48. Unleashing the power of financial markets for the green transition

Jeremy Oppenheim and Catharina Dyvik

We are living through one of the warmest decades ever recorded, with climate-related natural disasters increasing in frequency and intensity. We are also losing biodiversity at unprecedented rates, with over a million species on the verge of extinction. Recent Australia and Amazon forest fires remind us that deforestation, often caused by agricultural and infrastructure expansion, is also a major driver of global heating and environmental degradation.

According to the scientific community, limiting global warming and mitigating the effects of climate change will require a rapid and far-reaching transformation across the real economy if we are to reach the net-zero emissions target by 2050. To do so, we need to green our energy systems, decarbonize our heavy industries, integrate resilience into our building design, modernize our transport systems and shift how we produce our food. This will require strong and coordinated political leadership, changing consumer habits and bold businesses figuring out how to create value through sustainability. But none of this will happen – or happen fast enough – unless it is combined with rapid and widespread action from the financial sector.

There has been growing momentum and countless new initiatives over the past years that are committed to “greening” the financial system. But it is not happening at the necessary scale, speed or ambition required. The financial system is only responding at the margin. We continue to invest in high-carbon industries, with greenhouse gas emissions at record highs in 2018 and coal finance still on the rise.

Global climate finance flows dropped 11 per cent in 2018 to \$546 billion¹ largely due to falling spending on wind and solar and despite unprecedented efforts to install new renewable capacity. By comparison, the largest global banks have poured nearly \$2 trillion into fossil fuel financing since the Paris Agreement was adopted, with financing on the rise each year.

INVESTING IN THE NEW CLIMATE ECONOMY

To achieve net-zero emissions by 2050, a lot more capital will need to shift into the new climate economy, which is low carbon, captures negative externalities from high-emissions industries like coal or livestock, and which creates value from more circular and sustainable activities:

First, we need to invest roughly \$2.5 trillion more each year in sustainable, low-carbon infrastructure – of which clean energy counts for about \$1 trillion. This means a massive focus on energy efficiency, roll-out of renewable technologies, and decommissioning early energy infrastructure not compatible with Paris.²

Second, we must commit up to \$350 billion more each year to transform global food and land use systems – which represent at least a third of the most cost-effective climate mitigation solutions and are also essential to strengthening food security and biodiversity.³

Finally, we will need to make infrastructure more climate resilient, which adds about 3 per cent to the upfront costs, to protect our economic and natural infrastructure against the inevitable physical impact of climate change.⁴ The lion's share of this needs to go to emerging markets, who are typically on the front line of climate change and much less equipped to handle its effects.

REIMAGINING HOW WE INVEST

Investing in the low-carbon economy has traditionally been more capital intensive than continuing as usual. For example, building a wind farm has typically required higher upfront costs than building or expanding a gas facility or thermal coal power plant, resulting in a barrier to scaling up renewables. This is especially the case in emerging markets where the fiscal and social constraints are very real, and where workforces are still dependent on the coal sector for power generation. Due to significant reductions in the cost of clean-tech⁵ inputs (especially for solar and wind), this is gradually changing, and it is becoming an easier sell to repurpose outstanding capital towards low-carbon, resilient assets.

When we also analyse the lifetime costs of the various energy-generating technologies, renewables are rapidly becoming more competitive. Considering all plant-level costs, such as initial investments, operation costs and fuel costs during the power plant's lifetime, renewables are requiring much less ongoing expenditure compared with the "fuel" cost of a gas plant.

But it is not only this cheaper renewable technology and lower ongoing "fuel" expenditure cost that is accelerating the low-carbon transition, but also new and smarter delivery models. For example, "infra-light" solutions that

are more distributed, digitized and service based can increase productivity, increase resilience to climate change and reduce upfront investment costs.⁶

Supporting such new models will require financial innovation by structuring vehicles that allow various forms of capital (including more risk-averse institutional investor capital) to invest in nascent business models, new technology solutions and aggregated pools of smaller high-impact projects. Blended finance solutions that use development capital to mitigate investor risks, as well as commercial insurance solutions, can play a crucial role to make this work.⁷

Energy-efficiency assets, for example, would normally be considered too small-scale or illiquid for institutional investors. Through innovative products such as green mortgages or other government-funded programmes, actors can be incentivized to pursue energy efficiency improvements. Pools of such assets can then be aggregated and structured into bonds that fit well for large investors such as pension funds.

Critically, investing “in line with Paris” does not mean jeopardizing returns or mandates. On the contrary, picking “winning” companies that are well equipped to manage climate-related physical and transition risks generates better performance. And it is becoming increasingly evident that incorporating environmental and social considerations is key to mitigating financial risk.

In fact, incorporating sustainability considerations into investment decisions is now slowly becoming recognized as aligned with the objectives of savers in the broader society and long-term asset owners’ “fiduciary duties” (e.g., responsibilities when managing money on behalf of others). It should really be no surprise that a recent survey suggests that close to 70 per cent of UK pension plan holders want their investments to consider the impact on people and planet alongside financial performance.⁸

TODAY’S SUSTAINABLE FINANCE MARKET

With such a strong business case, is anything happening today? Newspaper headlines suggest that the finance industry is getting on with it. The macro figures for total global sustainable finance assets under management have been reported at \$31 trillion for 2018 – up over 30 per cent from 2016.⁹

The mainstream media frequently report on ambitious climate finance targets from development banks, they write about investment banks that are expanding their sustainable finance practices, they highlight new climate and resilience initiatives, and they write about acquisitions of climate risk analytics companies.

Green and sustainable labelled products continue to rise with the addition of new instruments like “transition bonds”, which help companies shift away from “brown” industries or high-carbon practices (e.g., oil & gas companies

investing in renewables or cattle companies intensifying to avoid deforestation). “Sustainability-linked loans” and insurance products that incentivize better environmental outcomes are also becoming more common, especially in consumer facing industries like food and fashion. “Resilience products” that support climate adaptation are still nascent, but we expect these to become more popular as the impacts of climate-related natural disasters are felt around the world, including resilience bonds and parametric insurance products triggered by events like cyclones or droughts.

BUT IS IT ENOUGH?

Financing for coal, the most polluting of fossil fuels and still the largest source of energy to generate electricity worldwide, has continued to expand despite more banks and financial institutions taking steps to eliminate their involvement. Carve-outs and loopholes still exist, with large international banks still offering coal-related advisory, insurance and corporate finance services. All this has corresponded with the highest ever greenhouse gas emissions recorded in the year 2018.

Many of the market’s largest players are sitting on the side-lines. Huge variation remains between investors across geographies, and the numbers and sustainability headlines may be somewhat misleading. We know that many leading investors are still grappling to understand their full exposure to climate change, and how they should position themselves ahead.

In some geographies, investors’ interest has been driven heavily by pro-climate regulatory pressures (e.g., in France, the Netherlands and the UK). For others, it is more of a relatively recent realization that they need to “future-proof” portfolios for imminent shifts across demography, consumer preferences, technology and climate-related risks. But a recent report from a global credit rating agency states that banks and other investors are still dramatically underestimating climate-related risks.¹⁰ Very few have a Paris-aligned strategy or “net-zero” ambition.

The first and most common sustainable investment strategy globally continues to be negative or exclusionary screening on the basis of environmental, social and governance (ESG) factors – especially in Europe where this accounts for more than 60 per cent of the total “sustainable finance” universe. Arguably, this kind of negative screening strategy (which excludes certain industries or companies by divesting) does little to directly support investments in a new climate economy and also removes investors’ ability to engage with – or pressure – companies to become more green. But it can send a very strong signal for companies to start acting for climate.

The second strategy is ESG integration, which incorporates considerations and tools in decision-making, and this is becoming more popular. The third

category with more active strategies, often called “impact” or “thematic” investing, counts for only a small fraction of the total (current size of the impact investing market roughly at \$500 billion).¹¹

PERCEIVED TRADE-OFFS

For the large majority, climate issues are still not considered material and do not feature in short-term investment decisions. Why? They are not convinced that pursuing green initiatives will deliver and that there is no trade-off between investment performance and sustainable investing. Certainly not in the short-run that drives their own private incentives.

Among hedge fund managers, an overwhelming 60 per cent still do not consider ESG factors when selecting equities for their portfolios. Despite the urgency of the climate situation, the prevailing belief in international finance is that portfolios will have time to gradually evolve. This leaves all main-stream portfolios exposed to the risk of a sudden shift in sentiment – a Minsky moment¹² – by the financial community once climate risk comes to the fore due to some unpredicted event.

As is often the case, finance is characterized by binary risk exposure: a problem can be neglected until it is too late. Even though capital markets are supposed to look to future cash flows, the combination of discounting methodologies, short-term incentives and the unfamiliar, non-linear nature of climate-related risks makes it almost inevitable that, absent strong regulation, market actors will only respond when it is too late. The ability of cash-rich, carbon-intensive incumbents to reward financial intermediaries with rich fees only compounds the problem.

WHAT NEEDS TO CHANGE?

Multiple market factors, information failures and policy distortions within the capital markets create a bias towards the status quo – in this case, an economy addicted to fossil fuels and a financial sector that has largely only responded in an ad hoc way to the climate crisis. Given that the low-carbon transition is one that is relatively capital intensive, it becomes a huge problem as money won’t flow at the speed and scale required. As a result, the finance system is itself a brake rather than an accelerator of the required transition. We could drive real change by tackling the following six systemic barriers:

1. *Regulatory disincentives:* Many of the regulatory requirements we have today on liquidity, reserves and capital provisioning for banks and other financial institutions were introduced or significantly tightened after the global financial crisis to safeguard the stability of the financial system.

This was deemed necessary. But these tight regulations are by now seen by many to restrict the flexibility of banks (Basel III)¹³ and insurers (Solvency II in Europe)¹⁴ to invest in the low-carbon economy that we need as the regulations create hurdles to invest in green infrastructure especially in emerging markets.

Regulators have more work to do ahead to find the right path. Our existing risk assessment frameworks tend to be backward-looking and therefore do not adequately capture climate-related risks, which will require more sophisticated forward-looking analysis and longer time horizons.

One option that has been discussed is to have a differentiated capital weighting system that assigns a higher or lower risk weight for provisioning depending on sustainability merits in anticipation of future negative and sudden price developments.

Fiscal policy including how governments apply taxes and subsidies at the real asset level is also extremely important, and it can have an outsized impact and affect investment strategies for example by introducing meaningful carbon pricing and phasing out fossil fuel subsidies.

Other options include tariffs and exemptions for water supply, tax breaks for geographical diversification of farming, and exemptions from land use fees for road and rail infrastructure.

2. *Fiduciary duty and traditional mindsets*: Institutional investors often justify climate-inaction by citing their fiduciary duty to maximize returns. Their ability to factor in non-financial metrics (e.g., in relation to climate) remains unclear or secondary.

While efforts have been taken in Europe to clarify investor duties (both by the UK Prudential Regulation Authority and at the EU level), the US is arguably still lagging behind. Most recently, even efforts to clarify potential conflicts of interests between retirement advisers and their clients through the Department of Labor fiduciary rule have been halted in the US.

The lack of clarity on fiduciary duty further translates to how asset managers execute their investment mandates as they are rewarded on the wrong metrics in an increasingly competitive low-fee environment, typically leading to short-term performance bias. The lack of clarity on the scope of fiduciary duty and existing loopholes can further reinforce the old mindset: that taking non-financial metrics into account when assessing portfolio opportunities reduces the investable universe and risks limiting returns.

3. *Low or no asset allocation for infrastructure and climate-tech*: Traditional asset allocation strategies (and regulations) tend to restrict institutional investors from pursuing “alternative assets” like infrastructure that are arguably well suited for patient and long-term capital. Less familiarity

with this asset class often leads to a high perception of risk and reduces investor appetite for infrastructure. And even for traditional infrastructure investors, setting meaningful allocations for emerging markets is challenging due to high perceived risks and lack of historical performance data.

If you factor in that investments are required in newer, asset-light climate and technology solutions, then we are in relatively niche territory. This is especially true around cleantech innovations, which are more capital intensive than, for example, the next social media app and, as a result, suffer from a deep “valley of death” as they move beyond the demonstration phase.

Generating investable products for institutional investors through aggregation and implementing other derisking measures (including policy support, innovative public–private partnerships or blended finance platforms) can help address the challenges of investing in the low-carbon economy.

Infrastructure is an arena in which the multilateral development banks (MDBs) are playing a critical role. However, their balance sheets are stretched, and they need to further explore opportunities to use guarantees, first-loss provisions and other blended finance tools to crowd-in the private sector. In part, the MDB role will be around financial innovation; but it is just as critical that they support governments on their policy reform agenda needed to implement low-carbon, climate-resilient growth pathways.

4. *Confusing taxonomy and unknown product quality:* With growing volumes of “ESG”, “sustainable”, “impact”, “green” and “ethical” products on the market, it is not easy for investors to navigate the shades of green versus brown. Asset managers have been able to label funds and define their investment processes as they see fit, making it challenging to compare and understand the real impact of products.

The industry has to date relied on voluntary commitments without a true standardization of practices. While voluntary taxonomies have worked relatively well in Europe to date, it may be less effective in the US where you may have a higher perception of liability risk. The EU’s efforts to implement a taxonomy and regulation for low-carbon benchmarks will be a huge step forward in this respect, which hopefully will be harmonized across more geographies including the US.

Other more “traditional” products are also limited in emerging markets, preventing capital to flow cross-border, such as long-dated foreign exchange hedging instruments or sufficiently developed bond markets that enable price discovery (e.g., green bond issuance in local currency).

5. *Limited data and tools*: Financial information providers are ramping up efforts on climate alongside some new specialized players, but we do not yet have fully sophisticated data and tools, which is limiting investors' ability to accurately assess exposure of portfolios, to evaluate performance and to forecast properly in terms of climate.

There is more confidence on how to gather data points on the *physical* risk side (e.g., bottom-up estimates around probability and potential damage – for example, caused by floods). Investors are slowly getting sensitized to these risks – for example, through rising insurance claims in the context of more intense hurricane seasons and, perhaps more powerfully, through the recent PG&E bankruptcy. The latter case in which a major utility is being held responsible for major property losses as a result of the wildfires in California could be a game changer in terms of investor awareness and willingness to price physical climate risk.

On the *transition* side, frameworks and tools feel more nascent (e.g., how a company is placed to handle climate-driven industry disruption). Figuring out how to identify which companies are ahead of the curve and robust enough to manage the transition is now climbing upwards on many investors' agendas to avoid being left with stranded assets. Such examples include recent bankruptcies in the US coal sector where the transition to a clean economy is starting to price them out of the market.

Investors' own models and decision-frameworks have not been designed to incorporate or consider "difficult-to-quantify" and non-linear climate risks. For many, climate issues are still not considered material enough, or not near term enough to feature in investment decisions and valuation models. That investors are stuck with "short-term thinking" is a big problem.

A further challenge is that climate effects should not be analysed by sector teams of a specialized fund manager in isolation; it cuts across industries and its disruptive impact on business is amplified by other mega trends such as artificial intelligence, automation and so on. It could affect multiple economic sectors simultaneously, from real estate through agriculture to the energy system to global supply chains and consumer goods industries.

6. *Significant information gaps and lack of transparency*: For consumers and the broader public, it is challenging to get good information and transparency on how financial players are using their financial strength (by investing) and power (as major shareholders and bond-holders) to influence the behaviour of carbon-intensive sectors.

To some extent, investing in green assets remains a small marketing gig or nice-to-have story for financial firms, with relatively little information on how this compares to overall operations. Today it is hard to hold the

financial firms accountable for their climate announcements and commitments, and to differentiate laggards from the future winners – those that are at the forefront to pick assets that will capitalize from the transitions.

Each of these barriers is challenging on an individual basis. However, when piled together, they translate into a set of deep cultural norms and incentives (both implicit and explicit) to move cautiously towards the new low-carbon world. There is great innovation taking place in the financial industry, but much of the best talent is focused on fintech (financial technology) or algorithmic trading rather than the challenge of financing a climate-friendly future.

EXAMPLES OF REAL INNOVATION AND LEADERSHIP

Despite these systemic barriers, there are still many extraordinary sustainable finance pioneers who are trying to tackle these capital market-specific constraints to accelerate Paris-aligned investment. We highlight a handful of these entrepreneurs, leaders and innovators below to show that change really is possible, but this list is by no means representative of all the people working very hard on this agenda and who deserve to be celebrated for their efforts to shift the finance system to become more sustainable:

1. *On regulation:* Frameworks can become powerful tools to incentivize or accelerate Paris alignment – for example, by making the Task Force on Climate-related Financial Disclosures (TCFD) mandatory. To get the attention of capital markets, former Bank of England Governor Mark Carney, recently appointed as the new UN Special Envoy for Climate Action and Finance, has courageously used his power to call for more disclosure, implemented widespread regulatory reform and has now rallied more than 50 central banks to join forces through the Network for Greening the Financial System (NGFS). This is under the mandate of protecting stability through a more “orderly transition” and preparing the financial sector for the new climate economy. We have already seen TCFD become a powerful mechanism for forcing investors to internalize climate risk assessments despite being voluntary, and calls for it to become mandatory in key financial markets.
2. *On fiduciary duty:* Convinced that climate change poses a financial risk to its pension scheme, the HSBC UK pension fund decided that it had to take action and “walk the talk” to fulfil its fiduciary responsibility. Knowing that more than 90 per cent of the market tends to stick with the default option, HSBC, as an early mover, shifted its employee default pension scheme (on which staff are automatically enrolled) towards a climate-tilted

option (a global equities index fund designed to reduce exposure to companies deemed to be at risk from a shift towards low-carbon-based energy, and increase exposure to those companies deemed likely to benefit).

Another example of an asset owner revisiting its fiduciary duty would be the Rockefeller Brothers Fund, who pursued a rapid divestment strategy – getting out of the most intensive sources of emissions (coal and tar sands) within a year already back in 2014. Since then, the Fund has further reduced its exposure to other fossil fuel activities.

3. *On infrastructure and new tech:* The Canadian pension fund CDPQ is a good example of a pension fund not afraid of infrastructure. It directly holds roughly 5 per cent in infrastructure versus a global average of around 1 per cent. Along with a few other primarily Scandinavian and Canadian asset owners, CDPQ has also just committed to decarbonize its entire investment portfolio as part of the new “Net-Zero Asset Owner Alliance”, recognizing their important collective role in accelerating the global energy transition, but also capturing opportunities to earn solid returns by investing in low-carbon solutions.¹⁵

There are a range of blended finance vehicles that are excellent examples of creating structures that combine commercial capital with development finance to mobilize finance for infrastructure in emerging markets by overcoming certain investor risks (e.g., by providing development guarantees, insurance or downside protection through subordinate debt or equity in a fund).

An example is the structure developed by the Inter-American Development Bank (IDB) to accumulate a portfolio of standardized energy-efficiency receivables from Mexican energy service companies. The investments will be securitized through the issuance of green bonds in the local debt capital markets, supported by funding from the Green Climate Fund, the Clean Technology Fund and a guarantee mechanism from the IDB.

Another example of pioneering blended activity is the MacArthur Foundation, which together with its partners Rockefeller Foundation and Omidyar, is demonstrating real leadership with the 2019 launch of a catalytic capital consortium dedicating \$150 million through subordinated debt, equity and guarantees to various private sector vehicles to help address financing gaps for high-impact issues.

From the private equity and asset management world, we are also seeing a growing trend of sustainability and cleantech becoming linked to long-term success. Examples include Lombard Odier, which has committed to integrate sustainability across 90 per cent of its mainstream assets and is now managing a number of forward-leaning sustainability-themed long/short equity funds, and Generation Investment Management,

co-founded by Al Gore and David Blood, which has just raised another \$1 billion of private equity to back later-stage start-ups that work across environmental solutions, healthcare and financial inclusion.

4. *On products:* We should highlight green bonds as an example of a product that has come far on the journey both in terms of standardization due to organizations such as the Climate Bonds Initiative working on common principles, and in terms of growth in the number of issuances from sovereigns, municipalities, corporates and banks worldwide supported by initiatives such as the “Green Bond Pledge” spearheaded by the former UN climate chief, Christiana Figueres. Green bonds, although the cumulative total issued as of mid-2019 is still minuscule at \$650 billion compared to the total bond market, which exceeds \$100 trillion,¹⁶ have been instrumental not only to mainstream green finance but also to drive innovation of other products, which can help to drive capital towards low-carbon assets (e.g., green loans).
5. *On data and tools:* When it comes to investor tools and data, we are seeing a lot of innovation emerging in the climate analytics and robotics space – with deep data analytics skills bridging climate science and asset valuations.

On the *physical* risk side, a few interesting examples include “hotspot mapping” of companies’ physical risk exposure (e.g., Moody’s Four Twenty Seven),¹⁷ expanding datasets to also cover physical risk (e.g., S&P’s Trucost), and offerings using artificial intelligence and satellite technology to provide a picture of asset-level risk from flood, fire, heat, drought, cold, wind and hail events (e.g., Jupiter Intelligence).

On the *transition* risk side, there are a number of initiatives for investors worth following that are seeking to provide portfolio-level analysis (e.g., Paris Agreement Capital Transition Assessment – PACTA), company-level assessments (e.g., Transition Pathway Initiative – TPI) and benchmarks (e.g., World Benchmarking Alliance) to measure how assets are on the path to cope with the transition to a Paris-aligned world.

On the *financial tool* side, external providers are expanding their support with climate-risk scenario modelling (e.g., Ortec Finance), and new technology solutions are being offered to retail and institutional investors to customize portfolios to match their environmental strategies (e.g., robo-advisor OpenInvest).

6. *On transparency:* There are a number of attempts to increase visibility and transparency through developing league tables and disclosure projects (such as ShareAction’s Asset Owners Disclosure Project – AODP).¹⁸ We are also seeing some financial actors that have decided to go public with their own analysis and results in anticipation of more publicly available rankings (e.g., Legal & General Investment Management).

Positive efforts on transparency also include initiatives that are seeking to educate and increase awareness within the broader public, such as the UK-based “Make My Money Matter” campaign, which, importantly, is seeking to mobilize actors to demand that their capital is clearly and transparently invested in a way that is aligned with values, that limits harm and supports the SDGs.

CALL TO ACTION

This chapter has summarized a few of the systemic barriers that compound to prevent the capital shifts we need to see in order to accelerate the transition to a low carbon economy. And while it is possible to get disheartened by the size of the task at hand, pressure for action can only increase, giving courage to political leaders for bold policy, giving mandate for regulators to change rules, pressuring CEOs to transform their business models, driving more innovation for technology solutions and incentivizing investors to reallocate capital flows towards a low-carbon pathway.

The areas of change and examples of pioneering leaders highlighted in this chapter are a good start, but we need to go faster and scale up this agenda. Critical areas to deepen and accelerate change further include to:

- challenge asset owners, asset managers and investment consultants on the focus on quarterly earnings, past track-records and historic data instead of forward-looking and longer-term climate and tech-risk-adjusted projections;
- have finance ministers across all geographies incorporate climate resilience in macro-fiscal and financial frameworks (including working with the insurance industry for new solutions and International Monetary Fund incorporating climate in its Article IV surveillance mechanisms);
- strengthen the mandate, resources and capabilities of the multilateral development banks as a joined-up system, to crowd private capital into low-carbon, climate-resilient infrastructure across the developing world; and
- increase public awareness of the power of their personal finances to push for climate (e.g., unleashing the “Millennials” and “Generation Z” to demand more transparent, user-friendly financial products in line with their values).

We must remind ourselves that finance markets can only go so far without the right regulatory and policy context. Carbon pricing and the right sectoral policies are key – and a lot can be achieved through policy frameworks that have built-in ratcheting mechanisms (e.g., tightening regulations on the power

sector or in the auto industry, predictably increasing carbon pricing across the economy), resetting expectations for investors. Fortunately, we now have finance ministers, central banks, regulators, credit rating agencies – and importantly, investors and business – all elevating and accelerating efforts on climate (although some a bit naive, or marketing driven, so far).

We are observing the start of an acceleration of action that is exciting and could lead to new norms in capital markets. We may not be that far away from a positive Minsky moment when investors shift rapidly out of high-carbon or climate-exposed assets and future-proof their portfolios. That would change the game.

NOTES

1. Climate Policy Initiative (2019), *Global Landscape of Climate Finance 2019*, accessed 31 August 2020 at <https://climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2019/>.
2. New Climate Economy (2016), *The Sustainable Infrastructure Imperative*, accessed 31 August 2020 at <https://newclimateeconomy.report/2016/>; New Climate Economy (2018), *Unlocking the Inclusive Growth Story of the 21st Century*, accessed 31 August 2020 at <https://newclimateeconomy.report/2018/>.
3. Food and Land Use Coalition (2019), *Growing Better: Ten Critical Transitions to Transform Food and Land Use*, accessed 31 August 2020 at <https://www.foodandlandusecoalition.org/global-report/>.
4. Global Commission for Adaptation (2019), *Adapt Now: A Global Call for Leadership on Climate Resilience*, accessed 31 August 2020 at https://cdn.gca.org/assets/2019-09/GlobalCommission_Report_FINAL.pdf.
5. Any product, process or service that reduces negative environmental impacts through energy efficiency improvements, sustainable use of resources, or environmental protection activities.
6. Blended Finance Taskforce (2019), *Better Finance, Better World*, accessed 31 August 2020 at <https://www.blendedfinance.earth/better-finance-better-world>.
7. See Food and Land Use Coalition (2019), note 3.
8. Department for International Development UK (DFID) (2019), *Investing in a Better World: Understanding the UK Public's Demand for Opportunities to Invest in the Sustainable Development Goals*, accessed 31 August 2020 at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/834207/Investing-in-a-better-world-full-report.pdf.
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10. S&P Global (2020), “The big picture on climate risk”, accessed 31 August 2020 at <https://www.spglobal.com/en/research-insights/featured/the-big-picture-on-climate-risk>.
11. Global Impact Investing Network (2019), *Annual Impact Investor Survey*, accessed https://thegiin.org/assets/GIIN_2019%20Annual%20Impact%20Investor%20Survey_webfile.pdf.

12. Minsky moment refers to the onset of a market collapse when investors after periods of steady prosperity and investment gains (“bull markets”) engage in increasing (debt-financed) speculative activity that reaches an extreme that is unsustainable, leading to cash flow crisis and rapid asset price deflation.
13. Basel III – a global, voluntary regulatory framework on bank capital adequacy, stress testing, and market liquidity risk.
14. Solvency II – the EU insurance regulation covering the amount of capital insurance companies must hold to reduce the risk of insolvency.
15. The UN-convened Net-Zero Asset Owner Alliance seeks to unite investor action to align asset owners’ portfolios with a 1.5°C scenario, addressing Article 2.1c of the Paris Agreement.
16. Climate Bonds Initiative (2019), *Green Bond Market Summary*, 2019, accessed <https://www.climatebonds.net/resources/reports/2019-green-bond-market-summary>.
17. Four Twenty Seven (2019), “Demystifying climate scenario analysis for financial stakeholders”, accessed http://427mt.com/wp-content/uploads/2019/12/Demystifying-Scenario-Analysis_427_2019.pdf.
18. Example league tables: Asset Owners Disclosure Project (ShareAction – asset owner/TCFD focus), InfluenceMap (lobby focus – forthcoming investor focus), Clean Energy League Tables (BNEF – renewables focus), Global Green Economy Index (Dual Citizen LLC – country focus), BankTrack (bank/fossil fuel focus).