

DISASTER AT THE TOP OF THE WORLD¹

Thomas Homer-Dixon[©]

Standing on the deck of this floating laboratory for Arctic science, which is part of Canada's Coast Guard fleet and one of the world's most powerful icebreakers, I can see vivid evidence of climate change. Channels through the Canadian Arctic archipelago that were choked with ice at this time of year two decades ago are now expanses of open water or vast patchworks of tiny islands of melting ice.

In 1994, the "Louie," as the crew calls the ship, and a United States Coast Guard icebreaker, the Polar Sea, smashed their way to the North Pole through thousands of miles of pack ice six- to nine-feet thick. "The sea conditions in the Arctic Ocean were rarely an issue for us in those days, because the thick continuous ice kept waves from forming," Marc Rothwell, the Louie's captain, told me. "Now, there's so much open water that we have to account for heavy swells that undulate through the sea ice. It's almost like a dream: the swells move in slow motion, like nothing I've seen elsewhere."

The Arctic is warming twice as fast as the rest of the planet, and this summer its sea ice is melting at a near-record pace. The sun is heating the newly open water, so it will take longer to refreeze this winter, and the resulting thinner ice will melt more easily next summer. At the same time, warm Pacific Ocean water is pulsing through the Bering Strait into the Arctic basin, helping melt a large area of sea ice between Alaska and eastern Siberia. Scientists are just beginning to learn how this exposed water has changed the movement of heat energy and major air currents across the Arctic basin, in turn producing winds that push remaining sea ice down the coasts of Greenland into the Atlantic.

Globally, 2010 is on track to be the warmest year on record. In regions around the world, indications abound that earth's climate is quickly changing, like the devastating mudslides in China and weeks of searing heat in Russia. But in the world's capitals, movement on climate policy has nearly stopped. Democrats in the Senate decided last month that they wouldn't push for approval of a climate bill. In Canada, Australia, Japan and countries across Europe, the global economic crisis and other near-term concerns have pushed climate issues to the back burner. For China and India, economic growth and energy security are more vital priorities.

Climate policy is gridlocked, and there's virtually no chance of a breakthrough. Many factors have conspired to produce this situation. Human beings are notoriously poor at responding to problems that develop incrementally. And most of us aren't eager to change our lifestyles by sharply reducing our energy consumption. But social scientists have identified another major reason: ***Climate change has become an ideologically polarizing issue.*** It taps into deep personal identities and causes what Dan Kahan of Yale calls "protective cognition"² — we judge things in part on whether we see ourselves as rugged individualists mastering nature or as members of interconnected societies who live in harmony with the environment. Powerful

¹ New York Times, August 22, 2010

² Kahan, D. 2010. Fixing the communications failure. *Nature* 463: 296-297. doi:10.1038/463296a; Published online 20 January 2010

special interests like the coal and oil industries have learned how to halt movement on climate policy by exploiting the fear people feel when their identities are threatened.

Given this reality, we'll almost certainly need some kind of devastating climate shock to get effective climate policy. That's the key lesson of the recent financial crisis: when powerful special interests have convinced much of the public that what they're doing isn't dangerous, only a disaster that discredits those interests will provide an opportunity for comprehensive policy change like the Dodd-Frank financial regulations.

It is possible that the changes I'm seeing from the ship deck are the beginning of the climate shock that will awaken us to the danger we face. Scientists aren't sure what will happen when a significant portion of the Arctic Ocean changes from white, sunlight-reflecting ice to dark, sunlight-absorbing open water. But most aren't sanguine. These experts are especially concerned that new patterns of air movement in the Arctic could disrupt the Northern Hemisphere's jet streams — which are apparently weakening and moving northward. This could alter storm tracks, rainfall patterns and food production far to the south.

The limited slack in the world's food system, particularly its grain production, can amplify the effects of disruptions. Remember that two years ago, when higher oil prices encouraged farmers to shift enormous tracts of cropland from grain to biofuel production, grain prices quickly doubled or tripled. Violence erupted in dozens of countries. Should climate change cause crop failures in major food-producing regions of Europe, North America and East Asia, the consequences would likely be far more severe.

Policy makers need to accept that societies won't make drastic changes to address climate change until such a crisis hits. But that doesn't mean there's nothing for them to do in the meantime. When a crisis does occur, the societies with response plans on the shelf will be far better off than those that are blindsided. The task for national and regional leaders, then, is to develop a set of contingency plans for possible climate shocks — what we might call, collectively, Plan Z.

Some work of this kind is under way at intelligence agencies and research institutions in the United States and Europe. Harvard's Kennedy School of Government has produced one of the best studies.³ But for the most part these initiatives are preliminary and uncoordinated. We need a much more deliberate Plan Z, with detailed scenarios of plausible climate shocks; close analyses of options for emergency response by governments, corporations and nongovernmental groups; and clear specifics about what resources — financial, technological and organizational — we will need to cope with different types of crises.

In the most likely scenarios, climate change would cause some kind of regional or continental disruption, like a major crop failure; this disruption would cascade through the world's tightly connected economic and political systems to produce a global effect. Severe floods dislocating millions of people in a key poor country — as we're seeing right now in Pakistan — could allow radicals to seize power and tip a geopolitically vital region into war. Or drought could cause an economically critical region like the North China plain to exhaust its water reserves, forcing people to leave en masse and precipitating a crisis that reverberates through the world economy.

³ Kousky, C., O. Rostapshova, M. Toman and R. Zeckhauser. 2009. Responding to threats of climate change megacatastrophes. Background paper prepared for the Global Facility for Disaster Reduction and Recovery (GFDRR) Unit of the World Bank

A climate shock in North America is easy to imagine. Say a prolonged drought causes major cities in the American Southeast or Southwest to run out of water; both regions have large urban populations pushing against upper limits of water supply. The news clips of cars streaming out of Atlanta or Phoenix might finally push our leaders to do something serious about climate change.

If so, a Plan Z for this particular scenario would help us make the most of the opportunity. It would provide guidelines for regional and local leaders on how to respond to the crisis. We would decide in advance where supplies of water would be found and who would get priority allocations; local law enforcement and emergency responders would already have worked out lines of authority with federal agencies and the military.

Then there are the broader steps to mitigate climate change in general. Here, Plan Z would address many critical questions: How fast could carbon emissions from automobiles and energy production be ramped down, and what would be the economic, political and social consequences of different rates of reduction? Where would we find the vast amounts of money needed to overhaul existing energy systems? How quickly could different economic sectors and social groups adapt to different kinds of climate impacts? And if geoengineering to alter earth's climate — for example, injecting sulfates into the high atmosphere — is to be an option, who would make the decision and undertake the operation?

Looking over the endless, empty horizon of the Arctic, I find it hard to imagine this spot being of any importance to global affairs. But it is just one of many places now considered marginal that could be the starting point for a climate shock that plays a central role in the evolution of human civilization. We need to be ready.