

Climate Change – Impact on traditional Value Chains and Business Models

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My experience as a value chain management professional has given me exposure to business models across a diverse range of sectors. A clear trend that has emerged over the last few years is the disruption of ‘traditional’ value chains from advancements in digital technology. Increases in our data collection, processing, communication, and storage capabilities, have led to shifting industry dynamics and the emergence of new markets. This automation and data exchange is on an upward trajectory, and we are well on our way to the ‘smart factories’ of Industry 4.0. However, there is another (silent but important) phenomenon which is about to cause a similar (and potentially bigger) disruption across all industry sectors: climate change.

Climate change is no longer a warning for the future. It is happening now in the form of irregular weather patterns, record-breaking summer temperatures in cities across the globe, and retreating snow and ice on our favourite ski-slopes and near the polar regions, among other examples. There are various tell-tale signs of climate change – temperature spikes, rising sea levels, loss of ice cover, more frequent and severe extreme weather events like hurricanes, wildfires, heatwaves, droughts, floods, etc. Each of these components, in some form, will disrupt traditional value chains and business models of industry sectors as we know them – either by creating new risks and opportunities or by amplifying existing risks.

Key risks that businesses need to consider are a) ‘transition risks’ to a low-carbon economy arising from policy changes such as introduction of a carbon tax or changing market preferences for more sustainable products/services, eventually leading to ‘stranded assets’, and b) ‘physical risks’ which include risks from direct damage to assets and/or indirect disruption to supply chains due to one-off events like cyclones, floods, droughts, etc or longer-term shifts in climate patterns like sustained higher temperatures, heat waves, rising sea levels.

Consider water scarcity, for instance. Large FMCG multinationals are already listing water shortage as one of the key risks for their operations. It is a similar story for mining companies as water scarcity is affecting expansion of some of their existing operations. Cape Town in South Africa almost saw ‘Day Zero’ in 2018, where the city was on the verge of running out of municipal water due to a multi-year drought. Chennai, India faced a similar crisis in 2019, and California is on the brink of a drought again in 2021¹. As such instances of water shortages increase, ‘water wars’ among local communities, governments, and businesses for prioritising water allocation are also likely to increase; Nestle is facing this in California² right now, and Google’s data centres faced similar issues in South Carolina³ a few years ago. As demand for fresh water rises due to a growing population and demographic shifts, water scarcity problems are only going to increase. World Wide Fund for Nature predicts that by 2025, two-thirds of the world’s population may face water shortages. For businesses, water scarcity will entail both transition and physical risks. Companies will need to proactively assess the water footprint across their end-to-end value chains, identify the most ‘at risk’ processes and activities, develop mitigation strategies, and adapt their supply chains accordingly.

The financial industry is another sector where factoring in climate change is going to be crucial for decision making and risk management. The biggest risk to banks and lenders is credit risk. Lenders will now have to consider transition risks from climate change and mitigation policies laid out by governments and regulators while lending against assets in traditionally carbon-intensive industries. In addition to social consequences, natural disasters such as wildfires, hurricanes, floods, and storms

¹ <https://www.theguardian.com/us-news/2021/apr/06/california-is-on-the-brink-of-drought-again-is-it-ready>

² <https://www.theguardian.com/us-news/2021/apr/27/california-nestle-water-san-bernardino-forest-drought>

³ <https://mashable.com/2017/04/23/google-data-center-south-carolina-water-wars/?europe=true>

also pose a significant business risk. According to Munich Re, global losses from natural disasters in 2020 came to \$210bn⁴. Businesses are therefore likely to ask for protection against such physical risks arising from climate-related events. A McKinsey research report suggests the value at stake from such natural disasters induced by climate change will increase to 4% of global GDP by 2050⁵. The insurance industry will have to innovate to launch new products that cater to the growing demand to address climate-related risks. Asset managers and other financial players will also have to undergo stress tests and climate-risk assessments and adapt their business models to a new climate-informed landscape.

Another important but very often overlooked area is the loss of biodiversity, which is exacerbated by climate change. Loss of biodiversity brings serious risks to societies and economies. Biodiversity underpins our food system. A recent study estimates that insects, the world's top pollinators, have declined by almost 40% in recent decades, with a similar number being endangered. Biodiversity loss is also undermining the resilience of our agricultural systems. This entails potential existential risk for key segments of the global food and agricultural industry. Aalto University researchers have found that a third of global food production is at risk from climate crises⁶. Other industry sectors that rely directly or indirectly on biodiversity (e.g. pharmaceutical industry relies on wildflowers and other animal species for sources of new medicines) will also be impacted. Despite this, nature-related risks are undervalued or are absent altogether in business decision-making, including from a reporting perspective. A recent KPMG survey⁷ suggested that over three quarters of world's largest companies do not report risks from biodiversity loss.

Biodiversity loss will inevitably start impacting bottom lines across industry sectors. Similar to water scarcity, businesses need to proactively start assessing the risks and impact associated with biodiversity loss on their operations. Mitigative strategies against the negative consequences of biodiversity loss are likely to change in some form various industry sectors – extractives, construction, energy, fashion, and textiles – which are especially vulnerable to ecological destruction.

For the first time, climate-related issues dominated all of the top-five long-term risks in terms of likelihood in the 2020 edition of WEF's Global Risks Report⁸. It is about time that businesses – in all sectors – started taking climate-change related risks seriously. Two courses of action for businesses are 1) mitigation, which include actions like reducing carbon emissions, biodiversity damage, etc. and 2) adaptation, which include potential changes to their operations to make it climate-risk proof. Both these actions involve changes to business strategy, supply chains, and activities across the end-to-end value chains in order to stay competitive, relevant and continue to create value for stakeholders.

Be it erecting flood defences around a manufacturing plant in a flood-prone area, changing operations to account for water scarcity, finding alternative sources of raw materials, or accounting for its impact in financing decisions and recognising it in financial statements – climate change is going to have a huge impact on traditional decision making, risk management and value chains as we know them.

Climate change is here, and so is the urgent need for business leaders to act.

⁴ <https://www.munichre.com/en/company/media-relations/media-information-and-corporate-news/media-information/2021/2020-natural-disasters-balance.html>

⁵ <https://www.mckinsey.com/industries/financial-services/our-insights/climate-change-and-p-and-c-insurance-the-threat-and-opportunity>

⁶ [https://www.cell.com/one-earth/fulltext/S2590-3322\(21\)00236-0?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2590332221002360%3Fshowall%3Dtrue](https://www.cell.com/one-earth/fulltext/S2590-3322(21)00236-0?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2590332221002360%3Fshowall%3Dtrue)

⁷ <https://home.kpmg/xx/en/home/media/press-releases/2020/12/largest-firms-fail-to-report-biodiversity-loss-risks-kpmg-survey-of-sustainability-reporting.html#:~:text=Yet%2C%20less%20than%20one%2Dquarter,Survey%20of%20Sustainability%20Reporting%202020.>

⁸ http://www3.weforum.org/docs/WEF_Global_Risk_Report_2020.pdf