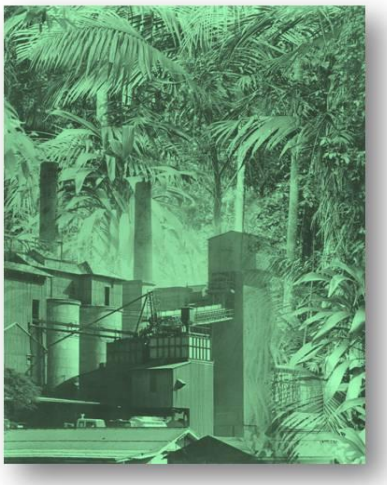

Translating Climate Change Science & its Adoption for NDCs: *A Comparison of 'Political' and 'Scientific' Communication Models*

Dr Ted Christie ***(Updated 29 June 2017)***

The science of climate change is complex. Polarisation of public opinion is now directed at climate action and mitigation measures to reduce CO_2 emissions in NDCs ("*Nationally Determined Contributions*").

This polarisation can be offset if the translation of key issues that are central to the public debate on NDCs is persuasive – and not divisive.

The first step is to ensure that the scientific evidence is both reliable and relevant. That, is to minimize the likelihood of divergent scientific opinion and information conflicts arising.

But, simply communicating all the relevant and reliable information on climate science and action does not simply end with the diffusion of this knowledge.

The more difficult challenge is to ensure that the cornerstones for its wider and equitable adoption are in place after the diffusion stage.

To effectively address this challenge, the bottom line is to ensure that the relevant and reliable climate science for adopting NDCs is understood! That is, for the scientific concepts and findings on climate change and climate action to be translated into the language and experiences of everyday life.

But different models for communicating this scientific information exist - as is evident from the myriad of articles that are published by the media and on the internet. How can these different models be best evaluated, given the linkage of these models to the extent and rate of adoption of NDCs, globally?

In this regard, reliance can be placed on long established principles from the accepted body scientific knowledge for the adoption of scientific information: In particular, the concept of **Relative Advantage**.

Expert opinion from this body of knowledge suggests that relative advantage would be an essential condition necessary for the adoption of one communication model over the other.

Relative advantage can be evaluated in terms of whether one communication model has a clear advantage over competing models *e.g. in terms of being more effective for the extent and rate of adoption of the science of climate action by translating the outcomes of NDCs into the language and experiences of everyday life.*

Two models for communication are compared – 'political' and 'scientific'.

COMMUNICATION MODEL #1: Climate Action & Political Translation

The following statements were contained in a Media Release (21 August 2015) by Australia's then Federal Government Minister for the Environment:

i. "Australia's emissions have fallen to their lowest level for a single quarter in 10 years....
ii. Emissions fell by half a million tonnes between the December Quarter 2014 and March Quarter 2015 – that's a 0.4%reduction in trend terms and 0.5% on a seasonally adjusted basis...
iii. Our emissions per person are now at their lowest level in 25 years. Since 1990 Australia's population has grown 39%, yet emissions per capita have fallen by 29%...
iv. The Government's post-2020 target announced last week ["Australia will reduce GHG emissions so they are 26-28% below 2005 levels by 2030"] will see emissions per person fall by at least 50% on 2005 levels by 2030 – the largest reduction in the developed world on announced targets...

v. We are on track to meet and beat our target of cutting Australia's emissions by 5% from 2000 levels by 2020, and we have a strong and credible target for the post-2020 period"

COMMUNICATION MODEL #2: Climate Action & Scientific Translation

UNFCCC Party	Contribution to Global Temperature Rise: Pre-industrial to 2005 (°C)
1. USA	0.151°C
2. PR China	0.063°C
3. Russian Federation	0.059°C
4. Brazil	0.049°C
5. India	0.047°C
6. Germany	0.033°C
7. UK	0.032°C
8. France	0.016°C
9. Indonesia	0.015°C
10. Canada	0.013°C
11. Japan	0.013°C
12. Mexico	0.010°C
13. Thailand	0.009°C
14. Columbia	0.009°C
15. Argentina	0.009°C
16. Poland	0.007°C
17. Nigeria	0.007°C
18. Venezuela	0.007°C
19. Australia	0.006°C
20. Netherlands	0.006°C

A Canadian research study estimated global temperature increase over the period pre-industrial to 2005. *National contributions to global temperature increase arising from CO_2 emissions from fossil fuel use and land-use change were estimated as* ***"units of temperature (°C)"*** *– rather than "****per cent CO_2 emissions reduction****" or "****tonnes of CO_2 emissions****" (Table1).*

Table 1: ***Estimates of National Contributions to the Historical Rise in Global Temperature Rise Arising from CO2 Emissions (Fossil Fuels & Land Use).***
Source: H Damon Matthews et al., (2014)

The following findings can be derived from Table 1 of the Canadian study:

i. Temperature from pre-industrial to 2005 increased by about 0.7°C from GHG emissions: ***Fossil fuel CO_2: 0.5°C; Land-use CO_2: 0.25°C.***
ii. The global temperature rise for the 20 UNFCCC Parties over this period varied over a wide range: From 0.006°C to 0.151°C (Table 1).
iii. The top seven ranking UNFCCC Parties accounted for about 63% of global temperature rise over this period (*six of which are entirely in the Northern Hemisphere*). The top 20 Parties accounted for around 82%.

iv. Developed countries and major emerging economies led in the historical contribution to global temperature rise through fossil fuel use.

v. Land-use emissions, originating from the deforestation of tropical forests, were the dominant component of global temperature rise in some developing countries - *Brazil, Columbia, Indonesia and Thailand*.

CONCLUSIONS

Relative advantage is a concept essential for the adoption of scientific information and innovations.

In this article, relative advantage is used to evaluate how effectively two communication models translated the science of climate change and action into the language and experiences of everyday life.

The following three criteria, having their origin in the adoption of scientific information and conflict resolution, were used to evaluate relative advantage:

#1: The adoption of adaptation and mitigation measures in NDCs to address climate change is less likely if there is a high degree of uncertainty, or a perception of risk, if adopted.

#2: Where the relevant and reliable science that is available is objective and consistent with the standards and criteria of science, it will have greater weight and be more persuasive, globally, for adoption in NDCs.

#3: Subject to #2, where the relevant and reliable climate science and action is perceived as being easy to understand and to apply, it is more likely to be adopted in NDCs.

Applying the above criteria, there are clear advantages for a communication model based on "*units of temperature (^oC)*" – relative to "*percentage reductions in CO_2 emissions*" or "*tonnes of emissions*": -

- It is easier to understand and apply as it translates relevant and reliable climate science and action into the language and experiences of everyday life;
- Awareness the extent an NDC would have in offsetting temperature rise - where the communication model is based on *units of temperature (^oC)* -

would be more likely to offset concerns over uncertainty or perceptions of risk in the outcome for an NDC. It would have greater persuasive value compared to a communication model based on *percentage reductions in CO_2 emissions* or *tonnes of emissions*.

The "Scientific Model" is the preferred model to the "Political Communication Model".