AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Effective frameworks for natural resource management

Gordon de Brouwer

Contributed presentation at the 61st AARES Annual Conference,
Brisbane, Australia, 7-10 February 2017

Copyright 2017 by Author(s). All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

Australian Government
Department of the Environment and Energy

Effective frameworks for natural resource management

Gordon de Brouwer
8 February 2017
Australian Agricultural and Resource Economics Society Conference

Extensive Frameworks for Natural Resource Management

- Importance of institutions
- System is broad and tiered
- Domains: land, water, seas, Reef, Antarctica
- Data, cooperation, regional and integrated outcomes
- Challenges: economic, population, climate
- Opportunities: technology, system-wide approaches

$40.3 billion (2.4% of GDP) → **321,500**

$53 billion (3.2% of GDP) → **580,200**

$99.4 billion (6.0% of GDP) → **227,700**

jobs

40 per cent of us living in Sydney and Melbourne,

71 per cent in the eight capital cities,

27 per cent in regional areas,

2 per cent in remote areas.

17.9%
of our land mass is reserve

147,579 animal and plant species

1800 **THREATENED**

200 highly **ENDANGERED**

130 known species **EXTINCT**

PATRIMONIO MUNDIAL · WORLD HERITAGE · PATRIMOINE MONDIAL

19
world heritage properties

Institutions for effective Natural Resource Management

- Shared principles, norms, laws, instruments, information systems
- Stability, reliability, predictability
- Multiple objectives and trade-offs
- Complex systems, deep and varied interests

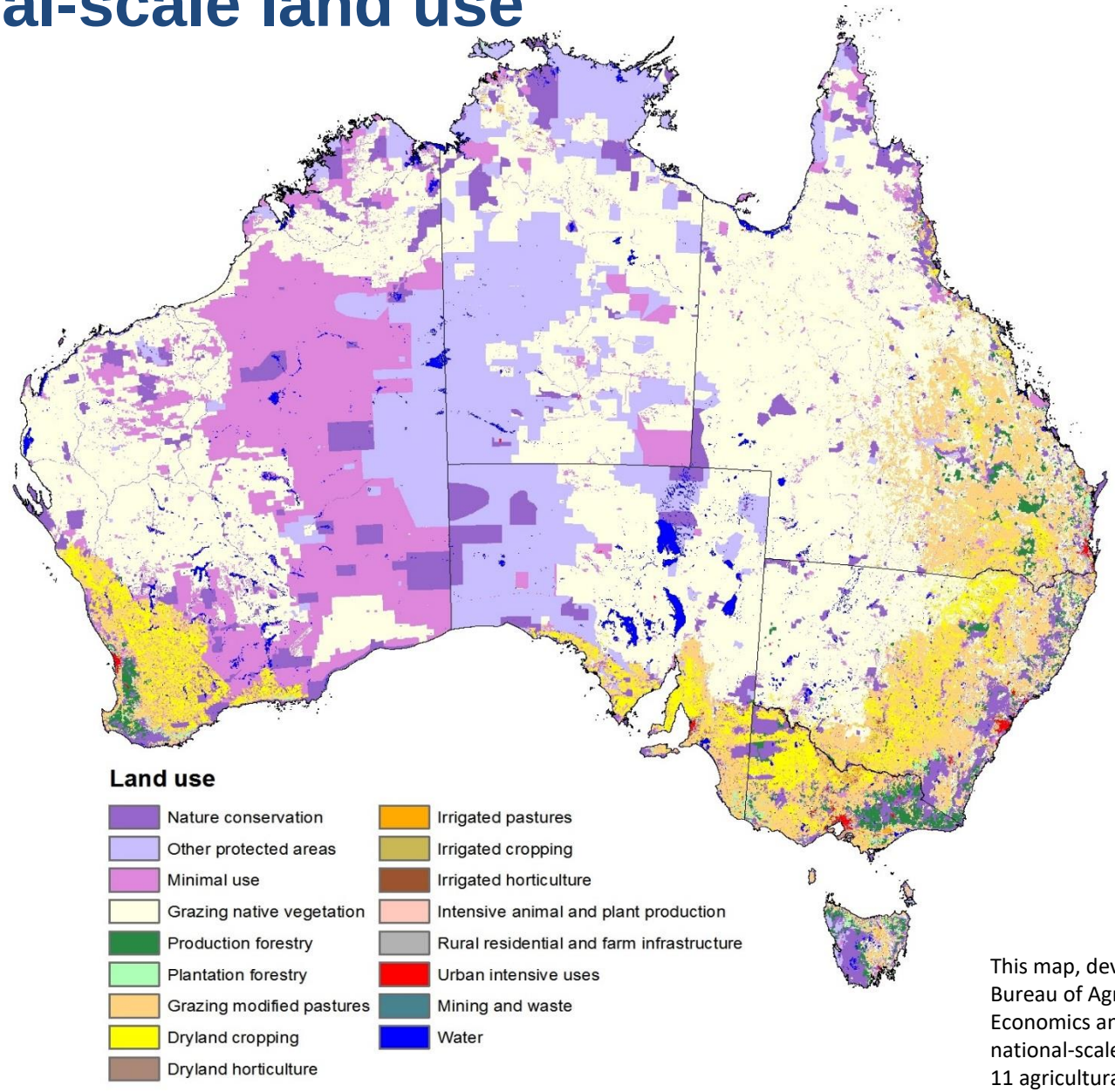
National Natural Resource Management Institutional and Governance Arrangements

Natural Resource Domains	Data and information about environmental condition	Principles/ Targets	Cth Legislation	Regulatory Tools	Funding from Environment Portfolio	Roles and Responsibilities	Lead/dedicated institutions
Land Management (terrestrial biodiversity)	• State of the Environment reporting • Terrestrial Ecosystem Research Network • National Environmental Science Program • Department monitoring, evaluation, reporting and improvement tool	• National biodiversity strategy • Intergovernmental agreement on the Environment • Convention on Biological Diversity and the 20 Aichi Targets • Threatened Species Strategy	• *EPBC Act 1999* • *Natural Heritage Trust of Australia Act 1997*	• Property rights for ownership/ occupation of land • EPBC Act approvals	• Green Army, • National Landcare Program • portion of Emissions Reduction Fund • National Environmental Science Program	• Multiple parties including the Commonwealth, states and territories, private sector (including agriculture and private land holders), local government, regional bodies e.g. NRMs and indigenous groups.	• No national overarching institution
Fresh Water (Murray-Darling Basin)	• Monitoring and evaluation programs by CEWH, MDBA and State agencies • National Water Accounts	• National Water Initiative • Murray-Darling Basin Agreement, • Murray Darling Basin Plan • Basin-wide Environmental Watering Strategy.	• *Water Act 2007 (supported in part by State referred powers)*	• Tradeable property rights (water entitlements and allocations).	• Water purchase, on and off farm irrigation efficiency. • Funding for environmental watering.	• Clearly defined legislated roles for Commonwealth, states & territories and MDBA.	• Bespoke institution e.g. MDBA • Supported by discrete functions in Bureau of Meteorology & ACCC
Cth marine areas (marine biodiversity)	• Australian Ocean Data Network (including IMOS) • State of the Environment reporting • Marine Bioregional Plans	• Aichi targets under the Convention on Biological Diversity. • Goals and principles for establishing the National Representative System of Marine Protected Areas	• *EPBC Act 1999 and Regulations* • *Environment Protection (Sea Dumping) Act 1981* • *Fisheries Management Act 1991*	• Marine Bioregional Plans, species recovery plans, conservation advices, threat abatement plans, wildlife conservation management plans, EPBC Act referral guidelines, approval conditions.	• Director of National Parks • National Environmental Science Program	• Commonwealth responsibility in Commonwealth waters	Commonwealth bodies with discrete functions e.g. • Director of National Parks • Australian Fisheries Management Authority • Great Barrier Reef Marine Park Authority • Department of Immigration and Border Protection
Great Barrier Reef	• Reef Integrated Monitoring and Reporting Program. • Five yearly outlook reports • Regional Report Cards • Reef Report Cards • eReefs	• Great Barrier Reef Intergovernmental Agreement • Reef 2050 Plan	• *Great Barrier Reef Marine Park Act 1975* • *EPBC Act*	• Permitting and licensing arrangements for activities within the Marine Park. • EPBC Act regulation	• Reef Program and Reef Trust	• Legislated roles for Commonwealth, Queensland Government and Great Barrier Reef Marine Park Authority.	• Great Barrier Reef Marine Park Authority • Queensland Government Office of the Great Barrier Reef.
Antarctica	• Australian Antarctic program	• Antarctic Treaty and Madrid Protocol • Australian Antarctic Strategic Science Plan	• *Antarctic Marine Living Resources Conservation Act 1981* • *Antarctic Treaty (Environment Protection) Act 1980* • *EPBC Act 1999*	• Environmental authorisation and/or permitting requirements under Antarctic specific legislation	• Significant, long-term spending from Australian Government	• Legislated roles for the Commonwealth.	• Australian Antarctic Division • Science based institutional partners.

Observations from the Commonwealth perspective

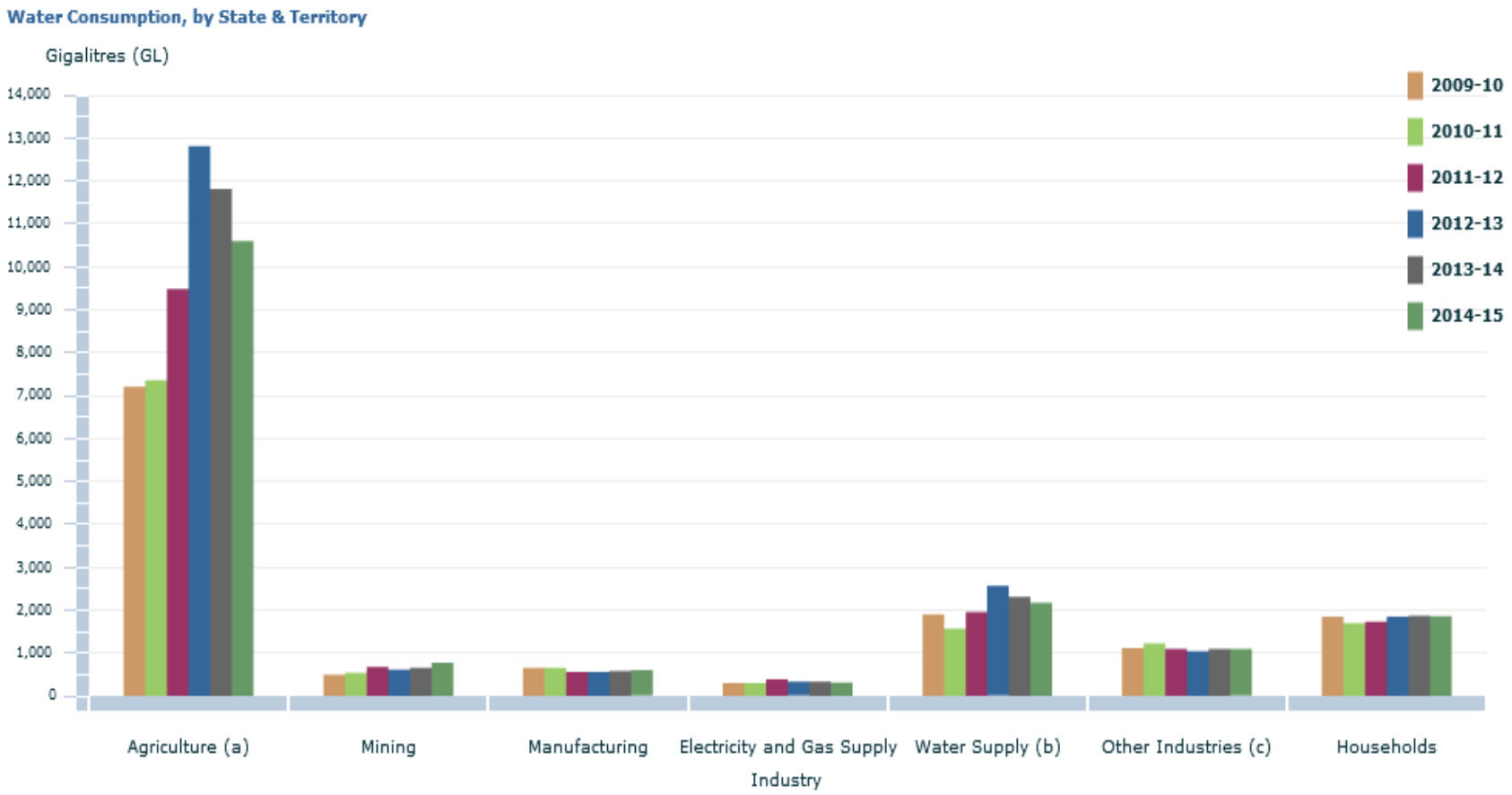
- Data and information widely available
- Cooperation between jurisdictions
- Role of regional and local organisations and landholders
- Focus on outcomes

National-scale land use



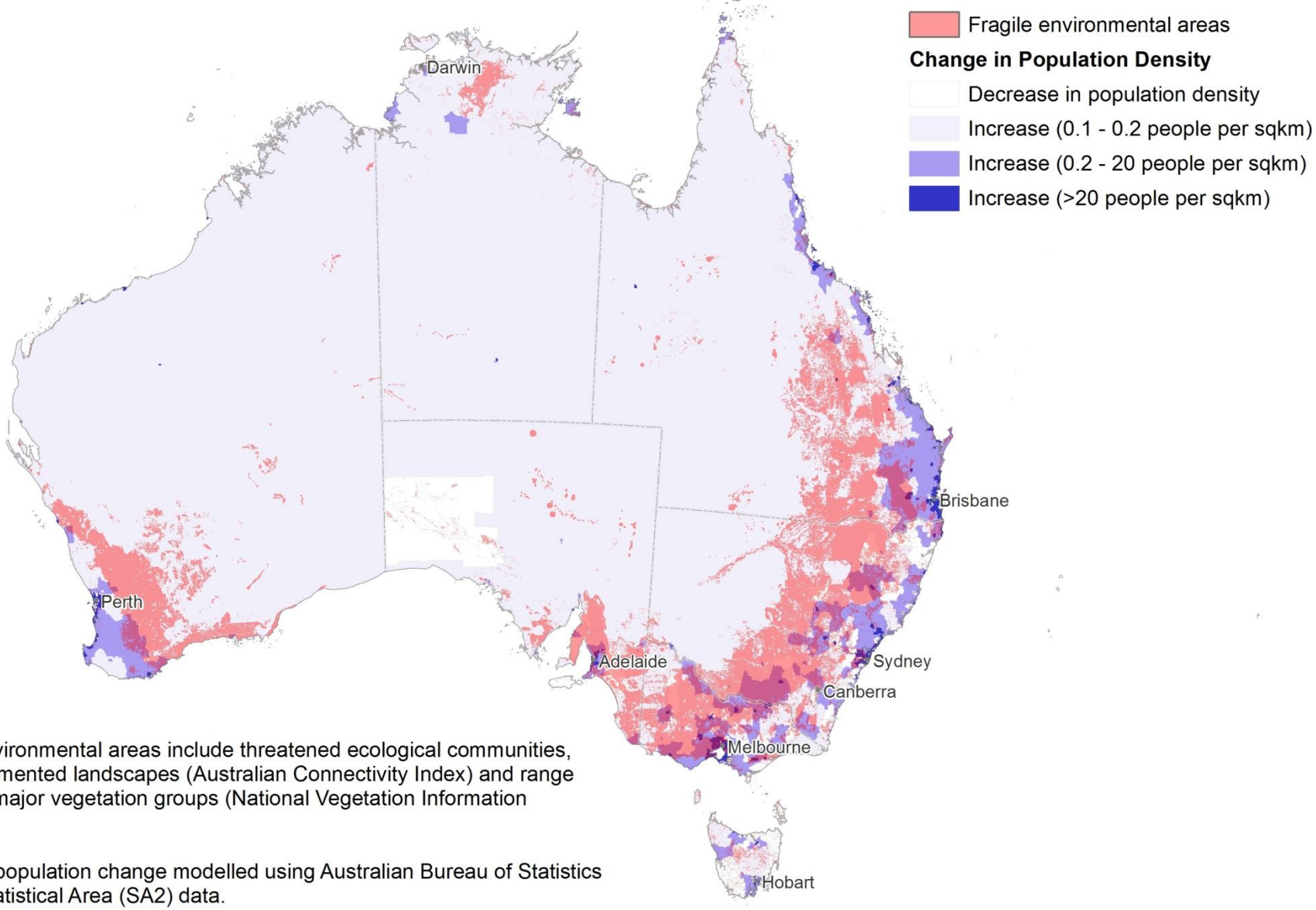
This map, developed by the Australian Bureau of Agricultural and Resource Economics and Sciences , shows national-scale land use based on 2010-11 agricultural census data.

Water supply and use in the Australian economy



Source: Australian Bureau of Statistics Water Account 2014-15

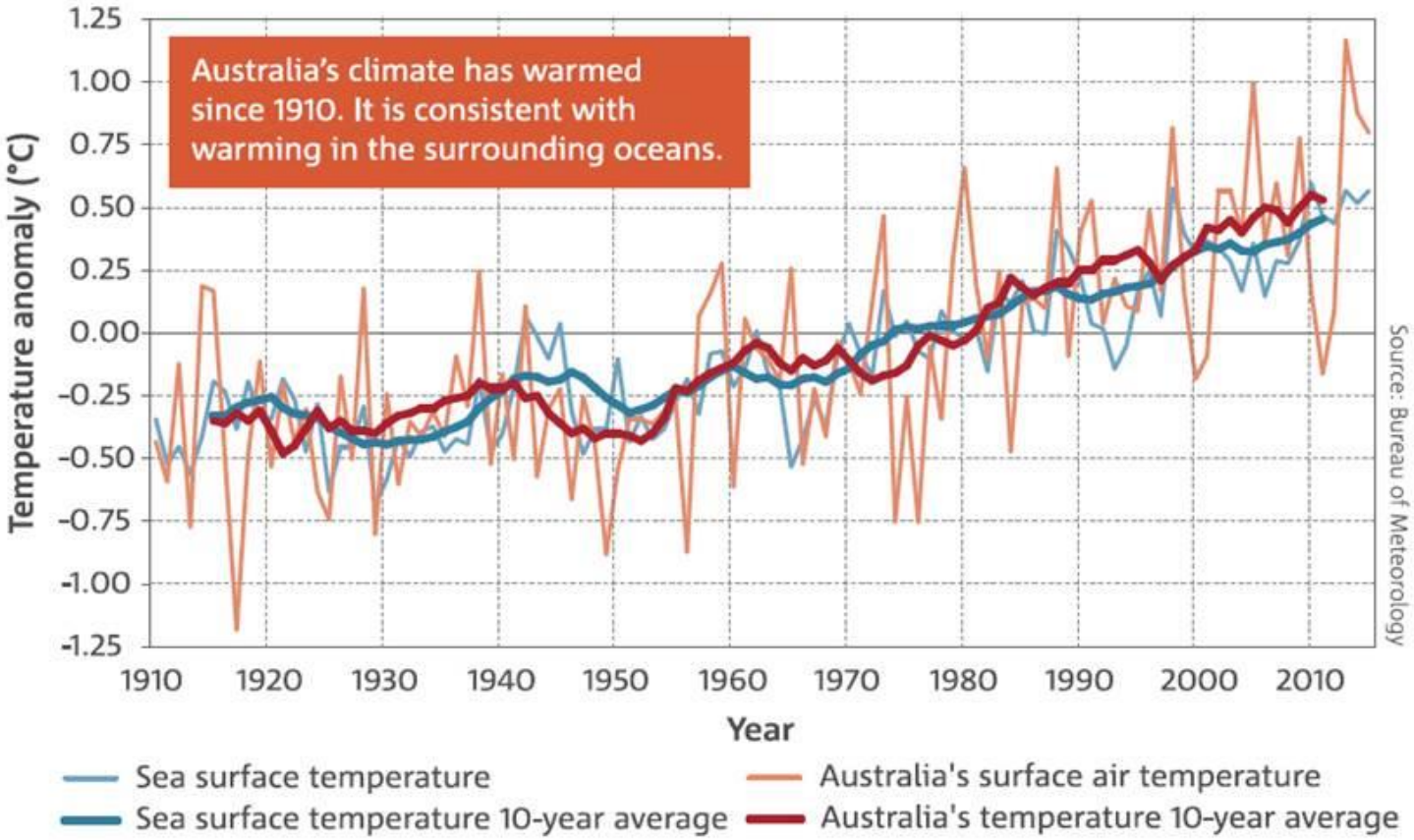
Fragile environmental areas with projected population change (2012-2027)



Fragile environmental areas include threatened ecological communities, highly fragmented landscapes (Australian Connectivity Index) and range restricted major vegetation groups (National Vegetation Information System).

Projected population change modelled using Australian Bureau of Statistics Level 2 Statistical Area (SA2) data.

Warming of Australia's sea and air temperatures



Time series of anomalies in sea surface temperature and temperature over land in the Australian region. Anomalies are the departures from the 1961–1990 average climatological period. Sea surface temperature values are provided for a boxed region around Australia (4–46 °S and 94–174 °E).

Source: CSIRO and Bureau, *Australia's Changing Climate* Brochure, 2016 – based on *Climate Change in Australia* projections data

Opportunities to strengthen our frameworks

- Technological change
- Open data and social media
- Market and financial innovation
- System-wide, strategic approach to outcomes
- Focus on outcomes

Thank you