What barriers exist to effective action on climate change?

What are the prospects that these can be overcome?

Introduction

The concern for climate change has resonated since the 1970s (MIT, 1971). Even earlier than this date, this was intimated by Rachel Carson in her book "Silent Spring" (1962), where she warned about pollution produced by pesticides. She averred that this was not just a local problem but one that would spread globally.

Carson reasoned that damage being thrust on the environment should not be treated as a local issue but with global reach, as climate change is today. She, like the climate scientists of today, was increasingly criticised by large corporations and others with agendas ranging from pecuniary pursuits to the ego-driven "one-upmanship" of other scientists; the latter usually employed or financially rewarded by large corporations with the support of Government members also relying on similar gratuities (Oreskes & Conway, 2010; Schiffman, 2021).

Today, more than when Carson began to present her thesis in the 1950s, and with the later advent of more sophisticated communication networks, flawed scientific arguments put forward by similarly inspired critics, together with boundless conspiracy theories promulgated by social networks such as Facebook and Twitter, have, and still are, continuing to retard progress towards greater commitment to reversing climate change initiatives. It has been a minority group of scientists (Cook et al., 2016) and an apparently larger group of politicians (Jylha & Hellmer, 2020) that have provided the public at large reasons for belief that perhaps, the situation is not as bad as it appears and in doing so, supporting barriers to effective action on climate change. But this is now changing.

There is a realisation by an increasing majority of the world's population that solutions to the accelerating pace of climate change impacts have to be addressed swiftly (UNDP, 2021). Thus, solutions identified to breaking down barriers, existing or perceived, that retard individual and cooperative action are becoming more into focus; but barriers still exist.

Barriers can be expressed as deterrent factors and it is Rickards et al. (2014), that refer to the deterrent factors

identified towards climate change mitigation in their study as reflecting three main levels of concern. These are evidenced at:

- 'Micro' level: individual and interpersonal factors
- 'Meso' level: network, organisational and institutional factors
- 'Macro' level: environmental, societal, cultural, economic and political factors. (p.9)

These levels of concern detail barriers to progress that indicate a blurred lack of understanding by the individual, organisations and Governments alike and the deeply embedded reasons for denial and avoidance of action towards change.

This discussion will follow similar guidelines in review of these three levels of concern the Individual and Social barriers, Government and Institutional barriers and Cultural factors.

The Barriers

If society is to address climate change successfully and progress is to be made, then Governments, representing the most senior of decision-makers in our societies, must lead the way forward. Even so, although a study conducted by Rickard et al. (2014) focussed on Senior Decision Makers

(SDMs) in particular, much of the data they have considered has relevance to all individuals in society.

Individual & Social Barriers

Many of the arguments posed in opposition to the causation of climate change tend to satisfy many who rely on information principally from social media and the websites available that reinforce their message. For whatever agenda driving this plethora of misinformation, the objective is to indicate that present-day disturbances caused by climate change are not as disastrous as they may appear. This is essentially following gossip sprinkled with comments made by scientists whose arguments appear credible, appealing to the confirmation bias of the listeners.

However, individuals are becoming more aware of climate change. But it is a greater understanding of its causation that is of greater importance to give resolution to future actions. “Raising awareness and thereby understanding of the effects of climate change on health will facilitate both behavioural change and societal support for the actions needed to reduce greenhouse gas emissions” (WHO, 2022).

Prospective solutions

It is with greater availability of educational programmes that will improve individual enlightenment. As (UNESCO, 2021) aver:

> Education is crucial to promote climate action. It helps people understand and address the impacts of the climate crisis, empowering them with the knowledge, skills, values and attitudes needed to act as agents of change (UNESCO, 2021).

This is being performed on various levels encompassing major initiatives such as providing resources for educators, building knowledgable societies, commitment to biodiversity resilience, gender equality and advancing the 2030 Sustainable Development Agenda. The Australian context can be read in the Australian Government's written commitment to "integrating climate adaptation skills, health and environment education into school curricula" (DFAT, 2019, p.35). But this is a statement challenged by Professor Gough in her assessment of what the Government is actually doing (Gough, 2022). In the recent Policy Forum of Asia & The Pacific Policy Society, she states: "learning about climate change from an early age will be crucial for future generations to tackle the problems it presents, but education policies are falling silent on the issue" and "indeed, in that Paris Agreement work program, Australia agreed to develop extensive climate change education policies. Instead, climate change has been ignored in our

national education agenda at a time when it is most desperately needed".

Presently there appear to be abundant educational resources and assistance regarding climate science that the United Nations can provide for individuals, non-governmental organisations (NGOs) and Government decision-makers alike. In the Australian scenario, there appears to be adequate dialogue on the subject in the educational system. Reviewing a section of the Australian Curriculum for Year 10 students, it positively indicates specific action in Science studies regarding Earth and space sciences leading towards an understanding of Climate Change. This is encouraging (Australian curriculum, 2022).

It could be argued that older generations, not now at school, rely on further education by way of more work-related informal and incidental means. Social networking systems provide significant avenues for incidental learning but are equally apt for the communication of conspiracy beliefs leading to doubt in the science of climate change. These beliefs, often originating from a minority group of scientists from other disciplines give oxygen to theories such as climate change science being a hoax perpetrated by some underground cabal of ill-meaning groups. However, according to Van Prooijen & Douglas (2017), the internet has replaced other, more traditional forms of communication, such as "word-of-mouth"; in other words, this type of thinking has always been there, and we cannot fairly lay the fault of poor communication leading to

conspiracy theories at the feet of recent communication technology.

This then begs the question of how we deal with this doubt of real science. Perhaps, a good start has been made by the inclusion of climate science being introduced in the academic training of the younger generation and from this, parents, caregivers and others may become more influenced by science and not superstition.

One of the most positive and potent forces for change has been the establishment of organisations such as the Climate Council, Cities Power Partnership (CPP) and the Emergency Leaders for Climate Action (ELCA) (Climate Council, 2022; ELCA, 2022; CPP, 2020). The Climate Council is made up of Australia's leading climate scientists and gives regular communication to the public at large on the latest research, extreme weather updates, health, renewable energy and policy recommendations that urge all, and in particular, Government bodies, how to address climate change

Government and Institutional Barriers

In a well-expressed article regarding climate change, Okereke et al. (2012) asserts that: "it is not conceivable that any organisation or political jurisdiction can go far in articulating effective responses [to climate change] without

the robust and sustained engagement of the leaders at the highest level of decision making" (p.25)

Political dialogue regarding climate change and tacit support for it has become part of the media messaging made available to the public. Certain incentives have also been given to those with energy-saving ideas (an example would be in the purchase of domestic solar panelling or electric vehicles). This would appear evident in many countries including Australia where greater progress appears to be coming from many individual enterprises attending to the problems of climate change. The Australian Government, in its messaging, appears to be taking credit for what changes are being made by commercial enterprises without reciprocation by way of greater funding for research and direct action towards renewable energy generation. This, together with the efforts made by such as the Climate Council, gives the appearance of "bottom-up" leadership.

Politicians and entrepreneurs have their own agendas, but as one group appears to be somewhat resistant to change, the other embraces it. Politicians are the elected senior decision makers of a country's direction in all facets of the social organisation, including the insurance of the safety of its population in the present and future. This should mandate

activities in the direction of what climate science is advising. Sadly, the Government of Australia, for example, appears to show more concern over its fossil fuel resources to reinforce its economy and enable the status quo (Campbell et al., 2021).

It is with interest that the Australian Renewable Energy Agency (ARENA) website at https://arena.gov.au/assets/2017/07/AU21476-ARENA-Corporate-Report-REVISED-v1-1.pdf indicates an attitude that: "Australian corporates are missing an opportunity to capitalise on the considerable benefits of renewable energy".

It goes on further to state that the Clean Energy Finance Corporation (CEFC) of the Government, since 2013, has invested $8.8 Billion in investment activity, yet in last year's subsidies to the fossil fuel industry, as reported by Campbell et al. (2021) above, was a subsidy of $11.6 billion alone. Over the longer term, $55.3 billion is committed to similar support.

Recently, and in contradiction of ARENA's bold statement, it was clear that the main decision maker of the Government, Prime Minister Scott Morrison gave strong opposition to the bid by Canada's Brookfield and Cannon-

Brookes, the co-founder of Atlassian to take over the Australian Gas Light Company (AGL) and convert it from fossil fuel driven power stations to plants capable of renewable energy production.

Perhaps the recent rejection of this bid appears to be in the interests of the shareholders. Still, it does appear that a radical shift in attitude, financial support and action needs to be driven by more Government members who are more knowledgeable of the science of climate change than the ego-driven concern of reemployment in their jobs.

Prospective solutions

We require a paradigm shift in Government thinking away from that of hoping to maintain "business-as-usual" One solution offered by banking institutions is to limit or deny funding of fossil fuel-driven companies but support those wishing to provide renewable energy sources or other positive methods of reducing ecological footprints. This would send a clear message of the desirability of products and organisations that support adaptability and mitigation of climate disturbances. Good examples are the manufacturing and placement of wind turbines and plastic waste removal/ replacement industries.

This indicates a "bottom-up" approach to change but with little financial support from the Government compared to

the subsidies offered by fossil fuel corporations. One way to change a Government's reluctance to drive forward faster with a more climate-driven agenda is to vote for a change; the key drivers still appear to be the entrepreneurs. It is an election year.

Socioeconomic Barriers & Prospective solutions

Barriers related to a cultural context are, in essence, a form of denialism. The main reasons individuals and social groups continue in their denial of climate change have been listed by Maslin (2019) as denials of Science, Economy, Humanitarian, Political and What Crisis? These areas of denialism are reviewed below, but religion also has a critical part to play in the refusal to be concerned about changes. The most vexing essence of denialism, however, are the efforts of vested interests to market conflicting and untruthful evidence at society at large to retard any strong and positive action to combat climate change - the metaphorical "wolf in sheep's clothing" (Oreskes & Conway, 2010). However, according to Wullenkord (2022), the strongest predictor of climate denial appears to be a right-wing ideological conviction.

Science denial has been assisted by some well-meaning scientists (and some possibly not) and some reputable authorities in their own right, but they are not climate scientists. Because of their social positioning, they have sown doubts about the reality of climate change by using specious arguments sprinkled with scientific terminology to baffle the bewildered. Those with little science education and an already determined inclination not to wish the worst could become even more entrenched in their denial. But there are many solutions to these arguments that are available to combat these falsehoods and give clarity to the truth of the situation (Skeptical Science, 2022)

Economic denial offers mixed arguments, including the cost of replacement forms of energy is too expensive, replacement of fossil fuel generated energy will create mass unemployment, electric vehicles (EVs) and solar panelling will require replacement just as frequently, the cost of minerals and materials for the transition will not only create more expense but more pollution. Threats to an individual's financial security through the prospects of experiencing job loss, and having to learn and purchase new technologies (such as a new EV and solar panelling), may also create a deterrence to any action in accepting any change. Possible solutions to these latter situations would be corporate efforts or Governmental policies to provide transitioning programmes and financial incentives to ease the way forward.

Humanitarian denial is where deniers think being warmer is safer than cold. That might be fine if you live in Siberia, but barely the thought of someone living in the tropics with already escalating temperatures (Maslin, 2019)

Political denial, as discussed earlier, requires politicians who can get to grips with the science of climate change and act on it with more energy. Vested interests and more favourable responses to fossil fuel lobbyists invest considerably in strengthening their positions with Government Ministers and arguing with some effect that their organisations are responsible for large proportions of the GDP of a country that any faltering in the delivery of their product (such as coal) would threaten that country's financial standing and of course, reduce employment levels.

What Crisis? Denial indicates a reluctance to believe anything threatening the status quo as an individual sees it. It also fits well with those of religious persuasion (particularly evangelical Christians) who believe that it's "all in God's hands" (Zaleha & Szasz, 2015). As these groups are somewhat well populated, it is beneficial to populist politicians to pander to their beliefs by agreeing that all is well and we shall not do anything much different from what we have already been doing.

The latter three forms of denial require addressing by more considerable, consistent, persistent and authoritative action

by way of Government direction. This can only be shown by stronger and more scientifically oriented leadership.

Conclusion

There are many barriers to fully accepting climate change and its probable continuing effects on humanity. These barriers are presented by the beliefs and actions (or lack thereof) of individuals, Governments, and Institutions reflected the main part in the socioeconomic concerns that hinder nearly all progress.

As Wullenkord (2022) observes: “Right-wing political conviction has been identified as a major predictor of literal climate denial because it is connected to the preservation of privilege”. This resonates with the idea of maintaining the status quo of those who have versus those who have not.

Some solutions are available and ongoing to overcome these barriers. These consist of better education, consistent communication of research, advice and support through certain institutions like the Climate Council and ELCA, banking discrimination, support for transitioning between workforces and financial incentives; the latter items would enable more workers to realise less anxiety about their

financial futures and be more accepting of change that is happening and so must they.

For the World in general and Australia in particular, there are many solutions to provoke action on climate change. Still, the time has been wasted, “it’s sadly too little, too late”, according to Hughes and Steffen (2021), and now it appears to be a situation where solutions must be mandated and not vacillated over.

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