

ECONOMIC COST OF EXTREME WEATHER EVENTS AND CLIMATE CHANGE

COST OF RECENT EVENTS IN NORTH QUEENSLAND

The drought and floods in North Queensland resulted in substantial economic losses. There are no official estimates of private losses but they are material not the least through the loss of cattle (media reports put this at 500,000 head.) The Queensland Government (2019 reported that North and Far North Queensland endured record-breaking monsoon flooding in 2019. “The trough wreaked havoc across 39 local government areas.”

The estimated preliminary cost of recovery efforts is \$1.3 billion, the direct negative impact of the floods on economic output is estimated at around 1/4 percentage point of Gross State product, GSP, or of the order of \$1 billion but less than losses of around 3/4 percentage point of GSP for Severe Tropical Cyclone (STC) Debbie and 2 1/4 percentage points of GSP for the 2010-11 Floods and STC Yasi.

EXTREME WEATHER EVENTS IN THE FUTURE

Extreme weather events can be expected to become more common and more intense under climate change CSIRO (2018). Predictions are for more extremely hot days and fewer extremely cool days; more intense heavy rainfall throughout Australia, particularly for short-duration extreme rainfall events; and fewer tropical cyclones, but a greater proportion of high-intensity storms, with ongoing large variations from year to year.

CLIMATE CHANGE AND PASTORAL PRODUCTION

While noting that there are few studies on livestock production, the IPCC (2018) states that climate change is expected to affect yield quantity and quality directly as well as indirectly through feed quality changes and spread to pests and diseases.

In addition, increased warming is expected to cause change in physiological process in livestock such as thermal distress, sweating and high respiratory rates and to have detrimental effects on animal feeding and growth rates and reproduction; reduction in water supply might increase water demand. Heat stress increases animal mortality and economic loss; and an increase in ruminant diseases such as liver fluke, blue tongue virus, foot and mouth disease, and zoonotic diseases. There may be a decrease in forage quality in sown grasslands in Australia and water resource availability expected to decrease owing to increased run-off and reduced ground water.

ECONOMICS OF CLIMATE CHANGE

Stern (2007) characterised climate change as the greatest market failure and recommended a global carbon price to show the full social costs of using fossil fuels; an expansion of emissions trading schemes; and technology policies to promote the use of low-carbon and high-efficiency products. Stern (2015) updated his Review. Nordhaus was a pioneer in the field and in 2018 was awarded the Nobel Prize in Economics (i.e. the Sverige's Rockbank Prize in Economic Sciences in Honour of Alfred Nobel). In his Nobel Lecture, Nordhaus (2018) he gave *Four steps for today*

1. People must understand the gravity of global warming. This involves intensive research and resisting false and tendentious reasoning.

2. Nations must raise the price of CO₂ and other greenhouse-gas emissions.
3. Policies must be global and not just national or local. The best hope for effective coordination is a climate club.
4. Rapid technological change in the energy sector is essential.

Suggested target carbon price is USD \$50 per ton CO₂.

This Brief is a summary statement about selected issues relevant to Rangeland Policy prepared for this Dialogue.

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