



OFFICE OF THE PRIME MINISTER'S SCIENCE ADVISORY COMMITTEE  
Professor Sir Peter Gluckman, KNZM FRSNZ FMedSci FRS  
Chief Science Advisor

*the* ROYAL  
SOCIETY *of*  
NEW ZEALAND  
TE APĀRANGI

# ***Government agencies and researchers working effectively together***

Stephen Goldson  
AgResearch

# There is something feel-good about doing science for government and the public-good

- Maybe it is useful
- Maybe it will help someone
- Maybe it will lead to more sensible decisions
- Maybe it could lead to more funding

# There is something feel-good about doing science for government and the public-good

- Often though, it does not work like that
  - You don't get enough funding for what is being asked for
  - They completely ignore what you have done and they file it
  - Maybe it is too detailed
  - Maybe the result does not fit with what was expected
  - Maybe when it is finished they don't need it anymore
  - Maybe it is completely ignored

# There is indeed work to be done...

- Sir Peter Gluckman has made good progress on this issue
- Government has made it one of his top priorities
- For the rest of this talk I will give a commentary on what has been going on...
- A lot of this is covered in his April 2011 paper...

*Towards better use of evidence in policy formation: a discussion paper* (<http://www.pmcsa.org.nz/wp-content/uploads/Towards-better-use-of-evidence-in-policy-formation.pdf>).

# There in fact is no real alternative but to use science-*based* knowledge

- Without it unhelpful conflation of dogma, ideology and political pressure
- Leads to decisions on key matters being made in almost total isolation or even in denial of useful knowledge
- Importance of science in policy v. clear in the UK at the time of the CJD crisis. Lord Robert May, the then British Chief Scientist had a major role in resolving what was going on
- Regrettably, however, the use of science in modern jurisdictions is not axiomatic
- E.g. Recent brawling in US re climate change; shows how easily science and policy formation can become separated

# There in fact is no real alternative but to use *science-based* knowledge

- Expectations of science changed hugely since the halcyon days of the mid-1960s
- Science used to be focused on simple linear questions e.g. how much weight will this bridge take?
- Science was authoritative, definitive and accepted by a very different public
- Science advice was issue-specific, linear and effectively free of various values and beliefs
- Experts talked to the policy-makers without much explanation or context
- Now there is much more going on
- The problem is that the relatively small reductionalist component is still taken by many to apply to all science. Wrong.

# There in fact is no real alternative but to use science-*based* knowledge

- Science undergone v. major change, esp. as biological, environmental and human sciences have come to dominate
- Science is now dealing with complex non-linear phenomena
- Certainty is not possible, unknowns remain; answers have to be defined in terms of probabilities and levels of uncertainty e.g. earthquakes and earthquake prediction

# There in fact is no real alternative but to use science-*based* knowledge

- Tendency for the press to magnify scientific debate and uncertainty causing confusion for public and politicians
- E.g. the adventures of “Moon Man”, Mr Ring, who unequivocally and wrongly predicts quakes based on gravitational pull
- Ludicrously he acquired credibility



# There in fact is no real alternative but to use science-*based* knowledge

- Shift from scientific advice based on reductionist precision to handling probabilities based on various coinciding factors and feedback loops has caught many unawares
- This is now called *complex science*
- The problem is centred on the uncertainty
- This is definitely not what scientists want
- Certainly not what policy-makers/politicians want to hear about

# There in fact is no real alternative but to use science-*based* knowledge

- It gets worse...
  - To top it off, as well as this complex science, another dimension where people's value systems strongly affect the debate e.g. this includes food security, animal welfare, GE technology and of course, climate change
  - These are issues of high public concern and political complexity
  - Are often the matters about which governments turn to science advisors
  - When public values are combined mixed in with complex science then we finish up with '*post normal science*'
  - Very long way from the old simple days of linearity when you could 'ask a scientist'
  - It ain't easy

# There in fact is no real alternative but to use science-*based* knowledge

- It gets worse...
  - To top it off, as well as this complex science, another dimension where people's value systems strongly affect the debate. e.g. this include food security, animal welfare, GE technology and of course, climate change
  - These are issues of high public concern and political complexity
  - are often the matters about which governments turn to science advisors
  - When public values are combined mixed in with complex science then we finish up with '*post normal science*'
  - Very long way from the old simple days of linearity when you could 'ask a scientist'
  - It ain't easy

# There in fact is no real alternative but to use science-*based* knowledge

- Coinciding with shift from linear to complex to post-normal science, a huge increase in public access to web-based information
- This has resulted in greater expectation by the public to participate in decisions albeit when it is arcane science
- Things esp messy around risk probabilities issues; refer Christchurch earthquakes
- Science and scientists now but one of the cacophony heard and considered
- Now have to push to be heard

# There in fact is no real alternative but to use science-*based* knowledge

- Often an unavoidable intertwining of values with knowledge
- Science unfortunately can become the proxy for a values debate with nothing to do with science
- Clearest example of such proxy scientific debate is the pseudo-scientific argument about anthropogenic climate change
- Most of that debate is not really about the existence of climate change at all
- Rather it is values debate about economics and intergenerational equity.
- As scientists get sucked into such debates, they can turn into advocates and risk losing public trust

# There in fact is no real alternative but to use science-*based* knowledge

- The climate change example seems quite straightforward but other examples are less so
- E.g. modified food; here problem confounded by what risk means to different people
- This tension is often handled by anodyne reference to the ‘precautionary principle’
- That said, the precautionary principle is easily misunderstood
- It is actually an approach to the management of estimated risks in situations of scientific uncertainty
- It must not be confused with the elimination of all risk, or become an excuse for doing nothing

# There in fact is no real alternative but to use science-*based* knowledge

- The precautionary principle promotes the concept of taking precautionary steps to evaluate any danger and search for the means to manage it
- Precaution designates an active, open, conditional and reversible approach which rests on a deepening of knowledge
- However, consideration of the components in this way is always going to be subjective and values-driven

# How to handle this state of affairs...

- So there are two rather divergent demands

On the one hand as an advanced nation, there is the inexorable need to adhere to the precepts outlined in the *Towards better use of evidence in policy formation: a discussion document*

and on the other, science advice has entered the messy age of post-normal deliberation based on complex science

- Partly as a result of these circumstances, NZ moving towards a configuration based on the UK model
- In the UK there is a Government Chief Scientific Adviser (GCSA), John Beddington who is the personal adviser on science and technology-related activities and policies to the Prime Minister and Cabinet



Office of the Prime Minister's  
Science Advisory Committee



# How to handle this state of affairs...

- Every individual British government department appointed its own departmental Chief Scientific Adviser (CSA)
- The GCSA has no formal management responsibility for departmental CSAs
- However, the GCSA and departmental CSAs sit on a Chief Scientific Adviser's Committee (CSAC) provides forum for the discussion of science issues in a cross-departmental context
- NZ developing a similar. MPI already appointed part-time Departmental Chief Advisor
- Other NZ Ministries and Departments expected to follow
- These advisors will work with NZ Prime Minister's Chief Science Advisor in a way cf that in the UK



Office of the Prime Minister's  
Science Advisory Committee

Policy answers are not always intuitive

Driver education...



Office of the Prime Minister's  
Science Advisory Committee

Thank you

Questions and Discussion



Office of the Prime Minister's  
Science Advisory Committee