

Efficiency, Justice, and Realism

Global Warming and the end of Business as Usual

When I started preparing this talk, Brendan sent me a transcript of a speech that Tim FLANNERY gave in Sydney back in May, a talk about global warming. It was a very good talk, but the specific reason that he sent it to me was that, by his own report, it left the audience "shocked and aghast."

Well I got the hint. Not that I needed it, because I always try to leave audiences shocked and aghast. But I looked, in any case, closely at the structure of the talk. It was simple.

The first 2/3rds was about global warming – what it is, and its history in Australia since the emergence of the Western Pacific Warm pool in 1976, and about the drought, always the drought, and Perth's water problems – terrible water problems – and so forth.

And the last third was an sort of pep talk, an upbeat appeal to the Sydney business classes to face reality, to realize that they had the power to change the future, and of course to make money at the same time. You always have to say that. To do good and do well, as they say in my far country.

Not a bad talk, but it doesn't quite serve my purposes.

For one thing, I am going, no doubt unwisely, to **assume** that you all know what global warming is. And even that you know how serious it is. If you don't, you can certainly find out. So right off the bat I save 2/3rds of my time.

And while I certainly agree that innovation, entrepreneurship, and courage among planners and business folk is essential to the solution, I'm going to tell you, as well, that it's not that simple. I'm going to warn you against believing what you want to believe. I mean, hell, I warn myself all the time, so why not you?

For while it's tempting to imagine that new energy technologies – efficiency, "clean coal," sequestration and all the rest – will get us through the coming greenhouse crisis. While it's even true that global warming is a historic opportunity, and that those who are on the right side of that opportunity are going, perhaps, to prosper, realism compels a tougher honesty.

A tougher honesty. That's what it's all about.

So, first of all, you know the situation is bad. But how bad?

SLIDE 1 – Business as Usual

- First of all, look at the "450 CO₂" curve at the bottom of this slide. This is the one that most people, even most professional enviros, still cite as the "safe" path forward, the so-called "soft-landing corridor." It is not, and there is an interesting discussion to be had about why people are still citing it.
- But instead of having that discussion, which is dangerously political, note the other graphs on this slide. They represent one of the principal "Business as Usual" storylines used by the IPCC... and they are the ones that you might keep in mind when, recalling the title of this talk, you think of "the end of business as usual."
- What it is, if you want to know the details, is the "balanced" BAU future, neither fossil-intensive nor assuming a New Energy Revolution. No climate policy, as Howard would have it. And no geo-political catastrophe in which we lurch into what the global scenarios group calls "Fortress World."
- And this, by the way, is hardly the worst case, not even as business as usual worlds go. It's a balanced future, by the normal standards of business as usual. And simply not an acceptable future. It would be, with an approximately 70% chance of inducing a warming of 4 degrees, an unmitigated disaster.
- And I don't just mean that the biosphere, as we know it, would be a distant, bitter, memory. I also mean that the social system, as we know it, would come apart at the seams.

SLIDE 2 – IPCC's "Reasons for Concern"

- I'm not going to be able to prove that to you, of course. But I don't, actually, think that I have to. Because the last few years have been a time in which, well, we all learned that it's a small world after all. When we learned that causes indeed have consequences. That consequences, eventually, "blowback" upon us, even in our keeps and suburbs.
- Are you allowed to say that here? That the world, and even the terror of the world, is comprehensible?
- Anyway, this is known as the "reasons for concern" chart, or, more familiarly, as the "burning embers." I'm not going to go into the detail, not too far, but do note that thick red line. This is **not** part of the IPCC's original graphic, but was overlaid by, well, an Australian actually, Bill Hare, from whom I stole this slide... That red line represents 2 degrees of warming, and it is the maximum that we can allow.
- What happens beyond two degrees? Nothing good. (Read the embers).

- And note, when you do, that, so far, we see a warming of about 0.7 degrees, and that another half a degree, maybe quite a bit more, is already "locked in."

SLIDE 3 – What Should be Accepted?

- I could, at this point, show you a few dozen slides about the likely impacts of 2 degrees. But I will content myself with two brief, indicative examples.
- First, at somewhere between 2 and 3 degrees of warming, there starts to be a serious water crisis. I mean a **really** serious water crisis. Not like Perth becoming the world's first "ghost city," a prospect that will not materialize in any case, because Perth, presumably, will be able to raid the local wetlands, or in a pinch pay for desalinization. I mean **billions** of additional people under **extreme** water stress. Stress concentrated, of course, in the Southern megacities. Many of which are not so very far from here.
- There are other details on the slide, in case I want them...

SLIDE 4 -- Rainforests in North Queensland: Impending Catastrophe

- Second, and because I've developed a weakness for the poetry of science, let me show you a map of Northern Queensland, and let me quote from a recent paper from James Cook University in Townville. To wit:

"Increasing temperature is predicted to result in significant reduction or complete loss of the core environment of all regionally endemic vertebrates. Extinction rates caused by the complete loss of core environments are likely to be severe, nonlinear, with losses increasing rapidly beyond an increase of 2 °C..."

- As you can see, by the time the warming gets to 3.5 degrees, the losses become catastrophic. You still have your rainforests, but they are tragic, terribly quiet places.
- Probably, at that point, you aren't really too worried about Northern Queensland. Or about the reef, which will be dead. Probably, at that point, you're looking way far North, past Queensland to Greenland, where the melting is now irreversible, the melting that will raise sea level by about seven meters. And you're looking South, to the West Antarctic Ice Sheet, which is also threatening to come apart. And you're trying to afford to beef up your navy too, because, well let's just say that you're starting to have a pretty serious problem with ecological refugees.

SLIDE 5 - BAU Emissions Paths, 450 ppm Corridor

- I was going to tell you that we, or rather our children, really are in trouble. But it's not to that point yet. Because, believe it or not, my punch-line is going to be that we can still get out of here. But that – should I give away my ending? – it isn't going to be free.
- But I'm not quite ready to go there yet. First, I have to show you, if you are willing to accept, for a moment, a scientific abstraction, a picture of what the scientists called "climate sensitivity." And I want to tell you why "the skeptics," as they like to call themselves, are irrelevant.
- This picture, among much else, is a good way to think about the principle remaining uncertainty in climate science, uncertainty about how responsive the climate system is to increased carbon concentrations. And it's an excellent opportunity for me to ask you to, in the future, to think in terms not of uncertainty but of probability.
- Because all you really need to know about climate sensitivity, just now, is that we don't quite know its value. And that the higher it is the more sensitive the climate system is, and the harder it will be to hold the warming to 2C degrees. And that the old consensus, from the ancient days of climate science – 1995 – that it was about 2.5 is now old news.
- This fabulous graph, done by an American scientist named Caldeira, finesses the uncertainty problem by showing a range of possible 2C paths. And you can see that if the sensitivity was only 1.5C, we'd be in good shape. Global carbon emissions could rise for another 45 years before they peaked, and we could still hold onto some of the vertebrates in the Australian wet tropics.
- Unfortunately, the picture is not such a pretty one. 3C is, in fact, a far more likely number than 1.5. Indeed, there is a significant possibility, a very real possibility – trust me, you would not get on a plane that had this chance of crashing – that is much higher.
- And as you can see, to make it to 2C degrees, global emissions have to start dropping yesterday.

Ok, that was the bad news.

So what's the good news?

Well, frankly, it isn't new, so I guess it isn't news. It's the same, bottom line declaration of political faith that you've been hearing from the street protestors

ever since the global justice movement busted out of the silence about 5 years ago.

Another world is possible.

Really. Even in the face of the incredible, almost incomprehensible challenge represented by this slide, another world is possible.

Because, you see, there's simply no reason why we would need as much carbon as is shown on the vertical axis of this graph. No reason at all. Because, the fact is, we can, all of us on this planet, live radically improved lives while generating a good deal less carbon than we generate today. Because we have the science, and the technology to make a transition – even a just transition – to a new world. And because we can easily afford to do so.

Well, there is one reason. The political scientists call it "path dependency." It may be that the rapid decarbonization of the global energy economy may simply not be something that we can achieve – not for technological reasons and not even for economic reasons, but for **political** reasons.

SLIDE 6 - Carbon emissions per capita, 1998

- The first aspect of this, of course, is that we are who we are. We are born into nations, and classes, not into the family of man. And we are, we Americans and we Australians, used to our lives and our luxuries. You can see that in this picture, which nicely snapshots the reality at this moment in time.
- You can see, here, that you are guilty. Not as guilty as me, to be sure. Hell, I flew here, and only to have a holiday with my family.
- And not as guilty as the Australia Institute would have it, for their recalculation of the per-capita numbers has your emissions as the highest in the world, in per-capita terms.

But leave that aside. It is only a detail. We are, all of us, rich. And we are, all of us, loath to understand what happens far away.

The greater part of the problem, though, is institutional. And this, really, is what is meant by path dependency. The greater part of the problem rotates around the machinery of power. So that when we say that an event is "locked in" or "locked out" – this is the language of path dependency – we are saying, first of all, that we cannot manage to break out of a "iron cage" that is built, in the first instance, of money and influence.

We all know this, of course. It is a child's realism.

You know, all of you, that fossil dependency is locked into our political system in very particular ways. And that, in the last instance, the fossil industry's lock-in may simply consist of the fact that the carbon cartel – oil and, in your country, especially, coal – may simply be too powerful to finesse.

We don't know yet. Though we are going to find out.

The thing is, we're powerful too. And our interests, our real interests, – the interests of our societies and of our world as a whole – are not the same as the interests on those men and women who happen, today, to be the most powerful among us.

That's the good news.

The good news, in other words, is that we may yet rise to the occasion. And in that spirit, let me go on just a bit longer. Let me, in fact, try to leave you with a sense that we can get out of here if we really try.

SLIDE 7 - Cost to stabilize the atmosphere

- This lovely little picture – by Christian Azar, an ecological economist in Sweden and Steve Schneider, a Stanford climatologist and a very sane man – is one we really should have tattooed on our arms. So that, each time we find ourselves swooning to the seductions of economics we might glance down and see a bit of reality.
- What does this picture show? Well, think about it this way: The IPCC's Third Assessment Report includes the very mainstream economic assessment that stabilizing atmospheric carbon dioxide at twice preindustrial concentrations by 2100 would cost between \$1 trillion and \$8 trillion.
- It sounds like a lot of money, but compare it to the several percent a year of world economic growth that's predicted by these same economists, and it becomes all but invisible. That's the point here. The difference, in the aggregate, and on average, is all but invisible.
- Because if the economy is growing by several percent a year, the world as a whole will be ten times as rich by 2100, and people, on average, will be five times as well off. And adding in the costs of tackling warming, and even treating them as a drag anchor on the global economy – which they probably will not be – makes hardly any difference at all.
- Even if they come to as much as 5 percent of global income – an implausible but typical estimate – it would postpone this target by a mere two years, from 2100 to 2102. Similarly, and more immediately, meeting

the terms of the Kyoto Protocol would mean industrialized countries “get 20 percent richer by June 2010 rather than in January 2010.”

- We’d like to think that most people, asked bluntly if they’d accept such sacrifices in order to preserve the stability of the Earth and its climate for their grandchildren, wouldn’t waste a lot of time agonizing over the decision.

There is an important proviso here.

The story I just told you was a story of averages. And we do not, we actual people, live in an average world. We are specific people, with specific problems, specific dreams, specific jobs. And were the economist's worst case scenario to come true – say a five percent reduction in the rate of economic growth – it is the specific people at the bottom that would be the ones to suffer. It is they who would enjoy less robust job markets, suffer increased unemployment, face a future without opportunities.

Or so, at least, they would quite justifiably fear. In reality, a crash program of energy sector decarbonization would probably be the best event in the history of industrial policy. And just as it would radically improve our security prospects by reducing our collective reliance on fossil hydrocarbons from the deserts of the Middle East, so too would it radically improve the job prospects of the average worker here, in the U.S., and throughout the world.

That, at least, is the promise. In the short-term, the crucial next few decades, the fight will be on, and it will be a bitter fight indeed. And the fact is that there will be a whole lot of people with a whole lot of legitimate concerns. Think, for example, of the men, and the communities, who will be dislocated as the coal sector is radically downsized, and then shut down. Think about the sympathies they will win from their friends at BHP and Rio Tinto. Think of how they will feel themselves aggrieved, how they will hearken to the songs of the right.

And think, please, about how this will not do.

Because we're talking about massive changes in the energy mix, and beyond that the global and domestic economic restructuring needed to make "sustainability" real. We are, in fact, talking about winners and losers. And we're talking about a future that is not, and cannot be, one in which we attend only to the opportunities and leave the losers to fend for themselves.

The transition will be a just transition, or there will be no transition at all.

SLIDE 8 – Just Transitions

- If I decide to use it.

Finally, though, this is not just a story about domestic change. I have to tell you that, for I'm not in the business of selling easy hope. You Australians are lucky enough to still remember social democracy. To still remember a world in which the sense of being in it together was palpable and real. To still be able to imagine pulling together and doing what's necessary to take care.

Or so, at least, I am told.

But this isn't, really, about Australia.

It's about the world.

And quite specifically about fact that we are not alone here.

For despite the most inconvenient fact that we are, finally and inexorably, confronting one of those elusive "limits to growth" that 1970s economists told us were only the ravings of overwrought greenies, the South is not about to give up what it considers to be its "right to development."

SLIDE 9 – A Soft Landing Corridor

This, very schematically, very simply, is what we have to do.

And that's all of us, all of us together. It's Australia, and American. And Russia and Saudi Arabia. And China and Brazil and Malaysia and India and South Africa. It's all of us sharing a precious, small carbon budget, as we try to decarbonize the entire global economy.

As you might imagine, there is quite a bit to say about this. But I am, I think, about out of time, and I will say little of it. Here, just to leave you with a few thoughts, are some of the main point to keep in mind.

SLIDE 10 – Equity Underlies Adequacy

First, and most importantly, the climate crisis really is deadly real.

Second, it comes to us on this profoundly divided planet. A planet, indeed, where division is only increasing. The shortcut to seeing this, by the way, is that inequality is increasing in both the US and China.

Seems a pattern here...

So it is from within this division that we must face the warming. There's no time for utopia – and by this I mean both the utopia of socialism and the utopia of the market. Realism will have to do.

And the principle point, when it comes to realism about global warming – as indeed the environmental crisis in general – is that bullshit isn't going to do us

any good. At the end of the day, our schemes will either work or they will not. This is what climate folk mean by "adequacy" – actually facing the challenge.

And "adequacy" depends on both technology and equity. For without technology, there would be no way forward. And without equity, there will be no way to move.

The bottom line, to put it in business terms, is that – if we are to make it into the soft landing corridor – we have to move fast. In fact, we have to move so fast that we had best dispense, right now, with fantasies of an economically optimal, least-cost transition. Fossil-related capita is going to have to be retired before it wears out. And people are going to have to be retrained. And the rich world is going to have to provide the poor world with the "ways and means" that it needs to "leapfrog" ahead, directly to a new energy economy.

On the other hand, we can afford it. And it really is true that the opportunities are vast almost beyond imagining.

Besides, think of the challenge. We're coming, now, to the eye of the needle, and to make it through we have to face what an old German philosopher once called "our real conditions of existence." And facing them, we have to find a way to transform them. We have to embrace the technology of the future – fuel cells, and solar power, and maybe even coal gasification and sequestration – and we have to be fair, and just, and judicious as we do so.

There's only one way out of here, and that's a way that's "fair enough."

SLIDE 10 – Environmental Space Bench