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POLLINATION INSIGHT

Navigating a
disorderly transition:
*Actions and priorities
for the private sector*

Conclusions from IPCC report AR6 WG3

Authors



Zoe Whitton

Partner

Zoe is an award-winning advisor on climate finance and sustainable investment. She advises investors, companies and regulators on the financial implications of climate change and transition strategy. Zoe previously led Citi's APAC ESG Research unit and advised investors on climate change at Credit Suisse and Bank of America Merrill Lynch. Zoe has won numerous research awards, was rated among the top ESG analysts globally in 2019, and was awarded the inaugural Rising Star award by Women in Banking and Finance.

She currently serves on the Boards of the Investor Group on Climate Change (IGCC) and the Centre for Policy Development (CPD), is a member of the Advisory Board of the Sydney Environment Institute.



Dr. Arjuna Dibley

Director

Arjuna ('Arj') Dibley is an expert advisor on climate policy, law and finance. Over the past decade, he has advised governments, international financial institutions and global corporations on the development and implementation of climate policy and legal frameworks, strategies and financing instruments. Arj was previously a lawyer at Baker McKenzie and a Senior Policy Adviser at the Centre for Policy Development. He has won numerous awards for his work, including best-lawyer under 30, a John Monash Scholarship, and Prime Minister's Australia-Asia Award.

On the side of his role at Pollination, Arj is an Honorary Research Associate at the Smith School for Enterprise and Environment at the University of Oxford, a Board Member at Carbon Plan and at Environmental Justice Australia.

Arj holds a doctorate in law and economics from Stanford University as well as degrees from the Australian National University, and is widely published in leading academic journals and the press.



Luke Fletcher

Director

With a background in both the energy industry and climate-change research, Luke has extensive experience advising companies and large institutional investors on ESG integration and climate-related risks and opportunities. Having worked as a senior ESG analyst in the investor research team at CDP, Luke developed methodology frameworks under TCFD and was lead author on a number of CDP's award winning sector research reports. Prior to this, Luke worked in the oil & gas industry as a Petroleum Engineer at BP across assets in Angola and an offshore rotation in the North Sea. Luke holds an MSci from Cambridge in Natural Sciences, specialising in Materials Science & Metallurgy. He was named among the top 10 SRI analysts in Extel IRRRI 2019.



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Executive Summary

The Intergovernmental Panel on Climate Change released its latest report this week on mitigation of climate change.

The near-3000 page report outlines the IPCC's view regarding the present state of transition, and the pathways available to the global economy. Following our earlier analysis, in this note we examine key conclusions of the report, and their implications for companies and investors.

The report highlights that mitigating climate change to 1.5 degrees by 2050 is still possible, but the window to achieve this goal is nearly closed. It offers both hope and challenge for this monumental task. The rate of global GHG emissions growth has slowed in recent years, in part because a growing group of countries have demonstrated that growth and reduced emissions are compatible. Technology costs are a bright spot, having declined dramatically and faster than predicted and presenting grounds for optimism. Deforestation has declined and net forest cover increased. Against this, however, are a litany of challenges. Emissions have continued to rise in many sectors, and many technologies need to be developed and scaled dramatically.

The probability of reaching a 1.5 degrees pathway is currently low. Companies, investors, governments and communities need to prepare for a disorderly transition and a step change in activity. In a disorderly transition policy will vary across regions, and businesses and communities will face a volatile commercial and policy environment combined with ongoing large climate-related shocks. Climate change will continue to compound with other geopolitical and physical shocks. In this setting, companies and investors should prepare for a step-change in mitigation expectations and activity. Investors and companies will need to continue to increase their ambition, and be prepared to negotiate their own approaches to challenging issues individually or with industry peers.

Transition pathways are also likely to diverge regionally, and entities that operate across borders need to consider how transition will play out in their different geographies. Transition pathways are increasingly differentiated across countries, which means that while some will find themselves operating in environments without overarching policy direction, others will face rapid local transitions and growing opportunities. This means that the depth and scope of transition plans will need to vary by location, and some locations are likely to become more competitive than others.

Climate and nature are likely to continue to converge as the private sector looks to expand the mitigation toolkit. Nature based solutions are highlighted as a significant lower-cost mitigation opportunity in the report, and we expect high quality models of mitigation which utilise combine mitigation, conservation and restoration to become increasingly pertinent.

Companies and investors need to be ready to expand the scope of their transition efforts, and

to engage with policy design. The ambition and scope of transition plans will continue to expand in some regions as private entities become responsible for managing a growing range of risks - such as just transition. Private sector actors will need to move faster than the Paris Agreement if they intend to capture competitive advantages. Private sector entities should engage with policy as a tool which can provide not only operating certainty, but also relief from growing volatility. Policy can create the demand needed to support transition solutions and the investment opportunities that they present.

The private sector will have to respond to significant physical risk. As we have noted previously, a disorderly pathway will result in more climate change in coming decades, and more physical risk. This will compel the private sector to establish greater resilience in the face of these risks, particularly in countries with limited central adaptation funding and efforts. This means that in addition to the broader scope of issues outlined above, transition plans must include resilience.



Report comes in the context of acute energy stress and increasingly visible climate impacts

The report is the latest from the IPCC's Working Group 3 (WG3). It follows two previous reports (on the causes of climate change and its extent), and assesses the current state of knowledge on climate change mitigation – that is, what can be done to stop global warming.

It is released against the backdrop of significant geopolitical and economic change: a global pandemic, geopolitical tensions and war, and increasingly devastating climate impacts have all impacted the global economy. This is what scientists refer to as 'compounding crises', an academic turn of phrase of which we are presently having a lived experience.

On the one hand, COVID-19 and its associated social and government responses have had a major impact on wellbeing, economic outcomes and emissions. The pandemic has brought about changes in government policy, social relations and the functioning of the economy which were previously unthinkable. Importantly, these social and policy changes created one of the single largest dips in emissions in recent history deriving from major reductions in transportation, power and industrial emissions.

On the other hand, changes wrought by the pandemic and the Ukraine conflict have upended the global energy supply system.

Supply and supply chain disruptions have led to a spike in energy prices which is having flow on effects from food pricing through to travel costs. As global markets shun Russian oil and gas supplies, fossil fuel producers elsewhere - including in Australia, the US and the EU - are ramping up production and export to counterbalance Russia's absence. This poses immediate risks to energy security for many, and also raises the spectre of further entrenchment of fossil fuel energy in markets that had been working to reduce their reliance on fossil fuels. It also raises the spectre of protracted geopolitical instability in the region and among other major powers.

Beyond the pandemic and global conflict, climate impacts are having major disruptive impacts in the real economy. Whether they be floods in Germany, drought in the Horn of Africa, wildfires in the West Coast of the US or floods across the Northern Rivers in Australia, communities and economies are already being ravaged by the impacts of the climate crisis. Within this context, the IPCC's call for transformative change rings louder than ever.

Report highlights a two-speed response to the urgent mitigation challenge

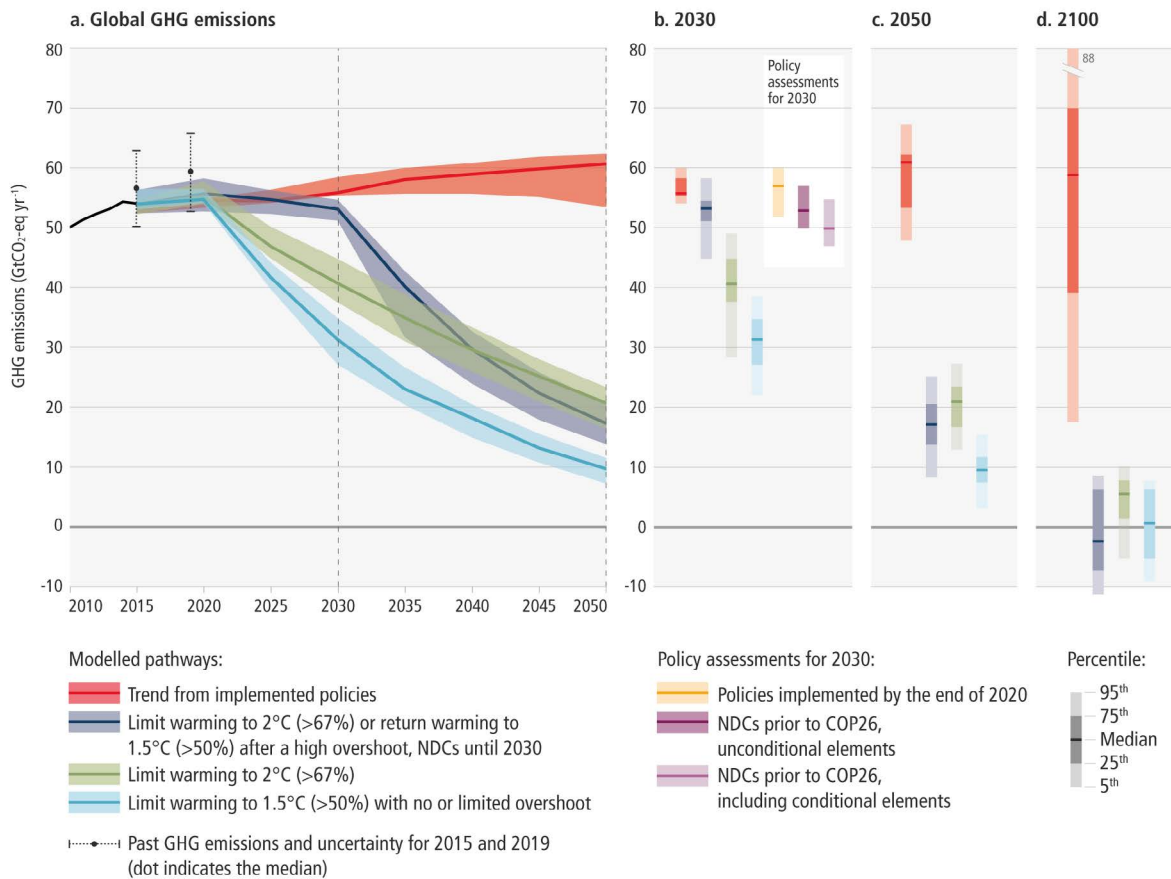
WG3 report examines where we're at, and where we need to go: A key feature of the WG3 report is that it outlines the latest modelling of mitigation pathways which will lead to the goals of the Paris Agreement. The report reviews recent emissions and technology progress and trends, the latest results of scenario modelling, and the recent success (or not) of policy and financing models to outline transition priorities and to forecast transition outcomes.

The bad news is that the global economy is presently tracking well-above 1.5 degrees: The rate of global GHG emissions growth has slowed in recent years, from 2.1% per year between 2000 and 2009, to 1.3% per year in between 2010 and 2019. This means that the most catastrophic emissions pathways, those above 40°C, look less and less likely, with the IPCC noting that

these pathways would now require a reversal of global technology trends. Nonetheless, the WG3 report highlights that the world will most-likely substantially exceed 1.5 degrees of warming in the 21st century. The authors of the WG3 report observe that two significant implementation gaps are still evident – one between existing policy settings and country 2030 targets (NDCs) and one between those NDCs and a 1.5 degree trajectory. The latest national targets released before COP26 suggest a global pathway characterised by gently falling emissions to 2030, after which emissions must drop precipitously (Figure below), implying ~2.8°C warming by end of century. **Current policies do not yet match these commitments, with emissions under present policy regimes projected to rise post-2030, implying warming of ~3.2°C by the end of the century.**

FIGURE 1

Projected global GHG emissions from NDCs announced prior to COP26 would make it likely that warming will exceed 1.5°C and also make it harder after 2030 to limit warming to below 2°C.



Source: IPCC AR6 WGIII Summary For Policymakers 2022, Figure SPM.4, SPM-18

The main driver of the high emissions trajectory is that fossil fuel use is not changing quickly enough across sectors. The report suggests that as a consequence of continued investment in fossil fuels and fossil fuel related infrastructure, significant existing assets and infrastructure are likely to be impaired in transition. The present value of un-burnable fossil fuels is estimated at 1-4 trillion dollars in a 2 degree scenario. If they are run to end of life, the cumulative lifetime emissions of current and planned fossil fuel infrastructure alone would eat up the entire remainder of the 2 degree emissions budget, leaving no space for other activity. This load is particularly generated by the power sector. In 1.5 and 2 degree scenarios, most of the emissions budget for fossil fuels is utilised in transport and industry, not in power. To our eyes this highlights that there is still a significant volume of power assets in play which will need to be impaired if we are to reach a 2 degree or 1.5 degree pathway.

Despite seemingly never-ending activity in capital markets, finance is another area singled out as particularly challenging. Although the report notes that there has been an explosion of activity in the space, this activity has not led to a growth in funds allocated to transition and adaptation sufficient to match the scale the IPCC believes is needed. Present finance provision for mitigation is between three and six times less than forecast in 1.5 and 2 degree scenarios, and financing for fossil fuels still outstrips spending on mitigation and adaptation. These issues are particularly acute in emerging markets, with financial flows to transition and adaptation activities in these markets still limited. Furthermore, although significant markets for climate and ESG focussed finance have sprung up, these also have had limited applicability to emerging markets.

Despite these negative trends, the report does point to some successes in driving down emissions.

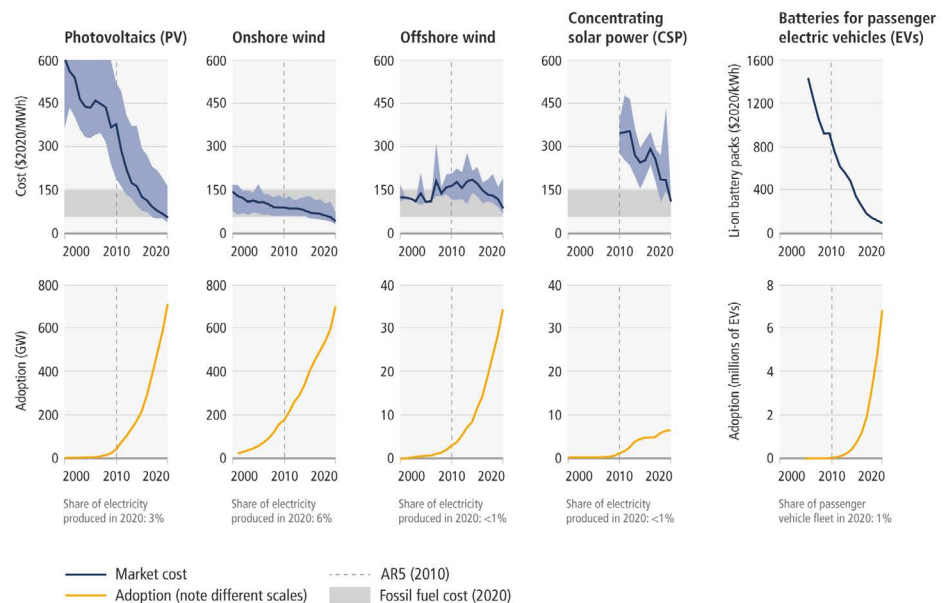
Policy has been increasingly impactful: Despite being a source of frustration for many, the report highlights that policy instruments are becoming more common globally following the introduction of the Paris Agreement, and that many of these have been successful in limiting emissions. The authors note that emissions have been reduced by at least 1.8Gt CO₂e pa as a consequence of studied policy instruments, with some estimates suggesting that policy had been responsible for up to 5.9Gt CO₂e pa reductions as of 2016.

Similarly, technology costs have been a bright spot in the landscape of transition efforts. Between 2010 and 2019 solar, wind and li-ion batteries have fallen in cost by 85%, 55% and 85% respectively, building on historical cost reductions (Figure below). Demand-pull subsidies, pilot project funding and public R&D spending are all identified as enablers of these outcomes. Interestingly, large scale mitigation options have not seen the same learning effects and cost reductions, and have consequently been adopted more slowly. Small-scale/consumer sized solutions seem to have faster adoption and make faster progress on cost. These technology

changes have meant that low carbon power-options in many regions are now not only cheaper than high emissions alternatives, but also come with co-benefits such as cleaner air, providing significant volumes of affordable potential mitigation (Figure below).

These varied trends are leading to emission reduction trajectories that vary across regions - which has competitive implications across the next few decades. Some countries are matching trajectories consistent with 1.5 degrees, while others continue to increase emissions. This variation is not only down to income – even within income bands, there is large variation in national emissions trajectories. At least twenty-four countries have sustained emissions reductions now for longer than ten years, largely via energy system decarbonisation, efficiency gains and reduced energy demand. However, recent years have demonstrated how major shocks can quickly change trajectories. The war in Ukraine has seen ramping of fossil fuel production in some countries where supply was easing, and while some governments made substantial green fiscal spending following COVID-19, many have used public finance to double down on existing high-emissions pathways. These trends point to a growing regional divergence in the transition, which has competitive implications across the next few decades.

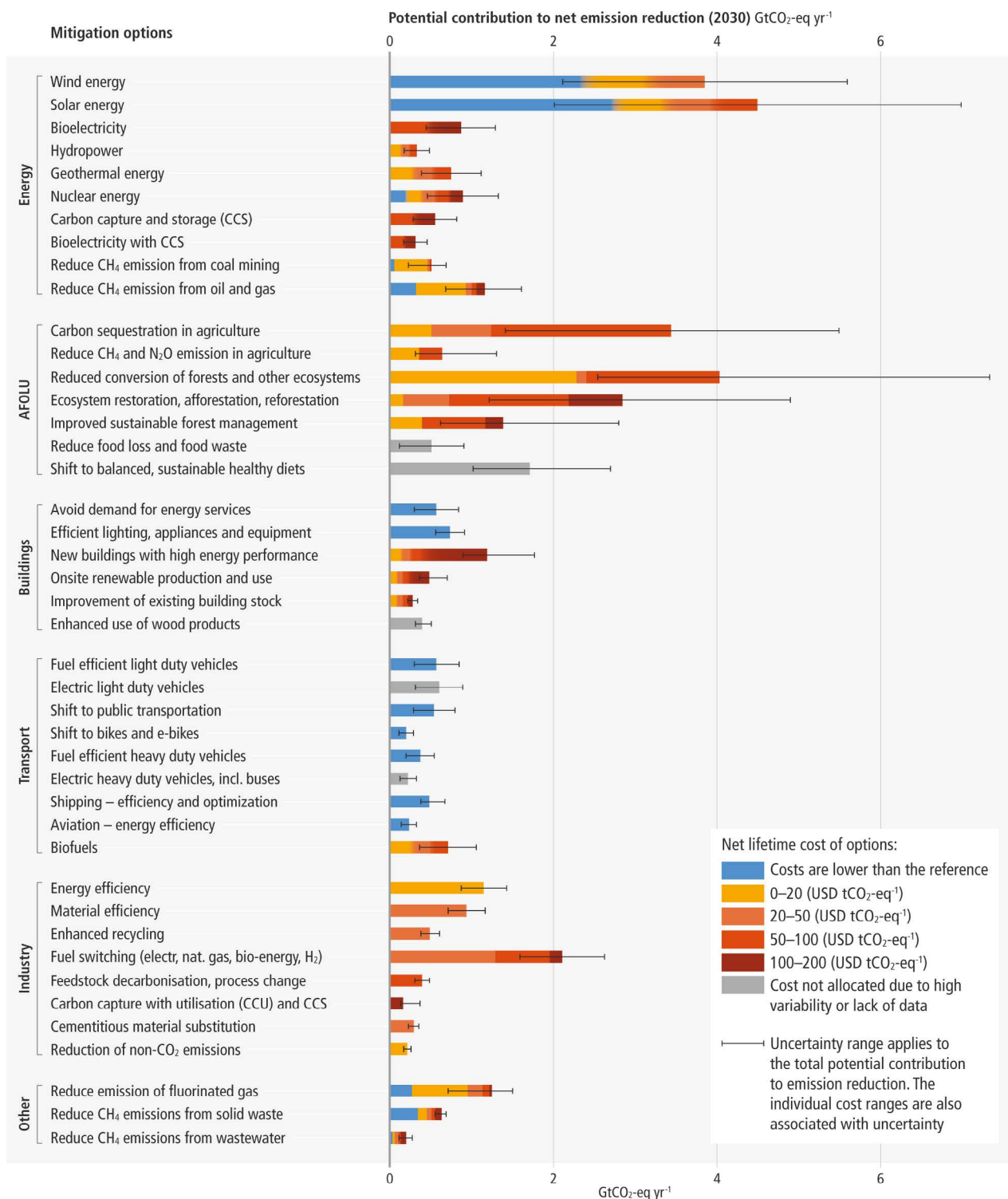
FIGURE 2 The unit costs of some forms of renewable energy and of batteries for passenger EVs have fallen, and their use continues to rise.



IPCC AR6 WGIII Summary For Policymakers 2022, Figure SPM.3, SPM-13

FIGURE 3

Many options available now in all sectors are estimated to offer substantial potential to reduce net emissions by 2030. Relative potentials and costs will vary across countries and in the longer term compared to 2030.



Source: IPCC AR6 WGIII Summary For Policymakers 2022, Figure SPM.7, SPM-50

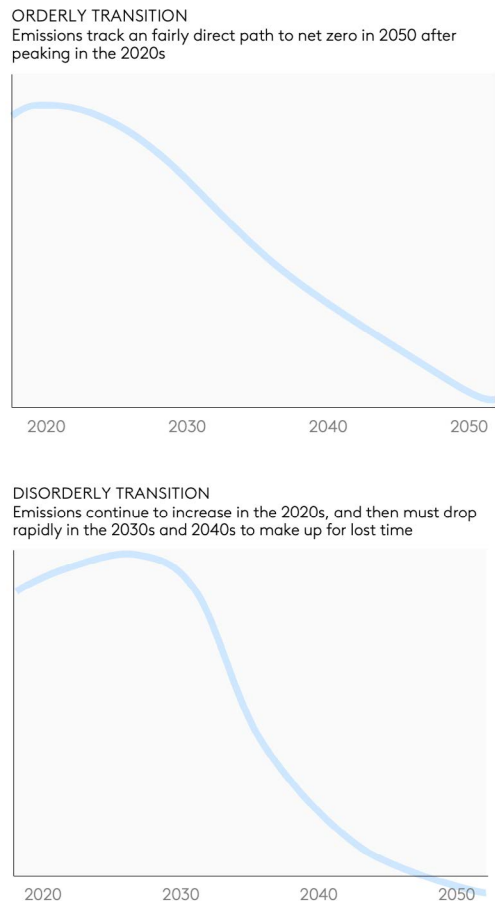
The report emphasises the likelihood of diverging regional transitions, with competitive and distributional implications

As it becomes evident that we are not tracking in line with a 1.5 degree pathway, transition emphasis is moving from incremental change to transformation.

To our eyes a key conclusion of the AR6 report is that our current trajectory looks likely to match a disorderly transition scenario. This is a trajectory in which transition efforts are too slow or late to start, and then must be greater later in the transition period to make up for insufficient action earlier on. In this scenario, individual actors - be these individual governments, companies or regulators - take increasingly disruptive individual actions, in an effort to insulate themselves from transition risks, to pursue opportunities or to force transition. Economies also have to undertake transition while experiencing climate change, which is likely to create further disruption and also spur ambition in various regions.

In a disorderly transition, interventionist policy and commercial action becomes the norm, and mitigation is slow and incomplete. Political actors are more likely to undertake ambitious interventions - such as power closure plans or industry funding interventions - which may at times be at cross purposes. Action in this scenario is also driven by individual decision making, such as when corporates decide to close power plants or other facilities on their own timelines.

FIGURE 4
Disruptive transition chart – orderly vs disorderly trajectories



Source: Pollination

The main characteristic of this scenario is volatility – affecting prices and operating conditions. An unmanaged transition is likely to lead to more volatile energy prices, more volatile operating conditions, and volatile stock and commodity pricing. Interventionist policy is likely to contribute to this volatility.

In this scenario individual and unilateral decision making and action take a greater role, making transition more expensive and less efficient. This scenario is unlikely to allow economies to take advantage of lowest hanging fruit first, instead relying on norms and individual actions. It also adds a governance load to the system – forcing companies and financial institutions (and even governments) to navigate an increasingly volatile environment with higher transaction costs and higher coordination requirements.

In this context, there is growing focus on rapid transformation, rather than incremental transition. The AR6 WG3 report notes that our failure to undertake sufficient mitigation to date, makes the remaining mitigation task increasingly acute. In this setting incremental transition efforts are still necessary, but are far from enough.

WE ALSO OBSERVE THAT REGIONAL TRANSITION OUTCOMES ARE STARTING TO DIVERGE NOTABLY

Some countries and regions are successfully transitioning, while others are not: One of the most interesting findings of the report from our reading is the increasing regional variation in mitigation efforts and success. As noted above, some countries and regions are having far greater success reducing emissions, and establishing policy environments which support these efforts. Others are still experiencing rising emissions. These differences illustrate the extent to which transition is unfolding differently in different jurisdictions.

This means that entities in different markets will have very different transition experiences. Some companies and FIs will need to navigate a disorderly transition while others benefit from more orderly environments. Some regions will be subject to rising costs and coordination

Disorderly transitions driven by individual decisions

The Australian electricity market is a good example of a disorderly transition in play, in which a policy gaps led to the injection of additional supply without the managed exit of old capacity, creating the disruptive step-by-step exit process we presently see in the market. An extreme example of a disorderly transition has been imagined by a number of commentators – in which one nation state might choose to undertake unilateral geo-engineering in order to protect their citizens. Although we should hope that this doesn't come to pass, an array of less extreme but nonetheless disruptive options are likely to be taken up in a disorderly transition scenario.

loads, while other regions will experience strong demand for solutions and new industries and have much greater clarity regarding what sufficient action from companies and finance providers looks like.

This is likely to become a source of competitive advantage over time, as economies with more powerful transition frameworks in place focus less of their energy on navigating directional questions and coordinating action and more on innovation and growth.

MITIGATION ACTIONS AND COMMITMENTS AND ACTIONS ARE INCREASINGLY VOLUNTARY AND DISTRIBUTED

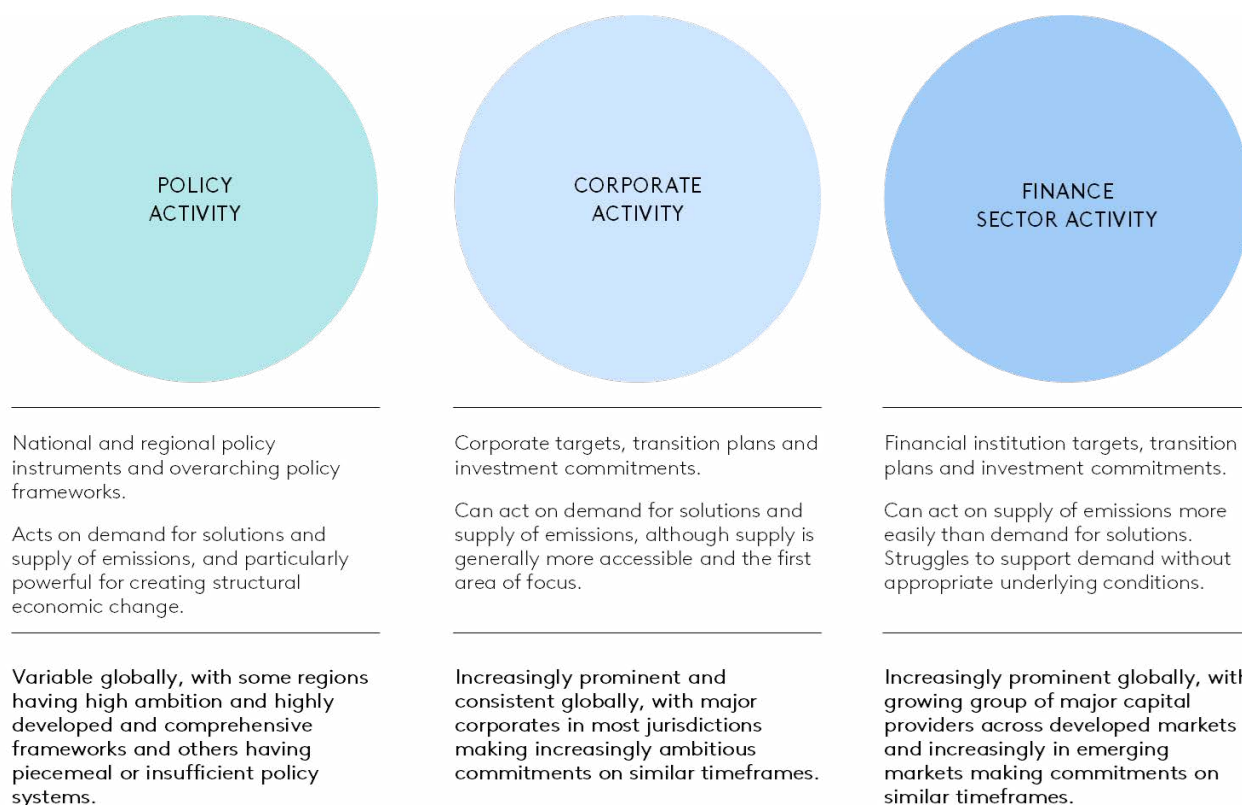
The private sector is increasingly active and visible in mitigation efforts: The report notes that policy has played a significant role in emissions reductions to date, as noted above. In a number of jurisdictions the private sector has played an increasingly visible role in mitigation commitments, although many of these are yet to play out in delivered emissions reductions. A number of private sector actors have been making growing mitigation commitments, including via frameworks such as GFANZ. Policy has obviously been moving on a growing number of fronts, but in many

regions has been characterised by fragmented efforts and a lack of over-arching governance regimes. We can think of mitigation efforts as happening via three levers – policy, corporate action and commitments and the actions and commitments of the financial sector. In many regions the emphasis of action is shifting into the corporate and financial levers.

This means that voluntary and distributed approaches are increasingly prevalent in mitigation efforts globally. Private and financial sector targets are generally bottom-up and undertaken on a voluntary basis, with targets generally being set by individual entities. Nonetheless, these commitments are increasingly uniform and international, particularly in the corporate space. This is a consequence of emerging standards and norms regarding what is and is not a sufficient target. This bottom-up dynamic is also on display in the Paris Agreement itself, which of course relies on individual country commitments rather than top-down global constraints.

In this context standards for voluntary targets and bodies which facilitate coordination between individual actors will become increasingly important. Soft infrastructure such as globally recognised scenarios (such as the IEAs), standards of disclosure (TCFD), and standards for target setting and other behaviour (SBTI and CA100+) will play an increasingly powerful role in mitigation. Coordinating bodies (such as Responsible Steel, GFANZ or CA100+) will also continue to rise in prominence as individual entities work to action their targets across their industries and supply chains. The UN’s decision to appoint an expert panel to establish standards around net zero target setting is a recent example. We can see this increased prominence playing out even following the publication of the report, with a number of FIs facing criticism for matching their emissions pathways to outdated IEA scenarios. Even though they are not embedded in law, said scenarios have become key governance instruments for the entire private sector.

FIGURE 5
The emphasis of recent commitments and actions has been moving into the corporate and financial space



Source: Pollination

IN LOW QUALITY GOVERNANCE SETTINGS WE NEED NEW APPROACHES TO TARGETS, AND THE PRIVATE SECTOR WILL CONTINUE TO TAKE ON GREATER RESPONSIBILITY

A reliance on bottom-up approaches does have shortcomings

Although voluntary and distributed approaches are powerful and increasingly prominent, they will struggle to support transformative transition. The above approaches have been easier to navigate for many as they don't require negotiating compromises across diverse groups. To date these advantages have resulted in an explosion of target-setting across the private sector. Nonetheless, as noted above these approaches to present a distinct coordination challenge. In our view it is unlikely that they will be able to facilitate the allocation and sharing of costs needed for transformative transition efforts. As such, we suspect that regions which rely on these approaches will experience very uneven transitions.

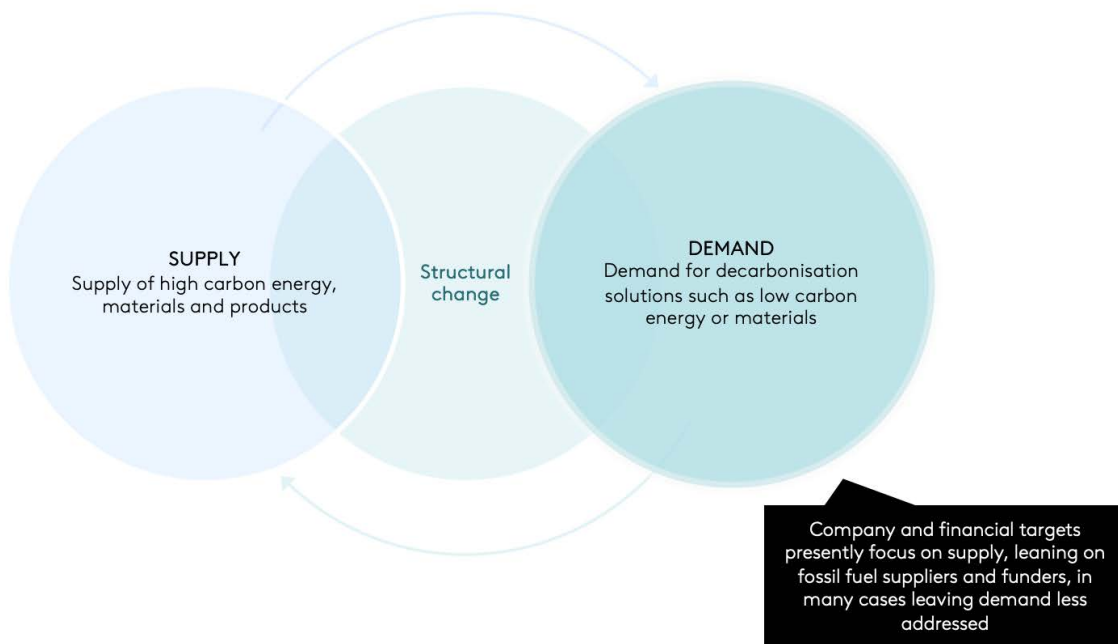
Furthermore, when we rely on bottom up approaches we are likely to face increasingly

significant distortions. This is clearly evident in efforts to establish and fund new low carbon sectors. Although we increasingly have constraints in place for the expansion of emissions supply (fossil fuels) we often hear that investors and companies are struggling to establish and make sufficient investments in their replacements (beyond renewables). This is because in many regions we don't yet have the underlying economic changes in place to provide demand for new solutions or industries. This demand is needed to support new business models and hence investments, and without it we find ourselves in many cases with significant targets which we can only partially meet.

Demand is an important aspect of transition, but hasn't been the focus of targets to date.

Despite the importance of demand, company and investor targets and activity to date have largely been focussed on what we don't fund or do. Demand is harder to create at the company and investor level as a consequence of competitive tensions, with many finding it hard to justify the choice to spend more to create said demand. Demand is much more accessible via policy levers, but these are variably used. As a consequence, our reliance on bottom-up efforts in many regions is committing us to moving away from our old economy without enabling us to build a new one.

FIGURE 6
Demand is often under-supported in regimes which rely on company and financial targets



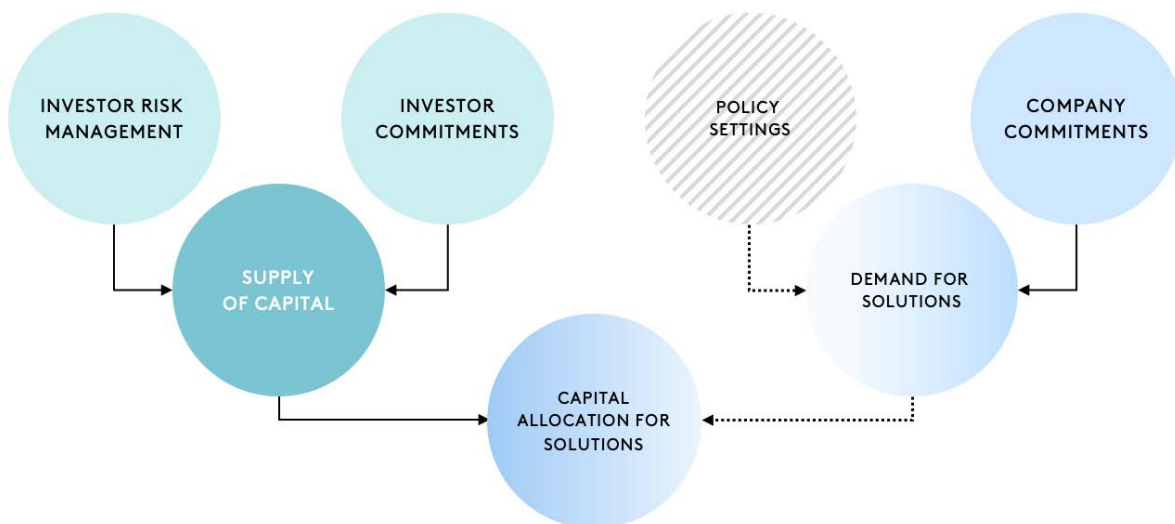
Source: Pollination

Because we're seeing action on some fronts but not others, we have a growing number of tension points or bottlenecks emerging in our mitigation approach. For example:

- We have many companies and capital providers committing not to extend fossil fuel supplies, but still see insufficient investment in alternative energy sources.
- We see many capital providers committing to provide capital to transition solutions, but many of these investors struggle to find a pipeline to invest this capital in.
- We witness growing requests for transition financing from various bodies, but because we don't have the economic conditions in place to support business models needed to deploy financing, this money often remains committed in name only.
- We have increasingly ambitious targets in place in many industries, but these targets look to be too expensive to meet for many commercial actors without the development of solutions sectors.

FIGURE 7

Where policy settings don't support demand, company and investor targets will struggle to drive investment in solutions



Source: Pollination

Positive targets can help create demand

Where private and financial sector activities dominate, we need positive targets which are capable of driving demand. Investor and commercial targets to date have focused on committing not to fund certain activities, committing to reduce exposure to these activities, and committing to reduce emissions. As noted above, these are somewhat one-sided, being more active in constraining supply than establishing demand. Private and financial

sector targets will need to increasingly focus on generating demand.

Procurement targets are one example of positive targets which increase demand.

Procurement targets compel companies to shift their purchasing to low-carbon options, and to bear the associated costs of doing so. They also create demand, providing the economic logic needed to establish new business models and the opportunities which go with them. Emissions reduction targets do eventually become procurement targets, but often not as a first step, and often only in very specific sectors.

FIGURE 8

Positive targets can help support demand where policy is absent or fractured

	STRONG TRANSITION	FRACTURED TRANSITION	TRANSITION LAGGARD
FINANCIAL ACTIVITY	Investment shifts away from emissions intensive activities and products and towards transition support as policy and company activity create demand conditions	Investment shifts away from emissions intensive activities and products, and towards some transition solutions, but fails to flow to other solution sectors which have weak or no demand.	Investment struggles to shift away from emissions intensive activities and products. Investing in transition solutions is extremely challenging, with little underlying economic activity to provide pipeline.
COMPANY ACTIVITY	Companies pursue decarbonisation and reduce production of fossil fuels, and demand conditions support the growth of new solutions providers	Companies pursue some decarbonisation options and reduce production of fossil fuels. Demand conditions are variable, with some solutions finding support. Decarbonisation remains expensive on a number of fronts, presenting challenges for companies with targets.	Companies pursue limited decarbonisation options, as most are too expensive. There is little demand to support the growth of new sectors. Emissions reductions happen only where technology changes make them viable under present operating conditions.
POLICY ACTIVITY	Strong and comprehensive policy constrains emissions, supports demand and provides clear transition pathways	Mixed policy frameworks create some constraints for emissions and some incentives for the provision of solutions.	Limited policy ambition and support in place, with emissions largely unconstrained and limited demand for solutions.

In fractured and laggard cases, positive targets can allow companies in particular to support demand and reduce the cost of transition

Source: Pollination

An increasing number of issues will be negotiated in the private domain

One of the key characteristics of a disorderly transition is the lack of effective central governance, leaving many issues, trade-offs and coordination processes to be navigated by individual companies or institutions and by civil society. This takes a number of negotiation and coordination tasks which would traditionally be borne by government and allocates these to the private sector. As we note above, not all regions will experience disorderly transitions. In fact, a number of countries currently appear to be transitioning in an orderly fashion. However, in those regions in which transition lags and is more disorderly, the private sector will need to negotiate a number of issues.

Net zero targets are an example of an area in which a high burden of proof is put on individual economic actors. Company transition pathways and targets were traditionally contemplated

within overarching policy regimes. However, in most regions companies are having to go above and beyond these regimes substantially. As such, the question of which target is good enough becomes one that individual companies and institutions must tangle with, along with their many stakeholders.

We obviously see this in play presently in many regions, with stakeholders including shareholders asking companies to set rigorous and detailed targets as a first line of action. Scrutiny on these targets is rising and rising, with increasing work being undertaken to determine which targets are or are not sufficient. The UN’s appointment of an expert panel on net zero targets is the latest in a long string of efforts to define what is and is not enough. This current debate highlights the extent to which the private sector (and civil society) is being tasked with determining what is and isn’t a responsible pathway for individual sectors, in the absence of guidance from policy.

FIGURE 9

Private sector actors are navigating a growing scope of responsibility

PRIVATE SECTOR ACTORS FACE GROWING SCOPE

A growing number of issues and standards are being negotiated outside of policy domains

Sufficient targets	Alignment and economic transition pathways	Abatement vs. offsetting
Private sector and civil society actors are increasingly responsible for identifying how much mitigation is needed for different companies and sectors.	Financial institutions in particular are being tasked with determining how transition should unfold and be funded, including which sectors should change first.	Private sector actors are presently responsible for managing the balance between abating emissions and offsetting in many regions, including the question of which offsets to use.

TASKS AND RESPONSIBILITIES ARE GROWING

In many regions the private sector is being tasked with a growing set of system goals

Transitioning communities	Funding new solutions and technologies	Supply chain and system decarbonisation
Private sector actors are increasingly tasked with ensuring that their actions do not disenfranchise communities and workers, and with managing the wellbeing of these workers.	Private sector actors are increasingly responsible for funding transition solutions, including supporting the commercialisation of new technologies.	The scope of responsibility for the private sector increasingly includes Scope 3 emissions, which often lie far beyond traditional company control boundaries.

Source: Pollination

Alignment is another key issue which must be increasingly navigated by private sector actors.

Many financial institutions are working hard to understand the extent to which their portfolios are managed in ways which are consistent with the Paris Agreement. This work includes not only the question of the selection of stocks or other investments in the portfolio, but also the targets of the assets or companies represented therein. In this effort investors are effectively being asked to determine which sectors should transition ahead of others, and at what pace.

What constitutes the appropriate offset use is another example of the growing list of issues that private sector entities are being asked to negotiate. Offsets have in the past been explicitly utilised in policy frameworks. Offsets traditionally allow emissions reductions to be fungible across companies and industries. This allows emissions reductions to be undertaken where they are most

effective and efficient and then transferred onto the balance sheets of companies and sectors with fewer options. In policy frameworks offsets are the mechanism which allows an economy to identify and target the lowest hanging fruit first, making mitigation efficient and affordable.

Private and financial sector actors are increasingly responsible for navigating the question of which offsets are appropriate for which sectors. Commercial actors presently have the option to use offsets as part of their decarbonisation efforts. However, when offset use is not governed by a central policy framework but instead becomes the province individual actors and entities, the question of whether or not offset use is appropriate becomes more challenging. As company and investor targets become more prominent, the appropriate extent of offset use and which offsets are or are not appropriate is increasingly being negotiated by the private sector and civil society.

These activities aren't driven only by uncertain policy, but they are emphasised by it. Companies and investors would still have an interest in demonstrating their bona-fides to stakeholders beyond those actions required of them in any policy setting. As such, the task of navigating these issues is not unique to contexts in which bottom-up approaches are in play and policy is uncertain. However, these voluntary commitments are less mission-critical in an environment in which policy is more effective and comprehensive.

PRIVATE SECTOR ACTORS ARE ALSO TASKED WITH A GROWING SET OF RESPONSIBILITIES

Just transition is a topical example. Stakeholders in many regions have growing concerns about the extent to which transition efforts will strand and disenfranchise communities and workers who presently depend upon legacy industries and assets. The AR6 WG3 report highlights that possible social ramifications of transition are an increasing challenge to transition efforts globally. Traditionally issues such as these are the province of government, and are managed using regional or national policy frameworks. However, where transition efforts are not as closely governed, these concerns must also be managed by individual companies.

Technology funding and commercialisation is another task increasingly being taken on by the

private sector. Meeting a Paris-Aligned trajectory requires that an array of new technology is commercialised and deployed more rapidly than might otherwise be the case. Without this technology in place, transition in many sectors will be slowed or impossible. Without significant policy to support demand or funding for these solutions, private sector actors in many regions are finding themselves having to fund commercialisation pathways directly. For many this requires putting capital at risk in ways that are novel for the parties involved. In addition to this, the underlying risk presented to those attempting to commercialise technologies is greater without demand signals in place.

Scope 3 emissions are a final domain in which private sector responsibilities are ever expanding. For a concentrated set of companies Scope 3 targets are effectively revenue mix targets which are implicitly promises to sell less of certain fuels. However, for other companies these targets are promises to decarbonise the ecosystem surrounding the company itself. These targets are somewhat of an oddity from the eyes of traditional emissions regulation, as they ask companies to find ways to influence domains that they might traditionally have little control over. In a more traditional policy setting, much of the mitigation needed in scope 3 emissions would be managed by an overarching policy framework. Without these frameworks, the governance remit of individual companies is expanding to include domains beyond their traditional areas of responsibility.

This means transition plans must broaden, vary regionally, and include adaptation

Based on our reading of the WG3 report, we highlight a number of areas of focus for private sector actors and their stakeholders, as follows.

FIGURE 10
Summary of recommendations

Continue to extend mitigation ambition	Companies and investors should anticipate that transition demands will continue to increase, and that these demands will increasingly vary by region. In some regions they should expect a step change in activity across the next few years.
Prepare to broaden scope of transition plans	The scope of activities which need to be addressed in transition plans will continue to broaden, particularly in regions with more minimal policy. Companies and investors should prepare to manage growing requests across just transition, system resilience, and scope 3 emissions management.
Approach policy as an opportunity	Strong policy frameworks are increasingly making the difference between transition outcomes across regions with competitive implications for the companies and investors operating in them. Companies and investors should approach policy as an opportunity to reduce exposure to transition volatility.
Develop models which combine nature and transition	Nature presents a significant opportunity for mitigation and other benefits, but also presents significant risks. Where relevant, companies and investors should work to establish rigorous models to combine natural capital outcomes with mitigation.
Work to establish resilience in portfolios and assets	Economies globally will continue to experience increasingly intense climate changes. Companies and investors need to establish resilience to these changes, and in some regions should prepare to do this with little government support.

Source: Pollination

Companies and FIs should be anticipating that transition demands will continue to increase and will vary by region and sector

Mitigation demands are going to go up, significantly, as climate risks start to materialise even more than they already have. This is likely to be difficult for many companies and financial institutions to come to terms with, as many feel they have already been escalating their responses and building capacity at break-neck pace. However, a key finding of the WG3 report (in line with the WG1 report) is that progress is too slow, and we would extrapolate this to imply that demands from stakeholders will increase, and interventions from policy makers and other commercial actors will become increasingly common and impactful. Companies and financial institutions, and governments, need to be prepared to further extend their transition efforts on several fronts.

The greater mitigation pressure will likely be felt in some sectors more than others. Where those pressures will come are laid out in the report. In most scenarios reviewed by the IPCC, the power and AFOLU sectors reach net zero earlier than other sectors (in AFOLU this is driven by reforestation and reduced deforestation). The buildings, industry and transport sectors transition to net zero more slowly. Around 74% of emissions reductions in net zero scenarios are achieved by CO₂e reductions achieved by reducing energy supply and demand, 13% are achieved by reducing CO₂e emissions in the AFOLU sector, and 13% are achieved from the reduction of non-CO₂e emissions (such as fugitives) in land use, energy and industry.

Regional variation is also likely to follow from differences in economic and policy settings. As noted above, the disorderly scenario is characterised by rising volatility and rising coordination loads for private and financial sector actors. It is likely that companies and FIs will face varying transition demands across countries and to manage this they will need more secure and direct relationships with suppliers and customers, and policymakers in the regions in which they operate.

IN SOME REGIONS WE WILL NEED TRANSITION PLANS WHICH ARE BROADER IN SCOPE

In regions where there is strong policy pressure and demand for transition, companies and FIs need to be ready to respond. In these settings, ambition will continue to ramp up and transition

will continue to be central to the strategic environment. Private sector actors should be prepared to not only align with Paris, but to move ahead of Paris if they wish to remain competitive and capture opportunities rather than arriving late. Corporates which take a modest approach to transition planning will find that speed of expectation shifts, market changes and climate changes will quickly catch up with them.

In regions with more uncertain policy and variable demand, companies and FIs will need to continue to expand the scope of their transition plans. Companies and FIs should be prepared to navigate conversations regarding what is enough, and for these standards to change constantly. Establishing focussed, long term approaches which are clearly thought through and articulated will help to navigate the disorderly transition landscape. Private sector actors should be prepared to communicate the logic of their approaches clearly and repeatedly as part of the process of forming industry expectations about private sector responsibilities.

Corporates should engage with community transition if they want their mitigation strategies to be sufficiently durable. As transition strategies come into action (with many companies and FIs coming into their first target commitment periods), communities and workers are likely to put them under increasing pressure both as direct and political stakeholders. This is particularly the case where legacy assets in regional communities are in play. With the disorderly scenario characterised by policy intervention, private sector actors should expect that if just transition considerations are not directly contemplated in their transition strategies, they will face increasingly direct challenges.

Financial institutions and companies also need to think about technology and commercialisation funding. As FIs increasingly set ambitious mitigation targets, a shortage of solutions-focussed investment opportunities is likely to become increasingly problematic. This is particularly acute at present in markets with poor policy support, where the pipeline of opportunities has not been nurtured. In this setting investors and other capital providers may need to consider higher risk allocations to support the development of these sectors. This is consistent with the capital needs of a transitioning economy, where these are not provided by a central actor. We say this knowing these allocations may be extremely challenging (if not impossible) but also noting that with limited sustainable investment opportunities competition for available opportunities will be significant.

Finally, FIs and companies should set positive targets which reach beyond supply and decarbonisation. Companies and FIs should consider setting positive targets, which create demand for solutions. These are complementary to existing exclusion or decarbonisation targets, but can help create the demand conditions needed to support technology commercialisation and transfer. For instance, targets for using CDR technologies can help to drive innovation over time. These can also help support the growth of solutions sectors, and as such also the allocation of sufficient capital to transition.

Policy can be a tool to reduce volatility

Financial sector entities and companies should consider their approach to policy. Policy has been considered a threat by many, as it regularly imposes hard limits and costs. However, as outlined above, policy settings can be very helpful in assisting companies to navigate the increasingly broad set of responsibilities they find themselves with and ensure a level playing field. Policy is also a very effective tool for allocating transition costs and consequently for generating demand for transition services. In this way policy can be used to help to manage the risks which face firms and investors.

Without policy transition will become harder and harder for the companies and investors involved. Without policy in place private sector actors are tasked with undertaking many activities which are usually managed by a government (from deciding what is good enough through to ensuring that alternative solutions for their problems develop). We see many clients moving well beyond their tradition commercial boundaries on climate change for this reason. Companies and financial institutions will have to take on more and more risk in their transition efforts if they do not have policy support.

Companies and FIs should consider how they can use policy strategically. This might include supporting robust climate regulation in key operating markets and industry collaborations which offer support for climate policy settings.

ROBUST NATURE-BASED SOLUTIONS PRESENT AN OPPORTUNITY TO INVEST IN MITIGATION, ADAPTATION AND OTHER BENEFITS

Nature is highlighted through-out as a promising avenue for mitigation. The authors highlight that mitigation options of up to 14GtCO₂e pa

are available from AFOLU options under the US\$100/t threshold, with up to 50% of this available below US\$20/t. The largest share of this comes from conservation, improved management, ecosystem restoration and reduced tropical deforestation. Sustainable management and carbon sequestration in agriculture can contribute between 1.8 and 1.4Gt CO₂e pa. These pathways come with significant co-benefits (and risks), which touch not only biodiversity and natural capital but also the full list of associated capitals across food, water, fuel, livelihoods and heritage.

Highly quality mitigation models which utilise nature-based solutions will help deliver affordable abatement: Mitigation opportunities in nature are likely to become increasingly relevant as transition efforts deepen, especially given their potentially lower costs and co-benefits. However, as with many mitigation options nature-based approaches present their fair share of risk, and have interaction with other important aspects of social utility. As a consequence of the volume of mitigation presented by nature and the risks entailed, high quality approaches to mitigation using nature-based solutions will be important for accessing affordable mitigation. Companies and investors with exposure to nature-based solutions should pursue the development of rigorous models which combine natural capital and mitigation outcomes.

ADAPTATION WILL INEVITABLY BE NEEDED

In addition to more stringent mitigation efforts, companies and FI should be preparing for increased adaptation needs across their and investee operations. The modelling and current trajectories discussed above point to an increasing likelihood that the world will face highly volatile physical risk conditions. This will continue to impact supply chains in significant ways over coming years, and could also disrupt business operations, physical assets, consumer behaviour and demand. Companies and FIs, particularly those with significant assets in highly exposed areas, should develop long term adaptation plans. In some cases, this will involve working with financiers, insurers and policymakers to ensure that risks can be appropriately managed. While the balance of effort today among firms and corporates is on setting ambitious mitigation plans, we anticipate that in the near future much greater effort will be on developing robust adaptation plans. We discuss this in more depth in our previous report.



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