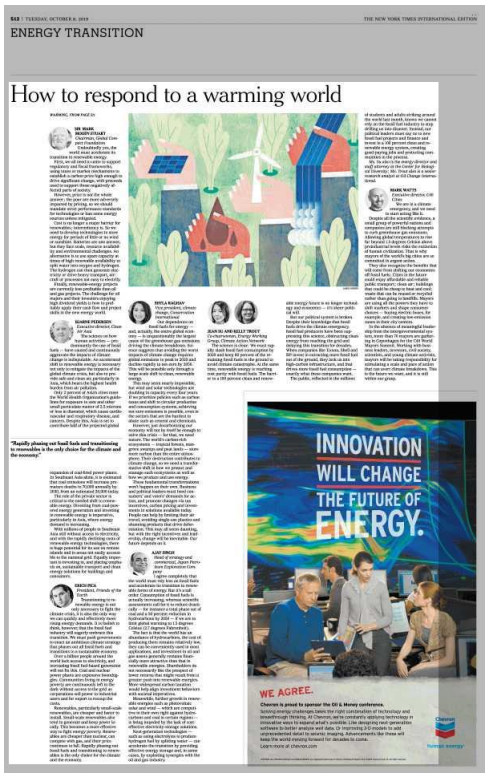
How to respond to a warming world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ENERGY TRANSITION

How to respond to a warming world

"Rapidly phasing out fossil fuels and transitioning to renewables is the only choice for the climate and the economy." From page S11 SIR MARK MOODY-STUART Chairman, Global Compact Foundation JAMES O' BRIEN Undoubtedly yes, the world must accelerate its transition to renewable energy. First, we all need to unite to support regulatory and fiscal frameworks, using taxes or market mechanisms to establish a carbon price high enough to drive significant change, with proceeds used to support those negatively affected parts of society. However, price is not the whole answer; the poor are more adversely impacted by pricing, so we should mandate strict performance standards for technologies or ban some energy sources unless mitigated. Cost is no longer a major barrier for renewables; intermittency is. So we need to develop technologies to store energy for periods of little or no wind or sunshine. Batteries are one answer, but they face scale, resource availability and environmental challenges. An alternative is to use spare capacity at times of high renewable availability to split water into oxygen and hydrogen. The hydrogen can then generate electricity or drive heavy transport, aircraft or processes not easy to electrify. Finally, renewable-energy projects are currently less profitable than oil and gas projects. The challenge for oil majors and their investors enjoying high dividend yields is how to profitably apply their cash flow and project skills in the new energy world. BJARNE PEDERSEN Executive director, Clean Air Asia The science on how human activities - predominantly the use of fossil fuels - have caused and continuously aggravate the impacts of climate change is indisputable. An accelerated shift to renewable energy is necessary not only to mitigate the impacts of the global climate crisis, but also to provide safe and clean air, particularly in Asia, which bears the highest health burden from air pollution. Only 2 percent of Asia' s cities meet the World Health Organization' s guidelines for exposure to soot and other small particulate matter of 2.5 microns or less in diameter, which cause cardiovascular and respiratory disease, and cancers. Despite this, Asia is set to contribute half of the projected global expansion of coal-fired power plants. In Southeast Asia alone, it is estimated that coal emissions will increase premature deaths to 70,000 annually by 2030, from an estimated 20,000 today. The role of the private sector is critical to the needed shift to renewable energy. Divesting from coal-powered energy generation and investing in renewable energy is imperative, particularly in Asia, where energy demand is increasing. With millions of people in Southeast Asia still without access to electricity, and with the rapidly declining costs of renewable energy technologies, there is huge potential for its use on remote islands and in areas not easily accessible to the national grid. Equally important is investing in, and placing emphasis on, sustainable transport and clean energy solutions for buildings and consumers. ERICH PICA President, Friends of the Earth Transitioning to renewable

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energy is not only necessary to fight the climate crisis, it is also the only way we can quickly and effectively meet rising energy demands. It is foolish to think, however, that the fossil fuel industry will eagerly embrace this transition. We must push governments to enact an ambitious climate strategy that phases out all fossil fuels and transitions to a sustainable economy. Over a billion people around the world lack access to electricity, and increasing fossil fuel-based generation will not fix this. Coal and nuclear power plants are expensive boondoggles. Communities living in energy poverty are continuously left in the dark without access to the grid as corporations sell power to industrial users and for export to recoup the costs. Renewables, particularly small-scale renewables, are cheaper and faster to install. Small-scale renewables also tend to generate and keep power locally. This becomes a more effective way to fight energy poverty. Renewables are cheaper than nuclear, can compete with gas, and their price continues to fall. Rapidly phasing out fossil fuels and transitioning to renewables is the only choice for the climate and the economy. SHYLA RAGHAV Vice president, climate change, Conservation International Our dependence on fossil fuels for energy - and, actually, the entire global economy - is unquestionably the largest cause of the greenhouse gas emissions driving the climate breakdown. Science suggests that avoiding the worst impacts of climate change requires global emissions to peak in 2020 and decline rapidly to net-zero by 2050. This will be possible only through a large-scale shift to clean, renewable energy. This may seem nearly impossible, but wind and solar technologies are doubling in capacity every four years. If we prioritize policies such as carbon taxes and shift to circular production and consumption systems, achieving net-zero emissions is possible, even in the sectors that are the hardest to abate such as cement and chemicals. However, just decarbonizing our economy will not by itself be enough to solve this crisis - for that, we need nature. The world' s carbon-rich ecosystems - tropical forests, mangrove swamps and peat lands - store more carbon than the entire atmosphere. Their destruction contributes to climate change, so we need a transformative shift in how we protect and manage such ecosystems as well as how we produce and use energy. These fundamental transformations won' t happen on their own. Business and political leaders must heed consumers' and voters' demands for action, and promote changes via tax incentives, carbon pricing and investments in solutions available today. People can help by limiting their air travel, avoiding single-use plastics and shunning products that drive deforestation. This may all seem daunting, but with the right incentives and leadership, change will be inevitable. Our future depends on it. AJAY SINGH Head of strategy and commercial, Japan Petroleum Exploration Company I agree completely that the world must rely less on fossil fuels and accelerate its transition to renewable forms of energy. But it' s a tall order. Consumption of fossil fuels is actually increasing, whereas scientific assessments call for it to reduce drastically - for instance a total phase out of coal and a 50 percent reduction in hydrocarbons by 2050 - if we are to limit global warming to 1.5 degrees Celsius (2.7 degrees Fahrenheit). The fact is that the world has an abundance of hydrocarbons, the cost of producing them remains relatively low, they can be conveniently used in most applications, and investment in oil and gas assets generally remains financially more attractive than that in renewable energies. Shareholders do not necessarily like the prospect of lower returns that might result from a greater push into renewable energies. More widespread carbon taxation would help align investment behaviors with societal imperatives. Meanwhile, further growth in renewable energies such as photovoltaic solar and wind - which are competitive in their own right against hydrocarbons and coal in certain regions - is being impeded by the lack of costeffective electricity-storage solutions. Next-generation technologies - such as using electrolysis to produce hydrogen fuel by splitting water - can accelerate the transition by providing effective energy storage and, in some cases, by exploiting synergies with the oil and gas industry. JEAN SU AND KELLY TROUT Co-chairwomen, Energy Working Group, Climate Action Network The science is clear: We must rapidly slash fossil fuel consumption by 2030 and keep 80 percent of the

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remaining fossil fuels in the ground to avoid climate catastrophe. At the same time, renewable energy is reaching cost parity with fossil fuels. The barrier to a 100 percent clean and renewable energy future is no longer technology and economics - it' s sheer political will. But our political system is broken. Despite their knowledge that fossil fuels drive the climate emergency, fossil fuel producers have been suppressing this science, obstructing clean energy from reaching the grid and delaying this transition for decades. When companies like Exxon, Shell and BP invest in extracting more fossil fuel out of the ground, they lock us into high-carbon infrastructure, and that drives more fossil fuel consumption - exactly what these companies want. The public, reflected in the millions of students and adults striking around the world last month, knows we cannot rely on the fossil fuel industry to stop drilling us into disaster. Instead, our political leaders must say no to new fossil fuel projects and finance and invest in a 100 percent clean and renewable energy system, creating good-paying jobs and protecting communities in the process. Ms. Su also is the energy director and staff attorney at the Center for Biological Diversity; Ms. Trout also is a senior research analyst at Oil Change International. MARK WATTS Executive director, C40 Cities We are in a climate emergency, and we need to start acting like it. Despite all the scientific evidence, a small group of powerful nations and companies are still blocking attempts to curb greenhouse gas emissions. Allowing global temperatures to rise far beyond 1.5 degrees Celsius above preindustrial levels risks the extinction of human civilization. That is why mayors of the world' s big cities are so committed to urgent action. They also recognize the benefits that will come from shifting our economies off fossil fuels: Cities in the future could enjoy affordable and reliable public transport; clean air; buildings that could be cheap to heat and cool; waste that can be reused or recycled rather than going to landfills. Mayors are using all the powers they have to shift markets and shape consumer choices - buying electric buses, for example, and creating low-emission zones in their city centers. In the absence of meaningful leadership from the intergovernmental system, more than 70 mayors are gathering in Copenhagen for the C40 World Mayors Summit. Working with business leaders, investors, civil society, scientists, and young climate activists, mayors will be taking responsibility for stimulating a scale and pace of action that can avert climate breakdown. This is the future we want, and it is still within our grasp.

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