

CLIMATE REPORT 2017

PRIVATE SECTOR AND CLIMATE FINANCE
IN THE G20 COUNTRIES



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FOREWORD

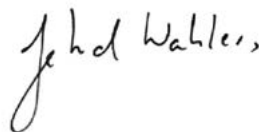
Dear Readers,

The G20 countries comprise two thirds of the global population as well as more than three quarters of the world's economic output, trade and CO₂ emissions. Founded in 1997 with the aim of overcoming global financial and economic crises together, the group of leading industrialised and emerging economies now focuses intensely on future issues which affect politics, business and the environment alike.

These undoubtedly include global climate change, which represents not least an economic and financial policy challenge. The achievement of international climate targets, which the countries imposed upon themselves in the Paris Agreement at the end of 2015, requires the private sector to align its investments accordingly. In addition to voluntary standards and self-imposed obligations of the private sector, political specifications and incentives of the G20 countries play a key role. This is a further reason why the issue of climate finance is gaining in importance for the 19 Member States and the EU. A separate G20 Climate Finance Study Group has been in existence since 2012. Within the framework of its G20 presidency, the German Federal Government has declared climate policy to be a key issue.

Some answers to the question of the significance of the private sector with respect to climate finance in the G20 countries are provided by the latest Climate Report from the Konrad Adenauer Foundation, which continues the series from 2007, 2011 and 2014. Differences and commonalities between the different countries not only provide information about the status quo, existing initiatives and obstacles, but also about emerging global trends, opportunities and risks. It is becoming clear that ultimately a resolute political framework for supporting the private sector is important. With the Climate Report, we are therefore also pursuing the target of providing a helpful information basis for the debate on economic, financial, climate and development policy concepts and strategies.

I hope you find the articles a stimulating read.

A handwritten signature in black ink, reading "Gerhard Wahlers". The signature is written in a cursive, slightly slanted style.

Dr. Gerhard Wahlers

ACRONYMS

AIIB	Asian Infrastructure Investment Bank
BNCDES	Brazilian Development Bank
CDP	Carbon Disclosure Project
CFSG	Climate Finance Study Group
CIF	Climate Investment Fund
EIB	European Investment Bank
ETS	Emissions Trading System
GCF	Green Climate Fund
GEF	Global Environment Facility
GIB	Green Investment Bank
JI	Joint Implementation (mechanism for emissions reduction under the Kyoto Protocol)
ICF	International Climate Fund
INDC	Intended Nationally Determined Contribution
MADS	Ministry of Environment and Sustainable Development of Argentina
MDB	Multilateral Development Bank
NDC	Nationally Determined Contribution
ODA	Official Development Assistance
PA	Paris Agreement
RGGI	Regional Greenhouse Gas Initiative
SOE	State-owned enterprise
UNEP	United Nations Environment Programme

In 2015, Argentina allocated nearly 855 million US dollars for climate protection measures, the money for which was provided almost exclusively by the Latin American Development Bank and the World Bank. The remaining sum was brought forth by other actors, for example the Inter-American Development Bank and international climate funds like the Green Climate Fund. Within Latin America, Argentina, besides Brazil and Mexico, is one of the three countries with the highest climate protection budgets.



Trees bent by the wind like the ones in Patagonia depicted here clearly show Argentina's potential for wind power. Source: © Martin Schneiter, AdobeStock

ARGENTINA

CLEARER ORIENTATION UNDER THE NEW GOVERNMENT

Up to the end of 2015, the distribution of climate finance in Argentina was largely unstructured, and partially confused due to a lack of strategic guidelines. Climate protection, and thus climate finance, only became a political priority with the new government under President Mauricio Macri. Since 2016, Argentina has enacted a national climate protection strategy as part of the *Nationally Determined Contributions* (NDC). Although it does not contain an exact definition of climate finance, the strategy includes funds from international climate funds and regional development banks, which also contribute to the implementation of the Argentine NDC.

The growing importance of climate policy in Argentina is reflected in the fact that it was the first country in the world to revise its NDC in the light of the Paris Climate Change Agreement. The new government did not simply raise the climate change goals. In the course of revising the NDC, Argentina has also formulated numerous concrete measures and implemented comprehensive institutional changes at the

ministerial level. In doing so, the Argentine government is striving to create a solid framework for climate protection, as well as fostering private investments.

REVISED NDC AND NEW STRUCTURE

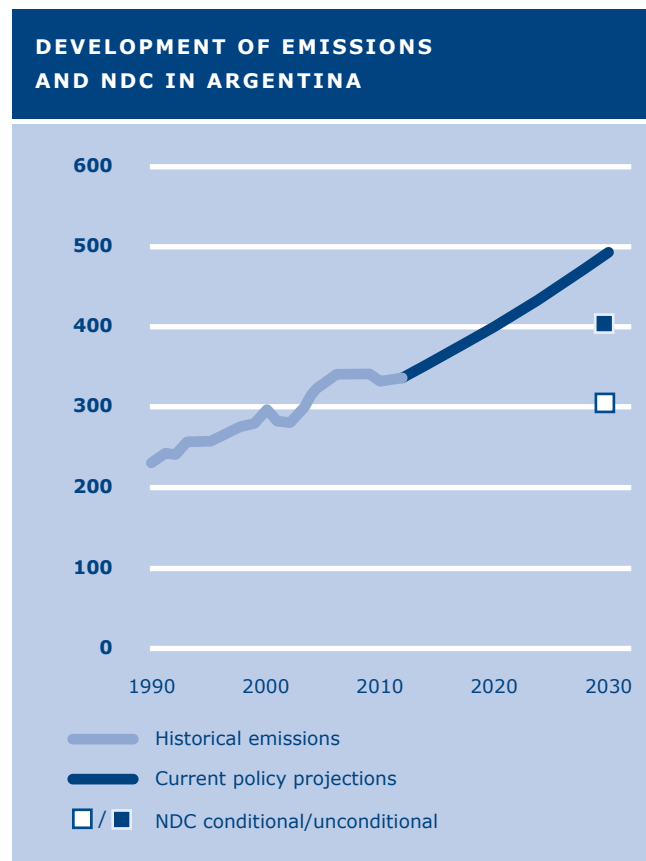
The new government began to revise its NDC shortly after taking over in 2015. In the amended version, the country set a CO₂ reduction target of 18 percent (previously 15 percent) against a business-as-usual scenario until 2030. The scheme even permits a reduction of CO₂ emissions of up to 37 percent (previously 30 percent) if sufficient financial or other resources are raised. The revision also includes a clarification of the implementation for the NDC. Numerous measures and institutional changes have already been addressed and implemented accordingly. At the first climate conference following the Paris Convention, in Morocco 2016 (COP22), Argentina was already in a position to present the new goals to the international community.

In the context of the revision of the NDC, a national reconciliation process on climate protection policy took place in Argentina for the first time. From the political point of view, the NDC therefore play an extremely important role in climate financing in Argentina. For the first time, they provide a strategic basis for climate protection because climate financing provided by national and multilateral development banks in Argentina is now governed by the NDC priorities. In addition, the development of the NDC has led to a significant improvement in the climate finance structure within the Argentine administration.

The Ministry of Environment and Sustainable Development (*Ministerio de Ambiente y Desarrollo Sustentable*, MADS) is responsible for climate policy including climate finance, although not for all its aspects in formal terms. Within MADS, the Department of Climate Change and Sustainable Development deals with all questions concerning climate change. It acts as a competence centre within the ministry and beyond. In the course of the revision of the 2016 NDC, an Interministerial Cabinet (*Gabinete Nacional de Cambio Climático*) was established for climate change issues, which is convened and coordinated by MADS. It has the task of assigning political implementation instruments to the commitments undertaken, e.g. in the context of the Paris Climate Agreement, and to coordinate climate financing. The cabinet is a working group composed of members from twelve different ministries. The cabinet is ranked at the ministerial level and its work is accompanied in practice by thematic working groups with the relevant experts from the various ministries. The debates, referred to as the "expanded cabinet", are open to representatives from civil society such as academic and private sector actors.

The working groups of the Interministerial Climate Cabinet play a central role in financing and achieving climate protection targets. Depending on the origin of the international climate funds, various working groups and thus ministries are responsible. The most important working group is the one concerned

with finance, which falls under the auspices of the Ministry of Finance. The Ministry of Finance is also formally responsible for examining all climate funds from international sources. The Ministry of Finance is also the direct contact for the Green Climate Fund (GCF) in Argentina. MADS, on the other hand, is responsible for funds from the Global Environment Facility (GEF). The Ministry of Agriculture manages grants from the Multilateral Adjustment Fund (AF).



Source: Climate Action Tracker, Climate Analytics, Ecofys, NewClimate

The complexity of the responsibilities is demonstrated by the example of the *Adaptación y Resiliencia de la Agricultura Familiar del Noreste de Argentina (NEA) ante el Impacto del Cambio Climático y su Variabilidad* project. The project aims to prepare small, privately managed farms for the effects of climate change, such as water scarcity, and to develop adaptation strategies. The funds for the project are sourced from the AF, which the Ministry of Agriculture is formally in charge of. The *Unidad para el Cambio Rural (UCAR)*, a sub-agency of the Ministry of Agriculture, manages the budget for the project. However, MADS and other lower-ranking authorities of the Ministry of Agriculture, such as the *Instituto Nacional de Tecnología Agropecuaria (INTA)* and the *Oficina de Riesgo Agropecuario (ORA)*, are also involved in the implementation of measures. The Climate Cabinet is to ensure that the more complex projects are implemented in a structured and coordinated manner. For the private sector, the new framework conditions and regulated competences may well provide an attractive investment framework because institutional barriers, such as ambiguous competences or the untransparent use of funds, were the primary factors that previously prevented private investments.

INTERNATIONAL CLIMATE FINANCING AND PRIVATE ECONOMIC INITIATIVES

Currently, the highest contributions from international funds for climate protection projects in Argentina are sourced from the AF, the GEF and the GCF. In addition, extensive loans are issued by the World Bank, BID and CAF every year. In recent years, the majority of the funds have been invested in the expansion of the Argentine renewable energy sector with the explicit involvement of the private sector. The Argentine government is backing this approach with the recent publication of a Renewable Energy Plan (RenovAr) for the country. This provides for the provision of at least eight percent of the national energy consumption from renewable energies by 31 December 2017. This is to be

expanded to as much as 20 percent by 31 December 2025. The preferred instruments for the promotion of renewable energies are grant auctions. The Argentine government is fostering the expansion of renewable energy production to promote climate protection, as well as combating energy poverty in rural areas.

For this purpose, a showcase Argentine project (Catalyzing Private Investment in Sustainable Energy in Argentina) that aims to stimulate long-term private investment in the expansion of renewable energies was funded to the tune of 130 million US dollars by the GCF. Technologies and business models are to be prepared for the private sector to this end. The project is co-financed by other regional development banks. The GEF, and above all the World Bank, also support projects in rural areas, such as the *Proyecto de Energías Renovables en Mercados Rurales (PERMER)*. This project intends to equip Argentina's public sector institutions in rural areas, such as schools, step by step with renewable energy technologies to counter energy shortages. Furthermore, the Argentine agricultural and forestry sector is supported financially. The specially created fund directs resources from the UN-REDD programme to the regions for reforestation projects. Additionally, the UN-REDD+ programme applies, which aims to promote forest conservation, forestry management and an overall improvement of forestry resource management.

Climate-regulatory instruments such as emission allowances, CO₂ taxes or the Clean Development Mechanism (CDM) do not currently play an important role in Argentina. For instance, there is no emissions trading scheme or environmental taxes. The CDM is used, the corresponding projects are, however, hardly relevant. Many companies avoid investments through CDM due to the supposedly high transaction costs. Overall, the Argentine private sector has so far failed to apply any truly innovative climate finance approaches, such as green bonds, beyond the classical instruments such as grants, credits and loans.

However, the Argentine government has established a basic framework for emission allowances for the first time. This framework stipulates the consent of the central government for carbon credit trades, and consideration of all emission reductions at the national level under the objectives of the NDC. This may well result in new business opportunities for the private sector.

OUTLOOK FOR THE G20

Argentina is wondering whether Germany, with its G20 presidency, will be capable of keeping the topics of climate finance and climate policy on the political agenda in the light of the new US government. The Argentinians do have some confidence in the Germans, particularly since the COP23 is due to be held in Germany subsequently. Argentina regards its own G20 presidency as an opportunity to present itself as an economically liberal country. Accordingly, the focus is expected to be on the economy and investments. However, it is difficult to assess whether climate financing will play a major role, since Argentina is more likely to raise the issues in the UNFCCC area. However, Argentina has a vital interest in participating in international climate finance, particularly now with the establishment of a national renewable energy sector. For this reason, the Argentine G20 presidency will presumably at least provide a platform for climate finance topics.

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Private climate finance is a growing part of Australia's climate action landscape. In 2015, at the Paris Climate Summit the Australian government announced a climate finance pledge of one billion Australian dollars (760 million US dollars) over five years. But, due to the absence of clear definitions and central oversight, a patchwork of initiatives has evolved in Australia. The result is a growing but fragmented private climate sector.



Solar panels in the middle of Flinders Ranges national park. Source: © Fritz Hiersche, AdobeStock

AUSTRALIA

FINANCIAL PLEDGES STILL NON-BINDING

A submission by the Australian government under the United Nations Framework on Climate Change (UNFCCC) noted that the one billion Australian dollar pledge seeks to “assist countries in our region, and to leverage additional private sector finance” (DFAT 2016). It is an increase on previous efforts, but still well below what most studies have suggested would be Australia’s “fair share” of financing efforts. The figure below provides a comparison between Australia’s current pledge against estimates of Australia’s “fair share” of international climate finance in 2020.* The “fair share” estimate is a non-binding political pledge and neither climate finance generally, nor private finance specifically, are mentioned in Australia’s Nationally Determined Contribution (NDC).

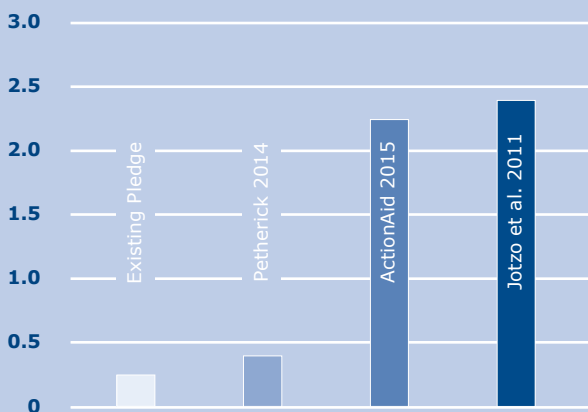
GROWTH AND FRAGMENTATION

Given limited public funds, mobilising private climate finance has become an increasingly important strategy for government and other actors. Private climate finance is understood here to be finance mobilised for the intention of climate mitigation or adaptation by Australian private sector actors for use at the domestic and international levels. In international negotiations, Australia has been an outspoken proponent of using private sector funds to meet multilateral financing goals. This includes Australia’s central role in developing the “Roadmap to 100 Billion US dollars”, a strategy tabled at the 2016 Marrakech climate talks which emphasizes the role of private finance in meeting the Copenhagen finance goal of mobilising 100 billion US dollars of climate finance for developed countries per year by 2020 (Copenhagen Accord 2009). Australian private

* Please note that the “fair share” estimate from ActionAid has been translated from US dollars into Australian dollars based on exchange rates on the 13 June 2017. This estimate is only for adaptation financing. The estimate from Petherick is for Australia’s “fair share” in an initial pledging round under the GCF, and not for 2020 specifically. However, both still provide useful indicative benchmarks to compare current financing efforts against. The depicted “existing pledge” for Australia is the annual average over the five-year period of the contribution.

COMPARING EXISTING FINANCING EFFORTS VS. "FAIR SHARE" ESTIMATES

Australian climate finance contribution in 2020
(in billion Australian dollars)



Source: Author's compilation based on Jotzo et al. 2011, Petherick 2014 and Action Aid 2015

sector engagement in climate finance has also increased. The Investor Group on Climate Change has released a report on the seven climate change priorities for investors and supported the Australian launch of a new investor action framework for sustainable real estate.

Despite increasing attention, Australian private climate efforts are fragmented and difficult to track. Currently, in Australia and internationally, there is no clear definition of private climate finance. In the absence of clear definitions and central oversight, a patchwork of initiatives has evolved in Australia. The table on the next page shows a broad typology of private climate finance in Australia. The typology and overview of initiatives provide a non-exhaustive snapshot of the Australian private climate finance landscape.

- **Public Catalyst:** Australia is using public funding to help catalyse private finance. Several institutions have been created by Australia and receive most of their funding from public coffers. One example is the Clean Energy Finance Corporation (CEFC), a ten billion Australian dollar fund for clean energy projects. The Australian Renewable Energy Agency (ARENA), established in 2012, has a 2.5 billion Australian dollar budget until 2022. Its purpose is to invest in projects that hasten the development and commercialization of renewable energy technologies. The Renewable Energy Venture Capital Fund is a 120 million Australian dollar co-investment initiative under ARENA. One half of the funding is provided by ARENA and the other by Softbank China Capital (SBCVC). The fund makes equity investments in early-stage renewable energy projects in the US, Australia and Asia, helping firms to cover start-up capital costs. Australia has also made a four million Australian dollar grant to the United Nations Development Programme's (UNDP) Low Emissions Capacity Building Programme and mandated for new aid investments to consider innovative ways to engage the private sector.
- **Private Catalyst:** Australian actors have been involved in supporting several privately driven climate finance initiatives. For example, the Australian government has provided funding for the Private Financing Advisory Network (PFAN), which matches investors to clean energy projects and provides facilitation, training and networking opportunities for renewable energy entrepreneurs. Similarly, the government has provided consistent support for the Climate Innovation Centre in Vietnam and the Clean Energy Solutions Centre, which operates throughout the world. The latter aids governments in designing and adopting programmes which assist renewable energy deployment, while the former provides financing and business training for entrepreneurs and new ventures. The Australian government also uses the Private Infrastructure Development

Group to provide guarantees for clean energy investment in developing countries. Financial instruments such as climate bonds have also been on the rise. From 2014 to 2017, Flexigroup, Monash University, Westpac, ANZ, Treasury Corporation Victoria and the National Australia Bank have all invested in climate bonds, amounting to approximately two billion Australian dollars (1.52 billion US dollars). These bonds were certified through the Climate Bonds Initiative, a UK-based non-profit which is working to develop credible standards in climate bonds.

- *Facilitation and Dialogue:* Facilitation and dialogue activities are being used by a range of actors to help spread private climate finance opportunities and create new partnerships and projects. Both the World Wildlife Fund (WWF-Australia) and the Department of Foreign Affairs and Trade (DFAT) have hosted two roundtables on Australian climate finance. The roundtables have brought together over 40 domestic stakeholders from the public, private and civil society sectors. WWF-Australia has also created a “Climate Cash” podcast series to highlight climate finance measures throughout the Asia Pacific. DFAT will also host a Green Climate Fund (GCF) Private Sector Roundtable on the 5 August 2017. This roundtable aims to raise awareness about opportunities for GCF funding and to encourage companies to partner

the fund. Australia is also looking to share expertise from Australia’s Clean Energy Finance Corporation internationally through the International Green Bank Network.

- *Multilateral Engagement:* Australia is currently a co-chair and active contributor to the GCF. It has used its position to strongly advocate efforts to leverage private finance. Australia is also involved in a range of other private climate finance initiatives including Mission Innovation, the Business and Investor Engagement Group, and work through the G20 Green Finance Study Group to identify barriers to green finance and options for mobilisation. The former two attempt to support low-carbon energy research and development through private investment, while the latter works to identify barriers and opportunities for green finance.

MANY INITIATIVES, MANY BARRIERS

This suite of activities covers a range of financial instruments including loans, bonds (Climate Certified Bonds), direct public finance (Renewable Energy Venture Capital Fund), grants (GCF funding), equity (ARENA) and de-risking of investments (CEFC). Other approaches are absent or underused. Further work could be done to limit financing for coal and fossil fuel projects, both domestically and through export credit financing. For example,

A TYPOLOGY OF PRIVATE CLIMATE FINANCE

<i>Public Catalyst</i>	Government creation of organisations or financial instruments to help mobilise or leverage private climate finance.
<i>Private Catalyst</i>	Privately created and led initiatives, including financial instruments and organisations. These often attract government funding and support.
<i>Facilitation and Dialogue</i>	Consultation and dialogue activities between stakeholders to increase understanding and opportunities to mobilise private climate finance.
<i>Multilateral Engagement</i>	Engagement through multilateral institutions by Australian actors to help mobilise private climate finance.

OECD countries have agreed to limit subsidies for the export of inefficient coal-fired power plant technologies, but Australia has resisted this by negotiating exceptions. It is difficult to either estimate the impact of these initiatives or conduct any thorough examination of lessons learned. Since there are no definitions of what constitutes private climate finance, there is little monitoring and reporting of outcomes. The lack of government-certified standards, for instance in the case of climate bonds, makes comparisons and assessments problematic.

Despite the proliferation of private finance initiatives, numerous barriers limit their spread and effectiveness. Domestically, the two largest constraints are a lack of funding and certainty. Australian climate financing has historically been volatile. While international financing has been moderated by peer-pressure, domestic funding has been more unpredictable. Domestic bodies such as the CEFC and ARENA have struggled with repeated cuts to funding and changes to their mandates. Other barriers exist at an international level. For example, some developing countries lack the capacity to make use of private capital. There can also be higher risks, such as sovereign and exchange risks, deterring the more risk-averse private sector. It can also be difficult to mobilise the private sector towards less profitable endeavours. Climate adaptation projects are crucial in the Asia Pacific region but are less favoured by the private sector since they are seen to be generally less profitable.

UNEXPLOITED POTENTIAL

Australia does not currently hold any official national positions on the role of the G20 in mobilising climate finance, but is likely to continue to work through it into the future. The potential of the G20 is limited by its role as a consensus-building and dialogue forum. However, it has indicated some ways forward in a 2011 paper on “mobilising climate finance” commissioned by the G20 finance ministers. Unfortunately, most of the recommended actions, such as the use of carbon pricing instruments,

phase-out of fossil fuel subsidies and use of bunker fuel taxes, have not been acted upon by Australia.

For now, Australian private climate finance is characterised by growth and fragmentation. It is by no means a panacea. Certainty, definitions and funding will be needed to maximise the potential of the private sector. If Australia is serious about doing its fair share internationally, then a credible and coherent strategy is needed for using public funds to leverage private climate finance.

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The author would like to thank Jonathan Pickering for his comments on an earlier version of this paper, and Geoff O’Keefe for his invaluable help in providing further information on Australian government initiatives.

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The Brazilian Development Bank (BNDES), one of the largest development banks in the world, provided in 2015 85 percent of the eleven billion US dollars for climate-related initiatives implemented by Brazil. Because of their dedication to the subject, the BNDES not only contributed directly to climate financing but introduced private players to the issue of “climate financing”. Despite this relatively positive starting point, private financing still rests on shaky foundations due to the economic crisis.



*Wind turbines on the beach of Canoa Quebrada.
Source: © silkfactory, iStockPhoto*

BRAZIL

CONTEXT AND MOST RECENT DEVELOPMENTS

BNDES not only contributes directly to climate financing, but in doing this, it has also brought other financial institutions, in particular private banks, to climate financing. A revolutionary initiative was the signing of the Green Protocol of the Brazilian Banking Federation (FEBRABAN) in 2009. This document defines the actions and practices of the banks concerning social and environmental responsibility in accordance with the concept of sustainable development. It led to a new directive in the region, decision No. 4,327 of the Brazilian Central Bank, which provides the implementation of a strategy on socio-ecological corporate responsibility by all financial institutions.

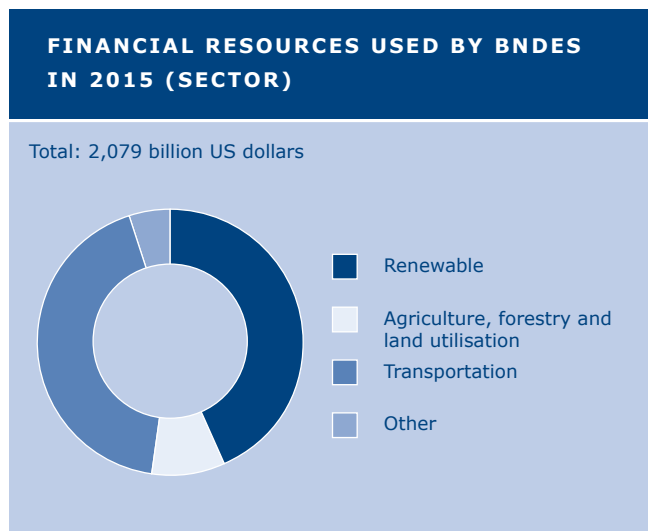
Since then, there have been some success stories of the growing involvement of the private sector in climate financing (e.g. green bonds), but the private sector's involvement remains marginal overall. In view of the exhausted financing capacities of the Brazilian state, due to the ongoing deep economic crisis and the associated unavoidable fiscal policy adjustment measures, a strategy focused on national development banks

is not very sustainable. This is why the Brazilian government should react to the weaknesses of its own policy – with the targeted promotion of private investment and the elimination of market barriers.

LEGAL BASE AND IMPLEMENTATION

According to a 2015 report by the G20 Climate Finance Study Group (CFSG) to the finance ministers, “Brazil’s National Adaptation Policy is supported by a strong legal mandate that has clarified the roles and responsibilities of institutions as well as of financing arrangements” (CFSG, 2015). In addition, the Brazilian Law on the Fight against Climate Change (*Política Nacional sobre Mudança do Clima*, PNMC, Law No. 12.187/2009) sets out 23 specific instruments, including among them specific programmes for the granting of loans and financing to public and private actors.

Fundamental to the paradigm shift in the Brazilian development strategy, is the Nationally Determined Contribution (NDC). Nevertheless, neither the commitments of the Brazilian NDC



Source: Samaniego/Schneider 2017

are linked to access to funding, nor is the country pursuing a policy of climate financing. There have however been developments in terms of subsidies, green bonds and the CO₂ pricing system, which are explained below.

- Subsidies:** In the field of subsidies, the programme “Low-Carbon Agriculture” (ABC), started in 2010, offers producers access to fixed-rate loans (currently 8.5 percent). The government bears the interest rate difference to the Brazilian standard rate (12.25 percent) through BNDES. In order to have access to these discounted loans, the producer must submit a project design with clear environmental objectives that contribute to the reduction of carbon emissions, such as the renaturation of pasture land, waste treatment or reforestation. This programme is significant because agriculture is the second largest greenhouse gas emitter after Brazilian deforestation.

- Green Bonds:** In July 2016, the Brazilian market for fixed-income securities with positive environmental characteristics amounted to 2.9 billion US dollars. The first issue of local green bonds took place in 2015/2016. The potential of green bonds is particularly large in the agribusiness, forestry and energy sector, but also in the transport sector as well as in the construction and sewage sector. Companies without access to the capital market could issue green bonds through banks. However, the Brazilian capital market has structural problems, including high market barriers, low stock market listings and a low liquidity rate.
- CO₂ Pricing System:** The Brazilian federal government has so far not implemented a CO₂ pricing system, neither in the form of an emission trading system (ETS) nor of a CO₂ tax, although the Brazilian Ministry of Finance has thoroughly examined international initiatives. In contrast to other countries, Brazil’s NDC does not provide for participation in an international CO₂ market in order to attain the climate protection targets. Instead, the NDC establishes that Brazil reserves its position with regard to the possibility of using any market mechanism that can be introduced under the Paris Agreement and thus fails to indicate how the self-imposed obligations are to be met. However, in order to achieve the reduction target of 43 percent of national emissions compared to a business-as-usual scenario by 2030, Brazil will need an ETS in addition to an effective termination of illegal deforestation. This ETS needs to charge CO₂ emissions in the energy sector at approximately 50 US dollars per tonne CO₂, so that investment decisions in this sector are actually directed towards renewable resources and biofuels.

In addition, the PNMC aims to stimulate the Brazilian Emissions Reduction Market (MBRE) an exchange-controlled institutional framework designed to facilitate trade in emission certificates. However, there is a lack of demand for emission certificates in

Brazil and the setting of details for the regulation of this market is still pending, such as the nature of the emission certificates to be traded.

The PNMC also provides for a CO₂ tax, a second form of a CO₂ pricing system. This instrument is intended to promote the reduction of greenhouse gas emissions, for example through differentiated tax rates and exemptions from taxes and charges. A legal basis already exists for a differentiated taxation depending on the environmental impact, according to which in the future several taxes and levies at federal and state level can be adapted as an incentive to transition to a low carbon economy. Worth mentioning is the *Cide Combustíveis*, a federal tax on the emission source of fossil fuels, which could be extended to the implementation of emission-reducing strategies for the transport sector.

INCENTIVES AND POSITIVE EXPERIENCES

The promotion of private sector climate financing in Brazil is strategically important because, in all probability, competitiveness advantages and disadvantages will derive from it. An increasing number of countries are implementing pricing systems for greenhouse gas emissions so that it can be foreseen that imports of products contaminated with carbon dioxide will be limited in the future. The national ETS of the People's Republic of China (which is due to enter into force in 2018, but with pilot projects already in progress in some provinces) is a strong signal for other emerging countries. Large-scale customers will soon demand information from their suppliers on the greenhouse gas emissions of the products. This is effectively a new purchasing criterion as it makes no sense for a state to cut its emissions domestically and then continue to import high-emitting products, (carbon leakage). In addition, the private sector is focusing on future regulations at national level, either concerning regulatory risks and image losses, or the perception of business opportunities and the promotion of innovation.

To ensure that Brazil does not lag behind in the world, and that its industry does not become even less competitive, Brazilian companies are increasingly participating in international initiatives such as the Carbon Pricing Leadership Coalition (CPLC), Carbon Pricing Champion and We Mean Business. In addition, a number of international initiatives are promoting the use of CO₂ pricing systems: the Business Initiatives on Climate (IEC), Council for Sustainable Market Development (CEBDS), Ethos Institute Climate Forum and Global Compact Network Brazil. Worth mentioning are GVces Companies for the Climate Platform (EPC) and the simulation of a cap and trade system. The initiative began in 2014 as a learning model for companies, and in 2016 it already included 30 large companies from nine sectors, emitting around 60 million tonnes of CO₂ (5.5 percent of the country's emissions in 2014, excluding land use changes). This pioneering initiative is the only active ETS in Latin America.

G20 AND GLOBAL GOVERNANCE

With regard to political uncertainties in the US and the expected growing instabilities and conflicts intensified by climate change, Brazilian experts agree that institutions and governance structures, such as the G20, need to be strengthened. With the UNEP Inquiry, the Financial Stability Board's Task Force on Climate-Related Financial Disclosures, and the CFSG, important milestones have already been reached within international organisations that are driving the discussion forward. The German Presidency of the G20 in 2017 also raised hopes that private sector climate financing would further advance internationally, as Brazil is perceiving Germany as the leading industrial nation in climate and energy policy.

High expectations are also linked to new financial institutions run by emerging countries, such as the New Development Bank of the BRICS countries (NDB) in which Brazil is involved, and the Asian Infrastructure Investment Bank (AIIB), whose founding memorandum was signed by Brazil (currently Brazil is

at the end stage of the formalisation of its membership in this bank). Both the NDB and the AIIB have a starting capital of 100 billion US dollars and have the motto of being “lean, clean and green” (meaning “unbureaucratic, clean and environmentally friendly”). While the former announced that after the first loans to finance sustainable projects it would increase its loans to 2.5 billion US dollars by 2017, the latter developed a targeted loan programme with a total of nine credit programmes, which totalled 1.73 billion US dollars by the end of 2016.

CONCLUSIONS AND OUTLOOK

It is to be assumed that the implementation of a carbon dioxide tax or an emissions trading scheme in Brazil will not take place before 2018 because the government has so far not made a firm decision on this subject and the elaboration of such instruments is time-intensive. Advances in the adoption of an emissions market mechanism are beneficial to the country in several ways: Brazil could position itself as a pioneer in Latin America and become a centre for the trading of emission certificates in the region. In addition, private sector climate financing is of crucial importance on the way to a decarbonisation of the economy by 2100, which was announced in the context of the German-Brazilian government consultations in 2015. It would be desirable that the G20 helps to put private sector climate financing at the heart of Brazil’s climate policy and to provide it with clear political support.

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Private climate finance has yet to play a significant part in Canada's climate action landscape, though the government is increasingly pairing the mobilisation of private finance with its public commitments. There are a number of initiatives that are quickly working to elevate the role of private finance. In the form of loans, Canada will invest nearly 1.8 billion Canadian dollars to mobilise private-sector support for clean innovation in developing countries. However, there is room for improvement in Canada's tracking and transparent reporting of the role of private finance.



*Wind turbines at the foothills of the Rocky Mountains.
Source: © bobloblaw, iStockPhoto*

CANADA

CANADA'S CLIMATE FINANCE PLEDGE

In 2015, at the Paris Climate Summit, Prime Minister Trudeau announced a climate finance pledge of 2.65 billion Canadian dollars over the course of five years. Canada's Second Biennial Report indicates that "Canada's contribution will be used to support climate change adaptation and mitigation programming, prioritising the most vulnerable countries, such as small island developing states, Africa and the least developed countries" (UNFCCC, 2016). Indeed, the announcement included a new contribution of 30 million Canadian dollars to the Least Developed Countries Fund to address some of their most urgent and immediate needs, and ten million Canadian dollars to the World Meteorological Organization to support the improvement of early warning systems in some of the most vulnerable communities.

This pledge is the largest climate finance commitment in Canadian history. Scaling up to 800 million Canadian dollars by 2020/2021, it is a substantial increase in funding from Canada's contribution of 236.4 million Canadian dollars to international assistance on climate change in 2014/2015, and represents a doubling

of Canada's fast-start financing levels. Nevertheless, it falls short of advocacy groups' estimates of Canada's "fair share" in financing efforts, which suggest a contribution of four billion Canadian dollars per year by 2020. It is a non-binding political pledge and neither climate finance generally nor private finance specifically are mentioned in Canada's Nationally Determined Contribution (NDC) to the Paris Agreement.

SCALING UP

Canada's public international assistance on climate change is administered and disbursed by Global Affairs Canada (GAC), with the participation of the Climate Change International Division of Environment and Climate Change Canada (ECCC). As mentioned, Canada's contributions from 2015/2016 through 2020/21 will represent a significant increase of the country's climate finance contributions. The tables on the following page summarize Canadian climate financing from 2013/2014 through 2014/2015.

The 2.65 billion Canadian dollars will be dispersed over five years from 2015/2016 to 2020/2021, scaling up to an annual contribution of 800 million Canadian dollars in 2020/2021. Allocations of the total amount so far are as follows:

- 1.8 billion Canadian dollars to spur clean innovation in developing countries, in the form of loans,
 - including 150 million Canadian dollars to the G7 African Renewable Energy Initiative.
- 300 million Canadian dollars to the Green Climate Fund,
 - including 110 million Canadian dollars to the Green Climate Fund in the form of loans and 190 million Canadian dollars in the form of grants.
- 92.5 million Canadian dollars to the Global Environment Facility, in the form of grants.
- 50 million Canadian dollars to the G7 climate risk insurance initiative in developing countries, in the form of grants.
- 30 million Canadian dollars to the Least Developed Countries Fund, in the form of grants.
- 35 million Canadian dollars to reduce short-lived climate pollutants (SLCPs), in the form of grants,
 - including 25 million Canadian dollars to reduce SLCPs through mitigation actions with key partner countries, e.g. 14 million Canadian dollars to SLCPs through partnerships with Mexico and Chile,
 - including ten million Canadian dollars to the Climate and Clean Air Coalition (CCAC), an international initiative aimed at advancing efforts to reduce SLCPs.
- Ten million Canadian dollars to support the improvement of early warning systems in some of the most vulnerable communities, in the form of grants.
- Five million Canadian dollars for the UNFCCC Capacity Building Initiative for Transparency (CBIT), in the form of grants. The CBIT is operated by the Global Environment Facility, to which Canada is the sixth largest donor and an active Council member.
- Three million Canadian dollars to the World Bank's Transformative Carbon Asset Facility to support emission reductions in developing countries, in the form of grants.

PROVISIONS OF PUBLIC FINANCIAL SUPPORT SUMMARY INFORMATION IN 2013-2014

Allocation Channel	CAD (in millions)	USD (in millions)
Multilateral	178.17	172.96
Bilateral	60.80	59.02
Total	238.97	231.98

Based on OECD/DAC exchange rates for fiscal year 2013/2014

PROVISIONS OF PUBLIC FINANCIAL SUPPORT SUMMARY INFORMATION IN 2014-2015

Allocation Channel	CAD (in millions)	USD (in millions)
Multilateral	161.15	145.87
Bilateral	75.25	67.30
Total	236.4	213.17

Based on OECD/DAC exchange rates for fiscal year 2014/2015

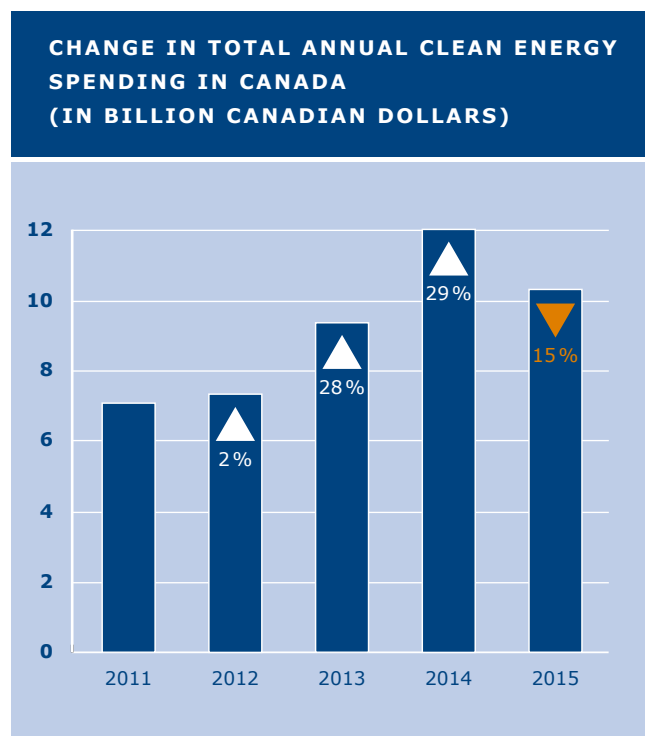
- 2.5 million Canadian dollars to the Clean Technology Centre and Network, in the form of grants.
- Two million Canadian dollars to the National Adaptation Plans Global Network for climate-capacity building in developing countries, in the form of grants.

Canada conducted a thorough review of its international assistance envelope through 2016/2017 and sought substantial public input to develop an updated policy. Canada's Feminist International Assistance Policy was subsequently unveiled on 9 June 2017. The policy establishes one core action area and five additional action areas to target Canada's international assistance:

1. (Core action area) Gender equality and the empowerment of women and girls;
2. Human dignity;
3. Growth that works for everyone;
4. Environment and climate change;
5. Inclusive government;
6. Peace and security.

Under the new policy, the government commits to "support government planning and initiatives to mitigate and adapt to climate change, advance women's leadership and decision-making and create economic opportunities for women in clean energy", and "ensure that no less than 50 percent of its bilateral international development assistance is directed to sub-Saharan African countries by 2021-22" (Government of Canada, 2017).

In addition, during the Paris COP in 2015, Quebec, one of Canada's ten provinces, became the first subnational government to commit climate finance on the international stage. Their 2015 announcement committed 25.5 million Canadian dollars to "support actions to fight climate change in Francophone countries that are the most vulnerable and most exposed to the consequences of climate change" (Gouvernement de Québec,



Source: *Clean Energy Canada*

2015). Quebec added to this commitment at the Marrakech COP in 2016 with a contribution of six million Canadian dollars to the Least Developed Countries Fund.

BEGINNINGS

While leveraging private investment has not quite developed into a core pillar of Canada's climate finance strategy, there are a number of initiatives that are quickly working to elevate the role of private finance in the Canadian climate action landscape.

Included among these and announced in March 2017 is the creation of a new Development Finance Institute (DFI), which will promote inclusive green economic growth while promoting the involvement of women and young entrepreneurs in sustainable development. The Institute will be a wholly-owned subsidiary of Canada's export credit agency. The intent is for the DFI to be represented in countries eligible to receive official development assistance and may interact with nationally designated authorities of climate funds. No Canadian private sector or public sector entities are currently accredited with the Green Climate Fund.

Canada's Second Biennial Report articulates the following goal: "climate financing [...] will also provide innovative tools aimed at removing barriers to and risk from investments from the private sector" (UNFCCC, 2016).

Indeed, a significant portion of Canada's fast-start financing (2010 through 2013), reported to the UNFCCC in Canada's First Biennial Report, established Canadian facilities at multilateral development banks (MDBs) designed to catalyze private sector investments. Canada's Second Biennial Report estimates that this support, alongside co-financing from MDBs and other public sources, have collectively mobilised approximately 1.44 billion US dollars of private climate finances over the same period. Methods used to reach these estimates are unclear.

CONCLUSION: ROOM FOR IMPROVEMENT

As indicated above, Canada is to invest nearly 1.8 billion Canadian dollars to mobilise private-sector support for developing countries. This amount is targeted to "leverage private-sector investments in areas such as clean technology, climate-smart agriculture, sustainable forestry, and climate-resilient infrastructure" (Government of Canada, 2016). Canada plans to deliver this support through a range of "trusted partners", including MDBs. Canada has also engaged with the Private Financing Advisory Network, which seeks to connect viable projects with funding.

In its efforts to increase transparency in finance accounting, Canada is working with international partners to strengthen climate finance reporting through the UNFCCC and other organisations that address the reporting of climate finance flows, such as the Organisation for Economic Cooperation and Development. In this sphere, Canada reports that it is contributing to the development of a robust methodology for tracking private sector climate finance mobilised from public interventions. However, the UNFCCC's review of Canada's Second Biennial Report indicates that there is much room for improvement in Canada's tracking and transparent reporting of the role of private finance.

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After the conclusion of the Paris Agreement, China started to focus its climate politics on green investment from the private sector. Although still very state-centred, China has rapidly become the largest issuing country for green bonds. During its G20 presidency in 2016, the Chinese government gave emphasis to the topic of “Green Finance”. Beyond the G20, China can use its leadership role within the New Development Bank or the Asian Infrastructure Investment Bank to incorporate low-carbon support in these institutions.



*Solar panels in front of the Shanghai skyline.
Source: © Aania, AdobeStock*

CHINA

CHINA INCREASINGLY PUTS PRESSURE ON THE PRIVATE SECTOR

Besides the traditional “North-South” flow of financial support, there have been two other interesting developments in the area of climate financing since the ending of the UN Climate Conference in Paris 2015. In order to obtain the necessary financial resources amounting to a billion US dollars for control of climate change, the so-called “South-South climate financing” is gaining here in importance because half of the global gross domestic product is now accounted for by developing countries.

As the largest energy consumer and emitter of greenhouse gases, China declared already on the evening before the UN Climate Conference in 2015 that it intended to provide 3.1 billion US dollars as financial assistance, thereby starting to prove its global leadership abilities. The rest of the world is now watching the Middle Kingdom with increased interest and how these two trends – the South-South climate financing and the involvement of the private sector – are going to be realized. The Chinese leadership already used the G20 presidency

in 2016 to underline the significance of the topic of “Green Finance” during the summit in Hangzhou, and to signalize its willingness to advocate environmentally friendly changes in the future. Nevertheless, global climate protection targets can be achieved only if laws are also introduced at a national level to stimulate investment from the private sector.

ENVIRONMENTAL PROBLEMS HAVE PRIORITY

China, as one of the countries most threatened by climate change, plays a central role in the improvement of environment protection. Especially air contamination is being regularly picked out as a central theme, not least because whole cities in the northeast of China regularly disappear under unhealthy smog. A survey of the inhabitants of ten Chinese cities, which was carried out by the Chinese Renewable Energy Industries Association (CREIA), showed that over 90 percent of urban consumers are willing to pay more for “green energy” from renewable sources in order to minimise air pollution. This result shows a clear improvement in the environmental consciousness of the Chinese population and underlines at the



Source: *China Green Bond Market Report 2016*

same time the necessity for a change to environment-friendly energy resources.

According to a statistic from the Centre for Development Research of the central government, China would need annual green investment amounting to at least two billion renminbi (315 million US dollars) over the period of the 13th five-year plan (2016 to 2020) to be able to effectively combat its environmental problems. In the last two years, the central and provincial

governments were able to provide only 200 billion renminbi of investment in environmental protection, energy savings, the development of renewable energy projects and other green sectors. Due to the financial limitations of the public sector, it is expected that 85 to 90 percent of all green investment has to be financed by the private sector. In order to guarantee a stable sustainable climate change and to mobilise resources from the private sector, the development of an effective green financial system is therefore of crucial importance.

CONCRETE OBJECTIVES FOR THE ACTIVATION OF PRIVATE CAPITAL

Involvement of the private sector in climate financing can be guaranteed and stimulated only by positive signals at the national level. So far, China has tried its utmost to achieve the objectives of the Paris Agreement. It has committed itself to reach the peak of its carbon emissions before the year 2030, and to reduce its emissions – in relation to economic performance at this point in time – to 60 to 65 percent of the 2005 level. Besides this, non-fossil fuels are to cover 20 percent of primary power consumption. In the 13th five-year plan that came into force in 2016, the Chinese government also defined the “ecological red line” which is not to be exceeded and has to be observed in future laws. In respect of environmental protection, the 13th five-year plan has several key points that have to be pointed out: on the one hand the government defines the upper limit for energy consumption in general and in the use of coal in particular, and on the other hand, Premier Li Keqiang demands more vigorous action against air and water pollution. For the first time in Chinese history, a concrete target of PM2.5 (pollution particles with the size of 2.5 micrometres) of air quality has also been set.

The People's Bank of China (the country's central bank) published in August 2016, together with six other governmental departments, the directives for the layout of a green financial

system. These directives are to serve as a guideline for the development of green financial mechanisms in order to enable a transformation to a sustainable economy. The publishing of such directives is a sign that the central government is following a clear strategy of supportive proposed legislation in order to receive sufficient social capital and to speed up the economy's green change. In this way, the central government has sent out positive signals to the financial industry and green companies to eliminate doubts from private investors. In relation to this, the national "Belt and Road Initiative" is of interest. This programme for the opening of new trade channels offers governments, companies and social organisations investment opportunities to support public and private partnerships, and to start giving more emphasis to sustainable ecology.

MEASURES FOR MOBILISING THE PRIVATE SECTOR

Private capital will not automatically flow into the green sector without a combination of government finances and supportive laws. Investments into the green sector are immersed in problems, especially in developing countries which do not have an established financial market, because governments define the major part of capital use by state financial institutions, development banks and legally supported lending. China's central government finally introduced various measures intended to mobilise green investments, inter alia, its own carbon market, green certificates, green bonds and evaluations of creditworthiness which include environmental protection factors.

In 2005, the Chinese government passed a law for renewable energies which guarantees supply tariffs to energy companies to ensure that a lucrative market for renewable energy can be developed. Since 2009, China has belonged to the leading countries for renewable energies even though a large part of the produced solar and wind energy cannot be used effectively due to frequent problems with grid power supplies. The cut-off rate in

wind and solar parks reached 15 to 19.6 percent in 2016, which may in the long run lead to minimised investments in renewable energies. However, the Chinese government is trying to make improvements in this area too. In 2017, the National Development and Reform Commission (NDRC) published a document with the aim of promoting sustainable consumption, greater coordination of mains power supply and subsidy mechanisms for a trading system with green certificates.

In recent years, China has emerged as one of the world's leading countries for green bonds. In April 2015, the People's Bank of China and the United Nations Environment Programme (UNEP) published a series of law proposals and official guidelines for the introduction of a green bonds market, and soon after that, in October 2015, the first green bonds from a Chinese provider came on the market. In 2016 alone, the Shanghai Pudong Development Bank, the Industrial Bank Co. and the Qingdao Bank sold green bonds worth 7.5 billion US dollars, making China the largest issuing country for such bonds.

Since 2011, several pilot regions for emissions trading have been developed in China. They extend from the prosperous coastal regions in the east of the country to the poorer inland regions. They have given China larger practical experience in emissions trading over the last six years, and there are plans to open a national carbon market of unprecedented size in 2017. The initial plan from the Chinese government is to issue emission allowances for three to five billion tons of carbon annually. According to the NDRC, the Commission identified more than 7,000 companies who are responsible for about half of all Chinese emissions and are to become part of the market. Recent tests showed, however, significant performance differences in carbon trading between the different regions of China. Carbon prices, at 50 renminbi per ton, are stable only in Beijing, whereas the prices in, for example, Guangzhou and Wuhan, achieve only ten to 20 renminbi per ton. There are also large differences in the participation of companies in the

carbon market. These two factors contribute to a very different development of regional carbon markets.

CHINA STRIVES FOR INTERNATIONAL LEADERSHIP

Because the major industrial and newly industrialised countries, as well as the strongest producers of greenhouse gases, are part of the G20, they should have the format and the necessary capacities to incorporate climate financing in their work programmes. Political stimulus in efforts to lower the use of carbon and to invest in eco-friendly developments should therefore be a given. China proposed a G20 working group for climate financing already in 2014. The central banks of China and Great Britain were to manage this group and at the end submit a summary report on the opportunities for green financing. China also used its G20 presidency to promote the inclusion of climate financing in future summit agendas and to thereby demonstrate the importance of climate financing.

Beyond the G20, China can use its leadership role within new financial institutions such as in the New Development Bank (NDB) or the Asian Infrastructure Investment Bank (AIIB), to incorporate low-carbon support in the fundamental part of these financial institutions. The NDB, which was established in 2014, provided its first loans for four projects in Brazil, China, India and South Africa with the aim of improving capacity for the production of renewable energies. Although the loans are considered as “green”, the representatives of civil society organisations criticised that the NDB has so far not specified how it wants to involve the public into this and receive feedback on the projects. In the meantime, the AIIB plans to invest in infrastructure projects as part of the “Belt and Road Initiative”. The authorized capital of the bank is 100 billion US dollars, while the subscribed capital comprises 50 billion US dollars. Unlike the NDB, the AIIB incorporated guidelines for lending in 2016 with the aim of ensuring that a public consultation

will take place. Since it is the job of the AIIB to finance large infrastructure projects in developing countries, in the long term much will depend on whether or not the planned projects are environmentally friendly. So far, the AIIB have not formulated any energy strategy that would support a change from unsafe and polluting energy sources, such as coal and nuclear power, to environmental friendly energy sources. Furthermore, there is a need to address the questions of transparency and cooperation with civil society. If the AIIB are to achieve improvements in these areas, they might be able to justify in the long term their self-imposed image of being a green and clean development bank.

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Green bonds – vanilla bonds with their proceeds earmarked for green initiatives – can potentially deliver significant financial flows for climate change action. Collectively, the EU and China are the largest issuers of green bonds. Despite this attribute, the growth of the green bond market in Europe is still inhibited by definitional and standardisation issues. However, policy support for green bonds is strong in the EU which suggests that there is potential for the scaling up of the market.



There is still no common standard for green bonds in the EU. © Source: ilolab, AdobeStock

EUROPEAN UNION

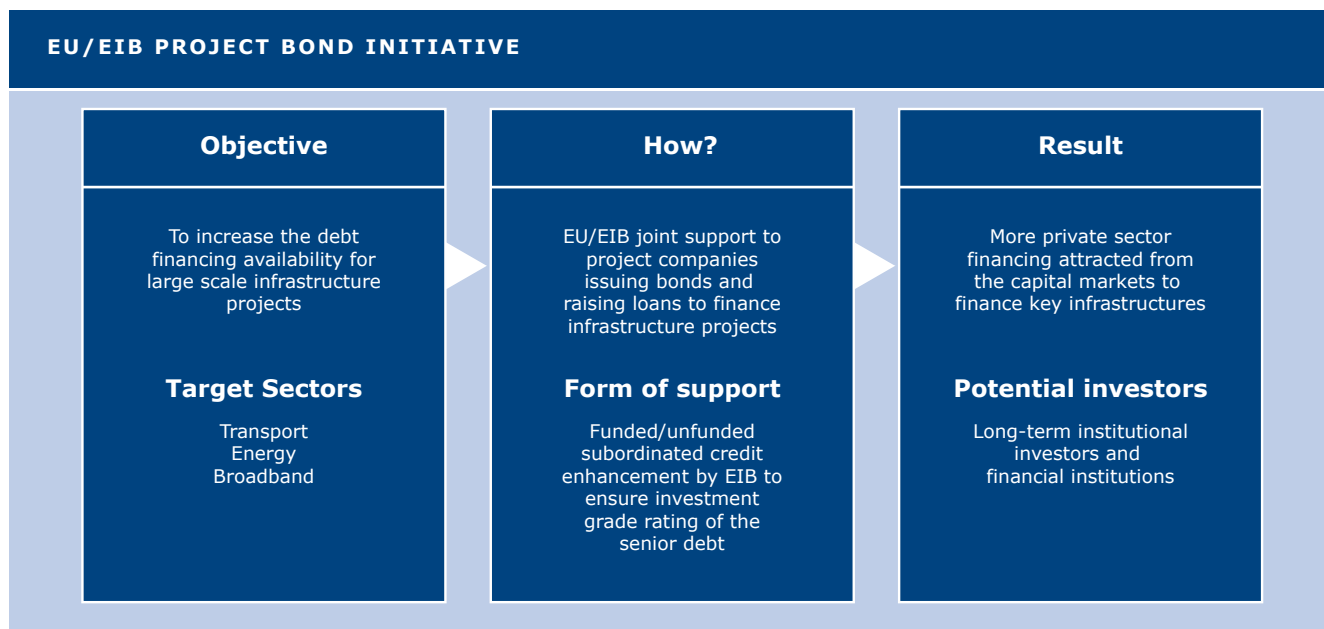
BACKGROUND

Given the significant investment needs to realign the global economy with a low carbon climate resilient future, financial flows will be required from all sources, including both public (government) and private (commercial) actors. According to the International Energy Agency (IEA), aiming to limit temperature increase to two degrees Celsius, investment in low-carbon power generation would need to increase by a factor of three while energy efficiency would need to increase by a factor of eight – a cumulative investment of 53 trillion US dollars by 2035. This represents, between 780 billion and 2.3 trillion US dollars by 2020 and 2035, respectively, in annual low-carbon infrastructure investment, and cumulative investment of 53 trillion US dollars by 2035.

Financial innovation and the development of new green investment products will be vital in meeting the infrastructure financing gap. Green bonds – “plain vanilla bonds” with proceeds used for green initiatives – are an example of a promising financial innovation that enables proactive climate investment strategies.

The green bond market has grown substantially in recent years. In 2015, the amount of labelled green bonds increased to 42 billion US dollars from 37 billion in 2014. As per July 2016, the labelled green market stood at 118 billion US dollars while the unlabelled climate-aligned bonds equalled 576 billion US dollars. Despite this booming growth, green bonds remain only a small fraction of the total bond market, approximately 0.1 percent.

Standards ensure that the proceeds from green bonds are used for green projects with measurable green benefits. Although there is no internationally accepted standard of green, the Green Bond Principles provide voluntary guidance and external environmental reviews are becoming best practice. However, these practices vary by issuer and by region, raising a risk of “green-washing” that could deter some investors. “Green-washing” in the context of green bonds refers to bonds labelled as green but the proceeds are allocated to projects that possess little or questionable environmental integrity. Approximately 40 percent of green bond issuances are self-labelled green, i. e. the issuer does not use an independent external review but determines what is green with no external environmental quality checks.



Source: Barrett 2012

THE GREEN BOND MARKET IN THE EU

Some green bond thought leaders have suggested that the European market be standardised through the implementation of a European Green Bonds Standard. Standardisation is a critical issue in all green bond markets, including the EU. It may be more advisable for European actors (supported by the G7 or G20) to first increase transparency on green bond definitions as it must be recognized that one standard does not fit issuers and investors in all regions. A comparison of external reviewers and implied definitions in green bond funds, indices, and securities market listings could guide issuers and investors alike in green bond decisions.

Kidney and Sonerud (2015) also suggest that EU policy makers could support the expansion of green asset backed securities (ABS) which are defined as green bonds backed by pools of loans or other revenue generating assets. Green ABS make it easier for banks to make green investments as banks can get loans to green projects off their balance sheets. The Climate Bonds Initiative states that there is policy support for securitization in the European Commission and the European Central Bank. Lastly, ABS can further support the Europe 2020 project bond initiative by the European Investment Bank (EIB) which targets increased reliance on bond financing at the project level.

EXPERIENCES AND CHALLENGES IN THE GREEN BOND MARKET

This risk-return of green bonds must be more attractive to institutional investors than the risk-return of vanilla bonds. The public sector can also play a role in de-risking green bonds to attract a broader investor pool. There are various instruments that can be used by the public sector to provide credit enhancement including guarantees, sub-ordinated debt or equity, insurance and political risk insurance. The World Bank and the IFC were pioneers in creating the green bond market, issuing 8.1 million US dollars and 3.4 million as per July 2016, respectively. The strong credit ratings (AAA) of development institutions allow them to introduce green bonds to institutional investors without significant levels of credit risk making them more attractive, particularly in emerging economies.

For issuers, there is a general lack of awareness of the additional requirements and transaction costs in issuing a green bond versus a traditional bond. The voluntary Green Bond Principles are interpreted in different ways by different issuers. There are many external review providers with different approaches. Some issuers already have a strong capacity for environmental impact reporting, e. g. multilateral development banks, whereas others are just starting to consider the environmental impacts of their operations and products. Increased transparency and guidance on steps to issue a green bond could support increased issuance, especially by corporations.

For investors, transparency on environmental impacts can help guide financial decisions. The Task Force on Climate-Related Financial Disclosures convened by the Financial Stability Board recommends disclosure of potential impacts of climate risk for companies and financial organisations. This provides strong impetus for financial decision-makers and companies to seek information on climate risk. A useful framework for green bond assessment is the Shades of Green approach used by CICERO,

an external reviewer, which allows for a transparent comparison of green bonds as to how well they support a low carbon climate resilient future. A broader application of such an approach across the green bond market could raise the level of publically available climate risk information to a broad set of investors.

CONCLUSION

Globally, European and Chinese issuers make up the largest portion of the climate aligned bond market. In Europe, France and the UK are the biggest issuers. Despite the growth of the Green Bond market in Europe, capacity building and awareness raising is still needed to diversify the pool of actors. Such initiatives could be directed at institutional investors and potential issuers to elaborate on potential green project types and climate risk while attracting actors who are not familiar with green bonds. Political groups including the G7 and G20 could further strengthen the case for such initiatives.

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France has made extremely ambitious commitments in connection with the reduction of greenhouse gas emissions. The French finance ministry predicts short-term investment needs till the year 2020 of between 40 to 60 billion euros annually. However, in its present form, the climate finance regulation in France depicts rather a brake for investments on account of the regulatory rules provided. The determination of a significant CO₂ price could accelerate the redirection of private finance in the direction of low CO₂ investments.



The General Electric offshore wind turbine plant in Montoir-de-Bretagne, near Saint-Nazaire, in western France. Source: © Stephane Mahe, Reuters

FRANCE

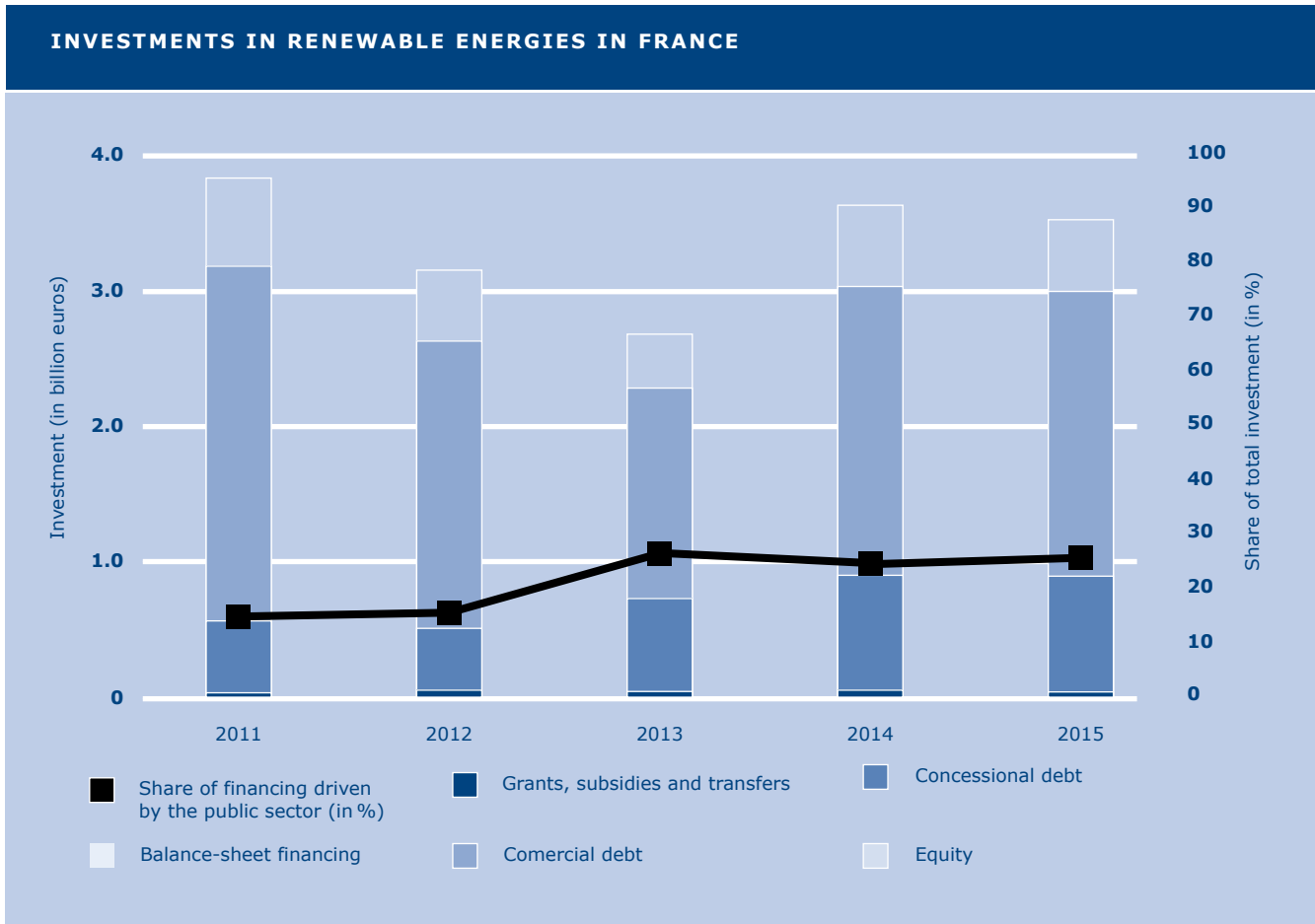
THE ROLE OF PRIVATE FINANCING FOR CLIMATE PROTECTION

In the 2015 “Energy Transition for Green Growth” Act, there is a provision for reducing the emission of greenhouse gases in France by 75 percent (default value from 1990). During the COP 22 in Marrakech, the French President tightened this ambitious goal further as he announced the same time-frame of emission neutrality for France. The challenge is enormous and requires a massive redirection of investment and the corresponding finances towards solutions without carbon in order to produce energy, ensure traffic mobility and provide accommodation and nourishment.

The French finance ministry predicts short-term investment needs till the year 2020 of between 40 to 60 billion euros annually. This funding framework corresponds to between ten and 15 percent of total investment in France. In its 2015 panorama of climate financing, the Think Tank 14CE (*Caisse des Depots* and AFD) mentions an estimated annual volume of 32 billion euros for France; 12.8 billion for energy efficiency, 6.5 billion

for renewable energies (EE), 10.6 billion for the construction and modernization of sustainable transport and network infrastructure as well as 2.1 billion for the rehabilitation of nuclear power plants (KKW) and the war against other greenhouse gases (THG). 40 percent of this finance is provided by the state, business enterprises and households bear another 30 percent each.

If France wants to fulfil the assumed commitments, it would have to invest around 15 billion euros more annually till 2020 (around ten billion alone would be for the energy efficient rehabilitation of buildings). The additional need for finance is however quite modest and above all it involves redirecting private investments: less for fossil fuel energy sources and energy production capacities and more for renewable energies and energy efficiency. Also, if private finances do not flow in spontaneously, then it is of course to be positively noted that an excess of private finances are available today. Each publicly invested euro provides maximum leverage for private financing. A challenge exists for the public sector to create the conditions for finance intermediation to redirect private investments by guaranteeing an adequate return.



Source: *Institute for Climate Economics*

The financial sector, so far rather indifferent to climate issues, has approached the topic step by step with an increasing attention span starting from risk perspectives. Of the three risks, which Mark Carney differentiates (physical risk, transition risk, legal risk), the risk of the transition from the carbon world to a carbon-free world and the consequent world of stranded assets,

is probably the main flash point of interest for the finance community about climate change.

The transition risk is especially critical for the enterprises which produce fossil fuel sources because in case of the two degree Celsius scenario, 80 percent of the coal, crude oil and natural

gas reserves have to remain under the earth. Their share market value, however, is partly determined by the size of the confirmed reserves. On account of the influence of coal and crude oil companies on financial parameters, the argument of a “carbon bubble” gains credibility with long-term investors and regulatory bodies.

Banks, insurance companies and investors have assumed considerable obligations in 2015 and 2016 within the scope of the Montreal Carbon Pledge, to reduce their CO₂ footprint by disinvestment in the coal sector. Recently, 500 enterprises which in total manage over three trillion US dollars, have taken a similar decision. Climate financing has thereby found a permanent place on the agenda of international economic and financing governance.

TRANSPARENCY AND REGULATION OF THE FINANCE SYSTEM

In France, investors must consider and be accountable for environmental aspects in their investment policy according to Article 173 of the statute on energy transition for green growth and especially the issues connected with climate risks. Although the relevant risk assessment methods have not yet been stipulated, the protagonists of the private sector have shown themselves to be extremely innovative considering the publication of this new type of strategic data. At end of October 2016, the Department of the Environment offered a prize “for the best reporting”. This French standard should serve as guideline for international rules and standards.

Apart from the risk transparency, the handling of institutional investors with finances, the usage of benchmark indices as well as the institutional and regulatory environment of the financial system have to be aligned with the time horizon of the climate challenge. However, in its present form, this financial regulation depicts rather a brake for investments on account of the

regulatory rules provided. Therefore, some protagonists are pleading for environmental risk to be included in the upcoming discussions about the future regulatory standards.

GREEN BONDS

The green financing business of banks remains marginal; green bonds provide one percent of the total bond market. Analogous to it, only one percent of the assets of institutional investors are invested in green and sustainable infrastructures. What makes the situation more difficult is the definition problem of the selection criteria for projects to have entitlement to green bond financing: nuclear energy projects, natural gas installations, coal power plants’ rehabilitation? The definition of the criteria was till now left to the private sector on whose initiative the “green bonds principles” (2016) are based. The strong impulse triggered by the issue of the first green state bonds by France in January 2017 (amounting to seven billion euros) will make a contribution to structuring this market.

In order to accelerate the growth of the green finance sector, the Stern-Stiglitz Review (2017) that defines a corridor of benchmarks for climate measures, recommends integrating such benchmarks into the financing instruments. If the value of the CO₂ emissions that were avoided with the help of green-financed investments is offset and guaranteed by the state sector, the risk of these investments is reduced and through it the financing costs will be more favourable.

CO₂ PRICING

The determination of a significant CO₂ price could accelerate the redirection of private finance towards low CO₂ investments. France pleaded in 2016 in the EU for a vigorous reform of the emission business. With the help of a price corridor, the market price signal should be adequately strengthened in order to trigger low CO₂ investments in the industry.

At the national level, in the energy transition law of 2015, France has established an ambitious development of CO₂ tax which shall increase from 30.5 euros per ton in 2017 to 56 euros per ton in 2020 and to 100 euros per ton in 2030. The CO₂ tax mainly concerns diffuse CO₂ emissions in the private transport and residential sector. This long-term development must now be set on a credible basis so that households and business enterprises can invest with corresponding confidence in the stability of the price development.

GIVE LONG-TERM INVESTMENTS A SOCIAL VALUE

Transparency in environmental risks, reporting of the two degree Celsius portfolios, new approaches to finance regulation, clear definition of green investments, CO₂ pricing and finance-engineering are necessary elements in order to align the financial system in a novel manner. All these elements are necessary to divert long-term investments in the battle against climate change. They are therefore of social benefit. This means that private finances need to be steered in harmony with big public investment projects more or less directly towards carbon-free projects. Without the involvement of the public when defining the course of action and the values to be achieved, any further investments from or on behalf of the central banks, or new investment incentives, will not have any long-term impact on growth.

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Players in the private sector understand that the transition to a low carbon economy is on the agenda. So far, private sector activities have been focused on energy production and efficiency, while the public debate on private climate finance in general terms tends to be more low profile. The financial sector is only beginning to embrace low carbon finance systematically. However, several recently launched initiatives could bring about a change to this situation.



In the federal state of Brandenburg, wind power was rapidly expanded owing to annual grants of several million euros. Source: © senorcampesino, iStockPhoto

GERMANY

PRIVATE SECTOR CLIMATE FINANCE IN THE GERMAN DEBATE

Private Climate Finance in Germany is understood as the non-public sector share in finance mitigation and adaptation measures. While this term is predominantly used in political and public debates by government and NGOs, it is less frequently invoked within the private sector, including the real economy and the financial sector.

The public debate on private climate finance in general terms tends to be low profile because investment volumes are difficult to track. In contrast, the debate is much more prominent in relation to concrete domestic issues. For example, the debate concerning investment in renewable energy instead of fossil fuel production, e-mobility solutions, energy efficient and low carbon housing is fairly prominent. It is also becoming increasingly more prominent in relation to climate-aligned financial products and portfolio management.

Germany has introduced well defined climate goals, in particular for reducing CO₂ emissions by 40 percent (though the 2020

goal is likely to be missed), and 80 to 95 percent (2050) relative to the levels that were being measured in 1990. Since November 2016, these goals have been included in the 2050 climate protection plan.

The withdrawal of the USA from the Paris Agreement has already triggered strong reaffirmation of the German government's political commitment to the Agreement itself and the wider issue of tackling climate change. The Paris Agreement has been instrumental in providing further confidence and guidance, and players in the private sector understand that the transition to a low carbon economy is on the agenda. The question is then not a matter of *if* but rather a matter of *how*. The USA's move opens up an opportunity for industry to further strengthen its relatively strong position in offering green solutions.

PRIVATE SECTOR ACTIVITIES

Private sector activities are focused on energy production and efficiency. Investments in mobility and agriculture are much less pronounced. The financial sector is only beginning to embrace low carbon finance systematically, with the exception

of a few institutions (e.g. Allianz and MunichRe) and niche markets (e.g. green bonds).

In the [energy](#) sector, power production from renewable sources (share in 2016 was 31.7 percent) is continuing to be one of the most important areas for private climate finance, based on the German feed-in tariff model. Although the share of renewable energy investment is still low in insurers' and pension funds' portfolios (i.e. usually below one percent), the asset class is becoming increasingly familiar (mainstream) for many institutional investors due to the reliability of the cash flows and the diversification benefits.

The move from a support policy based on feed-in tariffs to competitive auctioning caused some uncertainties in the renewable energy sector. There is a downward trend for new capacities being added to energy production with solar photovoltaics.

[Energy efficiency](#) is a growing market in Germany. Measures tend to be self-financed by industry and real estate companies. The involvement of private financial investors is low due to a fragmented market and relatively low investment volumes per implemented measure. Investment activities tend to be driven by cost savings, which in many cases (like LED lighting) offer quick returns, and by public regulation. Domestically, KfW's energy efficiency programmes continue to play an important role in triggering private finance.

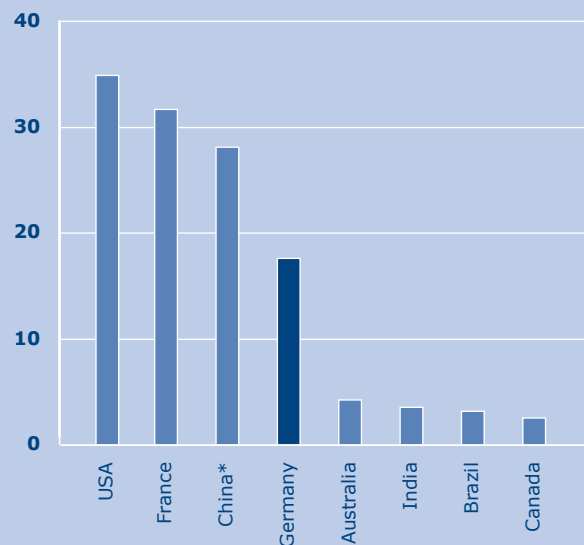
Low-carbon [mobility](#) is still at very low levels, in particular in comparison with more ambitious markets like China and Norway. However, it is expected to rise. As this occurs, private investment is expected to flow consequentially.

The Paris Agreement has certainly had an influence on the German financial sector. As financier of the economy, it is playing a steadily increasing role as a catalyser of the low carbon transition. It promises to do so by anticipating and measuring the risks of an unabated climate change and a

difficult transition. Compared to other countries, like the UK and particularly France, the Netherlands, and the Scandinavian countries, German financial institutions on average are lagging considerably behind in embracing climate change action and making it a central part of their long-term strategy. Various options exist for supporting climate finance:

COUNTRY COMPARISON: THE BIGGEST ISSUERS OF GREEN BONDS (MAY 2017)

Billion US dollars



* Only includes bonds in line with CBI taxonomy are shown. Total figure outstanding from Chinese issuers if bonds financing coal, large scale hydro etc. are included sum up to 41.5 billion US dollars.

Source: Climate Bonds Initiative 2017, data: *ibid.*, Bloomberg LLP., Thomson Reuters

1. Positive impact investments, e. g. renewable energy
2. Making the overall (mainstream) portfolio more sustainable
3. Understanding and managing portfolio carbon risks (transition, physical, litigation risks)
4. Providing climate related insurance solutions
5. Transparency

Financial institutions have also limited financing certain fossil fuel business models, notably the mining and burning of coal for power production (Allianz). The impact on the insurance industry of AXA's, the French insurer's, decision to withdraw from offering insurance to companies that generate more than 50 percent of their revenues from coal-based business models, remains to be seen.

As shown in the diagram, Germany has become the fourth largest green bonds market with 17.7 billion US dollars outstanding. Public issuers paved the way (NRW.Bank, KfW), followed by only a few private issuers (e. g. Nordex, Senvion, MEP Werke).

Asset ownership and retail demand for low carbon financial solutions is still low in the absence of incentives and a myopic time horizon that is, on average, significantly shorter than the time before impacts of climate change will become apparent.

Compared to international collaboration on climate finance (e. g. UNEP Finance Initiative, Principles for Responsible Investment and Sustainable Insurance, ClimateWise, and the Global Investor Coalition on Climate Change), national activities dedicated to climate finance have remained below their actual potential. This may change with climate (and sustainable) finance becoming more prominent with the recent sustainable finance initiative of the Deutsche Börse, the Green Finance Hub of the German Council for Sustainable Development, and the Hessian initiative to establish Frankfurt as a Green Finance Cluster in collaboration with the industry.

PUBLIC SECTOR SUPPORT AND ACTIVITIES

According to the German Ministry of Economic Cooperation and Development (BMZ), in 2015 the German government mobilised approx. 8.3 billion euros in climate finance, 900 million for supporting the private sector through revolving credit lines to local (development-) banks, participations in structured funds and public-private-partnerships.

Public-private collaboration with domestic institutions in climate finance is a field that can be further developed.

- Deutsche Bank successfully applied for Green Climate Fund support for its sustainable energy for Africa project.
- Allianz joined forces with the International Finance Corporation of the World Bank.
- The Global Climate Partnership Fund initiated by the German Ministry for the Environment and KfW attracted private sector investors in its senior notes (pension fund ÄrzteVersorgung Westfalen-Lippe and ASN Bank of the Netherlands).

With its national and international climate initiatives, the German Ministry for the Environment supports private sector initiatives. Likewise, Germany's support of the Global Innovation Lab for Climate Finance strengthened the collaboration between the public and the private sector with the aim of scaling up innovative financing ideas.

In September 2016, the German Finance Ministry received a report on how climate change could affect Germany's financial sector. At nearly the same time, the German Environment Agency (UBA) commissioned a study to analyse and assess the risk of a carbon bubble in the German financial system.

CHALLENGES AND BARRIERS

In the absence of relevant internalisation of the external climate effect (i. e. a low CO₂ price), markets are driven by investment opportunities that are already commercially viable or get sufficient support outside of the emissions trading scheme.

Increasing demand for green (finance) solutions would entice solution providers to design adequate products. Transparency on climate risks and alignment with climate goals will enable clients to make informed decisions. The public sector is in a perfect position to align all its investments (e. g. from public pension schemes) with overall climate goals as is the case in some neighbouring countries.

On the supply side, sovereign and sub-sovereign issuers could issue green bonds for demonstration purposes, thus signalling its viability to the financial sector and other (corporate) issuers.

The development of methodologies and models would enable financial institutions to achieve climate-smart decision-making and give them the tools to assess whether they are on course to reaching the long-term goal (science-based targets).

Financial regulation, due to its one-year risk horizon, is inherently short-term oriented. It fails to set incentives to look at the longer-term risks, what Mark Carney called the “tragedy of the horizon”.

Support in risk mitigation by the public sector is key for private climate finance flow to emerging and developing countries.

G20 SUPPORT

G20 has provided, through its Green Finance Study Group, useful analysis of the design of a sustainable financial system. Though not binding, the recognition of the importance of scaling

up green finance by the G20 played an increasingly important role, including promoting international collaboration to facilitate cross-border investment in green bonds and facilitating knowledge sharing on environmental and financial risks.

The recommendations by the Financial Stability Board’s Taskforce on Climate-related Financial Disclosure (TCFD) are crucial for the German financial sector. Investors will have much firmer ground to base their decisions on, particularly in terms of forward looking climate risks and opportunities. Only the standards and methodologies still need to be developed. Experiences from Article 173 of the French energy transition law might inform the debate about implementing the TCFD recommendations.

Germany plays a crucial role in continuously putting mainstreaming green and climate finance high on the G20’s priority list.

CONCLUSION

Germany has potential to increase its ambition in setting the right incentives for the financial sector to play its role in the transition to a low carbon economy. A credible and coherent strategy is key.

Creating public demand for green solutions is a relatively straightforward first step, as activities by German states show. Additionally, systematic crowding-in of large institutional investors should become a priority for the public sector. Complemented by increasing transparency and climate risk management requirements, investors, on the whole, would be incentivised to take their role more seriously.

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India wants to fight climate change by using more market-based mechanisms. Therefore, the government is actively devising strategies to support projects for renewable energy. Funds have been set up to mobilise private sector finance, and Indian corporates support initiatives which integrate sustainability into their core operations. As regards labelled green bond issuance, India now ranks seventh in the world. But comprehensive data, specifically for analysing the economic impact of green technologies and projects, is still lacking.



Wind turbines in the Indian lowlands. Source: © Nikita Podobulkin, iStockPhoto

INDIA

THE IMPORTANCE OF PRIVATE SECTOR CLIMATE FINANCE IN THE INDIAN DEBATE

Within the Indian political debate, the respective roles of public and private climate finance are well articulated in their respective domains and could work in tandem to address the mitigation and adaptation-related imperatives in the country. In order to increase finance up to 2.5 trillion US dollars, estimated to be required by India to meet its INDC goals, innovative large scale solutions would need to be implemented in the country. Thus, in India, mobilising private sector finance is an important policy choice. The country is therefore providing impetus to technology and business models for innovative, reliable solutions to address climate change mitigation and adaptation challenges. The example of a bulk aggregation model for LEDs, an energy efficiency market in the framework of the “Perform, Achieve and Trade” (PAT)-scheme, and renewable energy related programmes and policies are some notable efforts in this direction. Yet in the area of adaptation, more support from public climate finance is called for to leverage the private sector finance flows into adaptation activities. While one part of the debate in India is

on how the country will gain a significant and fair share of the promised external financing (public finance), including private capital flows, the other part concerns how to track public climate finance separately from private climate finance.

CONCRETE INITIATIVES

The government of India is actively devising strategies to promote private finance in the country in areas encompassing both mitigation as well as adaptation. One of the most significant moves in this area is India’s switch from effective carbon subsidization to taxation, done by imposing a de facto carbon tax on petroleum products at about 150 US dollars per ton, which is about six times greater than the level recommended by the Stern Review on Climate Change, and charging a Coal Cess (special tax), the rate of which has been steadily increasing and is currently at six US dollars per tonne of coal. Combined with the public commitment to add 175 gigawatts of renewable installed power in the country, this provided a clear signal to the private sector to ramp up its investments in this area. There has been a 23 percent increase in overall investments

within the renewable energy sector in the country reaching 10.2 billion US dollars in 2015 which could be attributed to some of the above factors.

The government of India is also assisting private investors through several means of project-level support, in terms of generation based incentives, feed-in tariffs, tax holidays, concessional allotment of public land, hedging costs of borrowings, etc. To increase the funding available for renewable energy and encourage participation from amongst the SME's, the Reserve Bank of India (RBI) has designated renewable energy as a priority lending sector, which enables banks to lend up to 2.3 million US dollars for renewable energy projects and also raise infrastructure bonds to do so.

The government has also set up two national funds, the National Clean Environment Fund, funded through the Cess on Coal and the National Adaptation Fund on Climate Change, funded through budgetary allocation. These two funds envisage mobilising private sector finance by supporting project developers by providing risk guarantees, venture capital funding, seed funding, etc. National development banks, commercial banks, and other private financial institutions also have a unique role in the context of both implementing and catalysing private sector players because they have a privileged position in their local markets, strong knowledge of and long-standing relationships with the local private sector, and a good understanding of local barriers to investment.

India is continuing to strengthen and expand market-based mechanisms to fight climate change. At present, there are two prominent mechanisms: the renewable energy certificates (RECs), with which power utilities are mandated to buy a portion of their power from renewable energy producers, and the PAT scheme, which aims to enhance energy efficiency in large scale industries through a market-based mechanism. These have the potential to mobilise significant levels of private finance in the

renewable and energy efficiency sectors. Additionally, large corporates integrating sustainability in their core businesses are included in the Bombay Stock Exchange's green index, the GREENEX, which was introduced in 2012 and comprises 25 of India's biggest companies.

Furthermore, the Companies Act 2013, which obliges companies having a certain level of profits to spend two percent of their annual profit on Corporate Social Responsibility (CSR) activities, is also being leveraged by corporates for climate change and clean energy initiatives. Estimates indicate that a fair share of the available CSR funding of about 3.5 billion US dollars annually will be invested in environment initiatives. Indian corporates are starting to take ambitious initiatives to integrate sustainability into their core operations through various measures such as establishing internal carbon prices, announcing GHG emission reduction commitments, transitioning to clean manufacturing methods, etc. According to the Carbon Disclosure Project (CDP), in 2016, 44 Indian companies were using or planning to use an internal price on carbon within two years, a 63 percent increase from 2015.

EXPERIENCES AND OBSTACLES

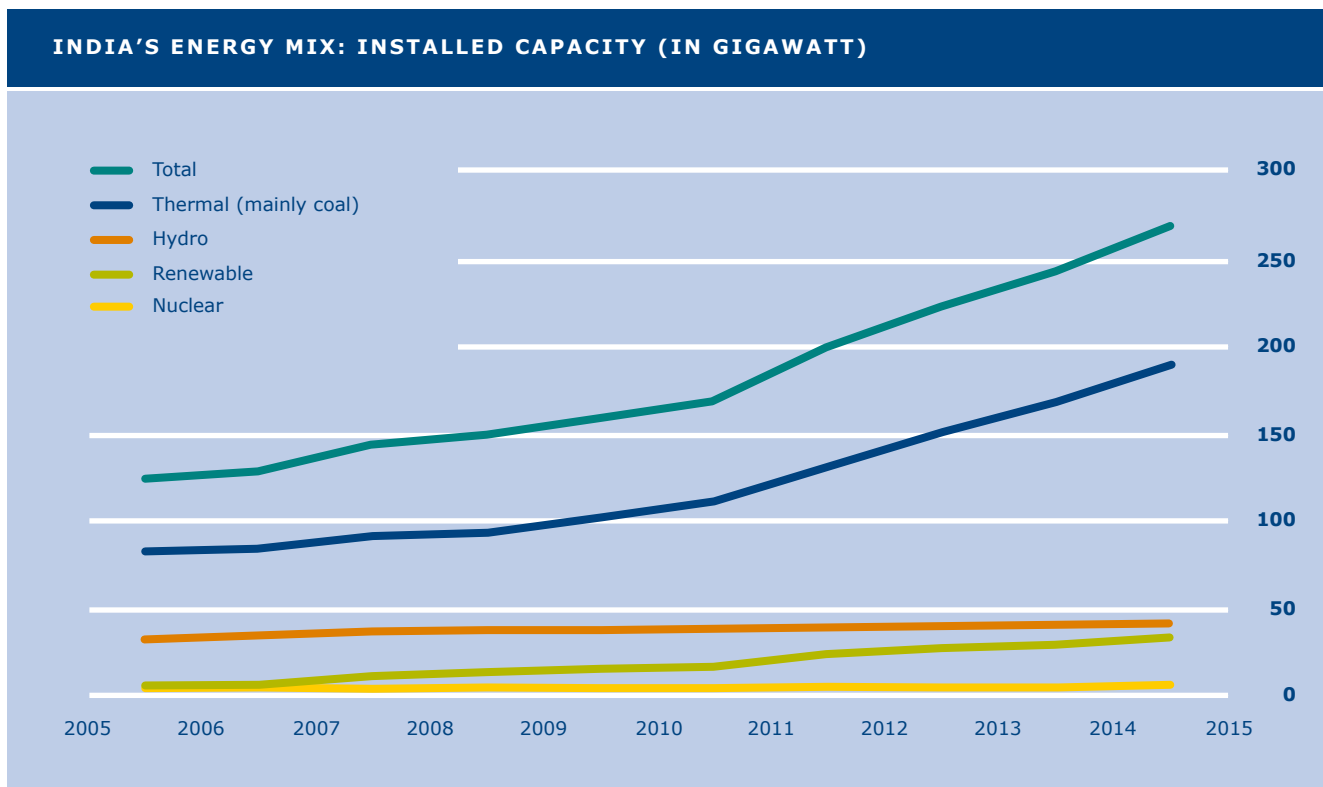
India now ranks seventh in the world for labelled green bond issuance, with bonds worth 2.7 billion US dollars and an estimated 15.7 billion US dollars unlabelled climate-aligned bonds. In 2016, several private financial institutions, national and private banks, public finance corporations, and public authorities from the energy and infrastructure sectors, successfully issued large green bonds. Most noteworthy is the National Thermal Power Corporation's (NTPC) issuance of a 300 million US dollars green bond to add more wind and solar power projects to its portfolio. This is a significant example of a fossil-fuel balance sheet being used to raise private climate finance. At COP21, a lot of movement was witnessed from the large scale investors and private banks from India who called for a specific commitment

to lending, investing and raising capital for renewable energy and energy efficiency, with some noteworthy deals and commitments made in 2016. For example, IDFC Alternatives and Ostro Energy inked significant deals to buy renewable energy projects, while a joint venture between SoftBank, Bharti Enterprises Ltd. and Taiwan's Foxconn Technology Group announced plans to invest 20 billion US dollars in India's solar power sector.

While India is relatively strong in terms of policy adequacy, consistency and predictability in low-carbon energy infrastructure, increased focus is required from private players in adaptation

financing. While the government of India has made a notable start towards adaptation through its budgetary allocation of over 50 million US dollars to the National Adaptation Fund on Climate Change for the financial years 2015/2016 and 2016/2017, a conservative estimate of around 1.8 percent of India's GDP would be required for adaptation by 2050. Both public and private finance would be essential to make any significant progress in this area.

While India's Intended Nationally Determined Contributions (INDC) is in itself a huge market signal to technology developers



Source: IndiaSpend

to start investing seriously in clean technology in India, there is major uncertainty surrounding the availability of finance for research and development (R&D) and the potential cushion against investment failures. In this light, de-risking climate projects becomes a key need for the industry. The government's "Make in India" initiative can also be seen as an opportunity to provide adequate impetus to the climate change sector. Although the financial sector and financial intermediaries have now started focusing on the renewable sector due to policy push and greater awareness, they still lack the understanding and capabilities to analyse clean tech and energy efficiency projects, resulting in a lack of accessibility to finance for these sectors. This is due to a lack of comprehensive data specifically for analysing the impact of green technologies and projects. Besides, due to a lack of availability of public funding flows to developing countries under the UNFCCC financial mechanism, there is a lack of predictability in available finance to leverage the private sector within the country beyond mitigation actions.

THE G20 AS A FRAMEWORK TO PROMOTE PRIVATE SECTOR CLIMATE FINANCE

The G20 is seen as a potentially strong driver for establishing frameworks and aggregating commitments for climate finance and international partnerships. The G20's focus on a variety of sectors and issues, particularly in respect to businesses and global trade, makes this platform uniquely placed to be able to understand and advocate for private climate finance, from the viewpoints of global sustainable development as well as of private industries and businesses. Although the private sector is increasingly aware of the need to mitigate the adverse impact of climate change, there is a perceived need for policies and frameworks to de-risk climate projects and provide opportunities to the private sector to take part in them. With the momentum gained within the G20 study group on Green Finance since 2016 – including the promotion of progress within countries on financial instruments – India

is open and sees a huge opportunity to discuss and deliberate on successful frameworks for promoting PCF in the country through this forum.

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FURTHER READING

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During the 2009 G20 meeting, Indonesia was one of the developing countries which announced its commitment to reduce greenhouse gas emissions. These efforts were intensified under President Joko Widodo's leadership. In 2015, at the COP21 in Paris, Indonesia declared its unconditional goal of a 29 percent reduction of all emissions by 2030. Assuming the (financial) support of international partners, Indonesia wants to achieve a 41 percent reduction.



*A solar power system in Bali. Indonesia is increasing efforts to exploit its large renewable energy potential.
Source: © slowstep, iStockPhoto*

INDONESIA

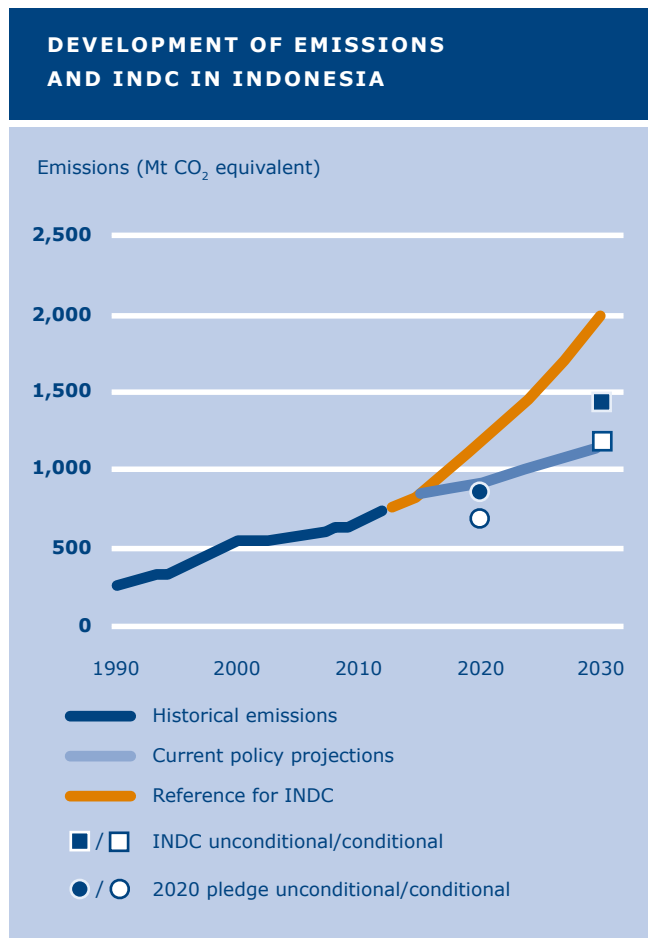
INDONESIA'S CLIMATE FINANCE COMMITMENTS

The private sector will play an important role in Indonesia's governmental development vision and strategy for reaching the emission target. State-owned enterprises (SOEs) and private sector companies are expected to invest more than 200 billion US dollars in infrastructure development. 200 billion US dollars of private investments are two-thirds of the total investment sum of around 300 billion US dollars needed by 2019. The Indonesian government will provide the missing last third (100 billion US dollars). Private sector emission reduction projects, the implementation of the RAN-GRK, and the National Action Plan for Climate Change Adaptation (RAN-API) are not financially supported by state funding. It is, however, unclear whether or not SOEs should be considered as private financing companies. The applied definition of private climate finance is not quite clear in this sense. This is a crucial point: SOEs are very important actors in the Indonesian economy due to them holding monopolies in electricity, oil and gas. Furthermore, most big banks (Mandiri, BNI and BRI) are state-owned.

PRIVATE SECTOR INVOLVEMENT

In preparation for the COP21 in Paris, there was an increase in awareness of climate-related topics among private companies in Indonesia. The number of private sector participants at the Indonesia Pavilion proved the rising interest. In Paris, these companies also promised an increase in their contributions to climate change activities/programmes. The APRIL Group, for example, announced its intention to double their peatland restoration commitment in Indonesia to 150,000 hectares, and that it will invest 100 million US dollars over the next decade in conservation and restoration. Furthermore, the Chamber of Commerce has become very active and interested in funding climate projects.

The Indonesian government welcomes this private sector involvement. The government introduced several initiatives related to climate finance development. One example is the launching of the first climate finance institution, Indonesia Climate Change Trust Fund (ICCTF), which was founded to increase capacity to manage climate financing. In 2010, the Norwegian government



Source: Climate Action Tracker, Climate Analytics, Ecofys, NewClimate Institute

assured that it would give one billion US dollars for Indonesia's "Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries" (REDD+) programme, and the Indonesian government has prepared financial mechanisms for the implementation of

this performance-based scheme. There are also initiatives by the Ministry of Finance in budget tagging for government funds and an online reporting system (PEP Online for both mitigation and adaptation action plans) developed by Bappenas (Indonesian Ministry of National Development Planning).

The involvement of the private sector in climate-related activities is significantly influenced by banking institutions' green lending or green investment programmes because Indonesia's financial system is dominated by banking which accounts for 79.8 percent of the total assets compared to insurance (10.5 percent), finance companies (6.4 percent) and pension funds (2.6 percent). In 2014, the Financial Services Authority (OJK) developed the "Roadmap for Sustainable Finance", which aims to increase the portfolio of green financing from financial institutions in Indonesia. Within the first phase after the issuing of the new regulations as the legal base for green financing (climate finance), OJK conducted a series of awareness raising programmes for the bankers. It is expected that bankers with the capacity to access the green projects will automatically reduce their risk perception towards this kind of project and that they are more likely to increase the volume of their financing of green projects. OJK encouraged banks support green finance projects, which motivated eight banks to volunteer as pilot banks in 2016. Volunteers are needed since most banks refuse to be green financing pioneers because they fear losing their competitiveness due to a lack of regulations.

THE IMPORTANCE OF RISK PERCEPTION

In general, it can be said that the banking sector is driven by risk perception and not by incentives, such as cheap financing for climate-related projects or increased financial resources for climate financing. Financial institutions in Indonesia usually do not see the lower cost of overseas money for climate projects as attractive enough to outweigh the burden of technical requirements, such as the "Measurable, Reportable, Verifiable"

(MRV) mechanism. Banks face overall difficulty in finding good bankable offerings among climate-related projects. More criteria and requirements for climate projects would make them even less attractive to banks.

The increased interest in green projects during the last two years caused a high risk perception for projects that generate a lot of emissions or which are harmful to the environment. This high risk perception was mainly caused by stricter international financial policies (e.g. limited funding resources for coal-fired power plants) and stricter domestic government policies (e.g. in 2015 the government froze a company for causing a forest fire). This shift in policymaking led to higher potential risks of funding for the companies willing to invest in projects with negative climate impact. Banks see a greater danger in the provision of credits, especially to exporting companies which have a bad environmental reputation. Difficulties can arise if the government interferes with business practices because of questionable environmental behaviour. Problems with sales figures and customer relations could lead to weaker business performance and to non-performing loans. In this context, the Indonesian financial sector considers regional market cooperation such as ASEAN Economic Community (AEC) as a challenge because it requires reforms and includes international standardised processes (for example in climate related issues). As a result, banks in Indonesia are now more eager to learn about green and climate finance.

Another possible source for climate finance is the Syariah Bank. Islamic financing has criteria which are close to those of green financing or climate protection financing. Indonesia, as the biggest Muslim country in the world, has huge potential for the generation of financing for climate-related projects. Many banks already have syariah branches, but this system still needs further improvement to achieve the aspired goal.

CARBON PRICING CONSIDERATIONS

In 2009, the Indonesian government considered a carbon tax to increase investment in climate protection projects. However, it was assumed that a carbon tax would be a negative signal for investors. Therefore, tax incentives for imported green machinery are currently favoured by the government. An Indonesian carbon market is still not feasible in the short run because the current range of information is not sufficient for such a scheme. Furthermore, a functioning competitive carbon market would be difficult to implement, because of monopolies by certain SOEs (such as PT Pertamina for oil and gas, and PT PLN for electricity).

As a result, Indonesia is trying to implement a carbon market scheme on the basis of Joint Crediting Mechanisms (JCM) and by using some pilot projects for a voluntary carbon market. It is expected that Indonesia will gain more technical knowledge from these pilot projects which would enable the government to introduce a national carbon market.

CONCLUSION

Indonesia needs to strengthen its capacity to improve private sector involvement and contributions to finance climate-related projects. To achieve this goal, climate finance actors must be provided with public financing mechanisms in order to improve the data and information situation. Furthermore, there must be improvement in stakeholder coordination for climate finance. It is of urgent importance that the Indonesian government and OJK increase the implementation of more climate-related projects by introducing regulations and by giving banks green-project-related investment incentives. Green business opportunities should be supported by adequate lending models, incentives for development, and simple, standardised procedures.

The G20 conferences generate attention, and they usually increase awareness of the discussed topics among member states. If G20 members increase the volume of their climate-related financing, the Indonesian government will very likely adjust its policies.

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The author would like to thank Raymond Bona and Marsha Ranti for their input and comments on an earlier version of this paper.

Italy has become a pioneer in terms of environmental protection and sustainability during the last years. Almost 50 percent of Italian companies have adopted advanced environmental standards and the Green Act, launched in 2015, is a concrete approach for the funding of development measures. Yet the only thing that could become a hindrance is the size of the financial players, so the investments needed for sustainable development can thus become a challenge.



The glazing of the railway station Porta Susa Torino is equipped with mono-crystalline photovoltaic cells. Besides generating electricity, they also act as a sun shield. Source: © Dario Egidi, iStockPhoto

ITALY

THE IMPORTANCE OF PRIVATE SECTOR CLIMATE FINANCE IN ITALY

One of the national studies conducted within the United Nations Environment Programme's (UNEP) initiative Inquiry into the Design of a Sustainable Financial System was that by the "Italy's National Dialogue for Sustainable Finance", launched in February 2016 and concluded a year later. The final report "Financing the Future" has been released by Italy's Ministry of Environment, Land and Sea (MATM) and the UNEP, with the contribution of over 100 experts from the banking, insurance, and capital markets sectors, and financial regulators, academics, and civil society. According to the report, "Italy faces a strategic opportunity to align its financial system with sustainable development. [...] This can contribute to wider financial stability and long-term economic recovery" (UNEP, 2017).

The stakeholders from the private sector involved in the green financial reform in Italy are banks, institutional investors, private equity, and capital markets, although a crucial role is played by the corporate sector. In Italy, this sector is characterised by a

vast prevalence of small and medium-sized enterprises (SMEs), consisting to a disproportionate extent of small companies in terms of number (99.9 percent of the total, out of which 95 percent has fewer than 10 employees). Most Italian companies (42 percent according to OECD data) are oriented towards green production and services, or have adopted advanced environmental standards in production processes or product design. The most important drivers of climate-friendly investments by the Italian business sector are both reputational and economic. The need to enhance competitiveness, both on internal and external markets, by raising the quality of products and productive models has been driven by the awareness of environmental degradation and climate change impacts caused by a business-as-usual economic system. Despite the financial crisis, between 2007 and 2014, the number of Italian companies with Environmental Management System (EMAS) registration rose by 74 percent. On the other hand, the transition towards a sustainable energy system has been mainly driven by the impact of policies and investments aimed at climate change mitigation. For instance, the Italian feed-in tariff scheme granting incentives over a period of 20 years for electricity generated

SOLAR PV GLOBAL CAPACITY AND ADDITIONS (TOP COUNTRIES IN 2016)

Ranking by Additions	Added 2016 (GW)	Total End 2016 (GW)
China	34.5	77.4
USA	14.8	40.9
Japan	8.6	42.8
India	4.1	9.1
Great Britain	2.0	11.7
Germany	1.5	41.3
South Korea	0.9	4.4
Australia	0.9	5.8
Ranking by Total Capacity		
China	34.5	77.4
Japan	8.6	42.8
Germany	1.5	41.3
USA	14.8	40.9
Italy	0.4	19.3
Great Britain	2.0	11.7
India	4.1	9.1
France	0.6	7.1
Australia	0.9	5.8
World Total	75	303

Source: REN21 2017

by solar PV plants connected to the grid, known as “Conto Energia”, was first introduced in 2005 and has been amended five times. Feed-in tariffs have also been granted to electricity from wind and other sources.

Other important private sector actors in Italy are banks and insurance companies. The Italian financial system is bank-centric: fewer than 16 percent of financial intermediaries in 2010 were independent from banking groups. In global terms, Italy’s banks are relatively small: the biggest Italian bank ranks 28th in the world (UniCredit) whereas the biggest insurance company ranks eighth (Generali). The relatively small size of the financial players makes the investment needed for sustainable development a challenge. Italy’s banks lent 27 billion euros between 2007 and 2014 for renewable energy, and over 22 percent of Italy’s insurance market is covered by companies that have signed the UN Principles for Sustainable Insurance.

CONCRETE INITIATIVES

One of the most important initiatives undertaken in Italy is the Green Act launched in January 2015. This is still under discussion, although it is expected to be adopted by the end of 2017. The Green Act is a law on the efficient use of resources, protection of natural ecosystems and financing for development that is aimed at structuring a national sustainable finance strategy. Other than the Green Act, it is worth mentioning the Non-Financial Reporting EU Directive 2014/95/EU and its transposition in Italy by Legislative Decree 254/2016. Companies listed on regulated markets, banks, and large insurance and reinsurance companies are required to prepare, on an annual basis, a Non-Financial Statement that must include information related to the use of energy resources (renewable vs. non-renewable energy), water use, greenhouse gas emissions and air pollution, and the environmental impact of the principal risks linked to the company’s operations.

Another important initiative is the one undertaken in 2015 by the Italian Parliament in which the government was asked to start a profound renewal of the 2002 National Strategy for Sustainable Development, by means of Law 221/2015. Article 68 sets up a national catalogue on environmentally

harmful subsidies. Connected to the topic of subsidies, the Italian Ministry for Economic Development created a study committee to introduce some green reform in the fiscal policy. This could be a driver for SMEs to invest in more sustainable business models and management systems, and to progressively remove the environmentally harmful subsidies (estimated about three trillion euros).

In Italy there is strong engagement by civil society for sustainable development and special mention is deserved by the Italian Alliance for Sustainable Development (ASviS), established in 2016 and gathering over 160 Italian civil society institutions with the aim of mobilising Italian society on the Sustainable Development Goals. The report issued by ASviS in 2016 on the situation in Italy, with respect to the wide range of economic, social, environmental and institutional objectives contained in the 2030 Agenda, puts forward several proposals for placing this commitment at the centre of debate for the entire country, and for contributing to the new Italian Strategy for Sustainable Development that is today under study at government level.

From the research standpoint, *Fondazione Eni Enrico Mattei* (FEEM) has been conducting the project Disclosure, Measurement, Management and Mitigation of Climate Related Risks for Companies (De Risk-CO) aimed at stimulating a scientifically sound public debate on the risks associated with climate change for Italian firms. The research results will be the subject of a final workshop which will discuss the ways in which scientific knowledge can support improvement in the capability of firms to manage climate-related risks, and of the FEEM publication *Rischi climatici: mitigazione e disclosure nelle imprese italiane*.

THE POTENTIAL OF TRANSNATIONAL FORA

As part of China's G20 presidency in 2016, a Green Finance Study Group (GFSG) co-chaired by China and the UK was established to develop options on how "to enhance the ability of the financial system to mobilise private capital for green investment" (G20, 2016). The fact that Germany announced that it will continue the work of the GFSG during its presidency of the G20 in 2017 was perceived very positively by the Italian financial community. However, in Italy, the green finance theme is relevant not only in the framework of the G20 but especially within the current Italian G7 presidency, where the role of financial institutions in sustainability and the role of SMEs in the implementation of the 2030 Agenda will be investigated.

In 2014, a G7 Energy Ministerial Meeting held in Rome ended with a joint statement in which it was agreed to work with institutions such as the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA) and international financial institutions for leveraging the private sector finance to develop renewable energies and improve energy efficiency. The importance of multilateral development banks in the facilitation of quality energy investments was reiterated at the G7 Energy held in Kitakyushu (Japan) in 2016 and is acknowledged by Italian financial actors.

In conclusion, the debate around green finance and the role of the private sector is very active in Italy, both at the state level and among the financial actors, civil society and research centres. In light of the limited public financial budgets, mobilising private capital is key. A clear regulatory context, streamlined administrative procedures, and a stable long-term policy strategy would give investors a positive sign about the future for their returns on investments, limiting policy and regulatory risk. Public-Private Partnership agreements should be highly encouraged because they would provide important private

capital investment, the necessary public guarantees, private sector technological innovation, and management expertise in project financing. Finally, the Green Act could offer a new window of opportunity for shifting the tax burden from companies and labour to pollution and resource depletion.

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FURTHER READING

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In order to mitigate the consequences of climate change, the Japanese government plans undertaking comprehensive measures with respect to climate finance. The central idea of the Japanese climate policy is the reduction of greenhouse gas emissions by means of technical innovations. Part of the Japanese strategy is to promote financing from the private sector. The finance industry is making efforts to stimulate investment in sustainable projects. An action plan that has also been under discussion for quite some time is the establishment of a national emissions trading system.



Japan is considered a pioneer and to have the most advanced market in the field of e-mobility. Source: © aozora1, iStockPhoto

JAPAN

JAPAN'S CLIMATE POLICY OBJECTIVES UNDER CRITICISM

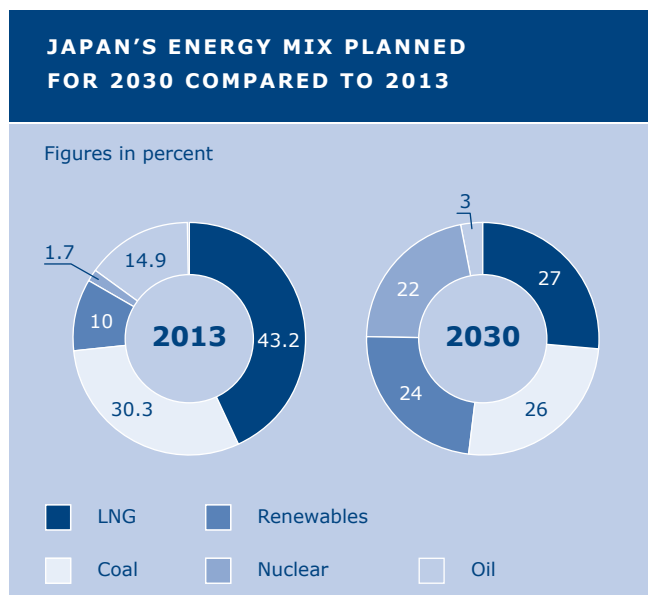
Shortly before the Paris Climate Change conference (COP21), the Japanese government announced the future targets it set for climate protection. The public response to the communication of Japan's Intended Nationally Determined Contribution (INDC) by the United Nations Framework Convention on Climate Change (UNFCCC) was muted. The Japanese government set the goal of achieving a 26 percent reduction of its global greenhouse gas emissions by fiscal year 2030, and an 80 percent reduction by 2050. The year 2013 serves as the base year. Japan had very high CO₂ emissions in 2013. The numbers get relativized accordingly when one correlates them with the international reference year 1990. Even then this would correspond to only a reduction by approximately 16 percent by the year 2030, and by 2050, it is only around 25 percent.

Some members of the international community criticised Japan's INDC as being disappointing. It represents a setback in the Japanese climate policy and is not in accordance

with the Copenhagen Climate Change Conference (COP15). On account of the low INDC, the Climate Action Network Europe and Germanwatch have placed Japan for the year of 2017 at 60 in a list of 61 in their annual publication "Climate Change Performance Index". Only Saudi Arabia has been valued lower than Japan.

ENERGY SECURITY AS THE DOMINANT FACTOR

Even six years after Fukushima the Japanese climate policy is still influenced by the consequences of the triple-disaster that struck the land. An energy deficit of 30 percent arose as a result of shutting down the nuclear power plants. In order to fill this gap the Japanese government had to switch to managing its energy requirements by importing fossil fuel. The dependence on gas, coal and oil which covered approximately 90 percent of Japan's energy consumption in 2013 lowered its self-sufficiency rate to 6.1 percent, which was around 20 percent in 2010.



Source: METI 2015

The deciding factor of the Japanese climate policy is security. Japan's energy strategy consists of three mainstays. First, energy security is to be achieved via a self-sufficiency rate of 25 percent, secondly, financial resources should be invested in the expansion of the power network as efficiently as possible. Both these steps would lead to more intensive utilisation of coal and atomic power, the two most cost-effective energy sources on the Japanese market. Furthermore, the Japanese energy deficit after the Tōhoku earthquake can be closed by reactivating the atomic plants. The expansion of the coal power plants as already announced by Shinzō Abe is a result of cost-benefit analysis. Thirdly, in order to reduce the CO₂ emissions, both renewable and atomic energy shall be used. In addition, technical innovations must make the use of gas and coal energy more environment-friendly. Altogether, the Japanese government expects economical, ecological and energy security.

A SLOW SHIFT IN CLIMATE FINANCE

In order to mitigate the consequences of climate change, the Japanese government plans undertaking comprehensive measures with respect to climate finance. Part of the Japanese strategy is to promote financing from the private sector (PCF). Under the heading "Cool Earth 2.0" (ACE2.0), the Japanese government intends to spend at least 1.3 trillion yen yearly from 2020 onwards as part of the global climate finance. The funds for the aid shall be composed of both, public funds and private investments. It is planned to attract private sponsors in future for the greater part of the climate finance. The past shows a large state-coordinated climate financing. A stronger involvement of the private sector is intended. Official Development Assistance (ODA) forms the central pillar of Japan's climate policy. Independent private sector climate finance is not the norm.

In Japan, there is a very broad understanding of climate finance. Climate finance encompasses the sum total of all funds which have the objective of reducing greenhouse gas emissions. This includes not only the promotion of renewable energy resources or providing support for measures connected to raising awareness for climate protection but also investments in technological innovations of fossil energy resources (e.g. Carbon Capture and Storage, CCS). Technological innovations are an integral part of the debate on climate protection and are promoted in accordance with it. In the recent past, there has been criticism by NGOs against Japan's handling of the debate on climate change.

Japan's climate finance is composed of the publicly financed ODA, OOF (Other Official Flows) and the private investments. Besides these, Public Private Partnerships (PPP) are assuming an ever greater importance. Public institutions like JBIC Japan Bank for International Cooperation (JBIC) and Nippon Export and Investment Insurance (NEXI) provide support to Japanese companies in their investments, thus promoting PCF. In this

sense, PPP-projects are key components in the promotion of PCF. The ODA-programmes are coordinated by the Japan International Cooperation Agency (JICA).

TECHNICAL INNOVATIONS FORM THE CORE

On 18 April 2016, the Ministry of Economy, Trade and Industry (METI) put forth an energy strategy under the heading NESTI 2050 as a reaction to the Paris Agreement. At a first glance, it is difficult to distinguish it from the previous strategy. The three mainstays of the climate policy are still energy reduction, energy storage and the development of renewable energy resources. However, in detail it can be seen that the renewable energy resources are assigned a more central role in comparison to the previous plans, in particular geothermal energy and photovoltaic plants. The central idea of the Japanese climate policy is however still the reduction of greenhouse gas emissions by means of technical innovations. A reason for the strong focus of the Japanese government on the expansion of climate-friendly technologies and better energy storage is that the targeted energy mix for 2030 was fixed even before the INDC. The energy mix has to be met on all accounts.

For the purpose of promoting technical innovations, the Japanese government initiated various programmes. Japan organises important forums like “Innovation for Cool Earth Forum” (ICEF) and “Clean Energy Ministerial” (CEM) to promote technical innovations. Traditionally, a high level of importance is attached to RD&D (Research, Development and Demonstration) in Japan. With respect to RD&D investments, Japan held third place behind the USA and China in 2014. The highest share was invested in nuclear energy (2014: 47 percent), renewable energy resources received only 21 percent, fossil energy resources approximately twelve percent. 15 percent of the funds was invested in the development of energy efficiency.

PRIVATE CLIMATE FINANCE THROUGH NEW INSTRUMENTS?

An action plan that has been under discussion for a long time is the establishment of a national emissions trading system. The one that is already in use in the metropolitan region of Tokyo could serve as a model. Tokyo has provided a model since 2010 as to how an effective strategy regarding climate change may look like in Japan. Intelligent and realistic goals were set with respect to the CO₂ emissions which give the industry stimulation to reduce greenhouse gas emissions. With this, Japan’s first emissions trading system was introduced.

Formulations for “green finance” are not uncommon in Japan even when they take place within a manageable context. The finance industry is making efforts to stimulate investment in sustainable projects. This is to be achieved by means of financing plans from banks for the borrower. Investments in renewable energy resources were limited on account of poor tariffs but could become more attractive in the near future through government measures. It is a medium-term objective of the Japanese government to make regional investments in sustainable projects more attractive for the local industry.

JAPAN’S CLIMATE FINANCE WORLDWIDE

At the G20 summit of 2014, Japan announced contributions to the Green Climate Fund (GCF). With 1.5 billion US dollars, Japan is one of the largest donors. The fund is the most important category for Japan’s climate finance. The largest share of the Japanese climate finance flows into the GCF. In 2013, the Ministry of the Environment (MOE) started the Green Finance Organization, an institution which was to promote private climate finance. 78 million US dollars has been mobilised through this path since the fiscal year 2013.

The latest ODA projects are located in Africa. At the Sixth Tokyo International Conference on African Development (TICAD VI), support for a photovoltaic plant in Egypt and a geothermal plant in Kenya were approved, as was an additional 1.8 billion US dollars towards activities for climate protection projects. The projects which have been announced are to be financed largely as PPP projects. The main objective is however to encourage Japanese private investments in Africa and thus forming a basis for future climate programmes, e. g. through human resource development. At least 1,000 persons are to be specially trained and sensitized to bring about a sustainable development on the African continent.

In addition, Japan announced at the COP22 that it would be participating intensively in the Nationally Determined Contributions (NDC) partnerships because they are absolutely necessary for it to achieve the targets of the Paris Agreement. The cooperation with international organisations is to be continuously intensified over the next few years.

JAPAN WAVERS

In conclusion, it may be said that Japan has provided many ideas regarding promoting PCF. Most of it however was concluded after the COP15; on the other hand, COP21 could not exercise an equivalent stimulus on the Japanese climate policy.

Non-transparent communication on part of the ministries did not allow for an in-depth assessment of the actual extent of PCF. Characteristic is also the strong state control over the PCF. The private investments flow almost exclusively into projects which are at least partly supported by the Japanese government. The competence distribution in the Japanese climate policy between METI, MOE and Ministry of Foreign Affairs (MOFA) is responsible for it. It is also noticeable that significantly more projects for offsetting the consequences of climate change

(mitigations) are supported, but almost none for adaptation to the consequences of climate change (adaption).

In the past, Japan had used the platforms of the G20 and G7 summits to present its climate goals to the global community. In 2014, at the G20 Summit in Brisbane, Prime Minister Abe announced Japan's investments in the GCF. Since then, Japan has become suspiciously silent at the summits when dealing with matters concerning formulating definitive climate goals. The Japanese government just nods in acquiescence to the outcome of the negotiations without however taking the initiative to present new measures against climate change. It remains to be seen what measures the Japanese government still wants to keep open for itself after the G20 Summit in Hamburg.

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In 2015, Mexico was able to mobilise 2.3 billion US dollars for climate projects. However, only 32 percent of this sum came from Mexico itself. The bulk of the money came from multilateral sources such as the World Bank, bilateral cooperation agreements and other international financing mechanisms. These figures show that Mexico's efforts to reach its ambitious climate protection targets by 2030 are, to date, by no means sufficient. In addition to the optimisation of existing financing instruments and the implementation of planned tools, a massive mobilisation of private capital is needed above all.



Mexico is, together with Chile, Brazil and Argentina, the spearhead of solar energy in Latin America. Source: © renacal1, iStockPhoto

MEXICO

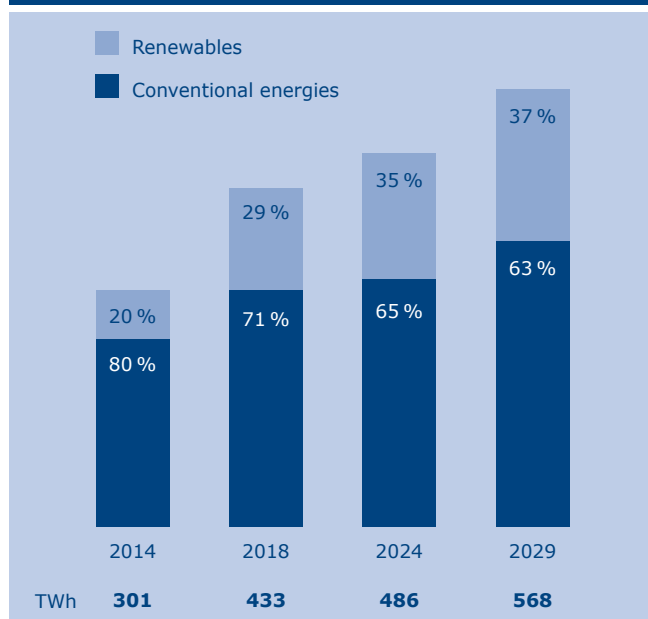
INTERNATIONAL CLIMATE PROTECTION COMMITMENTS

When it comes to proactively taking part in international climate protection efforts, Mexico is the flagship emerging market par excellence. Not only was it the first non-Annex-I country to join the ambitious reduction targets for 2050 voluntarily, but also in the run-up to the COP21 in Paris, Mexico attracted a lot of attention by presenting its Intended Nationally Determined Contribution (INDC) punctually and with an unexpectedly ambitious contribution: by 2030, the country would independently cut its greenhouse gas emissions by 22 percent against a business-as-usual scenario, without the support of the international climate protection regime. Should the Paris agreement lead to a more intensive multilateral climate protection cooperation, especially in the form of increased technology transfer and additional international financing, Mexico could even commit itself to an increased reduction target of 36 percent.

This means that the sectors with the highest share of CO₂ emissions in Mexico will face drastic adjustments. A government document on the subject, for example, states that Mexican industry, together with the energy sector, will use 43 percent of its electricity from “clean” sources of energy by 2030 and will have to increasingly include pollution-reducing technologies. In the transportation sector, among others, stricter environmental regulations and requirements for vehicles and industrial plants will be necessary. The expansion of the public transportation system and the advancement of investing in electricity-powered vehicles are also important. In addition, in the building construction sector, the construction of sustainable and energy-efficient buildings is to be promoted. At the same time, the INDC, with the involvement of the forestry sector, supports a rigorous deforestation stop.

For the Mexican government, it is also necessary to embed its commitment to combating climate change at a national level in a legal framework and to establish a broad set of instruments for the mobilisation of public, international and private funding.

PLANNED DEVELOPMENT OF MEXICO'S POWER GENERATION FROM RENEWABLE AND CONVENTIONAL ENERGY SOURCES



Source: *El Economista*

LEGAL ANCHORING OF THE INDC

Over the past decade, Mexico has made considerable progress in regard to its climate protection policy. The most important milestone in Mexican climate policy is the 2012 General Climate Act. It includes general climate objectives, strategies and plans aimed at reducing the country's greenhouse gas emissions by 50 percent by 2050 compared to the year of 2000. In addition, the "clean" energies (nuclear energy and gas are both encompassed in this definition of the Mexican climate protection legislation) should contribute at least

35 percent to electricity generation by 2024. On this basis, the national climate strategy 10-20-40 was adopted in June 2013, which is a sort of a route planner with concrete measures for the next ten, twenty and forty years. In addition, the so-called "Climate Change Special Programme 2014-2018" went into effect in 2014, with 23 measures to reduce CO₂ emissions by more than 80 million tons compared with the business-as-usual scenario.

In addition to these main instruments of Mexican climate policy, countless structural reforms also underpin climate protection policies in the energy sector. In this context, the climate change law, which is aimed at regulating the sustainable use of energy and the reducing of CO₂ emissions in the electricity sector, is of particular significance. The National Renewable Energy Programme of 2015 is linked to the above-mentioned special programme and sets clear expansion targets for renewable energies.

INSTRUMENTS OF CLIMATE FINANCING

With regard to the provision of financial mechanisms to reduce CO₂ emissions, Mexico has caught up over recent years. This is also necessary if it wants to achieve its ambitious (unconditional) climate protection targets. According to estimates, the Mexican state will have to spend between 160 and 170 billion US dollars on this by 2030.

However, the implementation is still very cumbersome. The best example for this is the Mexican Climate Fund. It was set up in 2013 to pool all the funds made available by the government, the private sector and international donors for climate protection, and to distribute them among the various mitigation and adaptation programmes and measures. By 2016, however, the fund had received no contributions due to the lack of statutory regulations and coordination. A reform of the General Climate Act, which is currently being discussed, should provide a remedy.

Still, with clearer regulations, small-volume emission reduction measures were supported with 1.35 million US dollars.

In addition to the Climate Fund, there is yet another national fund which could, however, spend significantly less money. The “Fund for Energy Exchange and Sustainable Energy Use” (FOTEASE) was able to implement 39 projects within six years, with a total budget of almost 9.1 million Mexican pesos (approx. 700,000 US dollars).

In addition, a carbon tax was introduced in 2014. This is intended to make large companies and consumers pay a higher price for fossil fuels and encourage a more economical use of non-renewable energy resources. The income resulting from this tax collection is to be used for concrete measures of (emission) reduction and the expansion of utilising renewable energies. However, compared with other countries, which also levied a tax burden on the use of fossil fuels, their implementation in Mexico has not produced the anticipated results. This can be attributed mainly to the very low tax rate set by the Mexican Treasury under the last tax reform. While the global average rate for such a fee is 20 to 30 US dollars per ton of CO₂, it is only five US dollars in Mexico. This means that only three percent of the fuel price is taxed, which equals an extra charge between five and 15 cents per litre of gasoline, diesel, heating oil, etc. Consequently, most companies prefer to pay this small extra charge instead of spending large investments on the more environmentally friendly and resource-saving conversion of their industrial facilities. A further weak point is that natural gas is excluded from this allocation because, according to the national climate protection legislation, it falls under the category of “clean” energy. The fact that from 2014 to 2015 the tax revenues decreased by a significant amount has a lot to do with this. Mexico’s natural gas-based power-generation has been growing during these years, in contrast to its power-generation based on petroleum. While in 2014 nearly 520 million US dollars flowed into the Federal coffers through this tax, in

2015 the amount decreased to only 410 million US dollars. It is also critical that so far, neither the purpose of the total tax revenue, nor the appropriate measures have been identified for which the funds could be used.

Another financial tool that the Mexican government wants to establish by 2018 is a renewable energy certification scheme. In this model of quotas, the state determines the ratio of renewable energies within the total energy consumption of the country and mandates electricity producers and suppliers to cover a certain (over time increasing) part of their electricity production or supply from renewable energy sources. The operators of renewable energy plants receive certificates for their electricity production, which they can also sell to other stakeholders in the energy market. Also worth mentioning is an emissions-trading pilot project with which the government is preparing the private sector for a planned, compulsory national emissions-trading starting in 2018.

Lastly, Mexico’s government has also set the framework for the development of green bonds. By 2016, the National Development Bank of Mexico, *Nacional Financiera* (NAFIN), was able to issue bonds totalling 500 million US dollars. The capital of Mexico participated with 50 million. In 2018, the issuance of a “green” bond worth US six billion US dollars is expected for the construction of the new international airport.

PARTICIPATION OF THE PRIVATE SECTOR IN CLIMATE PROTECTION

The Mexican energy sector can refer to a significant financial contribution from private companies in regard to climate protection. The energy reform of 2013 made this possible. It opened the Mexican energy sector for foreign investors and liberalised the national electricity market in particular. Articles 25, 27 and 28 of the reform provide that companies in Mexico are allowed to produce and sell electricity. The previously firmly established

monopoly of the Federal Electricity Commission (CFE) was thus dissolved and replaced by a freer wholesale market. At the same time, the reform creates incentives for the expansion of renewable energies: by 2050, 50 percent of electricity is to be generated by renewable sources of energy. Private companies wishing to participate in the Mexican electricity market may be required to produce or purchase their electricity from renewable energy sources. By means of state-regulated tenders and the subsequent auction of greenhouse gas certificates, the government has granted numerous concessions for foreign companies over the last two years. In the first power auction for renewable energies, 75 percent of the assigned electricity supply was solar power and 25 percent wind power projects. At the second power auction, 16 solar projects have been signed. By 2019, 34 companies will have invested 6.6 billion US dollars in renewable energy.

The other sectors, particularly the transportation sector, which should make a major contribution to climate protection due to their high emission quotas, have not yet managed to secure significant private financial resources. There is a lack of a secure legal framework and clear policy goals that would encourage potentially interested companies to inject significant financial means into emission-reducing projects.

State programmes designed to support sustainable energy projects or issue eco-loans for small and medium-sized enterprises are trying to increase the involvement of the private sector. How effective these programmes are, however, cannot be determined precisely because of the lack of instruments to ascertain transparency. This tackles a very fundamental problem with regard to the financing of climate protection projects in Mexico. Representatives from the public and private sectors agree that in order to fulfil the emissions reduction commitments it is important to make the actual effects of the numerous measures visible and to quantify them. This would create more confidence in Mexico's climate policy and also

have the advantage, in the event there are negative results, to implement counter-measures. Additionally, a recurring argument by representatives of the private sector in the debate on the mobilisation of private climate finance is the need to promote a clear legal framework. Particular attention should be paid to the definition of ownership rights and to tax incentives.

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In Russia, interest in the issue of CO₂ emissions grew between 2010 and 2012 when Russian businesses were given the opportunity to invest in reducing emissions as part of the Joint Implementation set out in the Kyoto Protocol. But unlike many developed nations where the private sector is becoming increasingly actively involved in solutions to protect the climate and reduce greenhouse gas emissions, Russia's private sector sees these matters as merely ancillary.



A wind farm in Zelenogradsk. Source: © vvicca, AdobeStock

RUSSIA

JOINT IMPLEMENTATION AS AN INCENTIVE

The most popular areas of investment were the disposal of associated gas and the reduction of gases with intense greenhouse gas effects. Russia was second only to Ukraine in the number of emission reduction units achieved as part of the Joint Implementation (JI). There could have been more projects if the process for registering and executing the JI in Russia had been quicker and less complicated for potential investors.

While JI projects have helped reduce emissions, this contribution should not be overestimated. It is very likely that many of the registered projects would have gone ahead even without climate financing. It is believed some companies probably "inflated" emission values on purpose to show greater reductions in the project results.

During the second period of the Kyoto Protocol from 2013 onwards, Russia no longer participated in the JI through quantitative obligations. Unlike the Kyoto Protocol, the Paris

Climate Agreement does not include any quantitative obligations for countries as the basis for JI projects. There is, however, the option of selling the reduction units to foreign partners on voluntary carbon markets, though very few companies across the country have experience in this.

PASSIVE CLIMATE POLICY IMPEDES ENTREPRENEURIAL COMMITMENT

Most entrepreneurs do not take measures to reduce greenhouse gas emissions, nor do they determine the volume of their own emissions. There are two main reasons for this:

The first reason revolves around the habit of seeing environmental awareness as the opposite of economic productivity. The conflict between profit and environmental protection is, however, artificial, insofar as it primarily reflects the conflict between many businesses' short-term and long-term interests. The weak institutions in Russia are creating a great degree of uncertainty and reducing the planning horizon, meaning short-term interests are inevitably given preference

over long-term ones. This is particularly true during recessions and political tensions, due to the confrontation with Western nations.

The second reason is that of a completely passive state climate policy. In recent decades, Russia has become a leader in absolute emission reduction. In 2015, this was at 29.6 percent of the 1990 level. But it was not the result of any special measures; it was the product of a transition economy crisis and subsequent economic restructuring. This enabled Russia to vastly exceed its obligations from the Kyoto Protocol (which consisted of not exceeding the 1990 emission levels), and took away Moscow's incentive to drive the economy in a green direction.

It was not until 2013 that a target for reducing greenhouse gas emissions was legislatively established in Russia. According to the president's decree, emissions are not to exceed 75 percent of the 1990 level by 2020. This target is not just a way of increasing emissions compared to the present-day levels; given the current economic recession, it also means it practically cannot be exceeded. Yet as part of its Intended Nationally Determined Contribution, submitted during preparations for the Paris Agreement, Russia once again endorsed a weaker target – 70 to 75 percent of the 1990 emissions –, albeit “on condition forest absorption capacity is taken into account as much as possible” (INDC of Russia, 2015). It is highly likely that this target will be achieved without any additional effort.

Russia has not yet ratified the Paris Agreement, and probably will not do so before 2019. An action plan for ratification has, however, already been prepared and is set to include a point regarding the drafting of a law on state emission regulation. This plan is due to be completed by 2019 and a regulation model proposed by the end of 2017. From this point onwards, major companies will have to start reporting annually on their emissions. Preliminary discussions have repeatedly touched on the possibility of using market mechanisms in Russia (carbon

tax or emissions trading scheme). Taking into account the fact that the only targets to be officially set can be executed without additional measures – both for 2020 and for 2030 –, it is difficult to imagine such a mechanism at present.

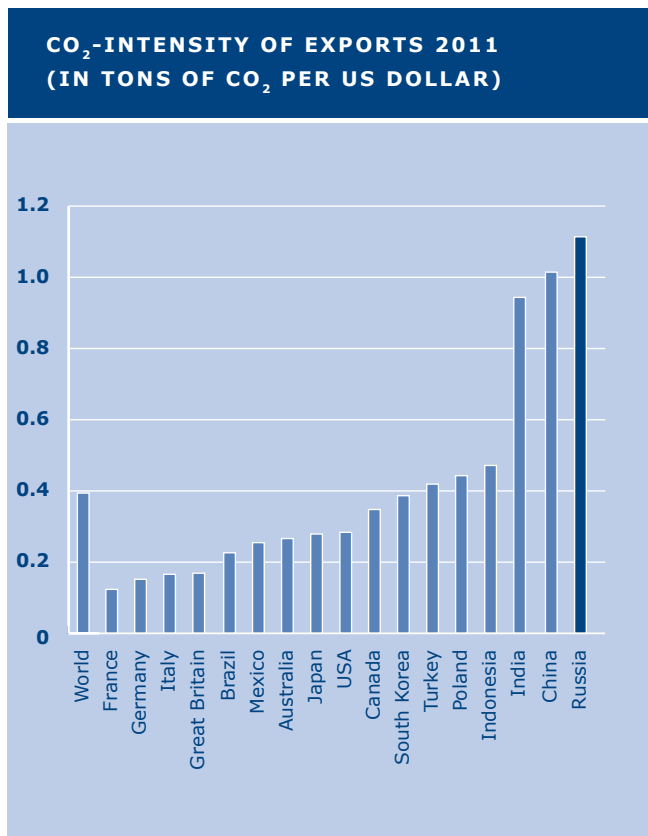
INITIATIVES OF THE PRIVATE SECTOR

Despite the high level of uncertainty and passive state climate policy, debates over the issue of private climate financing have somewhat intensified in recent years, especially after the conclusion of the Paris Agreement in December 2015. Oleg Deripaska, owner of Rusal, the country's largest aluminium company, played a key role in promoting the climate agenda in Russia. Together with leading Russian banks and insurance companies, as well as some other major businesses, Rusal founded the Russian Partnership for Climate Protection. Most of the members have a commercial interest in developing the climate agenda. Rusal, for example, believes using the clean hydroelectric power from Siberia and the Far East gives it an advantage over Chinese competitors, who use coal. The members of this partnership are currently the biggest supporters of the notion of introducing a carbon regulation system in Russia as quickly as possible.

Such initiatives can hardly be seen as adequately prepared, and it is not surprising that they have met with resistance from another section of the economy. Those opposing carbon regulation, including coal and steel companies, have criticised such initiatives and even warn that ratifying the Paris Agreement will threaten the Russian energy sector and thus the entire economy.

INTERNATIONAL MARKETS AS A DRIVING FORCE

Private climate financing in Russia will probably expand gradually over the next few years. If companies in leading nations take note of the emissions in the various stages of the value chain, they will be forced to be more exacting with their partners.



Source: author's compilation, data resources: UNFCCC, WIOD (The World Input-output Database)

In recent years, Russian businesses have been increasingly receiving requests from their foreign customers and investors to disclose information on their GHG emissions. In response to this trend, around ten Russian businesses participate annually in the Carbon Disclosure Project (CDP), which seeks to rank companies in the area of climate reporting. This not only includes the traditional, pro-conservation ArchangelskyTSBK, but also giant firms such as Gazprom, Novatek and Lukoil.

It won't just be the disclosure of information on emissions that gradually becomes a criterion for partners as the basis for deciding on future co-operations. The volume of emissions as such will also be increasingly assessed as a benchmark for potential partnerships. Prospective business partners similarly assess the current pollution level, and use this as a factor in their decision-making.

Coupled with this are the numerous rankings of companies in terms of CO₂ emissions, which present all necessary information on emissions in systematic and comparative form. Moreover, throughout the world, thousands of investment funds, pension funds, businesses and private investors are joining the carbon divestment initiative, pulling their investments out of fossil-fuel companies.

We may also start seeing the gradual introduction of border carbon adjustment, particularly for countries which have no state regulations on greenhouse gas emissions and thus practice "environmental dumping". Russian businesses would be particularly affected if these sorts of mechanisms were to take effect.

INTERNATIONAL CLIMATE PROTECTION PROJECTS AS A CATALYST?

International economic partnerships may be one of the major driving forces behind the climate-financing developments in Russia. The high potential for emissions reduction on the Russian market may be attractive for international organisations or private companies looking to finance green projects. In addition to the unfavourable investment climate, the sanctions and crisis in the relations between Russia and the West are also playing a negative role. A number of international organisations, including the Global Environment Facility, International Financial Corporation and European Bank for Reconstruction and Development, have stopped financing green projects in Russia.

Unless these confrontations are settled and the financial sanctions removed, it will be difficult for Russia to capitalise on international partnership opportunities to develop private climate financing. The G20, for example, is currently disregarded by the Russian political elite and Russian climate experts. The Arctic Council, on the other hand, offers more hope, giving priority to addressing climate policy. The supporting of green projects in Russia as part of BRICS appears more promising over the short and medium term because the New Development Bank is treating this as one of the key focuses of its work.

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The Gulf States were opposed to international climate protection agreements for a long time. Their economic and political dependency on oil and gas was simply too great. In recent years, however, a paradigm shift has taken place. Following the lead of other Gulf States, Saudi Arabia is now also arriving at a more progressive climate protection policy.



A field of solar panels at the King Abdulaziz City of Sciences and Technology. Source: © Fahad Shadeed, AdobeStock

SAUDI ARABIA

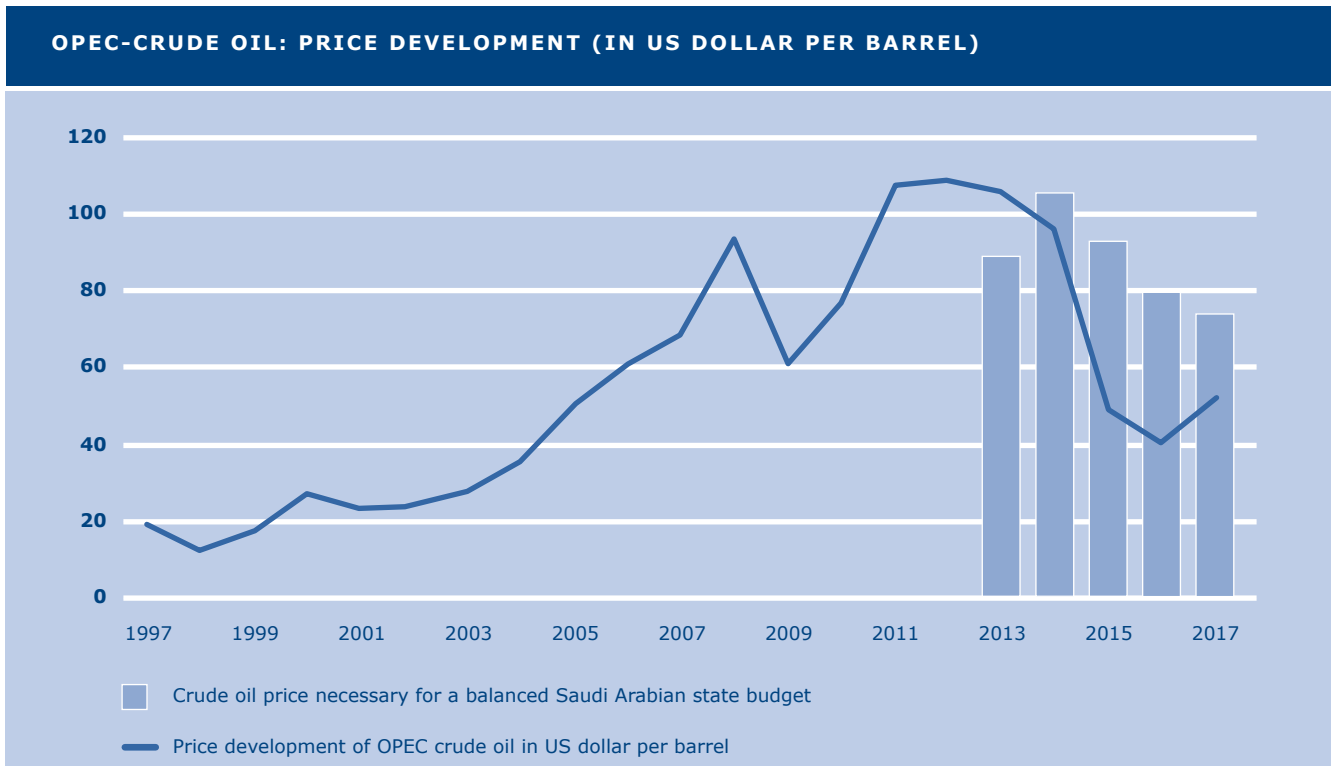
THE TRANSFORMATION OF SAUDI CLIMATE POLICY

Second only to Venezuela, Saudi Arabia has the world's second largest proven oil reserves and is also the largest crude oil exporter in the world, accounting for 17 percent of the world market. Revenues from the oil business are the dominant factor in the economic legitimization of the Saudi ruling house, since a large portion of the revenue is used to alimnt the population. 80 percent of the workforce is employed in well-paid public service jobs. The Saudi state also provides its citizens with free education and free access to health care. Furthermore, water, electricity, gasoline and housing prices remain well below world market prices. The strategic importance of fossil resources has therefore always been too great for a Saudi commitment to binding climate protection goals.

In recent years, a rethink has emerged. During the UN Climate Change Conference in Doha in 2012, Qatar, the United Arab Emirates (UAE) and Saudi Arabia made a fundamental compromise on binding emission targets for the first time. At the climate conference held in Paris in December 2015, the Gulf

monarchies were unanimously in favour of a follow-up agreement to the Kyoto Protocol. Even though the self-imposed emission targets of Saudi Arabia in particular remain rather vague and even subject to certain minimum incomes from oil and gas exports, their motion gave fresh life to international climate protection negotiations. Saudi Arabia ratified the Paris Agreement at the beginning of November 2016, and publicly spoke in favour of the treaty again two weeks later. Above all, this is an important foreign and domestic policy signal that the largest Gulf State, Saudi Arabia, is now on a progressive course of reform in the field of international climate protection policy.

The reason for this paradigm shift is primarily the foreseeable end of the pure rentier state system in Saudi Arabia. At present, 90 percent of overall export revenue is generated by the sale of crude oil or oil-based products. In the next few decades, the Kingdom will probably face economic challenges of unprecedented proportions resulting from the progressive extinction of fossil sources of energy, the dependence on the level of the oil price, and domestic political tensions, first and foremost the high youth unemployment rate.



Source: OPEC 2017, IMF 2016

In Saudi Arabia, climate change and its consequences have been particularly noticeable in recent years. Summer temperatures are breaking records just about every year. Precipitation is declining further. Some studies already argue that climate change will soon lead to temperatures that pose an acute health risk even for young and healthy people. Since fresh water sources are increasingly drying out, water requirements are now nearly entirely met by the energy-intensive desalination of seawater. The decade-long settlement of petrochemical and metal-processing industries with extremely energy-intensive processes continues to drive up

consumption. Today, the per capita electricity consumption in Saudi Arabia is already twice as high as in Germany. As a consequence, around a quarter of the total Saudi oil production is diverted for energy production. However, the oil and gas used for domestic electricity production could be profitably sold on the world markets.

The demographic development in Saudi Arabia will probably exacerbate the situation. Recent estimates suggest that the population will grow by about 30 percent over the next 20 years. According to recent estimates, climate change and

population growth will lead to a doubling of electricity consumption in Saudi Arabia within the next ten years.

SAUDI ARABIA RELYING ON RENEWABLE ENERGY

Like the other Gulf States, Saudi Arabia has recognized the signs of the times. Saudi Arabia is increasingly investing in alternative energy sources to ensure energy and supply security over the coming decades. Saudi Arabia has been pursuing the construction of a civilian nuclear programme for several years. Several cooperation and research agreements were concluded with leading exporters of nuclear technology. Already in 2010, the Kingdom created the infrastructure for the intended energy transition with the King Abdullah City for Atomic and Renewable Energy. According to the plan, around 15 percent of the country's total energy needs are to be covered by nuclear power by 2040.

With delays, Saudi Arabia has also begun investing in the development of renewable energies. Vice-Crown Prince Mohammad bin Salman Al Saud presented the "Saudi Vision 2030" in April 2016. An important goal of this vision is the ability to cover the majority of the Saudi energy requirement with solar power by the end of the next decade. The expansion of the photovoltaic sector is also intended to stimulate the domestic export economy to escape from dependence on the volatile oil and gas business. In this respect, investment in green technologies and renewable energies is to ensure future energy and supply security, as well as providing important incentives to diversify the economy. The fact that such investments improve the national climate balance as well as international reputation is a welcome side effect. In terms of internal politics, a progressive environmental and climate policy underpins the claim for religious leadership of the Saudi royal house. In the "Saudi Vision 2030" it says: "By respecting our environment and natural resources, we fulfil our Islamic, human and moral duties".

OPPORTUNITIES FOR THE PRIVATE SECTOR

In restructuring the domestic economy, the royal house is also relying on the participation of the private sector. According to "Saudi Vision 2030", the contribution of private companies to the gross domestic product is to increase from currently 40 to 65 percent. For this purpose, predominantly state enterprises are to be privatised. Furthermore, the prerequisites for public-private partnerships and an improved investment climate for foreign investors are to be established. The approximately 700 German companies that are active in Saudi Arabia regard the "Saudi Vision 2030" as an opportunity to open up new business areas. They have recently set up a committee to accompany the planned economic reforms of the Kingdom.

In principle, Saudi Arabia offers good prerequisites for corporate investment in renewable energies. According to a study by the delegation of the German economy in Saudi Arabia, the country constitutes "a highly interesting market" due to attractive climatic and geographic location factors. The report indicates that both the necessary infrastructure and a well-educated workforce are present in the country. However, there is currently no adequate regulatory framework to guarantee the necessary legal certainty for capital-intensive investments in this sector. Furthermore, the overlapping competencies of government agencies provide for non-transparent structures and ambiguous responsibilities. For this reason, investment projects to the value of several billions by private-sector players have not yet gone beyond the pure planning stage. However, the biggest hindrance to investments is probably the state intervention on the energy markets. Given the immense oil and gas subsidies, alternative sources of energy are currently simply not competitive in Saudi Arabia.

The "Saudi Vision 2030" is also to address this aspect. Households and the private sector will have to pay more when it comes to the cost of energy and water supplies in future. The gradual dismantling of the Saudi subventions policy has already been

ushered in. In autumn 2015, for instance, the price of gasoline was raised by eight dollar cents compared to the beginning of the year, which constitutes a price increase of 40 percent. The same applies to electricity, water and gas. Since the production and opportunity costs are now increasingly borne by the actual consumers, the consumer behaviour of private households is also expected to adjust in the medium term, according to theory. This would permit alternative and energy-efficient technologies to become more competitive in Saudi Arabia in the next few years.

CONCLUSION

Climate protection and renewable energies are set to play an increasingly important role in Saudi Arabia over the next few years. The paradigm shift towards a more progressive climate and environmental protection policy has taken place. This raises the question of how Saudi Arabia and the other Gulf States are going to react should there be a further oil price shock in the coming years. In fact, at that time the drop in oil price tore holes of such magnitude into the state budget that they could only be offset using the international currency reserves. Such liquidity issues may mean that large-scale investments in new technologies, which are usually only profitable in the long term, may become unattractive. Particularly since the new reform course, which provides for less state intervention in the various goods and labour markets, has not been received enthusiastically by all parts of the population. The comforts of the past few decades have simply been too great for a price shock to trigger a journey into the unknown. Saudi Arabia still appears to have sufficient financial resources to withstand a further oil price decline. The (partial) privatisation of the state oil production company Saudi Aramco, the world's largest oil company, is expected to flush several billion US dollars into the state coffers. This should suffice to warrant freedom of action, at least in the short term. However, will these ultimately limited buffers suffice to make the ambitious "Saudi Vision 2030" a reality one day?

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South Africa is fossil fuel dependent with approximately 90 percent of its energy derived from coal. Per capita, it is in the top 15 carbon emitters in the world. South Africa's climate change response policy frameworks include a commitment to reduce its greenhouse gas emissions to below business-as-usual by 34 percent by 2020, and 42 percent by 2025. In order to achieve these commitments, additional financial investments – from both public and private sources – are required.



A solar plant in Karoo. Source: © Douwdejager, iStockPhoto

SOUTH AFRICA

CLIMATE FINANCE AS BASIS FOR SOUTH AFRICA'S CONTRIBUTION FOR CLIMATE PROTECTION

Within its Nationally Determined Contribution (NDC), South Africa states that the implementation of its commitments is subject to, and conditional on, finance, the transfer of technology, and capacity building from domestic, private and international sources; particularly for its national Green Fund, with an allocated 110 million US dollars in the period 2011 to 2013. The NDC furthermore enumerates its climate-related expenditure to date, and lays out a roadmap of proposed activities with the indicative scales of finance required to achieve these activities. The programmes identified for investment include: the expansion of existing public works programmes (Working for Water, Fire, Wetlands); Water Conservation and Demand Management; the expansion of its Renewable Energy Independent Power Producer Procurement Programme (REI4P); and the roll-out of electric vehicles.

South Africa's NDC clearly emphasises the need for climate finance to support adaptation over mitigation measures, and it

strongly endorses the narrative that investing in climate adaptation represents opportunities to reduce poverty and inequality while simultaneously addressing other socio-economic development challenges such as job creation.

THE PRIVATE SECTOR CLIMATE FINANCE LANDSCAPE IN SOUTH AFRICA

South Africa possesses a developed and well-regulated financial sector. Its financial community, including banks, insurers, asset managers, venture capital, private equity and hedge funds, has actively participated in low-carbon project development. The expansion of new climate-related technologies, associated with positive risk/return profiles, coupled with the introduction of incentives and governmental support schemes, has paved the way for commercial investment opportunities. Private banks, including Standard Bank, ABSA and Nedbank, have all provided debt financing on a project basis to companies awarded Preferred Bidder status under the REI4P. Financial backing from these renowned banks signalled trustworthiness to installers and commercial investors, giving companies and their partner's financial security.

The finance community has mobilised both well-established and new primary capital market products to target low-carbon, climate-resilient investments. This includes project finance, corporate and project bonds, commercial lending, equity finance, and consumer finance. These have further been supplemented by new products, including the use of green bonds, carbon foot-printing and internal carbon pricing. Outside of the banking sector, public-private partnerships provide a route for institutional investment in renewable energies (RE).

In addition, a growing number of banks and investors are increasingly concerned about the climate responsibilities associated with company activities and investments. The most well-known initiative in this connection is the investor-led Carbon Disclosure Project (CDP). The South African-CDP, led by the National Business Initiative (NBI), promotes responsible investments in mitigation and adaptation. In 2014, over 80 percent of the 100 largest South African companies reported on their GHG emissions.

The public sector currently supports the development of sustainable projects through public procurement and catalyst projects in which government and international financial institutions act as public finance sponsors, providing start-up equity to mobilise larger amounts of private capital. South African Development Finance Institutions (DFIs), such as the Industrial Development Corporation (IDC) and the Development Bank of Southern Africa (DBSA), currently play an active role as development partners and financiers (granting loan facilities) in the REI4P. South Africa uses public funds to mobilise private sector investment and protect private-capital investors against risks of default. A number of financial tools are used in this context, leveraging either debt or equity via direct public financing or by providing public guarantees. Loan guarantees and policy risk insurance policies are the most prominent tools. Finally, international and corporate grant-providers are critical in consolidating financing packages for climate projects in South Africa.

PRIVATE INVESTMENT FOR MITIGATION AND ADAPTATION

The private sector's participation in the energy sector, and particularly in power generation, has been historically limited due to the dominance of the state-owned utility, Eskom. As part of the efforts to address energy supply and reduce emissions, the government introduced a National Energy Regulator of South Africa (NERSA), approved the Renewable Energy-Feed-in Tariff (REFIT) – in which a single buyer can purchase capped capacity amounts of RE at set prices from independent power producers, and launched the REI4P in August 2011. This is in line with South Africa's Integrated Resource Plan 2010 to 2030 and highlights the need for an increase in RE generation capacity in South Africa's energy mix. South Africa's utility scale RE sector is the most mature in the region and therefore offers a useful platform for investors seeking to venture into the rapidly growing regional market.

Since its establishment, the REI4P has procured over 6,300 megawatts in five bidding rounds and attracted high levels of private equity and debt investment. Some 192 billion rand (14.4 billion US dollars) has been invested into the programme's 92 projects. The lion's share of debt funding has come from commercial banks and pension and insurance funds, with the remainder coming from DFIs. For the first three bids, 86 percent of debt was raised internally, with the South African pension fund Old Mutual committing to finance 16 projects. The most common financing structure has been project finance although about a third of the projects used corporate financing arrangements.

Prices have fallen as the bidding mechanism has enabled REI4P to adjust to rapidly changing technology and development costs. The scheme has also delivered substantial socio-economic benefits, including the reduction of the national electricity supply constraint. Since 2012, the climate change benefit

**ASSET FINANCE OF RENEWABLE ENERGY
ASSETS BY COUNTRY, 2015 AND GROWTH
ON 2014 (IN BILLION US DOLLARS)**

	2015	Growth
Chile	3.4	141 %
Japan	3.8	-49 %
Mexico	3.9	109 %
South Africa	4.5	337 %
Germany	6.3	-46 %
Brazil	7.7	40 %
India	9.1	34 %
Great Britain	19.1	24 %
USA	24.4	31 %
China	95.7	18 %

Source: UNEP, Bloomberg New Energy Finance

of the operational RE generation capacity has amounted to 4.4 million tons of CO₂-equivalent (CO₂-e) reduction. Increasing requirements have also created more opportunities for investments in local manufacturing and assembly facilities. In terms of commercial viability, the IRP4 offers valuable lessons in the design of the rolling competitive bid window procurement programme structure, which established market confidence early on and attracted vibrant investor interest locally and from abroad. The programme also maintained a supportive investment environment with a clear pipeline in the roll-out of the procurement programme.

However, the continuity of the flagship RE programme is not without challenges, especially with the need for better alignment between generation and transmission planning and implementation, and inadequate funding available for investment in transmission and distribution infrastructure.

**GREEN ECONOMY INCENTIVES,
PRICING REFORM AND PENALTIES**

While a number of G20 countries, including India and Indonesia, have begun energy subsidy reform processes, South Africa's national commitments include a carbon tax, desired emissions reduction outcomes for sectors, company-level carbon budgets, and regulatory standards for specifically identified GHG. Initially due to come into effect on 1 January 2017, South Africa's carbon tax will be pegged at a marginal rate of 120 rand (approximately nine US dollars) per ton CO₂-e. This tax will be implemented with complementary measures, including reduction of the electricity levy. The emissions reporting will be in line with mandatory reporting requirements for GHG emissions.

Besides the proposed carbon tax, South Africa's green economy framework includes additional tax and fiscal stimuli, rebates, and standards in a variety of sectors. According to the KPMG Green Tax Index, South Africa ranks 13th out of 21 countries in its use of tax as an incentive to drive its green growth agenda (ahead of Australia, Singapore and Finland).

**REMOVING BARRIERS TO PRIVATE
SECTOR INVESTMENT**

Despite significant advances, South Africa is still at the beginning of the anticipated transition, and much greater levels of adaptation and mitigation finance are needed if it is to meet its national commitments. Slowly but surely, at least in leading financial institutions, climate change is becoming a mainstream driver of investment strategy. In any case, although South Africa is a nascent market, sophisticated tools for understanding risk and vulnerability exist (including South African weather services), and products such as sovereign risk pooling, micro-insurance, catastrophe bonds and index-based insurance are being developed.

Besides RE's, investment in other low-carbon technologies has been slow and there is a recognised need for increased investment in energy efficiency, renewable heat, smart grids, transport, and forestry.

At the policy level, an enabling investment environment requires governments to design and implement policies to encourage price competitiveness. Removing pricing distortions will contribute to a more level playing field and attract further private investment. Policy support measures can contribute to market transformation only if the regulatory framework is strict. These requirements are essential in emerging financial markets where risk is still high. In terms of South Africa's REI4P, more certainty is needed from the highest political level to instil confidence amongst investors. Good governance and transparency is a prerequisite, as well as political and economic stability. In this light it is laudable that the South African cabinet recently approved the International Arbitration Bill. The bill is expected to contribute to investors' confidence where disputes will be settled according to international best practice.

The South African finance community needs to expand its experience in adaptation finance and project implementation. This will include increasing knowledge of new services and technologies, and better understanding correlations between the risks and returns of associated assets. Those seeking capital and risk protection need to correctly gauge the market opportunities and efficiently structure their financing and investment strategies.

Keeping the global temperature increase below two degrees Celsius will require the scaling up of private sector climate investment for improved inclusive growth in South Africa. As the only African nation with a G20 seat, South Africa can also serve as a pathway for private sector climate finance into Africa.

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Private climate finance has gained momentum in Korea since 2010 when the country joined the competition to host the Green Climate Fund. Korea sees itself as a mediator, not only between developed and developing parties but also between the public and private sectors as regards their contributions to the 100 billion US dollars target by 2020. The public sector in Korea has not only led the discussion but also sought out initiatives to facilitate private climate finance.



In 2012, The Renewable Portfolio Standard replaced the feed-in tariff system in order to accelerate Korea's renewable energy deployment in a competitive market environment. Source: © sunhee, AdobeStock

SOUTH KOREA

KOREA AS HOST OF THE GREEN CLIMATE FUND

When Korea engaged in the competition to host the Green Climate Fund (GCF) in the Conference of Parties to the UNFCCC (COP), it strongly portrayed itself to the international community as a “middle power party” seeking to build bridges between developed and developing parties to the UNFCCC. As the first country to transform itself from recipient to donor country status in the OECD, Korea emphasised its experience as both a developing and developed country. For Korea, hosting the GCF meant more than just contributing to global cooperation for climate change. It was an opportunity for Korea to amplify its voice in the global climate talks, and especially in climate finance. This “middle power position” was further incorporated into its role of “facilitator” in the GCF to enhance the cooperation between developed and developing countries. Korea asserted that the role of facilitator would be essential for meeting the goal of 100 billion US dollars to be mobilised by 2020 as climate finance for developing countries within the framework of the PA.

After Korea was confirmed as the host of the GCF in 2012, it confronted a stark contradiction. First, it was widely agreed that public sector financial sources, such as governmental agencies, are not enough to meet the 100 billion US dollars target. One of the suggested solutions to this challenge was to invite private sector involvement in climate finance. However, private sector actors were considered more passive than the public sector which has led the discussions on climate finance. Therefore, Korea's task after hosting the GCF was to act as a mediator, not only between developed and developing parties but also between the public and private sectors as regards their contributions to the 100 billion US dollars target. This task was given further emphasis by the view of the Korean government that the success of the GCF was a prerequisite for fulfilling the expectations of the international community in the global climate talks.

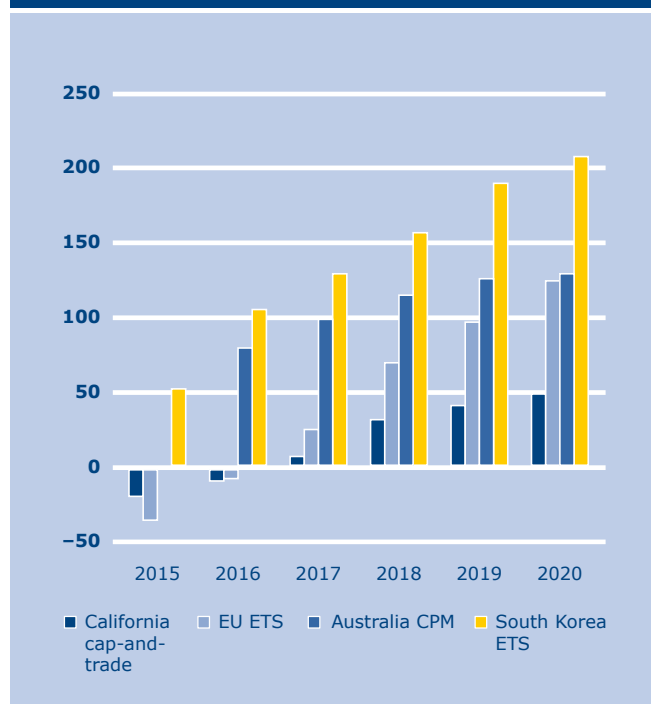
For these reasons, facilitating private climate finance meant not just one approach to climate change response, but instead a national-level strategy for Korea in climate change cooperation. Discussions of private climate finance in Korea are still led by governmental actors such as the Ministry of Strategy

and Finance (MOSF) or the Ministry of Foreign Affairs (MOFA). Both agencies have a powerful influence in climate change negotiations in that MOSF is an NDA (National Designated Authority) of Korea to the GCF, and MOFA acts as a control tower at the negotiation table. Participation from private actors was not absent. Private consulting firms such as KPMG Korea-Samjung assisted these governmental agencies from the hosting of the GCF to the provision of policy advice for

its utilisation. On the whole, governmental agencies still took the lead in discussions of private climate finance, while being supported by consulting firms.

With respect to the Conference of Parties, serving as the meeting of the Parties to the Paris Agreement (CMA), Korea pledged in its NDC (Nationally Determined Contributions) to reduce greenhouse gas emission by 37 percent from the business-as-usual (BAU) level by 2030, 11.3 percent of which will be reduced by using carbon credits from international market mechanisms. While it is not clearly stated what kind of private climate finance will be utilised to meet the reduction target, the Korean government encourages private actors to actively engage in projects abroad which reduce greenhouse gas emission, and to obtain carbon credits that are accredited by UNFCCC.

ESTIMATED ANNUAL DEMAND FOR ABATEMENT, COMPARISON BETWEEN DIFFERENT EMISSIONS TRADING SCHEMES (MILLION METRIC TONNES OF CO₂ EQUIVALENT)



Source: Bloomberg New Energy Finance

KOREA'S EFFORTS FOR PRIVATE CLIMATE FINANCE

Despite the concept of private climate finance, the public sector has hardly lost its prominence in its discussion in Korea. "For a long time, the misconception of a rivalry between public and private finance has inhibited progress in these discussions. Mobilising at-scale private finance requires bold public action, be it of a regulatory, legislative, and/or judicial nature. All public action, in turn, requires public investment and public finance." (UNEP, 2014)

Therefore, the leadership of public sector actors in the discussion should not be considered a sign of disparity between the two sectors. The public sector in Korea has not only led the discussion but also sought out initiatives to facilitate private climate finance. In 2015, Korea became the first country in Asia to initiate a national-level ETS, with 525 private entities participating. The Korea Emissions Trading Scheme (KETS) is designed to facilitate private climate finance by incentivising projects to reduce greenhouse gas emissions for participating

entities. In three periods, KETS aims to gradually increase the ambition of the national reduction target and to minimise the pressure on private actors in the transition to a low-carbon economy.

During the initiation period, private entities, mainly from the heavy industry sector, have however resisted the implementation of KETS, arguing that Korea as a non-Annex I Party bears no responsibility for the reduction of emissions. Industry sector actors also feared that meeting the expectations of the international community by setting a high national reduction target might impute heavy costs to them. Reflecting this resistance, the total trading unit in the first year (2015) was about 4.3 million CO₂-equivalents, accounting for less than one percent of the total allowances of that year.

To solve this conflict, the Korean government has come up with two solutions. First, considering the wide range of industrial sectors covered by KETS, its governing agency was changed from the Ministry of Environment (MOE) to the Prime Minister's Office (PMO) in 2016. It was considered that the PMO could more effectively strike a balance between different interests among industry sectors and governmental agencies. Second, KETS will gradually allow new sources to provide emission units to the market. Currently, emission units from international projects and voluntary projects by unaccredited entities (other than 525 entities) are not allowed to be traded in KETS. The Second Framework Plan of KETS plans to lift the ban on foreign units in 2018 and on those from new entities in 2020.

G20 AND PRIVATE CLIMATE FINANCE FROM A KOREAN PERSPECTIVE

Korea views the G20 as a useful platform for performing its "middle-power diplomacy", which is also the main strategy in climate change negotiations. For Korea, the nexus between climate change and the G20 is its promotion of "green growth"

as a new developmental paradigm for developing countries. Korea views this paradigm as a useful concept able to obtain support from both developed and developing countries in that it can meet the needs of developed countries (greenhouse gas emission) and developing countries (economic development) at the same time. It was not until the seventh session in 2012 in Mexico that climate change was one of the main thematic areas within the G20 because of the focus on rehabilitation of the global economy from the 2008 financial crisis and Eurozone crisis. In 2015 and 2016, when the G20 actively embraced climate change as its top priority with respect to COP21, Korea gained its voice to promote green growth in the G20.

In its response to the challenge it faces as the hosting country of the GCF, Korea derives all the more advantage from using the G20 to enhance its role as facilitator in climate finance. In 2012, Korea participated in the G20 Dialogue Platform on Inclusive Green Investment (G20 DPGI), which was tasked by the G20 Development Working Group (DWG). This initiative led to the launch of 'GreenInvest' in 2015, within the G20, which aims to facilitate cooperation between the public and private sectors in climate finance. The establishment of GreenInvest was mainly led by the Global Green Growth Institute (GGGI), which was incubated by Korea and is now run as an international organisation. Prioritisation of the green growth agenda in the G20 will continue to provide more scope for Korea to take advantage of the forum and to find valuable connections with its climate change diplomacy.

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The development in terms of climate policy in Turkey follows in various respects the international trends. Furthermore, the private sector makes a special contribution. Currently, it is still significantly supported by international financial resources. However, Turkey's public institutions have also started to intensify the development of climate-friendly legislation and stimulation systems in close cooperation with private actors in order to create financial bases for the change to a low-carbon economy.



In Turkey, the support for renewable energies is provided to a large extent by multilateral funds and development banks. Source: © 1001slide, iStockPhoto

TURKEY

PROBLEMS OF CLIMATE FINANCING

The Paris Agreement globally points to a rapid transition in the direction of low-carbon national economies. In order to ensure this fast and structural transformation, urgent political measures, programmes or projects for lowering the greenhouse gas emissions and the adaption to negative effects of the climate changes are required. These measures and actions that are financially supported from international, national, local, public and private sources can be summarized under the term Climate Finance. By looking at the details, it seems that the resources of the climate protection financings are far beyond actual need. The Global Economy Forum, for example, found out that investments in infrastructure, which are to be used in the developing countries, must be financed with 5.7 trillion US dollars yearly till 2020, so that these countries are "green" and are able to withstand the climate change.

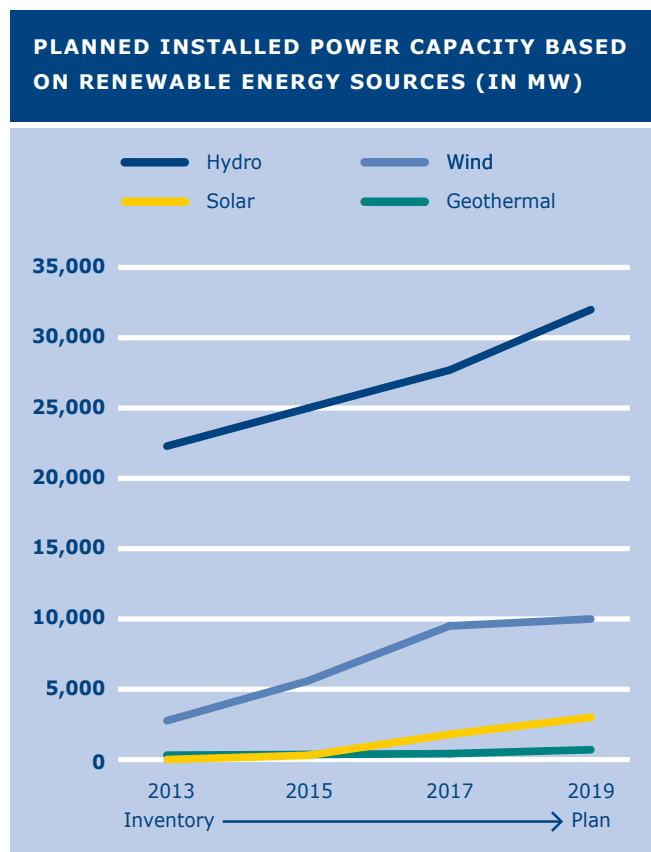
INTERNATIONAL CLIMATE FINANCING AND PRIVATE-SECTOR INITIATIVES

What is the status quo now in Turkey with regard to a new climate regime, and what status has been achieved in the financing of the private sector in Turkey? With its twelve years of belated partnership both at the UNFCCC (2004) and at Kyoto Protocol (2009), and up to the admission of the Paris Agreement, we may say that Turkey has practised follow-up politics and, due to its special conditions, has avoided taking on responsibility. Turkey as a founding member of the OECD, official candidate of the European Union and of the G20 economy, became on 24 May 2017 an official contract partner of the Paris Agreement, which represents the framework of the global battle against climate change. Due to its present position, Turkey is not able to benefit from the Green Climate Fund, which is the most important distribution mechanism of the climate financing structure. Its application for receiving climate financing is negotiated as open-ended. Despite its unclear position, we may say that the development of the climate policy at national and local level in Turkey shows parallels

to international trends. Recent works have shown that the development of climate protection legislation throughout the world has made rapid developments, especially after 2005. Based on these dynamics, which are the result of international negotiations, legislative efforts for harmonisation in the process of becoming a member of the European Union and the activities carried out by non-governmental actors, Turkey is forming its relevant politics and measures – although with

relative delay, but at a steady tempo – and evaluates different options for the development of capacities for the realisation of these measures.

In the course of the climate strategy and measures, Turkey already benefits from its own public resources and many different sources of climate finance. Turkey is a country which has access to a vast range of financing resources, especially to EU structural funds, bilateral and multilateral funds of development banks, the Global Environment Facility (GEF) and the Climate Investment Funds (CIF). The trade with CO₂ emissions certificates permits Turkey to join the optional carbon markets to a significant proportion, which can be seen as a financing of the private sector. It is estimated that in 2015 alone, an income of more than four million US dollars had been achieved in the voluntary market of the private sector in Turkey. The development of finance in terms of climate policy for Turkey for the year 2014 seems to have exceeded 2.4 billion US dollars. Turkey has received a funding of 301 million US dollars for 55 projects over GEF and has created co-financings of around 1.2 billion US dollars. The sum of support received in the frame of CIF was about 449 million US dollars, to which about 4.5 billion US dollars of co-finances have been created. The European Bank for Reconstruction and Development (EBRD) supports 230 projects in Turkey with around 9.5 billion euros, with 97 percent of the projects being private enterprises. To a high degree, this support has been invested in renewable energies, energy and resource efficiency, infrastructure and sustainability of the infrastructure as well as in the reform of the energy sector. Mechanisms, such as the Turkish Sustainable Energy Financing Facility (TurSEFF) and the Turkish Mid-size Sustainable Energy Financing Facility (MidSEFF), have created important financial resources to support the climate protection of the private sector. Offering this support through Turkish banks has increased stimulation for private actors and at the same time increased the capacity of the funding institutions.



Source: Ministry of Energy and Natural Resources, National Renewable Energy Action Plan

GREEN BONDS

A fast development of various financial instruments for climate protection can be observed in Turkey parallel to the international development. The interest in green bonds, which are securities and used on international bond markets as a means of financing the transition to a low-carbon economy, has increased and the first green bond of Turkey with 300 million US dollars has been issued. Some critical steps have been undertaken to create a basis for the transfer of private sector financing to the climate protection measures. Public institutions evaluate the options for various market-based mechanisms, such as the carbon trade in cooperation with the private sector, and are preparing the necessary legal requirements. In 2014, the Istanbul Stock Exchange (BIST) started to calculate and publish the ISE sustainability index. In order to identify the financial need for the transformation into a low-carbon economy, the private sector and the investors have received an important infrastructure indicator.

An examination of the intended national contribution of Turkey within the frame of the Paris Agreement at the climate negotiations shows that the basic perception regarding climate financing is confined to public funds, the Green Climate Fund and market-based mechanisms. Nevertheless, the perception of the private sector in Turkey is not limited with regard to its perspective. It has been found that specifically credit and insurance companies perceive the climate financing in a larger frame which, with regard to the realised activities and agenda discussions, cannot be wrong. Substantial deficits in climate protection financing in the realised projects and programmes are the lack of financial resources, uncertainties and insufficiencies of the legislature, limited capacities of the actors and problems finding financing project pipelines. Financing actors have repeatedly found in many parts of the world, and in Turkey too, that financial resources alone are rarely sufficient presuppositions.

OUTLOOK

It is true that there is no consensus on the definition of private-sector climate financing in Turkey. Nevertheless, the necessary funding for the required measures for the transition to a low-carbon economy and a sustainable development are partially provided or will be available in near future through various channels such as carbon pricing policy, carbon trading systems, support of renewable energies, green bonds, investment funds, bank loans and grants. In the face of these developments, it can be assumed that the climate regime rearranged by the Paris Agreement will send out strong signals to international investors and credit companies, and the possibilities for financing of the private sector in Turkey will increase and also become more widely distributed. The role of public actors in Turkey in this process is to develop climate-friendly legal requirements and stimulate systems in cooperation with non-governmental actors in order to create transient signals that go beyond carbon issues. The private sector and financing institutions should diversify the climate-protection instruments, develop capacities for their efficient use and make scientifically consolidated steps by using transparent evaluations of climate risks in investments and portfolios.

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Despite Brexit, the UK remains, at least so far, highly committed to the Paris Agreement and the respective contributions of the EU as a whole. Private climate finance is an instrument that the UK plans to use in meeting its commitments. The Paris Agreement has increased confidence in investments in green technologies, considered to be key in the process of meeting the climate targets. Climate finance is an area in which the UK has a competitive advantage.



An off-shore wind farm in the English Channel near Clacton-on-Sea in south east England. Source: © Toby Melville, Reuters

UNITED KINGDOM

IMPORTANCE OF PRIVATE SECTOR CLIMATE FINANCE

Several actors are directly involved in shaping the field of climate finance: the government, by proposing frameworks that would encourage private climate finance, the public financial sector (the Bank of England), the private financial sector (Aviva and HSBC, which have emerged as global leaders in this field), insurance companies, climate finance academics and think tanks. Large oil and gas companies such as BP have started to financially support low-carbon technologies and to adopt an internal carbon price. The debate is taking place in settings provided by media, government, think tanks and foundations (E3G, ODI and European Climate Foundation), and sometimes even by private financial institutions (Lloyds Bank, for instance).

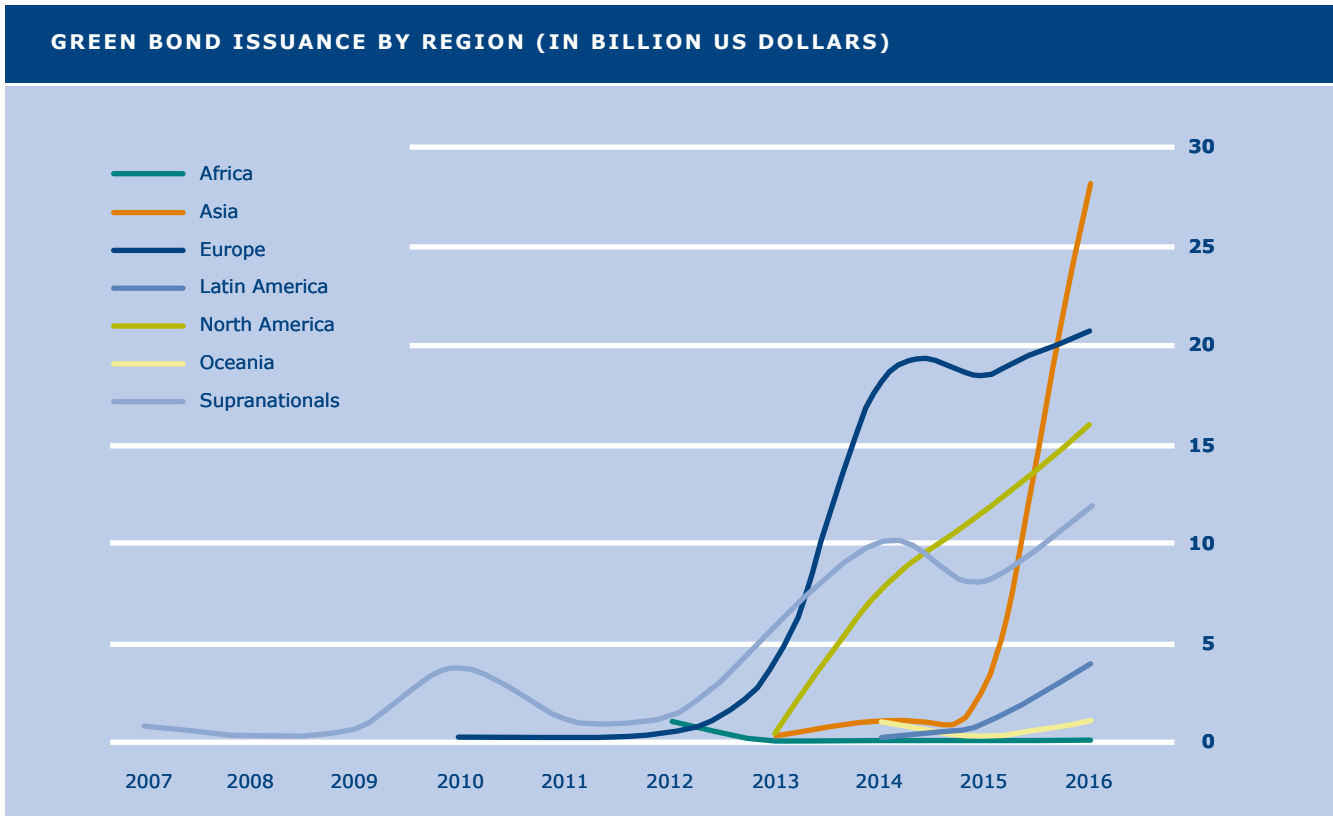
London also hosted climate finance events with global implications, such as the Clean Energy Finance Summit held on 3 and 4 June 2014. Recent initiatives that are based in London include the Climate Bonds Initiative and the Green Finance Initiative. The Green Finance Initiative was launched on 14 January 2016

to enhance financing for sustainable infrastructure. Jointly with the UN Principles for Responsible Investment, the Initiative is organising the Green Finance Summit 2017 on developments in green financial policy and market developments.

CONCRETE INITIATIVES, EXPERIENCES, PROVISIONS

The UK is part of the EU-ETS, Emissions Trading System, which is complemented in the UK by a carbon floor. They aim to underpin the price of carbon at a level that drives low-carbon investment, which the EU ETS has not yet achieved.

In 2010, the UK established the Capital Markets Climate Initiative which – according to the Department for Business, Energy and Industrial Strategy and Department for International Development – “created a strong public-private partnership to help mobilise and scale up private finance flows for low carbon solutions in developing economies” (Department for Business, Energy and Industrial Strategy and Department for International Development 2013). In 2012, the UK government created the



Source: *Climate Bonds Initiative 2017*

first worldwide green bank – the Green Investment Bank (GIB) –, which has mobilised more than ten billion pounds sterling total capital (2.7 billion pounds sterling direct commitment), to support over 80 low-carbon projects in the UK, with almost 75 percent of investment from non-GIB sources. The GIB aims to support and reduce barriers to investment in green projects with the intention of attracting private funds for private sector investments. The priority areas of GIB include investing in energy efficiency projects and building retrofit projects.

The Climate Bonds Initiative is a UK initiative raising finance for climate change mitigation or adaptation-related projects or programmes. The Climate Bonds Initiative is mobilising the 100 trillion US dollars bond market. The Capital Markets Climate Initiative (CMCI) has been set up to support governments of developing countries in obtaining a better understanding as to why and how to effectively and efficiently leverage private capital by helping to address the information barriers.

The UK government has set up the 3.87 billion pounds sterling International Climate Fund (ICF) to help address the challenges of climate change and to benefit from the opportunities by catalysing green private investment and building markets for sustainable, low-carbon ventures worldwide. Through the ICF, public money helps to mitigate the risk of private investments as well as increasing the availability of finance to small and medium enterprises (SMEs). ICF is perhaps the most significant positive experience in climate finance. It has supported the creation of over 39,000 jobs and helped avoid more than 2.3 million tons of greenhouse gas emissions worldwide. A range of ICF-financed programmes work with the private sector. The most important are the World Bank's Carbon Initiative for Development (Ci-Dev), the Results-Based Financing Facility (for energy access) and the Energising Development (EnDev) programme. In December 2013, the UK government invested 30 million pound sterling of ICF funds into the Global Climate Partnership Fund (GCPF), a public-private partnership committed to mitigating climate change.

The Climate Public Private Partnership Programme (CP3) is a joint initiative of the Department for International Development (DFID), the BEIS and the Department of Energy and Climate Change (DECC). CP3 is an important initiative in the UK's contribution to mobilising 100 billion US dollars of climate finance a year by 2020.

Another example of the role of the state in climate finance is the Global Innovation Lab for Climate Finance. The Lab was launched in 2014 by the UK, US and Germany, as well as in partnership with several countries supporting climate finance such as Denmark, France, Japan, the Netherlands and Norway, and major private sector representatives. The Lab is constituted by leaders from governments, pension funds, investment banks, project developers and development finance institutions. It aims to identify, develop and pilot climate finance instruments in order to drive billions of dollars of private investment into

climate change mitigation and adaptation, contributing to the PA's target of mobilising 100 billion US dollars of climate finance a year by 2020.

There are some barriers from the country's perspective related to climate finance. There is a need to align the government's and private sector's standpoints on green energy objectives. The state should spell out the reasons for the UK's ratification of the PA. This would include making clear the outlines of the UK's path to a greener future. There should also be more data transparency in climate finance operations in order to incentivise investments. The government should support the analysis and understanding of climate-related risks, ensuring that money managers, analysts, consultants and the financial leaders of the future can target climate-related risk and explore green economic opportunities. Additionally, the government should collaborate to institutionalise green finance through international best practices, learning, and cooperation.

THE G20 AS FRAMEWORK FOR ENCOURAGING PRIVATE CLIMATE FINANCE

The UK and especially the Bank of England places a lot of confidence in the G20 when it comes to climate finance. The G20 is regarded as a platform that can further stimulate both governments and financial services to work towards implementing the climate commitments made in Paris. The Bank of England co-founded and is co-chairing the G20 Green Finance Study Group (GFSG) together with the People's Bank of China. The Group aims to detect institutional and market barriers and enhance the capacity of the financial system for mobilising private financial resources for green investment.

Voices from British academia hold a similar position. Ben Caldecott, Director of the Sustainable Finance Programme at Smith School, University of Oxford, welcomed the initiative of the G20 to focus on mobilising finance and the work on green finance by the Bank

of England and the People's Bank of China. Caldecott mentioned that this work needs to accelerate under the G20 taking place in Germany. However, G20 countries have also been criticised in the past by London-based institutes such as ODI for not phasing out subsidies for fossil fuels. Against this backdrop, in May 2016, alongside other G7 members, the UK took a pledge to end subsidies for fossil fuels by 2025, especially subsidies distorting the energy market. The media also recognise the impact that the G7 agreement on cuts in carbon emissions and on pledging money to help poor countries access low-carbon energy infrastructure might have on effectively fighting climate change.

CONCLUSION

The UK is a leading European financial centre (London, for instance, is the third largest bond market in the world and covers nine percent of total global issuance). Climate finance is an area in which the UK has a competitive advantage. Institutions in the UK are a leading issuer of green bonds. The UK has a positive track record in private climate finance, playing a central role in conducting important programmes to support the private sector's fight against climate change. Some investments offer climate change benefits in their portfolios. Many of these programmes remain in their early stages, and their innovative elements will need to be monitored and evaluated over time as implementation proceeds. Initiatives such as ICF and GIB have sought to find new approaches that will bring greater volumes and proportions of private finance into climate compatible development. It remains to be seen whether these approaches will attract more private investment than past efforts. The more successful climate finance initiative will encourage investors to consider the sector for future investments and accelerate private sector capital flows towards a low-carbon economy.

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The private sector has traditionally played a significant role in the USA. The US financial sector is the highest-volume sector in the world. Hence, institutional investors have considerable resources that also flow into climate financing, although still to a minimal extent. However, there are a number of sustainability indices in the USA, but they have so far not been widely used. At the same time, more and more big companies opt for energy supply from renewables sources.



With around 5,000 wind turbines, the Alta Wind Energy Center in Bakersfield is one of the largest wind farms in the world. Source: © Spondylolithesis, iStockPhoto

USA

PRIVATE CLIMATE FINANCING ON THE RISE

The topic of “private climate financing” has held a strong presence in the media at the latest since the beginning of the divestment debate about five years ago. The divestment movement is currently directed mainly at the financial departments of private universities, which have considerable resources. This is primarily a shift from coal, natural gas and mineral oil investments into other sectors. However, explicit climate investments are not yet associated with this. The discussion on private climate finance is largely focused on the investment of large companies in their own supply of renewable energies. IT companies such as Amazon, Apple, Google, Facebook or Microsoft, as well as service providers such as the MGM Group, detach themselves from the offer of the respective local energy supplier and opt for cost-effective long-term contracts for the procurement of renewable energies. The USA is the world leader in this market and represents a significant share of private investments in renewable energies

THE IMPORTANCE OF THE PARIS AGREEMENT FOR PRIVATE CLIMATE FINANCING

At least 81 large companies joined the “American Business Act on Climate Pledge” in 2015 in support of the Paris Agreement (PA) and formulated their climate protection contributions in this context. However, at the national level, there is no direct link between the ambitions of the private sector and the Nationally Determined Contribution (NDC), which is the self-imposed contribution of the USA within the framework of the PA. The NDC of the USA covers emission reductions in all sectors but does not establish sector-specific sub-goals. The private sector is directly affected by a number of the regulatory policies (Clean Air Act, Energy Policy Act, Energy Independence and Security Act). An open discussion on a proactive role of the private sector to achieve the NDC began to some extent in the final phase of the Obama administration; it broke off, however, with the new government in 2017. At the level of the federal states, individual companies are however likely to have a greater impact on climate policy developments; an example for this is the technology sector in California.

IMPORTANT INSTRUMENTS TO INCREASE PRIVATE CLIMATE INVESTMENTS

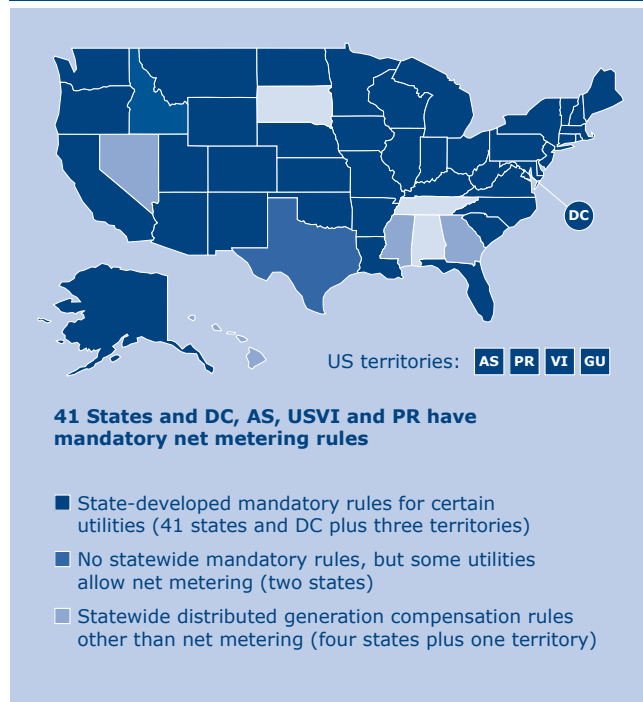
At the federal level, there are three tax incentives, which usually cannot be combined, for climate investment:

1. Since December 31, 2016, the Renewable Electricity Production Tax Credit (PTC) has been updated and is now limited to the promotion of wind energy plants which will be built by the end of 2019 (currently at 2.3 US dollar cent per kilowatt hour for a maximum of ten years).
2. The Residential Renewable Energy Tax Credit, which only applies as of this year to photovoltaic systems (PV) and solar thermal systems for private homes, will allow a 30 percent tax deduction of plant costs by the end of 2019. The tax relief will be gradually reduced to 22 percent by the conclusion of the programme, at the end of 2021.
3. The Business Energy Investment Tax Credit (ITC) enables companies to claim tax deductions which, dependent on the technology, mean a gradual reduction from the current level to 30 percent. After 2022, only geothermal electricity generation and photovoltaic will be considered, with ten percent each.

These tax credits can be traded in the USA nationwide so that project developers can sell these credits at a discount. This market is not very transparent or regulated and consists entirely of over-the-counter and broker transactions without the use of a stock exchange. There are various assumptions about the size of the market and whether it can be extended.

The federal states also generate important incentives which trigger private climate investments, particularly with their minimum quotas for renewable energies in the electricity mix.

NET METERING REGULATIONS IN THE FEDERAL US STATES



Source: DSIRE 2016

Suppliers must comply with the quotas either by investing in renewable energies themselves or by purchasing certificates in the open market instead. In addition, important incentives are also emerging from feed-in tariffs (net metering), in particular for the construction of smaller plants.

The expansion of renewable energies has developed into a very successful business field in the USA, thanks especially to very favourable conditions for wind power and solar power, but also thanks to the accompanying cost-cutting tax regulations.

The most important role of the state is currently to continue with the existing tax benefits. The main reason for this, from the point of view of political decision-makers, is found in the economic power, which is now behind renewable energies, be it as a source of tax revenue, or from over 670,000 direct jobs created by the employers in this sector. On the other hand, climate adaptation and climate protection play only a subordinate role as motivators, if at all.

In addition, there are two regional emission trading systems in the USA: the California-based trading system and the system of the East Coast States, the Regional Greenhouse Gas Initiative (RGGI). The RGGI has been in existence since 2009 and today includes the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island and Vermont. The RGGI obliges the participants to cover their CO₂ emissions from the generation of electricity through emission certificates. Fossil power generation plants with over 25 megawatt are obligated to comply. The total quantity of allowances (Cap) was 86.5 million tons in 2016, and is reduced by 2.5 percent annually. In the Californian trading system, there is a lowest price limit which has, however, led to the fact that since the beginning of 2016, the quantity supplied could no longer be sold in the auctions. At the last RGGI auction in March 2017, the price was only three US dollars per ton of CO₂. Overall, the greenhouse gas emissions trading in the USA is not in good condition due to low allowance prices and low demand. No improvements are expected in the short term.

INITIATIVES OF THE FINANCIAL SECTOR

The financial sector is active in a number of areas. Important sustainable funds in the United States are, among others, the Green Century Equity Fund, the Vanguard FTSE Social Equity Fund, the Calvert Large Cap Core Portfolio and the Fidelity Select Environment & Alternative Energy Portfolio. Meanwhile, investing in green bonds has developed into a growing market, with

7.5 billion US dollars in 2016 in the United States of America. The world's largest green bond was issued by Apple with 1.5 billion US dollars. Among the banks, the Bank of America leads the global Green Bond market.

A number of banks have entered into commitments to quit coal production and exploitation, including Citigroup, Bank of America, Morgan Stanley and Wells Fargo. Also, almost all of the major banks in the USA have committed themselves to the Equator Principles for the management of environmental and social risks in projects. Also, some banks have committed themselves to making climate investments to a certain extent. Thus it was Citigroup's goal to invest 100 billion US dollars in climate protection in 2015; but it is spread across the world and over a ten-year period, which puts this figure back into perspective.

RESTRICTIONS AND BARRIERS

The commitments mentioned above notwithstanding, a number of banks are still active in the mineral oil sector. Among others, Citigroup, SunTrust Robinson Humphrey, TD Bank and Wells Fargo are financing the controversial Dakota Access Pipeline or its parent company Energy Transfer Partners. Another example shows how complicated it is to comply with voluntary self-commitments. Although JPMorgan Chase was known to no longer promote coal projects, together with BNP Paribas the bank has now begun to look for buyers for a 250-million-euro bond from Polish ENERGA Finance AB, the financial subsidiary of the Polish energy company ENERGA S.A. Since the bond cannot be directly attributed to the construction of a new power plant, JPMorgan Chase is not breaking its word, strictly speaking. While the experiences of investors are very positive due to the tax incentives for wind and solar energy, they have been rather negative in the biofuel sector, especially in so-called third-generation biofuels, i.e. the enzyme- and algae-biofuels.

According to the current status, the new US government is not pursuing the goal of strengthening private climate financing. As a result, from the point of view of the United States, the G20 is not a suitable framework or driving force for this purpose. Already at the meeting of the G20 finance ministers in March 2017, the new US government enforced that the issue of climate finance did not appear in the communiqué. The expectations of domestic stakeholders in the USA, that the G20 can make a contribution in the area of private climate financing, are extremely muted against this background.

CONCLUSION AND OUTLOOK

Private stakeholders in the USA will continue to be the driving force behind private climate investments in the USA. From the point of view of the financial stakeholders who are committed to climate investments, the business prospects in the USA are, however, not favourable although some big companies will continue to invest in the climate change, especially technology companies. Despite the existing incentives for climate investment, private investors in the USA largely lack in long-term planning security. The regulatory framework is subject to significant fluctuations, which slows down long-term investments. There is also a lack of price consideration of the environmental-, resource- and climate-related risks for investment decisions. The state authorities have recently been forced to disregard the social costs of climate change. A national cost estimate of greenhouse gas emissions is currently not foreseeable. The Clean Power Plan will presumably continue to exist, if at all, in a very weakened form, which should reduce the climate policy ambitions of the federal states in the coming years.

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CONCLUSION

The individual contributions in the Climate Report suggest the following central statements and recommendations for political action:

1. CLIMATE PROTECTION TARGETS HAVE BECOME INCREASINGLY IMPORTANT FOR THE PRIVATE SECTOR; MARKET-FOCUSED LEGAL FRAMEWORKS AND A RANGE OF GOVERNMENT INITIATIVES SUPPORT THIS DEVELOPMENT.

The Paris Agreement appears to have a positive impact on climate financing by the private sector. The confidence of the private sector in climate policy targets has grown along with the willingness to invest in climate-compatible areas. However, there are still uncertainties regarding the actual implementation of the formulated climate goals. The situation thus calls for a clear, reliable and market-focused legal framework. In the various G20 countries, this framework differs widely; in the industrialised countries, it is much stronger than in most emerging economies.

Against this background, an increasing number of G20 countries are establishing CO₂ pricing systems, particularly with a view to the competitiveness of their respective economies. The recognition that insufficient consideration of the CO₂ emissions associated with goods, services and investments is detrimental in the long run, particularly when it comes to export and foreign direct investment, is driving the political and economic course of action in many countries. Both CO₂ taxes and emissions trading systems are popular instruments, partly also as a supplement or substitute for more inefficient and less market-compatible legal regulations such as feed-in tariffs. From an entrepreneurial point of view, this results in cost factors (e.g. savings through higher energy efficiency or use of renewable energies) and image issues ("green" products, corporate responsibility, etc.); the



For climate financing, the private sector and politics are dependent on each other. Source: © Tobias Schwarz, Reuters

development of future-proof business models is also fostered (reduction of own CO₂ intensity as a reaction to political risks in the form of more stringent climate protection legislation).

Apart from economic drivers, health and environmental policy aspects, such as air pollution, also play a central role in climate-related financing in many G20 countries; in China, the term "green finance" is preferred over "climate finance" for this reason. Arguments around energy (supply security, energy prices), industrial (technology development, economic modernisation), structural (regional development) and employment

policy (“green” jobs) also play a role. Climate financing is thus only relevant insofar as the measures and investments concerned also have a climate protection effect above and beyond the aforementioned effects.

The international dialogue on these issues must undoubtedly be intensified. The aim would be to coordinate the various national legal frameworks as far as possible to facilitate investments compatible with climate protection by internationally active private-sector players under similar competitive conditions.

2. THE FINANCIAL SECTOR MUST BE INTEGRATED AS A PREREQUISITE FOR ACHIEVING AND FINANCING COMMITMENTS FOR CLIMATE PROTECTION; POLICYMAKERS MUST REMOVE BARRIERS IN THIS RESPECT.

The commitments and promises of the wealthier countries to implement transparent and continually growing climate financing to the benefit of the poorer countries is a core element of the Paris Agreement. The donor countries must expand public climate funding with the help of the private sector to meet their commitments. A positive tendency is in fact becoming apparent in this context. The financial markets have also shown a measurable development over the past few years, as indicated by the growing number of insurance and investment companies, banks and funds that have made sustainability and climate factors a priority.

In the various G20 countries, this development is taking place at a different pace. In particular Great Britain, but also the USA, France, China and India, are all striving for international leadership in the young segment of climate finance. Green bonds are in vogue, but they remain a niche market; its expansion is obstructed due to the weakness of the capital markets in many G20 emerging markets. In addition to insufficient data availability and measurability of climate-relevant effects,

further general obstacles to the expansion of climate finance are a lack of legal certainty as well as political and economic instability in some areas.

The clear difference between the longer-term temporal horizon of climate protection and the more short-term investment horizon of the producing and financial economy undoubtedly remains a fundamental problem. This dilemma also frequently applies when it comes to policy perspectives. However, the lack of measurability and transparency with regard to greenhouse gas emissions is also an obstacle to the reconciliation of these perspectives. As a result, climate issues are commonly not considered in the scope of financing decisions even though they may be of relevance from the decision-makers’ point of view. Policymakers should thus support the development and standardisation of measurement methods and reporting as well as the necessary internalisation of emission-related external costs. The public sector should also take the opportunity to take account of climate and sustainability aspects when formulating the strategy for government funds and investments. This would, in turn, also drive developments in the private sector. In the foreseeable future, investment incentives by the state, national and regional development banks, as well as by funds are likely to remain of central importance, especially in many emerging markets.

In many G20 countries, the subsidisation of fossil fuels is another major obstacle to the growth of climate financing. In some countries, this subsidisation has been declining in recent years which has been facilitated or driven by the global fall in the price of these energy sources. However, the volume of such subsidies remains enormous. A reduction in state influence (and expenditure) would have a positive effect on climate financing in this context.

3. THE CLIMATE FINANCE OF THE PRIVATE SECTOR HAS SO FAR CONCENTRATED ON RENEWABLE ENERGIES, NECESSITATING INCENTIVES FOR AN IMPROVED BALANCE.

The focus of climate finance on emission reductions in the electricity sector has resulted in an imbalance between investments in power plants and network infrastructures in many G20 countries. As a result, clean electricity is often not used, and the resulting downtimes cause additional costs. From a political perspective, this calls for legal regulations to enable private-sector investment in a way that is beneficial to the overall system, i.e. to maximise (cost) efficiency in energy utilisation where possible and foster the conversion of the energy system. This principle applies to both costs and climate protection. In this sense, climate financing must integrate the construction, mobility, agriculture and forestry sectors to a greater extent. There is also still a lot of potential in the area of energy efficiency.

The fact that private climate financing has so far hardly covered the area of adaptation to the effects of climate change is another fundamental imbalance. The accelerating process of global warming makes this aspect of climate protection increasingly important. A sensible approach to foster private sector investment in this area are measures such as climate insurance for emergency aid and reconstruction after catastrophes due to increasingly extreme weather events. The InsuResilience initiative, which was launched by the German Federal Government in the context of its G7 presidency in 2015, involves the insurance industry and development banks. New insurance markets are generated with the support of public funds, which, in turn, have a beneficial effect on adaptation measures and risk provision. Instruments of this kind should be considered by policymakers in response to the consequences of climate change. This would also have an indirect effect on the flow of refugees.

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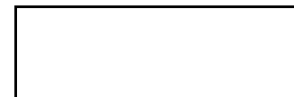
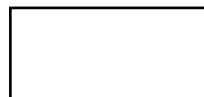
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