Greening Capital Markets

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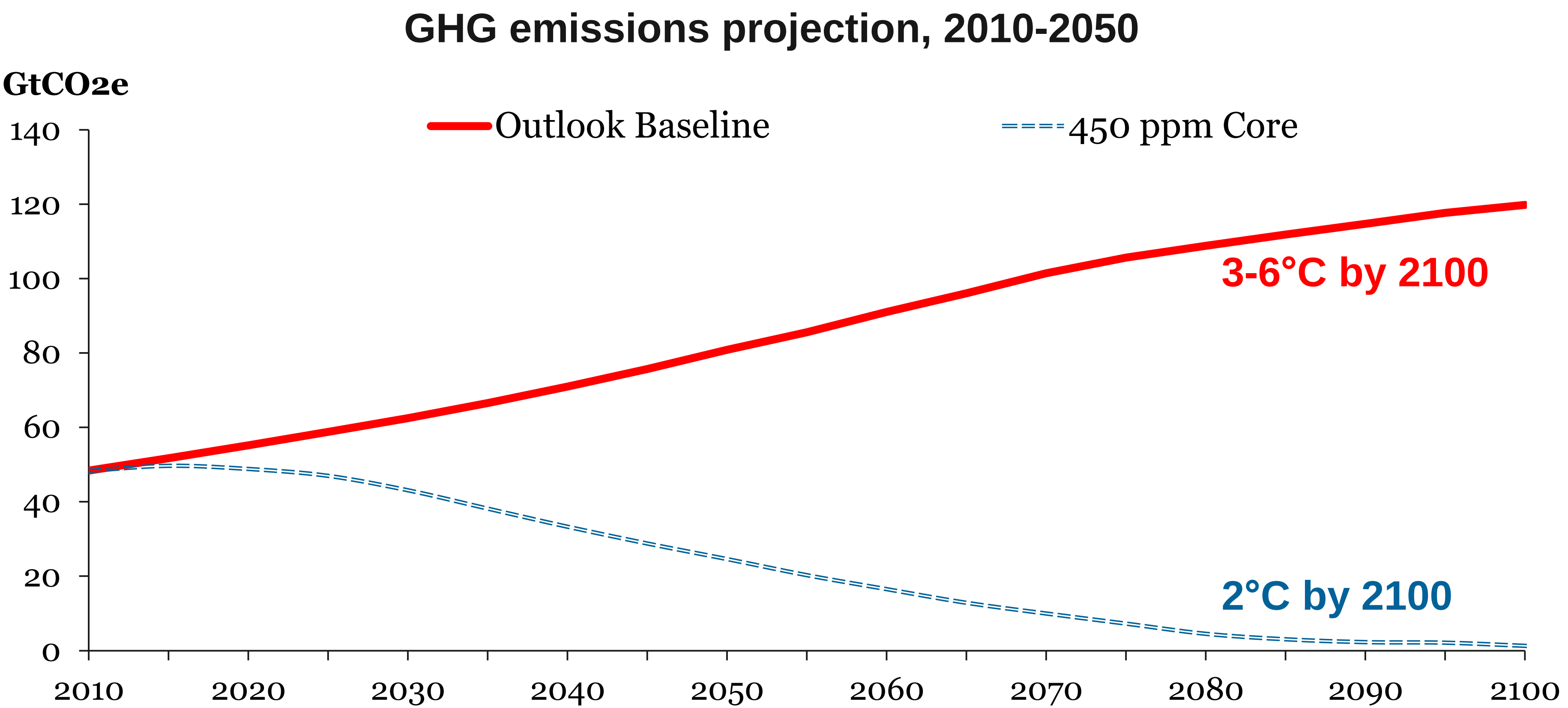
22 March, 2016
OECD-ADBI Capital Market Roundtable

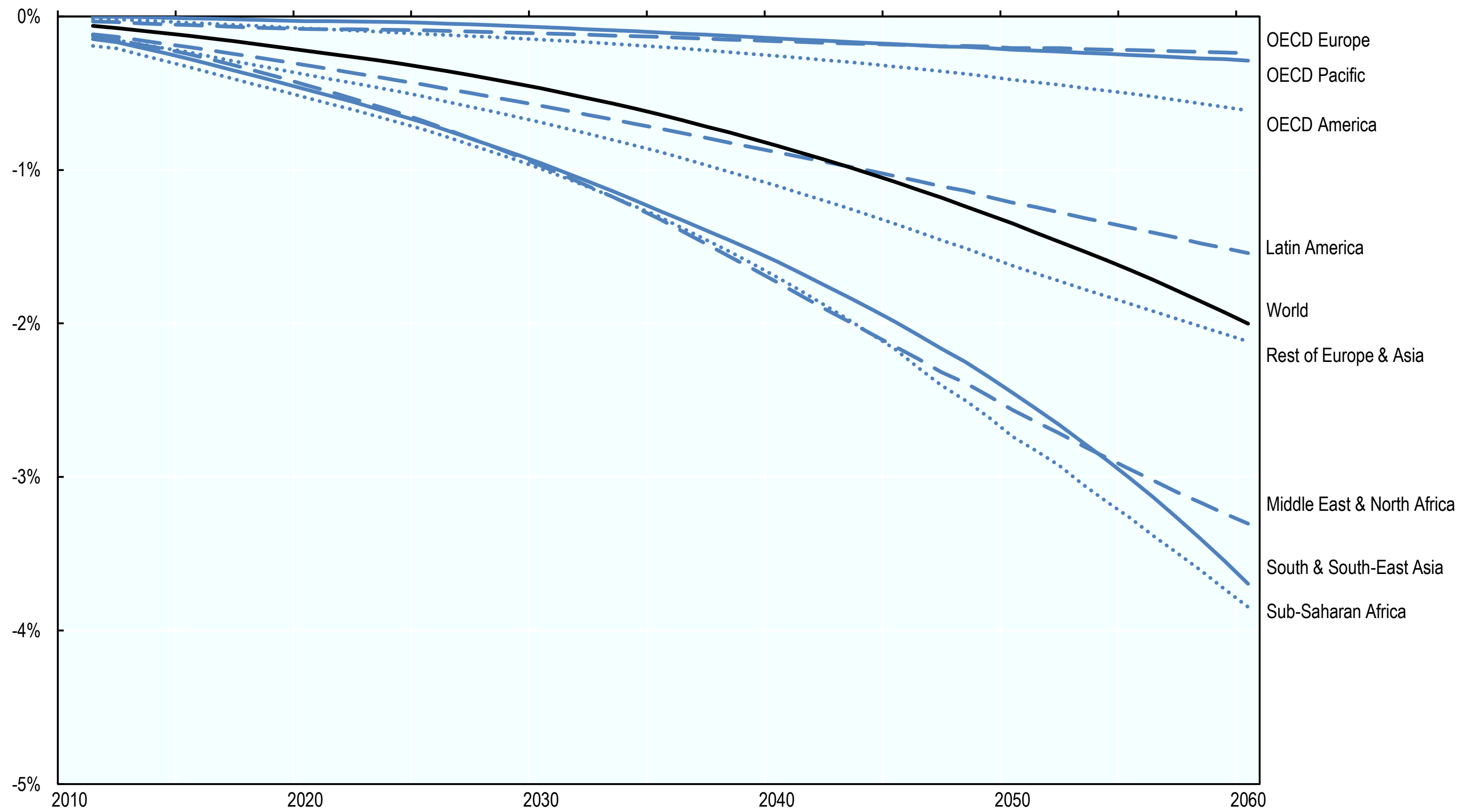
What do we do? Closing the GHG emissions gap



Source: OECD (2012), Environmental Outlook to 2050: The Consequences of Inaction.

Asia is a most vulnerable region against climate changes

Regional damages from selected climate change impacts, central projection



OECD projections subject to high degree of uncertainty

Breaking the tragedy of the horizon: Carney's 3 climate-re financial sector risks

Physical risks:

- Impacts on insurance liabilities and value of assets that arise from climate- and weather-related events
- Consequences most immediately for insurance sector, but also extend more widely

Liability risks:

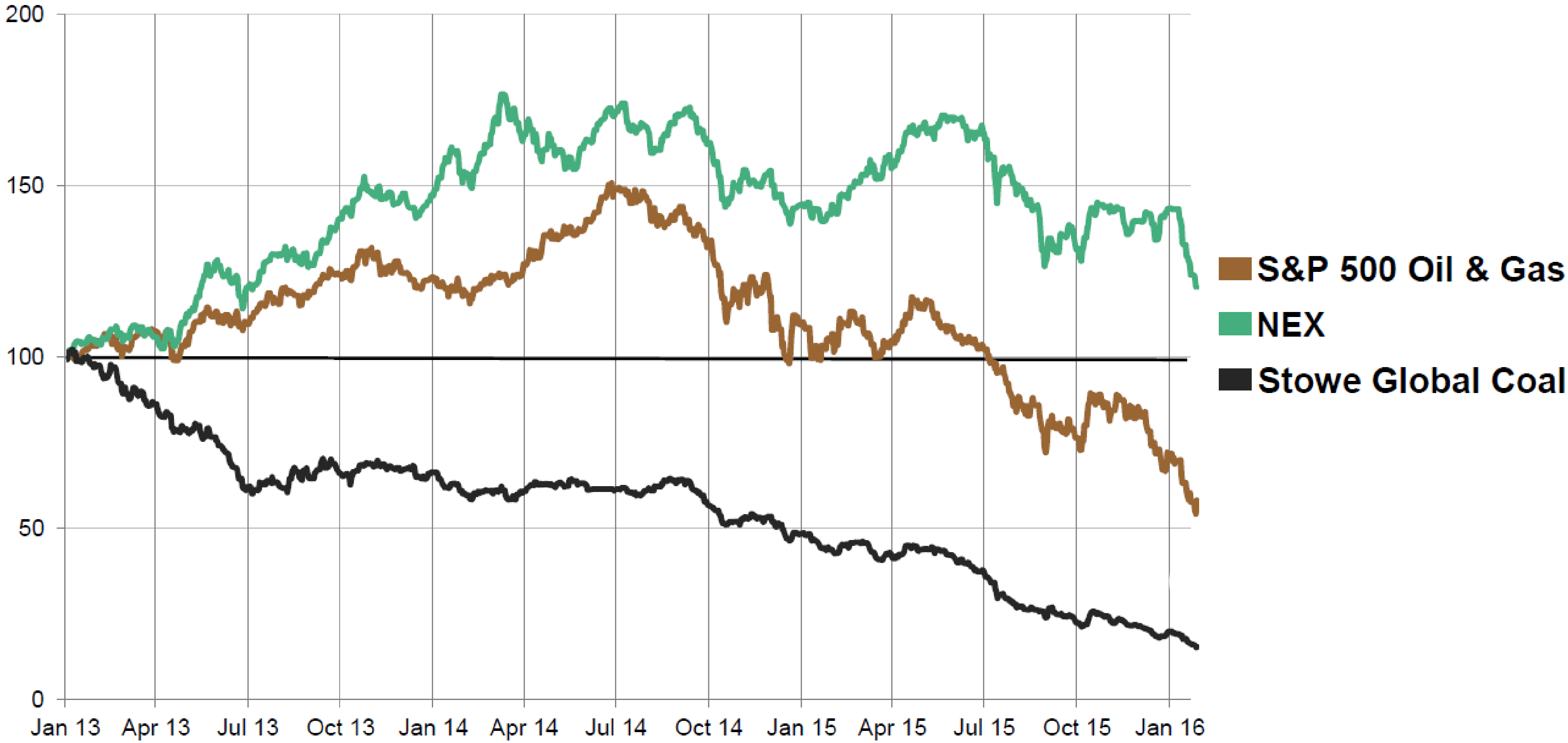
- Impacts that could arise if parties who have suffered loss/damage from effects of climate change seek compensation from those held responsible
- Claims could come decades in the future, creating liabilities for carbon extractors and emitters and their insurers

Transition risks:

- Financial risks which could result from process of adjustment towards a lower-carbon economy.
- Changes in policy, technology and physical risks could prompt value reassessment of large range of assets as costs and opportunities become apparent.
- The abruptness with which such re-pricing occurs could influence financial stability.

Source: Carney, M (2015), Bank of England: http://www.bankofengland.co.uk/publications/Pages/speeches/2015/844.aspx

Index performance: Clean energy (NEX) vs Oil & Gas (S&P) vs Coal (Stowe)



Source: Bloomberg

15 out of G20 countries mandate disclosure of (some) climate information

15	G20 countries have a mandatory corporate climate change reporting scheme
15	schemes require reporting of direct GHG emissions (scope 1)
6	schemes require reporting of emissions related to consumption of purchased energy (scope 2)
0	schemes require reporting of indirect emissions (scope 3)
4	schemes encourage reporting of indirect emissions
9	schemes encourage reporting of information other than GHG emissions (e.g. risks, strategy)
15	schemes apply to companies within national boundaries
2	schemes also apply beyond national boundaries
12	schemes require verification of information
12	schemes provide penalties for non-compliance
14	schemes specify methods of GHG emissions calculation
12	schemes provide reporting guidance

Rethinking the governance of institutional investments

Too few institutional investors include the financial impacts of environmental factors in their investment process

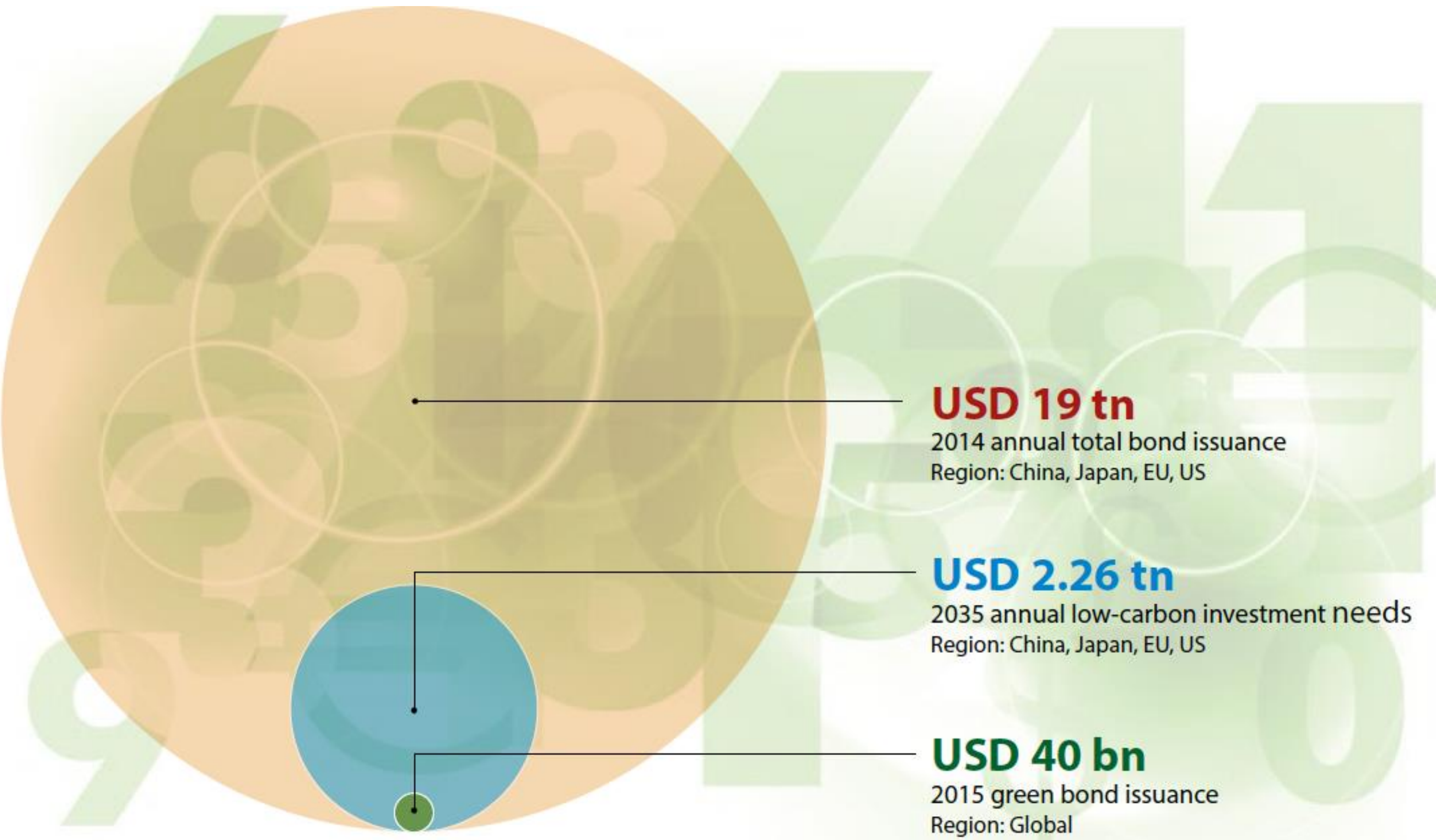
- Short-term focus
- Difficulty balancing conflicting interests of beneficiaries
- Lack of standardised models and analytical tools
- Limited expertise and resources

OECD will undertake a review of governance standards around investment decisions

- Assess current standards of care and governance of institutional investments
- Examine how institutional investors manage (financial) risks and opportunities linked to green investments / climate change
  - Linkage with corporate carbon disclosure
- Identify effective approaches regarding investment governance and green finance

OECD analysis will seek to rethink governance and assess whether "green" risks and opportunities can be incorporated more systematically into investment decisions.

Low-carbon investment needs, new bond issuance and green bond issuance (USD, annual)

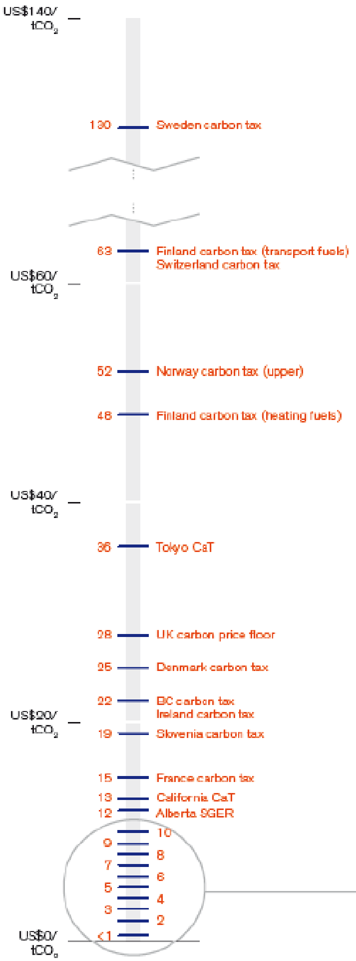


Note: "Low-carbon" investment needs cover the renewable energy, energy efficiency and low-emissions vehicle sectors as estimated by the IEA (2014, 2012). The 2015 green bond issuance figure of USD 40 billion extends to all sectors covered in Climate Bonds Initiative database as of November 2015. Annual total bond issuance is provided as an illustration and just as with green bond issuance, reflects "gross issuance" figures i.e. does not account for those securities that reach maturity or are redeemed from previous years (termed "net issuance"). It includes other types of debt securities such as notes and money market instruments.

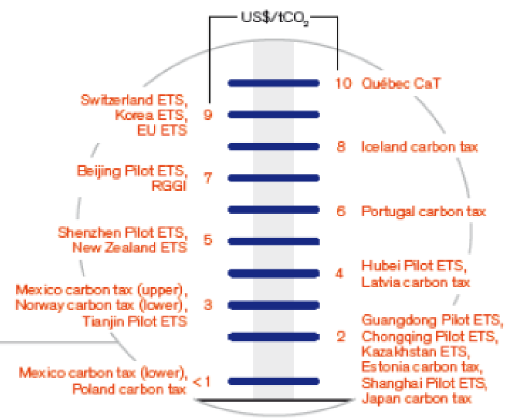
Source: OECD analysis based on IEA (2014, 2012), Climate Bonds Initiative (2015), BIS (2015), SIFMA (2015), ECB (2015), JSRI (2015), ADB (2015) and Goldman Sachs (2015). in OECD (2015, 2016 forthcoming)

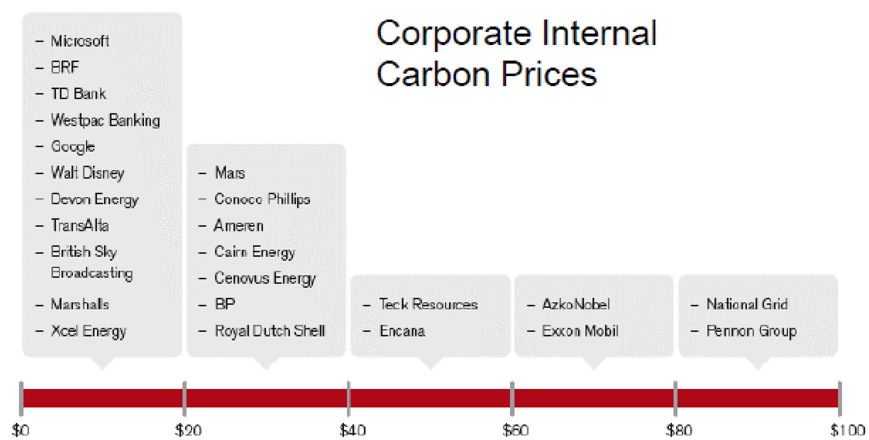
Putting a price on carbon

- Prices range from <US$1 / tCO_2e to US$130 / tCO_2e
- 85% of emissions priced at <US$10 / tCO_2e



National and Sub-National Carbon Prices

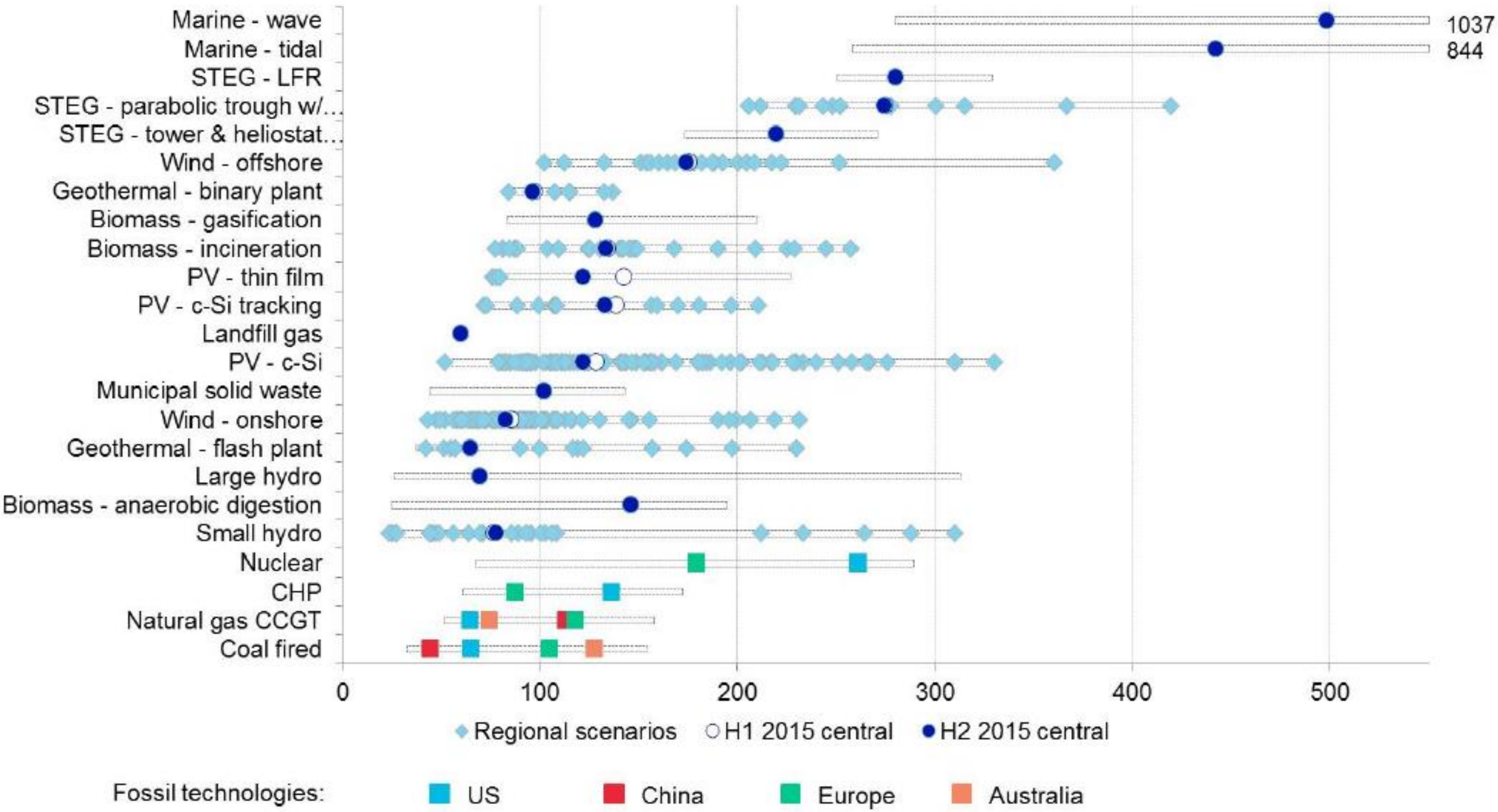




Source: State and Trends of Carbon Pricing 2015, World Bank Group and Ecofys (Sep 2015)

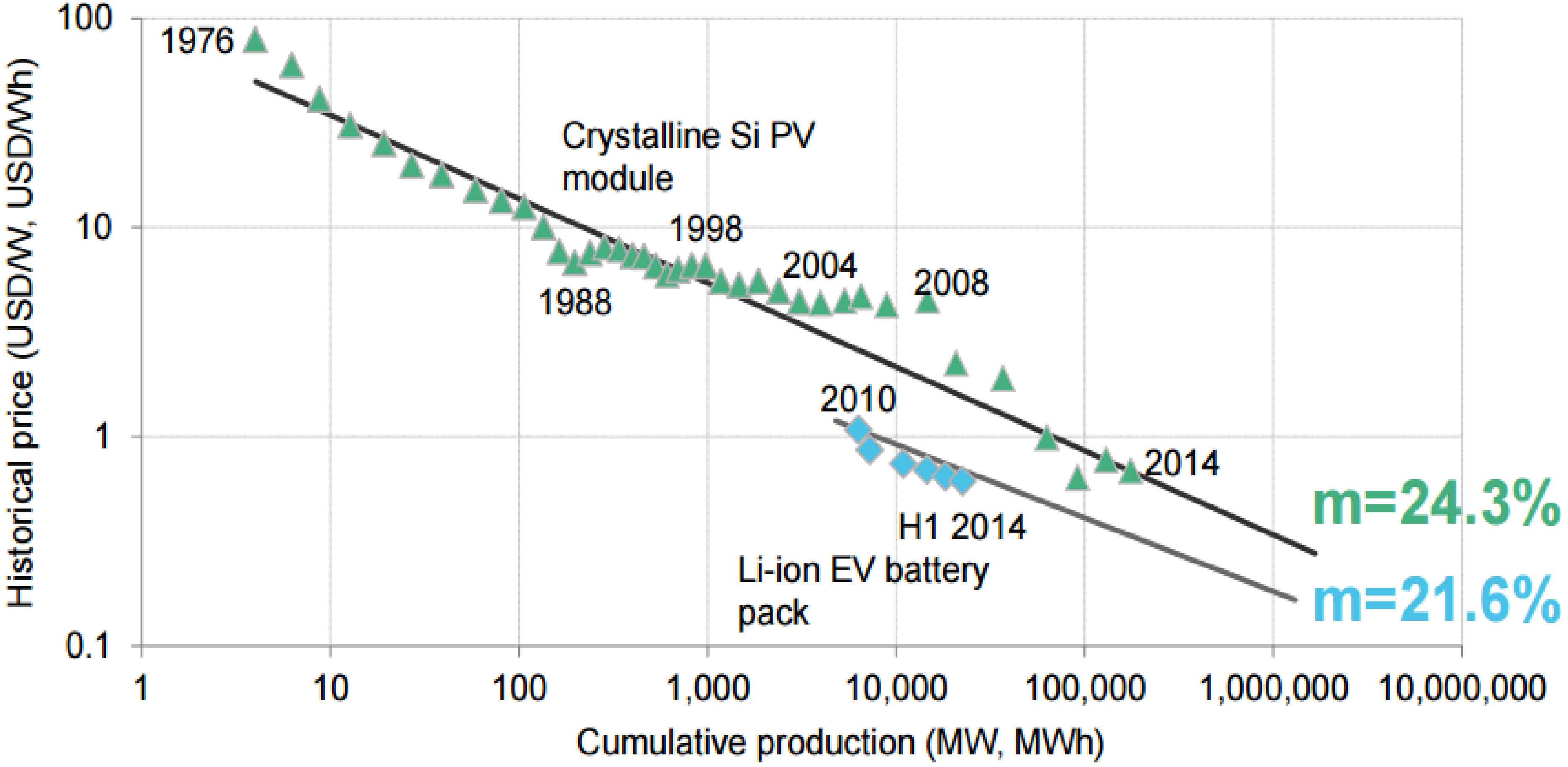
LEVELISED COST OF ELECTRICITY 2015 ($/MWH, Unsubsidized)

A number of renewable energies have comparable and, at times, cheaper costs than "conventional" power sources



Source: Bloomberg New Energy Finance, EIA

DECLINING COSTS: Lithium-ion Electric Vehicle (EV) Battery Experience Curve Compared with Solar PV Experience Curve



Note: Prices are in real (2014) USD.

Source: Bloomberg New Energy Finance, Maycock, Battery University, MIIT

OECD policy recommendations for G20: Overcoming barriers and greening institutional investors

Barriers to institutional investment

- Weak, uncertain or counterproductive environmental, energy and climate policies
- Regulatory policies with unintended consequences
- Lack of suitable financial vehicles with attributes sought by institutional investors
- Shortage of information. knowledge and data to assess portfolios and investments and underlying risks/returns

Establish pre-conditions for institutional investment

Ensure a stable "investment grade" policy environment - evaluate and fix unintended regulatory impacts

Address market failures (incl. lack of carbon pricing & remove fossil fuel subsidies)

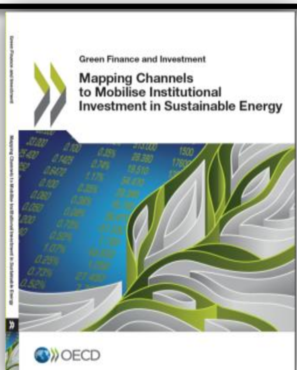
Provide a national infrastructure road map & pipeline

Facilitate the development of liquid financing instruments (e.g. green bonds) and risk mitigants

Promote market transparency, disclosure, standardisation and improve data availability

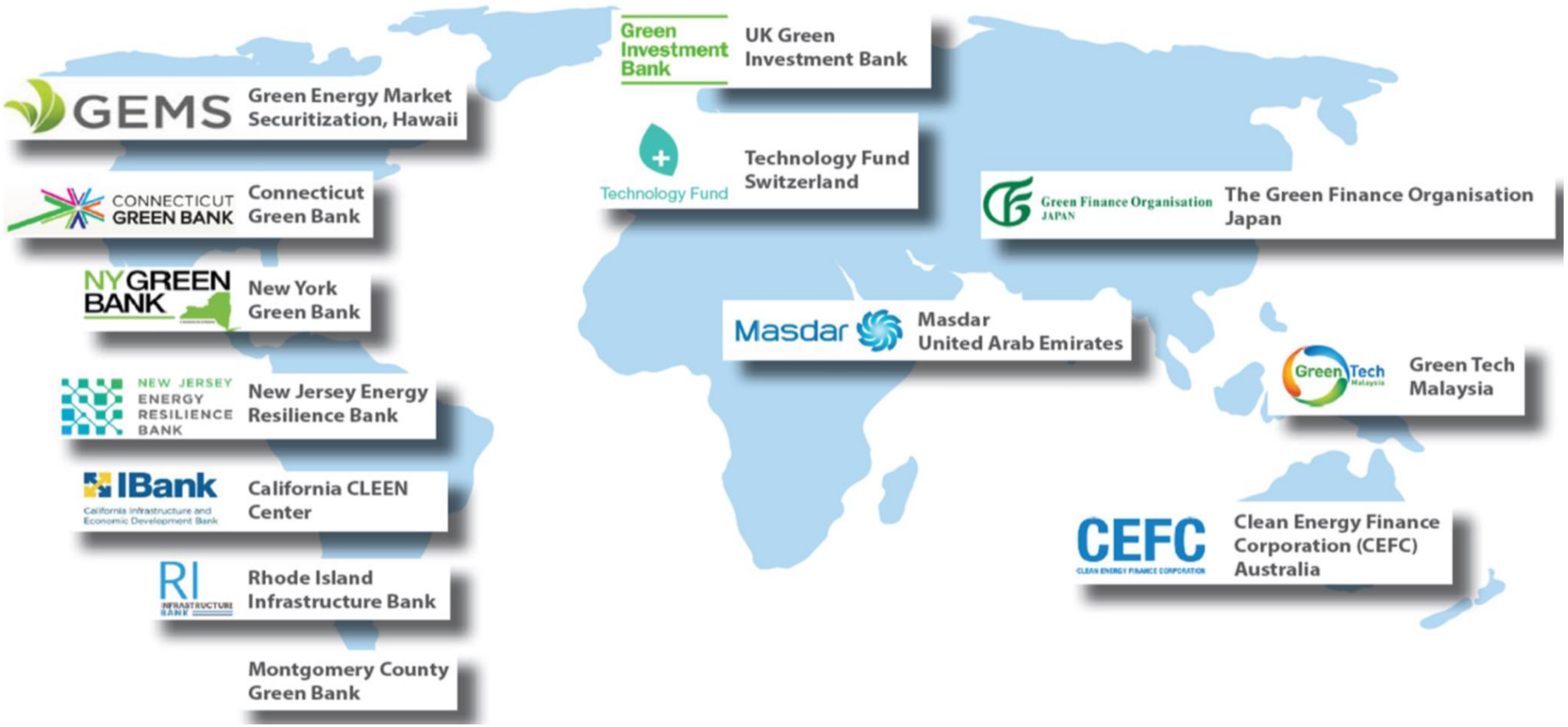
Reduce the transaction costs of green investment

Establish a "green investment bank" or refocus existing public financial institutions



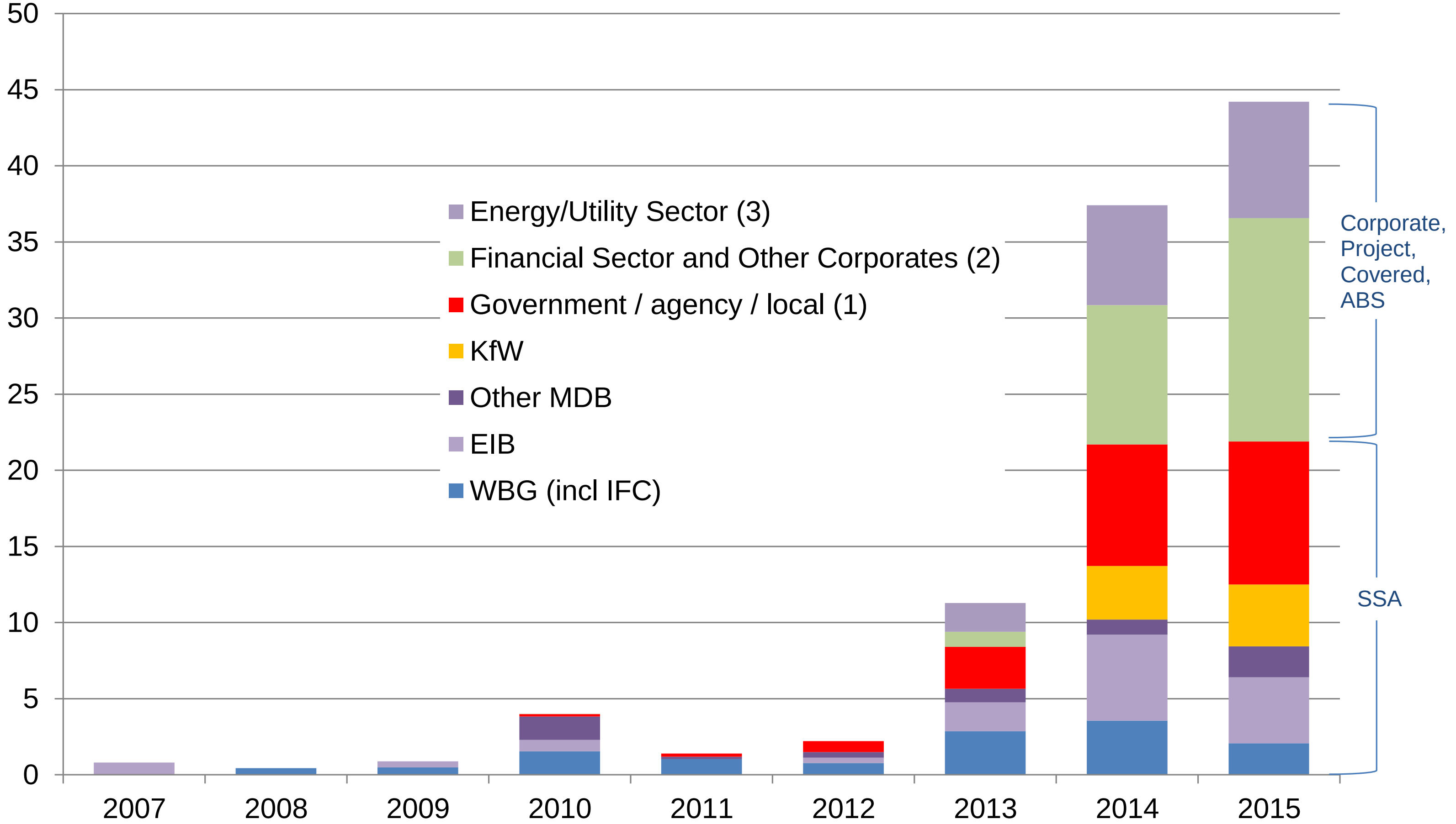
Source: OECD, 2015: http://dx.doi.org/10.1787/9789264224582-en

Mobilising investment in green infrastructure
Green Investment Banks



13 national and sub-national governments have created public green investment banks, which facilitate private investment into domestic low-carbon, climate-resilient infrastructure.

Composition of the green bond market (as of Dec 2015, USD Bn, gross issuance)



Note: SSA: Sub-sovereign, Supranational and Agency, Muni: Municipal; ABS: Asset Backed Securities. (1) includes national development banks, sub-sovereign jurisdictions including municipalities, agencies, and local funding authorities. (2) includes financial sector bonds and all other corporates that are not energy/utility sector, as well as covered, project and ABS not energy/utility related. (3) includes corporate bonds issued by energy/utility companies as well as covered, project and ABS related to energy/utility companies

Source: OECD analysis based on Bloomberg and World Bank data in OECD (2015, 2016 forthcoming)