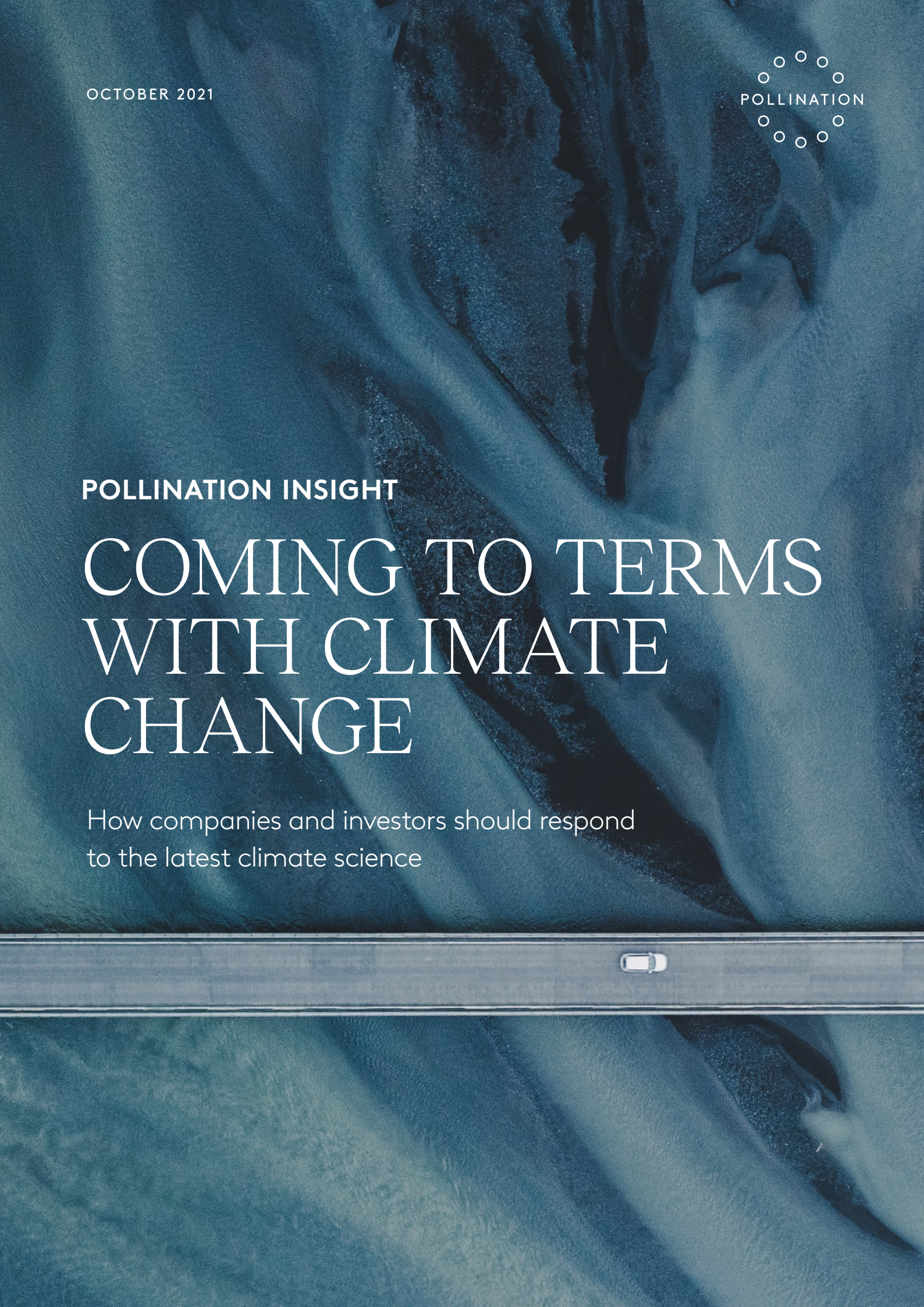

OCTOBER 2021

POLLINATION

POLLINATION INSIGHT

COMING TO TERMS WITH CLIMATE CHANGE

How companies and investors should respond to the latest climate science

Authors

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POLLINATION

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Executive Summary

The private and public sectors are just starting to come to terms with the scale of change and risk implied by climate change, and we expect a significant step up in activity in the next eighteen months.

The past few months have been punctuated by rolling updates regarding the state of the science on climate change, the latest observations regarding the energy transition, and commentary from global institutions regarding the speed of change. As with many of our clients, we received the IPCC's sixth assessment report with interest. The report was summarised by some scientists as "more detailed, more certain", and in our reading we also noted more extreme. The months since have also seen the release of the updated IEA World Energy Outlook (WEO) and UNEP's Production Gap report. Coming into COP26, we decided it was time to reflect on these in terms of what they mean for companies, investors and governments, and in this note we outline some our key conclusions.

Rising urgency and rigour in corporate and investor climate response: As an overarching point, the findings of the first of the IPCC's sixth assessment reports (AR6) combined with events across the past twelve months suggest that urgency and rigour is likely to increase across climate risk and transition planning. This might seem an impossible statement to those of us who have lived through rapidly escalating demands for the past few years. However, the first IPCC AR6 report reminds us that both the private and public sectors are only just beginning to come to terms with the scale of change and risk implied by our scientific understanding of climate change. Companies and investors working to develop their transition pathways, their risk management approaches and their resilience plans should do so with renewed focus and the expectation of increasing requirements from customers, regulators, and finance providers. They should also prepare for increasing liability risk.

At this point we expect that the global economy will follow a disorderly transition pathway, with transition in some sectors to be delayed while others make rapid progress. An array of recent literature including UNEP's Production Gap report and the latest WEO

emphasise the extent to which the global economy is not presently following anything close to a 1.5 degree trajectory. We expect that we are likely to breach the 1.5 degree threshold somewhere between 2035 and 2040. As a consequence we are anticipating high transition risk and asset stranding driven by a delayed and steeper transition. We also expect high and in some cases permanent physical risk, and note that companies and investors should be including this in their analysis. Finally, this scenario would likely engender significant demand for emissions removals and offsets in response to insufficient emissions reductions, despite ongoing debates about their utility. In our view, we are well and truly in the disorderly scenario.

Three themes particularly emerge for us on a reading of recent events:

1. **Transition risk is likely to be accelerated across a number of fronts** as a consequence of increasing physical impacts and as a consequence of the IPCC AR6 reporting process. The first IPCC AR6 report reminds us that our experience of climate change will be acute, visceral and confronting. It also provides an increasingly certain forecast of climate change impacts. Much of transition risk is driven by the actions of system participants, and this report and the three to follow will increase the perception and expectation of risk among these participants across the next 12 months. As such, we expect that transition risk driven by customer preferences, by technology disruption, and by civil society pressure will escalate, and that the AR6 itself will drive direct increases in policy ambition, liability risk and regulatory standards. This risk will be amplified if the energy system continues to invest in a pathway which is far removed from 1.5 degrees.

2. **We also note that resilience is underplayed, and that resilience investments will be critical and needed in some cases permanently.** The IPCC notes that some physical impacts from climate change are now unavoidable, and that some of these will be effectively permanent (for example, some sea level rise). With the IEA and UNEP both noting that current system trajectories are running well above 1.5 degrees, we can expect to experience significant further climate change. If this is the case, the subject of resilience and adaptation deserves far greater emphasis than it presently receives. Companies should be assessing their assets and investments against stringent physical risk scenarios, and investments to establish resilience in company operations and supply chains will be necessary. This is relevant both for companies themselves, but also for investors, who should be considering investment needs and opportunities in resilience alongside transition investments. We expect resilience to become an increasingly prominent theme for companies and investors across the next eighteen months.

3. **The decisions we make now are highly significant, and could be effective in limiting climate change.** The IPCC concludes that even though climate change is already under way, reaching net zero emissions would significantly constrain its extent. As such, we expect net zero to become a standard part of climate risk management among companies and investors and an increasingly established norm among stakeholders. We can see this norm rising coming into COP26, with the release of the SBTI's net zero standard and example of rapid developments the space. Companies and investors not already considering net zero should engage, and those already pursuing net zero should ensure that sufficient governance infrastructure (including accountability) is in place to support the delivery of these commitments. Furthermore, companies and investors should ensure that they have processes in place to review expectations and ambitions, as we expect the default net zero target date is likely to quickly move forward from 2050.

In response to increasing perceptions of risk and increasing stakeholder demands, we believe the size and materiality of company and investor responses to climate change will continue to increase. Business transformation and focused, transition aligned investment efforts have to date been the exception rather than the norm, but we believe they will become increasingly regular responses to climate risk. We've seen examples of transformative business response in the last few months across the energy and resources sectors, and we believe these will become relevant responses in a broader set of sectors such as materials and industrials.

As it gets easier to be green, it will get harder to be not so green: Pressure on companies and investors in sectors which are perceived as materially mis-aligned with a net zero pathway is likely to grow, and importantly we expect it to come from all angles. Pressure to move away from activities perceived to be mis-aligned is emerging across sectors, and the focus is moving from companies who supply or use large quantities of fossil fuels to companies with large emissions footprints anywhere in their value chains. As such we suspect that companies in mis-aligned sectors will face pressure from many stakeholders, including even suppliers. This is likely to be relevant even for profitable sectors, as pressure to demonstrate alignment ramps up.

All companies and investors should expect a notable step up in expectations and challenges from stakeholders across the board. In the next 12 months we expect requests to demonstrate and evidence resilience to physical climate risks and to establish transition strategies for company supply chains (not only operations) will quickly become regular. We also expect that legal challenges will only continue to grow, concerning right to operate, disclosure and risk management, and the legitimacy and accuracy of company and investor responses.

To avoid a valley of death, act sooner rather than later: In response, it is our view that organisations in these settings will need to build viable transition strategies or make well evidenced cases for their ongoing viability and alignment. Organisations in this predicament should act promptly to avoid a valley of death, in which resources and support are removed just as companies (or even regions) begin to contemplate (and look to fund) transition pathways. This might seem obvious, but we expect that the risk of losing access to resources will escalate significantly in the next 18 months.

Clear regulatory and policy settings reduce governance loads and support competitiveness and capital access: Governments and regulators can assist companies and investors as they undertake transition by providing clear pathways and clear, consistent and unequivocal guidance – including near and mid-term pathways. It is our experience that loose guidance and absent policy result in significant time and energy being wasted to identify best practice and negotiate transparency and risk sharing, and in more volatile transitions with greater asset stranding. Policy makers and regulators can reduce transaction costs and governance load and support competitiveness and capital availability in their jurisdictions by providing clear, specific and consistent guide-rails.

WE EXPECT A MATERIAL ESCALATION IN THE ASK FOR COMPANIES AND INVESTORS

TRANSITION PRESSURE ESCALATES

Transition risk is likely to accelerate as perceptions of urgency and risk increase among consumers, policy makers, disruptors, civil society and regulators.

RESILIENCE BECOMES PARAMOUNT

The need for resilience and investments in resilience will increase, with some climate impacts now unavoidable and some likely to be permanent.

NET ZERO BECOMES STANDARD

Net Zero is likely to become a norm in climate risk governance for companies and investors, with the timeline to net zero likely to shorten.

RESPONSES BECOME MORE MATERIAL

The materiality of investor and company actions on climate change is likely to increase notably, with org transformation becoming more common in resources and energy, but also in materials and industrials more broadly.

CHALLENGES FOR SOME SECTORS GROW

Operating in sectors perceived to be non-aligned with net zero is likely to get more difficult, with pressure to establish transition strategies likely to come from all angles (including from suppliers)

TIME IS OF THE ESSENCE

Companies at risk should ask sooner rather than later, and approach stakeholders constructively (where possible) to establish transition plans or evidence for continued alignment.

REGULATORS AND POLICY MAKERS CAN SUPPORT COMPETITIVENESS AND REDUCE GOVERNANCE LOAD BY ENSURING THAT POLICY SETTINGS AND REGULATORS ARE CLEAR, COHERENT AND UNEQUIVOCAL.

NEXT STEPS FOR AFFECTED COMPANIES AND INVESTORS

GOVERNANCE

- If not already in place, establish net zero and supporting infrastructure (including integration with remuneration and clear accountability measures)
- Engage with stakeholders regarding their changing expectations (they are likely to be changing, even if they're not talking to you about them)
- Ensure that leadership are sufficiently up to date on climate risk and opportunity, including having relevant knowledge and expertise on the topic and processes in place to keep this knowledge up to date
- Ensure that leadership are satisfied that company claims and disclosure are accurate and reasonable, and do not expose the company to accusations of greenwashing

RISK

- Revisit material risks faced by the business, and assess whether more powerful or transformative responses are warranted
- Update scenario analysis to at least include the IEA's Net Zero Emissions scenario
- Form an overarching view of physical risks to the business, and prepare to undertake physical risk assessments if these are not already in place
- Identify likely liability risks, and prepare for increasing pressure on these fronts

OPPORTUNITY

- Consider the organisation's major exposure to decarbonisation and resilience themes
- Ensure that where opportunities are relevant the organisation is appropriately equipped and funded to pursue them
- Specifically identify any needs for resilience among customers, and within the surrounding supply chain

ALIGNMENT

- Establish net zero targets if not already in place (as above), including establishing offset coverage for operations and products where needed
- Consider whether parts of the organisation, supply chain or customer base are materially mis-aligned with a net zero pathway, and identify responses (including both transition pathways and restructuring or divestment) capable of addressing or avoiding this misalignment
- Identify and establish the systems and information needed to observe alignment in operations, activities or investments

RESILIENCE

- Undertake investments in resilience for assets or encourage these among investee companies
- Consider impacts as potentially permanent where these stem from sea level rise, changing water availability in glacial basins and marine productivity, and establish commensurate adaptations
- Where resilience is likely to depend on system conditions, identify relevant system actors (such as planning bodies or supply chain participants) and prepare to engage with them

TRANSPARENCY

- If not already doing so, prepare to report on your alignment with net zero (including your metrics, tracking processes, targets and accountabilities) supported by the above systems and information
- Prepare for increasing requests for information about the specific location or physical risk exposure of your assets or investments, and any likely impacts on the wider operating environment

Expectations are escalating

Extreme weather and structural economic change have recently kept climate risk at front of mind across public and private sectors, and has driven increased policy and private sector ambition. The past few years have been marked by a series of extreme weather events. In the northern hemisphere summer of 2021 alone these include a record-breaking heatwave in the US, wildfires across the western US and Europe, flooding in Europe, the US, China and Japan and flood-induced landslides in India.[1] Not all of these events have been conclusively connected to climate change, but an increasing number are. Alongside this, rapidly changing prices and availability of low carbon energy technologies have continued to drive change across energy systems and capital markets. As a consequence of this steady drumbeat of changing perceptions of present and future climate and transition risk, the political will to act has grown, and will continue to grow.

In line with this the last eighteen months have seen a notable escalation in global policy ambition. A raft of major economies have extended their climate commitments in the past year, including a net zero 2060 target from China, and commitments to reach 2030 emissions reductions targets of 55% in the EU, 65% in Germany, 35% in India, 46% in Japan, 50-52% in the US and 68% in the UK among others. These mark a significant step up in political ambition and commitment.

In the same period our expectations of a likely transition pathway have also steepened. Major transition milestones and horizons are creeping closer and closer. This has perhaps been most clearly evidenced in the International Energy Agency's latest scenario, the Net Zero Emission scenario (or NZE), which outlines a steeper transition pathway across the energy system (and by implication the wider economy) than previously modelled by the agency. This includes a number of distinct milestones, including the end of exploration for new oil and gas resources as of 2021 and the decarbonisation of power systems in developed markets by 2035.

As such, companies and investors are facing increasing urgency and increasing risk on numerous fronts, accompanied by escalating standards of action, governance and transparency.

- **Company and investor commitment to net zero has escalated across the past eighteen months, and become more material.** The Race to Zero campaign ended 2019 with 500 company members, and as of October 2021 has over three thousand. Similarly, the Net Zero Asset Managers Initiative was founded in December 2020 with 30 signatories managing ~US$9tn, and nine months later had 128 signatories managing ~US$43tn between them. Companies and investors are also increasingly considering more transformational change. Demergers, major divestments and corporate restructuring are increasingly the norm in heavily transition affected sectors (such as resources and energy). This is, of course, only the visible action – in our experience companies and investors beyond these groups are also racing to establish net zero targets and build transition pathways.

- **Commitments are driving change across supply chains and economies.** These commitments are of course not only relevant for the organisations making them. Many company commitments have implications for, or directly include, their supply chains, effectively driving ambitions through the wider economy. Similarly, commitments by financial institutions are driving increased ambition and risk management across economies.

1. Carbon Brief (2021)

- **We observe the same lift in urgency among company stakeholders.** The last year has been punctuated by increasingly direct and powerful challenges to companies via their AGMs, and investors are facing growing demands and scrutiny from civil society and the press. The results of the Chevron and Exxon AGMs earlier in 2021, along with the rise of Say on Climate votes are examples of the increased intensity of stakeholder attention that companies and investors are fielding.

- **Finally, in addition to the above companies and investors are being held to higher standards by regulators.** TCFD reporting frameworks and sustainable finance taxonomies are becoming part of the regulatory landscape for financial institutions and companies in many jurisdictions, and are still under extension. Investors are under increasing pressure to demonstrate that their sustainable investment activities are transition aligned. Companies and investors also face increased scrutiny regarding the veracity of their statements on climate change and the reasonableness of their commitments. This has been most recently illustrated by a court challenges for companies facing accusations of greenwashing.

- **Ambition is likely to continue to grow through the remainder of 2021 and 2022.** COP26 has been a driver of acceleration in policy, stakeholder and regulator pressure, and in company and investor commitments, and we expect that companies, investors and governments will use the conference itself and the following 12 months to further increase ambition.

REQUIRED COMPETENCIES AND ACTIONS FOR COMPANIES AND INVESTORS

GOVERNANCE

Ensure leadership have sufficient understanding, expertise and information. Establish effective governance on climate change, including elements of remuneration and sufficient other accountability measures.

RISK

Identify all material risks posed to the organisation by climate change and the transition, and establish commensurate management strategies for these risks, including establishing tracking metrics. These strategies should not be superficial, and may include organisational or business model transformation where warranted.

ALIGNMENT

Establish a transition pathway in line with the net zero by 2050 goal, and identify operational alignment measures within relevant divisions or operations. As above, undertake organisational transformation if this is needed to reach alignment.

OPPORTUNITY

Identify opportunities presented to the organisation by climate change and the transition. Ensure that sufficient priority is placed on investigating and pursuing these where viable. As an overarching requirement, ensure that the organisation has sufficient capacity to establish and pursue these opportunities.

RESILIENCE

Ensure the organisation is resilient to direct physical risks presented by climate change, and to the impact of these direct physical risks on its value chain and operating environment. Beyond this, establish a sufficient understanding of the impacts of economy-wide physical climate risks.

TRANSPARENCY

Establish sufficient transparency to assure regulators, customers, stakeholders and finance providers that the above steps are being taken. This includes publishing tracking and risk metrics, specific financial impacts and targets across emissions and other operational or business model changes.

IPCC assessment report raised the stakes

The first edition of the IPCC 6th assessment report (AR6-WG1) came amidst this rise in ambition and urgency. Every six years the IPCC publishes an assessment report, which is a summary of our scientific understanding of climate change and its present and likely extent. The report includes contributions from hundreds of authors, and the authors review tens of thousands of scientific articles (published before or during the review period) and consult with a large group of governments to arrive at their conclusions. These assessment reports are effectively the combined summary of our knowledge about climate change at the time of the report, and they inform our collective views of risk across government, regulatory and corporate systems.[2]

AR6-WG1 is the first of four reports: The report released in August is the first of four reports which will together form the conclusions of the sixth review effort. The follow-on reports will be published in February, March and September 2022. As such, over the next twelve months the AR6 series will continue to update our understanding of climate change, and add running emphasis to the extent of physical climate risk and its implications for societies and the businesses that operate in them.

Although we will not summarise the report in depth, a few headline points are worth noting.

- **Firstly, the AR6-WG1 report concludes that it's definitely us causing climate change, and its already happening.** The report notes that the role of human influence in driving climate change is now unequivocal. The authors note that widespread changes have already occurred (Figure 1), including changes in extremes such as heatwaves, flooding, droughts and cyclones. Temperature increases have been observed almost everywhere on earth, and changes in the water cycle (rain frequency, floods or droughts) observed already across most of Eurasia, Southern Africa and Northern America among other regions.

- **And there's much more to come:** In addition to existing changes, the report notes that global temperatures will continue to increase until mid-century under all emissions scenarios considered, and these will drive further changes (Figure 2).

- **Extremes are the name of the game:** The report reminds us that is useful to think about climate change impacts as an increase in extremes. This doesn't encompass all expected climate change impacts, nor the nuances of our understanding of the topic. Nonetheless it is a useful way to summarise its effects across different domains and to think about its relevance for companies and investors. Rainfall increases during heavy rainfall events, and decreases at all other times. Storms become more intense. Droughts become more prolonged. Hot weather becomes more unbearable, and is combined with droughts to create extreme fire weather. AR6-WG1 re-confirms this increase in extremes, noting that all climate scenarios will see us experience more extreme rainfall, more drought, more fire weather, and more extreme storm events. In this world fires massive enough to create their own weather systems stop being freak events and start being regular.

2. https://www.ipcc.ch/report/ar6/wg1/#FullReport; https://www.carbonbrief.org/in-depth-qa-the-ipccs-sixth-assessment-report-on-climate-science; https://www.carbonbrief.org/in-depth-qa-the-ipccs-sixth-assessment-report-on-climate-science; https://www.climatecouncil.org.au/wp-content/uploads/2021/08/IPCC-6AR-WGI-Explainer_updated.pdf

- **Highly damaging compound events also increase:** The report also confirms an increase in what we call compound events, which occur when multiple extremes combine – such as a drought combined with a heatwave (causing extreme fire weather, as in Australia in 2019) or a fire followed by flooding (such as in Europe in 2021). These events are especially significant for societies, companies and investors, because their combined impacts not only increase damage but also reduce capacity to adapt and respond.

- **Some climate changes are now baked in, meaning physical risk is unavoidable.** The report notes that some climate change impacts are now unavoidable even if we constrain emissions. The global climate system has a certain volume of warming already baked in, and as such some climate change impacts are also locked in. These include increases in extreme hot weather, extreme rainfall, ocean warming and rising, and ice loss. Beyond this, the report notes that we are likely to experience warming well beyond a 1.5 degree scenario as a consequence of our inability to reduce emissions quickly enough (we're expected to breach the threshold for 1.5 degree of warming before 2040). This will result in impacts and damages well beyond those expected in the 1.5 degree scenario. This means that we will definitely continue to experience the impacts of climate change, and experience further impacts even in a strong transition scenario.

- **The carbon budget is the best control mechanism.** The report notes that the impacts of climate change will increase in a largely linear fashion with CO2e loads in the atmosphere, reinforcing the importance of establishing a carbon budget and reaching net zero as soon as possible. This process will be very difficult, but is still possible. Although we cannot now avoid climate change, we can still avoid most of it.

FIGURE 1:
CLIMATE CHANGE IS ALREADY AFFECTING EVERY INHABITED REGION

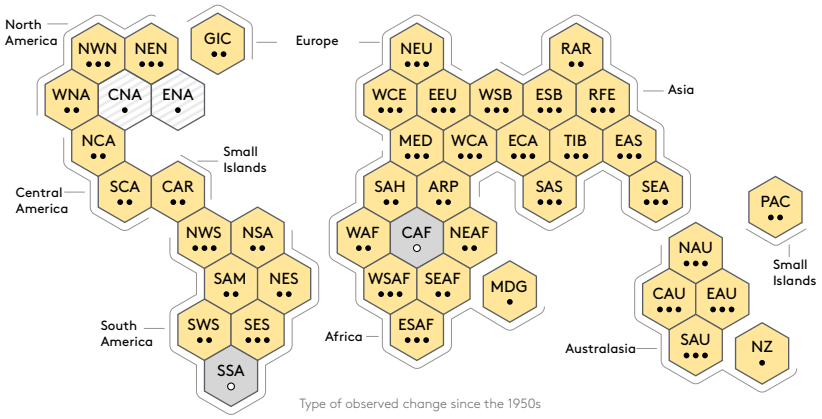
Type of observed change
in hot extremes

- Increase (41)
- Decrease (0)
- Low agreement in the type of change (2)
- Limited data and/or literature (2)

Confidence in human contribution
to the observed change

- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence

a) Synthesis of assessment of observed change in **hot extremes** and confidence in human contribution to the observed changes in the world's regions



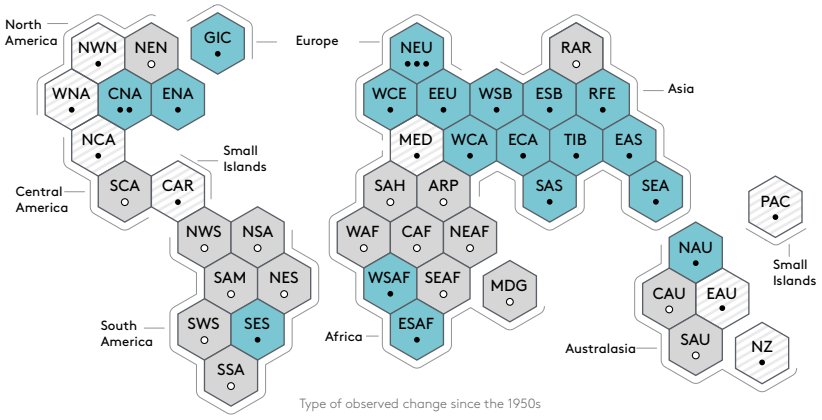
Type of observed change
in heavy precipation

- Increase (19)
- Decrease (0)
- Low agreement in the type of change (8)
- Limited data and/or literature (18)

Confidence in human contribution
to the observed change

- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence

b) Synthesis of assessment of observed change in **heavy precipitation** and confdence in human contribution to the observed changes in the world's regions



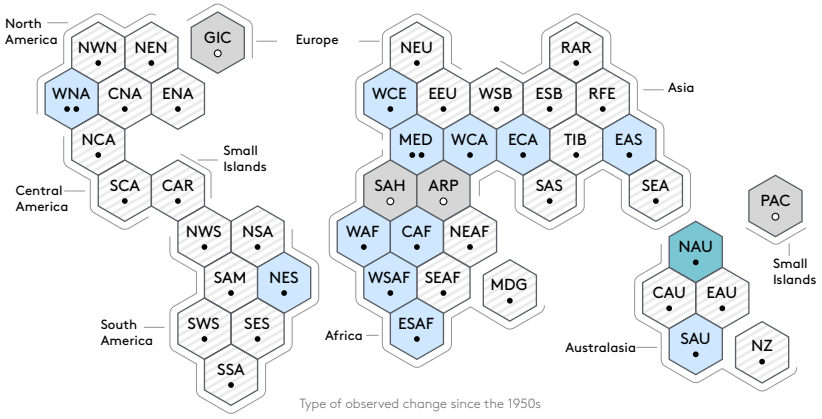
Type of observed change
in agricultural and ecological drought

- Increase (12)
- Decrease (1)
- Low agreement in the type of change (28)
- Limited data and/or literature (4)

Confidence in human contribution
to the observed change

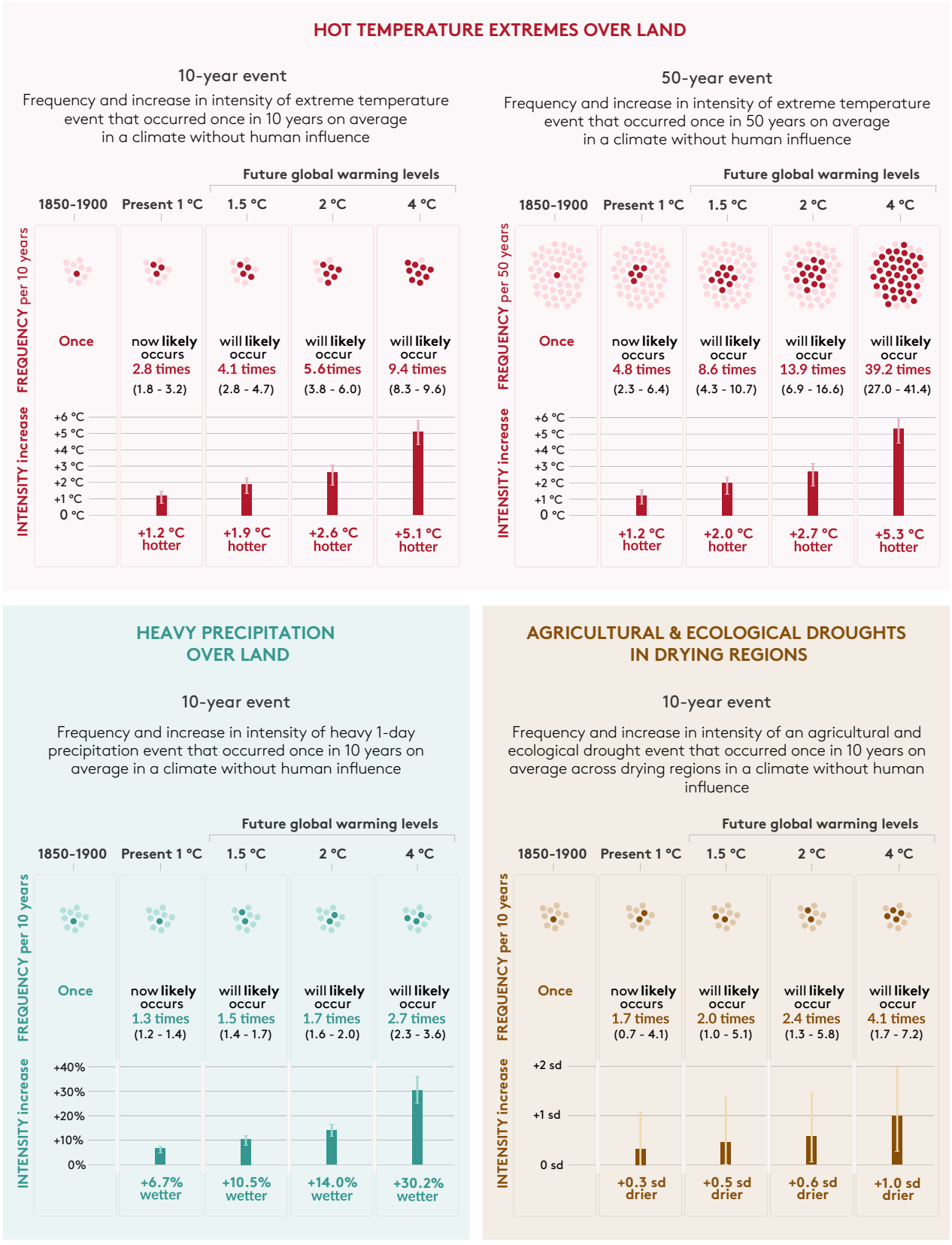
- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence

c) Synthesis of assessment of observed change in **agricultural and ecological drought** and confidence in human contribution to the observed changes in the world's regions



Source: Figure from IPCC Sixth Assessment Report Summary for Policy Makers (2021)

FIGURE 2:
PROJECTED CHANGES IN EXTREMES GROW WITH ADDITIONAL WARMING



Source: Figure from IPCC Sixth Assessment Report Summary for Policy Makers (2021)

Transition risk will keep growing

Transition risk as escalated to date, but there's more to come: When we survey recent events and research, our conclusion is that transition risk is likely to continue to escalate for three reasons – increased climate risk experience, increased risk perception, and a continuation of industrial development which is not aligned with Paris.

Transition risk will partially be driven by increased risk experience, as climate change is expected to drive acute and highly conspicuous damages. This means that our experience of climate change is likely to be not only chronic, but also acute, palpable and confronting. It is likely to be materially significant for our wellbeing, productivity and resilience.

In our view, this means that risk perception and transition ambition will accelerate. Transition risk is driven by perceptions of risk among relevant parties (including consumers, finance providers, governments and regulators), and by consensus for action in these groups. Most transition risk is driven by either changes in policy or regulation, changes in consumer behaviour (including B2B consumption), changes in technology availability and viability, and changes in the actions of civil society (including litigation). The risk perceptions of each of the groups responsible for these changes – policy makers, consumers, technology providers and funders, and civil society – are likely grow as a consequence of the IPCC report findings across the next twelve months, and also as a consequence of the actual experience of climate change.

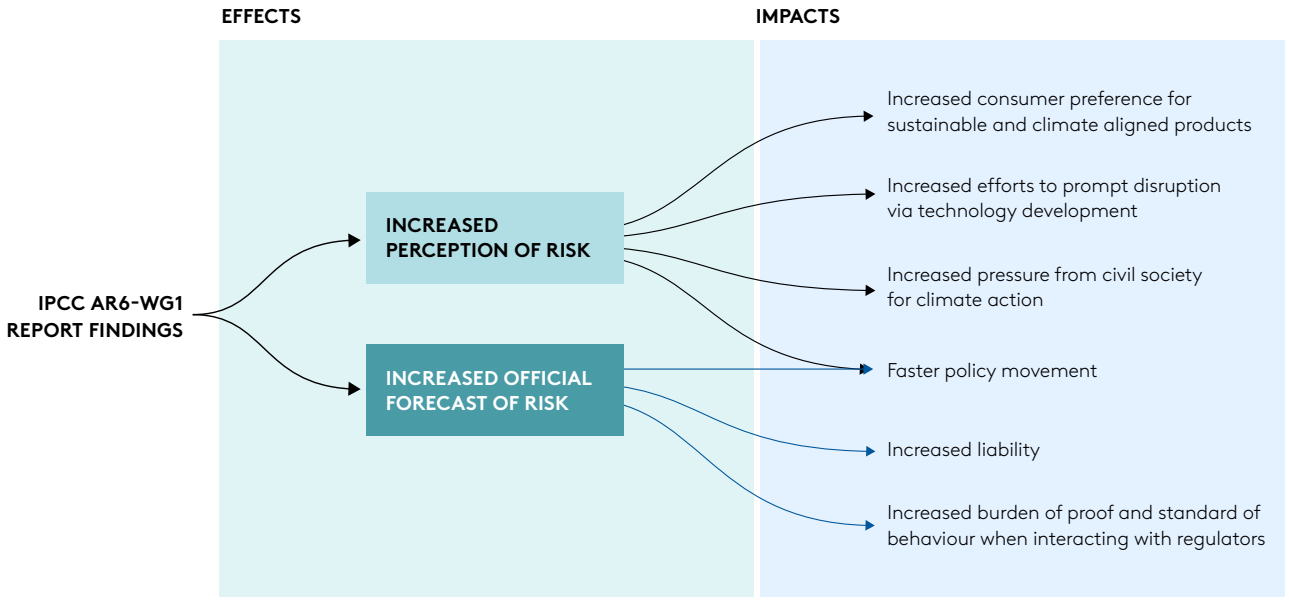
- **On the policy front,** policy makers are likely to continue to respond to conspicuous and damaging climate risk by extending national policy commitments. These extensions were already likely, but will likely proceed more quickly under a greater experience and expectation of risk. We expect that net zero targets will start to fall earlier than 2050, and that interim ambitions (particularly between 2035 and 2045) will escalate substantially.

- **On the consumer front**, we expect existing trends in consumer preference towards sustainable and climate aware products (including carbon neutral products and companies, and offsets) to continue to develop as consumers continue to connect their concerns with their consumption. This has implications not just for B2C companies but also for the agricultural and industrial supply chains which support them.

- **On the technology front,** we expect that efforts to fast-track technology development will continue and become more urgent. For proponents of new technologies this environment will be supportive, while providers and users of legacy technologies are likely to face increased revenue pressures or pressures to switch. Companies and finance providers are likely to face growing requests to support development of these technologies, including by taking greater investment risks and taking a larger role in commercialisation.

- **On the civil society front,** we expect that interventions in the corporate governance space and liability risk will continue to grow. On the first, acute climate change impacts are likely to increase the frequency of activism, to increase the group of stakeholders involved in activism (in many cases to include stakeholders who are not traditionally activist), and to increase the demands of activist actors. Listed companies should expect increasing alignment-type requests from activists and mainstream shareholders, and companies in general should expect increasing requirements for alignment from finance providers. On the liability side, increasing climate impacts will increase the forecasts and actual costs of damage from climate change, and as such increase the number of parties looking to establish blame for or prevent these costs.

FIGURE 3:
THE LATEST IPCC REPORT IS LIKELY TO ESCALATE TRANSITION RISK



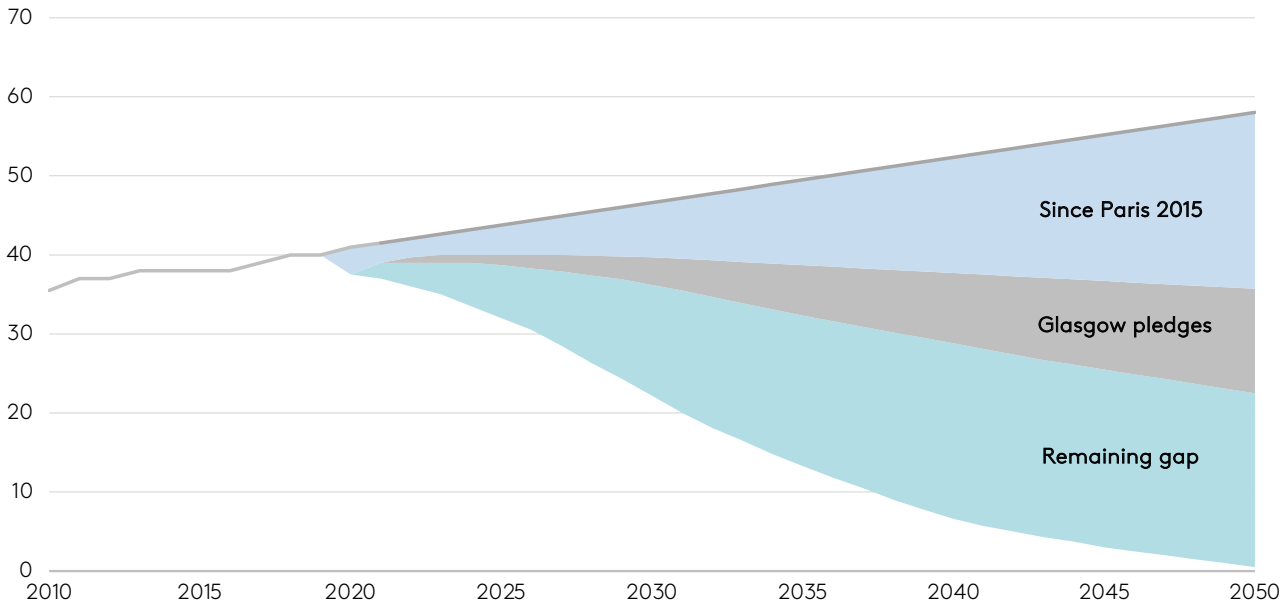
Alongside increased risk perception in public and private sectors, regulatory and legal responsibilities driven by climate risk forecasts will also increase: In addition to the above, the view of the IPCC is used to establish likely damages from climate change, and to inform corresponding standards of responsibility across regulatory decision making particularly. The AR6 series will effectively increase the view of likely climate risk under an unabated climate change scenario. As such, requests and responsibilities placed on companies and investors which are informed by these damage forecasts (such as scenario analysis requirements, regulatory stress testing requests and environmental approval hurdles) are also likely to increase across the next 12-18 months. We have seen a similar effect with the release of the IEA NZE, with ambition levels in the new scenario being translated immediately into expectations placed on companies and investors.

However, this increased ambition will occur in a context in which policy and investment have not yet shifted sufficiently. This might seem like an unusual statement given the volume of change we've observed in policy and in capital markets across the past eighteen months. Nonetheless, it is a position clearly supported by UNEP's production gap report and by the results of the most recent WEO. UNEP's work found that as of October 2021 government fossil fuel production plans for 2030 are about twice what would

be needed to meet a 1.5 degree trajectory. The report also notes that since the beginning of the COVID-19 pandemic in 2020, G20 countries have directed more new funding to fossil fuels than clean energy. Similarly, the 2021 WEO update finds that on current policies or pledges, oil production will be ~44% or ~33% greater in 2020 than a net zero trajectory. This is not to say that nothing has been achieved – the WEO notes that Glasgow pledges alone have made a substantial contribution to closing the emissions gap (Figure 1). However, both of these reports demonstrate that our present trajectory we are tracking and investing well above 1.5 degrees.

Increased ambition in the face of ongoing investment in fossil fuels will increase transition risk: As such, we are likely to experience an increase in perceived risk, ambition and expectation in the context of ongoing investments in high emissions energy sources. These countervailing forces are likely to generate ongoing increases in transition and stranding risk across many economies.

FIGURE 4:
CONTRIBUTION OF GLASGOW PLEDGES TO EMISSIONS GAP



Source: IEA (2021) World Energy Outlook

Resilience will become a critical theme

Most consumers, employees, and assets will be affected by growing climate impacts even if we reach net zero. The first AR6 report clearly highlights the extent to which climate change will affect these groups in all scenarios. Nonetheless, resilience has gained comparatively little attention across the private sector and across capital markets to date. We believe resilience as a theme is significantly under-played, potentially because the near-term impacts of transition are easier to perceive than the longer-term realities of climate change.

In the face of climate change as outlined in the first AR6 report, investing in resilience will be critical. The report tells us that there is no possible scenario in which companies and investors and their stakeholders and operating environments don't have to withstand rising physical risk. In this setting increasing levels of resilience will be necessary across all fronts, whether this be physical, organisational or financial resilience.

Furthermore, the first AR6 report notes that although some climate changes are reversible, some are not. Changes associated with ice masses and the oceans in particular will be slow to reverse, or will play out over very long time horizons. For example, even in a 1.5 degree scenario sea levels will continue to rise for centuries as a consequence of deep ocean warming, and as global ice masses adapt to new temperature ranges.

Changes driven by oceans and ice will be particularly permanent: In particular, companies or investors with assets affected by sea level rise, marine system productivity and water availability from snow-masses will need to establish resilience and undertake adaptations on an effectively permanent basis.

One example of assets affected is coastal real-estate or infrastructure. Under a high emissions scenario, sea levels are expected to rise by 30cm by 2050, 70cm-1m by 2100. A 1m rise in sea levels would likely see significant portions of Miami, London and Shanghai inundated among many other locations (with water front property and assets particularly affected). However, sea levels will continue to rise for centuries as a consequence of continuing deep ocean heat uptake and ice mass loss. The first AR6 report notes that sea level rise "approaching 2m by 2100 and 5m by 2150 under very high greenhouse gas emissions scenarios cannot be ruled out".[3] The effective permanence of these impacts on economic time scales means that assets and businesses with operations or supply chains in locations such as Shanghai, London, Bangkok and Tokyo will have to establish resilience and potentially undertake adaptation on a permanent basis. One example of this type of adaptation is Singapore's coastal and flood protection fund (which was established in 2020 with an initial injection of SGD$5bn) and is designed to fund the needed sea walls around Singapore as oceans rise.

This is also relevant for assets which rely on water supply from riverine systems fed by snow or glacial melt (such as assets in Northern India, Central China or parts of South East Asia). As climate change progresses the yearly distribution of water supply from these ice masses will change, with glacier runoff likely to increase to mid-century. Following this, in the medium term overall water supply from glacial runoff may decline as glacial masses decline, even if warming is reversed.[4]

3. IPCC WG1 (2021) Sixth Assessment Report

Resilience investments should now be considered BUA: As a consequence of the above companies looking to invest in resilience should treat a certain level of climate impacts as a given. Resilience planning should not be approach on a just-in-case basis, but on a business as usual basis and should become a standard part of climate risk management efforts. Alongside this, companies and investors should ensure that they are assessing their portfolios against high climate risk scenarios.

In a similar vein, resilience and solutions are likely to be a growing area of focus for investors. Resilience has been under-played to date in investor practice, beyond establishing resilience measures associated with individual assets. These asset-level resilience efforts are obviously crucial, but financial institutions must begin to consider resilience at a system level and consider which investments are likely to facilitate resilience across economies. The fact that some climate impacts are inevitable means that investments which can improve industry, economy or national resilience will all be areas of growing demand under all future scenarios.

Having said this, in our view we are likely to under-invest in resilience across the board, paradoxically making the case for resilience investments stronger. One of the challenges of investing in resilience is that unlike transition risk, the rationale for including resilience needs in investment decision making is more variable. As such, we believe that across the board, investment in resilience is likely to be far lower than needed. This in turn will increase the extent to which we experience physical risk. For this reason, investments in resilience for individual assets are likely to be especially important.

We would note that significant improvements are needed in data availability, regional impact mapping and impact translation to facilitate sufficient investments in resilience.

4. IPCC WG1 (2021) Sixth Assessment Report – Regional fact sheet: Asia; Carbon Brief (2021) Climate change has driven 16% drop in 'snow meltwater' from Asia's high mountains

Net zero is likely to become the default pathway

A key finding of the first AR6 report is that a net zero pathway will actually work. There is a high likelihood of constraining warming and avoiding destabilising climate change. Although it might seem counter intuitive when stated following the above points, the impacts of climate change become more severe with every additional degree of warming. As such, although climate impacts are locked in to a certain extent, these locked in to effects are comparatively low impact compared to what we might experience in higher warming scenarios.

As a consequence of this finding, the push to establish net zero pathways for companies, investors and nations is likely to accelerate. This finding has particular weight following the updated WEO, which notes the still significant gap between updated pledges for COP26 and the net zero pathway. We expect that net zero pathways (including effective interim pathways) will be prosecuted as a default part of expected climate risk governance for medium and large-scale enterprises in developed markets within the next couple of years, and for most large financial institutions in a similar period. In this context, we would suggest companies and investors approach net zero as a standard component in the climate risk toolkit.

What is considered a net zero pathway is likely to be steeper than in the past: In this context transition trajectories like those outlined in the IEA's Net Zero Emissions scenario and by the new SBTI net zero standard are likely to become the norm, rather than being considered an ambitious or aggressive. The milestones outlined in these scenarios are also likely to be increasingly widely adopted, including exclusions on greenfield oil, gas and coal developments. This is likely to extend the collapse in proposed new coal-fired projects seen in many regions since the Paris agreement into greenfield fossil fuel projects more broadly.[5]

Net zero pathways and solutions will see many uses: This means that work to establish net zero governance within companies and financial institutions will not be wasted, and is likely to be deepened and held to increasingly rigorous standards. Furthermore, we suspect that this work is likely to become an essential part of business planning in some sectors at least across the next two decades. In addition to this, effective governance systems and infrastructure (within companies and investors and at a system level) will need to be established to support delivery against these pathways. Furthermore, companies or investors who offer solutions which enable emissions reductions, net zero planning and governance or net zero aligned investment are likely to face growing demand.

5. Global Energy Monitor, CREA (2021)

What future do we expect?

We think it is likely that we will find ourselves in a scenario characterised by high physical and transition risk. In this scenario, a transition is undertaken late, and as such involves both more rapid change and greater physical risk.

We think this is likely firstly because staying under 1.5 degrees will be possible but hard, and in our view the system is not yet changing fast enough. The first AR6 report notes that although it is possible to stay below the 1.5 degree threshold, it will be very difficult and will require immediate and sustained action across a number of major sectors. As highlighted in the WEO and by UNEP, although we have seen a number of substantial updates to NDCs in 2020 and 2021, these have only fractionally narrowed the gap between current policy trajectories and a net zero pathway (see Figure 5).[6] As we are engaged assisting companies, governments and investors to navigate a transition, we are acutely conscious of the range and speed of work currently being undertaken across private and public sectors. Despite what seems like a tidal wave of activity, the system is not yet changing fast enough to ensure that the global economy stays beneath the 1.5 degree threshold.

Furthermore, although some sectors will change quickly, others are very likely to lag. As outlined in both the UNEP report and the WEO, despite rapid advances in solutions and solutions-focused sectors (such as renewable energy provision), high emissions and fossil fuel producing sectors are not changing nearly as fast as they need to. This slower rate of change is not surprising – despite many fossil fuel companies working determinedly to transition, many others are struggling to come to terms with the required extent and speed of change in their businesses. As such, we believe that despite what are likely to be very meaningful advances in the availability and viability of solutions, it is still likely we will significantly overshoot a Paris compliant trajectory as incumbent industries struggle to change course fast enough.

These dynamics would put us firmly in the disorderly transition category, with variable transition speed across sectors maintaining emissions levels for longer, necessitating a faster eventual transition. This scenario presents more risk on all fronts.

Importantly, in a disorderly scenario physical climate risk will be higher, and as noted above we will have to prepare carefully for this. Any under-investment in resilience will amplify the impact of physical risk and amplify transition pressure. As such, investors and companies should begin or scale up the use of stringent physical risk assessments as part of their risk analysis and management.

At the same time, a disorderly scenario is likely to present higher transition risks, as the transition will be undertaken more quickly. Disorderly transition is expected to involve fragmented, late efforts to increase ambition on behalf of governments, corporates and investors, alongside increased unilateral action by system participants. In particular, a disorderly scenario is likely to result in more assets stranding compared to a 1.5 degree scenario, because investment in high risk assets will continue. Where this investment occurs beyond the needs implied by a 1.5 degree scenario (for example, the milestones outlined in the IEA's Net Zero roadmap), this investment is likely to result in

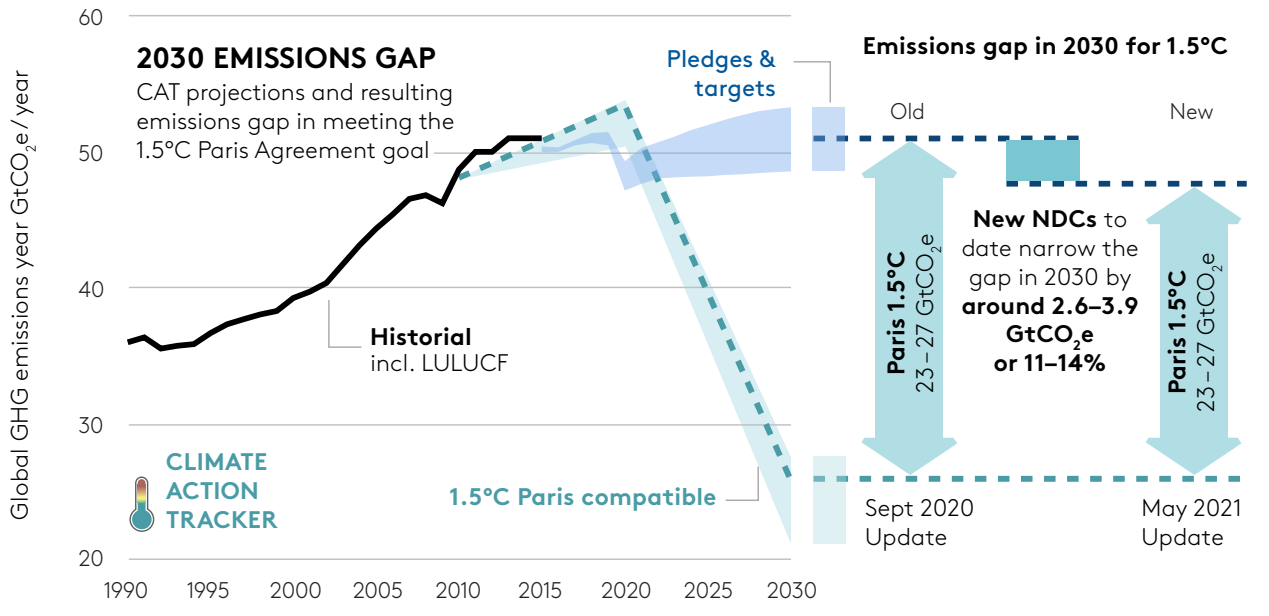
6. Climate Action Tracker (2021)

greater oversupply and greater stranding outcomes. This is a particular danger for sectors or fuels whose role is unclear (such as gas), as industry actors are more likely to continue investments beyond said milestones. However, companies and investors with exposure to all sectors should be prepared for a less predictable policy and commercial environment and a choppier transition if we continue on the present path.

As physical impacts and stranding are likely to be higher, so is liability. With citizens, communities, nations and organisations facing greater damages on both fronts, efforts to identify and attribute liability are likely to also be greater than in an orderly transition scenario. We can see this trend developing already, with a raft of litigation presently underway across a range of sectors and issues. With entire litigation firms now set up to prosecute litigation on climate-related issues, undertaking projects which can be related to climate damage will become more challenging and transition plans and claims will have to become more rigorous.

Under this scenario, removals of various kinds will be essential. A disorderly scenario implies that global emissions will significantly overshoot the trajectory associated with 1.5 degrees of warming. Correcting this overshoot will require significant drawdown of emissions – likely from multiple sources including man-made removals and nature-based removals. If these removals are not affordable and available at scale, net emissions and warming will be more extensive. Offsets are presently contentious, with significant debate underway regarding their utility and legitimacy. Nonetheless, many company and investor transition plans are likely to rely on them in some form, particularly in a delayed and disorderly transition scenario.

FIGURE 5:
GAP BETWEEN EXISTING POLICY AND 1.5 DEGREE TRAJECTORY



Source: Climate Action Tracker (2021) Global Update

How should companies and investors respond?

Combined events point to increasing urgency: In our view, events across the past twelve months along-side the impending COP and the remaining AR6 reports suggest that companies and investors should develop their transition pathways and governance, their risk management and their resilience with renewed urgency and with the expectation of increasing requirements for rigour.

Notable step up in company and investor responses likely: We would also note that as ambition rises, the traditional pace of response is unlikely to be considered sufficient. Five years ago requests for increased climate risk management and strategic responses were often met with improved disclosure and planning. Now and in the immediate future these requests will increasingly be met by business transformation and focused, transition aligned investment efforts. There are obviously already a number of examples of this type of transformative work under way, including among major companies in the resources, energy, utilities and agriculture spaces. We expect that these types of responses – which include over-arching strategic revision alongside changing climate ambitions – will be increasingly common in these sectors and will become regular in adjacent sectors as well.

Mis-aligned sectors, companies and investments will become more challenging: On the flip side, we believe the pressure on companies and investors in sectors which are manifestly mis-aligned with a net zero pathway will only grow. This is likely to come from customers (business or otherwise), finance providers, insurance providers and potentially other suppliers as well. The emphasis on engagement is slowly shifting from suppliers of fossil fuels or emissions intensive products to companies with significant emissions anywhere in their value chain. With this pressure to move away from non-aligned sectors being instituted across economic systems, companies in these sectors should expect pressure from all directions.

To avoid a valley of death, act sooner rather than later: To respond to this pressure, organisations in these positions will need to engage with stakeholders to build a viable transition strategy, or alternatively make a powerful and well evidenced case for the ongoing viability and alignment of their assets or investments. This is better done sooner rather than later, as the availability of capital and other supports for these sectors are likely to continue to decline. Organisations in this predicament should act promptly to avoid a valley of death, in which resources and support are removed just as companies' needs for resources and support to embark on a transition pathway grow. Companies in highly impacted industries have already faced a changing capital access landscape, but we believe this will escalate substantially in the next 18 months. As we have said many times before, companies and investors who approach the issue from a position of resistance or denial are more likely to be stranded than peers who can countenance the importance of the theme to stakeholders.

Clear regulatory and policy settings can support competitiveness, reduce governance loads and maintain capital availability: Finally, it is an oft stated point that governments and regulators can assist companies and investors as they undertake this transition effort. This support can come in the form of clear long-run and near-term policy pathways, the provision of relevant information and data, and clear, consistent and unequivocal guidance. It is our experience that when companies and investors attempt to undertake transition planning and climate risk management with loose guidance and absent policy, significant time and energy must be expended to initially determine what is good enough, which futures to plan for and who is responsible for movement. To the extent that policy makers and regulators can reduce these uncertainties they will reduce governance load in the system and support competitiveness and capital availability for organisations and investors operating in their jurisdictions.

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