

## **Submission: Emergency Responses to the Climate Emergency**

David Blair

Emeritus Professor, UWA, Fellow, Australian Academy of Sciences, Fellow, American Physical Society, WA Scientist of the Year 2007, shared winner Breakthrough Prize 2016.

### **Introduction**

One hundred and twenty five years ago the Swedish scientist Svante Arrhenius wrote *“Is the mean temperature of the ground in any way influenced by the presence of heat absorbing gases in the atmosphere?”* He went on to point out that the French mathematician Fourier in 1827 had *“maintained that the atmosphere acts like the glass of a hot-house”*. Arrhenius went on to show that if the CO<sub>2</sub> concentration of the atmosphere doubled, the global temperature would rise 5 degrees, and somewhat worse at the poles.

Today it is becoming more and more obvious that Arrhenius was basically correct. The 500 million tons of coal per year that he estimated was being used in 1896, has grown to more than 7000 million tons, supplemented by vast amounts of oil and gas and forest destruction. The CO<sub>2</sub> in the atmosphere is well on track to doubling.

No nation can solve the problem alone. Every nation and every state including Western Australia needs to understand that the problem has been ignored so long that now it has become an emergency. Whether you agree with their tactics or not, Extinction Rebellion and the School Strike Movement are correct in bringing our attention to a life or death problem for much of humanity.

To prevent despair we need to see governments take action. But we need to empower people by having them contribute ideas, and we need our political parties to be promoting constructive ideas.

### **Proposed Initiatives**

Below I list eight initiatives that the WA government should consider either implementing, promoting or supporting with appropriate policies. The entire package could be cost neutral, by balancing taxation of greenhouse sources with incentives for greenhouse abatement and profits from major new industries. The initiatives need not increase inequality.

- In implementing these actions the government needs to pre-emptively manage the opposition from the coal lobby and the climate change deniers.

#### **1. Tree cover action**

Trees are the best natural carbon sinks: inexpensive, and self-sustaining. We need massive tree planting. This requires a major government initiative with incentives and penalties across all landscapes and environments.

- Financial penalties for large treeless heat islands such as car parks and unshaded roads through rates or levies.
- Incentives for individuals, businesses, and local authorities.
- We need a tree cover policy with targets, taxes and grants.

## 2. Penalties and incentives for heat absorbing surfaces

White reflective surfaces reduce global heating by reflecting sunlight back into space. A ten square meter white surface offsets 1 tonne of CO<sub>2</sub>. Huge areas of unshaded black and other high emissivity surfaces contribute significantly to global heating. The world's dark roofs have been estimated to contribute the equivalent of 24 gigatons of CO<sub>2</sub> emission.

- Dark roofing should be prohibited or taxed according to solar absorption.
- This should be compensated for by incentives for retrofitting low emissivity surfaces, tree-shaded surfaces and solar energy generating surfaces.

(Hashem AkbariH. Damon Matthews:

<https://doi.org/10.1016/j.enbuild.2012.02.055>

See also <https://heatisland.lbl.gov/coolscience/cool-roofs>)

## 3. Carbon pricing.

It is essential that Australia provide financial dis-incentives for carbon emission compensated for by incentives for low carbon alternatives.

- WA government should institute a carbon levee.
- Safety net solutions should be provided such as renewable energy shares awarded to those in need to compensate for increased electricity costs.
- Grid connected solar generation should not be capped to a power limit as it is at present, to encourage individuals to invest in larger installations including battery banks.

## 4. Bush Fire Warfare

Bush fires in 2019 are likely to have contributed 10% to national CO<sub>2</sub> emissions. Massive investment in water bombing equipment is justified. The goal should be that every fire front can be controlled within hours using the largest possible fleet of jumbo water bombers distributed across the country.

- The country needs to be put on a war footing to fight the increasing risk of fire in the future.
- Military resources and the budget for submarines should be diverted to the bush fire war.
- Our firefighting resources could be shared with our northern neighbours to help reduce the catastrophic greenhouse effects of tropical forest fires and peat fires.
- WA government should lobby strongly for the above or go-it-alone if necessary.

## 5. Export Renewable Energy

Undersea DC cable technology allows energy transmission at only 3% loss per 1000 km. Existing proposals to export Australian renewable power to Asia via undersea cables should be accelerated. Large scale renewable hydrogen production should also be accelerated through government policy support.

- Western Australia and the Northern Territory could power south east Asia with renewable energy, providing economic benefit while enabling a much faster transition to a zero emission future.
- WA should lobby for their implementation as a national policy goal, partially funded by carbon pricing.

## **6. Invest in Greenhouse Accounting and Greenhouse Education**

Individuals are not equipped with necessary information to make informed decisions on items of consumption. Every product should have a mandatory greenhouse rating that takes into account the total CO<sub>2</sub> costs of production and transport.

- We need a national Greenhouse Accounting Office with statutory powers to quantify, verify, monitor and enforce greenhouse costing and abatement.
- This is needed not just for consumers but for assessing and implementing abatement policies, and to ensure that all policies are based on good evidence-based science.

## **7. Speed Limit for Shipping**

Ships account for more than 2% of global CO<sub>2</sub> emission. There is an international call for reducing shipping speed limits. A 20% speed reduction is estimated to reduce the CO<sub>2</sub> emission of ships by 25%, as well as reducing whale collisions. Ship speeds are easily monitored and verified using satellite data.

- The WA government should lobby for Australia to take a lead, and require speed reduction for all ships docking in Australia.
- WA should take a lead by scaling port berthing charges according to ship speed.

## **8. Waste Organics Carbon Storage**

Huge quantities of CO<sub>2</sub> are liberated by farm cleanup. The burning of tree waste, such as from orchards, vineyards and tree farms accounts for up to 50% of the carbon capture by the farms themselves. Waste wood piles that decompose naturally provide a carbon sink, as well as a moisture and nutrient store. While they re-emit their CO<sub>2</sub> over their decomposition lifetime, they represent a substantial carbon store that could provide a 5-20 year slowdown in carbon emissions.

- Burning should be prohibited in favour of slow decomposition.
- Carbon storage guidelines should be developed in conjunction with the bush fires board and emergency services.
- Research should be supported to provide quantitative data on carbon storage benefits for different types of farms.