

Could technology innovations help reverse the climate change trajectory? Not without a lot more money.

An additional US\$2 trillion in private hardtech investment will likely be needed to effectively slow global warming. Here's how financial services organizations can play a leading role in bridging the funding gap.

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Most of the total climate funding will likely need to come from the private sector—but so far, there isn't enough.¹ Deloitte estimates that there may be as much as a US\$2 trillion² private funding gap for next-generation climate technologies to achieve the goal of limiting global temperatures to 1.5°C of preindustrial levels by 2030.³

Contrary to popular belief, most “climate hardtech”⁴ innovations may have surpassed the point of technical difficulty. True, direct air capture and aviation decarbonization represent real challenges.⁵ And batteries with gravimetric energy density anywhere near today's jet aviation fuel don't exist.⁶

But what can deter investment is the lack of a viable business model, given that carbon's polluting effects may not be fully priced in. Consumers are often unwilling to pay the “green premium”—that is, the additional cost for less-polluting energy sources.⁷ As Bill Gates points out, “In many cases, clean alternatives appear more

expensive because fossil fuels are artificially cheap.”⁸ For example, green hydrogen, which is derived from water, costs around three times its much more pollutant “gray” counterpart, which is produced from fossil fuels.⁹

Then, there is the difficulty of working out when and how to make a systemic shift—the “chicken and egg” dilemma. Who moves first: the consumer or the producer? Some organizations aim to solve for this exact dilemma by “using their purchasing power to create early markets for innovative clean technologies.”¹⁰

This prediction addresses the current state of climate funding, and the measures financial services institutions (FSIs) could take to help bridge the private funding gap for climate technologies in stages before deployment.¹¹



FSIs are taking steps to help fund next-generation climate technologies



FSI have a broad and pivotal role to play. They should continue to provide support by helping create a market for climate-related instruments and facilitating project finance and term loans for projects that deploy climate tech. While FSIs are adept at this, there may still be significant potential to develop new, innovative financing instruments such as green deposits and emission reduction-linked bonds to fund these types of transformations, possibly affording them new business opportunities.

That said, while the bulk of overall climate funding is likely needed for scale-up and deployment, much remains to be done to fund climate technologies that are not yet commercially deployed. FSIs can support early-tech start-ups *directly* through equity investments or by insuring them.

Some investors have shown their willingness to back climate early tech. For instance, Breakthrough Energy Ventures has invested almost US\$2.5 billion across three funds.¹² Just Climate recently raised US\$1.5 billion from institutional investors, exceeding its target by US\$500 million.¹³ BNP Paribas's Solar Impulse Venture Fund aims to invest €150 million in American and European cleantech start-ups.¹⁴

Blended finance, where philanthropy and/or development finance are used to mobilize private capital, can help hard-to-fund projects, especially in developing countries. Standard Chartered Bank, Société Générale, DWS, and Mitsubishi UFJ Financial Group are some of the active private investors in blended finance.¹⁵



Moreover, large global FSIs are increasingly joining coalitions such as the Glasgow Financial Alliance for Net Zero (GFANZ), committing to align lending and investment portfolios and ramp up green capital. The GFANZ is trying to accelerate country-specific climate finance flows and build a bankable pipeline of projects in countries such as Colombia and India.¹⁶

To stimulate the market for green bonds, government actions like the tax credits embedded in the Inflation Reduction Act (IRA) and Infrastructure Investment

and Jobs Act (IIJA) are intended to address the “green premium” issue referenced earlier. And early returns suggest it might be working: around US\$2.3 trillion have been issued in green bonds so far in 2023, with US\$487 billion raised in 2022.¹⁷ Meanwhile, green loans, typically smaller in size than green bonds and arranged privately, constituted just 2% (~US\$10.4 billion) of the market in 2022. So far this year, 70% of loan instruments originate from Asia-Pacific and Europe combined.¹⁸

GOVERNMENTS AND REGULATORS: LEADING FROM THE FRONT

Industry estimates suggest that about 75% of climate funding will flow from the private sector.¹⁹ But while the private sector may account for the bulk of funding, governments can—and are—playing a role in the net-zero transition through policy interventions and financing.

One potential role for governments to consider is to try redressing the market failure that carbon is underpriced, which could explain green premiums, at least in part.²⁰ Some governments have considered policies to promote low-carbon products by levying

carbon taxes, such as the European Union’s (EU’s) proposed Carbon Border Adjustment Mechanism.²¹

Other policy responses may include tax incentives or government funding, which could *de facto* derisk private investments. The United States’ IRA, which allocates over US\$400 billion in spending and tax incentives to accelerate the transition to clean energy, is expected to help drive investment in carbon capture and green hydrogen.²² Separately, the EU has unveiled its own “Green Deal Industrial Plan.”²³

In addition to government policy action that could help derisk and incentivize private investment, the official sector—central banks, international bodies, and supervisors—will likely continue playing a role in this space. For example, the Bank of England and European Central Bank now have climate goals. The central banks of Japan, China, Singapore, Hong Kong, the United Kingdom, and the EU have implemented measures to encourage green financing, via financing facilities, grants, or changes in monetary policy.²⁴

Accelerate now!



Despite these examples of progress, FSIs' efforts to mobilize private capital to climate tech could be improved. The total issuance of green bonds to date is less than half of the *annual* issuance from 2025–2030 needed to address the stark risks of climate change.²⁵

With blended finance initiatives from US and EU governments coming online, developing a robust, climate-centered financial ecosystem can be paramount in addressing the funding gap. Here are some steps FSIs can consider to help close that gap and meet their own climate commitments:

1. **Understand climate tech.** Financing climate early tech requires that FSIs educate themselves about the technology and get smarter about potential risks and opportunities. They may require setting up centers of excellence that focus on climate tech.
2. **Create innovative financing instruments.** FSIs should use their financial expertise, product frameworks, technology, and geographical reach to create structures that spread risk to facilitate both climate-tech development and deployment.
3. **Build borrower profiles.** FSIs can provide small loans to climate start-ups, which can help them build their creditworthiness.
4. **Address information asymmetry.** FSIs can facilitate market development by sharing information and data within the industry and providing support for new business models that can help create a market for next-generation climate technologies.

5. **Enhance risk management capabilities.** By expanding climate-centric information, firms can manage the financial implications of climate change on a day-to-day basis, generate new insights, and bolster reporting.²⁶

According to the Intergovernmental Panel on Climate Change's 2023 Sixth Assessment Report on greenhouse gases, emissions must peak before 2025 and decline 43% from 2019 levels by 2030 to limit global warming to 1.5°C.²⁷ Given the risk of triggering potentially catastrophic tipping points, bridging the funding gap, and doing so promptly, is important to the broader effort of reducing carbon emissions. FSIs are in a privileged and powerful position: They may hold the key to unlocking the power of groundbreaking climate technology. And they should use it.

METHODOLOGY: WHAT'S BEHIND OUR FUNDING GAP ESTIMATE

Our prediction of the private funding gap for early-stage climate mitigation technologies is based on the difference between publicly available forecasts of current funding growth rates and our analysis of the total funding requirement for the forecast period of 2021–2030. The funding requirement for climate early tech is a function of the total climate funding, calculated as a percentage of GDP, an estimation of technologies that are in concept or at the prototyping stage using [Greenspace Navigator](#), and the fraction of funds likely to flow from the private sector. Lastly, we estimate the potential availability of private funds (i.e., venture capital funding and green bonds) raised by financial corporates, during the forecast period to arrive at the funding gap.²⁸

Endnotes

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