

PO Box 6021
Parliament House
CANBERRA
Canberra ACT 2600

AgZero2030

AgZero2030@gmail.com

Phone: +61 2 6277 4500

Fax: 02 6277 4424

agriculture.reps@aph.gov.au

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To the Secretariat of the Standing Committee on Agriculture and Water Resources,

Please accept the following as a **submission to the inquiry into the opportunities and impediments to primary production sectors realising their ambitions to grow Australian agriculture to \$100 billion by 2030.**

AgZero2030 appreciates the opportunity to comment on this important ambition for Australian agriculture. AgZero2030 is a new and growing collective of Western Australian producers and organisations involved in agriculture and its supply chain. We see climate change as the biggest threat to the agriculture industry from a production, market access and risk perspective. AgZero2030 promotes climate smart agriculture as a driver of positive change within the agriculture industry to help it step up to the challenge of becoming a net zero emissions industry by 2030. Our net zero emissions target is in line with other agriculture organisations such as the National Farmers Federation (*NFF 2030 Roadmap, 2018*), and Meat and Livestock Australia.

AgZero2030 evolved from a Twitter chat among primary producers in May 2019 about climate change. Motivated by the discussions, this led to the formation of the *WA Climate Solutions Working Group*. On 3 September, sixty influential leaders involved in WA agriculture attended our **Creating Climate Solutions in WA Agribusiness Forum** at the UWA Club and chose to form a *WA Climate-smart Ag Collective* (later renamed AgZero2030). At the forum, the collective members came up with three goals to work on as a collective *and* in their own spheres of influence.

1. Support WA ag to be part of the climate solution by being carbon neutral by 2030.
2. Share stories of the diverse range of profitable climate-smart ag practices in WA.
3. Welcome and encourage good climate policy that will benefit Western Australia.

To grow Australian agriculture, AgZero2030 asks the federal government to develop ambitious policies and programs to promote climate smart agriculture, and to mitigate the effects of climate change on farms and in regional communities, as a matter of urgency. To be proactive is to capture the market opportunities and co-benefits of healthy, viable farms, landscapes and communities.

Yours sincerely,
AgZero2030

Chair: Simon Wallwork

Working group: Cindy Stevens, Christie Kingston, Dale Park, Tony York, Larissa Taylor, Wayne Pech, Kent Broad, Rob Grima, Ross Woodhouse, Phil Gardiner

Climate change trends and their impact on Australian agriculture

Climate change trends are well documented across various, reputable sources and they present farmers with a growing challenge in the years and decades ahead. Climate change impacts are already serious at an increase of 1°C, projected impacts at 1.5°C are worse, and much worse for 2°C and yet the world is on track for 3°C heating¹. The risks of our current climate variability are nothing new to farmers, and many have already been adapting to the significant changes in the Australian climate over recent decades.

“To date, any impacts from climate change have been largely offset by the increases in production/yield that have been achieved through the research programs delivered by the Rural RDCs and others.

Looking forward to 2030, the impact on most [agricultural] sectors is significant... Beyond 2030 the impacts, in the absence of concerted global action, are likely to be more severe, with an acceleration in productivity losses being the norm for most commodities.^{2/1}.

Total annual rainfall has decreased across most agricultural regions since the 1970's (Figure 1), growing season rainfall has decreased around 20% in many agricultural parts of the south west WA, and seasonal rainfall zones have changed and will continue to do so (Figure 2.). The impacts of frosts have increased with more frequent frosts over a longer time period in inland WA (Figure 3). Annual maximum and average temperatures have generally increased across Australia (Figure 4). This heat exacerbates drought, increases evaporation on an already drying landscape, worsens fire risk and results in productivity losses of plants and livestock due to stress. Figure 5 on 'Climate effect on productivity' clearly shows the negative climate change effects on farm productivity in southern Australia since 2000. With a changing climate, new and ongoing pests and diseases are likely to be a growing issue and extreme weather events will become more frequent.

“Extreme events like droughts, heatwaves, cyclones and floods have an impact on agriculture and food production; this is already affecting Australia's economy and will cost us much more in the future.

Repeated extreme weather events can reduce agricultural productivity by reducing investments in new technologies and production efficiencies, leading to a permanent loss in productivity improvements that might otherwise help to counteract the effects of climate change.”³

Whilst Australian farmers are incredibly resilient and innovative when adapting to climate risks, the projections are serious and there are limits to adaptation. Mitigation also needs to be factored into Australian agriculture increasing its production in the decade ahead. Australian farmers need support to address the challenges of climate change from a production, risk and marketing perspective.

Opportunities in addressing climate change in agriculture

- Farm businesses that can weather the growing variability and more challenging consequences of climate change. This will increase production and promote the industry to a younger generation.
- Greater market access and potential income where sustainability, net zero GHG emissions and animal welfare are addressed for agricultural commodities.
- Regional areas have a renewables industry creating jobs, reducing GHG emissions, lowering energy costs and increasing electricity reliability.
- The Australian Government and agriculture are viewed as leaders in reducing GHG emissions, improving animal welfare, increasing biodiversity, improving environmental outcomes, promoting renewables and improving the farming sectors social license.
- A carbon market that farmers can easily tap into ⁴

¹<http://www.ipcc.ch/sr15>

²Supporting Agriculture to Adapt to Climate Change: Stream 1: Understanding Climate Change and Current Approaches

³Compound Costs: How Climate Change is Damaging Australia's Economy, Stetten et al (2019)

⁴Improving Carbon Markets to Increase Farmer Participation, Agrifutures

Costs of not addressing climate change

- Loss in crop and livestock production through limited biomass (less rainfall, increased risk of frost, heat stress, increased risk of extreme climate events, topsoil loss).
- Loss of market access. Some overseas markets (who are acting to reduce their GHG emissions) want ethical, sustainable products that are reducing GHG emissions. This consumer preference will only increase.
- Restraints in lending. Banking institutions are considering climate risk in lending to farm businesses. NAB are supporting the community and customers to transition to a low carbon economy (*NAB sustainability report, 2019*), and will not support businesses that do not comply with animal welfare. Other banks will follow.
- The social license of agriculture continues to erode. Many Australian consumers are adopting 'plant based' diets to reduce their impacts on the environment, and in opposition to farming livestock and animal welfare (*eg. the live sheep export trade continues to deal with the ramifications of a growing trend in consumers who object to live export*).

In summary - requirements for farmers to address climate change

- **All levels of Government across all parties need to accept and address the science of climate change. If Australia is to do its share in limiting global heating to 1.5 °C, large, concrete and ambitious policies and programs need to be put in place. To be proactive is to develop programs around the latest science, as soon as possible.**
 - Agriculture, its supply chain and regional communities need explicit, accessible information on the risks and opportunities of climate change to their business and community. This needs to be Government led and supported.
 - Financial risk instruments. Companies and banks need to develop products that farm businesses can use to mitigate climate stress on a business.
 - Long term support for strategies that abate drought and climate risk for farm businesses.
 - Tax incentives to implement programs that address the effects of climate change.
 - Low interest loan incentives to implement climate smart agricultural practices, and transition to clean energy.
 - Programs to support long term strategies for water security on farms and in regional communities (*eg. desalination of underground water using solar energy*).
 - A carbon market needs to be developed and supported. This involves an industry accepted, widely available tool to measure carbon within agricultural businesses.
 - Research and extension on the link between plant and livestock productivity, and climate solutions such as increasing soil carbon and reducing methane emissions. These are complex and poorly understood by both farmers and consumers. Science needs to guide best practice in climate solutions technology. This then needs to be promoted to farmers and consumers.
 - Universities need to provide research into products that address lower GHG. This information then needs to be developed and promoted through extension and agronomy.
 - Farm agribusinesses need to be encouraged to research and develop products that lower GHG (*eg. lower emitting nitrogenous fertilisers, livestock additives that lower methane production*).
 - Carbon offset opportunities promoted to rural communities.
 - More research and support for agribusinesses to move towards clean energy (*ie. reduce its reliance on fossil fuels such as electrifying farms and farm machinery*).
 - Support in the renewables industry for both agribusiness and rural communities (*solar and wind farms*).
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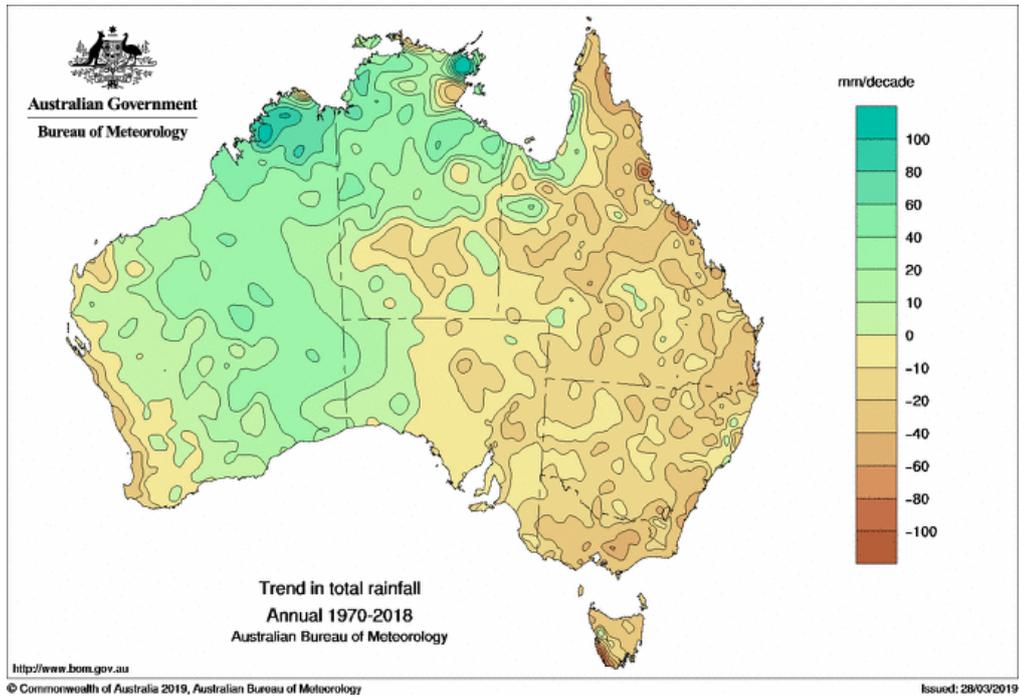


Figure 1. Trend in total annual rainfall, 1970-2018.

<http://www.bom.gov.au/climate/change/index.shtml#tabs=Tracker&tracker=trend-maps&tQ=map%3Drain%26area%3Daus%26season%3D0112%26period%3D1970>



Figure 2. ¹ Stephens, D.J. (2018). Australia's New 21st Century Rainfall Zones and Associated Drivers (poster). 12th International Conference on Southern Hemisphere Meteorology and Oceanography, 5th – 9th February. Sydney, Australia.

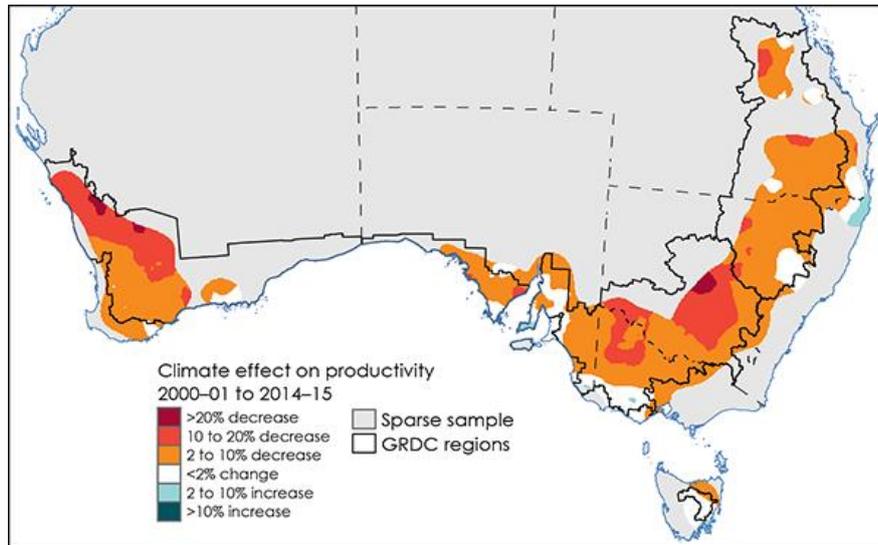


Figure 5. Climate effect on productivity 2000-01 to 2014-15.

Hughes et al. 2017

Image from <https://www.agriculture.gov.au/abares/research-topics/climate/farm-performance-climate#key-findings>