by Brett Parris

# Smoke, mirrors and economics

*Dire warnings of economic catastrophe are preventing strong action on climate change. Once the implications of the science are grasped, however, these arguments make little economic sense, explains Brett Parris.*

There are at least six reasons why, far from ruining our economies, strong action on climate change is in fact critical for the world's economic prosperity and political stability:

***1. Conventional economic estimates of the "costs" of addressing climate change are small.***

The Intergovernmental Panel on Climate Change (IPCC) noted that by 2030 the costs of an emissions path to stabilise emissions at 445 parts per million carbon dioxide equivalent (445 ppm $CO_2$-eq)[1] would be at most around a 3% decrease in global gross domestic product (GDP), compared to a baseline projection where there was no action (and no climate change). So at worst, strong action would cost about one year's economic growth.[2]

The Australian Treasury similarly found that reducing emissions to 24% below 1990 levels by 2020 would shave just 0.1 percentage points off annual real per capita economic growth – implying that Australians would have to wait until 2054 to be as rich as they would otherwise have been in 2050.[3] Note that these "reductions" are not reductions from current income levels, but slight reductions below projections of much higher incomes.

Are there reasons to doubt these results? Yes – but those doubts make the case for action even more compelling.

***2. The conventional estimates of the "costs" of addressing climate change are not the net costs.***

Economists use baseline projections of gross national product (GNP) growth as a benchmark against which the "costs" of mitigating climate change can be compared. But these baselines rarely take into account the impacts of climate change on the economy. For example, the *OECD environmental outlook to 2030* noted that its analysis only shows the impact of the economy on the environment, and not vice versa:

> *"It does not, however, reflect the environmental impact back on the economy. Failing to provide this fully integrated picture has two implications. First, the Baseline fails to reflect GDP loss from environmental damage, so GDP projections may be higher than are justified. Second, since without that feedback environmental policy will always show a loss of GDP, there is a misleading implication that environmental policy always decreases welfare."*[4]

The Australian Government's report similarly notes: "The modelling does not include the economic impacts of climate change itself, so does not assess the benefits of reducing climate change risks through mitigation."[5]

Projections for economic growth that ignore the impacts of climate change cannot be used to assess the net costs and benefits of mitigation measures. To do so is like deciding whether or not to hose down a burning house purely on the basis of the cost of the water, ignoring the fact that the house is on fire.

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***3. Much economic analysis tends to grossly under-estimate the likely costs of unmitigated climate change.***

Most economic analysis of climate change simply presumes that strong economic growth will continue regardless of any impacts climate change might have on economies and societies.

But economic models are rarely well integrated with climate, political and financial models, so they cannot examine things like the effects of famines and mass migrations on the stability of governments, or the likelihood of conflict and the impacts it might have on investment decisions and financial markets. Neither can they account for the impacts of sea-level rise on coastal property values, financial markets and insurance markets.

It is also often assumed by economists that sea-level rise represents a slow, progressive inundation that is relatively straightforward to manage. But the storm surges which accompany tropical storms can often be 5–7 metres high. Periodic inundations

by storm surges have been to the order of 9–28 times more expensive than permanent inundation, due to factors such as repeated re-building and repair costs and higher insurance costs.[6] Since many of Asia's major coastal cities (including Manila, Jakarta, Kolkata, Mumbai, Dhaka, Karachi, Bangkok and Shanghai) are vulnerable to sea-level rise and storm surges, the economic costs of unmitigated climate change are likely to be far higher than most conventional economic analysis would suggest.

The geo-political implications of water and food security projections, in Africa and in Asia, are also extremely serious. The glaciers of the Himalayas and the Tibetan Plateau are the source for several of Asia's most important rivers, yet many of these glaciers are melting, with temperatures on the Tibetan Plateau rising three times faster than the global average for the last 50 years.[7]

Increased glacier melt in the next 20 to 30 years is likely to increase flooding, including sudden and catastrophic glacier lake outburst floods. But by the late 2030s, some river flows are likely to decrease dramatically as the glaciers shrink. By the 2050s more than a billion people in Central and South Asia could be suffering significant water shortages, and crop yields could decrease by 30%.[8]

There are enormous humanitarian and security implications if, as expected, water shortages spread across southern Africa, the Mediterranean basin, Turkey, Israel, Lebanon, Syria, Iraq, Iran, the Caucasus, Pakistan, Afghanistan, India and parts of China. Water shortages and declining crop yields in the face of rising populations would in turn lead to widespread food shortages, which would be likely to trigger large movements of people and potentially major armed conflicts with staggering humanitarian and economic costs. Again, economic models tend to ignore these factors.

***4. Industries tend to over-estimate the costs of adjustment to emissions reduction policies.***

Another reason for the dire warnings of economic disaster from emissions reductions is because the affected industries have every incentive to over-estimate the impacts: in order to persuade governments to be less stringent with regulations and more generous with assistance packages. It is instructive to analyse, then, what actually happened to industries in the past when similar measures were introduced.

In California, for example, vehicle manufacturers over-estimated the costs of their compliance with new efficiency regulations by between two and ten times, due mainly to unanticipated technological innovations which lowered compliance costs.[9]

While fighting the introduction of a new law, companies have every incentive to over-state the compliance costs. Once a new law is introduced, resources are at least partially switched to innovating to minimise compliance costs below what was envisaged.

***5. Economists tend to ignore low-probability high-impact possibilities.***

Much economic analysis relies on the "average" projections – the "most likely" events. But very high-impact events are also possible, with probabilities far greater than events like being hit by a bus (for which we routinely take out insurance!). When these risks are given their proper weight in the analysis, strong action to rein in emissions looks eminently sensible.[10]

**We are on track for around 6°C of warming; the word "catastrophe" hardly begins to capture the consequences**

This point is further reinforced by the fact that scientists are now warning that we are currently on track for around 6°C of warming, and that even higher temperatures are possible this century.[11] The word "catastrophe" hardly begins to capture the consequences of warming anywhere close to 6°C, since it would render many irreversible high-impact events no longer "low probability" but guaranteed.

***6. Current markets and industrial structures are distorted by two centuries of misleading price signals.***

*Repair costs should be considered when measuring the impact of climate change. Residents of Barangay Santa Teresa in the municipality of Malilipot, Albay, in the Philippines, repair their bridge following a typhoon in 2007 .*
***Photo:*** *Maria Socorro Melic/World Vision*

*Sreymom Koy, 13, holds a bunch of peanuts that she and her family harvested. Economic Opportunity for the Poor (EOP) is a project under the Food and Water Security programme of World Vision Cambodia, which aims to address problems, such as environmental challenges, by replacing traditional monoculture crop cultivation with multi-production through integrated farming systems.* ***Photo:*** *Sopheak Kong/World Vision*

Some policy-makers and elected officials are concerned that measures to address climate change could be "market-distorting" and therefore "inefficient". This perspective rests on an unspoken assumption that the current market environment is efficient, or could be made so by further deregulation.

In fact, the entire problem of anthropogenic (human-caused) climate change has stemmed from the most colossal market failure in history: the failure of prices to reflect the true costs of emissions for the last 200 years. Markets and industrial structures are currently distorted by this long-term market failure and by subsidies to emission-intensive fuels and industries.

Today, new low-carbon industries are trying to establish themselves and compete with established emissions-intensive industries on a playing field that is severely distorted in favour of heavy emitters. It is entirely appropriate that a raft of policy measures be used to correct this distortion.

Such measures should include market-based measures, but in the context of an already highly distorted market, policy-makers should not assume that other regulatory measures are "market-distorting".

Regulatory measures such as higher-efficiency standards, subsidies for low-emission renewable technologies, public investment in network infrastructure and so on would, in fact, help to make the market more efficient by correcting the built-in distortions and by enabling the price signals the market sends to better reflect the true costs of emissions.

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## Good economic reasons

As the true costs of greenhouse gas emissions come to be better reflected in prices, and as energy efficiency standards are tightened, we are witnessing the emergence of a clean industrial revolution with thousands of new jobs being created. Many of these are labour-intensive, blue-collar jobs in both rural and urban areas: building new distributed renewable energy systems and smart power grids, retrofitting buildings and homes, building new mass transit infrastructure, and installing renewable energy systems at large and small scales.

In view of the staggering economic and humanitarian risks of weak emissions reductions, the Least Developed Countries (LDCs) and the Alliance of Small Island States (AOSIS) have called for efforts consistent with warming of no more than 1.5°C and 350 ppm $CO_2$-eq. Given the risks that failure would bring, there are good economic reasons for other countries to support them in this call. Indeed, economic opportunities abound for those countries and those companies with the vision to invest in the low-carbon future needed to avert disaster. ■

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[1] $CO_2$-eq is a measure of the warming impacts of the most important greenhouse gases expressed in terms of the equivalent concentration of $CO_2$ alone.

[2] IPCC, "Summary for policymakers", in *Climate change 2007: Mitigation*. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change eds. B Metz *et al.*; Cambridge University Press, Cambridge, 2007, pp 11–12

[3] Australian Government, *Australia's low pollution future: The economics of climate change mitigation*, Canberra, October, 2008, p xii

[4] OECD, *OECD environmental outlook to 2030*, OECD, Paris, 2008, p 513

[5] Australian Government, *op. cit.*, p xi

[6] J A Michael, "Episodic flooding and the cost of sea-level rise", *Ecological economics*, vol 63, no 1, 15 June 2007, pp 149–159

[7] J Qiu, "The third pole", *Nature*, vol 454, no 7203, 24 July 2008, pp 393–396

[8] IPCC, "Summary for policymakers", in *Climate change 2007: Impacts, adaptation and vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, eds. M L Parry *et al.*, Cambridge University Press, 2007, p 13

[9] R Hwang & M Peak, "Innovation and regulation in the automobile sector: Lessons learned and implications for California's $CO_2$ standards", April 2006, http://docs.nrdc.org/air/files/air_08030301A.pdf

[10] M L Weitzman, "On modeling and interpreting the economics of catastrophic climate change", *Review of economics and statistics*, vol 91, no 1, February, 2009 pp 1–19

[11] A P Sokolov *et al.*, "Probabilistic forecast for twenty-first-century climate based on uncertainties in emissions (without policy) and climate parameters", *Journal of climate*, Vol. 22, No. 19, October, 2009, pp 5175–5204