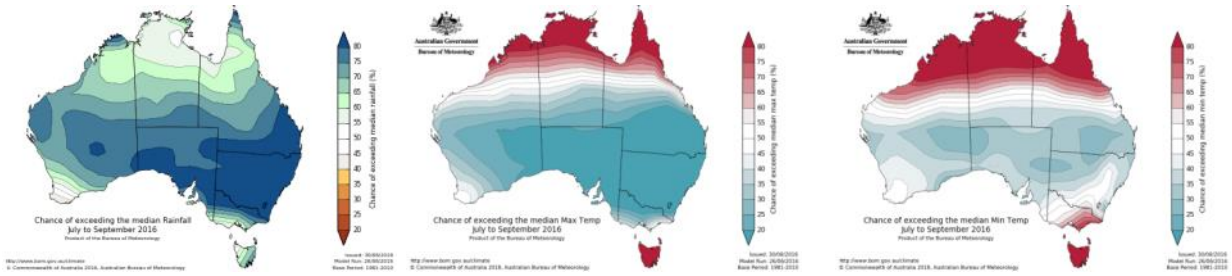
NRM on farms

A monthly news summary about climate and natural resources in agriculture. July 2016

CONTENTS

CLIMATE

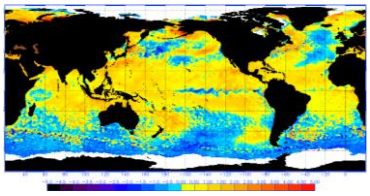
NSW seasonal outlook



A developing negative Indian Ocean Dipole, cooling in the tropical Pacific Ocean and very warm sea surface temperatures surrounding northern and eastern Australia are indicating above average rainfall for NSW over the next three months along with cooler than average days and average to cooler nights.
http://www.bom.gov.au/climate/outlooks/#/overview/summary/
http://www.bom.gov.au/climate/outlooks/#/overview/video

Ocean temperatures

Surface temperatures have cooled in the tropical Pacific, remain warm in the western Pacific, and very warm around Australia and SE Asia. The eastern Indian Ocean remains warm, and northwest areas are cooling, consistent with a negative IOD.
http://www.ospo.noaa.gov/Products/ocean/sst/anomaly/index.html
http://www.bom.gov.au/climate/enso/#tabs=Sea-surface



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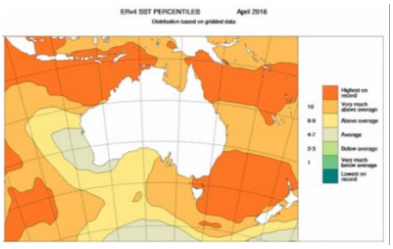
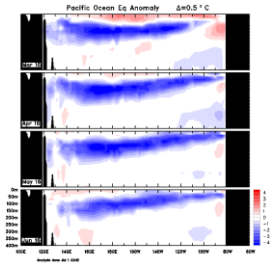
Record sea surface temperatures around Australia

Large areas around Australia reported record warm sea surface temperatures in March and April. Particularly warm conditions affecting tropical and eastern waters resulted in the warmest sea surface temperatures on record across these areas. Similar conditions were also reported in the waters of the northern tropics, and the Tasman Sea.
http://www.bom.gov.au/climate/current/statements/scs56.pdf



Pacific subsurface cools

A clear cooling trend has been observed in the top 100 m of the equatorial Pacific since March, and cool anomalies have spanned the equatorial Pacific Ocean since April. Since May, the volume of cooler water in the equatorial Pacific sub-surface has reduced.
http://www.bom.gov.au/climate/enso/

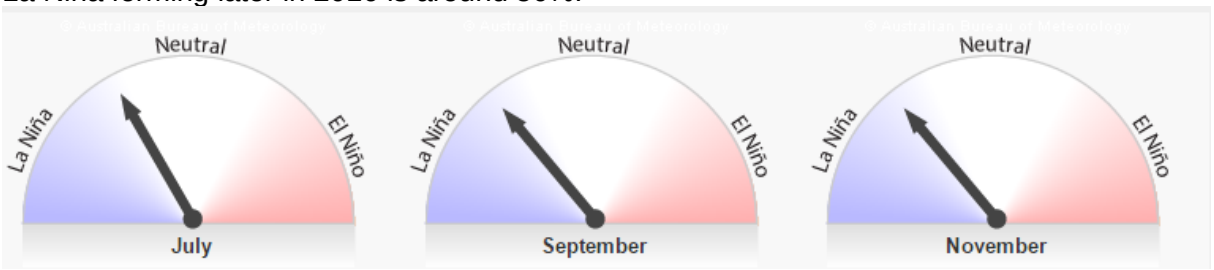


La Nina is a possibility

Tropical Pacific Ocean sea surface temperatures have continued to cool in recent weeks, but a large volume of cooler than normal water below the surface suggests La Niña remains possible in 2016. Typically during La Niña, winter-spring rainfall is above average over northern, central and eastern Australia. If La Niña does develop, climate models suggest it is unlikely to reach levels seen in the most recent event of 2010-12, one of the strongest La Niña events on record.
http://www.bom.gov.au/climate/enso/

Model outlook

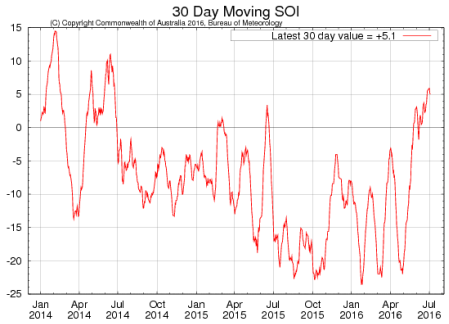
Recent observations, combined with current climate model outlooks, means the likelihood of La Niña forming later in 2016 is around 50%.



http://www.bom.gov.au/climate/model-summary/

SOI now neutral

The 30-day SOI is within the neutral ENSO range, continuing a slow trend upwards. Sustained values above +7 typically indicate La Niña.
http://www.bom.gov.au/climate/enso/#tabs=SOI



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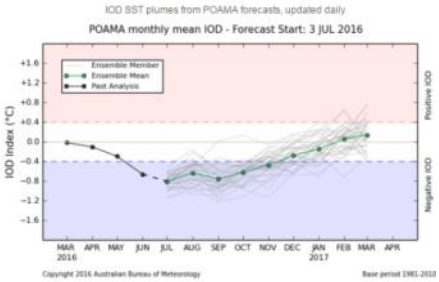
IOD goes negative

The latest value of the IOD index is -1.1 °C, the most negative value in at least 15 years. A negative IOD pattern is predicted to persist and develop through winter and spring. A negative IOD typically brings above average rainfall to southern Australia during winter-spring, with cooler-than-average daytime temperatures across southern Australia.

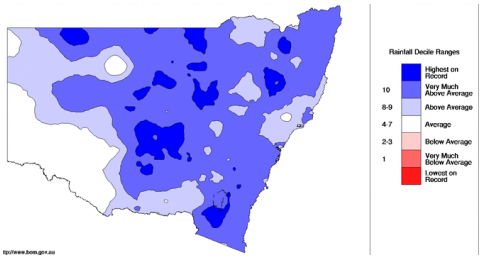
http://www.bom.gov.au/climate/enso/#tabs=Indian-Ocean



Third wettest NSW June

June was NSW's third-wettest June on record, due to widespread heavy rainfall from two East Coast Lows. Overnight temperatures were the seventh-warmest on record for the State as a whole, while daytime temperatures were warm on the coast but average to below average in inland areas.

http://www.bom.gov.au/climate/current/month/nsw/summary.shtml#maps



Record rain with East Coast Low

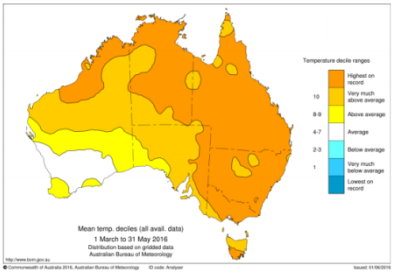
The June 5 East Coast Low led to NSW's wettest day on record with a regional average of 73.11 mm, surpassing the previous record of 68.89 mm set on 19 January 1950. In NSW daily totals exceeded 100 mm, ranging up to 468 mm on north and mid-north coast, and from 130 to 180 mm south of Sydney where heavy rain continued to fall on 6 June. Rainfall totals over the 2-day period resulted in several locations reporting their wettest June on record in the first week of the month. Previous extreme daily rainfall totals approaching this volume all occurred during summer months, and were all associated with tropical cyclones or former tropical cyclones.

http://www.bom.gov.au/climate/current/statements/scs57.pdf

Warmest autumn on record

Autumn 2016 was Australia's warmest on record. The national mean temperature for the season was 1.86°C above average, and more than 53% of the country experienced highest on record mean temperatures. Queensland, NSW, Victoria and NT all reported their warmest autumn on record.

http://www.bom.gov.au/climate/current/statements/scs56.pdf



NSW DPI seasonal conditions report

Subscribe to NSW DPI's seasonal conditions report, and the climate summary which provides a snapshot of the monthly report in an easy to read four-page format with additional graphs and charts.

http://www.dpi.nsw.gov.au/agriculture/emergency/seasonal-conditions/regional-seasonal-conditions-reports

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CLIMATE RESOURCES

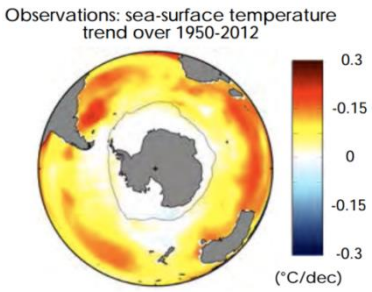
May climate records are cause for alarm

Several climate records were broken in May according to NASA and NOAA, giving much cause for alarm according to David Carlson, Director of the World Climate Research Programme. The atmospheric concentration of carbon dioxide, which is driving global warming, passed 400 parts per million on 23 May at the South Pole – the last place on earth to breach the milestone. May 2016 was the 13th consecutive month a monthly global temperature record has been broken—the longest such streak since global temperature records began in 1880. The average global land and ocean surface temperature for January–May 2016 resulted in the warmest such period on record across the world's land and ocean surfaces. Rapid changes in the Arctic are of particular concern as they affect the rest of the globe.
http://public.wmo.int/en/media/news/may-2016-sets-new-records

CO2 levels rising at a record rate

ANU research has found that over the past year, CO2 levels in the atmosphere have risen faster than any period in the past 55 million years. From April 2015 to April 2016, CO2 levels rose by 4.6 parts per million reaching a level of 407.42ppm at Mauna Loa observatory, Hawaii. CO2 levels above 400ppm have not been observed in the Earth's climate record since the Pliocene, 5.3-2.6 million years ago, when sea level was about 25 metres higher than at present.
https://theconversation.com/past-present-future-how-human-evolution-and-climate-are-linked-57336

Why the Southern Ocean is warming more slowly



A new study has found that while the Arctic is warming at twice the global average, warming of the Southern Ocean around the Antarctic has been much slower, because ocean currents carry warm surface water away from Antarctica, and pull up cold water up from depth in its place. Almost 70% of the warm water is carried north to meet warm water travelling south from the Atlantic, Pacific and Indian Oceans. This water is then pushed down into the deep ocean. However, in relative terms, the Southern Ocean has warmed to depths of more than 1000m, and changes to its circulation have been bringing more of this warm water under the ice sheets, melting them from below.
http://www.carbonbrief.org/ocean-conveyor-key-sluggish-antarctic-warming-study-says

Orchards need to adapt

Research into what climate change might mean for Australia's apple, pear and cherry industries has found that winters in some of Australia's warmer fruit growing regions may to be too mild to support apple production by 2030, but the outlook is better for the south eastern states. Growers in some regions will need to adapt their orchards to cope with extreme heat days, or risk significant loss of fruit from sunburn damage.
http://www.piccc.org.au/news/global-warming-change-how-where-fruit-grows

Impacts of elevated CO2 and heatwaves on wheat

Victorian modelling of the impact of heatwaves and increasing atmospheric carbon dioxide on wheat growth has found that while elevated CO2 increased yield, grain number and grain weight, a heatwave five days before flowering reduced grain number and grain yield. A heatwave 15 days after flowering reduced grain number and size. When this trial was performed in a low-yielding, low-rainfall season in 2014 there was no direct indication that CO2 concentration altered the impact of the simulated heatwave. However, during a natural heatwave event in 2009, elevated CO2 buffered some of the heatwave effects. This shows that CO2 and heatwaves may have complex interactions, particularly with the amount and distribution of available water during the growing season.
https://grdc.com.au/Media-Centre/Ground-Cover/Ground-Cover-Issue-123-JulyAugust-2016/Research-increases-understanding-of-heatwave-impacts

New approach to drought and agriculture in Queensland

The Queensland Government will establish a climate risk and drought resilience program to improve farm business capacity, seasonal forecasting and provide decision support tools to better manage climate risk. The Queensland Rural Adjustment Authority will be reconstituted as the Queensland Rural and Industry Development Authority to reflect a broader role including an industry development emphasis and expanding its charter to include policy research and advice to government regarding the financial sustainability of Queensland's agricultural sector, including partnerships with the private banking sector.
http://statements.qld.gov.au/Statement/2016/6/14/budget-boosts-and-protects-queensland-agriculture

West Gippsland climate strategy

West Gippsland climate change strategy identifies areas within the region that may be suitable for establishing vegetation to help improve landscape connectivity and sequester carbon. It also explores emerging opportunities to store blue carbon through coastal ecosystems such as saltmarsh, mangrove and seagrass communities.
http://www.wgcma.vic.gov.au/our-region/climate-change

CliMag July 2016

The latest edition of CliMAg features progress in the Managing Climate Variability research program, including upgrades of seasonal forecasting tools, a summary of current projects, and useful BoM products for agricultural decision support
http://www.managingclimate.gov.au/wp-content/uploads/2016/06/CliMagEdition27pdf.pdf

Journal of Southern Hemisphere Earth Systems Science

The new Journal of Southern Hemisphere Earth Systems Science covers research in meteorology, climatology, oceanography, hydrology and the land surface. The first issue includes articles on major flooding in coastal south eastern Australia, and Snowy Mountain rainfall analysis.
http://www.bom.gov.au/jshess/papers.php?year=2016&cid=019sw02

Climate policy timeline

The Australian Parliament has published a timeline of Australian and key international climate change policies since 1972 when the Stockholm Declaration acknowledged that

environmental problems are generally related to industrialisation and technological development.
http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/rp1516/Climate2015

Effect of climate change on farmland values

US economic research into the future effects of climate change on farmland values in south western US found that irrigation, population density, and farm subsidies all increased farmland value, but subsidies had an effect in highland areas only. In addition, heat waves were found to hurt productivity. Land values in one location were influenced by irrigation and climate conditions in neighbouring locations due to water depletion, water run-off, and/or sudden floods. Overall, highland areas were more affected by climate change than lowland.
https://www.sciencedaily.com/releases/2016/06/160607113114.htm

African warming is outpacing adaptive crop breeding

UK-African research has found that the rate at which temperatures across Africa are increasing is outpacing the rate at which new maize varieties can be developed and deployed. By the time a new crop variety gets to farmers' fields, it will be growing in temperatures higher than those it was developed for. As a result, the crop will mature more quickly, have less time to produce grain, and have lower yields.
http://www.carbonbrief.org/guest-post-three-ways-to-boost-crop-resilience-to-climate-change

Climate Smart agriculture portal

CSA Guide is a web portal developed by the CGIAR Research Program on Climate Change, Agriculture and Food Security for the World Bank. It is designed to be easy to use and is aimed at practitioners, decision-makers and researchers interested in CSA.
https://csa.guide/

EMISSIONS

Agricultural emissions must reduce to limit global warming

Scientists have calculated that agricultural emissions must reach a reduction target of 1 gigatonne carbon dioxide equivalent per year by 2030 to meet the Paris Agreement to limit warming to 2°C in 2100. Current interventions will only achieve 21-40% of this goal, even though 119 nations included mitigation in agriculture in their intended emissions reductions in the Paris Agreement. A more comprehensive target for the 2°C limit should be developed to include soil carbon and agriculture-related mitigation options.
http://onlinelibrary.wiley.com/doi/10.1111/gcb.13340/abstract

Dairy methane intensity has plummeted

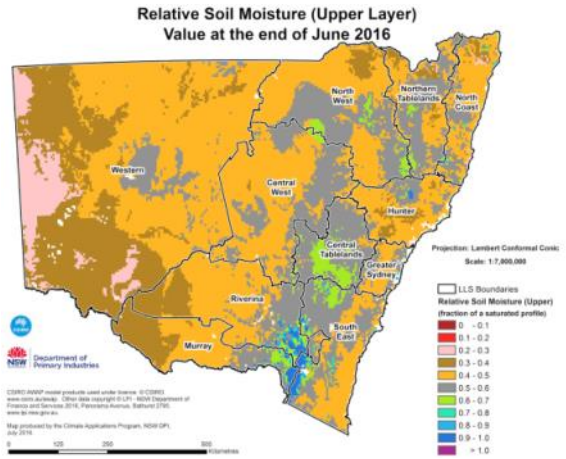
Victorian scientists have charted a 'remarkable decline' in the intensity of methane emitted by dairy cows in Australia, due to increased per-cow milk yield. In 1980, Australian dairying produced around185,000 tonnes of enteric methane and total enteric methane intensity was around 33.6g methane/kg milk. In 2010, the estimated production of enteric methane was 182,000 and total enteric methane intensity was 19.9g methane/kg milk. Emissions from 220 forage-fed cows indicated an average methane yield of 21.1g methane/kg DMI.
http://www.publish.csiro.au/paper/AN15222.htm

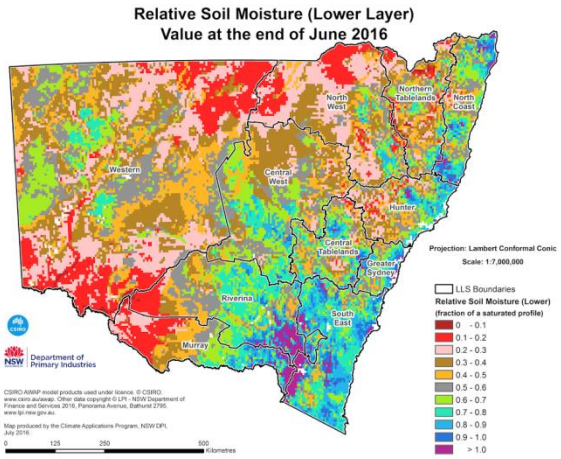
Food waste emissions have increased dramatically

In the past 50 years, the global food requirement has increased from 2300 to 2400 kcal/cap/day, food surplus has grown from 310 to 510 kcal/cap/da, and GHG emissions related to this surplus have increased from 130 to 530 Mt CO2eq/yr, an increase of more than 300%.
http://pubs.acs.org/doi/abs/10.1021/acs.est.5b05088

SOILS

NSW soil moisture for June





The economic value of soil organic carbon

WA analysis estimates that the marginal value of soil organic carbon in cropping systems of the state's south-west is AU$7.1–8.7/t C/ha/year, depending on rainfall zone and crop type. Approximately 75% of this value is the estimated sequestration value, 20% is the nitrogen-replacement value, and 5% is the estimated productivity improvement value. Over 50 years, this equates $130–160/t C/ha depending on the rainfall zone.
http://www.publish.csiro.au/nid/84/paper/SR15101.htm

German forest soils are losing carbon

In the last three decades, forest soil carbon across the German Alps has decreased by an average of 14% and by as much as 32% for certain types of soils. However there was no change in samples taken from pasture soils. Carbon appears to be more stable in these soils because of their high mineral content. The carbon in the soil clings to these minerals and isn't released into the atmosphere as easily.
http://www.carbonbrief.org/alpine-soils-storing-up-to-a-third-less-carbon-as-summers-warm

Nitrogen and fungi key to faster growth with raised CO2

A review of past research has found that plants can grow faster as atmospheric carbon dioxide concentrations increase, but only if they have enough nitrogen or partner with fungi

that help them get it. Plants that form ectomycorrhizal partnerships respond to extra CO2 without any added nitrogen, because these fungi produce enzymes that liberate bound nitrogen from soil organic matter, and the fungi can take up the nitrogen and pass some along to the plant. However, plants that associated with arbuscular mycorrhizae were unable to respond to CO2 unless extra nitrogen was added, because arbuscular mycorrhizal fungi specialise in taking up phosphorus from the soil, not nitrogen.
https://www.sciencedaily.com/releases/2016/06/160630144507.htm

UK soil not being managed sustainably

The UK Government's ambition to manage the UK's soil sustainably by 2030 will not be met unless further action is taken according to a new report on the health of UK soil. Failing to prevent soil degradation could lead to increased flood risk, lower food security, and greater carbon emissions.
http://www.publications.parliament.uk/pa/cm201617/cmselect/cmenvaud/180/180.pdf

Database on mycorrhizal fungi research

A database of research analysing how mycorrhizal fungi affect plant productivity, MycoDB, is available online. The database, representing 10 years of the most pertinent research, includes 4,010 studies from 438 peer-reviewed articles, and contains data on how various plant species behave when inoculated with the fungi compared to when they are not.
http://datadryad.org/resource/doi:10.5061/dryad.723m1

Soil type has big impact on production models

Agricultural production models take into account factors such as climate and weather variability, irrigation, fertiliser, and soil type. A new study published in the journal Nature Communications shows that the type of soil used in such a model can often outweigh the effects of weather variability—such as year to year changes in rainfall and temperature.
http://phys.org/news/2016-06-soil-key-future-food.html#jCp

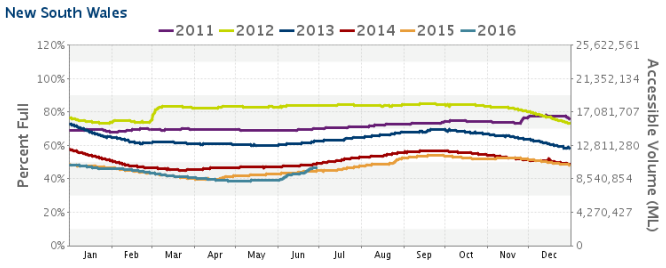
APSoil

APSoil is a database of soil water characteristics enabling estimation of plant available water capacity for individual soils and crops. It covers many cropping regions of Australia and was most recently updated in June. It is designed for use in simulation modelling and agronomic practice.
http://www.apsim.info/Products/APSoil.aspx

WATER

NSW water storages

June's East Coast Low rains helped replenish water storages with an additional 1.6 ML, an increase of 7.5% over the May storage total, and a 2.1% increase over 2015.
http://water.bom.gov.au/waterstorage/awris/



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Pasture strategies to prevent salinity

Research into pasture strategies to prevent water leaking beyond the root zone and contributing to soil salinity, found that summer activity, persistence, adequate density and deep rootedness controlled leakage. Of the species tested, only lucerne satisfied all these criteria.
http://www.publish.csiro.au/nid/40/paper/CP15337.htm

MDB environmental watering showing results

Reports from the Commonwealth Environmental Water Holder on the impacts of environmental water during 2014-15, show water at the right time and in the right place is having a positive effect on MDB rivers, floodplains and wetlands. Native fish species including golden perch, silver perch, Murray hardyhead, bony bream, Murray cod, rainbowfish and gudgeon species are responding well to environmental watering, There has been a boom in the breeding of native birds such as nankeen night heron, cormorants and the first breeding of the internationally protected Eastern great egrets since 2011. Monitoring in the Goulburn River found environmental flows during summer 2014 and autumn 2015 encouraged bank-stabilising plant growth.
http://www.environment.gov.au/water/cewo/media-release/ltim-reports

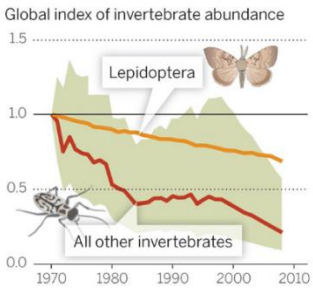
BIODIVERSITY

Farmers helping endangered ecosystems

The Environmental Stewardship Program funded more than 150 farmers in the box gum grassy woodland ecosystem to undertake controlled grazing by livestock in woodland remnants, replant native woodland, avoid firewood harvesting, cease bushrock removal, and control weeds and feral animals. Monitoring over the past six years has found that the funded management patches have fewer environmental weeds, greater native plant species richness, more natural regeneration of native plants, smaller areas of erodible bare ground, and more species of woodland birds. Farmers are now highly motivated to deliver better environmental outcomes on their farms and showcase the integration of the multiple objectives of agricultural production and conservation. There is also anecdotal evidence that farmers engaged in successful environmental programs suffer fewer problems with mental illness. This landholder goodwill and change in attitude towards land management is something that will far outweigh the 15-year investment in the program.
https://theconversation.com/heres-a-good-news-conservation-story-farmers-are-helping-endangered-ecosystems-60794

Insect numbers plummet

Analysis of more than 400 insect species has found a 45 percent drop in global invertebrate numbers over the past 40 years. In one annual survey in Germany, the average biomass of insects caught between May and October has decreased from 3.5 pounds per trap in 1989 to just 10.6 ounces in 2014. Scientists say various factors from monoculture farming to pesticide use to habitat loss are to blame for the plight of insects, which are essential to agriculture and functioning ecosystems.
http://e360.yale.edu/feature/insect_numbers_declining_why_it_matters/3012/



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Managing natural resources for crop pollinators

A new $5.2 million RIRDC project will look at ways to secure pollination for a more productive agricultural sector. The four-year project will look into the best ways to manage and improve natural resources on or near farms, and in particular the critical food resources that support managed and wild pollinators. The project will also determine the best approach to manage the biosecurity risk posed by the Varroa mite on farms.
http://www.rirdc.gov.au/news/2016/06/22/funding-provided-for-new-pollination-r-d-project

Online tool for plant identification in NSW

The Plant Community Type Identification Tool (PCT Id Tool) is a software program that has been created to assist landowners and vegetation practitioners in the identification of vegetation communities in the field. The PCT Id Tool is designed to be downloaded and used on laptops away from internet connection.
http://www.environment.nsw.gov.au/research/PlantCommunityIDsoftware.htm

Tracking domestic cats

Central Tablelands LLS domestic cat tracking project tracked domestic cats' unsupervised roaming around Lithgow and found they ranged up to three kilometres from home. The LLS is now looking to roll out the project in other areas as part of a national cat tracking program.
http://centraltablelands.lls.nsw.gov.au/resource-hub/media-releases/2016/cat-tracking-exposes-secret-feline-adventures

Vegetation of Australian riverine landscapes

This new book from the Australian Rivers Institute highlights the diversity and dynamic nature of riverine vegetation across Australia, and is a resource and reference for researchers, academics and environmental consultants.
http://www.publish.csiro.au/nid/18/pid/6504.htm

ENERGY

Wanted: information on biomass for renewable energy

NSW Forest Science is collecting information on biomass sources around the state, including residues from forestry, crops, livestock, horticulture, food processing and waste management. The information will contribute to the Australian Biomass for Bioenergy Assessment (ABBA) project and included in the Australian Renewable Energy Mapping Infrastructure (AREMI) platform, providing information to industries and the general public on renewable energy sources. The data will be displayed as an interactive map and include locations, volumes and availability. NSW Forest Science is leading the NSW component of the ABBA project. If you have any information that could help build a reliable NSW biomass database please contact Fabiano Ximenes fabiano.ximenes@dpi.nsw.gov.au or Cath Carney cath.carney@dpi.nsw.gov.au.
http://nationalmap.gov.au/renewables/
http://arena.gov.au/project/the-australian-biomass-for-bioenergy-assessment-project/

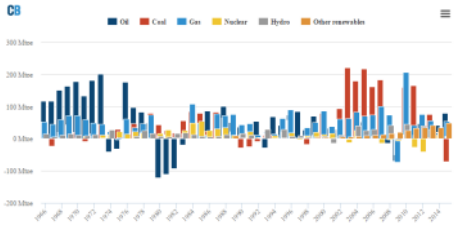
Progress report on the 2020 renewable energy target

This paper outlines progress towards meeting the 2020 target of 33,000 GWh of new large-scale renewable energy generation. The level and pace of investment will need to increase

substantially in 2016 and 2017 for liable parties to deliver on the 2020 legislated target and obligation. The Clean Energy Regulator estimates that for this to happen, around 3000 MW of new renewable capacity should be committed in 2016.
http://apo.org.au/resource/progress-and-status-renewable-energy-target

Coal use declines

In 2015 global coal use fell by more than 70 million tonnes of oil equivalent (Mtoe), a 1.8% decline and the largest annual reduction in records going back half a century, according to BP's statistical review of world energy 2016. The review also found that global energy-related CO2emissions stalled at the global level, while the amount of non-hydro renewable energy added last year (48Mtoe) was the largest ever increase.



http://www.carbonbrief.org/bp-global-coal-use-fell-by-largest-recorded-margin-in-2015

Infographic on coal

This infographic from The Conversation looks at coal's past, present and uncertain future.
https://theconversation.com/infographic-the-state-of-coal-60545

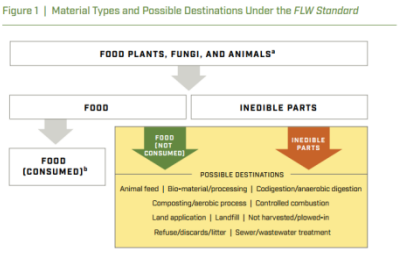
FOOD

Food systems and natural resources

Food systems fundamentally depend on natural resources, such as land, soil, water, biodiversity, minerals, biomass and fossil fuels. Due to population growth, changes in dietary patterns driven by growing wealth (more meat, dairy and fish consumption) and climate change, the pressures on natural resources are expected to increase over the coming decades. This will lead to risks for future food production. This new report from the UN Environment Program concludes that a fundamental transformation of our food systems is required if we are to meet future demands of food and quality of life.
http://www.unep.org/resourcepanel/KnowledgeResources/AssessmentAreasReports/Food

New global standard for measuring food loss and waste

The new global Food Losses and Waste standard for measuring food loss and waste aims to improve efforts to store, transport and consume food more efficiently.
http://flwprotocol.org/



Food bytes

Foodbytes is a project of the Food Climate Research Network at the University of Oxford to provide users with knowledge about food systems and sustainability.
http://foodbytes.org.uk/

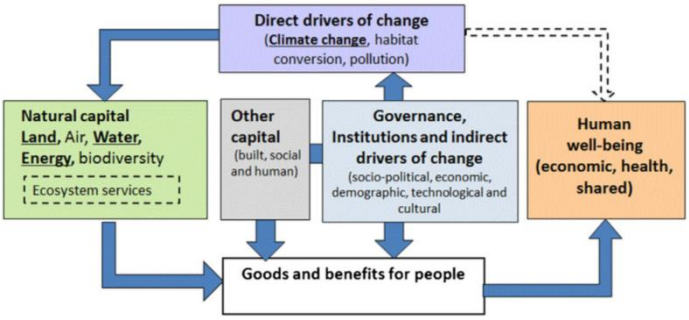
Routledge handbook of food and nutrition security

This new book covers current knowledge of food and nutrition security from a global perspective, including how food has been, is and should be made available; the ways in which politico-economic and social arenas have shaped access to food; and the effects of food and nutrition systems in addressing human health, known as food utilisation.
https://www.routledge.com/Routledge-Handbook-of-Food-and-Nutrition-Security/Pritchard-Ortiz-Shekar/p/book/9781138817197

LAND USE

How land use reflects resilience to climate change

This UK paper considers how current land uses and related policies affect resilience to climate change, setting out an agenda for research and practice relevant to stakeholders in land-use management, policy and modelling. A range of ecosystem services need to be valued and integrated into a resilient land-use strategy, including the introduction of non-monetary, physical-unit constraints on the use of particular services.

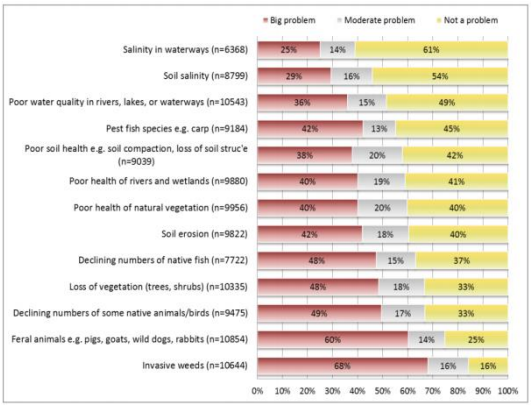


http://www.sciencedirect.com/science/article/pii/S1462901116300326

SUSTAINABILITY

2015 regional wellbeing survey

The natural capital section of the 2015 Regional Wellbeing Survey Wellbeing reports that most rural and regional Australians see invasive weeds, feral animals and declining native animals and vegetation as the biggest problems facing their areas. People living in NSW and Queensland were least likely to report that the local environment was in good condition. Further reports based on the 2015 survey results, examining farmers and agriculture, drought and extreme weather events, environment and natural resource management, and environmental watering and water reform, will come online as they are released.



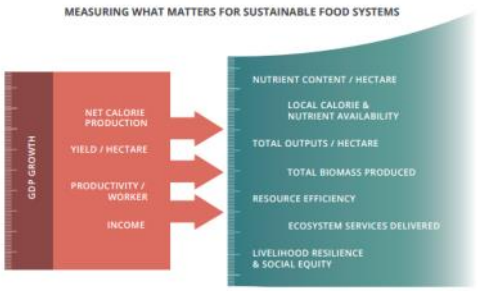
https://www.canberra.edu.au/research/faculty-research-centres/ceraph/regional-wellbeing/survey-results/2015

Advancing Australia's natural capital

NAB chairman, Dr Ken Henry recently delivered the 2016 Fiona Wain oration outlining the business case for natural capital in which he concluded: 'We need to manage our natural

capital with the same diligence that we manage our financial capital. This means accounting for the condition of our environmental assets, including the availability of clean water, the quality of biodiversity and the condition of our soils. And it means an integrated national approach to natural capital management.'
http://news.nab.com.au/dr-ken-henry-ac-speech-advancing-australias-natural-capital/

Shift to agroecological farming is needed



A new report from the International Panel of Experts on Sustainable Food Systems identifies industrial agriculture as a key contributor to the most urgent problems in food systems, and concludes that a fundamental shift towards diversified agroecological farming can deliver simultaneous benefits for productivity, the environment and society. What is required is agriculture based on diversifying farms and farming landscapes, replacing chemical inputs, optimizing biodiversity and stimulating interactions between different species, as part of holistic strategies to build long-term fertility, healthy agro-ecosystems and secure livelihoods.
http://www.ipes-food.org/reports

Southern NSW research results

This DPI publication summarising research undertaken by NSW DPI in the southern cropping region of NSW in 2015 includes papers on water, soils and climate interactions with crops.
http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/660496/Southern-NSW-research-results-2015.pdf

Solutions to feed the world

This new book from Friends of the Earth promotes agroecology, diversified organic farming and small- and mid-scale farmer livelihoods. It focuses on reviving rural economies, advancing food sovereignty and democratising governance and power in the food system.
http://www.foe.org/projects/food-and-technology/farming-for-the-future

EVENTS

September 28-30	Bushfire 2016, Brisbane http://www.bushfire2016.org/
December 4-8	7th International Nitrogen Initiative Conference, Melbourne http://www.ini2016.com/
March 26-28, 2017	2nd Agriculture and Climate Change Conference, Barcelona http://www.agricultureandclimatechange.com/

SUBSCRIBE

NRM on Farms is a monthly NSW DPI newsletter that summarises recent information about climate and natural resource management relevant to agriculture to keep farmers and agricultural and NRM advisors and researchers up to date. It is freely available to anyone interested or involved in agriculture or NRM. To subscribe, email Rebecca Lines-Kelly at rebecca.lines-kelly@dpi.nsw.gov.au.

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