

Rising focus on just transition will raise risks for most exposed companies

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ABOUT

Moody's is committed to helping market participants advance strategic resilience, responsible capitalism, and the greening of the economy. Our offerings span across credit, ESG, sustainable finance, and climate risk solutions and help our customers identify risks and opportunities and provide meaningful performance measurements and insights.

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Rising focus on just transition will raise risks for most exposed companies

Globally, there is a lack of preparedness for the coming disruption to workforces, supply chains, communities and consumers caused by the transition to net zero. Post-COP 26, we expect that the just transition will rise up the agenda for policymakers, companies, investors and civil society. Lack of action by companies and market participants to assist those negatively impacted by the transition will risk derailing national decarbonisation strategies and delaying the industrial transformations required. Our global analysis of critical carbon-intensive sectors finds that average company performances across seven selected criteria core to the just transition are “weak” or “limited”, with broad-based challenges related to workplace and labour issues.

Responsible management of corporate reorganisations is a global blind spot, with US companies lagging in terms of supporting at-risk workers to develop skills and build careers. Most companies in high transition risk sectors in all regions exhibit “weak” performance for their approaches to responsible management of reorganisations. US companies perform poorest in disclosures related to career management and promotion of employability and in promotion of labour relations. Companies that are unable to disclose how they are limiting layoffs, maintaining employment, enabling career development or managing restructuring may see reputational risks rise.

Companies in sectors with clearer policy roadmaps and scalable technologies are ramping up green products and services, thereby enhancing consumer choice. We expect the rate of growth of green product and service commitments in sectors such as automobiles and electric and gas utilities to be tied to innovation, electrification and infrastructure developments that enable lower costs and improve access for consumers.

High-emitting sectors are also significantly exposed to physical climate hazards, over the coming decades, with implications for public health. Based on our analysis of physical climate risk for about 5,000 publicly listed companies and their roughly 2 million underlying corporate facilities, nearly all analysed sectors have over 30% of their assessed facilities exposed to both heat stress and water stress looking out to 2030-2040. These hazards will carry implications for public health with rippling impacts on labour productivity and business costs. Several sectors also have around 20% of their assessed facilities exposed to floods, which is significant for sectors which rely on onsite operations, capital intensive equipment and supply chains, such as automobile manufacturing and transportation and logistics.

Why the just transition matters

The push towards a net zero global economy will be the defining challenge of the coming decades. In demanding an [unprecedented industrial transformation](#), it will radically change how economies are structured, companies operate and how people live and work. If not implemented carefully, the transition has the potential to exacerbate existing societal challenges and dislocate the most exposed workforces, supply chains, communities and consumers – particularly those already facing disproportionate challenges due to income, race and other factors.

Moreover, with the extreme effects of climate change likely to disproportionately affect disadvantaged communities, managing physical risk exposure also represents an important pillar of a just transition. As climate extremes become increasingly apparent – with delays to the transition coming with increasing costs – we expect companies to come under increasing pressure to prepare for the physical impacts of climate change, with an eye toward building resilience in the communities and regions making up their workforce and supply chains.

Companies that fail to demonstrate how they will implement policies and programmes to manage the social consequences of the transition to a low-carbon economy are likely to face greater scrutiny from investors, policymakers and consumers, raising potential market, reputational and legal risks. While the incorporation of the just transition into activities of governments, investors and companies is at an early stage, our datasets can today provide a deep dive into some of the challenges that sectors are likely to face, as both transition and physical climate-related impacts crystallise and become increasingly urgent.

For more information, visit: <https://esg.moodys.io/esg-measures>

Globally, there is a lack of preparedness for the coming disruption to workforces, supply chains, communities and consumers caused by the transition to net zero

Post-COP 26, we expect that the just transition will rise up the agenda for policymakers, companies, investors and civil society. Net zero commitments are now commonplace across the globe. Following the Glasgow summit, country net zero targets between 2050 and 2070 will cover nearly 90% of global emissions, including the four largest emitters – China, the US, EU and India.¹ Going forward, the feasibility of ambitious and accelerating net zero commitments will become linked more concretely to social impacts. This integration is recognition of the societal repercussions of net zero and the need to attract broad-based public support for success.

Lack of action by all stakeholders to assist those negatively impacted by the transition will risk derailing national decarbonisation strategies and delaying the industrial transformations required. Recently, stronger pledges and better understanding of the implications of industry transition pathways and related social impacts, in addition to growing awareness of physical climate risks, has led some governments, investors and other organisations to set out just transition expectations, recommendations and commitments – including the [COP 26 Just Transition Declaration](#), signed by more than 30 countries (Table 1). This followed up the G20 Call to Action, which advocates for funds and incentives to be made available to support workers, communities and consumers that take part in the net zero transition.

Table 1 COP26 has reinforced the need for a just transition to a net zero economy

COP 26 Just Transition Declaration Principles

Support for workers, communities and regions in the transition to new jobs

Support and promote inclusive social dialogue and stakeholder engagement

Economic strategies that support clean energy and create decent jobs

Local, inclusive, and decent work with effective support for reskilling and training as well as adequate social protection for those in need

Ensure that existing and new supply chains create decent work for all, including the most marginalized, with respect for human rights

Include information on Just Transition efforts, where relevant, in national Biennial Transparency Reports in context of achieving Nationally Determined Contributions

Source: [Supporting conditions for a just transition globally, UN Climate Change Conference UK, November 2021](#)

¹ See [Energy and Climate Intelligence Net Zero Scorecards](#)

The COP 26 Just Transition Declaration has been reinforced by other statements of support, signaling strong momentum to integrate just transition into policy frameworks. Individual governments and other relevant organisations are mainstreaming just transition into policymaking. For example, in 2019, Scotland established a [Just Transition Commission](#) and the just transition has ministerial level accountability. In heavily coal dependent South Africa, just transition is a core component of [the Presidential Climate Change Coordinating Commission](#). Meanwhile, new financing mechanisms are also emerging. At COP 26, the EU, France, Germany, the UK and the US launched a [Just Energy Transition Partnership](#) with South Africa, with an initial financing commitment of \$8.5 billion. Elsewhere, the EU has set up a Just Transition Mechanism that aims to mobilise €55 billion between 2021 and 2027, with member states in the process of preparing Just Transition Territorial Plans.

Beyond the public sector, we are also seeing increasing impetus in the private sector to consider just transition elements in decarbonisation strategies. Notably, the Glasgow Financial Alliance for Net Zero (GFANZ), a global coalition of financial institutions, has set out its backing for just transition.² In its November [progress report](#), GFANZ recommended that the just transition must become embedded into corporate net zero transition disclosure frameworks.

Investor coalitions have also formed around just transition activities. The [Investors for a Just Transition](#), spearheaded by the Paris-based Finance for Tomorrow and representing €4.3 billion of assets under management, is committed to deepening assessment and engagement with investee companies on just transition activities.³ Similarly, the multistakeholder [Financing the Just Transition Alliance](#), coordinated by the Grantham Research Institute on Climate Change, includes over 40 banks, investors and financial institutions. It aims to identify concrete steps that the financial sector can take to scale up climate action which delivers positive social impact, both in terms of maximising the social benefits of net zero and also making sure no one is left behind.

Finally, just transition assessments are also emerging. The multi-stakeholder World Benchmarking Alliance has published results of 180 companies assessed against its [Just Transition Benchmark](#). Climate Action 100+ is also developing a Just Transition Indicator, currently in beta, as part of its disclosure process examining action across four proposed areas of acknowledgement, commitment, engagement and action.

We have assessed approximately 1,000 companies in eleven sectors identified as most exposed to carbon transition, across seven just transition-relevant criteria. Our sector selection is based on those with a moderately or highly material weighting in terms of greenhouse gas emissions coupled with high labour intensity – both elements resulting in elevated just transition risks. The criteria assessment includes the following three equally weighted pillars and indicators, with data based on companies' disclosures:

- » The *Leadership* of the company: defined as the exhaustiveness of relevant commitments to addressing selected criteria.
- » The company's *Implementation* of measures to address selected criteria: including the processes in place at management level and at site level, their coverage and the geographic scope of implementation.
- » The *Results* achieved by the company: including disclosed key performance indicators (KPIs), stakeholder feedback and controversy analyses.⁴

Our global analysis finds average company performances across all criteria to be “weak” (less than 30 out of 100 in our scoring) or “limited” (less than 49/100) in all identified carbon-intensive sectors, with broad-based challenges linked to workforce and labour issues (Figure 1). At a global level, Forest Products and Paper performs best across all assessed sectors, with a median score across all seven criteria of 46. Conversely, the Oil Equipment and Services performs poorest, with a median score of 28.

² Moody's Corporation is a founding member of the Net Zero Financial Services Provider Alliance, part of the Glasgow Financial Alliance for Net Zero (GFANZ). See [Moody's Announces Participation in New GFANZ Alliance: Commits to Align Products and Services to Achieve Net-Zero Greenhouse Gas Emissions by 2050](#), September 2021.

³ Moody's ESG Solutions is a founding member of Finance for Tomorrow and exclusive data partner for the Investors for A Just Transition platform. [The data hub with access to company scores across a range of relevant indicators can be accessed on their website.](#)

⁴ See our [ESG Assessment methodology](#).

Figure 1 Average global scores by sectors across just transition-relevant indicators.

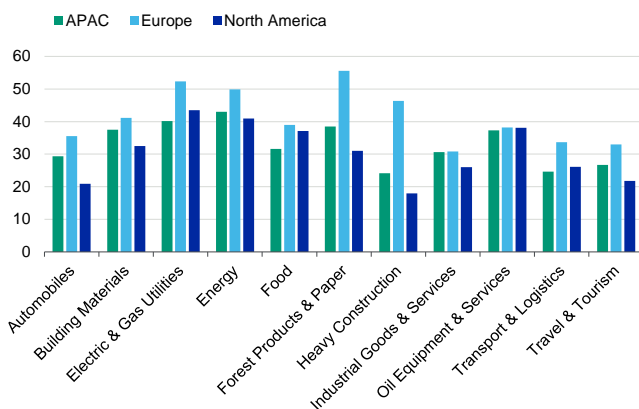
	Responsible management of reorganisation	Career management and promotion of employability	Promotion of labour relations	Promotion of social and economic development	Non-discrimination	Respect for human rights standards and prevention of violations	Minimising environmental impact from energy use
Automobiles	17	32	29	29	44	37	39
Building Materials	17	31	27	41	41	40	44
Electric & Gas Utilities	24	37	36	46	50	43	28
Energy	20	31	24	44	45	39	30
Food	14	29	22	35	42	39	38
Forest Products & Paper	27	40	45	47	50	46	49
Heavy Construction	19	31	31	35	42	43	40
Industrial Goods & Services	16	31	25	30	46	41	36
Oil Equipment & Services	15	26	16	39	40	34	28
Transport & Logistics	18	31	29	28	43	39	44
Travel & Tourism	16	31	28	28	46	44	45
Median Indicator Score	17	31	28	35	44	40	39

Note: Our scoring of sectors across relevant just transition criteria finds average performance to be weak (lower than 30 out of 100 denoted in red) or limited (from 30-49 out of 100 denoted in orange), with few robust scores (from 49 to 59 out of 100 denoted in yellow) and particular challenges for workforce and labour issues. Dataset includes relevant companies across all regions globally.

Source: Moody's ESG Solutions

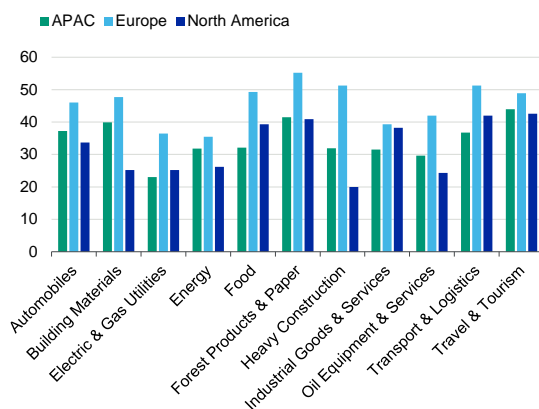
Our analysis also finds higher median indicator scores for minimising environmental impact from energy use, non-discrimination and respect for human rights standards, compared to other criteria. Above-par performances for promotion of social and economic development and minimising environmental impact from energy use suggest that most companies have reasonable capabilities and resources to engage with local communities (Figure 2) while also decarbonising (Figure 3) – although clearly there remains scope for improvement. At present, our evaluation of company activities related to social and economic development captures issues ranging from capacity building, impact assessments, technology transfer and tax transparency. As disruption takes place to local communities where net zero implementation will likely reshape economies, we expect investors, lenders and policymakers to require explicit links to just transition plans. As such, we expect assessment of social and economic development in the future to come under greater scrutiny, particularly for companies with weak scores for their capacity to reduce emissions related to energy consumption. Usefulness of disclosures will be tied to growing demand for aligning place-based socioeconomic impact assessment with transition trajectories and physical climate risks and impacts.

Figure 2 Average scores for promotion of social and economic development by region.



Source: Moody's ESG Solutions

Figure 3 Average scores for minimising environmental impacts of energy use by region.



Source: Moody's ESG Solutions

Companies can reinforce stakeholder engagement practices by looking to established guidelines such as those of the [Global Reporting Initiative](#) and learn from [sector specific guidance from organisations such as the OECD](#). Better stakeholder identification, inclusion and engagement that build trust and accountability will support companies to make more effective net zero transitions.

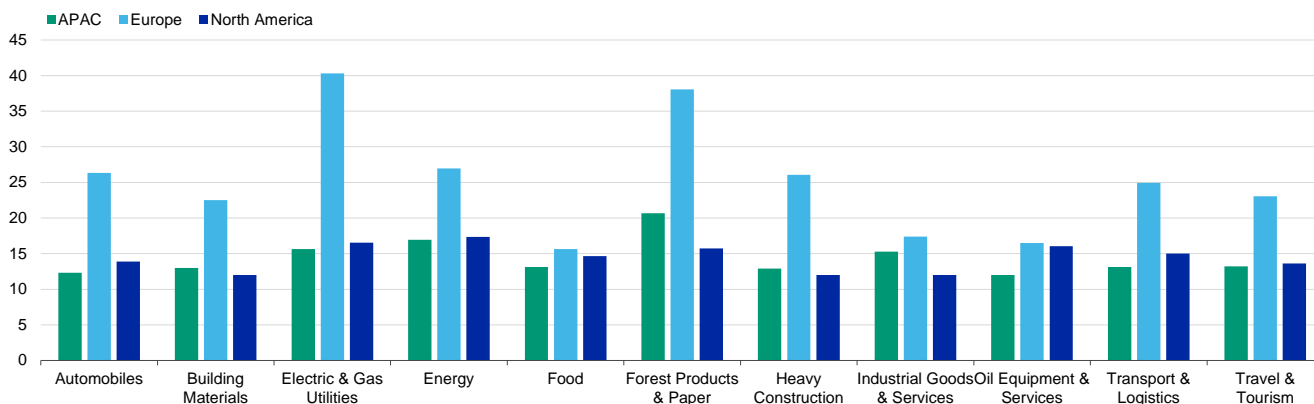
Case study: Stora Enso OYJ

Pulp and paper producer Stora OYJ has an advanced score (88/100) for the promotion of social and economic development. As a major forest owner, [they recognise the importance](#) of the rights of indigenous people and local communities living in areas near their operations and have developed procedures for community engagement that are context and region-sensitive. They also have formal grievance channels in place for communities close to their sites to raise issues.

Responsible management of company reorganisations is a global blind spot, with US companies lagging in terms of supporting at-risk workers to develop skills and build careers

Corporate and industry reorganisation in response to increasing transition and physical climate risks will see jobs disappear, change, and, over time, be created at scale, as new industries emerge. The [International Energy Agency \(IEA\) has estimated](#) that although up to 15 million jobs will eventually be created in new activities linked to investment in clean energy, up to 5 million jobs will be lost in fossil fuel linked sectors. Most companies in high transition risk sectors in all regions exhibit weak performance for their approaches to responsible management of corporate reorganisations (Figure 4). Job losses linked to the changing nature of economic activity, including factors such as the role of labour-saving technology and automation, have long created disruption for how people live and work. Going forward, the rise of ESG momentum and the increasing pressure for companies to decarbonise rapidly may combine to increase attention on how reorganisation is managed. We expect near-term reputational risks for companies that are unable to disclose how they are limiting layoffs, maintaining employment, enabling career development or managing restructuring. These risks are likely to intensify for poor performers as carbon-intensive activities are aggressively scaled back under a net zero pathway.

Figure 4 Average scores for responsible management of reorganisation by region.



Source: Moody's ESG Solutions

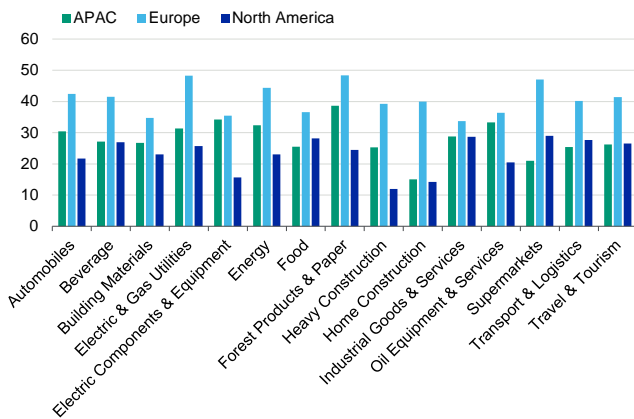
As part of our assessment of responsible management of reorganisations, we evaluate companies' engagement to limit layoffs and responsible consultation and restructuring practices, which are particularly important for carbon-intensive companies undergoing large shifts in business models. Currently, for certain high carbon sectors, [employment in some regions has yet to return to pre-pandemic levels](#), in part linked to net zero commitments. But despite the net gain of employment in aggregate across existing and new sectors linked to the net zero transition, the lag in new job creation, as well as mismatches in the skills and locations of new jobs created, puts heightened emphasis on present-day responsible reorganisation practices. We expect many companies across high-risk sectors to be underprepared for the level of coming scrutiny, given current levels of performance. At present, companies may feel they are not assessed on performance against this criteria, hence low disclosed performance rates. However, we expect demand will rise from investors, policymakers and other stakeholders (such as employees and community leaders) for better disclosure and action, putting pressure on companies in the most exposed sectors to enhance their performance in this area.

A lack of support for workers to develop professionally, or the absence of tools to allow employees to adapt to a changing work environment, risks reducing employability and augments social disruption. Transition exposed US companies perform poorest for career management and promotion of employability, and in the promotion of labour relations (Figures 5 and 6). We expect this lack of career support, compounded by restricted labour relations, to reinforce negative social risks and impacts for affected workforces. Given growing engagement on economy-wide net zero ambitions and green jobs prospects, a lack of readiness to support workforces is likely to weigh negatively on the worst-performing companies, leading to potential reputational costs and hindering transformation efforts.

Case study: Endesa

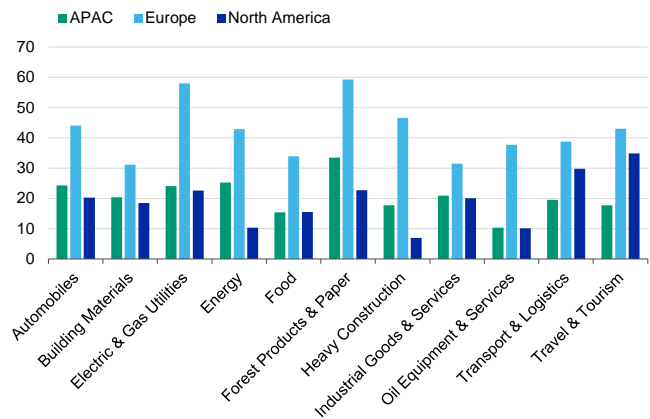
In the last three years, electricity utility Endesa has undergone reorganisations within its operations due to acquisition activities. Endesa has maintained an advanced performance (>60/100) in this criteria due to a range of measures put in place to limit the impact of reorganisations. Endesa’s internal mobility programme includes an employee-wide re-skilling initiative. In cases where the internal mobility programme is inapplicable, Endesa reports that there are collective framework agreements to provide financial compensation and early retirement benefits to affected employees.

Figure 5 Average scores for career management and promotion of employability by region.



Source: Moody's ESG Solutions

Figure 6 Average scores for promotion of labour relations by region.



Source: Moody's ESG Solutions

Case study: Stellantis N.V.

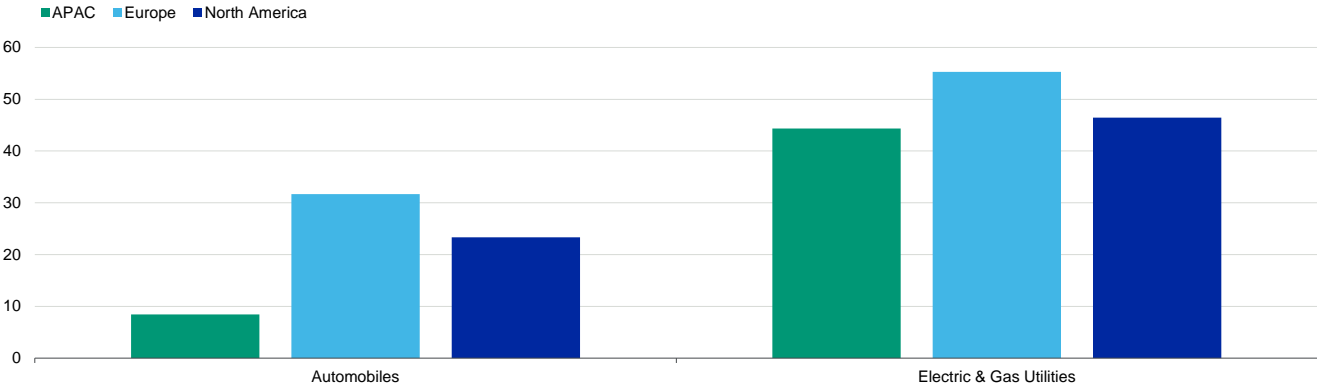
Global automaker Stellantis N.V. achieves an advanced performance (90/100) for career management and promotion of employability. It has a global framework agreement in place with trade unions and commitments regarding career management and training, particularly in France. In addition, the company has included comprehensive commitments to promote career development and life-long employability within all its operations in its international human resources policy. Stellantis N.V. also has its own 'Corporate University' to support training and skills development of employees.

Companies in sectors with clearer policy roadmaps and scalable technologies are ramping up green products and services, thereby enhancing consumer choice

Industry transformation and adoption of new technologies at scale require strong policy signals. Consumers, when given access to goods and services that will enable the transition, have a key role to play. The IEA estimates that approximately 55% of the cumulative emissions reductions required will be linked to consumer choices. [We see a picture of mixed momentum and preparedness within and between sectors in the race to zero.](#) While fundamental risks facing sectors like oil and gas are well-understood, there are important differences among other industries. For example, in the past two years and against the backdrop of a pandemic, auto manufacturing and utilities have made rapid progress from being among the most exposed to being better

positioned for the net zero economy. We expect the rate of growth of green product and service commitments in sectors such as automobiles and electric and gas utilities to be tied to innovation, electrification and systemic infrastructure developments that lower costs and improve access to low-carbon choices for consumers (Figure 7). Those sectors where policy roadmaps are in place, proven technology is now available at scale, and capital expenditures are being channelled into new products and services, will be at an advantage to meet growing consumer demand.

Figure 7 Average scores for commitments to the development of green goods and services by region.



Source: Moody's ESG Solutions

Case study: Orsted

Energy producer Orsted has shifted its production over the last ten years from heavy coal dependence to becoming a renewable energy global leader. Since 2006, the company has reduced coal consumption by 73%, and aims to phase out coal by 2023. Their green solutions include offshore and onshore wind, renewable hydrogen, energy storage and waste-to energy technology. Its operations and energy production (Scope 1 and 2) are on track for carbon neutrality by 2025 with its entire value chain set to be carbon neutral by 2040.

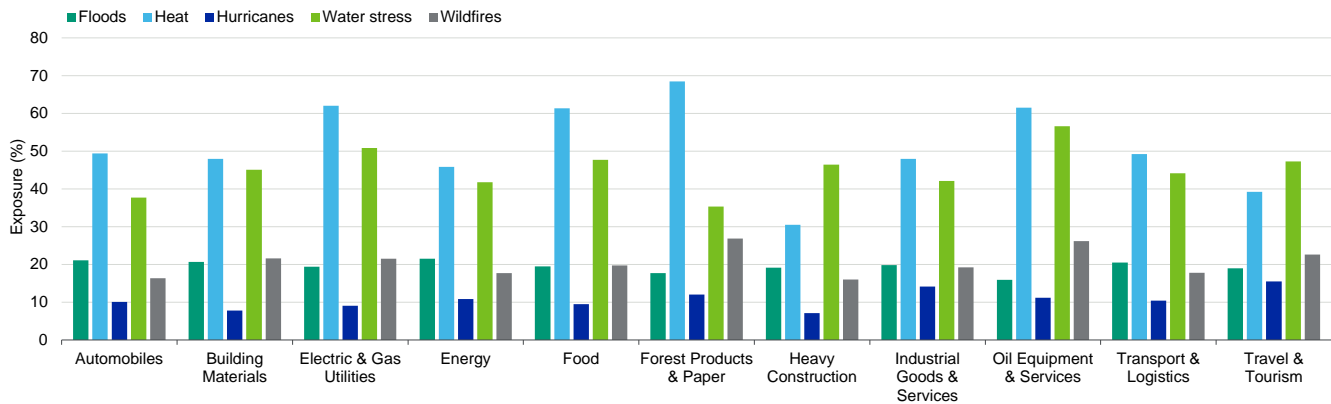
High-emitting sectors are also significantly exposed to physical climate hazards, over the coming decades, with implications for public health

Transitioning the economy in a just and resilient manner requires a consideration of workers' exposures to physical risk, as well as the exposure of broader communities and supply chains. Therefore, another element of the just transition is ensuring the investments in new business models will be able to succeed despite increasing frequency and severity of climate-driven extreme events. Importantly, this includes ensuring the employees and communities that underpin business operations are resilient to these extremes.

Our analysis of physical climate risk for about 5,000 publicly listed companies and their roughly 2 million underlying corporate facilities demonstrates that several high emitting sectors are also significantly exposed to physical climate hazards, projected out to the 2030-2040 decade.⁵ Nearly all sectors have over 30% of their assessed facilities exposed to both heat stress and water stress, which represents a significant proportion of corporate operations and thus associated workers globally. These hazards will carry implications for public health with rippling impacts on labour productivity and business costs.

⁵ We rely on external data providers for the underlying data on company facilities and thus depend upon their methods and quality assurance measures. Our company facility database includes facilities for which a company has indirect or ultimate ownership of at least 50%, including subsidiaries and joint ventures. For this analysis we used a snapshot of company facilities as of September 2020, so it may not capture recent changes in corporate ownerships. See [Critical industries have substantial exposure to physical climate risks](#), Moody's ESG Solutions, November 2021.

Figure 8 Share of company facilities with high physical risk exposure by sector, % of total.



Note: We leverage global climate change data integrated into proprietary models to provide asset-level risk assessments of the physical risk exposure of companies over the 2030-2040 horizon. Our physical climate risk scoring methodology for companies assesses three types of risk: Operations Risk, Supply Chain Risk, and Market Risk. Each indicator for the 5,000-plus corporations covered is scaled by percentile to derive a risk score between 0 (low risk) and 100 (high risk).

Source: Moody's ESG Solutions

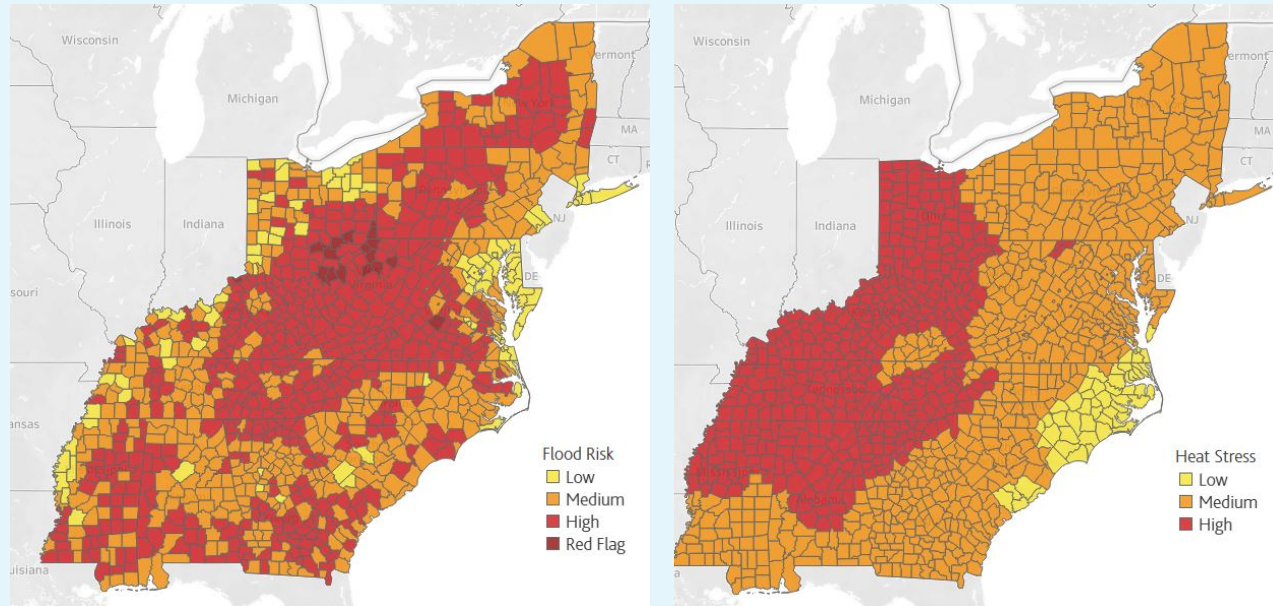
Heat stress presents risks to sectors which have operations that are vulnerable to increasing temperatures due to reliance on energy or human labour. For example, the food sector stands out with 58-63% of facilities exposed to extreme heat. Agriculture is an industry with particular vulnerabilities to high temperatures given crop sensitivities in addition [to worker safety and productivity](#). This also has implications for the resilience of broader communities and economies as our food systems underpin daily activity.

The travel & tourism industry's exposure to water stress (44-49% of facilities) is noteworthy due to the downside of water use restrictions on visitor sentiment, as well as the significance of [the tourism industry in economic development plans and the job opportunities it can provide](#), when conducted sustainably. Likewise, 20-25% of facilities exposed to wildfires represents significant exposure to a hazard that has the potential to destroy assets and affect the desirability of a region for tourism.

The utilities industry is also exposed to just transition risks, as it is a high emitting industry that also underpins community operations. Sustainable and resilient grids are critical to ensure a sustainable economy and companies will need to factor in physical risk when considering opportunities to prepare utility infrastructure for the low-carbon economy. We estimate that 59-64% and 49-54% of assessed utility facilities are exposed to heat stress and water stress, respectively.

Case Study: Exposure to extreme events threatens labour productivity and long-term resilience in Appalachia

The US [Appalachian region crosses 13 states](#) from New York down through northern Mississippi. It is a region where the overlapping challenges of transitioning business models, building resilience to extreme events and addressing overlapping community challenges is particularly evident.



In the Appalachian region of Ohio and West Virginia, 43% of counties are highly exposed to heat stress and 92% are highly exposed to floods, based on our analysis.⁶ Likewise, roughly 2.57 million people (49% of total) are exposed to floods in these counties and 2.37 million (45%) to heat stress. Heat stress has significant implications for labour productivity and human health with higher temperatures projected to lead to decreases in productivity equivalent to 80 million full-time jobs globally by the year 2030 [according to the International Labour Organization](#). The mining sector is expected [to lose approximately 12% of working hours](#) due to heat stress by 2030 and [783 deaths and 70,000 injuries between 1992-2016 have been tied to heat related working conditions](#). The chronic lung and heart risks associated with living or working in close proximity to mining activity exacerbates the adverse health impacts of extreme heat.

The widespread exposure to high flood risk, particularly across West Virginia and in Kentucky, also presents challenges for business operations due to both asset and community exposure. The area is particularly vulnerable to flooding due to the impacts of strip mining, which removes tree cover, increasing run-off that is often toxic. These challenges often persist even after a mine has been closed and [around 1,400 square miles within the Ohio River basin of Appalachia have been strip mined](#). The long-term implications of this flood vulnerability in Appalachia presents risks to local companies as well as new companies looking to bring greener industries to the region, especially as consistent operations will rely on safe employee commutes. [A growing tourism industry](#) has potential to provide greener and long-term job opportunities, but this sector is also vulnerable to damage and disruption from extreme flood events and wildfires, which can have lasting impacts on the perception of a region and desirability for tourists.

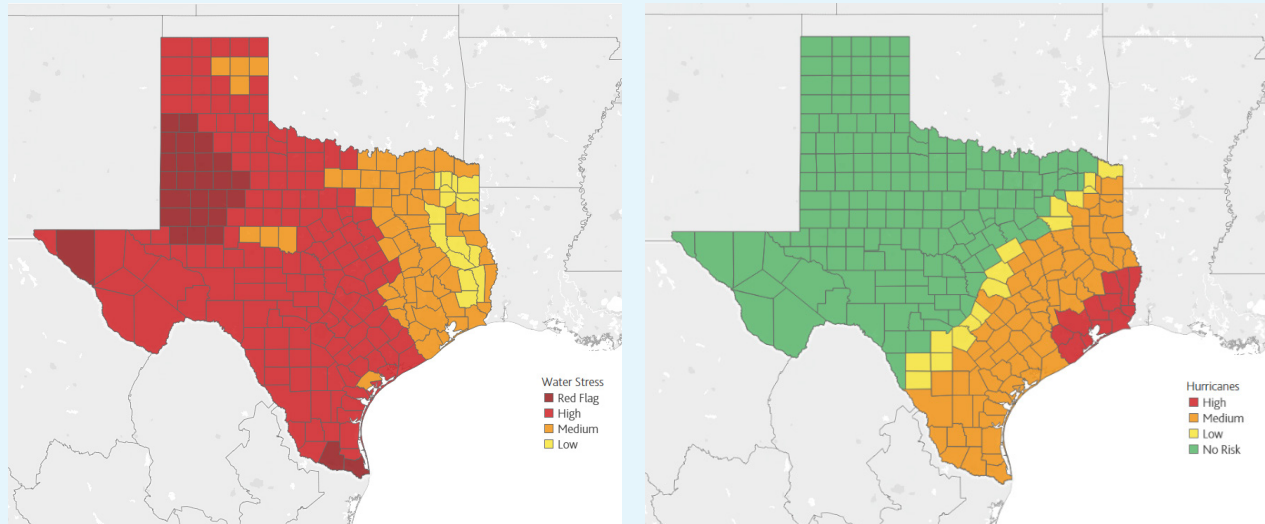
Several assessed sectors also have around 20% of their assessed facilities exposed to floods, which is significant for sectors which rely upon onsite operations, capital intensive equipment and supply chains, such as automobile manufacturing and transportation and logistics. Floods that affect corporate facilities can disrupt operations which mean that hourly workers may lose shifts and associated wages. Meanwhile, even if the business facility itself is not flooded, employees may face dangerous conditions travelling to work or experience loss and damage in their own homes, which has implications for worker health and well-being and can also end up disrupting business operations. Similarly, if supply chains are disrupted due to flood events, businesses can face loss and disruption, underscoring the importance of regional resilience to floods.

⁶ Moody's ESG Solutions assesses the population-weighted risk exposure of global states and urban areas and US counties, MSAs and zip codes to floods, heat stress, hurricanes & typhoons, sea level rise, water stress and wildfires projecting out to 2030-2040, based on global climate models and environmental datasets. For more information: <https://www.businesswire.com/news/home/20211007005579/en/>

Transitioning the workforce in a just and equitable manner requires a consideration of workers' exposures to physical risk. Populations [living adjacent to heavy emitting industries, such as coal processing or power plants, are disproportionately affected by physical climate hazards](#). So not only are these populations facing the potential phasing out of industries relied upon for employment, but they also disproportionately live in flood plains and have asthma or chronic heart conditions, worsening the impacts of heat waves and wildfire smoke.

Case Study: New business models must consider exposure to physical risk to ensure resilience

Operations of many high emitting sectors, including energy, utilities and manufacturing, are all dependent on on-site labour and capital intensive infrastructure which makes them particularly vulnerable to extreme events.



[The Gulf Coast region of Texas](#) includes 13 counties in which oil and gas extraction and pipeline transport are currently among the most prominent industries. 50% of the population of this region was non-white including Black and Hispanic residents, as of 2018 and 23% of these counties (170,230 people) are exposed to water stress and 46% are exposed to hurricanes (3.98 million people) based on our analysis. The exposure to hurricanes presents significant risks to oil companies, both in terms of disruption as well as reputation risk due to spills. However, as companies in this region have had to build with hurricanes in mind in recent years, they have an opportunity to learn lessons [as they look to invest in renewable energy](#), which also relies on capital intensive infrastructure.

While water use of solar panels varies based on the type of panels, the size of the plant and other factors, [concentrating solar thermal power plants do require water for cooling](#), making them vulnerable to water stress despite the opportunities for solar generation in hot, dry regions. There are dry cooling approaches which are more expensive and less efficient, which shows that there is an opportunity for companies to factor in this requirement up front to ensure the most resilient and cost-effective operations in areas exposed to physical climate hazards. Renewable energy also provides an additional benefit of grid resilience during extreme heat or cold events compared to natural gas and coal powered energy, [particularly when it relies on several different types of renewable energy](#).

Many regions in which industries will need to transition are already facing [multifaceted challenges including due to race and income](#). For example communities of colour are disproportionately in [low-lying areas exposed to flood risk](#), [dense urban areas with little green space](#), or areas [facing water challenges](#) or other adverse health impacts due to contamination. As discussed above many of these are long-term impacts which will persist event as fossil fuels are phased down, and they have implications for worker productivity and operational continuity in the workplace, as well as the long-term viability of economies and new development. As companies, investors and governments look to invest in new more sustainable and resilient business, there is an opportunity to account for the long-term benefits of ensuring that [adaptation focuses on those areas in which the populations are in greatest need due to their exposure and vulnerability to climate hazards](#).

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