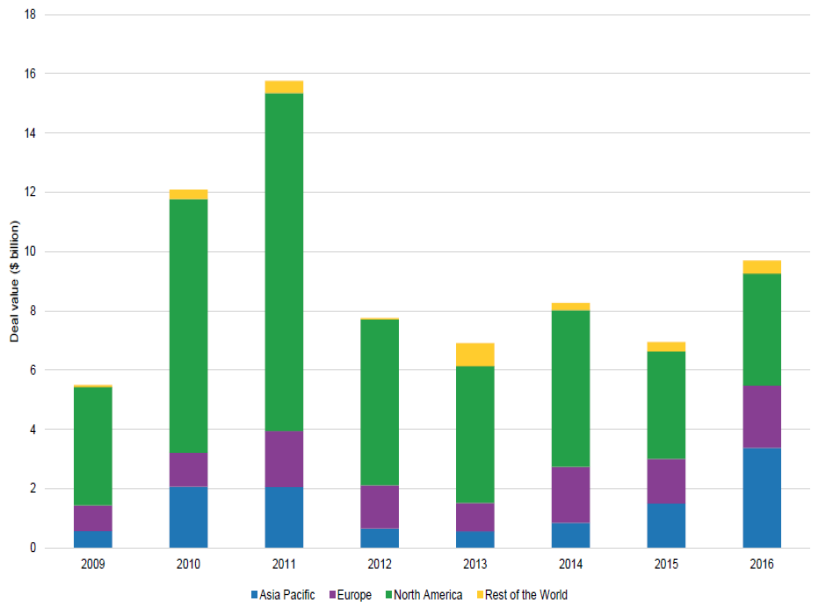
According to Clean Energy Pipeline data, Venture Capital and Private Equity (VC/PE) investments in Clean Tech companies amounted for **USD 10 billion over the period between 2010 and 2016.**

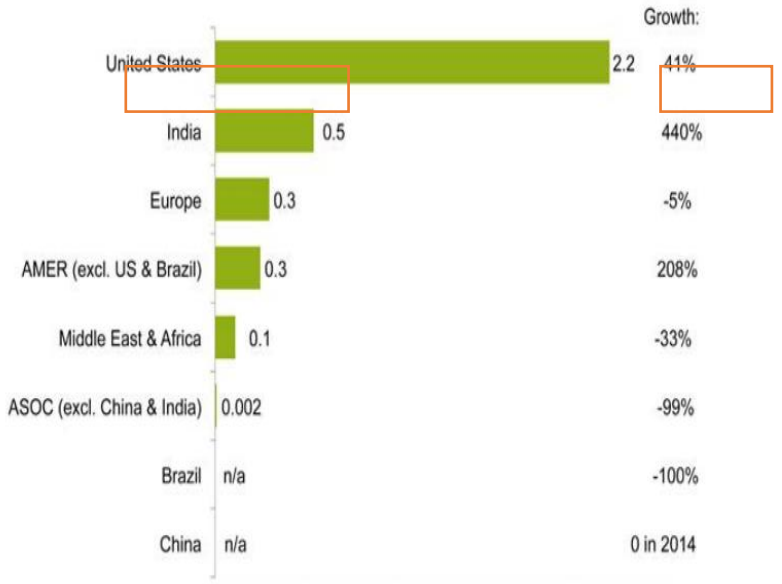
This is driven by the general trend in VC/PE financing. in 2016, Asia Pacific VC/PE financing reached record levels with Greater China and India recording more deals than Europe - 2,047 transactions in China against 3,793 in North America (Preqin, 2016).

GLOBAL VC/PE BY REGION



Source: *Clean Energy Pipeline*.

VC/PE NEW INVESTMENT IN RENEWABLE ENERGY BY REGION, 2015, AND GROWTH ON 2014, $BN



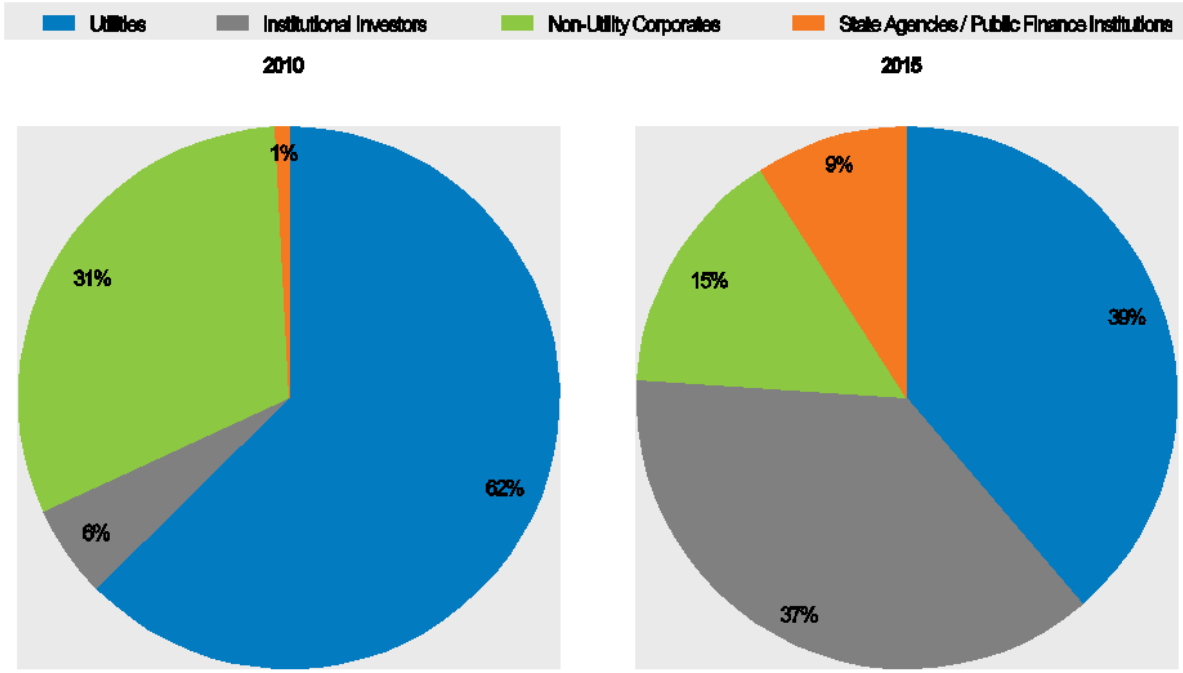
Source: *Bloomberg New Energy Finance, UNEP.*

Transactions Trends

Infrastructure Financing Market – Changing Ownership

… Additional sources of finance and new financial structures are emerging

Change in equity mix in wind energy projects in Europe, 2010 and 2015



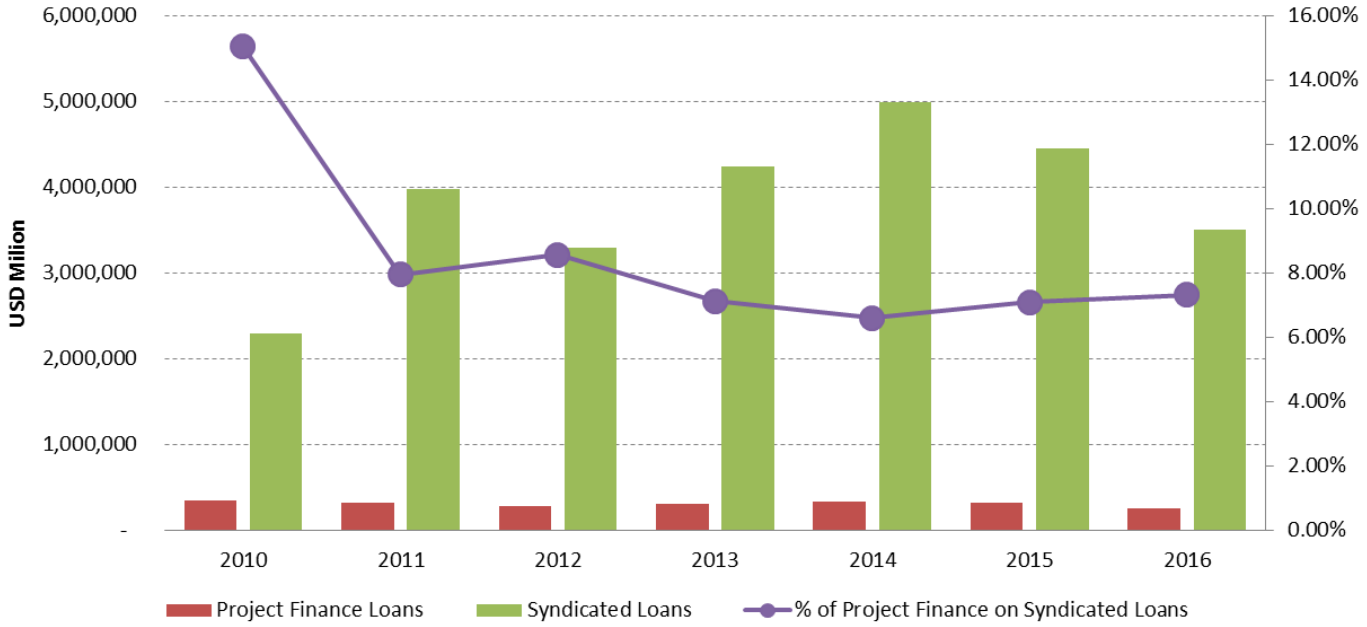
The **ownership of power generation assets has been changing** over the past decade shifting from relatively large scale projects financed through the retained earnings of well-capitalised utilities and power producers to more diverse sources.

Source: *BNEF* (2016), OECD Calculations. Note: Figures correspond to shares of total equity in sample.

Transactions Trends

Infrastructure Debt – Syndicated Loans

Evolution of syndicated and project finance loans worldwide In USD million (l.h.s.) and per cent shares (r.h.s.), 2007-2016

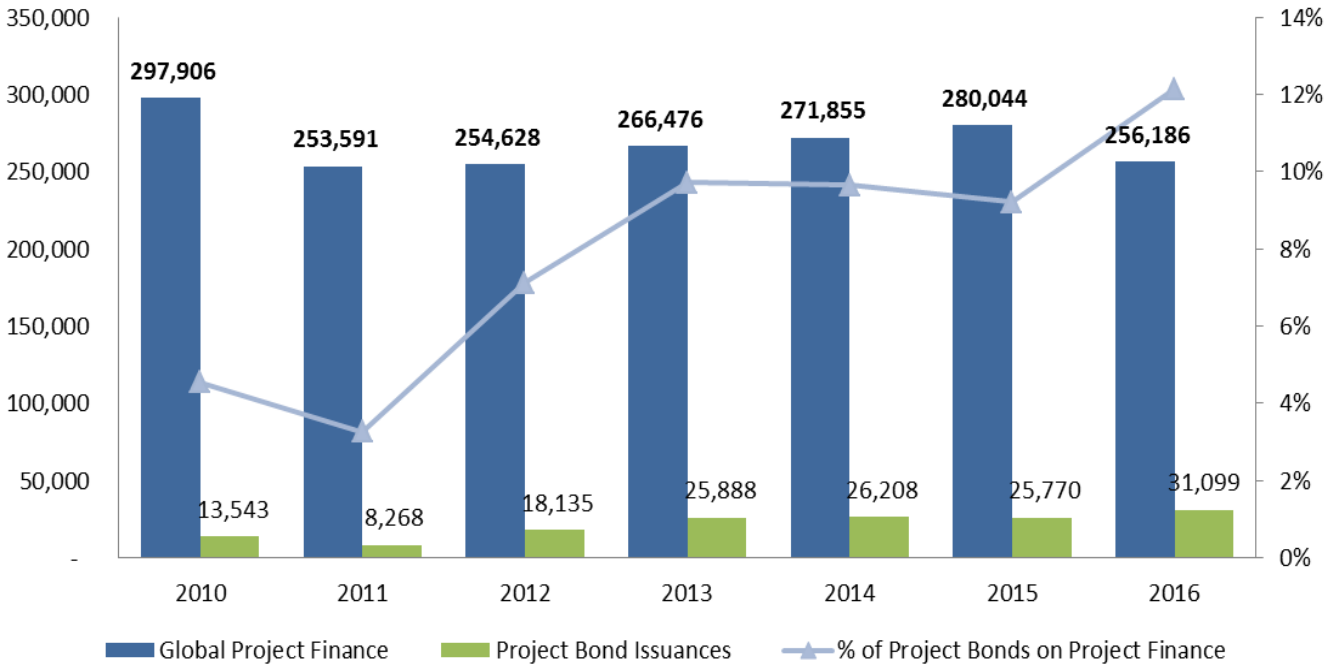


Despite recent growth, **project finance still represents a marginal percentage of total syndication markets**, ranging from 5% to 10% of the total between 2010 and 2016

Source: *Thomson Reuters*

Transactions Trends

Infrastructure Debt – Project Bonds



The **strong increase** between 2010 and 2016 was in part **due to the overall decline of bond yields** on all major asset classes and the consequent need for fixed income investors to find other investments with a better risk/return profile than more traditional sovereign and corporate bonds.

Other drivers of this growth have been the **increased acceptance of infrastructure as an asset class** and **green bonds** features **for** certain sectors such as **renewables.**

Source: *IJGlobal Transactions. OECD Calculations.*

Transactions Trends

Development Banks and State-owned Banks

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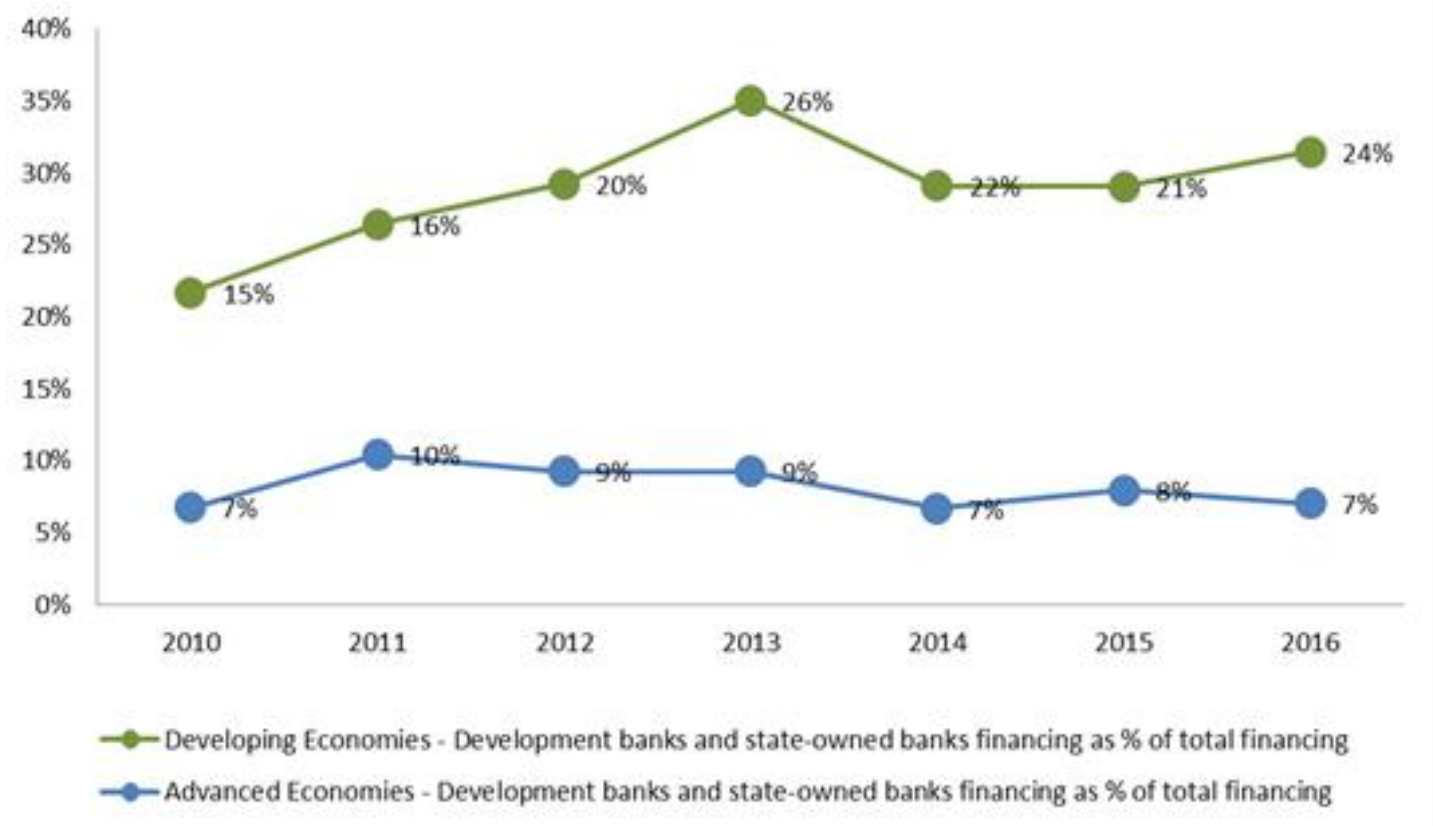
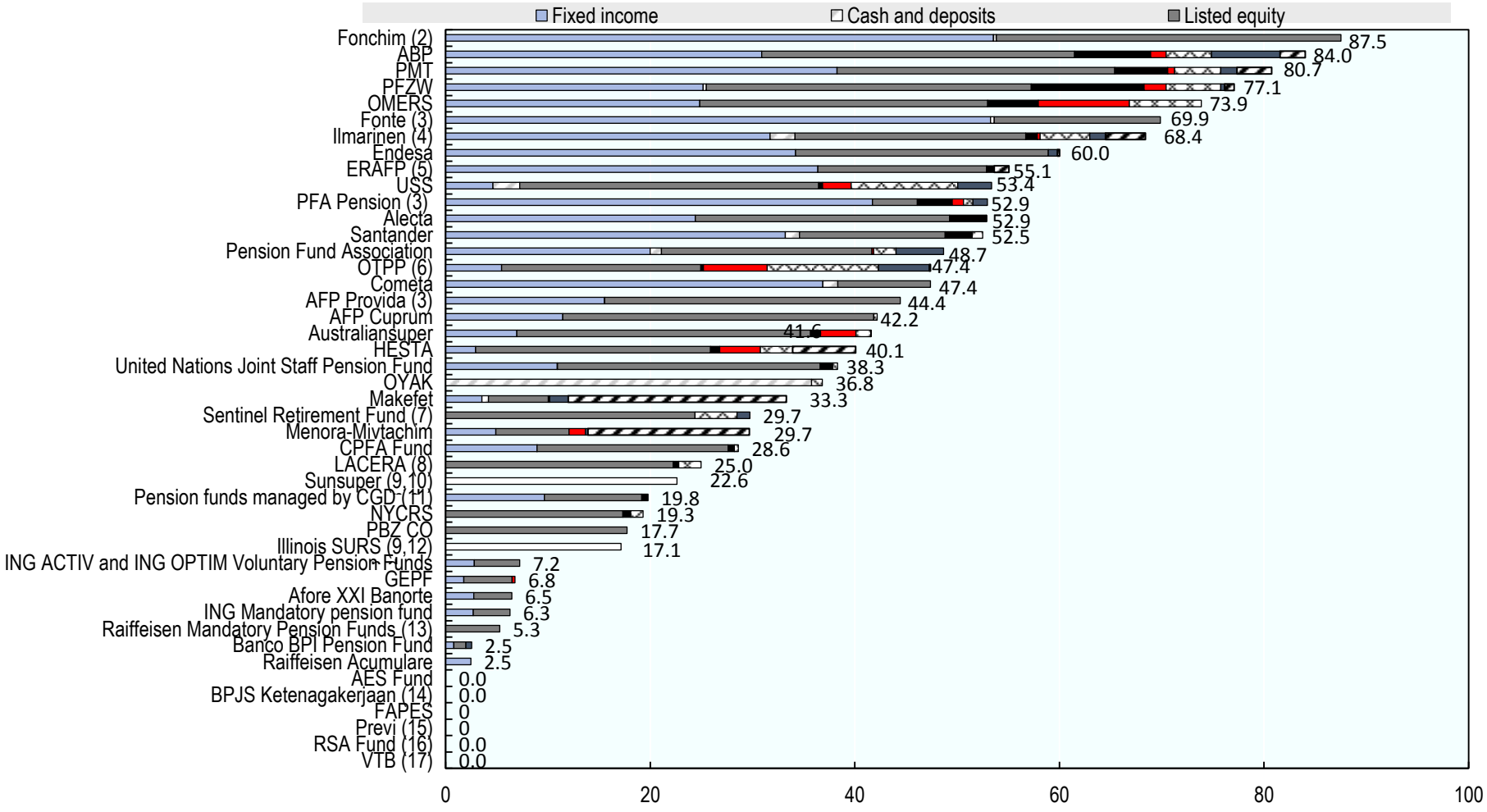
Share of development banks and state-owned banks in primary financing for power (excluding renewables) and transport sectors, advanced and developing economies, 2010 to 2016



Source: IJGlobal Transactions. OECD Calculations.

Pension Funds foreign allocations – OECD and G20 countries



Source: OECD Annual Survey of LPFs and PPRFs.

Instruments / approaches to mobilise private finance

Issues with mobilising private capital

Despite availability, only a small fraction of institutional assets are being channeled into infrastructure

Infrastructure investment is associated with specific, asset-related risks which make its financing more difficult

Equity-return expectations and cost of debt also influence the cost of capital for infrastructure

Risks and returns in infrastructure financing

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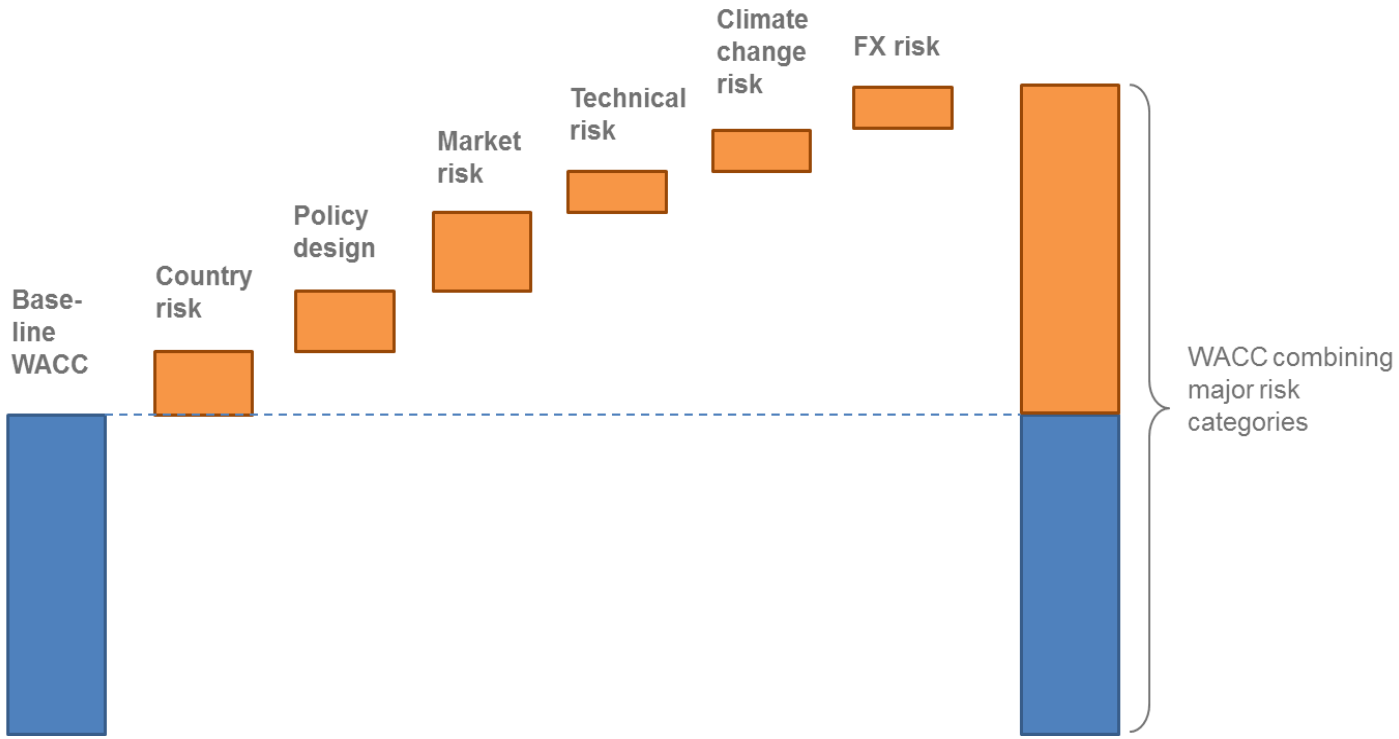
Risk Categories	Development Phase	Construction Phase	Operation Phase	Termination Phase
Political and regulatory	Environmental review, land acquisition	Cancellation of permits	Change in tarriff regulation	Contract duration
	Rise in pre-construction costs (longer permitting process)	Contract renegotiation		Decommission
				Asset transfer
			Currency convertibility	
	Change in taxation			
	Social acceptance			
	Change in regulatory or legal environment			
	Changes in climate change policy and support schemes			
	Enforceability of contracts, collateral and security			
Macroeconomic and business	Prefunding	Default of counterparty		
	Financing availability		Refinancing risk	
			Liquidity	
			Volatility of demand/market risk	
			Liability risks - compensation from victims of climate change	
	Inflation			
	Real interest rates			
	Exchange rate fluctuation			
	Long pay-back period for climate change mitigation investment			
Technical	Governance of the project			Termination value different from expected / stranded assets
	Environmental			
	Project feasibility and inclusion in investments plan*	Reliability of forecasts for construction costs and delivery time	Qualitative deficit of the physical structure/ service	
	Archaeological			
	obsolescence			
	Force Majeure			

Approaches to mobilise private investment

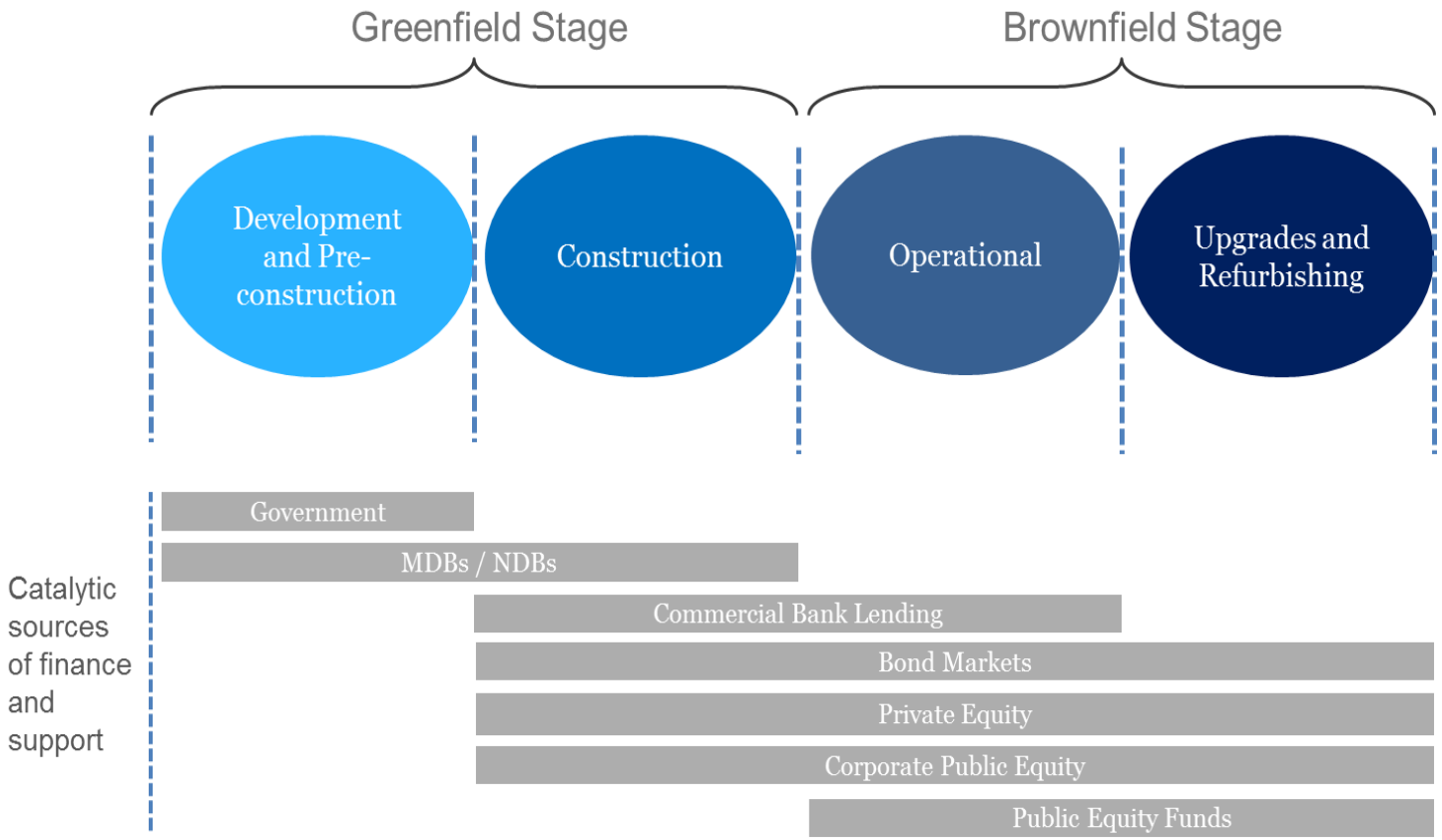
- Range of tools being used by DBs and DFIs

Risk mitigation and blended finance	Approaches to enable transactions and the flow of finance
• Guarantees • Currency hedging • Loan syndication and subordination • Co-investment • Technical assistance & project development facilities	• Diverse equity instruments • Bond issuance • Securitisation • Insurance

Emerging markets infrastructure IRR build-up



Catalytic sources of finance



Greening the financial system

Greening the financial system

Linking sustainability performance and financial performance

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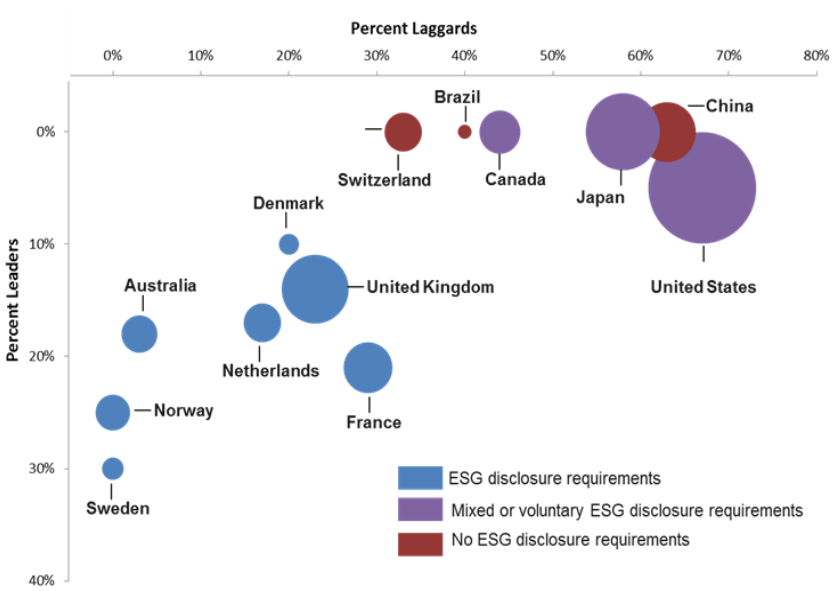
Improving the way financial system works to support investment in low-carbon infrastructure is a key policy objective

Country leaders and laggards, asset owners



Source: Asset Owners Disclosure Project 2016 and OECD

Climate change factors are increasingly being recognized as potential drivers of future **institutional investors'** portfolio risk and return. An understanding of climate change risk exposures is paramount in order to complete long-term asset allocation processes and risk management of investment portfolios.

Momentum is gathering to further clarify and disclose climate change risk: The Financial Stability Board (FSB) Task Force on Climate-related Financial Disclosures, The Portfolio Decarbonisation Coalition, ClimateWise, etc.

Governments have initiated efforts to encourage the monitoring and disclosure of climate risks and impacts

Stock exchanges in a number of markets including South Africa, Brazil, Australia and Hong Kong include ESG information in their listing requirements.

Although most **bilateral development banks and finance institutions** adopted ESG standards, the practice in terms of monitoring, reporting and disclosing climate risk and impact varies widely.

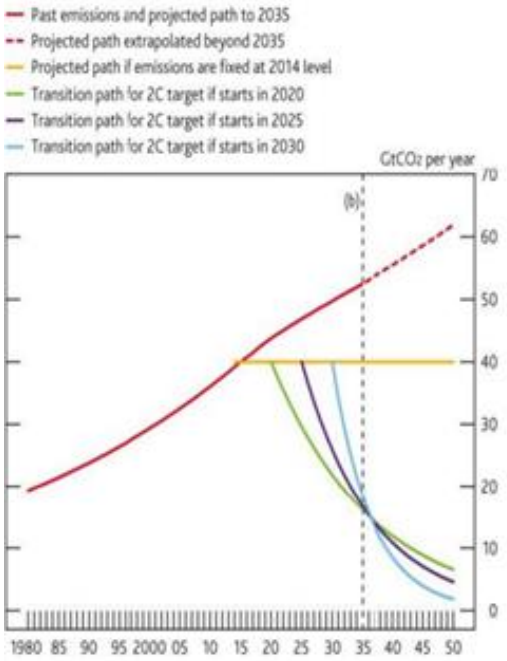
Current empirical data to test the effects of climate change on asset performance is limited

Climate Change and Financial Stability

The "Hard landing" scenario

The transition to a low-carbon economy could end up in a "hard landing" scenario…

Possible trajectories of carbon emissions, modelled on basis of using global '2°C carbon budget' by 2100 (>66% of less than 2°C, emissions shown until 2050)



Source: Prudential Regulation Authority (PRA), 2015

…it could result in a sudden pricing of climate risk which constitute a threat to financial stability. In the worlds of Mark Carney, governor of the Bank of England, this systemic risk is "*Transition risk*".

Climate Risk

- **Physical Risk** *(the impact on insurance liability)*
- **Liability risk** *(Claims on third-party liability insurance)*
- **Transition Risk**

The scenario would represent a systemic risk via the following channels

- The macroeconomic impact of sudden changes in energy use
- **The revaluation of carbon-intensive assets (Transition Risk)**
- The rise in the incidence of natural catastrophes

Being a significant challenge for the financial industry, the pricing of Transition Risk is pivotal.

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OECD work for the G20/APEC

OECD Work on Long-term Financing and Sustainable Infrastructure

Deliverables/Areas of Activity

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Work developed through the G20/OECD Taskforce

- **G20 Report on Decarbonisation for German G20**
- **G20/OECD Guidance Note and Support Note on the Financing of Infrastructure and SMEs (Sept 2016)**
- **OECD and APEC, work on risk mitigation instruments**
- **Quality Investment infrastructure and Connectivity work with the WBG ADBI**

Future Events

- G20/OECD Taskforce on LTI – 24th of March Paris
- APEC- OECD long term investment in quality infrastructure – May 2017, Vietnam
- Green Forum October 2017, Paris
- OECD/WBG Connectivity Infrastructure Forum Nov 2017, Paris

Annex

OECD Work on Long-term Financing and Sustainable Infrastructure

Deliverables/Areas of Activity

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Work developed through the G20/OECD Taskforce

- **G20/OECD High Level Principles of LTI financing by institutional investors (Sep 2013)**
- Report on Effective Approaches of the G20/OECD High-level Principles on LTI by Institutional Investors (Sep 2014)
- Survey Report on Pension Funds' LTI (Oct 2013, 2014, 2015, 2016)
- Mapping Channels to Mobilise Institutional Investment in Sustainable Energy (Feb 2015)
- Finance and Climate: The Transition to a Low-Carbon and Climate-Resilient Economy from a Financial Sector Perspective (2016)
- Quantitative Framework for Analysing Potential Bond Contributions in a Low-Carbon Transition (2016)
- Report on institutional investors and ESG (2016)
- **G20/OECD Guidance Note and Support Note on the Financing of Infrastructure and SMEs (Sept 2016)**

OECD and G20 Agenda: Diversifying Sources of Finance

- Suitable finance structures and instruments that match the preferences, profile, and capabilities of investors
- Focus on innovation, early stage project finance, and EMEs
- Identify effective financing approaches
  - Currently surveying countries on effective approaches to implementing the Guidance Note
- Many investors perceive a lack of suitable financing structures, particularly in EMEs
- Presents a range of instruments that may compliment traditional sources such as from commercial banks, MDBs and governments
- Further development of the advantages and disadvantages

OECD and APEC Agenda: Quality Infrastructure

- **A strong link to sustainable infrastructure**
- **Important need for investment in infrastructure globally over 90 trillion US $ from 2015 to 2030 to sustain economic growth and development goals**
- **Given fiscal constraints** on governments in many developed and emerging countries, **investment should focus on quality infrastructure investment** which are likely to **generate the greatest economic impact paving the way for eventual repayment of debts,** or **for servicing private sector financing if business models are applicable**
- Infrastructure investment that is **in-line with long-term economic planning**
  - Demographics
  - Urbanisation
  - Resiliency (including climate)
  - Food and water security
- Investment that emphasizes **long-term value creation**
  - Could involve the development of partnerships between private investors and public entities to create long-term investment opportunities that are attractive to private investors

OECD and Infrastructure Connectivity

- Part of the APEC and G20 agendas
  - OECD researching risk mitigation instruments in APEC countries: building on last year's "Availability of Risk Mitigation Instruments in ASEAN Countries" Report, currently surveying Chile, Peru and Mexico
- Mobilizing long-term financing for infrastructure, particularly through enhancing member-economies' capacity for project preparation
- Demonstrating the importance of and activating long-term vehicles to support long-term investment with high impact
- Promoting inclusive infrastructure in urban development and for regional connectivity
- Recognise synergies in infrastructure across key trade partners

Green Infrastructure Survey Design

Part I: General questions

-Current and future demand for infrastructure and renewable energy investment
-Required ROE matrix of infrastructure sectors
-Identify major climate change risks for infrastructure assets
-Identify gaps in information to assess climate change risks
-Policy support and actions needed to make investment attractive

Institutional Investors	Banks	Utilities and Corporates	Asset Managers
-Portfolio allocations -Financial instruments -ESG -Climate change strategy -Disclosure -Investment pipeline	-Lending capacities -ESG -Sustainable Banking -Disclosure -Impact of Basel III	-Investment priorities -Utility business models -ESG -Disclosure -Cost of equity	-Investment products -Financial instruments -ESG -Investment pipeline

Project on availability of risk mitigation instruments: objectives and implementation

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Purpose: The project aims to **foster infrastructure development** by improving the understanding of major risks, risk mitigation and the availability of **financial risk mitigation instruments (RMI)**. Building on GRS/DAF work

Political Risk	Commercial Risk
Political Risk Insurance	Contractual arrangements (liquidated damages, contingency funds)
Political Risk Guarantees (eg. PRG)	Insurance
Credit Guarantees (eg. full credit guarantees, wraps, PCGs)	Sureties (performance bonds, warranties)

- **Demand and supply** of political risk insurance and guarantees
- **Providers of guarantee and insurance** products include selected bilateral (ECAs) & multilateral agencies (World Bank, IDB) and private insurers.
- Assessment of institutional and policy framework for **investment protection**

Infrastructure Investment Trends
Asia Pacific

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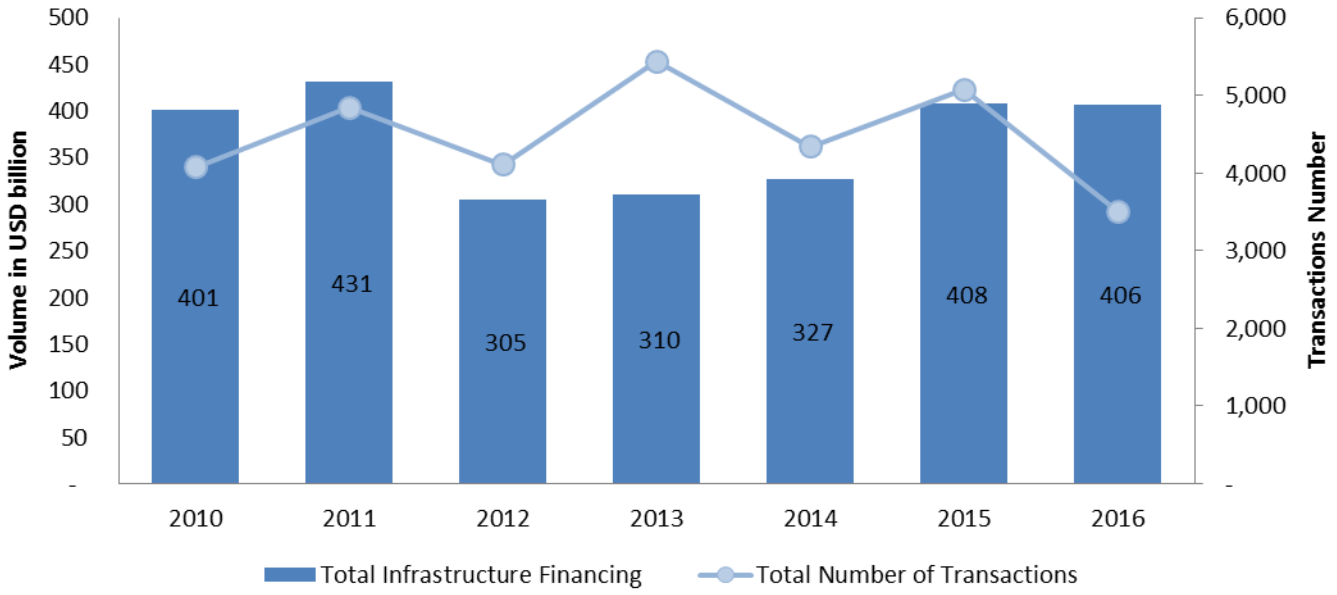

Source: *IJGlobal Transactions, BNEF*. OECD calculations.
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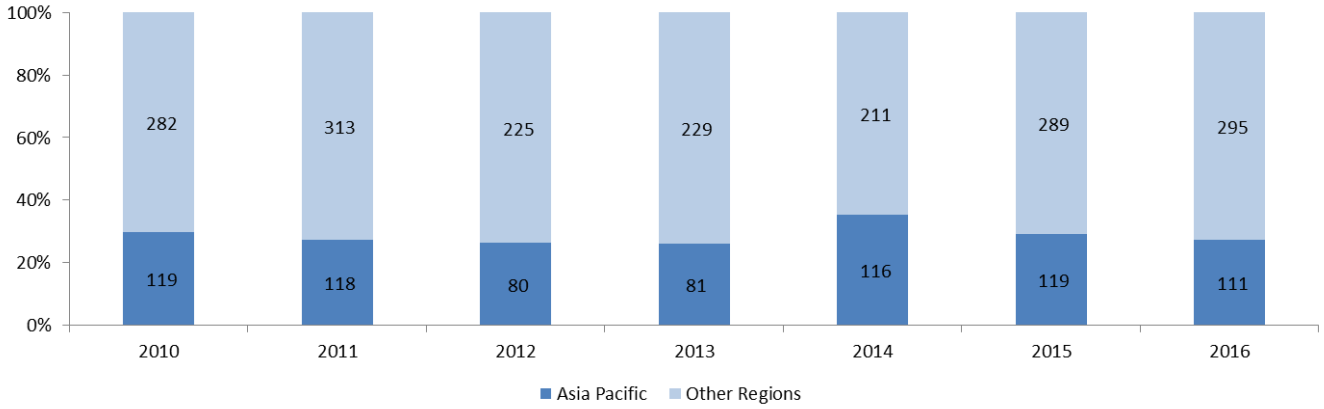
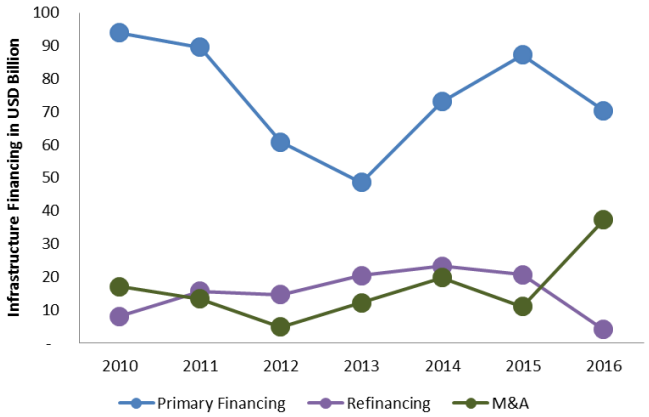
Infrastructure Investment Trends
Asia Pacific

Between 2010 and 2016, Asia-Pacific accounted on average for **30% of global infrastructure financing**…



…**Primary financing represented 70%** of the USD 745 billion financing of Asia Pacific infrastructure over the period



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