Practical Measures Supporting Climate Change Mitigation

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Climate change is a global problem that is not going away any time soon. It is a perennial challenge that will be with us for hundreds, if not thousands, of years to come. In order to analyze it in greater depth, this panel consists of four academics that are each experts in fields related to climate change. Their discussion touches upon climate change mitigation strategies, global environmental governance, and future recommendations for a greener world.

What are some of the impediments to achieving progress on the issue of climate change?

One challenge is that cheap fossil fuels remain at the heart of the global energy system, making up approximately 85% of the global energy supply even today. Our economies are almost entirely dependent on fossil fuels, and the fossil fuel industry has witnessed financial investments worth trillions of dollars over the past five to six decades by world governments, including the United States, and financial institutions. Furthermore, the costs of massive environmental externalities in the future have not been incorporated into the current use of fossil fuels. Instead, the industry benefits from massive state subsidies, equaling 6.3% of the global GDP. Another challenge has to do with international agreement making. In a sense, the Kyoto Protocol was groundbreaking because it aimed to limit states' carbon emissions and implement greenhouse gas reduction measures cost-effectively. However, it was unsuccessful due to the non-participation of the United States, which was the largest carbon emitter at the time. The Protocol also failed to convince emerging developing countries, such as China and India, to take specific action to reduce their emissions. Instead, these states rapidly increased their greenhouse gas emissions after the Protocol came into effect. Other countries soon left the Kyoto Protocol as well. For example, Canada withdrew in 2012, and Russia and Japan rejected their targets to reduce emissions during the second commitment period, from 2013 - 2020. Notwithstanding these setbacks, a recent focus on 'climate transition risks' as being recognized as financial stability issues bodes well for substantive climate action going forth. This is because real action will have to be taken to mitigate climate change. This action should be driven by changes in the financial disclosure requirements of states, companies, and actors at their corporate, policy, and reputational

levels, affecting the preferences, asset values, and business costs of actors, citizens, and stakeholders alike. All of these potential changes raise concerns, though, that the re-evaluation of investments could lead to a range of undesireable behaviours, from panic to divestment, thereby resulting in a 'climate Minsky moment' affecting broader financial stability.

How successful is the Paris Climate Agreement?

The international community has been trying to work meaningfully on climate change since the 1980s. The Paris Climate Agreement, the latest accord under the UN Framework Convention on Climate Change (UNFCCC), overcame many of the Kyoto Protocol's challenges by taking a bottom-up approach. This means that, rather than being determined by an overarching and general set of targets, all participating countries developed and published their own unique climate change mitigation measures, called Nationally Determined Contributions (NDCs). However, the NDCs are not legally binding, and the Agreement does not have the power to impose sanctions if states fail to achieve their objectives (though, to be fair, this is a common problem when it comes to international law). It is still too early to say for sure whether the Paris Agreement is a success or a failure. The success of the Agreement will be better determined after the first global review and analysis in 2023. If countries are on track to meet their NDCs and come forward with a new round of more ambitious pledges, we can therefore say that the Agreement is working. The European Union, for example, has been leading with ambitious pledges, and generally, they have a better record than other regions in terms of following through with their pledges. On the other hand, the official exit from the Paris Agreement by the United States greatly hampered the Agreement's chances of success.

Most commentators argue that mitigation is not enough. What are some other responses to climate change and what are some of their challenges?

One of the approaches taken to combat climate change involves appropriating technocratic expertise within the realm of climate discourse, so as to to develop knowledge-based solutions to introduce new limits, metrics, and pricing strategies that best reflect the present and future levels of climate risk. However, the challenge of moving towards greener practices here is public skepticism and indifference, which translates into a lack of political will and commitment. Governmental institutions are also constrained by established conventions and mandates that demand 'market neutrality' in policy decisions and actions. Moving money away from fossil fuels will require massive investments of approximately $3.5 trillion annually over the next few decades. This shift calls for extensive capital reserves. One way of achieving this could be through imposing an economy-wide consumption tax. For example, a 2% increase in Canada's sales tax would yield approximately $20 billion per year. However, this amount will not help if it ends up in the general reserves. Instead, if these investments are managed similarly to the pension plan investment board and with a precise mandate for climate action, it would solve the government's challenge and gain public acceptance.

Another set of proposals to respond to climate change involve nature-based solutions. These solutions generally include the sustainable use of land, the management and restoration of ecosystems, and biodiversity preservation, with the express purpose of drawing down and extracting carbon dioxide from the atmosphere. Given Canada's natural territory, these solutions offer opportunities to reduce emissions and capture carbon through regenerative agricultural practices that simultaneously boost soil productivity and increase resilience to floods and droughts. Humans emit approximately 40 gigatonnes of carbon dioxide into the environment annually. According to the Intergovernmental Panel on Climate Change (IPCC), human beings may have to retrieve between 10 and 20 gigatonnes of emissions from the atmosphere each year by the end of the century to limit global warming to 1.5 degrees Celsius. The scale of this type of enterprise is enormous, and nature-based practices such as this may be just one component of an overall solution. Other chemical or mechanical means to draw carbon dioxide out of the atmosphere—techniques

like Direct Air Capture or Enhanced Weathering—may also have to be utilized at massive scale. Some experts also believe that solar geoengineering, the reflecting of sunlight back into space before it is absorbed into the atmosphere as heat, could be a potential response to climate change if used in conjunction with emissions abatement and carbon removal. Solar geoengineering remains, however, a contentious idea.

What are some of the measures taken in response to climate change that have the potential to be effective?

Legal mandates that limit the use of fossil fuels offer a clear and effective strategy with predictable outcomes. Exit from coal generation or a ban on gasoline fuelled cars in the transport sector are emerging as credible options. Auto manufacturers are also in a pivot towards the electrification of transport. This confluence of policies and market factors holds enormous promise for climate change mitigation, if driven forward over the next decade or so. Ontario and Alberta both provide examples of legally mandated exits from coal. The key to success with these mandates is good planning, full stakeholder buy-in, and arrangements to compensate investors through payments reflecting the plan's residual economic value. It is also essential to manage these mandates' social and community impacts with specific labour retraining measures, support to communities, and development of clean technology as solutions and environmental remediation of the lands. In Germany, for example, the estimated cost of approximately 50 billion Euros includes funds for community support and adjustment payments. A carbon tax can also work. The problem arises on whether the carbon tax is high enough to deal with climate change effectively. Equitable distribution of the burden of tax is necessary for it to work.

Market-based actors also have the potential to play an essential role in effective responses to climate change. Asset managers such as BlackRock are important because of their ability to raise public awareness about the need for a green transition due to their ability to set the agenda in specific ways, advise large institutions, draw up typologies for legal solutions, and spread awareness about green and brown asset classes and investment classes. However, it is important to recognize that private actors do have significant and potentially conflicting financial self-interests in these rules, conventions and standards. Furthermore, civil society members must be interested in their states' national policies and encourage leaders to set ambitious policies for tackling climate change in their own countries.

Climate change is an important issue in most countries' national agendas, as can be seen, for example, by the debates around the topic in the 2020 presidential campaign in the United States. The United States looks set with the new Biden administration to reenter the Paris Agreement, though there will remain a lingering mistrust of the United States and its long-term commitment to internationally coordinated climate action. In addition, in the United States the domestic climate change response, managed through the federal government, is also in tatters, and will take some time to reconstitute. While the European Union and China can play a role in filling the US's leadership vacuum concerning climate matters, they are both deeply involved in their domestic climate policies, which also have the potential to be successful.

Is there a gap between science and policy when it comes to climate change responses? If so, how can this gap be bridged?

One way of looking at the relationship between science and policy on issues such as climate change is that science identifies the issue, and then the political system works to come up with responses to the issue. However, in the United States, there is a complete disconnect between science and policy, and the only way to solve this problem is to completely transform the political and social system. The situation in other regions, such as Europe, Canada, and New Zealand, is more optimistic, and that raises hope that the gap between the two spheres emerging in the United States is not a global or a permanent phenomenon. The

effective use of data to solve climate issues and a conversation about the embeddedness of science within politics, and vice versa, can further bridge this gap.

Recommendations for policymakers:

1. Encourage community engagement and develop effective communication and implementation strategies that allow 'white space' for politicians to lead a broader public discourse to promote bold climate change mitigation initiatives.
2. Carry out ambitious emissions reductions within the framework of the Paris Agreement.
3. Investigate effective atmospheric carbon removal methods and identify how these methods will lead to a social transition in the service of climate action.
4. Reevaluate current assumptions about economic governance and explore how economic policies such as quantitative easing can be used to play a part in solving the climate change problem.
5. Move beyond the fossil fuel economy through divestment and accelerate cleaner technology solutions.
6. Encourage activist bond purchases to move money away from fossil fuel purchases.
7. Move towards electrification of the economy and explore high and low-grade heat sources for regions where electricity is not a viable solution.
8. Reevaluate the role of banks and financial institutions in climate change mitigation.
9. Establish regional institutions like the European Union to coordinate global climate change policy.