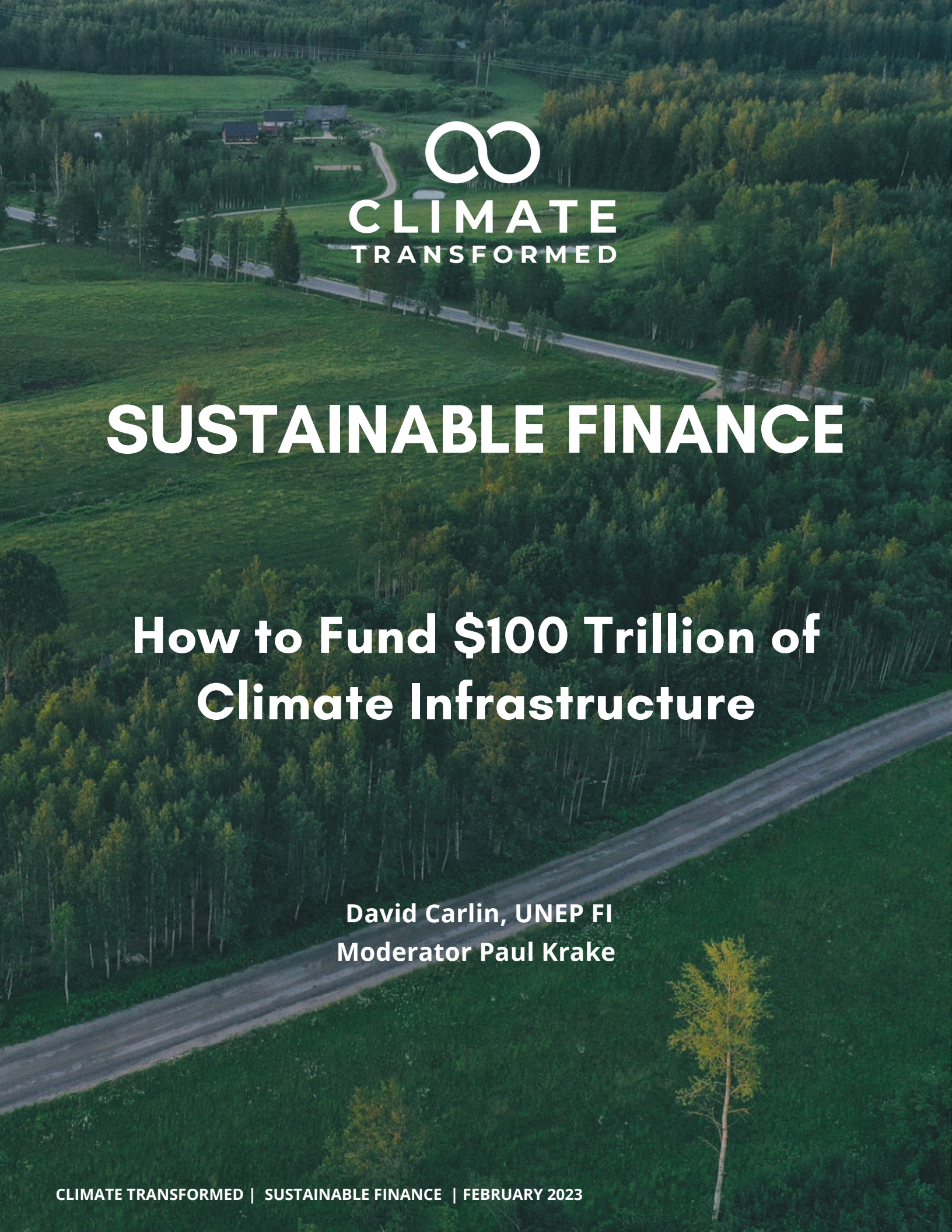

CLIMATE TRANSFORMED

SUSTAINABLE FINANCE

How to Fund $100 Trillion of Climate Infrastructure

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Moderator Paul Krake

How to Fund $100 Trillion of Climate Infrastructure

David Carlin is the Head of Climate Risk at the United Nations Environment Programme Finance Initiative (UNEP FI).

Summary

This top-down look at the financing needs of the energy transition, decarbonization, and the pathway to net zero is essential when assessing the opportunities for the private sector funding component of the largest investment opportunity of our lifetime.
Watch the full discussion here.

Key takeaways

- This top-down look at the financing needs of the energy transition, decarbonization, and the pathway to net zero is essential when assessing the opportunities for the private sector funding component of the largest investment opportunity of our lifetime.
- Most funding will come from debts, grants, nature swaps, or specific equity. The finance is sourced from Development Financial Institutions (DFIs), governments, Multilateral Development Banks (MDBs), and the private sector. International mechanisms have been set up to increase the dispersal of funds.
- Climate finance needs to grow dramatically from its present level to meet the 2030 goals. Currently, we are around 10% to 20% of the necessary levels of meeting the Paris goals set for 2030 and 2050. Climate-related technology and measures require about three to six times increase in finance than current levels.
- While some key difference-making areas—such as renewable energy—are highly funded (28% achieved), other areas like agriculture and water are often overlooked. They must also be financed as they play a huge part in providing solutions to climate change. Scaling these solutions may cost less capital, but they will be a significant part of our solution.
- To meet the climate goals, clean energy finance needs to be scaled up significantly, with an estimated need of $3 to $5 trillion annually. The energy transition also presents a vast opportunity to create new markets.

Paul's observations

The complexities of modeling the infrastructure requirement for achieving Paris goals create a wide range of potential outcomes. The exhaustive work that David and his team have executed in conjunction with organizations like the International Energy Agency should be your benchmark when assessing the scale of investment opportunities in transportation, grid modernization, agriculture, hydrogen, etc. Working on a financing assumption of $4tn plus between now and 2050 is a useful benchmark, but a granular look at the current level of investment in different mitigation segments should excite all investors that the opportunities are in their infancy. While renewables are at about 28% of the investment required to meet an average scenario, all other major segments such as energy systems, buildings, infrastructure, water, waste, and agriculture, are at or below a tenth of what is required.
Those doubting the opportunity for climate infrastructure only need to look at the following chart:

How is the world doing on climate finance?

Segment	2019/2020 Investment ($bn/yr)	Implementation cost of Paris-aligned scenarios through 2050 ($bn/yr)			Progress against avg. scenario (%)
	Tracked	Lower bound	Average scenario	Upper bound	Tracked (%)
Climate Finance	**653**	**5,209**	**7,604**	**11,513**	9%
Mitigation & Dual Benefits	**603**	**5,034**	**7,350**	**11,181**	8%
Energy Systems	333	1,526	3,319	6,625	10%
inc. Renewable Energy	323	662	1,142	1,983	28%
Buildings & Infrastructure	51	480	800	1,119	6%
Industry, Waste & Water	10	280	369	458	3%
Transport	163	2,449	2,565	2,681	6%
AFOLU	10	298	298	298	3%
Adaptation	**49**	**175**	**254**	**332**	19%

Source: taken from David Carlin's presentation at the Sustainable Finance forum

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Presentation: Climate finance flows and needs

Understanding Climate Finance

Climate finance supports initiatives that reduce greenhouse gas emissions and promote sustainable practices globally. It aims to mitigate emissions and risks through investment in climate-related activities. The majority of the funds come in the form of debts, grants, or specific equity. A few other forms tend to have various swaps where certain amounts of debt might be forgiven for various sustainable outcomes; however, these funds are not currently common.

The finance is sourced from Development Financial Institutions (DFIs), governments, Multilateral Development Banks (MDBs), and the private sector. International mechanisms have been set up to increase the dispersal of funds.

The UN Framework Convention on Climate Change has categorized funds from the MDBs and DFIs as either Official Development Assistance (ODA) or new and additional climate finance. Institutions will be able to access these two types of finance through the Global Environmental Facility (GIF) and the Green Climate Fund (GCF).

The private sector plays a crucial role in the carbon markets, which receive investments from private institutions and governments via Internationally Traded Mitigation Outcome (ITMO) to meet their climate targets. Most of the finance is invested in individual projects, with a significant portion directed toward mitigation, particularly in the energy and transportation sectors.

Looking forward to COP28, the discussions around climate are focused on reimagining the relationship between the private sector and finance for emerging markets and developing countries.

Major international mechanisms for climate finance

Climate finance is available to emerging markets and the least developed countries (LDCs). The UN Framework Convention on Climate Change (UNCCC)—through the COP process and its Standing Committee on Finance—has three main mechanisms of funding:

- The inter-governmental finance is channeled to international initiatives through GCF, which is the largest single fund exclusively focused on climate change.
- The Adaptation Fund (AF) focuses exclusively on building adaptation and resilience to climate.
- The Green Environmental Fund (GEF) has sub-funds for disaster relief and economic development.

The scaling of this capital to meet the commitments is under discussion.

Climate finance needs: forecasts and challenges

Climate finance needs will vary based on economic growth, population, technological development, and financial variables. Closing the finance gaps for mitigation and adaptation by 2030 or 2050 will be greater than $850 billion annually. On the high end of the spectrum, the annualized investments will be $10 trillion. This investment will be required for the entire low-carbon transition. Moreover, the private sector

will experience a capital influx.
Due to long development and capital deployment cycles, investments must align with the net-zero and climate-resilient pathway. Both corporates and governments are identifying areas that require scaling to meet near-term climate goals in order to plan their investments, research and development budget, and purchasing decisions.
A major area that requires a significant scale-up is energy system transformation, which involves electrifying elements that currently rely on fossil fuels, such as electric vehicles. In addition, the transportation system also requires scale-up as it includes not only the electrification of vehicles but also the development of the infrastructure to produce EVs and to ensure the resilience of the supply chain.
Unfortunately, some critical areas that can help us meet climate goals are often overlooked and underfunded. For example, the loss-and-damage and adaptation and resilience sectors receive insufficient funding, even though they are essential to ensure the well-being of communities and nature. These sectors cannot wait until 2050 to secure adequate capital and must be scaled up as soon as possible to benefit the environment and society.

How is the world doing on climate finance?

Climate finance needs to grow dramatically from its present level to meet the 2030 goals. Currently, we are around 10% to 20% of the necessary levels of meeting the Paris goals set for 2030 and 2050. Climate-related technology and measures require about three to six times increase in finance than current levels. While some key difference-making areas—such as renewable energy—are highly funded, other areas like agriculture and water are often overlooked. They must also be financed as they play a huge part in providing solutions to climate change. Scaling these solutions may cost less capital, but they will be a significant part of our solution.
We have only reached 28% of the necessary investment in renewable energy infrastructure to align with the Paris Agreement 2050 target, as estimated by the Climate Policy Initiative using the 1.5-degree scenarios of the Intergovernmental Panel on Climate Change. To achieve this goal, significant investments are required in renewable energy production, electrification, and grid stabilization.

Where is climate finance falling short?

The majority of climate finance is allocated towards mitigation efforts, while adaptation financing is largely sourced from public funds. Adaptation finance is crucial as the adverse effects of climate change increasingly affect communities, yet it remains neglected. However, less than 10% of climate finance currently goes towards adaptation, despite the need to increase tenfold to address the growing impacts of climate change.

Climate finance supporting adaptation

The UN's Adaptation Gap Report (AGR) outlines the applications of adaptation finance, which include hazard reduction through measures such as nature-based solutions, vulnerability reduction through the development of infrastructure and systems within institutions to ensure resiliency, and exposure to risk

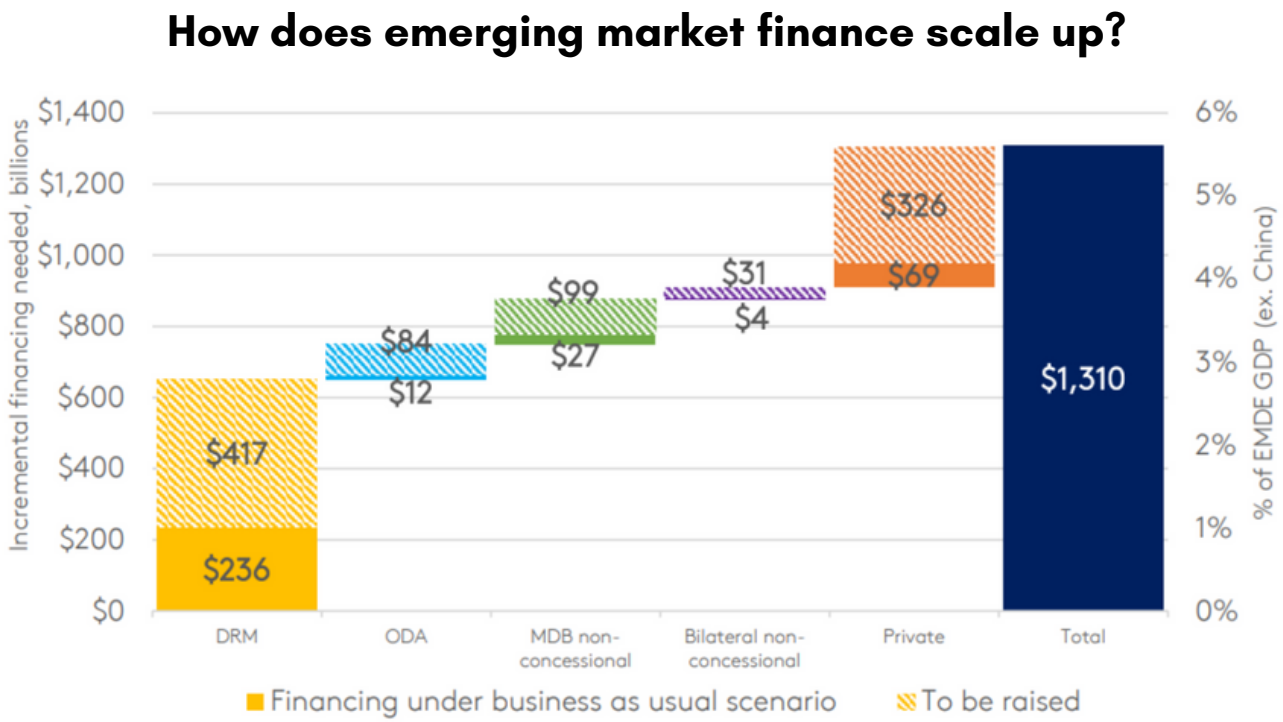
reduction through elements such as early warning systems. However, all of these areas are currently underfunded.

Allocation of mitigation finance

The current allocation of mitigation finance has largely been directed toward the renewable energy and low-carbon transportation sectors. In recent years, investment in transportation has increased significantly, reaching a 500% increase. However, there is a need to redirect existing finance away from high-emitting assets and towards low-carbon alternatives. This requires a shift in economic incentives that prioritize low-carbon initiatives over high-emitting projects. To meet the climate goals, clean energy finance needs to be scaled up significantly, with an estimated need of $3 to $5 trillion annually. The energy transition also presents a vast opportunity to create new markets.

Suggestions to scale climate finance

Scaling climate finance requires applying innovative financial tools, such as debt-for-nature swaps, green bonds, and such products. It can be scaled by developing robust and credible international carbon markets where a carbon price is straightforward. The reimagining of development funds is required to unlock new pools of climate finance and enable rapid responses to climate disasters. Blended finance is needed to expand for derisking and attracting private capital. Creating national and regional policies is required for energy transition and adaptation. This scaling also needs investments in developing and deploying new technology and nature-based climate solutions. Climate finance must focus on the co-benefits for the environment and society.



Source: taken from David Carlin's presentation at the Sustainable Finance forum

Questions & Answers

Deficiencies in Accounting Standards

We are at the early stages; however, we are making important progress regarding a rigorous accounting framework toward climate risk. Over the last decade or two, initiatives such as Carbon Disclosure Project (CDP) and the Global Reporting Initiative have worked with companies to get voluntary disclosures of their emissions and various climate risks.

In 2015, the Financial Stability Board of the G20 created the Task Force on Climate-Related Financial Disclosures (TCFD) to develop a common language for financial institutions to measure and manage their financial risks related to climate change. The TCFD released its 11 voluntary recommendations in 2017 covering governance, strategy, risk management, metrics and targets to improve climate-related information in financial markets. Over time, we have seen success in various institutions adopting the TCFD. However, we have still not reached a state where institutions use the information for climate-related disclosures as they do in financial reporting. Integrating climate-related considerations into mandatory disclosures is important to increase comparability and standardization.

The International Sustainability Standards Board (ISSB) is working on how TCFD's recommendations and sustainability fit together and providing us with a language to speak in these disclosures. ISSB's work has also considered various other decisions, including Scope 3 inclusion and scenario analysis. These standards are expected to be finalized by June 2023. They will likely play a crucial role in smoothing the differences and providing a template for the regulators looking to mandate disclosures.

The current challenge is not with the standards but with the lack of integration between sustainability and finance. The industry is still building skills and data, and the compliance regimes aim to create standardization that could help people figure out—based on their annual report—the extent to which climate risk is influencing their financial prospects.

Level of complexity around standards related to climate risk disclosures

The complexity of climate scenario analysis is increasing, requiring more quantification work from the TCFD. While there is some progress in standardization, the integration between sustainability and finance remains insufficient, impeding standardization. Most of these modelings consider climate as a potential incremental risk. We need more consideration of how climate will pose these financial impacts.

Companies need to realize that climate is fundamentally a cross-cutting risk. This means that we need to think not only about the potential loss under different climate scenarios but also about how various economic drivers can impact certain elements, such as the values of our portfolio companies and the ratings of our borrowers.

Currently, most financial institutions position themselves as reporters instead of users of their climate disclosure information, and they need to use that information in their decision-making processes. Financial institutions can leverage the information effectively through comprehensive disclosures and start taking action to mitigate their climate risks. Until the disclosure reports are fully considered in the decision-making process, their impact will remain limited to learning rather than utilizing them to be

What are the benchmarks for modeling a $20 trillion investment by 2030?

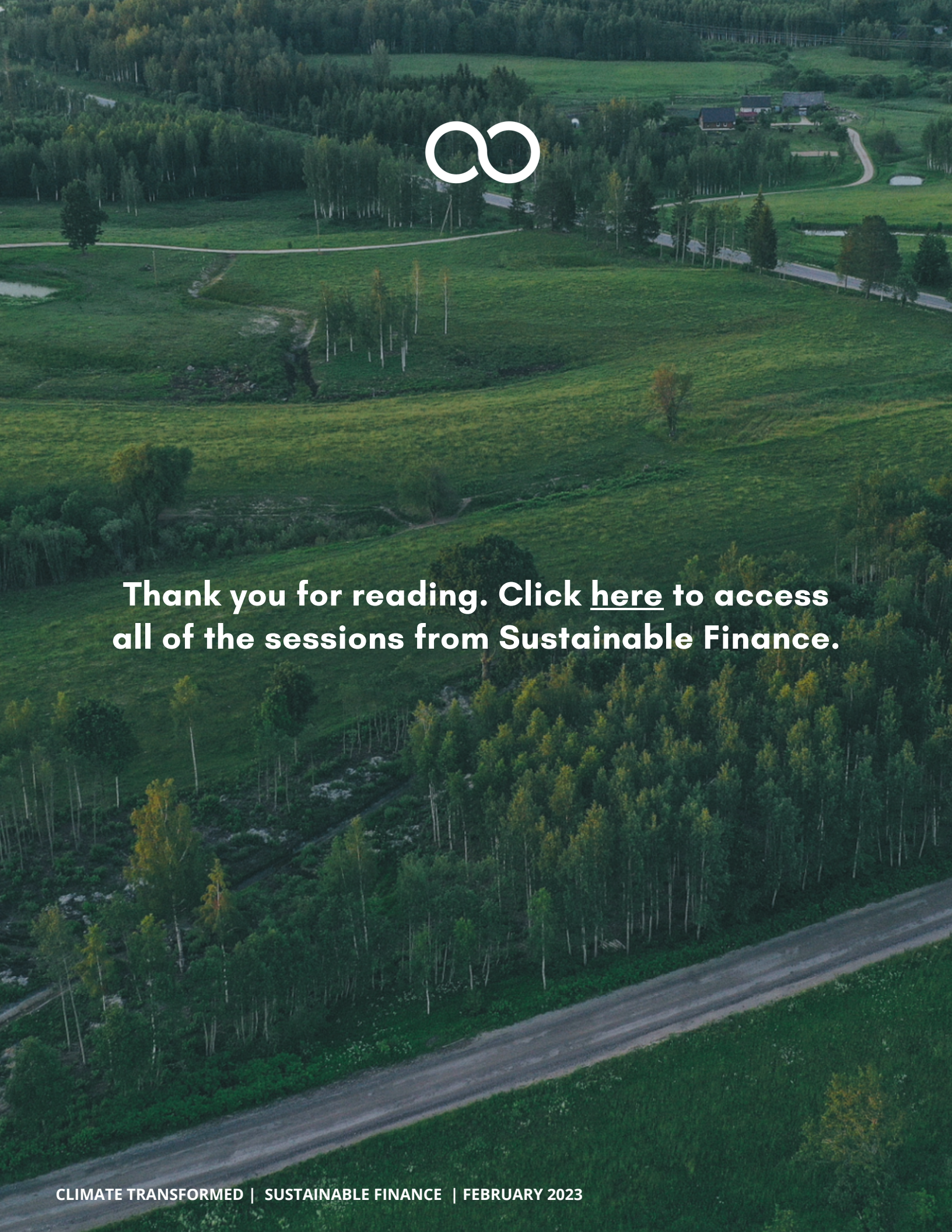
The International Energy Agency (IEA) provides an explicit roadmap for this investment. This capital will be used to transform the power system by abating the use of fossil fuels and replacing it with electricity while scaling up renewable energy. On the transportation side, we will observe more sales of electric cars. We will begin to see the electrification of fleets and trucks, scale-up of Sustainable Aviation Fuel (SAF), and emission mitigation methods in the shipping industry. In 2030, we will begin to see a significant energy transformation.

Will the mitigation finance be based regionally?

The IEA has created a framework based on regions to determine analytical capacities in energy markets, technology trends, policy strategies, and investments across the energy sector. While adaptation finance is mainly directed toward least developed countries, mitigation finance will focus less on the needs of the emerging world. The earlier stage of these investments will come from the West and the wealthy economies to scale these technologies and drive down the cost. Reaching net zero is a combined global challenge. But some countries, such as India, will take longer than others to achieve their goals depending upon their size and the net emissions.

How can we get to $4.3 trillion in annual climate finance?

We can get to this level of climate finance by creating the right market incentives through expanding carbon pricing and carbon tax mechanisms. This will create economic incentives for carbon capture and sequestration for the cost competitiveness of low-carbon production industries like cement and steel. Participation from the private sector will also enhance climate finance. Governments, particularly in the western world, need to responsibly speed up the net-zero efforts and ensure other countries are taking care of these goals. Development finance has a critical role, especially in emerging economies. Offering debt swaps where possible will also help scale up the climate innovations.



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