

Adapting Australia's trade and aid policies to climate change

NCCARF's evidence-based Policy Information Briefs address key challenges to effective adaptation to Australia's variable and changing climate. They provide high-level information and advice designed for use by policy makers at Commonwealth and State level. This Brief deals with the challenge of managing Australia's trade and aid policies under a variable and changing climate.



Key Points

The impacts of climate change on Australian society will not be just a function of changes in Australia's climate. We are highly exposed to changes in countries with which we exchange goods and services and people, and which are important for our economy and international reputation.

Many of the risks climate change poses for Australia will flow across our borders. Climate change may alter the competitiveness of Australian exporters, undermine peace and prosperity in our region, and create new tensions that must be managed through foreign policy. This broader landscape of risks points to potential trade-offs between the Australian Government's domestic and foreign responsibilities.

Climate change also creates opportunities for trade and aid to enhance prosperity at home and abroad. Australia has comparative advantages in research and development, natural resource management, energy technologies and climate change adaptation practices that can be further developed to advance climate resilience and economic growth domestically and abroad.

Actions to better prepare Australia for the challenges and opportunities climate change poses to trade and aid include:

1. Increasing research and development for adaptation and mitigation technologies, including in export-oriented sectors such as agriculture.
2. Supporting free and open trade in climate change mitigation and adaptation technologies and knowledge.
3. Building understanding of the impacts of climate change on Australian trade and aid through cross-agency scenario planning and/or foresight exercises.
4. Increasing support for climate change adaptation and disaster resilience in the Asia-Pacific region, including implementation of adaptation plans.
5. Raising awareness in Australia about the risks and opportunities that climate change creates for Australia's engagement with the Asia-Pacific region.⁴

The context

Trade

In 2013-14 48,000 Australian firms exported a total of \$330 billion of goods and services, accounting for 21% of GDP.¹ Of these exports, 12% came from the climate sensitive sectors of agriculture, forestry and fishing, and tourism, with tourism accounting for 84% of these climate-exposed exports. There are around 135,000 farm businesses in Australia, and about 60% of their production is exported.

There has been considerable research into the effects of climate change and climate change policies on the output and profitability of Australian farming. None of this analysis has factored in the competitiveness of agricultural exports. This is important, for the effect of climate change on Australian primary producers depends on what happens to our rivals in export markets, and climate change will not have uniform impacts on agricultural producers worldwide.⁴

This issue of competitiveness is equally relevant for Australian tourism. As with agriculture, research on climate change and tourism tends to focus on the effects of climate on costs rather than on markets. Yet tourists who come to Australia choose among multiple markets, and climate change may increasingly be a factor in their choices. As an indicator, there is some evidence that disasters deter tourism, and that a positive reputation for environmental stewardship increases demand.

Figure 1. Total Humanitarian and Disaster Response: Papua New Guinea and Pacific Island Countries, Australian ODA.⁶

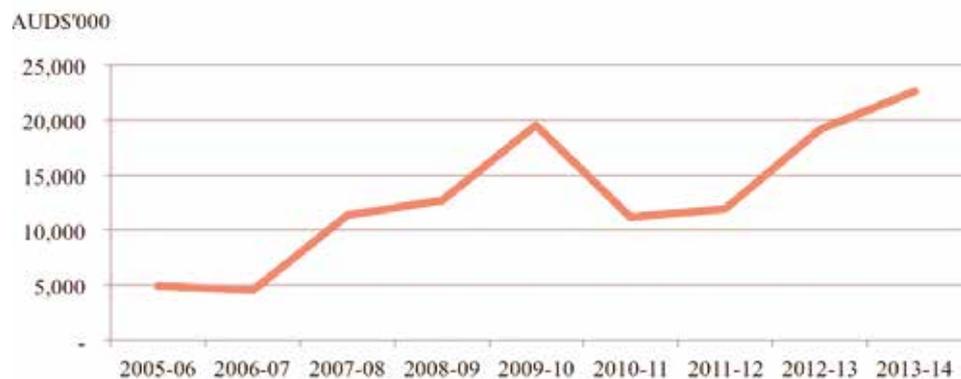


Table 1. Top five destinations for Australian farm exports, top five agricultural exports, and top five countries of tourist arrivals.

Agricultural export markets		Agricultural commodities		Visitor arrivals ¹³	
Country	Share of all agricultural exports	Commodity	Share of all agricultural exports (value)	Country	Number of arrivals
China	19.7%	Beef	17.5%	New Zealand	1,310,000
United States	10.3%	Wheat	13.4%	China	1,024,000
Japan	9.5%	Meat (excl. beef)	8.4%	United Kingdom	688,000
Indonesia	7.9%	Dairy	5.8%	United States	610,000
R. of Korea	6.2%	Wool	5.5%	Singapore	396,000

Table 2. Major bilateral recipients of Australian ODA 2013-14.⁶

Country	AUD'000	Share of all ODA
Indonesia	580,999	11.5%
Papua New Guinea	502,425	10%
Solomon Islands	183,270	3.6%
Philippines	182,568	3.6%
Afghanistan	148,414	2.9%

In both agriculture and tourism, there are other key variables affecting competitiveness, including the value of the Australian dollar, price of fuels, marketing, and barriers to entry and related agreements about these. The extent to which these variables may themselves be affected by climate change is also important, though this is likely to be less important to Australian competitiveness than the direct effects of climate.

Aid

Australia's aid program has responded to climate change. Investments in cleaner energy, and adaptation and related sectors such as water infrastructure, sanitation and water management, accounted for 6% of the \$5 billion of Australian Official Development Assistance (ODA) in 2013-14.⁶

Australia's ODA is concentrated in its immediate region, with 21% being spent in Papua New Guinea and Pacific Island Countries, and 26% in East Asia. It is notable that annual Australian ODA directed towards humanitarian and disaster response in Papua New Guinea and Pacific Island Countries more than quadrupled between 2005 and 2014 (Figure 1). Given their environmental and social characteristics, and climate change, there will almost certainly be an increasing need for more humanitarian assistance, and more support for climate change adaptation in all of the main recipients of Australian ODA, including those shown in Table 2.

Climate risks

Trade

The effects of climate change in key markets for Australian exports and in countries with which we compete, are therefore important variables affecting the future of Australian trade – at least in the obviously more climate-sensitive sectors of agriculture, forestry and fishing, and tourism. For example, Australia competes with beef producers from Canada, New Zealand and Uruguay for imports into the Chinese market. Indonesia, Japan, South Korea and Malaysia are major markets for Australian wheat, which competes with supply from Canada and the United States. The effect of climate change on beef and wheat producers in North America and New Zealand is therefore an important concern for Australia's trade, and needs to be considered alongside the direct impacts of climate change on Australian production.

The three major studies¹⁴ on the impacts of climate change on world food production agree that crop yields will be more negatively affected in tropical areas than at higher latitudes, and that in general countries where yields are expected to fall most are those where hunger is already most acute. Over the period to 2050, Australia is expected to experience declining yields relative to producers in Europe and North America.¹⁴ These studies focus largely on the effect of temperature and higher levels of CO₂, few are able to capture the effect of anticipated changes in precipitation, none account for the effect of other production factors (nor of adaptation). Studies of the effect of climate change on meat production are unreliable.

Taking into account the effect of these changes on global crop productivity, Hertl and colleagues find that in a worst-case scenario where climate change has a large impact on productivity globally, Australian crop producers fare very well relative to competitors¹⁰. However, under a scenario where global aggregate crop productivity remains relatively high, Australian crop producers fare much worse than those in Canada, Europe or the USA.

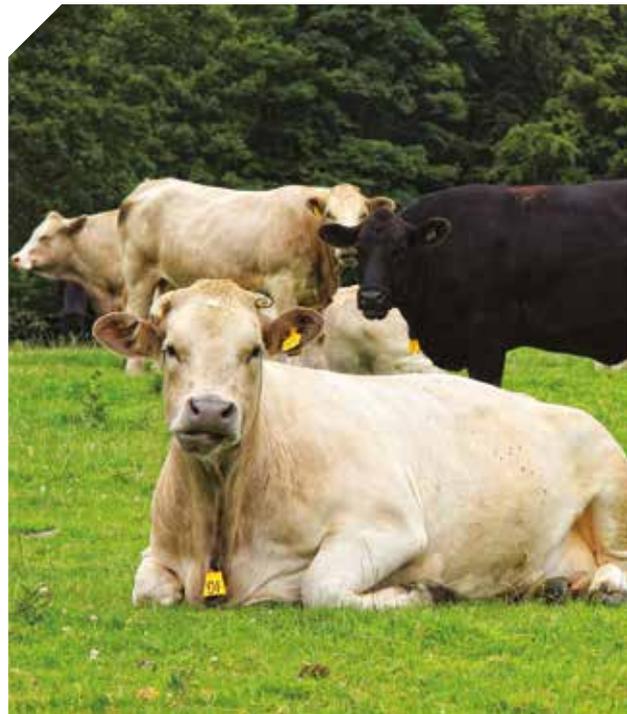
Modelling of the effect of climate change on tourism is even more uncertain. There is some suggestion that the impacts of climate change may cause demand for travel to Australia to fall relative to competitors, and that higher energy costs may further compound this effect.¹² Variables such as political stability, disasters, the value of currencies in competing tourism markets and incomes in source

countries are also major drivers and hard to model with certainty. A major finding of most studies is that the effects of climate change on competitiveness can be managed by strategic planning at the level of firms and the sector overall, which can help respond to shifts in demand across seasons and across potential tourism activities within Australia.

Aid

Climate change is likely to undermine progress towards development in many countries in Australia's region. For example, climate change is expected to cause annual losses equivalent to 6.7% of GDP by the end of the decade in Indonesia and the Philippines.² In Papua New Guinea and the Solomon Islands total population is set to double in the next 40 years, creating an additional 4 million (mostly young) people living in the coastal zone, where climate change will increase flooding, vector borne diseases such as malaria and dengue fever, and damages from increasingly intense storms.^{3,11} These trends in Melanesia are also evident throughout the region. In the more remote small Pacific islands, many of which are highly exposed and sensitive to climate change, increasing humanitarian crises arising from flooding, cyclones, and drought seem highly likely. These climate change-related trends will challenge Australia's aid and disaster response capacities.

There is a need to evaluate the contributions that are and could be made through other Australian cooperation programs, such as the Defence Co-operation Program. This may reveal greater opportunities for Australia to create value without additional cost.



Emerging risks

Australia is a wealthier, more dynamic, and peaceful society because of its extensive engagement with its region and the world through trade, migration, and its aid, diplomatic, and security institutions. Yet this also exposes Australia to the impacts of climate change abroad.

There can be no confident diagnoses of the risks climate change pose to Australia's engagement with the region. Extensive scenario analysis that considers plausible concurrent changes in domestic and international affairs due to climate change could help, and may point to some emerging critical thresholds. These thresholds might include:



- Critical capability gaps in Australia's disaster response institutions arising from simultaneous domestic and regional emergencies, for example major bushfires in Southern Australia coinciding with catastrophic cyclone events in Melanesia during increasingly intense El Niño events. Given existing capabilities, and in the absence of better disaster mitigation and adaptation practices in Australia and the region, under such situations a choice may be required between the disaster response and recovery needs of domestic constituents and those of Australia's international partners.
- Increasing instability in Australian agricultural regions due to the combined effects of altered productivity in shifting agro-ecological margins and extreme events, and changes in international markets and competitiveness.
- Increasing demands for Australian ODA arising from increasing poverty and humanitarian crises across multiple countries in Australia's region. The ability to meet this increasing demand may be progressively constrained as climate change places greater demands on public spending domestically in sectors such as infrastructure, public health, and emergency management. Failure to respond may affect Australia's reputation and influence in the region, and open up opportunities for countries that seek to increase political influence and access to markets in the region.



Adaptation actions and policy implications

Australia has extensive policies and partnerships in the areas of aid and trade.⁹ These have evolved during a period of relatively stationary climate conditions, and may need to be adapted to secure Australia's domestic and foreign interests from the destabilising effects of climate change on regional and international order.

There is very little evidence about the implications of climate change for Australian trade and aid, or for other foreign policy domains including security and defence, immigration, biosecurity and policing. Cross-agency scenario planning or foresight exercises can help set parameters around plausible futures and policy responses, and build understanding of the uncertainties. Nevertheless, uncertainty should not be a cause of inaction but rather of caution, and much can be done now, as the following sections suggest.

Trade

Australia's primary producers and tourism operators are innovators and have demonstrated capacity to adapt to new circumstances, largely because of micro-economic reforms across the Australian economy in past decades. Maintaining and where possible enhancing this adaptive capacity is key to adapting Australia's trade to new but uncertain climate futures.

An important driver of adaptive capacity in Australia's export sectors is research and development (R&D). Increasing investment in R&D will help Australian exporters to maintain competitiveness in a climate-changed future. If supported appropriately, our industrial base and strong research sector can generate new technologies and systems to reduce greenhouse emissions and promote adaptation to climate change in Australia and abroad, creating new products and knowledge for export.

Investment in agricultural research and development, extension, and education and training is key to promoting adaptation in rural Australia (see *Adapting agriculture to climate change*, NCCARF Policy Guidance Brief 4, https://www.nccarf.edu.au/sites/default/files/attached_files_publications/AGRICULTURE_A4Printable.pdf). Such investment is important for world food security, because it ensures productivity growth to meet the strong growth in demand in coming decades.

The infrastructure that facilitates trade and tourism may be at risk from climate change impacts, and enhancing its resilience will be necessary (see *Climate proofing Australia's infrastructure*, NCCARF Policy Guidance Brief 7, https://www.nccarf.edu.au/sites/default/files/attached_files_publications/infrastructure_A4-Webview.pdf). Climate change will also require innovative insurance solutions to ensure Australian exporters can recover from and adjust to extreme events, and this might include the development of new insurance products and increased provision of information about risks and insurance options to small and medium enterprises.

Information about climate change risks and responses at home and overseas can support evidence-based decision-making by exporters. Regulation and incentives may be necessary to support adaptation in Australia's export sectors.

Aid

The Paris Agreement and related agreements such as the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction are appropriate institutions to guide Australia's support for climate change adaptation.⁸ The principle that developing countries lead their own adaptation processes is important, and Australian aid can assist with this through supporting the development of good quality National Adaptation Plans and National Adaptation Plans of Action, and the subsequent implementation of these. Increased investments in adaptation and disaster preparedness and response, particularly in expanding urban centers in the Asia-Pacific, seem opportune given trends in disaster frequency and magnitude, and in urbanisation.

Aid for Trade initiatives that enhance the capacity of developing countries to trade present new opportunities to build climate resilience in the region. This might include a focus on climate proofing the infrastructure necessary for trade in goods and services such as tourism, assisting vulnerable communities to access export markets, and supporting climate resilience in key trade sectors such as tourism, agriculture and fisheries.

Emerging technologies and practices in areas such as renewable energy, sustainable transport, water and sanitation, and information and communication have the potential to reduce vulnerability to climate change, but there are cost and information barriers to accessing and implementing these. Aid for Trade could assist in building the capacity of developing countries to adopt and export such innovative technologies and practices.



Education and training of workers in developing nations has an important role in promoting adaptation innovation, especially when focused on vulnerable sectors. Where this training meets skills deficits in other countries, it may facilitate short-term labour migration and remittances that contribute to vulnerability reduction in the source nation.

Innovative micro-insurance products may assist producers in developing countries to recover and build back better from extreme events, and Australian expertise and policy could help facilitate the development of such institutions.

A whole of government response is necessary to ensure that the extent of Australia's engagement with its neighbors is recognised, and is coordinated, creative, efficient, and leverages expertise from appropriate agencies.

Citation

The information to support policy makers provided in this brief was developed through a workshop and extensive exchange with experts and stakeholders.

This Brief was prepared by Jon Barnett from the University of Melbourne. Please cite as:

Barnett J. (2016) Adapting Australia's trade and aid policies to climate change. Policy Information Brief 5, National Climate Change Adaptation Research Facility, Gold Coast.

A workshop was held in Canberra, attended by policymakers, managers, and researchers from the University of Melbourne, the Bureau of Meteorology, the Australian Government and the National Climate Change Adaptation Research Facility.

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