

Climate Adaptation Infrastructure: Resilience and Protecting People and Property

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Despite broad consensus on the need to achieve net-zero, economic prosperity and political stability demand the continued use of fossil fuels, and therefore energy-related emissions continue to increase. While the world strives for net-zero, “climate adaptation”¹ has become a priority strategy for dealing with climate change. Historically, governments built public infrastructure to enhance the relationship between people, property and the surrounding environment. Climate change however has upset the traditional perspective, and climate adaptation now introduces two new realities:

- First, all infrastructure must achieve a higher standard of “resilience” to address the impacts of climate change generally—this is “climate resilient infrastructure”.
- Second, infrastructure built specifically to “protect people and property” from the impact of climate change and catastrophic weather events is increasingly relevant—this is “climate protective infrastructure”.

Climate Resilient Infrastructure

“Climate resiliency” arises through changes to construction standards and specifications and is now an aspect of all projects that are being built or retrofitted. This drives up the costs to build and maintain infrastructure. The general infrastructure

deficit together with the move towards energy transition, compounded by these increased costs, is the rationale behind the United States passing the Inflation Reduction Act and the Infrastructure Investment and Jobs Act which contemplate infrastructure support and incentives of an estimated US\$1.7 trillion.

Climate Protective Infrastructure

“Climate protective infrastructure” is a “specific project” and while projects continue to be developed, the pace is insufficient to make a significant contribution to “climate adaptation”. An example of climate protective infrastructure is the Metropolitan Outer Area Underground Discharge Channel developed in the Greater Tokyo area in 2002. In October 2019, Typhoon Hagibis, the largest recorded typhoon to hit Japan, brought winds of over 195 kph and waves as high as three-story buildings, but the 2002 project served its purpose:

“... it saved Greater Tokyo from an estimated 26.4 billion yen (\$201 million) of damage.”²

Japan has other examples of “climate protective infrastructure” such as protecting Kansai International Airport from storm-related water damage.³ In the United States flood barriers are being built to protect the south tip of Manhattan from another Hurricane Sandy event which caused \$80 billion in

damage. On a smaller scale, our law firm worked on the US\$2.2 billion, 32-mile diversion channel off of a major river in North Dakota and Minnesota to protect more than 250,000 people from increased flooding. We are currently designing climate protective infrastructure in Canada to mitigate the impact of wildfires.

While climate adaptation may be growing as a government strategy, climate protective infrastructure does not yet appear to be a significant aspect of such strategy. This is due to understandable factors such as:

- **Political inertia and lack of accountability** – Given the catastrophic impacts of climate events of all types—from floods, to wind storms, to wildfires—where do policymakers start? Where is money to be spent? Which citizens or geographic areas are to be protected and which ones are not? What are the political benefits now for infrastructure that may not yield benefits for many years? Who is to be held accountable for the long-term consequences of “doing little or nothing” to protect against climate related catastrophes?

- **Lack of financial resources** – Governments are running large deficits due to the higher cost of developing climate resilient infrastructure, the emergency-related costs of more frequent climate catastrophes, the COVID pandemic, the war in Ukraine etc. The many competing needs for scarce financial resources make it easy to forgo expensive climate protective infrastructure, despite the urgency.

Possible Actions

To develop solutions to the competing issues and priorities, policymakers must delve deeply into the subject. Potential actions might include:

- the establishment of governmental centers of “climate adaption excellence”
- the development, and continuous upgrading, of predictive modelling for a range of weather events and consequential damage and the use of such data to establish the basis for the development of climate

predictive infrastructure and longer term land development strategies such as prohibiting development or mandating development away from areas at high risk to climate change (e.g., coastal areas)

- the development of strategies to harness the creativity and financial resources of the private sector
- the undertaking of a public education / relations program to foster acceptance of the proposition that funds invested by governments for “protection” are as important as funds invested for “economic development” such as subsidization of large industrial initiatives.

In summary, net zero is 25 to 50 years in the future however, on a daily basis, the press reports stories of people dying, property being destroyed, property insurance being unaffordable or unavailable etc., all due to climate risks and weather catastrophes. The urgency of the situation suggests that governments may need to soon raise their efforts to a “war footing” with respect to the development of strategies for climate adaptation generally, and climate protective infrastructure in particular.

1. The European Environment Agency defines “climate adaptation” as: *“anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause…”*
[https://www.eea.europa.eu/help/faq/what-is-the-difference-between#:~:text=In%20essence%2C%20adaptation%20can%20be,\(GHG\)%20into%20the%20atmosphere](https://www.eea.europa.eu/help/faq/what-is-the-difference-between#:~:text=In%20essence%2C%20adaptation%20can%20be,(GHG)%20into%20the%20atmosphere)
2. <https://asia.nikkei.com/Spotlight/The-Big-Story/Japan-battles-flooding-amid-deepening-climate-crisis>
3. See footnote no. 2

<Biography>

Douglas B. Buchanan, KC is the Global Head of Infrastructure and Resources at Norton Rose Fulbright. His practice focuses on project development, project finance and M&A with an emphasis on infrastructure, public-private partnerships (PPP), natural resources and power generation.

Prior to joining Norton Rose Fulbright, Doug was for over 5 years the Co-Head, Global Infrastructure and Project Finance at an international law firm based in New York, and for 29 years prior to that he was a lawyer and partner at an international law firm in Canada. Doug was honored with the appointment to Queen’s Counsel (now King’s Counsel) in British Columbia in 2007. He is admitted to practice law in both British Columbia and Ontario and is licensed to practice as a legal consultant in the state of New York. 