Institute for Global Environmental Strategies (IGES)

Non-Party Stakeholder Submission to the Talanoa Dialogue of the UNFCCC

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IGES

Climate
Bringing Changes from Asia

Foreword

The Institute for Global Environmental Strategies (IGES) is pleased to submit this document as a third-party submission to the Talanoa Dialogue of the United Nations Framework Convention on Climate Change (UNFCCC). This submission uses climate-related research findings from the Institute itself, as well as member organisations of the Low-Carbon Society Research Network (LCS-RNet). The aim of this submission is to make a case for an accelerated transition to a low-carbon society, backed by the latest research findings in climate policy and science.

This paper follows the spirit of the Talanoa Dialogue, by asking three main questions: where are we? Where do we want to go? And how do we get there? Studies show that the low-carbon transition, enshrined in the Paris Agreement, is still not happening at the desired pace and scale, notably due to a lack of financing for green technologies and processes. Nonetheless, there is reason for cautious optimism, as most scenario modelling research seem to indicate that creating a decarbonised society remains technically feasible within the required time frame. However, in order to achieve this, immediate and ambitious actions should be taken. This submission concludes by emphasizing the importance of key policy instruments that can facilitate this low-carbon transition.

Contents

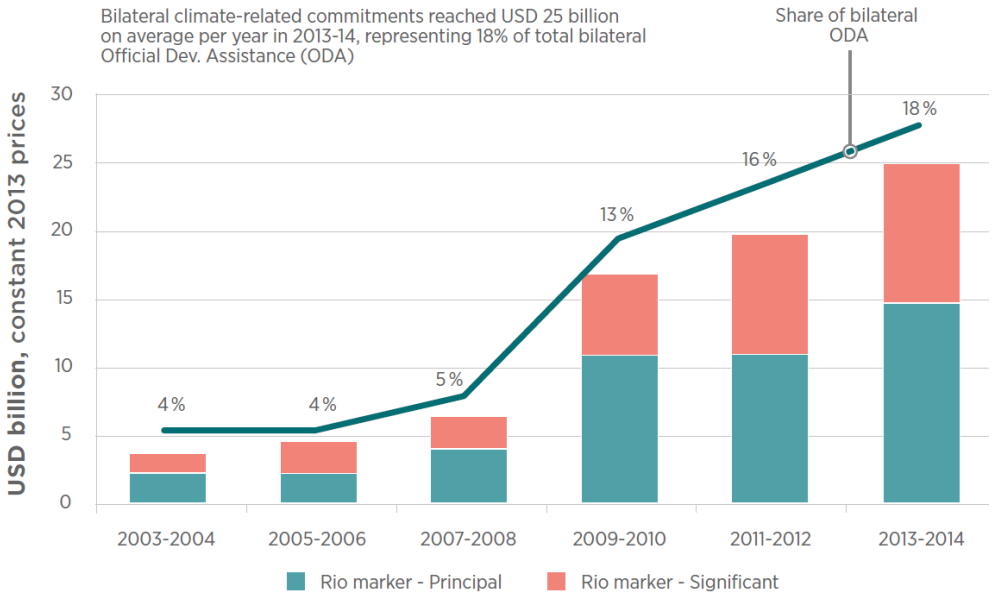
1. Where are we? A lack of climate finance to reach long-term decarbonisation targets

The question of where we are in the transition to a low-carbon society envisaged by almost every country in the world through the Paris Agreement brings us to pressing issue of finance. As the mid and long-term targets for decarbonisation have set a commonly accepted time frame for climate action, it is necessary to plan ahead the flow of climate finance needed to fund the transition. Yet, studies show that while climate-related funding is increasing (1.1), it is still not the level nor the pace required to keep the world on a two degrees pathway (1.2).

1.1. Current flows of climate-related finance

- Bilateral climate-related development finance from DAC members amounted to $25 billion on average in 2013-2014, or around 18% of total bilateral overseas development assistance (ODA). This figure has been increasing steadily since 2002. The quality of climate-related development finance[a], in terms of its impact in delivering mitigation and adaptation in partner countries, is as important as the magnitude of the finance mobilised. However, this increase compared with previous periods still falls short of the climate finance amount required to realize a low-carbon transition.

Figure 1: Bilateral ODA from DAC members and climate-related development finance



Source: OECD-DAC, 2013-14 average, USD constant 2013 prices[1]

[a] The Rio markers provide an indication of the degree of mainstreaming of environmental considerations into development co-operation portfolios by requesting DAC members to indicate for each activity whether it targets the objectives of the Conventions: 1. As a "principal" objective: the activity would not have been funded but for that objective; 2. As a "significant" objective: the activity has other prime objectives but has been formulated or adjusted to help meet the relevant environmental concerns.

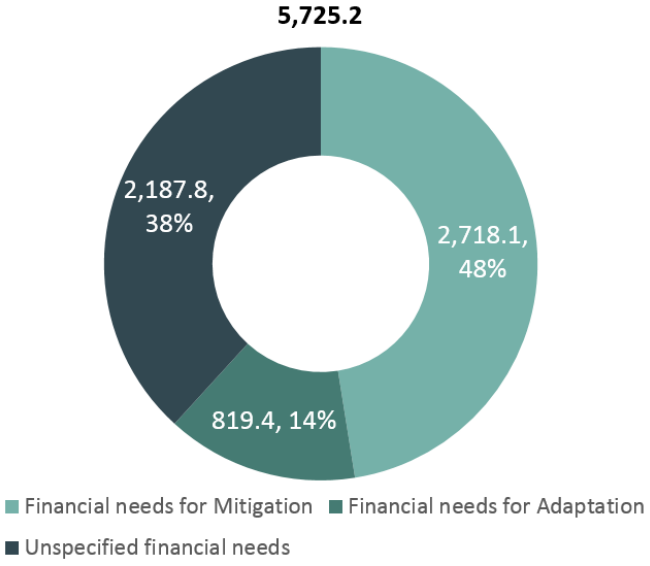
1.2. The climate finance gap for NDCs' targets implementation

- Analysis of NDCs shows that cumulative financial needs expressed in NDCs from developing countries amounts to approximately $ 5,700 billion, including specified needs of $ 2,700 billion for mitigation and $ 820 billion for adaptation (IGES, 2018). Financial demand in NDCs comes mainly from developing countries in Asia (50%) and Sub-Sahara Africa (42%).

- However, the amount of $100 billion per year pledged first in Copenhagen in 2009 and reiterated in the decision of the 21st Conference of Parties (COP21) from developed to developing countries is insufficient compared to overall investments needed for realising the low-carbon transition. Besides, full implementation of the unconditional NDCs and comparable action afterwards is consistent with a temperature increase of about 3.2°C by 2100 relative to pre-industrial levels, which means that ambitious action is required beyond the expressed targets (UNEP, 2017[2]).

- Studies show that the world needs to double its annual investment over the next 15 years in order to achieve the low-carbon transition—an increase of $2-3 trillion per year, a third of which needs to be directed towards sustainable infrastructure (Bhattarcharya et al, 2015[3]).

Figure 2: Total amounts of financial needs expressed in NDCs (in billion USD)



Source: IGES (2018) NDC Database, version 4.3[4]

2. Where do we want to go? The low-carbon transition is feasible but requires immediate action

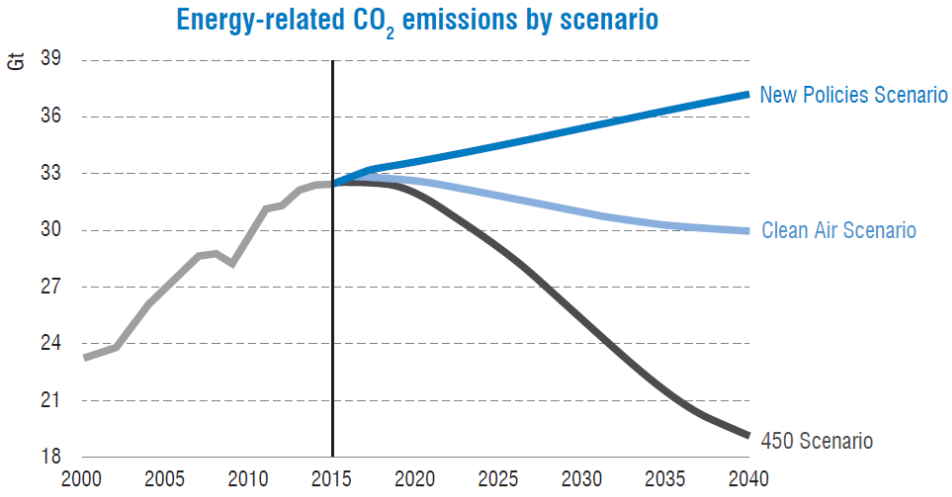
The status of where we are, as seen in the previous section, should serve as a wake-up call to strengthen climate action. However, while more climate finance is required, scenario modelling research shows that a decarbonisation of the society is nonetheless feasible in the long-term. These findings can be cause for optimism regarding future prospects and help the global community plan ahead for the transition.

Studies notably show that at, a global scale, the world will reach a peak in GHG emissions, before embarking on a more stringent emission reductions journey (2.1). This section also explores the specific cases of two developed countries, Japan (2.2) and Germany (2.3), in order to show sectoral evidence that in spite of local challenges regarding energy supply, a decarbonization of the society is possible. However, both at the global and country level, such pathway necessitates immediate action, depending in particular on the availability of climate finance.

2.1. The conditions for the feasibility of a global low-carbon transition

- IEA's Clean Air Strategy scenario shows it is possible to cut air pollution and related premature deaths by about half, while only requiring a 7% increase in investment. A well-designed air quality strategy will also have major co-benefits such as improving energy access, meeting the SDG targets of renewable energy and energy efficiency by 2030, lowering the energy import bill, and leading to a peak in CO_2 by 2020 (IEA, 2016[5]). However, while the Clean Air Strategy will be able to reduce energy related CO_2 emissions, more efforts will be needed to achieve the 2 degrees target.

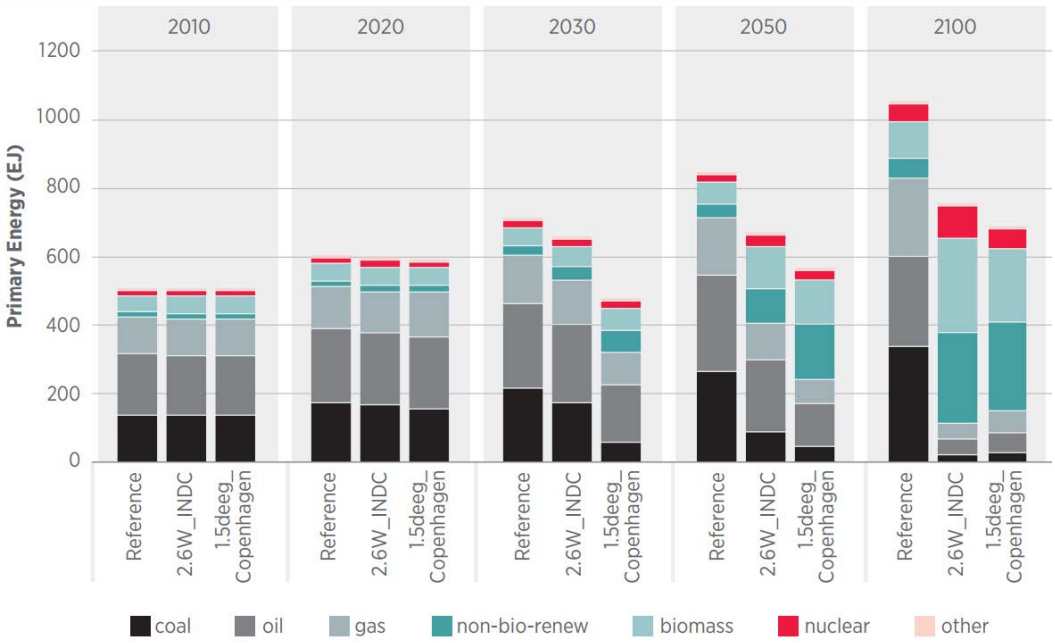
Figure 3: Climate benefits of the IEA Clean Air Strategy



Source: Presentation by Timur Gül (2016)[6], based on IEA's Clean Air Strategy

- Taking measures to drastically reduce GHG emissions needs considerable effort from different aspects. The AIM/Global [CGE] model uses different scenarios to assess a 1.5°C pathway (Fujimori and Masui, 2015). In addition to the 1.5°C scenario, which encompasses the Copenhagen emissions pledges in 2010 and mitigation policies to meet the 1.5°C target, four other scenarios have been developed to analyse different energy mixes and economic impacts. The Shared Socio-economic Scenario 2 (SSP2) is used as a reference scenario. The SSPs are part of a new scenario framework established to facilitate the integrated analysis of future climate impacts, vulnerabilities, adaptation and mitigation (Riahi et al., 2016)[7].

Figure 4: Global primary energy consumption under different scenarios



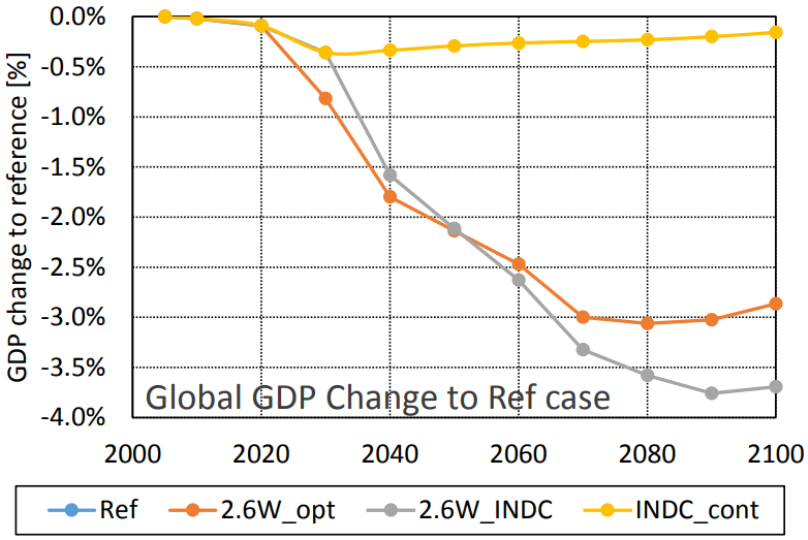
Source: Fujimori and Masui (2015)[8]

- This research shows that the world could move towards using an increased share of renewables under a 1.5°C scenario. The availability of renewables in 2030 would be limited, the amount of primary energy consumption would decrease after 2030 and reach 65% of that in the reference scenario in 2100, due to energy efficiency improvements and the availability of renewables. However, the deployment of renewable and energy efficiency technologies depend largely on the level of public support that will be put in place during the same time frame.

- This brings the question of the financial cost of the low-carbon transition. The AIM model scenarios show that, although the 1.5°C scenario may cause a decrease in GDP compared to the reference scenario, absolute GDP will increase in the long run. Global GDP in 2100 in all scenarios are higher than in 2010. Some scenarios show a lower global GDP than in the reference scenario, however, this is mainly because the GDP estimate does not take the economic impacts of climate change into account. Therefore, this likely increase in global GDP due to the low-carbon transition can serve as a basis for increasing the level of

climate finance to its required level, in order to create a virtuous loop of investment and climate impacts.

Figure 5: Global GDP change compared to reference case, from AIM model



Source: Fujimori and Masui (2015)

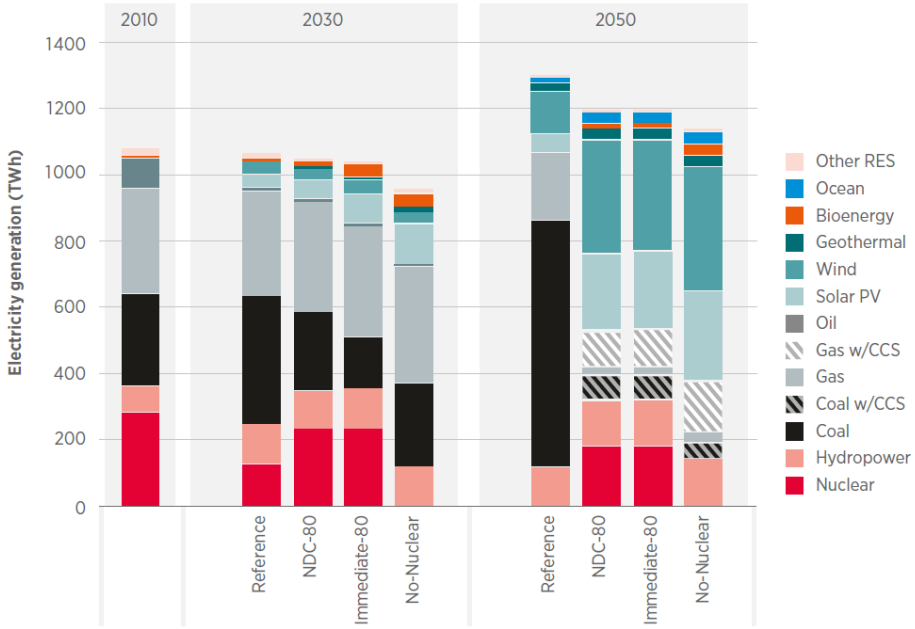
2.2. The case of Japan: decarbonisation is achievable but requires rapid emission reductions

- Global and Japanese scenarios assessed by the AIM modelling team of Japan indicate that for Japan achieving approbatively 25% emission reduction in 2030 and 80% in 2050 (compared to 2005) is technically feasible even without nuclear power.

- Besides energy efficiency and renewable energies, innovative technologies such as CCS will be important options. End-use will be significantly electrified after 2030 and electricity will be almost fully decarbonised by 2050. While NDCs are meaningful, much more effort will be needed after 2030.

- Key challenges to implement these options for 80% reduction by 2050 are: (i) Integration of variable renewable energy after 2030, (ii) Technologies such as back-up energy systems, efficient, high capacity batteries, and reliable grids, (iii) Policies such as carbon pricing, feed-in tariff, emissions trading, regulations linked to best available technologies, and policies to increase employment with low carbon systems, and (iv) increasing public awareness through dialogue among stakeholders and international collaboration. As seen above, most of those options required to implement the low-carbon transition as seen in this research requires a sharp increase in the level of climate finance in the short run.

Figure 6: Electricity generation in 2010, 2030 and 2050 in Japan



Source: Oshiro (2016)[9]

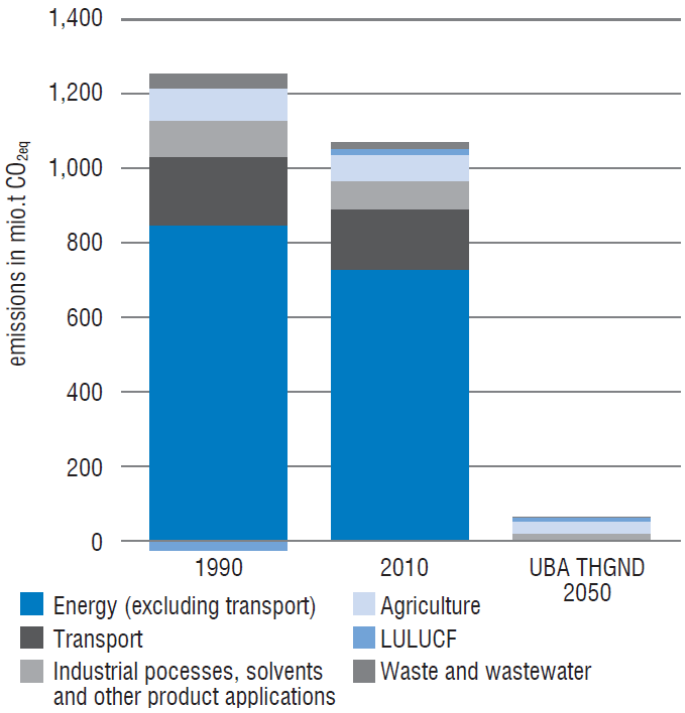
2.3. The case of Germany: a GHG-neutral economy is foreseeable, but requires deep production and consumption changes

- Germany's goals of 40% GHG reduction in 2020 and 80–95% reduction in 2050 imply a GHG-neutral German economy in 2050 with 80–100% share of renewable energy in electricity, halving of final energy use by 2050, resource-efficient economy, and 1 tonne CO_2 emission per capita.

- Some major characteristics of this GHG neutral pathway are: 100% renewable energy in power, heat, transport and industry; Intensive deployment of technological measures for GHG reduction in all sectors; Ecological and sustainable agriculture and change in lifestyle and food habits, especially meat consumption; High recycling rate and use of secondary materials, and major reductions along entire value chains.

- Similarly with Japan, the lifestyle and economic changes required for Germany to follow the low-carbon scenario shown in this research tend to imply a steep increase in the level of funding available for implementing climate actions and facilitating the adoption of low-carbon processes.

Figure 7: UBA-Study: GHG-neutral Germany in 2050



Source: Presentation by Harry Lehmann, Synthesis Report of the Eight Annual Meeting of the International Research Network for Low Carbon Societies (LCS-RNet), September 2016

3. How do we get there? The need for transformative policies to mainstream green growth and investments

Research have shown that the current flow of climate finance does not increase at a sufficient pace to reach long-term decarbonisation targets (cf. section 1). In spite of this, there is cause for optimism, as scenario modelling findings indicate that a low-carbon society can still be materialised (cf. section 2).

However, the underlying implication of such scenarios remains that sharp action must be taken in the short term, and such actions require an increase in climate finance. Therefore, in order to facilitate the mainstreaming of climate change investments, transformative policies should be adopted. Three policies in particular can be instrumental in this regards.

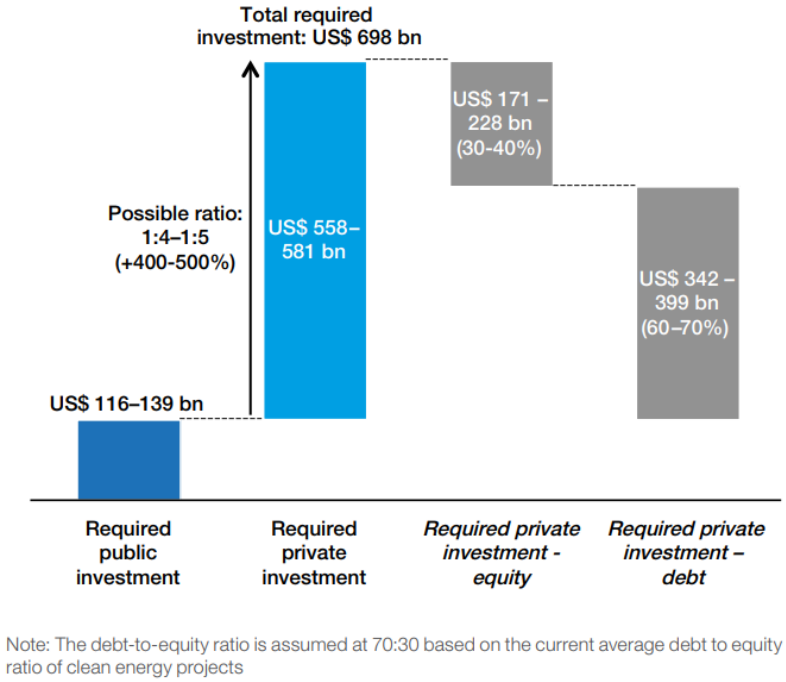
In a context of strained public finance and economic policies marked by austerity, utilising public investments as a lever for mobilising private finance rather than an end to itself can prove effective in generating the required level of climate finance (3.1). A high level of carbon pricing must also become the cornerstone of the climate policy of any government serious about addressing climate change, as it acts as a powerful price signal to incentivize investors to shift their investments from carbon-intensive technologies and processes to green ones (3.2). Finally, new financial mechanisms such as carbon certificates should be created to serve as guarantees against the investment risks arising from low-carbon investments, facilitating large-scale investments in climate-related initiatives, technologies and processes (3.3).

3.1. Addressing the green investment gap by utilising public finance as a lever for mobilising private finance

- As many OECD countries are undergoing a period of austerity, reliance on public-sector investment must be minimised, and more attention paid to attracting private finance. Therefore, while public finance plays a critical role in catalysing, leveraging and guiding climate-related investment; large-scale private sector engagement and investment will be needed to enable this transition.

- The World Economic Forum estimates that the green investment gap could be closed by mobilizing private investment through smart use of limited public finance. If public-sector investment was increased to US$ 130 billion and more effectively targeted, it could mobilize around US$ 570 billion in private capital (World Economic Forum, 2015)[10].

Figure 8: Potential public-private finance mobilization to close the cost gap for climate-specific investment



Source: World Economic Forum (2015)

3.2. The need for high-level carbon pricing instruments

- As the world is moving towards implementing NDC targets, more countries are putting a price on carbon, either through domestic, regional and international emissions trading schemes (ETS) and carbon taxes. According to the World Bank and Ecofys' Carbon Pricing Watch (2017)[11], in 2017 over 40 national and 25 sub-national jurisdictions were putting a price on carbon, translating to a total coverage of about 8 giga tons of carbon dioxide equivalent ($GtCO_2e$) or about 15 percent of global GHG emissions.

- Three kinds of low carbon financial mechanisms are currently being implemented or discussed: (1) "carbon markets"; (2) the "real pricing" of carbon for taxation purposes and subsidy elimination; and (3) the "positive pricing" of carbon reduction (Sirkis et al. 2016) [12]. Carbon markets are recovering from recent blows and are developed on a national and sub-national scale. Nevertheless, these instruments are quite limited for achieving stipulated efficiency targets by trading under the cap.

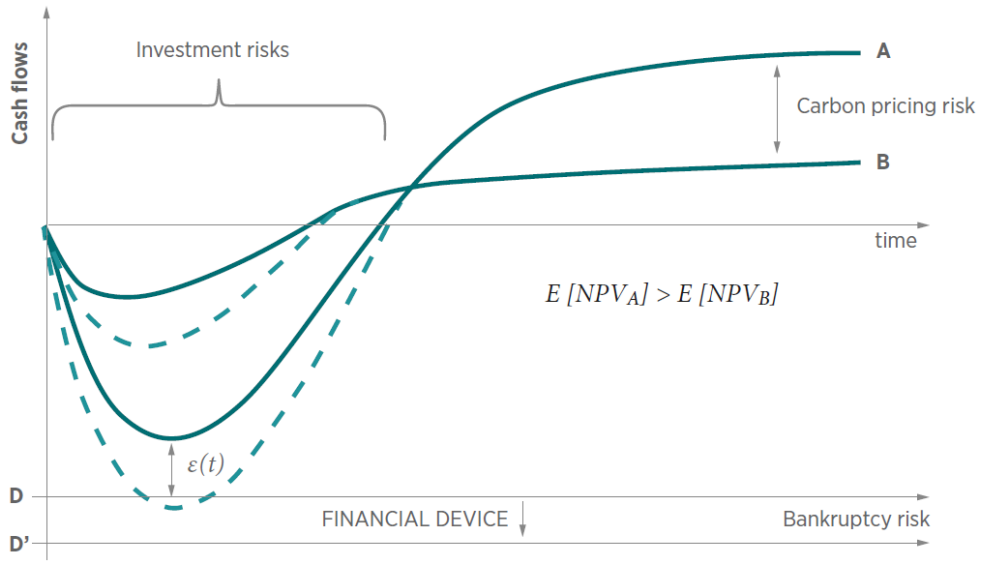
- Carbon taxes and fossil fuel subsidy elimination hold an important potential for incorporating the climate change, environmental and health externalities' prices into the economy and for helping to fund the transition. However, this approach faces fierce political resistance, which must be tackled nation by nation, as taxation systems are national policy instruments.

- Future financial instruments could also be built on the 'positive pricing' of carbon reduction, based on Paragraph 109 of the Paris COP Decision (decision 1/CP.21), which recognises "the social, economic and environmental value" of "mitigation actions". This means that carbon reduction/removal has intrinsic value which could, in future, engender powerful instruments for mobilising investment in mitigation. Positive pricing does not replace "real" pricing for carbon taxation purposes.

- Actions to mitigate climate change can simultaneously be tools for responding to today's economic and social challenges. However, high upfront costs of low-carbon projects might impair their financial viability. Studies show that in the mechanism currently at play (see the figure below), project A, capital-intensive, has a higher expected present value than project B, but it might not be selected because of its higher upfront costs. During the incubation phase of the project, negative signals in terms of (indicated by the dashed lines) might generate a deficit in the operating accounts beyond the "danger line" D, i.e. the level of deficit the decision maker does not want to cross.

- To explain the link between climate policies and the overall necessity of reducing the gap between the propensity to save and the propensity to invest: the 'danger line' must be moved (from D to D') and the risks arising from overruns of upfront investment costs must be decreased. To this effect, sufficiently high carbon prices could encourage decision makers to take the risk, but the carbon prices would have to be very high because the cost ε(t) of approaching and crossing the danger line is highly non-linear and they would have to cover the "noise" of other unfavourable signals (e.g. real estate prices, oil prices and exchange rates).

Figure 9: Investments risks, finance and carbon pricing



Source: Hourcade et al. (2014)[13]

3.3. Alternative financial mechanisms could pave the way for a "new deal" for green growth opportunities

- Financial devices designed to "move the trillions" towards low carbon investments (Sirkis et al. 2016) could contribute by making more long-term projects less risky and increasing the propensity to invest. One potential option for triggering the low-carbon transition is for governments to provide a public statutory guarantee for a new asset which allows the central bank to provide new credit lines refundable with certified reduction of CO_2 emissions (carbon certificates).

- These carbon certificates (CC), allocated to low carbon projects, would be priced at a Value of Climate Remediation Assets (VCRA). The targeted credit facility would make possible bigger loans to Low Carbon Investments (LCIs) by lowering the financial risk, and would generate a new class of Climate Remediation Assets (CRAs)[14].

- A CRA device would facilitate this strategic change if the CRAs were recognised in interbank payments, reducing the need for countries to grow their exports in order to amass a war chest of dollars. It would generate important north-south flows in support of the Nationally Determined Contributions (NDCs) directed towards domestic markets and activities (Hourcade et al. 2015).

- In addition to reducing the gap between the propensity to save and the propensity to invest, this device would help to reduce one of the major 'fault lines' of the world economy: an excessively export-led growth strategy in developing countries which places them under disproportionate dependence on the ability of foreign consumers to pay (Rajan, 2010[15]).

Conclusion

- Research shows that the amount of climate-related development finance is increasing compared to previous periods. However, this progress still falls short of the investment needs required to implement the mitigation targets of the Nationally Determined Contributions (NDCs) and the target of the Paris Agreement of holding the increase in the global average temperature to well below 2 °C and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels.

- In spite of those findings, scenario modelling research shows that it is nonetheless feasible to successfully achieve a low-carbon transition by 2050 at the global level. However, such trajectory requires sharp actions in the short, and especially mid-term in order to radically transform global production and consumption patterns.

- Several public policies have proven to be effective in redirecting investment flows to green technologies and processes and mainstreaming sustainability concerns into day-to-day economic activities. While traditional public sector investments could be used as a lever for increased private financing of climate initiatives, high level carbon pricing instruments such as real pricing and positive pricing could pave the way for the low-carbon transition. Finally, alternative financial mechanisms could be created in order to generate large-scale green investments.

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About LCSR-Net

The International Research Network for Low Carbon Societies (LCS-RNet) is a network of researchers and governments from the G7 tasked to provide contributions to national climate policies. Its basic operational concept is to facilitate international dialogue between science, policy and society on the profound, broad-based transition of social systems to reduce GHG emissions and, by doing so, stabilise the climate.

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