

THE GREAT GREENHOUSE GAMBLE

CAN GOVERNMENTS HANDLE THE CRISIS?

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Can governments handle the crisis?

Well it's a problematic question really, because according to the best available science, severe changes related to greenhouse gas emissions are almost certainly already locked in.

The average world temperature has consistently hovered around 13.7oC over the past 8,000 years. The 1.3oC changes which scientists think is already locked in represents a global average climate shift of nearly 10%.

There will be environmental implications for all of us, there will be species extinctions and there will be significant economic and social impacts, particularly in the third world where major economic constraints limit their ability to adjust to change.

In the last 20 years, rainfall in Perth has fallen by 15% over that experienced over the previous 70 years. This 15% drop in rainfall has resulted in a 50 to 70% reduction in runoff.

Scientists believe a similar trend is now starting in eastern Australia. CSIRO research suggests that NSW, for example can expect more frequent droughts, heatwaves, rainstorms and strong winds. A worst case scenario could see a 70% increase in drought frequency by 2030 – that's only 25 years away - impacting on coastal water supplies and on fresh water resources in the Murray Darling Basin.

Globally, the indicators are equally significant:

- Alaska's Columbia Glacier has already retreated 12km over the last 20 years.
- Emperor penguin numbers in the Antarctic circle have fallen by 50% in the past 30 years -because the krill, which are eaten by jellyfish, which are eaten by the penguins, have fallen by 40% per decade over the past three decades.

Scientists say that a 70% reduction in CO2 emissions from 1990 levels by 2050 is necessary to stabilise the world's climate: that's a reduction of 9,000 million tonnes

of CO2 or thereabouts each year from the current emission of 13,000 million tonnes - in less than half a century.

Given that our entire civilisation is built on fossil fuel, this is a profound and frightening prospect for any government to countenance.

It's not surprising therefore that people are reluctant to change with the uncertainty that surrounds this issue.

Such a major reduction is compounded by the fact that we have not reached a steady state in our emissions growth in the developed economies and we still live on a planet where almost half the world's 6 billion people live on less than \$2 a day.

If the developing world were to reach our standard of living, to which they have every right to aspire, using our technological pathway, our emissions would need to be reduced by significantly more.

Many people would argue that the changes being observed already represent a crisis for our world.

To be frank, as beautiful as they are, how many people do you think would consider the extinction of the Emperor Penguin significant enough for the good citizens of planet earth to give up the luxuries created by their fossil fuel economy.

But the truly frightening thing is if we adopt a business as usual position and not constrain emissions growth until we have a 'real' problem, as some powerful vested interests are lobbying for, these changes may turn out to be the tip of the proverbial iceberg.

Tim Flannery, in his soon to be released book, ***The Weather Makers***, describes three tipping points that appear to have happened to the earth's climate in the past as a result of increased temperatures of the magnitude predicted for our earth over the next century:

1. The slowing or collapse of the Atlantic Gulf Stream current, which would plunge Europe into an ice age, potentially in as little as a decade.
2. The potential rapid demise of the entire Amazon rainforest into grasslands and desert, which would cause mass extinctions and have severe catalytic climate impacts on the rest of the world.
3. And perhaps the biggest and least predictable of all, is the release of methane stored as frozen gas on the sea floor and methane stored in the Siberian permafrost, leading to mass extinctions perhaps similar to that which occurred at the end of the Permian 240 million years ago when our planet lost over 90% of its biodiversity.

The point is that the geological record tells us these types of events can happen.

We don't know if they will, when they might occur, or at what tipping point the process becomes irreversible.

But if one, two or three of these scenarios do occur, it is all over for our civilisation.

If this all sounds a little alarmist - and to be frank, to most people it just reads as greenie scare mongering - consider our luck in being able to repair the hole in the

ozone layer caused by the invention of perfectly safe inert chemicals called CFCs, half a century ago.

If it had turned out that chlorine behaved chemically like bromine - a very similar element - the ozone hole would have been a global, year-round phenomenon, not just an event of the Antarctic spring.

Bromine and chlorine can be used interchangeably for many purposes, and the fact that chlorine was used to produce CFCs rather than bromine to produce BFCs, is simply that chlorine was cheaper to produce.

BFCs would have done just as good a job. However it turns out that bromine is forty five times more destructive to ozone than chlorine. Had bromine been used, it would have torn apart the ozone layer before our Nobel winning scientists had even discovered the cause of the problem. In a matter of decades the marine and terrestrial ecosystems we depend upon would have been severely damaged to the point that our civilisation would have been under intolerable stress.

It was luck that saved our civilisation this time – and only a handful of people on our planet even know how close we came.

But the ozone issue is also significant for another reason – it did show that humanity can respond to a crisis when it accepts that we have one.

Nobody set out to pollute our planet with CO₂, it just happens that we have.

The same happened with CFCs.

And when the world's community is convinced that CO₂ pollution poses a significant risk to our wellbeing, then the political system will adjust. The great uncertainty is not whether governments will respond, but whether this adjustment happens in time to avert catalytic climate change.

This will be a combination of luck (as it was with ozone) and the ability of science to articulate the magnitude and risks to our civilisation of inaction.

We have no control over the former, but we can influence the latter.

There are a number of principles of human behaviour which we can call on to accelerate a political response. These principles come, not from the physical sciences which many people here today are most comfortable with, but from the political sciences, which most people see as dark and murky.

Our problem is that as many scientists are as confused by the unpredictability of politics as politicians are confused by the uncertainty of science.

So what are we dealing with?

First, we know that rapid technological change away from a fossil fuel based civilisation will have significant economic impacts in the short term, so people will need to be convinced there is a crisis.

Secondly we know that all species (including humans) are reluctant to change when the short term impacts of the change are negative and the long term impacts are uncertain. Anything past two generations and you can forget it, unless the impacts are absolutely certain.

Thirdly, we know that vested interests will vigorously defend their privileged position.

Fourthly, we also know that when there is a crisis or a significant risk of a crisis, survival instincts are triggered. People will sign up in their hundreds of thousands to risk their lives to defend their country in times of war.

And finally, history shows that western democratic governments will eventually respond to the wishes of their community – irrespective of the power of vested interests – provided the citizens of these societies demand action. Even Citizen Kane running the most unscrupulous multinational corporation has an interest in seeing their grandchildren's future secured.

Understanding these simple rules of human behaviour gives us the roadmap for accelerating a political response and thereby minimising the risk and lowering the overall cost of adjustment.

If we want to accelerate the political response, the first thing we must do is ensure our governments continue to invest in science and economic analysis, to decrease the uncertainty surrounding the scientific and economic implications of climate change.

The second thing is to ensure that respected scientists communicate with our political leaders, to our business leaders and to the broader community.

Conferences are useful exercises, but the communication must go wider than scientific and environmental groups.

Scientists must speak to the community and not have their opinions filtered. They need to speak out and when they do, they need to be protected for doing so when attacked. People have a right to know.

In order to lever change in a democracy, all members of the community must be aware of the significant and imminent risks that are posed by not taking action.

As I said earlier, nobody set out to pollute our planet with CO₂, it just happens that we have.

When the world is convinced that this pollution poses a significant risk to our wellbeing, then the political system will adjust.

The great uncertainty is not whether governments will respond, but whether this adjustment happens in time to avert catalytic climate change.

It's up to all of us to accelerate this debate.

And the best way to do this is to convince governments to allow carbon to be traded.

In doing so, this will create a currency for carbon, which will then allow carbon to be traded, which will then provide the economic catalyst to stimulate human innovation.

The market will then find the cheapest solution.

If governments cap and trade carbon, and if we have got the 20-30 years we need for our technologies and economics to adjust (this is where the luck comes in), then we can do it without causing catastrophic economic impacts.

If governments try to pick winners, or rely on voluntary measures, or delay the response, we will fail and we are likely to suffer not only catastrophic ecological consequences but also catastrophic social and economic consequences as well.