«Financing the transition – Green Bonds»

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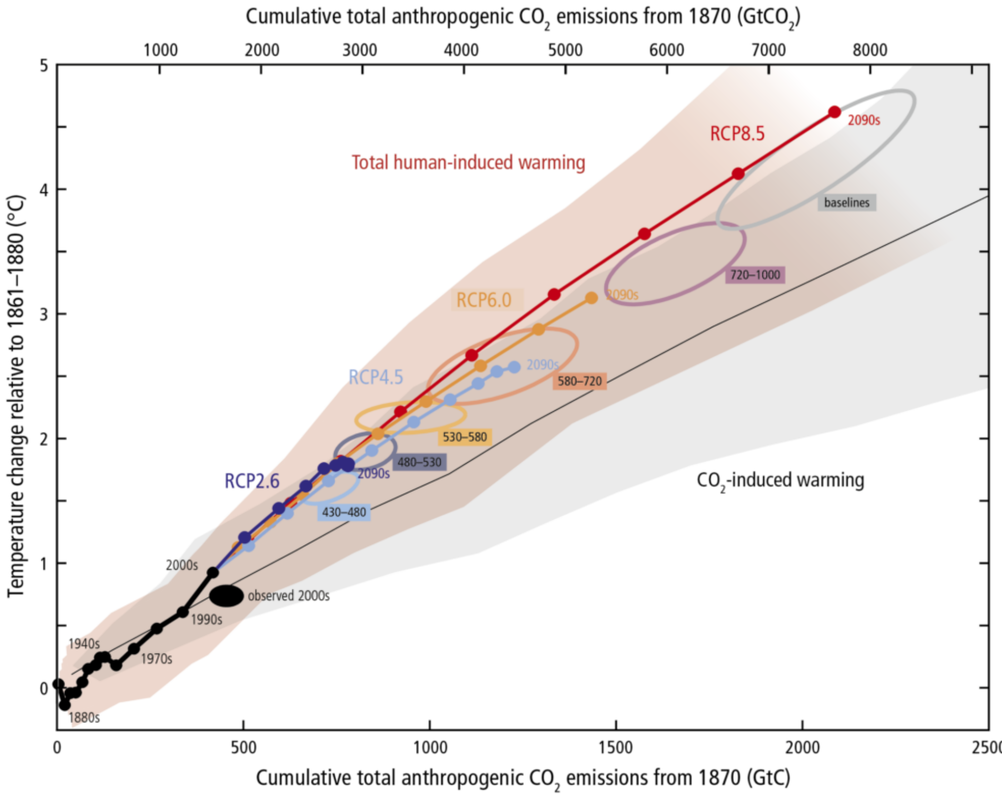
Climate change

«to limit "total human-induced warming to <2°C relative to 1861-80 with probability >66%, would require cumulative CO_2 emissions from all anthropogenic sources since 1870 to remain <2900 $GtCO_2$ (carbon budget)" (IPCC, 2014).

Given the amount of CO_2 emitted up to now, raining cumulative carbon budget is 1000 $GtCO_2$. (Gignac &Matthews 2015)

Curbing CO_2 emissions requires urgently strong action. Fiscal policies (taxes, permits, etc) are not enough to fulfill the Paris pledges and most importantly, much stronger action is needed. Debt financing, using Green Bonds, can contribute substantially in addressing the problem and also inter-generational equity issues.



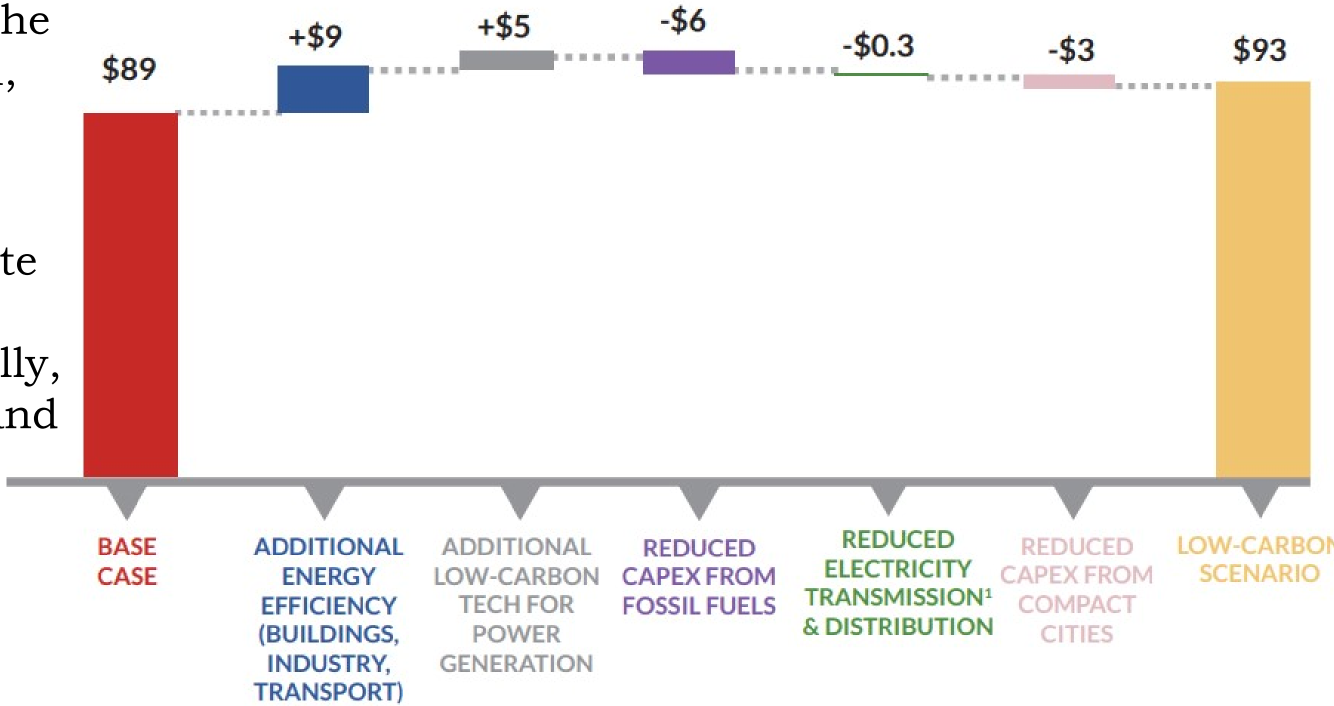
Warming versus cumulative CO2 emissions (Source: IPCC 2014, Figure SPM.5 (b))

Transition financing requirements

Total basic infrastructure spending between 2015 and 2030 are estimated at around $89 trillion. Additional investment required to support the shift to low-carbon economy is only about $4 trillion over the next 15 years, or $0.27 trillion per year on average. (Global Commission on the Economy and Climate, GCEC).

Other estimates increase the needs to about $15 trillion, or $1 trillion per year.

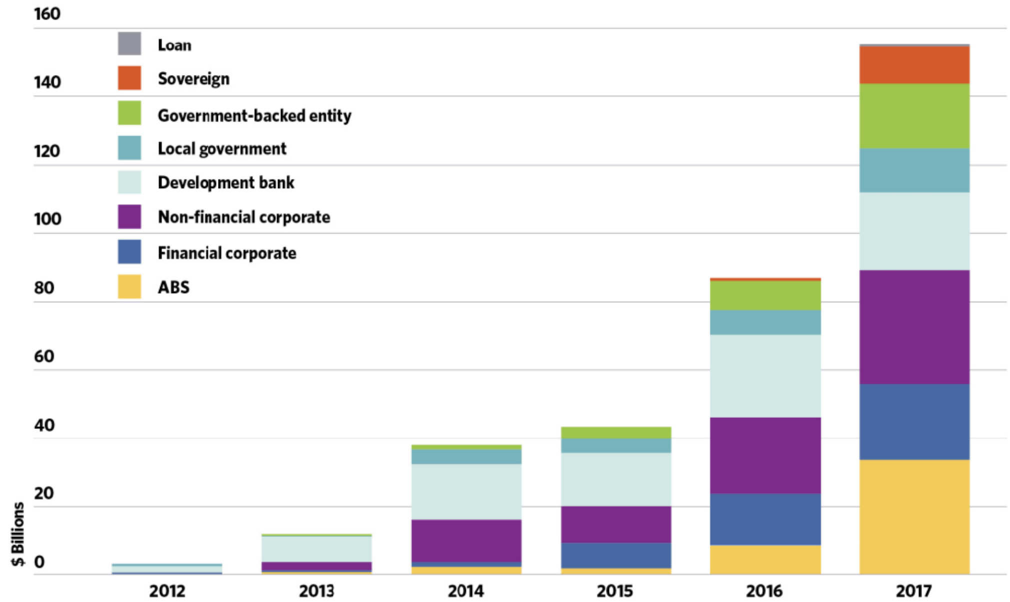
The problem is that low carbon investments, despite their large social benefits, they involve, at least initially, low returns, higher risks and depend heavily on policies and regulations.
Thus, the necessary low carbon infrastructure investments cannot be provided by private markets without the public sector's intervention.

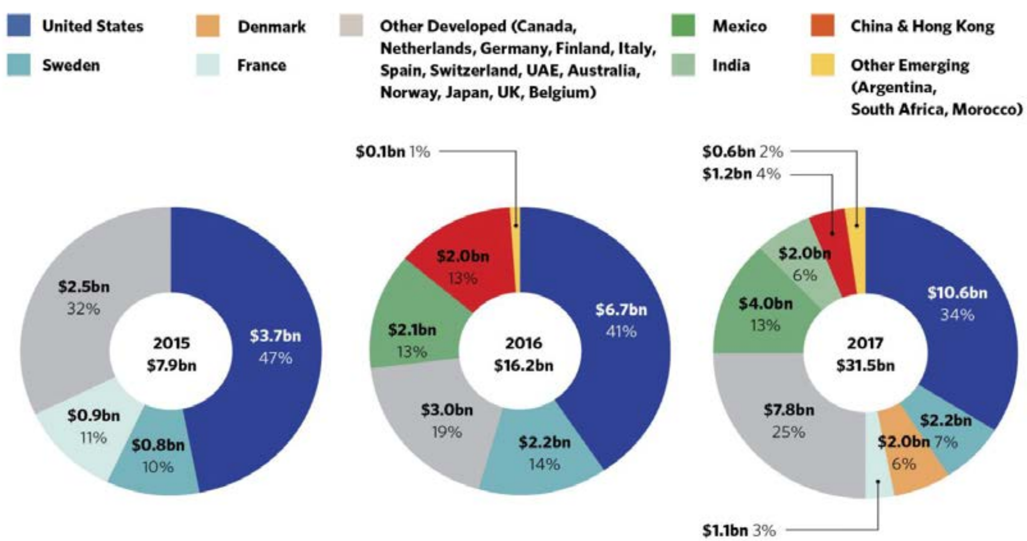


Global Investment requirements, 2015-2030, US$ Trillion, constant 2010 USD. Source: GCEC (2014).

Green bonds' market

The market was initiated with European Investment Bank's "Climate Awareness Bond (CAB)" issued in 2007.
Multilateral Banks, such as the World Bank, followed, while the first corporate bonds were issued in 2013 followed by local and regional governments in 2014.





A key catalyst for the market's development was the introduction, in January of 2014, of the **Green Bond Principles**.
Since then, the labelled market has expanded almost doubling after each subsequent year: from 11b$ in 2013 to 167.6b$ in 2018. All reports project that green bond issuance for 2019 will exceed $180 billion potentially reaching as high as $210 billion.

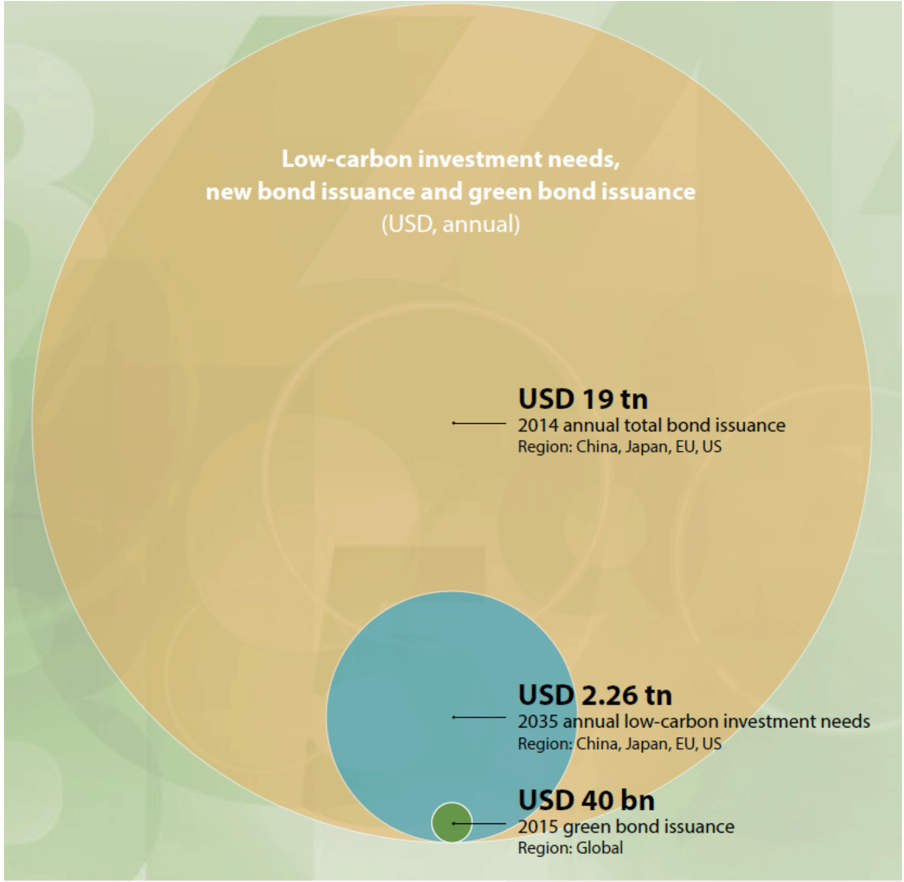
Green bonds market's prospects…

Despite its fast growth, the market for green bonds remains still a relatively small part of the total bonds market. The global outstanding bonds market was valued at approximately 97t$ in 2014, while in the same year the new bond issuance amounted to 19t$ (OECD 2017). New green bond issuance in 2014 was below, while in 2015 just above 40b$, constituting a miniscule fraction, just 0.21%, of the newly issued bonds. Other studies estimate this up to 1.5% of the total bonds market in 2016.

… and drivers

The market's drivers can be classified into:

- financial motives (expected lower risks and better financial performance due for ex. to increased transparency)
- non-pecuniary motives, that is, investors' environmentally-friendly preferences



Low-carbon investment needs, new bond issuance and green bond issuance. Source: OECD (2017).

Green bonds market's performance...

Supply: issuing GBs is more expensive, given the costs of possible certification, regular reporting, holding separate accounts for the proceeds, etc. Estimates of additional costs are between 0.3 and 0.6 basis points for a 500m$ issue, depending on the level of work.
Demand: recent studies find that GBs allow issuers to borrow at a lower price (price premium), i.e. investors are willing to accept a lower yield. The estimates of these spreads range from 2 up to 18 basis points, with higher spreads for certified labelled bonds.

… and challenges

Bridging the informational gap between issuers and investors is probably the most important challenge. Providing clear green criteria and monitoring process will reduce both issuers' additional costs of certifying and contiguously communicating information regarding the green character of the proceeds' investments, and will provide investors with the required assurance of the green character of their investment.

Green bonds market's future

Recent developments: The EU Technical Expert Group (TEG) on Sustainable Finance moves fast, China continues, Mexico, Morocco, Nigeria and ASEAN have introduced green bond guidelines. The UK's Green Finance Taskforce recommended making London green finance hub. The Expert Panel on Green Finance in Canada has released an Interim Report and soon the Final Report. In Australia, investor and ESG groups have formed a Sustainable Finance taskforce, the central bank-led Network for Greening the Financial System delivers its first report in April 2019.

Although the regulatory framework is developing, this should not imply that large financial institutions should wait for the perfect framework to be developed. The larger globally Bank, the Industrial & Commercial Bank of China (ICBC) followed by Bank of China, Industrial Bank of China και Construction Bank of China, have all issued Certified green bonds, as they also did anorher 100 large Banks in Europe, Canada and Australia. More banks will lead out on green bonds, green loans, mortgages and green deposit products in 2019. A banking sector that collectively still holds trillions in brown investments around the world, should move fast to reach the first trillion of green investment.

Climate Bond Certified