Investing in the climate

Quintin Rayer and **Richard Millar** say that individual investors can play their part in encouraging firms to address climate change

Hurricanes Harvey, Irma, Jose and Maria, which swept across the Caribbean last year, caused an estimated $200bn of damage. Recent studies indicate the frequency of Harvey-like downpours over Texas may have already increased by up to six-fold since the late 20th century. Since a hotter atmosphere has a more energetic water cycle, and warmer air can hold more moisture, future climate change is likely to increase the intensity and perhaps the frequency of hurricanes still further.

The study of extreme weather events such as hurricanes is one example of how science can raise thought-provoking and important questions regarding the appropriate actions of both investors and companies. In the wake of the devastation of the 2017 Atlantic hurricane season, the question is whether some companies should be held at least partially liable for their activities, with possible implications for investment. Could carbon-intensive industries be held liable for some of this damage? And how would you even quantify their responsibility?

Risk and responsibility

The economic impact of extreme-weather damage is already beginning to be incorporated into risk assessments, with some fund managers considering climate issues in decision-making. Yet the financial liability of carbon-intensive industries for such damage may not be reflected in companies' market valuations.

Apportioning responsibility for such damage is, in principle, possible. We know that cumulative carbon-dioxide emissions are the primary cause of changes in the global climate, which means we can start to quantify contributions from individual nations and companies, including extreme weather-event frequency increases. In 2015, for example, the fossil-fuel sector accounted for 91% of global industrial greenhouse-gas emissions. From 1988 to 2015, some 25 companies and state producers generated 51% of global industrial emissions. Seven of these were publicly owned companies, collectively accounting for 9.5% of "scope 1" and "scope 3" emissions and with a combined market capitalization of around $1220bn.

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Heavy weather The frequency of Hurricane Harvey-type downpours has increased dramatically.

If such firms contributed 9.5% of the 2017 hurricane damage ($19bn), this would decrease their share price by 1.6% – a not insignificant sum, particularly if contributions are requested for other past and future extreme-weather events. If global warming increases hurricane losses, under a hypothetical climate-liability regime, damage contributions approximating 1–2% of companies' market capitalizations might become more usual with each annual hurricane season. This ignores other climate impacts, such as sea-level rise, which could readily run to much larger sums.

Despite the science, however, no legal precedent yet exists for extreme weather-event climate-damage liability. The 2015 Paris Agreement explicitly rules out damages associated with climate change as a basis for liability. It is hard to say how investors might react to the possibility of companies having to contribute for damages associated with climate change caused by their past emissions. Barriers to successful climate-damages compensation cases remain substantial, but as insight develops, the possibility remains. For major insurance companies or governments footing the bill, the prospect of multi-billion-dollar pay-outs may focus attention on whether legal barriers could be overcome, potentially allowing them to pass on costs.

Climate change highlights the challenges faced in making research accessible and relevant to the broader community. Members of the public, industrialists and financiers rarely read scientific journals, so society's response to such research can therefore take a long time. The need for scientists to be open to broader uses for their research is now more crucial than ever. Regular engagement outside academia would help to ensure that wider society has a more robust scientific understanding, as well as a clear demarcation of where the current knowledge boundaries lie.

Based on scientific insights that highlight and communicate possible investment risks, environmentally aware investors can actively nudge companies away from destructive behaviours towards a more constructive role. Selective investment in firms facilitating the transition to a net-zero-carbon economy supports them, while refusal to buy shares in those companies failing to do so can make it harder for them to raise capital. Even small investors' accumulated views matter, just as individuals should believe that recycling their plastic bottle or casting their democratic vote makes a difference.

The ever-developing world of "sustainable investing" is a valuable way for climate scientists to have a real influence on financial markets. Environmentally focused investors are integrating climate risks into financial decision-making in many different areas.

Ethical investment

Apart from reaching out to broader society, scientists have another route to express their insights. As individuals, many invest savings in funds and pensions schemes. By actively seeking out sustainable, environmentally focused investments, they too can support companies that share their values while avoiding those that do not contribute to climate solutions.

To influence social and corporate behaviours, scientists need to engage with the wider world through social media and other routes not normally used by academics. Physicists with cross-disciplinary skills are also contributing to this effort by making their research accessible and relevant to finance and business.

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