Climate Action Network

Public Finance for 1.5°C and Zero-Carbon Development by 2050:

Implications of 1.5°C and Zero-Carbon by 2050 Goals for Public Finance Institutions

Companion Document
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Climate Action Network International (CAN) is the world's largest network of civil society organizations working together to promote government action to address the climate crisis, with more than 1100 members in over 120 countries. www.climatenetwork.org

1. Fossil Fuels Foreclose a 1.5C Future

The IPCC's Fifth Assessment Report (AR5) in 2013 concluded that the global energy sector must reduce its CO2 emissions by at least 90% from 2010 levels between 2040 and 2070, just to not exceed 2°C and stabilise atmospheric GHG concentrations at 450 ppm by 2100.[1] To have even a 50% chance of keeping average global warming below 1.5C, all atmospheric GHGs must be stabilized below 430 ppm.[2] As of today, CO2 alone has reached 410 ppm, and average global temperatures have risen by 1°C.

The IEA has consistently acknowledged the need to keep two-thirds of commercially viable, conventional fossil reserves in the ground (the relatively new, unconventional fossil fuel resources such as shale oil and gas being additional) if global temperature rise is not to exceed 2°C[3], and the IRENA grounds its most recent energy transition report in a carbon budget calculation.[4] Against these, the independent specialists analyses call for a faster, deeper, more equitable reduction in fossil fuel consumption and emissions:-

- In the 2011 *Unburnable Carbon* report that introduced the concept of the carbon bubble, the Carbon Tracker Initiative calculated the available atmospheric space for GHG emissions

[1] Adequacy and feasibility of the 1.5C long-term global limit
[2] Climate Change 2014 Synthesis Report: Summary for Policymakers
[3] World Energy Outlook 2012/International Energy Agency
[4] Perspectives for the Energy Transition: Investment Needs for a Low-Carbon Energy System/IRENA

over a 50-year span at 565 Gt whereas proven reserves held by public and private fossil companies were at 2,795 Gt, implying that 80% of these reserves were unburnable.[5]

- In January 2015, the Institute for Sustainable Resources in London reported that more than 80% of the world's coal reserves, half of the gas, one-third of the oil, all Arctic oil and gas, and most Canadian tar sands would be unburnable in a 2°C scenario.[6] Where exactly these reserves should be stranded - and who should exploit/sell the last of the fossil fuels - raises important equity questions.[7]

- *The Sky's Limit*, a report released in September 2016 by Oil Change International and 14 other organizations, warned that today's operating coal mines and oil & gas fields contain enough carbon to push beyond the emissions targets in the Paris Agreement. Even if all coal mining were phased out immediately, emissions from existing oil & gas operations would still exceed the 1.5°C long-term target for average global warming. In a global economy that adhered to a realistic carbon budget, any new fossil development would be out of the question.[8]

These necessary and ambitious decisions are enabled by, and may well depend on, the shifts in fossil fuel-related MDB and other DFI investments as well as disclosure policies recommended in the position paper for which this document serves as a companion.

While a comprehensive assessment of PFIs' performance and other public sources of energy finance is beyond the scope of this short paper, the snapshots in this companion document indicate a serious gap between current practices and the dual imperative to keep a large proportion of known fossil reserves in the ground, while accelerating the just transition to zero-carbon development by 2050 with sustainable energy access for all.

2. Fit for 1.5°C: Aligning Public Finance Investment Priorities with Zero-Carbon Development and Sustainable Energy Access for All

The question of whether conventional energy systems are 'fit for 1.5°C' provides the Parties to the Paris Agreement and international financial institutions (IFIs) committed to climate action a clear choice. The conventional energy path leads to a mix of complex, expensive, polluting and often old-fashioned options that severely imperil the goal of 1.5°C, and certainly defeat the SDG7 objective of delivering sustainable energy for all by 2030. Alternatively, the new path is more community-centric, practical and innovative, requiring financial and institutional support for front-line capacity to achieve a sustainable, clean and renewable energy future by 2050. The 2050 decarbonisation imperative is reinforced by the often unaccounted "external" costs and negative impacts of fossil fuel production on people and nature across their supply chain and

[5] Unburnable Carbon/Carbon Tracker Initiative

[6] The geographical distribution of fossil fuels unused when limiting global warming to 2°C/Nature 517

[7] Who should sell the last of the fossil fuels: Stranded assets, equity and climate change/Oxfam America

[8] The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production/Oil Change International et al

product life cycle. If these costs are fully accounted for, as they should be, it quickly becomes clear that fossil fuels are economically, socially and ecologically unviable. ***Public finance raised from taxpayer's money is not supposed to support these adverse, unaccounted-for impacts on people, economy and ecology.***

Accordingly, immediate realignment of public finance is required to reflect four urgent realities:

- The large proportion of known fossil fuel reserves that must stay in the ground in any plausible decarbonisation scenario;
- The mismatch between centralised fossil energy development and the unmet energy needs of mostly rural communities in developing countries;
- The negative environmental, social and economic impacts of non-renewable and centralised energy projects, particularly in developing countries;
- The massive new investment opportunities triggered by the growing affordability of solar, wind and energy efficiency technologies.

2.1 Outdated Energy Systems Financing in 21st Century

The International Development Finance Club (IDFC) brings together 23 member DFIs active in 69 countries. In 2014, the IDFC members' combined financial commitments were approximately $636 billion[9] compared to the World Bank Group's commitment of $65.6 billion. So shifting this *financiers club's* public sector energy and infrastructure financing towards net-zero carbon and climate-resilient development, fully aligned with the Paris Agreement and the SDGs, would have a significant impact. In 2015, IDFC reported[10] that its "green finance"' investments, including climate finance and "other environmental objectives", accounted for $98 billion, or 15.4% of their total financial commitments in 2014. This implies that nearly 85% of IDFC members' combined financing fails to mainstream climate considerations.

Despite World Bank Group President Dr. Jim Yong-Kim cautioning countries against new coal developments,[11] the World Bank Group itself still pursues an investment strategy that favors fossil fuels[12]. The International Financial Corporation (IFC) directs billions of dollars to new coal projects around the world, working through financial intermediaries such as commercial banks and equity funds that received $40 billion in IFC funding between 2011 and 2015, now representing more than half of the IFC's lending portfolio.[13]

60% of the $60 billion in electric power development insured by OECD Export Credit Agencies (ECAs) between 2003 and 2013 went to fossil fuel projects[14] and G20 ECAs financed more than

[9] IDFC Members finance figures
[10] IDFC Green Finance Mapping for 2014
[11] World Bank Head Warns Against New Power Plants
[12] World Bank Favors Fossil Fuel Projects in Developing Countries, report says
[13] Disaster for Us and the Planet: How the IFC is Funding a Coal Boom/Inclusive Development International
[14] Working Party on Export Credits and Credit Guarantees/OECD

$45 billion in international coal projects between 2007 and 2015, including more than $10 billion between 2014 and 2015[15].

By comparison, financial support to overcoming energy poverty was only around $13 billion per year, with 80% coming from public sources, both developing country budgets and multilateral aid, and only 3% of those funds going to address unsustainable cooking practices in developing countries[16]. This stark imbalance points to the need for a rapid, fundamental realignment in public finance institutions' policies, programming[17] and investments[18].

2.2 A positive new narrative: Cost-competitive renewables with multiple co-benefits

The required transformation is made much easier by the emergence of a positive new narrative:- rapid growth of global renewable energy capacity[19] driven by the reality that unsubsidized new solar and wind now beat new fossil energy on price alone in 30 countries, and will reach grid parity in two-thirds of the world's nations within a few years,[20] without even factoring in the climate impacts or social costs of emissions. However, the up-front costs for renewables like solar and wind are often still higher than for incumbent fuels, and those costs are falling too slowly to support a "well below 2°C" or 1.5°C scenario that dictate early retirement of high-carbon assets (like coal-fired power stations) in favor of renewables and energy efficiency. For these purposes and reasons, role of public finance institutions to lower costs of finance for renewables in developing countries is crucial. And yet, public finance for renewables has largely been directed to European countries, while public finance in developing nations largely supports fossil fuels.

Access to reliable, affordable, efficient, clean renewable energy delivers multiple benefits, and is a cornerstone of the effort to achieve the United Nations Sustainable Development Goals. It is an essential step in countering deforestation, addressing global poverty, and reducing deadly indoor pollution that prematurely kills three to four million people each year, mainly in Asia and Sub-Saharan Africa.[21]

3. The Transition Ahead

By December 2015, renewable energy and energy efficiency as a broad category had seen an increase over time in energy-related lending from all but one of the MDBs. Even then, all the DFIs had a long way to go in setting portfolio-wide greenhouse gas reduction standards,

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[15] Carbon Trap: How International Coal Finance Undermines the Paris Agreement

[16] World Energy Outlook, figure 2.25, IEA; 2015

[17] World Bank Development Policy Finance Props Up Fossil Fuels and Exacerbates Climate Change/Bank Information Center

[18] Outsourcing Development: Lifting the Veil on the World Group's Lending Through Financial Intermediaries/Inclusive Development International

[19] IEA Energy and Air Pollution and WHO Fact Sheet

[20] Green energy can increasingly match - or beat - fossil fuel prices, report says/Christian Science Monitor

[21] IEA Energy and Air Pollution

excluding fossil fuel exploration and coal, ramping up energy access spending[22], establishing low-carbon energy portfolios and applying forest safeguards across sectors and lending modalities, among other objectives.[23] Energy efficiency, in particular, has received far less attention and support than is warranted by its breakthrough potential to mitigate greenhouse gas emissions and reduce end-use energy costs: It accounted for only 14% of all MDBs' combined energy investment portfolios between 2012 and 2014, when a focus on optimizing efficiency should actually be mainstreamed across *all* portfolios.[24]

On average from 2010 to 2015, total investments in upstream and downstream fossil fuels exceeded $1.1 trillion per year, compared to less than $300 billion for renewables and $220 billion for energy efficiency. More than 90% of this investment came from private finance sources[25].

Combined annual global investments in renewables ($283 billion) and energy efficiency ($221 billion) over the past few years are still less than 50% of what is directed to fossil fuels[26]. And those clean investments are still a far cry from the $2.5 trillion required by 2030 for a below-2°C trajectory.[27] The uptick in special pleading and misleading analysis[28] from fossil interests demonstrates that these legacy industries will increasingly depend on unjustified subsidies that can more productively be redeployed to help build a decarbonised energy system.

3.1 Coal

Coal-fired generation must be fully phased out by mid-century to meet the Paris objective of holding average global warming "well below 2°C",[29] with developed countries expected and well-positioned to do so first to lead the rest of the developing world. The extent of the transition required can be seen in the 2,308 GW of coal capacity now in operation or under construction that will be surplus to global demand under the Paris Agreement, and the 596 GW of new capacity in the planning stages.

Market forces and natural constraints, driven and augmented by the commitments in the Paris Agreement, are accelerating the coal industry's decline towards complete phase-out. Major public finance investors are still holding the key to accelerate or obstruct this fundamentally necessary shift. Even "exclusively-for-renewable" investment by MDBs in energy firms that run both fossil and renewable energy businesses helps create the foundation for these firms to mobilise money for fossils from other sources. Reallocating public finance to dedicated sustainable energy and energy efficiency firms will accelerate the transition.

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[22] Still Failing to Solve Energy Poverty: International Public Finance for Distributed Clean Energy Access Gets Another "F"/Oil Change International & Sierra Club

[23] MDB Climate Change Scorecard: Do the MDB's pass the 2 degree test?

[24] The Productivity of International Financial Institutions' Energy Interventions/Climate Policy Initiative

[25] World Energy Outlook, table 2.4, IEA; 2016

[26] World Energy Outlook, page 82, IEA; 2016

[27] Perspectives for the Energy Transition, IEA and IRENA; 2017

[28] Forecasting Failure: Why Investors Should Treat Oil Company Energy Forecasts With Caution/Oil Change International & Greenpeace

[29] Implications of the Paris Agreement for Coal Use in the Power Sector/Climate Analytics

3.2 Natural gas

One barrier to the necessary drawing down of oil and gas capacity is the false narrative that casts natural gas as a "bridge" to a renewable energy future. It is a grave error to invest hundreds of billions of dollars in new gas infrastructure that will be incompatible with the emission reduction goals in the Paris Agreement, while endangering communities on the front lines of gas infrastructure development.[30] Yet precisely that error is playing out in many jurisdictions, from Bangladesh to Tanzania to the European Union. European analysis points to natural gas as an expensive dead-end for efforts to decarbonise transportation, not the "bridge fuel" its proponents assert.[31] [32]

In one notable instance, the European Investment Bank devoted about €17 billion to gas infrastructure between 2007 and late 2016—all of which turned out to be a more carbon-intensive set of investments than previously believed, and showed significant potential to become stranded assets.[33] The European Fund for Strategic Investments (EFSI) devoted 80% of its energy investment to renewable energy and energy efficiency as of July 2016, but still steadily increased fossil fuel funding and overwhelmingly supported high-carbon modes in its transportation portfolio.[34] By the end of the year, the EFSI had allocated €1.8 billion to fossil infrastructure projects, mostly gas, leveraging another €5 billion in private investment by the end of the year.[35] Meanwhile, five MDBs—the World Bank, the ADB, the AIIB, the EIB and the EBRD—recently invested in the controversially carbon-intensive Southern Gas Corridor, despite strong evidence of questionable economics and serious project risks.

3.3 Hydropower

World hydroelectric capacity reached 1,064 gigawatts in 2016, accounting for 16% of all electricity generation and 71% of what the World Energy Council defines as renewable electricity.[36] GHG emissions reduction scenarios frequently include large hydro capacity that has already been developed or could potentially be repowered.[37] However, large hydro projects routinely result in a range of negative impacts, from flagrant human rights abuses, particularly toward indigenous peoples, to devastating loss of ecosystems, community, food production and World Heritage Sites,[38] to dramatic cost and time overruns,[39] to missed job and industrial development opportunities for preferable forms of renewable generation.[40] They can even

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[30] The Gas Rush: Locking America Into Another Fossil Fuel for Decades/Sierra Club

[31] Natural gas in vehicles—on the road to nowhere/Transport & Environment

[32] Europe's Declining Gas Demand: Trends and Facts on European Gas Consumption/E3G

[33] Making EIB Finance Consistent with the Pathways Toward Low Greenhouse Gas Emission Development/CEE Bankwatch Network

[34] The Best Laid Plans: Why the Investment Plan for Europe does not drive the sustainable energy transition/CEE Bankwatch Network

[35] EFSI support to fossil fuel projects/CEE Bankwatch Network

[36] World Energy Council, *Energy Resources: Hydropower*

[37] Northern Ontario First Nation Takes 25% Stake in 438-KW Hydro Redevelopment/The Energy Mix

[38] UNESCO begins monitoring mission of Wood Buffalo National Park/Canadian Broadcasting Corporation

[39] 'Not the right choice': Muskrat Falls estimate surpasses $11 billion/Canadian Press

[40] B.C.'s Biggest Wind Farm Just Came Online - But Future of Wind in Province Bleak/DeSmog Canada

provoke geopolitical instability.[41] At the same time, hydropower is particularly vulnerable to climate change, and a recent study estimated that methane emissions from dam reservoirs account for 1.3% of global GHG emissions.

Recent analysis points to financing - traditionally by the World Bank Group, and more recently, by Chinese and private sector financial institutions - as a lynchpin in deciding whether projects are developed, and on what terms. Because dam projects carry high risk for communities, environment and investors, public finance is often required for projects to proceed.[42]

About 3,700 new dams were on the drawing boards as of May 2016,[43] and the World Bank still dedicates a large though declining share of its renewable energy portfolio to large hydro. That's despite the Bank's own poor track record in financing large dams, the culmination of which led to the World Commission on Dams (WCD) process that established core guidelines to avoid such impacts in the future.[44] Any new large hydro developments must adhere to the WCD guidelines, and must be assessed more effectively against alternative smaller-scale, easier-to-deploy renewable energy options that often carry far fewer negative impacts.

3.4 Biomass

Just over 3 billion people had no access to clean cooking in 2014, according to the Global Tracking Framework.[45] About 2.7 billion, 38% of the global population, rely on traditional biomass, and more than 3 million die prematurely each year due to indoor pollution caused by inefficient burning of dung, charcoal, and wood residues, often in open fires. Modern, highly efficient cookstoves and biogas digesters, complemented by local agroforestry and afforestation, can significantly reduce and eventually eliminate this indoor air pollution and related forest degradation, at an annual cost of less than $3 billion. Still, progress has been slow because the "clients" are often poor and without cash, so the return on investment for IFIs would be low, and small, distributed transactions across millions of households would mean higher costs for private investors. These factors make community biomass a suitable focus for clean energy/zero-carbon investment by public financial institutions working in developing countries.[46]

CAN does not favour any public finance support to large-scale commercial bioenergy production by IFIs in the absence of safeguards acting as fundamentally important pillars of accounting and implementation. These safeguards include, without being limited to, measurement of a project's life-cycle GHG emissions, including from indirect land use changes, as well as its impacts on food security and biodiversity.

3.5 Nuclear

Global nuclear capacity stood at 390 GWe at the end of 2015, accounting for about 11% of

[41] India to speed up hydropower building on rivers flowing into Pakistan: source/Reuters
[42] Banks and Dam Builders/International Rivers
[43] Hydropower's next act: becoming a less-controversial renewable/Christian Science Monitor
[44] California's drought adds $2 billion in electricity costs/Sacramento Bee
[45] Global Tracking Framework 2017
[46] REN 21, Global Status Report Renewables 2016; IEA, Special Report on Air Pollution 2016

electricity produced worldwide.[47] CAN has consistently called on all governments that have or are planning new nuclear power installations to swiftly shift away from these investments toward safe, clean, appropriate and sustainable renewable energy.

Nearly 75 years of experience with nuclear generation shows that the technology is socially, environmentally and economically unsustainable. New nuclear projects have no role to play in a fully decarbonised power sector in transition to a sustainable, clean, renewable energy future with sustainable energy access for all. Nuclear generation should not be eligible for any existing or new GHG compliance mechanism or for carbon credits, and must be barred from receiving any financial support under international or bilateral climate finance mechanisms in the name of enhancing safety and operational life when they actually need to be phased out.

3.6 Centralised versus decentralised energy models

In many developing countries, the challenge is two-fold: pursue beyond-the-grid energy access, and simultaneously scale up sustainable, renewable electricity capacity.[48] Public finance institutions should support this by integrating grid and beyond-the-grid solutions.

Still as of today, MDBs' energy access portfolios are overwhelmingly skewed towards grid extension, overlooking the ability of decentralised renewable energy (DRE) to offer faster and cost-effective access for the communities that need it most. Only 1.5% of the World Bank's energy portfolio was devoted to off-grid projects between 2000 and 2014. Among four MDBs assessed in one study, the highest share of energy spending for off-grid and mini-grid projects was 2%. The extent of scale-up needed can be understood from the fact that new household connections in low-access countries must increase from 1.6 million per year currently to 14.6 million per year, in order to achieve universal, sustainable energy access by 2030. [49] [50]

Despite global energy supply investments of about $1.6 trillion per year over the last six years, one assessment determined that $1.1 trillion went to fossil fuels, against only $13 billion to all energy access activities and only $500 million to clean cooking facilities for the poor[51]. Out of $14.1 billion in international public climate finance, only $475 million went to decentralised energy, and only $8.4 million to clean cooking in 2006-2015.[52]

To support decentralised renewables and accelerate clean energy access for all within a 1.5°C frame, MDBs must factor energy access opportunity cost assessments into their funding decisions, act as catalysts for energy access "super funds" to expedite dedicated funding streams, and mobilise fast-track intermediaries to quickly, nimbly deliver funds to support DRE projects.[53]

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[47] World Energy Council, *Energy Resources: Nuclear*

[48] https://www.oxfamamerica.org/explore/research-publications/the-energy-challenge-in-sub-saharan-africa/

[49] Energy Access & the Multilateral Development Banks (MDBs)/Power for All

[50] Figure: Still Failing to Solve Energy Poverty/Oil Change International & Sierra Club

[51] World Energy Outlook, page 106, IEA; 2015; World Energy Outlook, page 82, IEA; 2016

[52] Unlocking climate finance for decentralised energy access, IIED/Hivos

[53] Decentralized Renewables: The Fast Track to Universal Energy Access/Power for All