Your submission to Zero Carbon Bill

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Reference no: 977

Submitter Type: Individual

Clause 1. What process should the Government use to set a new emissions reduction target in legislation?

Position
The Government sets a goal to reach net zero emissions by the second half of the century and the Climate Change Commission advises on the specific target for the Government to set later

Notes
Of the two options above, the second is slightly preferable as it allows somewhat more flexibility. A third option, in which the Government does not set an emissions reduction target at all, would be better still.

Clause 2. If the Government sets a 2050 target now, which is the best target for New Zealand?

Position
Net Zero Carbon Dioxide - Reducing net carbon dioxide emissions to zero by 2050

Notes
If a target is indeed to be set, then the first option, being the least onerous, is the one that should be adopted. Not setting a target at all would be preferable.

Clause 3. How should New Zealand meet its targets?

Position
Domestic emissions reductions (including from new forest planting) and using some emissions reductions from overseas (international carbon units) that have strong environmental safeguards

Notes
The second option is still a bad option but is preferable because it allows slightly more flexibility. But neither option really answers the question: how exactly is New Zealand going to meet its targets? The Discussion Document speaks of innovation and land use changes, but there are few details about what these may entail. There will no doubt be a move to greater levels of renewable electricity generation, but will this, for example, require damming more of our few remaining wild rivers? Will we still require substantial reserves of base load electricity generation capacity for those times when the wind doesn’t blow and the sun doesn’t shine, and what forms will they take? How do we power the expanding fleet of electric vehicles? If we have to reduce our livestock farming industries to meet targets for methane and nitrous oxide (assuming these are set), how do we fill the hole this will leave in our national economy?

Clause 4. Should the Zero Carbon Bill allow the 2050 target to be revised if circumstances change?

Position
Yes

Notes
2050 is 32 years away. Thirty-two years ago, in 1986, there was no internet, hardly any mobile phones, the USSR was still intact and the Berlin Wall still up, there was a stock market boom that was about to end in spectacular fashion, and New Zealand had double-digit inflation. We have no idea what the future holds, and need to retain as much flexibility as we can to face whatever it may throw at us. Furthermore, there is a significant minority of climate scientists who consider that the current level of concern about climate change is considerably overstated; it may yet turn out that they're right. For a paper on how the current scientific “consensus” has been engineered and dissenting voices suppressed for political ends, see Curry, JA and PJ Webster, 2013: Climate change: no consensus on consensus. CAB Reviews 8(1): 1-9. I have attached a copy of this (consensus-paper-revised-final.pdf, sourced from curryja.files.wordpress.com/2012/10/consensus-paper-revised-final.doc). A plain language version is also available at judithcurry.com/2012/10/28/climate-change-no-consensus-on-consensus and in the event that the current alarm over climate change comes to be seen as misplaced, future generations should have the option of modifying or abandoning the course which many in this generation wish to set for them.

Clause 5. The Government proposes that three emissions budgets of five years each (i.e. covering the next 15 years) be in place at any given time. Do you agree with this proposal?

Position
No

Notes
The Discussion Document notes: “Setting targets is not new. New Zealand has already made commitments to reduce emissions to
... 5 per cent below 1990 levels by 2020.” What it doesn’t say is that the best we have been able to do so far, with only two years to go until the target date, is to stabilise emissions at 19.6% above 1990 levels. Meeting these targets is likely to be very challenging indeed. The Document has no details on how these targets are to be enforced, and the consequences of failing to meet them are not clear. I note Germany has just announced that it is likely to miss its goal of cutting emissions by 40 percent by 2020.

Clause 6. Should the Government be able to alter the last emissions budget (i.e. furthest into the future)?
Position
Yes - each incoming Government should have the option to review the third budget in the sequence
Notes
See above.

Clause 7. Should the Government have the ability to review and adjust the second emissions budget within a specific range under exceptional circumstances? See p36 Our Climate Your Say
Position
Yes
Notes

Clause 8. Do you agree with the considerations we propose that the Government and the Climate Change Commission take into account when advising on and setting budgets? See p44 Our Climate Your Say
Position
Yes
Notes
If the Government is to set budgets, and if there is to be a Climate Change Commission, then these considerations are reasonable.

Clause 9. Should the Zero Carbon Bill require Governments to set out plans within a certain timeframe to achieve the emissions budgets?
Position
No
Notes

Clause 10. What are the most important issues for the Government to consider in setting plans to meet budgets? For example, who do we need to work with, what else needs to be considered?
Notes
The Government’s primary concern should be for the economic, social and environmental damage that actions to meet these targets may precipitate. What would be the effect on tax revenue of restricting livestock numbers to control methane and nitrous oxide levels? How would this impact the ability of the Government to support the socially disadvantaged who may, for example, require assistance with home heating costs in the face of higher electricity bills? What are the environmental consequences of planting fast-growing exotic plantation forests solely for carbon capture? The recent floods in Tolaga Bay showed the serious downstream effects that can occur when forests are not properly managed; a lack of management is likely if planted trees have no clear function other than soaking up carbon.

Clause 11. The Government has proposed that the Climate Change Commission advises on and monitors New Zealand’s progress towards its goals. Do you agree with these functions? See p42 Our Climate Your Say
Position
No
Notes
A Climate Change Commission is unnecessary and diverts Government attention away from more serious matters. Some of the actions proposed to fight climate change (such as increasing energy efficiency, improving home insulation, better public transport and affordable housing) make sense on their own merits and should be pursued, but putting all the focus on emissions is likely to distort economic signals and produce undesirable outcomes such as suppressed economic activity and more expensive energy, to no good purpose. The destruction of American forests to produce “biofuels” for export to Europe is an illustration of the effects this narrow focus on “carbon neutrality” can have; we do not want to see these follies repeated in New Zealand.

Clause 12. What role do you think the Climate Change Commission should have in relation to the New Zealand Emissions Trading Scheme (NZ ETS)?
Position
Advising the Government on policy settings in the NZ ETS

Notes
Both are poor options: better to have no Climate Change Commission at all. But if one must be established, then it is preferable it have an advisory capacity only.

Clause
13. The Government has proposed that Climate Change Commissioners need to have a range of essential and desirable expertise. Do you agree with the proposed expertise? See p45 Our Climate Your Say
Position
Yes
Notes
Better to have no Climate Change Commission, but if one must be established this range of expertise looks appropriate.

Clause
14. Do you think the Zero Carbon Bill should cover adapting to climate change?
Position
No
Notes
If there has to be a Zero Carbon Bill, it should be as small and unobtrusive as possible. Climate change will continue to occur regardless of what human greenhouse gas emissions may be, but its direction and extent will be impossible to predict. New Zealand requires as much economic resilience as possible to deal with any future adverse events, and setting rules now will not help future generations to cope with situations which they will be able to perceive far more clearly than we can. Restricting economic activity and hence national financial resources through efforts to fight climate change will also limit the options of future generations.

Clause
15. The Government has proposed a number of new functions to help us adapt to climate change. Do you agree with the proposed functions? See p47 Our Climate Your Say
Position
No
Notes
The proposals would only serve to create more bureaucracy and lead to more, not less, inefficiency in the way national and local governments conduct their operations.

Clause
16. Should we explore setting up a targeted adaptation reporting power that could see some organisations share information on their exposure to climate change risks?
Position
No
Notes
See above.

Clause
Do you have any other comments you'd like to make?
Notes
Please see attached document (Zero Carbon Bill Submission Supplementary Comments.pdf)

Supporting documents from your Submission

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Climate change: no consensus on consensus

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Abstract. This essay explores the history and consequences of the scientific consensus building activities by the Intergovernmental Panel on Climate Change (IPCC) on the topic of dangerous anthropogenic climate change. A broad view of consensus is provided in the context of the philosophy of science and the social and psychological issues that contribute to bias. The role of scientific consensus in policy making is discussed. An overview is provided of critiques of the IPCC consensus process. A summary of recommendations is provided aimed at improving the interface between climate science and policy in ways that can support decision making associated with the growing implications of the “messy wickedness” of the climate change problem.

Key words: climate change, consensus, consensus, decision making under uncertainty

Review methodology: A comprehensive evaluation was conducted of relevant literature from climate science, science and technology studies, philosophy of science, psychology and public policy.
Introduction

“My job will not be easy but I am convinced the problems will be solved in a quicker and more efficient way if there is unity and consensus.” – Lucas Papademos

The United Nations initiated a scientific consensus building process with the objective of providing a robust scientific basis for climate policy, under the auspices of the Intergovernmental Panel for Climate Change (IPCC). Sir John Houghton introduced the concept of consensus in the context of the IPCC in a statement in the Foreword to the IPCC First Assessment Report (FAR): [1]

“Although, as in any developing scientific topic, there is a minority of opinions which we have not been able to accommodate, the peer review has helped to ensure a high degree of consensus among authors and reviewers regarding the results presented. Thus the Assessment is an authoritative statement of the views of the international scientific community at this time....”

Subsequent to the FAR, consensus became codified in the IPCC’s procedures: "in taking decisions, drawing conclusions, and adopting reports, the IPCC Plenary and Working Groups shall use all best endeavours to reach consensus" [2]. The IPCC’s consensus approach has been driven largely by the desire to communicate climate science coherently and simply to a wide spectrum of policy users [3]. In this context, it has been argued that the IPCC consensus is used as an appeal to authority in the representation of scientific results as the basis for urgent policy making [4].

The main IPCC consensus findings and their evolution through the course of four IPCC assessment reports are summarized as:

- FAR (1990): “The size of this [global] warming is broadly consistent with predictions of climate models, but it is also of the same magnitude as natural climate variability.” [1]
- TAR (2001): “There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities." [6]
- AR4 (2007): “Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.” [7]

The IPCC findings on attribution of climate change in the latter half of the 20th century are the most important statements made by the IPCC, in context of policy making under the precautionary principle. The IPCC consensus findings on attribution have been echoed in position statements made by many scientific organizations, including the following that explicitly use the word ‘consensus’:

- American Association for the Advancement of Science (2006) [8]

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1 http://www.bbc.co.uk/news/world-europe-15687600
Consensus has both cognitive (evidenced based) and social (peer acceptance) dimensions, including shared beliefs and uniform interpretations. Funtowicz and Ravetz [12] propose a coding system for levels of consensus as it relates to peer acceptance (Table 1). The consensus among climate scientists around the IPCC attribution statement has been portrayed by Oreskes as “nearly total” [13]. Oreskes acknowledges that while there is some disagreement, the agreement is nearly total in terms of the IPCC portraying the best available explanation. It is argued further that a small number of scientists who do disagree have lower levels of expertise and prominence than the scientists supporting the consensus [14] or are politically motivated ‘merchants of doubt’ [15].

The IPCC itself expends considerable effort in assessing uncertainty and levels of confidence in the scientific findings as described in the recent special issue in Climatic Change on Guidance for Characterizing and Communicating Uncertainty and Confidence in the Intergovernmental Panel on Climatic Change [16]. Yohe and Oppenheimer describe the pervasiveness of uncertainty in the introductory essay to this special issue [16]:

“Since its inception in 1988, the Intergovernmental Panel on Climate Change (IPCC) has worked with the growing recognition that uncertainty is pervasive in our understanding of the climate system: what drives climate change, what will determine its future course, and what influence it will have on important social and ecological aspects of our world. It is not news that the IPCC has struggled, with varying degrees of success, in its efforts to describe these uncertainties and to judge the confidence with which it can offer its major conclusions.”

In a series of three papers [17] [18] [19], the authors (Curry and Webster) have argued that the characterization of uncertainty by the IPCC is inadequate and leads to overconfidence in the conclusions, particularly with regards to the IPCC AR4 statement on attribution. With these levels of uncertainties, it would seem that there is plenty of scope for disagreement among scientists. Nevertheless, the IPCC consensus is portrayed as nearly total among scientists with expertise and prominence in the field of climate science. The idea of a scientific consensus surrounding climate change attribution has been questioned by a number of people, including scientists and politicians. Notably, the Nongovernmental International Panel on Climate Change (NIPCC) has written a report entitled Nature, Not Human Activity, Rules the Climate [20] that contradicts the main conclusions of the IPCC. Much effort has been undertaken by those that support the IPCC consensus to discredit skeptical voices including the NIPCC, essentially dismissing them as cranks or at best rebels, or even politically motivated ‘deniers’ [21]. Amidst the increasingly intense public debate on the issue of climate change and the recent challenges to the credibility of the IPCC [22] [23], the issue of consensus itself has become a topic of debate, in context of the science as well as its role in policy making.

Students of science are taught to reject *ad populam* or ‘bandwagon’ appeals, a sentiment is articulated by the motto of the UK Royal Society: ‘nullius in verba’, which is roughly translated as ‘take nobody’s word for it’. How then, and why, have climate scientists come to a scientific consensus about a very complex scientific problem that the scientists themselves acknowledge has substantial and fundamental uncertainties? This paper seeks to provide some insight into this issue.

**Consensus and the philosophy of science**

“In questions of science, the authority of a thousand is not worth the humble reasoning of a
The debate surrounding the consensus on climate change is complicated by the complexity of both the scientific and the associated sociopolitical issues. Underlying this debate is a fundamental tension between two competing conceptions of scientific inquiry: the consensual view of science versus the dissension view [24]. Under the consensual approach, the goal of science is a consensus of rational opinion over the widest possible field [25]. The opposing view of science is that of dissension, whereby scientific progress occurs via subversion of consensus in favor of new experiments, ideas and theories. There are four arguments that undermine the consensus perspective [24]: scientific research is controversy-laden; incommensurability of theories; underdetermination of theories and successful counternormal behavior. The importance of controversy is evident in Kuhn’s arguments [26], whereby the emergence of new scientific ideas requires a process that permits rational men to disagree, with advocates of different paradigms often subscribing to different methodological standards and cognitive values. Underdetermination implies that inadequate data and understanding does not allow one theory to be selected unambiguously to the exclusion of all its competitors. Feyerabend argues that there are many noteworthy instances of scientific progress whereby scientists have apparently violated the norms or canons usually called scientific [27].

Lehrer raises the following question [28]: When is it reasonable for a person to conform to a consensus and when is it reasonable to dissent? His response:

*We shall answer the question in terms of an intellectual concern of science and rational inquiry. Succinctly stated, the concern is to obtain truth and avoid error. We shall argue that consensus among a reference group of experts thus concerned is relevant only if agreement is not sought. If a consensus arises unsought in the search for truth and the avoidance of error, such consensus provides grounds which, though they may be overridden, suffice for concluding that conformity is reasonable and dissent is not. If, however, consensus is aimed at by the members of the reference group and arrived at by intent, it becomes conspiratorial and irrelevant to our intellectual concern.*

With genuinely well-established scientific theories, ‘consensus’ is not discussed and the concept of consensus is arguably irrelevant. For example, there is no point to discussing a consensus that the Earth orbits the sun, or that the hydrogen molecule has less mass than the nitrogen molecule. While a consensus may arise surrounding a specific scientific hypothesis or theory, the existence of a consensus is not itself the evidence.

The issue of challenges to the IPCC consensus statement on attribution is not analogous to Galileo-like revolutionaries. Rather these challenges are associated with a concern about the oversimplification by the IPCC of a complex issue in the interests of policy making [17]. How to reason about uncertainties in the complex climate system and its computer simulations is neither simple nor obvious [18]. Scientific debates involve controversies over the value and importance of particular classes of evidence as well as disagreement about the appropriate logical framework for linking and assessing the evidence. The IPCC faces a daunting challenge with regards to characterizing and reasoning about uncertainty, assessing the quality of evidence, linking the evidence into arguments, identifying areas of ignorance and assessing confidence levels. An overarching concern is how the issue of climate change is framed scientifically and how judgments about confidence in complex scientific arguments are made in view of the cascade of uncertainties [18].

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Given the complexity of the climate problem, ‘expert judgments’ about uncertainty and confidence levels are made by the IPCC on issues that are dominated by unquantifiable uncertainties. The IPCC consensus building process has been characterized as an exercise in collective judgment about subjective Bayesian likelihoods in areas of uncertain knowledge [29]. Goodwin argues that the IPCC consensus is a manufactured consensus, arising from an intentional consensus building process [4]. Judging the manufactured consensus of the IPCC by Lehrer’s standard implies that the IPCC consensus is not intellectually meaningful. This argument does not imply that the IPCC’s conclusions are necessarily incorrect or that the consensus is not useful for policy makers; however, this argument leads to the conclusion that the consensus building process employed by the IPCC does not lend intellectual substance to their conclusions.

Consensus and bias

“A long time ago a bunch of people reached a general consensus as to what's real and what's not and most of us have been going along with it ever since.” – Charles de Lint

If the objective of scientific research is to obtain truth and avoid error, how might a consensus seeking process introduce bias into the science and increase the chances for error? ‘Confirmation bias’ is a well-known psychological principle that connotes the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or an existing hypothesis [30]. Confirmation bias usually refers to unwitting selectivity in the acquisition and interpretation of evidence.

Kelly provides some insight into confirmation bias [31], arguing that a prior belief can skew the total evidence that is available subsequently in a direction that is favorable to itself. Kelly also finds that individuals tend to be significantly better at detecting fallacies when the fallacy occurs in an argument for a conclusion which they disbelieve, rather than for a conclusion in which they believe [32].

An individual’s assessment of a scientific issue and the associated levels of uncertainty can be influenced by the group dynamic in a consensus building process. In its recent review of the IPCC, the InterAcademy Committee [33] states that “Studies suggest that informal elicitation measures, especially those designed to reach consensus, lead to different assessments of probabilities than formal measures. Informal procedures often result in probability distributions that place less weight in the tails of the distribution than formal elicitation methods, possibly understating the uncertainty associated with a given outcome.” An example is provided by Morgan et al., who elicited subjective probability distributions from twenty-four leading atmospheric scientists that reflect their individual judgments about radiative forcing from anthropogenic aerosols [34]. Agreement was strongest in their assessments of the direct aerosol effect. However, the range of uncertainty that a number of experts associated with their estimates for indirect aerosol forcing was substantially larger than that suggested by either the IPCC 3rd or 4th Assessment Reports.

Recent research provides insight into the group dynamics of consensual judgments by examining how well a confidence-based strategy works in groups [35]. When most people did not know the correct answers, confidence-based group decisions were worse than those of even the worst-performing individual, because group decisions are dominated by the more confident member.

3 Charles De Lint, "Where Desert Spirits Crowd the Night", 1995, p. 254
An implication of this research is that in uncertain environments, groups might make better decisions by relying on the guidance of those who express the most doubt.

Kelly describes an additional source of confirmation bias in the consensus building process [32]: “As more and more peers weigh in on a given issue, the proportion of the total evidence which consists of higher order psychological evidence [of what other people believe] increases, and the proportion of the total evidence which consists of first order evidence decreases . . . At some point, when the number of peers grows large enough, the higher order psychological evidence will swamp the first order evidence into virtual insignificance.” Kelly concludes [32]: “Over time, this invisible hand process tends to bestow a certain competitive advantage to our prior beliefs with respect to confirmation and disconfirmation.”

With regards to the IPCC, cognitive biases in the context of an institutionalized consensus building process have arguably resulted in the consensus becoming increasingly confirmed in a self-reinforcing way, to the detriment of the scientific process.

Role of scientific consensus in decision making

“Consensus means that everyone agrees to say collectively what no one believes individually” – Abba Eban

The mandate of the IPCC is to provide policy-relevant information to policy makers involved in the UN Framework Convention on Climate Change (UNFCCC). Based upon the precautionary principle, the UNFCCC established a qualitative climate goal for the long term: avoiding dangerous climate change by stabilization of the concentrations of atmospheric greenhouse gases. The IPCC scientific assessments play a primary role in legitimizing national and international policies aimed at reducing greenhouse gas emissions. The main practical objective of the IPCC has been to assess whether there is sufficient certainty in the science so as to trigger political action to reduce greenhouse gas emissions. This objective has led to the IPCC assessments being framed around identifying anthropogenic influences on climate, environmental and socio-economic impacts of climate change, and stabilization of CO₂ concentrations in the atmosphere.

The role of consensus in this decision making is described by Oreskes [36]: “If we feel that a policy question deserves to be informed by scientific knowledge, then we have no choice but to ask, what is the consensus of experts on this matter? If there is no consensus of experts—as was the case among earth scientists about moving continents before the late 1960s—then we have a case for more research. If there is a consensus of experts—as there is today over the reality of anthropogenic climate change —then we have a case for moving forward with relevant action.”

Oreskes’ statement is based on the linear model of expertise [37], or ‘speaking truth to power’ [38], whereby first science has to ‘get it right’ and then policy comes into play. The influence of science on policy is assumed to be deterministic: if the scientific facts are ‘sound,’ then they have a direct impact on policy. In the linear model, the key question is whether existing scientific knowledge is certain enough to compel action; Oreskes [36] argues that we should not expect logically indisputable proof, but rather a robust consensus of experts. The linear model of expertise continues to dominate perceptions among climate scientists and policy makers [37] [39].

http://en.wikiquote.org/wiki/Talk:Abba_Eban
Van der Sluijs argues that the IPCC has adopted a ‘speaking consensus to power’ approach that sees uncertainty and dissent as problematic, and attempts to mediate these into a consensus [40]. The ‘speaking consensus to power’ strategy acknowledges that available knowledge is inconclusive, and uses consensus as a proxy for truth through a negotiated interpretation of the inconclusive body of scientific evidence. The ‘consensus to power’ strategy reflects a specific vision of how politics deals with scientific uncertainties [40] and endeavors to create a knowledge base for decision making following the linear model of expertise.

A distinction needs to be made between scientific consensus and consensus-oriented decision making. In the ‘speaking consensus to power’ approach, there is the inference that a scientific consensus should translate to a consensus decision. Consensus-oriented decision making is a group decision making process that seeks the consent of the participants and to improve solidarity and does not necessarily imply agreement or any kind of unanimity [41]; the existence of a relevant scientific consensus may or may not be important in the deliberations. Consensus-oriented decision making is about finding common ground among parties with diverse interests and values.

Classical decision making under the linear model involves reducing the uncertainties before acting. In the face of irreducible uncertainties and substantial ignorance, reducing the uncertainty is not viable, but not acting could be associated with catastrophic impacts. Under conditions of deep uncertainty or ignorance, optimal decisions based upon a scientific consensus can carry a considerable risk. Weitzmann characterizes the decision making environment surrounding climate change in the following way [42]: “Much more unsettling for an application of expected utility analysis is deep structural uncertainty in the science of global warming coupled with an economic inability to place a meaningful upper bound on catastrophic losses from disastrous temperature changes. The climate science seems to be saying that the probability of a system-wide disastrous collapse is non-negligible even while this tiny probability is not known precisely and necessarily involves subjective judgments.”

Obersteiner et al. describe the uncertainty surrounding the climate change science as a two-edged sword that cuts both ways [43]: what is considered to be a serious problem could turn out to be less of a threat, whereas unanticipated and unforeseen surprises could be catastrophic. Obersteiner et al. argue that the strategy of assuming that climate models can predict the future of climate change accurately enough to choose a clear strategic direction might be at best marginally helpful and at worst downright dangerous. Underestimating uncertainty can lead to strategies that do not defend the world against unexpected and sometimes even catastrophic threats. Obersteiner et al. note that another danger lies on the other side of the sword if uncertainties are too large and analytic planning processes are abandoned. While a higher level of confidence and a consensus can make decision makers more willing to act, overestimating the confidence can result in discounting the value of information in the decision making process if the confidence later proves to be unwarranted.

The linear model of expertise works well for ‘tame’ problems [44], where everyone essentially agrees on both the problem and the solution. Successes in managing tame problems are evident in the domains of engineering and regulatory science. Beck [45] argues that climate change has been framed as a relatively ‘tame’ problem that requires a straightforward solution, namely the top-down creation of a global carbon market. However, climate change is arguably characterized better as ‘wicked problem’ or a ‘mess’ [46] [47]. ‘Messes’ and ‘wicked problems’ are characterized by multiple problem definitions, the methods are open to contention and the solutions are variable and disputed, and ‘unknown unknowns’ suggest chronic conditions of
ignorance and lack of capacity to imagine future eventualities of both the problem and the proposed solutions [44].

In summary, the problems with the ‘speaking consensus to power’ approach are [40]: it underexposes scientific uncertainties and dissent, making the chosen policy vulnerable to scientific errors; and it limits the political playing field in which players can present different policy perspectives.

**Unintended consequences of the IPCC consensus**

“Historically, the claim of consensus has been the first refuge of scoundrels; it is a way to avoid debate by claiming that the matter is already settled.” – Michael Crichton

The consensus approach used by the IPCC has received a number of criticisms. Oppenheimer et al. [48] warn of the need to guard against overconfidence and argue that the IPCC consensus emphasizes expected outcomes, whereas it is equally important that policy makers understand the more extreme possibilities that consensus may exclude or downplay. Gruebler and Nakicenovic [49] opine that “there is a danger that the IPCC consensus position might lead to a dismissal of uncertainty in favor of spuriously constructed expert opinion.” Curry [18] finds that the consensus approach being used by the IPCC has failed to produce a thorough portrayal of the complexities of the problem and the associated uncertainties in our understanding.

Goodwin argues the consensus claim created opportunities to claim that the IPCC’s emphasis on consensus is distorting the science itself [4]: “Once the consensus claim was made, scientists involved in the ongoing IPCC process had reasons not just to consider the scientific evidence, but to consider the possible effect of their statements on their ability to defend the consensus claim.”

While the IPCC’s consensus approach acknowledges uncertainties, defenders of the IPCC consensus have expended considerable efforts in the ‘boundary work’ of distinguishing those qualified to contribute to the climate change consensus from those who are not [4]. These efforts have characterized skeptics as small in number [13], extreme [50], and scientifically suspect [14]. These efforts create temptations to make illegitimate attacks on scientists whose views do not align with the consensus, and to dismiss any disagreement as politically motivated ‘denialism’ [51]. The use of ‘denier’ to label anyone who disagrees with the IPCC being enforced as dogma, which is tied to how dissent is dealt with.

The linear model of expertise places science at the center of political debate. Scientific controversies surrounding evidence of climate change have thus become a proxy for political battles over whether and how to react to climate change [37]. Therefore, winning a scientific debate means attaining a privileged position in political battle, hence providing motivation for defending the consensus. As a result, it has become difficult to disentangle political arguments about climate policies from scientific arguments about the evidence for human-induced climate change. The quality of both political debate and scientific practice can suffer as a consequence.

The linear model of expertise ‘speaking consensus to power’ tends to stifle discussion of alternative policy approaches. The IPCC has framed its assessment around the UNFCCC policy

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of stabilizing greenhouse emissions, focusing its scientific assessment on the attribution of climate change and the sensitivity of climate change to greenhouse gases. The narrow focus on issues of attribution masks major political implications, marginalizes issues around adaptation and development, and fails to engage with alternative approaches and to generate ideas to inform its ‘solutions’ [52]. Pielke argues that this narrow focus and ignoring our ignorance diverts attention away from options that do not depend on scientific certainties about climate change, such as accelerating decarbonization through expanding energy access, improving security, and improving resilience to extreme weather events [53].

While the public may not understand the complexity of the science or be predisposed culturally to accept the consensus, they can certainly understand the vociferous debates over the science portrayed by the media. Further, they can judge the social facts surrounding the consensus building process, including those revealed by the so-called “Climategate” episode [22] [45], and decide whether to trust the experts whose opinion comprises the consensus. Beck argues that [45] “in a public debate, the social practices of knowledge-making matter as much as the substance of the knowledge itself.”

In summary, the manufactured consensus of the IPCC has arguably had the unintended consequences of distorting the science, elevating the voices of scientists that dispute the consensus, and motivating actions by the consensus scientists and their supporters that have diminished the public’s trust in the IPCC.

Ways forward

“Science is belief in the ignorance of experts” – Richard Feynman6

The linear model of climate science expertise conceals uncertainties, ambiguities, dissent and ignorance behind a scientific consensus. The authors have argued previously [17] [18] that the single most important actions that is needed with regards to climate science – particularly in context of the IPCC assessment reports – are explicit reflection on uncertainties, ambiguities and areas of ignorance (both known and unknown unknowns) and more openness for dissent in the IPCC processes. Greater openness about scientific uncertainties and ignorance, and more transparency about dissent and disagreement, would provide policymakers with a more complete picture of climate science and its limitations.

Along these lines, some specific recommendations for the IPCC have been made. Oppenheimer et al. state [48]: “Increased transparency, including a thorough narrative report on the range of views expressed by panel members, emphasizing areas of disagreement that arose during the assessment, would provide a more robust evaluation of risk.” Van der Sluijs [40] suggests including a dissent chapter in the synthesis report of the IPCC, which contains a sketch of minority scientific views and points of ongoing scientific dispute. Socolow [55] recommends that the IPCC provide a perspective of earth systems science as an evolving human enterprise, explaining how recent research has altered perspectives. In the context of iterative risk management, policy makers need insight into the rate of learning, as well as what is known and unknown.

Moving forward requires a reassessment of the ‘consensus to power’ approach for the science-

policy interface that has evolved in the context of the IPCC and UNFCCC. Given the discomfort associated with scientific uncertainty and ignorance in the linear model of expertise, Socolow [55] makes the point that “It will take courage to disclose lack of consensus.” He further states that coexistence of contending views (‘low agreement’) is normal in science and not a cause for embarrassment, and that users of the IPCC reports need this information. Pielke [53] cites an example of decision making described by Gross [56]: “The limited knowledge and predictive capacities of science were not seen to be signs of poor science. Instead, the actors agreed on what was not known and took it into account for future planning.” Pielke argues that awareness of ignorance actually opens up possibilities for political compromise and policies that proceed incrementally based on the feedback of practical experience: agreement on facts as a prerequisite to action is not necessary, so long there is an agreement to learn based on experience.

The challenge is to open up the decision making processes in a way that renders their primary nature more honestly political and economic, while giving proper weight to scientific reason and evidence [53]. Holt [44] argues that messes and wicked problems require organizations to abandon the desire to design a solitary strategy determined from within a specific ‘culture’. Holt views risk management for messes and wicked problems as the resolution between alternative solutions and the dissolution of confusions, more so than the pursuit of optimal solutions.

There are frameworks for decision making under deep uncertainty and ignorance that accept uncertainty and dissent as key elements of the decision making process [57] [58] [40]. Rather than choosing an optimal policy based on a scientific consensus, decision makers can design robust and flexible policy strategies that account for uncertainty, ignorance and dissent. Robust strategies formally consider uncertainty, whereby decision makers seek to reduce the range of possible scenarios over which the strategy performs poorly. Flexible strategies are adaptive, and can be quickly adjusted to advancing scientific insights.

The perspective of Funtowicz and Ravetz on post normal science [59] – characterized by conflicting values and deep uncertainties – is useful in moving forward on messes and wicked problems. When the stakes are high and uncertainties are large, Funtowicz and Ravetz point out that there is demand by the public to participate and assess quality, which they refer to as the extended peer community. The extended peer community consists not only of those with traditional institutional accreditation that are creating the technical work, but also those with much broader expertise that are capable of doing quality assessment and control on that work. New information technologies and the open knowledge movement are facilitating the rapid diffusion of information and sharing of expertise, giving hitherto unrealized power to the peer communities, although this requires increased public availability of data, documentation of methods, and journal articles. Arguing from consensus to enforce conclusions does not work with the extended peer community. What is needed are serious attempts to engage the extended peer community with the modes of expert reasoning used to reach those conclusions [45].

Conclusions

The climate community has worked for more than 20 years to establish a scientific consensus on anthropogenic climate change. The IPCC consensus building process arguably played a useful role in the early synthesis of the scientific knowledge and in building political will to act. We have presented perspectives from multiple disciplines that support the inference that the scientific consensus seeking process used by the IPCC has had the unintended consequence of introducing biases into the both the science and related decision making processes. The IPCC scientific consensus has become convoluted with consensus decision making through a ‘speaking
The growing implications of the messy wickedness of the climate change problem are becoming increasingly apparent, highlighting the inadequacies of the ‘consensus to power’ approach for decision making on the complex issues associated with climate change. Further, research from the field of science and technology studies are finding that manufacturing a consensus in the context of the IPCC has acted to hyper-politicize the scientific and policy debates, to the detriment of both. Arguments are increasingly being made to abandon the scientific consensus seeking approach in favor of open debate of the arguments themselves and discussion of a broad range of policy options that stimulate local and regional solutions to the multifaceted and interrelated issues of climate change, land use, resource management, cost effective clean energy solutions, and developing technologies to expand energy access efficiently.

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Zero Carbon Bill Submission: Supplementary Comments

David Riddell

The Discussion Document refers repeatedly to adverse weather events already becoming more common, yet this is not supported by the Intergovernmental Panel on Climate Change. The chapter on extreme weather in their most recent Assessment Report (AR5) says (pp. 214-216):

“In summary, there continues to be a lack of evidence and thus low confidence regarding the sign of trend in the magnitude and/or frequency of floods on a global scale. ... In summary, the current assessment concludes that there is not enough evidence at present to suggest more than low confidence in a global-scale observed trend in drought or dryness (lack of rainfall) since the middle of the 20th century. ... Current data sets indicate no significant observed trends in global tropical cyclone frequency over the past century. ... In summary, there is low confidence in observed trends in small-scale severe weather phenomena such as hail and thunderstorms because of historical data inhomogeneities and inadequacies in monitoring systems.”

In other words it is not possible, according to the IPCC, to make a strong scientific case for an increase in adverse weather events, much less tie these to human greenhouse gas emissions, yet the Discussion Document (among many other sources) treats this as unassailable fact. In his introduction to the Document, the Hon. James Shaw refers to the warm weather and associated high sea temperatures last summer, although these were a strictly local phenomenon, not representative of temperatures globally. In the tropical eastern Pacific for example, temperatures were significantly cooler than normal (1). The Minister also notes the number of cyclones that passed through the New Zealand region, while omitting to mention that overall cyclonic activity in the South Pacific was slightly below average last summer (2). This is cherry picking; it is not scientific evidence for climate change.

Although there has indeed been a rise in global temperatures since the 19th century (much of it prior to the rapid expansion in human greenhouse gas emissions from the mid-20th century), observed temperatures according to the IPCC are falling behind model projections (3). Despite an El Nino-driven spike in 2016, this trend still holds true (4, 5).

The Discussion Document mentions that future climate change is “locked in”. This is quite correct: temperatures will continue to increase even if all of the proposed Zero Carbon initiatives, and others like them in other countries, are implemented. The question is what the difference in temperature is likely to be if we commit to this campaign, compared to what it would be if we did nothing. Model projections indicate that all climate policies by the US, China, the EU and the rest of the world, implemented from the early 2000s to 2030 and sustained through the century, will likely reduce global temperature rise about 0.17°C in 2100 (6). This seems a very small return for the trillions of dollars in direct and indirect costs these policies will require to implement; it may be better to invest our resources elsewhere.

The Government has clearly decided on a plan of action well before the commencement of this consultation process, and public input will be limited to minor details. Legislated emissions reduction targets and/or a commitment to net zero emissions could commit future generations to an inflexible economic and social framework with consequences that cannot be envisaged in 2018. The Bill, if passed, has the potential to do significant harm to this country by suppressing economic activity, creating financial hardship for the most vulnerable members of our society, reducing their access to energy, and diverting resources away from more serious environmental issues and programmes. To give one
example, there is another proposal to transform the country's environmental practices which also has a deadline of 2050, namely the Predator Free New Zealand initiative. If successful, this could transform the fortunes of our threatened and endangered flora and fauna, but it will require significant resources, research and commitment to achieve. It would be a tragedy if it were sidelined in the rush to meet emissions reduction targets which may turn out to be unnecessary and/or unattainable.

I do not support the introduction of this Bill, in any form.

References


3 - IPCC Fifth Assessment Report, Fig. 11.25a, p. 1011, see judithcurry.com/2014/01/06/ipcc-ar5-weakens-the-case-for-agw

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