Information Bulletin

NUMBER 158 • MAY 2012

A CN TRADE RELATIONS FORUM
BUT IS IT TRUE?
A TRADE SPECIALIST LOOKS AT CLIMATE ALARMISM

Presented on Wednesday, April 25, 2012

Michael M. Hart
Simon Reisman Chair
Norman Paterson School of International Affairs
Carleton University

UNIVERSITY OF ALBERTA SCHOOL of BUSINESS

Western Centre for Economic Research

www.business.ualberta.ca/wcer
with support from: The George M. Cormie Endowment

Library and Archives Canada Cataloguing in Publication

Hart, Michael, 1944-
But is it true? [electronic resource] : a trade specialist looks at climate alarmism / Michael M. Hart.

(Information bulletin ; no. 158)
Includes bibliographical references.
Electronic monograph.
Issued also in print format.
ISBN 978-1-55195-830-9

1. Climatic changes--Government policy. 2. Climatic changes--Political aspects. 3. Climatic changes--Economic aspects. I. University of Alberta. Western Centre for Economic Research II. Title. III. Series: Information bulletin (University of Alberta. Western Centre for Economic Research : Online) ; 158

QC903.H37 2012 363.738'746 C2012-903051-1

Michael Hart
Simon Reisman Chair in Trade Policy, Professor of International Affairs

Michael Hart holds the Simon Reisman chair in trade policy at the Norman Paterson School of International Affairs at Carleton University in Ottawa, where he teaches courses on the laws and institutions of international trade as well as Canadian foreign policy. Professor Hart spent the 2004-5 academic year in Washington, DC, working on a book on Canadian foreign policy and the United States, as the Fulbright-Woodrow Wilson Center Visiting Research Chair in Canada-US Relations. Concurrently, he was also a Scholar-in-Residence in the School of International Service and a Senior Fellow in the Center for North American Studies at American University in Washington.

He is a former official in Canada's Department of Foreign Affairs and International Trade, where he specialized in trade policy and trade negotiations. He holds an MA from the University of Toronto and is the author, editor, or co-editor of more than a dozen books and numerous articles and chapters in books on international trade issues, including A Trading Nation, short-listed for the Donner Prize (Public Policy), the J.W. Dafoe Prize (History), the Donald V. Smiley Prize (Political Science), and Purvis Prize (Economics) in 2003 and Decision at Midnight, short-listed for the for the Gelber Prize and the Canadian Business Book

Expertise
Trade Policy, Canadian Trade Policy, World Trade Organization, North American Free Trade Agreement, Canada-US Relations, Canadian Foreign Policy

But Is It True? A Trade Specialist Looks at Climate Alarmism

Let me begin by thanking the organizers for honouring me with the invitation to speak at the 2012 CN Trade Forum. Thanks also to Jason Brisbois, Rolf Mirus, Jean Frost, and their colleagues for their excellent arrangements and hospitality.

My topic today is public policy and climate change. In the interest of truth in advertising, I will tell you now that I will take a contrarian position. I am not at all convinced that there is anything extraordinary or alarming about recent changes in the planet's climate. Whatever impact humans have, it is at the margin of far more important natural forces. As a result, I also do not believe there is any need for the kind of draconian public policy measures advocated by the alarmist community.

Before going any further, let me also put to rest the question that some of you may be asking yourselves: what is a trade guy doing talking about climate policy. I accept that I am not a climate scientist, something I have in common with such luminaries as former US vice-president Al Gore, Rajendra Pachauri, the head of the UN's Intergovernmental Panel on Climate Change, and CBC gadfly David Suzuki. They are, respectively, a politician and failed law and theology student, a railroad engineer, and a sometime fruit fly geneticist.

They are entitled to their opinions, no matter how ill-informed they may be, because the global climate debate is largely a matter of politics with at best a tenuous connection to science, a point to which I will return. Public policy deserves better. For the record, I am a long-time practitioner and student of public policy, and believe that public policy should be grounded in rational analysis and clear evidence, rather than in emotions and fears.

My approach to this issue builds on that of the late Harvard political scientist, Aaron Wildavsky. In the early 1990s, Wildavsky, in cooperation with his graduate students, compiled a fascinating and well-documented study of the problem of scientific uncertainty and public policy called *But Is It True? A Citizen's Guide to Environmental Health and Safety Issues*.

He surveyed a series of public policy concerns that had originated in alarming scientific claims about environmental health and safety. Each

had succeeded in capturing significant media attention and activist concerns. For each issue, he asked: "But is it true?" a question that needs to be pursued much more often in our risk-averse age. Some things are objectively true and some are not, and whether they are or not has critical public policy implications.

In many cases, Wildavsky and his students learned that most of the scientific claims being made, each of which had been subject to activist campaigns for government action, were open to serious doubt based upon subsequent, evidence-based scientific investigation, a conclusion confirmed in each instance by well-credentialed and respected scientists in the field. My beef with climate change is similar. It is a scare campaign abusing very contentious and uncertain science and exploiting gullible people concerned about the environment.

The issue that concerns me, however, goes beyond climate. It goes to the heart of modern public policy. Over the past 35 years we have seen a transformation in the politics of regulation. In an earlier era, governments focused on ensuring politically desirable economic outcomes. That broad social concern gradually faded and led to the deregulation movement of the 1970s as economists made a convincing case that society would be better off with fewer economic regulatory requirements and restrictions. Results-oriented economics gave way to the economics of opportunity. As a trade official, I was deeply immersed in that process.

In its place, however, we have seen the rapid rise of quality-of-life regulations, i.e., efforts by governments to address risk-based concerns. Every year, federal and provincial governments in Canada initiate or amend some 5,000 regulatory requirements affecting Canadian citizens, at tremendous cost to society, many of them serving little purpose other than the bureaucratic hunger for information or accommodating what British blogger John Brignell calls the March of the Zealots. Most of these regulations are related to matters of health, safety, and the environment, and are ostensibly grounded in evidence-based science; in fact, many are grounded in irrational fears. That is the issue that Wildavsky found intriguing and which has been the focus of some of my own research and writing over the past 20 years.

Wildavsky's quest rested on the premise that well-educated citizens should be able to make informed judgments about most health- and environment-related scientific issues. In his words, his quest involved:

… understanding the scientific bases for rival claims, engaging in informed discussion, and making reasoned judgments … [not] as apprentice scientists … [but] as reasoned deliberators capable of taking informed action in fields not necessarily determined by but infused with conflicting scientific and technological assertions.

His case studies, which ranged from the bans of DDT and PCBs to the role of rodent studies in predicting cancer in humans, indicated that many of the claims were based on shoddy or incomplete science that had been sensationalized by the media and activists. Political responses were often premature, lacked informed risk analysis, and were predicated on ensuring political survival rather than averting serious harm.

In the 20 years since Wildavsky's book was published, society's aversion to risk, the media's attraction to alarm and sensation, and governments' willingness to act prematurely have vastly increased the field for further case studies. Indeed, activists' attachment to the so-called precautionary principle has made political authorities even more prone to act in haste.

Wildavsky's assessment of climate change indicated that the case for public action was very slender. In the intervening years, the case has seemingly become more robust, or has it? Those calling for action have certainly succeeded in creating very broad public sympathy and, in response, governments have created a public policy movement that has attained a life of its own. But is it true?

Interestingly, a number of the scare campaigns described by Wildavsky involved activists advised by Fenton Communications, the same people involved in climate change alarm, advisors to Al Gore and organizers of such web sites as RealClimate. Like all scare campaigns, the organizers of alarm are rarely grass-roots citizens worried about something scary, but organized groups funded and advised by less altruistic interests, whose executives are often paid salaries that rival corporate titans.

We have been conditioned by environmental alarmists into thinking that minor changes in the world around us will have dire consequences. Australian marine scientist Walter Starck puts it rather well:

The idea that a few degrees of warming will somehow wreak havoc on the environment arises from the postmodern mythology of nature as fragile and existing in a delicate state of balance which is vulnerable to collapse at the

slightest disturbance. If caused by humans, any detectable effect is described as an impact. … [Each of these emotive words are] favourites of the eco-salvationists.

Nothing could be further from the truth. Nature is not fragile, as anyone who has farmed or even gardened can attest. The planet has survived 4.5 billion years and will survive some of the perturbations that today's environmentalists find so worrying.

Like Wildavsky, I have long been fascinated by the ability of some interest groups to create and sustain a case for political action on the basis of very slim or controversial evidence, and by the willingness of governments to respond to these calls and even feed them. Three years ago I introduced a new course for our students on scientific uncertainty and public policy: the case of climate change. It required me to immerse myself in the literature, and I have continued to do so.

As such, I am now as well versed on climate change and public policy as most of the people who prepare the quadrennial reports put out by the UN's Intergovernmental Panel on Climate Change, the IPCC. As Canadian investigative reporter Donna Laframboise has demonstrated in her recent book on the IPCC, *The Delinquent Teenager Who Was Mistaken for the World's Top Climate Expert,* most of the people who write the reports are recent graduates in political science, geography, and other soft-science disciplines. Actual climate scientists are a small minority and they, in turn, represent a very small percentage of the scientists active in the field.

Systematic study of climate is a relatively young discipline, encompassing less than two generations of research. Its practitioners are drawn from a number of scientific disciplines and very few are masters of the whole field. Some were trained as meteorologists, others as physicists, chemists, mathematicians, computer modelers, geologists, cosmologists, astronomers, and more.

Because it is in its infancy, different groups of scientists, depending on their core discipline, are working on different theories and explanations of why and how climate changes and what the impact of such changes might be.

That's as it should be: researchers testing various hypotheses to determine which stand up to rigorous examination and are not falsified by new data and insights. To date, no such hypotheses have emerged, although many have been proposed and some show promise.

There is no consensus. Indeed, the idea of consensus, a concept that is alien to all science, is particularly risible in the context of climate. Again, Walter Starck puts it rather colourfully:

Matters of science are determined by reason and evidence, not by consensus or pissing contests over credentials. In fact, some of the most important advances in science have come when relative unknowns challenged prevailing expert opinion with an explanation which proved to be a better one. In scientific disagreements, attacks on personal qualifications are an implicit admission of defeat. They are invariably only resorted to when there are no credible answers to a better argument.

But vilification of anyone who doubts the so-called consensus has become the hallmark of debate among some climate scientists. The debate has become very political.

The early politicization of climate science has made it particularly prone to one of the plagues of modern science: a penchant for premature conclusions and their publication. Both *Nature* and *Science*, the premiere general scientific journals, have recently published major articles pointing with concern to the rise in the publication of shoddy science. Two drug researchers, Glenn Begley and Lee Ellis, for example, pointed out that they had sought to replicate published findings in their own laboratory, and found that they could do so in only 6 of 53 studies.

They were not alone in their findings. In a meta analysis of surveys of scientific fraud, researcher Danielle Fanelli learned that 34 percent of scientists admitted to questionable research methods, including falsifying date, and suspected it in 72 percent of their colleagues.

Other researchers report similar levels of failure and fraud. John Ioannidis, for example, a leading researcher of questionable scientific claims, points out that *"false positives and exaggerated results in peer-reviewed scientific studies have reached epidemic proportions in recent years."* He adds, *"for many current scientific fields, claimed research findings may often be simply accurate measures of the prevailing bias."* The academic pressure to publish is such that much of what passes for new research and insights needs to be considered with great care.

Two recent popular books explore this disturbing phenomenon: David Freedman, *Wrong: Why Experts Keep Failing Us and How to Know When Not to Trust Them* and Dan Gardner, *Future Babble: Why Expert Predictions Fail – and Why We Believe Them Anyway.* I commend them to you, particularly when someone tells you scientists have proven whatever.

The problem is compounded by what science blogger Eric Raymond calls an error cascade, i.e., when researchers begin to trim their observations to fit within a perceived or prevailing consensus. They may privately consider the consensus wrong and incapable of explaining the

phenomenon being studied, but peer pressure keeps them from speaking out. Raymond observes:

When politics co-opts a field that is in the grip of an error cascade, the effect is to tighten that grip to the strangling point. … Consequently, scientific fields that have become entangled with public-policy debates are far more likely to pathologize — that is, to develop inner circles that collude in actual misconduct and suppression of refuting data rather than innocently perpetuating a mistake. … When anyone attempts to end debate by insisting that a majority of scientists believe some specified position, this is the social mechanism of error cascades coming into the open and swinging a wrecking ball at actual scientific method right out where everyone can watch it happening.

The idea that science is objective and value free is laughable. Scientists are human. They have agendas and opinions and they are interested in careers. Cognitive biases, confirmation bias, and logical fallacies abound as much in scientific work as in that of economists and other social scientists. Scientists are human and far from infallible.

Good scientists, however, are always on the lookout for the pitfalls that come from premature conclusions and from ignoring confounding observations. Science writer Gary Taubes describes the scientific process as follows:

The first principle of good science, as Richard Feynman liked to say, is that you must not fool yourself because you're the easiest person to fool. … Science is ultimately about establishing cause and effect. It's not about guessing. You come up with a hypothesis — force x causes observation y — and then you do your best to prove that it's wrong. If you can't, you tentatively accept the possibility that your hypothesis was right. … The bold conjectures, the hypotheses, making the observations that lead to your conjectures… they are the easy part. The critical or rectifying episode, which is to say, the ingenious and severe attempts to refute your conjectures, is the hard part. Anyone can make a bold conjecture.… Making the observations and crafting them into a hypothesis is easy. Testing them ingeniously and severely to see if they're right is the rest of the job — say 99 percent of the job of doing science, of being a scientist.

Uncertainty is thus at the heart of good science. When it comes to public policy, however, uncertainty is a big problem, particularly for governments looking to make policy on the basis of uncertain science. Unfortunately, the government response often makes it worse.

Scientific inquiry that feeds into public policy suffers from the political requirement for certainty, particularly when the issues at stake are large and controversial. Governments do not like to take decisions based on speculative reasoning. Even more than their preference for one-handed economists, politicians look for one-handed scientists.

But certainty is not a normal feature of science; the best that scientists can do is to discuss probabilities. Governments, however, require certainty and thus we get Official Science, which is often the product of an advisory process that, in economist David Henderson's words, is *"marred by chronic and pervasive bias. … The [IPCC] advisory process is run today, as it has been from the start, by true believers."*

Once governments have pronounced on a matter, often as a result of lobbying by various interests, real science goes out the window and Official Science takes over. As Guelph University economist Ross McKitrick argues, Official Science lacks three critical safeguards: balance, due diligence, and full disclosure. One could add a fourth: an ability to adjust to new evidence and insights. In the absence of these safeguards, science can easily be captured by vested interests that can then use the authority and resources of government to marginalize critics and advance their preferred perspective.

The UN's IPCC took Official Science to a whole new level, corrupting many of the normal safeguards built into the scientific process in order to provide governments with certainty and a basis for action. Its *Summary for Policy Makers,* for example, posits a 95 percent confidence level that global warming in the 20th century was largely anthropogenic, but the underlying scientific reports from the three Working Groups use the words "uncertain" and "uncertainties" 1,300 times. Even more telling, the IPCC's mandate was to find the human impact on climate change, which disposed it to ignore or understudy the many other factors that influence the highly complex process of ever-changing climate.

MIT atmospheric physicist Richard Lindzen suggests that *"when an issue becomes a vital part of a political agenda, as is the case with climate, then the politically desired position becomes a goal rather than a consequence of scientific research."* He notes further: "*The temptation to politicize science has always been high, and political organizations have long sought to improve their own credibility by associating their goals with 'science' – even if this involves misrepresenting the science."*

The stifling impact of Official Science is compounded by the tyranny of highly specialized experts prepared to speak with great confidence from a narrow base on a broad subject. As famed theoretical

physicist Richard Feynman observed: *"In this age of specialization men who thoroughly know one field are often incompetent to discuss another."* Over the past half century, knowledge and research have become ever more narrow and specialized and cross-cutting interdisciplinary work ever rarer. In both research laboratories and academia, money and prestige flow increasingly to the narrowly focused. As a result, many investigators need to accept on faith the conclusions of various other experts in order to push the boundaries of their own areas of specialization.

In these circumstances, it becomes possible for an environmental economist like Marc Jaccard, for example, to model how best to use carbon taxes to reduce carbon emissions to more politically acceptable levels without any desire to examine whether the case for reducing carbon has any merits; he relies on others to make that judgment. By this process, questionable ideas are disseminated and fixed in the "paradigm" of the moment and the point is reached at which failure to conform becomes a liability. British philosopher Martin Cohen observes,

Today, global-warming 'deniers' have all been told they must fall into line with 'the science'. But this is not science, this is propaganda. And we are not being asked to be more rational but to suspend our own judgment completely. That, not 'runaway climate change', is the most dangerous threat to the world today.

Much continues to be made of the importance of peer review by credentialed experts. Please! Progress in scientific understanding is based on observation, hypothesis, and further observation. Critical to this process of discovery is falsification; whether that falsification derives from the work of credentialed experts or inspired amateurs is irrelevant. As Galileo indicated four centuries ago, *"The authority of a thousand is not worth the humble reasoning of a single individual."* A hypothesis remains a hypothesis until it has been verified by real-world observation and can be replicated by other researchers.

Any such verification also remains subject to the caveat that future observations that falsify the hypothesis bring the whole theory into question. Computer programs do not verify, but they can falsify. In the case of greenhouse-gas induced global warming, there has to date been a lot of theorizing, a great deal of computer modeling, little verification, and much falsification. The two sets of e-mails leaked from the Climatic Research Unit at the University of East Anglia at the end of 2009 and again

at the end of 2011, have exposed peer review for what it too often is: the defense of entrenched views and interests.

It is not difficult to conclude that the rise of climate alarmism to the top of the global anxiety agenda has been a matter of design. Two of its earliest advocates said so in unguarded moments. Sir John Houghton, former head of the UK's Met Office and the first chair of the IPCC's scientific assessment panel, said in an unguarded moment:

"If we want good environmental policy in future, we'll have to have a disaster. It's like safety in public transport. The only way humans will act is if there's been an accident."

Stanford's Stephen Schneider went him one better, telling *Discover* magazine:

On the one hand, as scientists we are ethically bound to the scientific method, in effect promising to tell the truth, the whole truth, and nothing but – which means that we must include all doubts, the caveats, the ifs, ands and buts. On the other hand, we are not just scientists but human beings as well. And like most people we'd like to see the world a better place, which in this context translates into our working to reduce the risk of potentially disastrous climate change. To do that we need to get some broad based support, to capture the public's imagination. That, of course, means getting loads of media coverage. So we have to offer up scary scenarios, make simplified, dramatic statements, and make little mention of any doubts we might have.

The means by which many members of the public have been convinced that dangerous global warming is occurring are not subtle. The three main agents are: reports from the United Nations through the IPCC; incessant lobbying by environmental NGOs and allied scientists, political groups, and businesses; and the obliging promulgation of selectively alarmist climate information by the media. Indeed, the combined alarmist activities of all three can only be termed a propaganda campaign.

Just to put a point on it, the advertising copy for the Al Gore documentary *An Inconvenient Truth*, shown to millions around the world, including impressionable school children, reads:

"Humanity is sitting on a time bomb. If the vast majority of the world's scientists are right, we have just ten years to avert a major catastrophe that could send our entire planet's climate system into a tail-spin of epic destruction

involving extreme weather, floods, droughts, epidemics and killer heat waves beyond anything we have ever experienced—a catastrophe of our own making."

This is pure hype. No wonder the British High Court ruled that it could only be shown in schools with a proper disclaimer.

However, because most interest groups communicate with the public primarily through the gatekeepers of the press, it is the press that carries the prime responsibility for the unbalanced state of public discussion and opinion on global warming.

In the last few weeks, a group of 49 retired NASA scientists, engineers and astronauts sent a letter to the head of NASA complaining that much of NASA's scientific work on climate had deteriorated into propaganda. They wrote:

The unbridled advocacy of CO2 being the major cause of climate change is unbecoming of NASA's history of making an objective assessment of all available scientific data prior to making decisions or public statements. … We believe the claims by NASA and GISS, that man-made carbon dioxide is having a catastrophic impact on global climate change are not substantiated.… We request that NASA refrain from including unproven and unsupported remarks in its future releases and websites on this subject.

NASA's response was to invite them to enter into the debate. Precisely. We need a much more informed and open debate on both the science and the public policy, absent the claims of consensus and other rhetorical tricks.

The letter to NASA summarizes well the extent of the scientific controversy. It is based on four interrelated assertions:

- global temperatures are climbing to levels never seen before;
- human activity is largely responsible for this increase;
- climate change of this order will have catastrophic impacts on the earth's biosphere; and
- policy-induced changes in human behaviour can stabilize the climate and ward off calamity.

Contrary to what many have been conditioned to believe, the science underpinning the first three of these assertions is far from settled, and many economic researchers are not convinced that the cost of implementing even a modest version of the preferred policy prescriptions

is justified by any benefits that could reasonably be attained. Indeed, many are convinced that most of the solutions offered would have either catastrophic effects of their own or remain technologically impossible.

The science of climate change is concerned with the most complex, coupled, non-linear, chaotic system known. Change is the only constant. Weather varies from day to day and season to season. Climate also changes over time – from seasonal to annual, decadal and more. Over its four-and-a-half-billion-year history, the earth has experienced both long periods as a snowball and as a hothouse.

Over the past few million years, short periods of warmth of 10,000 or so years, followed by ice ages of 100,000 plus years, have been the pattern. The current interglacial period – known as the Holocene – is now some 11,500 years long, and is among the cooler interglacials. Over this period, there have been centuries that were either warmer or colder than now. They are called optimums because for human civilization, and much of nature, warm is better than cold.

We know from historical evidence of the Roman and medieval optimums, when temperatures in Europe may have averaged 2-3 degrees centigrade higher than now; there is good evidence from paleoclimatology that the same held true in other parts of the planet. There have also been some colder periods, for example, the Maunder and Dalton minima.

Our current climate is the result of fewer than three centuries of steady, but not linear, warming from the trough of the last cold phase, known as the Little Ice Age. The only constant about climate, therefore, is change. As my Carleton colleague, earth scientist Tim Patterson, puts it: *"Climate stability has never been a feature of planet Earth. The only constant about climate is change; it changes continually and, at times, quite rapidly."* The idea that at some point there has been, or could be, a stable climate around a long-term norm is a political rather than a scientific notion.

Critics of the catastrophic anthropogenic global warming theory do not deny human impacts on climate, but they do question the dominant role of a trace, but life-giving gas in the atmosphere, carbon dioxide, and other, even rarer greenhouse gases, in warming the temperature of the planet as a whole to a significant degree. These gases are not pollutants; rather they are vital to life on earth. Critics further do not believe that the modest changes seen over the course of the last quarter of the 20th century – there has been no detectable global warming since 1998 – will have catastrophic impacts on either the biosphere or on human civilization.

Given the extent of the controversy, it is important that serious work testing the greenhouse gas hypothesis continue. Such work would

be more credible, however, if it proceeded as a matter of open scientific investigation and on a level playing field with other issues that need further investigation, such as the impact of coupled ocean-atmospheric circulation, the role of clouds and precipitation, changes in the intensity of the sun, the role of cosmic and galactic rays, and the impact of direct human influences such as aerosols and land use.

Claims of consensus in climate science are political rather than scientific statements. Indeed, the extent of heterogeneity in the study of climate is a healthy sign of scholars engaged in vigorous research; the efforts by some climate alarmists to suppress some of this research by denying access to peer-reviewed journals points unhealthily to the emergence of a cult with a non-scientific agenda.

Nevertheless, through the work of the UN's Intergovernmental Panel on Climate Change and the Framework Convention on Climate Change, many of the world's governments have committed to the greenhouse gas hypothesis – at least rhetorically – and are prepared to pursue costly national and international mitigation strategies with the goal of fundamentally altering global climate patterns. As such, they seem willing to see a fundamental reordering of national economies to achieve this goal. This is not public policy. This is madness.

Public policy is a matter of identifying problems and opportunities that would benefit from government attention and action, of developing appropriate policies and programs, and of weighing their costs and benefits. As Richard Lindzen points out, the fact that something has been identified as an issue does not necessarily lead to a need for public action. Nevertheless, we have become so accustomed to activist governments that few stop to think whether or not climate change – natural or anthropogenic – is a problem that governments can or should address. In order to warrant action, therefore, governments need to consider such questions as:

- Do we know enough about climate change to warrant decisive action? To what extent is climate change natural? Are current patterns outside the bounds of previous experience?
- What are the real problems that need to be addressed? Are there any offsetting benefits associated with these problems?

- What are the long-term effects of climate change and to what extent will adaptation and voluntary changes in behaviour reduce negative effects?
- What tools are available to control climate change? How effective are they likely to be?
- What instruments are available to mitigate the negative effects of climate change or to facilitate adaptation?
- What are the costs and benefits of deploying such tools and instruments? How do the costs of mitigation and adaptation strategies compare?
- How do these costs and benefits stack up against the costs and benefits of addressing other global and national problems?

Policy that is hastily conceived and inadequately discussed is unlikely to succeed in meeting its objectives. The often repeated call for governments to do something just in case the alarmists are right – an incoherent application of the pernicious precautionary principle – betrays a lack of seriousness. "Doing something" is not without cost.

By framing the issue in apocalyptic terms, alarmists have sought to avoid consideration of these questions and to stampede governments into considering radical approaches to what may well prove a non-problem or one easily addressed through gradual adaptation and supportive policy measures.

Suggesting that the IPCC has answered all questions borders on the risible. Recent events have demonstrated the extent to which the IPCC, and the climate scientists associated with it, were deeply committed to a single perspective and worked assiduously to freeze out all who questioned that perspective.

Reconstituting modern industrial society on the basis of energy derived from alternate sources than fossil fuels will require heroic steps that will disrupt lives and create major societal and individual hardships. The prospect of a substantive decline in living standards in developed countries is real and of a reversal in economic development in poorer countries even more so. No government should entertain policy choices with such momentous negative consequences without a much firmer basis in both science and economics, and only following a thorough cost-benefit analysis and open public debate.

For a start, governments can accept that there is broad agreement in the scientific community that the global climate has warmed over the

past century and a half and that human activity is a contributing factor, but the extent of both and their impacts on the biosphere are hotly debated as is the capacity of humans to control climate change. On one side stand those scientists, the alarmists, who are satisfied that we understand enough about human influences on climate change to warrant urgent action. On the other are those scientists, the skeptics, representing a wide spectrum of views, who accept the fact of climate change but are not convinced that we know enough about the anthropogenic dimension to justify government action.

On the public policy front, there is also considerable debate, with some experts convinced that mitigation strategies are feasible and others skeptical that there is either a need for them or that such strategies will have a prophylactic effect. For many skeptics, the potential costs of mitigation far outstrip any benefits and, to the extent that there is a problem, adaptive strategies may offer the best prospects. Discussion along these lines, however, has become politically "incorrect".

Public policy discussion of the projected impacts of global warming has been marred by three factors: the tendency of alarmists to systematically overestimate negative impacts, to discount natural adaptation and technological developments, and to attribute issues that may arise due to population pressures to global warming. The burden of proof lies not with those who believe that adaptation will be sufficient to address gradual warming but with those convinced that the impacts will be catastrophic and unmanageable and require immediate and radical solutions.

Before I conclude, let me offer a two-part solution to the political conundrum governments face when confronted by the insistent demands of activists making alarmist claims ostensibly grounded in science. Governments should not act unless there has been:

- a thorough, science-based risk assessment that includes a balanced, open, transparent, adversarial process to weigh the evidence advanced by activists; followed by
- a transparent cost-benefit assessment of proposed courses of action.

To make this work, governments need to deep-six the perverse precautionary principle that has become a mainstay of activist campaigns. Let me explain each in turn.

Society has long had to deal with competing claims about guilt and innocence or, in civil suits, competing interpretations of the facts and the law. We do not demand consensus in such cases. Instead, society has established clear rules of procedure on how to present and weigh the evidence supporting competing claims. Opposing counsels are provided with full scope to present their case and to counter the arguments of the other side. Witnesses are cross-examined to test the strength of the evidence they offer. Decisions are made by disinterested citizens and judges. Decisions at lower levels are subject to oversight at higher levels to determine whether the rules and the law were properly applied.

Arizona State University's Daniel Sarewitz, who has put a lot of thought into the science and public policy nexus, puts it this way in a recent article in *Nature News:*

When the US Supreme Court issues a split decision, it presents dissenting opinions with as much force and rigour as the majority position. Judges vote openly and sign their opinions, so it is clear who believes what and why — a transparency absent from expert consensus documents [in science]. Unlike a pallid consensus, a vigorous disagreement between experts would provide decision-makers with well-reasoned alternatives that inform and enrich discussions as a controversy evolves, keeping ideas in play and options open. That is something on which we should all agree.

Governments will also have to retreat from their tacit acceptance of the so-called precautionary principle. This is an idea first advanced in German consideration of environmental issues and which has since become embedded in European law and practice. Other governments have been more cautious, as well they should be.

The precautionary principle posits that in the face of incomplete knowledge, the burden of proof lies with those who want to introduce a new process or product or prevent a regulatory restriction. It insists that the default position is to ban or restrict unless the proponent can prove that the proposed course of action is safe or benign. This, as you can readily appreciate, turns centuries of science and governance on its head. It presumes that there are definitive answers in science and other areas of human endeavour, rather than probabilities. It is a technique for ending debate, rather than one that relies on the best available evidence.

Governments should solicit open debate, hear from both sides of a controversy, examine all the evidence, and only then arrive openly at a decision as to whether or not a public policy response is warranted. If they

believe it is, they should then proceed to a rigorous cost-benefit analysis of alternative options. Anything short of that opens governments to what we have witnessed over the past two decades on the climate change file: premature decisions based on incomplete and controversial evidence, taken more to satisfy political constituencies rather than real concerns.

In most other areas of life, such behaviour would be considered scandalous and subject to investigation and appropriate sanctions. Consider, for example, a publicly traded corporation soliciting funds on the basis of biased, incomplete information. But climate alarmists insist that on the climate file governments must under no circumstance engage in due diligence and reach a balanced assessment of the issues.

In the world of trade, governments have insulated themselves from this kind of pressure. In the WTO, governments have carefully elaborated some sensible rules to discipline the way they can address risk-related issues. Their purpose is to ensure that governments are not easily stampeded into taking discriminatory or restrictive action based on incomplete knowledge or political caution. The WTO agreements on technical barriers to trade and on sanitary and phytosanitary measures set out the requirements governments must meet in order to limit the free exchange of a product. They boil down to four fundamental requirements:

- Governments have the right to set product and process standards in order to safeguard the health, safety, and well-being of their constituents and their territory. In doing so, however, they may not use regulations as disguised restrictions on trade or in a discriminatory manner.
- Governments are urged to use internationally agreed product and process standards and testing and certification protocols, such as those established by the International Organization for Standardization or the Food and Agriculture Organization.
- Governments may establish stricter standards and requirements than those internationally agreed, but any such standards or requirements may be subject to challenge by other governments and must meet the requirement that they are based on an independent, science-based risk assessment.
- In cases of emergency or when knowledge is incomplete, governments may introduce temporary preemptive or

precautionary measures, but must follow up with a proper risk assessment.

These disciplines were developed over many years and seek to provide a balance between the political imperative to respond to emerging situations that may pose risks and the ability of private entrepreneurs to develop and market new products and use new processes.

Since the entry into force of the WTO in 1994, dispute settlement panels have wrestled with a number of cases that challenged this balance and have explored the limits of internationally agreed disciplines, including the use of growth hormones in animal husbandry, the use of genetically modified organisms, and the presence of minute disease vectors or chemical residues in agricultural and fisheries products. Each of these cases arose as a result of government action in the face of incomplete or controversial scientific knowledge. In almost all of these cases, panels have determined that governments erred on the side of political caution and responded to activist campaigns without an appropriate risk assessment.

My experience with the trade regime first pointed me to the interesting parallels in the area of climate science, in which we see the conjunction of incomplete or controversial science, activist groups, and intense pressure for political action. Unlike the trade regime, however, international governance of climate-related issues is far less developed. What exists is more the result of activist pressure than scientific knowledge.

Government regulations are all about balancing probabilities. In licensing therapeutic drugs, for example, regulators weigh the risks and the benefits and the proposed usage of the drug. Virtually all drugs pose serious risks. The regulator's task is to determine whether those risks outweigh the benefits of treating a specific illness or condition. The drug's manufacturer is not required to prove that the drug is safe, but that the therapeutic benefits outweigh the potential risks. The same standard should apply in the regulation of other areas of modern life. Mining the oilsands of Alberta, for example, certainly poses some risks, most of which can be readily ameliorated. The benefits, however, far outweigh the risks. That is the approach the governments of Alberta and Canada have taken, and it is one that they should continue to take. It is principled and based on a proper weighting of risks and benefits.

Much of global warming alarmism forms part of a religious belief system bent on creating a global utopia. People are free to hold such

beliefs, but the rest of the population should not be expected to join the stampede and indulge their preferences. The fact that an international agency is engaged in promoting this belief system is of little moment. It is not the first, and will not be the last, cause that has found such internationalism to be a convenient vehicle for gaining attention. For those alarmists not part of the cult, the motivation appears to be more sinister: a hoax used to extract research funds out of gullible government agencies and foundations or to subsidize economic activities that cannot find a place in the market on their own merits.

Canadian public policy on climate change has, on the whole, been prudent. From the perspective of environmentalists, of course, Canada has been negligent in its duty to the planet. The rest of us, however, prefer that government pay attention to the broader needs of Canadians and do as little as is politically feasible to "save" the planet until such time as more is known and a clearer cost-benefit analysis has been undertaken.

Thank you.

Bibliography

Wildavsky, *But Is It True? A Citizen's Guide to Environmental Health and Safety Issues*.

Donna Laframboise, *The Delinquent Teenager Who Was Mistaken for the World's Top Climate Expert* (Toronto: CreateSpace, 2011).

Walter Starck, "Neglected Truths of Climate Change," *Quadrant Online,* September 9, 2011.

Walter Starck, "Clarification of more Moore misstatements," 2 November 2009, at www.goldendolphin.com

C. Glenn Begley and Lee M. Ellis: "Drug development: Raise standards for preclinical cancer research," *Nature* 483, 531–533, 29 March 2012.

John P.A. Ioannides: "An Epidemic of False Claims," *Scientific American,* May 31, 2011 and www.plosmedicine.org/article/ info:doi/10.1371/journal.pmed.0020124).

Danielle Fanelli, "How Many Scientists Fabricate and Falsify Research? A Systematic Review and Meta-Analysis of Survey Data," PLOS One, 4:5, May 2009

David Freedman, *Wrong: Why Experts Keep Failing Us and How to Know When Not to Trust Them*

Dan Gardner, *Future Babble: Why Expert Predictions Fail – and Why We Believe Them Anyway*.

Eric S. Raymond, "Error cascade: a definition and examples, at http://esr.ibiblio.org/?p=1642, February 4, 2010.

Gary Taubes, Science, Pseudoscience, Nutritional Epidemiology, and Meat," at http://garytaubes.com/2012/03/science-pseudoscience-nutritional-epidemiology-and-meat.

David Henderson, "Economists and Climate Science: A Critique," *World Economics* 10:1 (March 2009).

Ross McKitrick, "Bringing Balance, Disclosure and Due Diligence into Science-based Policymaking," at http://ross.mckitrick.googlepages.com/#theory.

Richard Lindzen, "Climate Science: Is It Currently Designed to Answer Questions?" Paper prepared for presentation to a conference in San Marino, Italy. September 27, 2008.

Richard Feynman, "Cargo Cult Science," *Caltech commencement address, 1974.*

Richard Feynman, "The Relation of Science and Religion" transcript of a talk given by Dr. Feynman at the Caltech YMCA Lunch Forum on May 2, 1956.

Martin Cohen, "Beyond debate?" Times Higher Education Supplement, 10 December 2009.

Sir John Houghton, Interview, "Me and my God," Sunday Telegraph, 10 September 1995.

Stephen Schneider, Interview by J. Schell, Discover, pp. 45-48, Oct. 1989.

Marc Jaccard, with Jeffrey Simpson and Nic Rivers, Hot Air: Meeting Canada's Climate Change Challenge (Toronto: McClelland and Stewart, 2007).

An Inconvenient Truth, "About the Film," at *hollywoodjesus.com/movie/ inconvenient_truth/notes.pdf.*

Letter to NASA, "Former NASA scientists, astronauts admonish agency on climate change position," at http://sppiblog.org/news/former-nasa-scientists-astronauts-admonish-agency-on-climate-change-position.

Tim Patterson, "Read the Sunspots," National Post, June 20, 2007.

Daniel Sarewitz, "The voice of science: let's agree to disagree," Nature News, 5 October 2011 | Nature 478, 7 (2011).