

AJASN AGRI – Newsletter

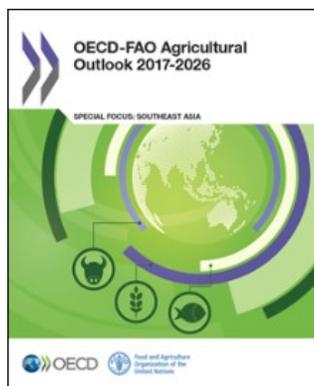
December 2017

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The Outlook is available
[here](#).

Public sector & related

Global hunger levels have fallen more than a quarter since 2000, but rising hunger scores of several countries in the 2017 [Global Hunger Index](#) (GHI) underline how uneven and how precarious is this progress. This blog post discusses [food waste](#) developments in Sweden. The Australian Government is setting up a national [food waste reduction](#) body.

Leaving the EU without a trade agreement would cost the UK economy £400bn by 2030, according to [research](#) from leading food and agribusiness bank, Rabobank.

A [Melbourne TAFE](#) is now offering courses in greengrocery (from 2018.)

A [feature article](#) published in the open access journal *eLife* gives perspectives on the bio-based economy and 20 emerging issues in biological engineering.

This [study](#) found the benefits of organic farming are greatest when we combine it with reduced food waste and limited meat consumption. New York city (sanitation) announced a [micro](#)-grant program to fund local businesses interested in developing initiatives to curb food waste.

Here is a [scoping study](#) (potential pilot project) on organic waste management options in Sydney.

Louisiana has developed a framework [Strategic Adaptations for Future Environments](#) (LA SAFE), a policy that radically rethinks coastal land use and development patterns. It resettles communities that can't be fortified, retrofits those vital to the region's economy, and reshapes high-ground territories to best foster economic and population growth. (Here is a story about [one resettlement](#).)

Farming

Three global interventions (regulation, user fees, and reducing global meat intake) might reduce the ballooning problem of [antimicrobial resistance](#) on farms. A new review published in the European Journal of Soil Science examines the results of recent studies on [veterinary antibiotic](#) use. New research shows common [weed killers ingredients](#) can also cause bacteria to become less susceptible to antibiotics. Here is a [systematic review](#) and meta-analysis on 'restricting the use of antibiotics in food-producing animals and its associations with antibiotic resistance in food-producing animals and human beings.'

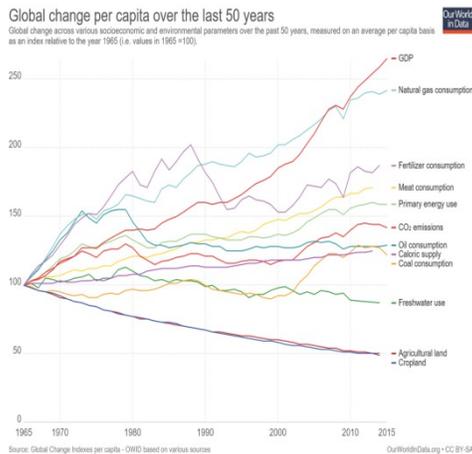
There are more articles being written about a [post-animal economy](#) and cellular agriculture – example.

The profitability of the average UK farm could fall by as much as half after Brexit. A [report](#) by the Agriculture & Horticulture Development Board (AHDB), says the 'worst-case scenario' would cut average farm profits from £38,000 a year to just £15,000.

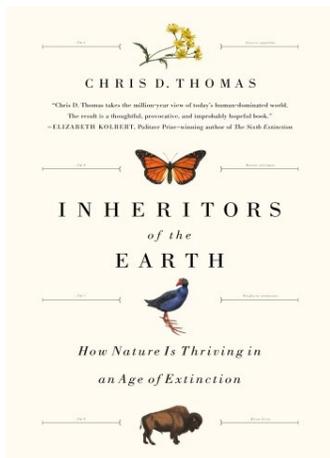
Rabobank says that [alternative proteins](#) have a significant chance of capturing market share in the next five years in the EU, and to some extent in North America.

Proposed national standards for chicken farming argue that [battery cages](#) are not a significant detriment to hens' health.

Canada's [Food Report Card](#) 2016: Provincial Performance - this inaugural provincial food report card compares 63 food performance metrics across Canada's 10 provinces.



To see the 'Our world in data' original graph [link](#) here.



An interview with the author is [here](#). (Not everyone agrees with his ideas.)



Babette Porcelijn's book *De Verboden Impact* (Hidden Impact) reveals that the manufacture of new products is the biggest human impact on the planet. [\(Source\)](#)

Ecosystems

[15,000 scientists](#) in 184 countries warn about negative global environmental trends.

Eastern Australia is in the top 10 of the world's major deforestation fronts – the [only one in a developed nation](#). Most of the clearing is happening in Queensland, and it is accelerating. Most of the clearing in Queensland since 1999 has been for pasture. Most good cropping land was cleared decades ago. Yale Environment 360 reports on the [rapid decline of the world's kelp forests](#).

A third of the planet's land is severely degraded and fertile soil is being lost at the rate of 24 billion tonnes a year, according to first [the Global Land Outlook](#). Improving [soil health in farmlands](#) could capture extra carbon equivalent to the planet-warming emissions generated by the transport sector.

Many Pacific Island nations will lose 50 to 80 percent of [marine species](#) in their waters by the end of the 21st century if climate change continues unchecked.

Research shows that [relocating crops across the globe](#) could help us get closer to our full agricultural potential (e.g. use less water.) The study says that if crop planting were optimized to provide the most calories while using least water, our planet could feed 825 million more people than it does now, using 13 percent less H₂O.

Researchers are [concerned](#) if the increase (in global radiance from) artificial light at night continues to grow at a fast rate it will have serious effects on the Earth's ecology.

Gulf of [Alaska cod](#) populations appear to have nose-dived. This fishery collapse (70% decline in 2 yrs.) is linked to warm water temperatures.

A study says decades of unsustainable logging has created an 'extinction debt' in [Victoria's central highlands](#) that will trigger an ecosystem-wide collapse within 50 years.

In this [study](#) researchers say that focusing on species [function](#) and evolutionary heritage can narrow the focus on what needs to be protected most urgently.

Australia is installing a world first [continental acoustic array](#) to detect ecosystems sounds (as an early indicator of health.)

Climate

This [study](#) found that the top 20 meat and dairy companies emitted more greenhouse gases in 2016 than all of Germany, Europe's biggest climate polluter by far.

The [Climate Science Special Report](#) (US) was published in early November 2017. *Yale Environment 360* examined [what newer research says](#) about the world's chances of avoiding the most severe impacts of climate change. A collection of [SSIR articles](#) highlighting environmental issues and climate change innovation.

A new report about the impact of climate change on global food security has been launched by the United Nations World Food Programme (WFP) in partnership with the Government of Sweden: [How Climate Change Drives Hunger](#). A recent CERES analysis of food companies' exposure to water risks is entitled [Feeding Ourselves Thirsty](#).

The process of getting better practices to more people – "scaling up" innovations to make agriculture more climate-smart – has baffled many development practitioners. Some approaches work on a small scale, but suddenly on a larger scale, everything changes. These are the challenges that the authors of [these 9 briefs set out to address](#).

This [article](#) says we will need geoengineering by the mid-2030s to have a chance at the (1.5 degree) goal. This [study](#) has investigated carbon feedback from forest soils (for 25+ years.)

Two studies find that the prospect of a dangerously warming planet inspires us to close ranks / cling more tightly to our clan ([here](#), [here](#).)

Health

[Pollution denial](#) is starting to appear inside *and* outside the US in countries where the air is much more toxic.

A new [drug-resistant strain of malaria](#) is beginning to spread in SE Asia.

A [report](#) (analysis of internal documents) shows the sugar industry buried research that pointed to sugar's negative health effects ≈ 50 years ago.

A large long-term study on the use of the big-selling weed killer glyphosate by agricultural workers in the United States has found no firm link between exposure to the pesticide and cancer ([here](#), [here](#), [here](#))

This article starts with a premise that as genetic editing becomes a reality, some say it would be [wrong not to use it to cure disease](#).

Science & technology

Additional [evidence](#) of resistance gene transfer between bacterial species.

The Office of the Chief Scientist has published an [occasional paper](#) on Gene Editing and CRISPR. Researchers have [published a paper on bioRxiv](#) that argues gene drive techniques (e.g. editing genes of insects to get rid of them) aren't safe enough to use in the current, basic form. Esvelt & Gemmill published a paper on how [Conservation demands safe gene drives](#). And a different gene-editing technology could help New Zealand in an ambitious project to [eradicate invasive mammal predators](#) – but the plan could have dangerous consequences for the rest of the world. What's a pest in one place may be valued in another, so getting consent to use a gene drive could mean consulting people across a species' whole range, be it several nations or continents.

The Queensland University of Technology has genetically modified [Cavendish bananas](#) using a wild gene, resulting in strongly resistant and Panama (TR4) disease-free plants across a three-year trial. New [research](#) brings us closer to the development of salt-tolerant grapevines. The first [genetically modified apples](#) went on sale in the United States (slices don't brown.) [Tomatoes](#) produced with more anti-oxidant features. But, breeding highly productive corn has [reduced its adaptability](#). This research [review](#) (for journalists) covers farmed versus wild salmon.

University of Illinois researchers are developing a [bio-based jet fuel](#) made from *engineered sugarcane*, which could become a lucrative energy crop. This [publication](#) discusses *Best practices for the emerging Australian Seaweed Industry*.

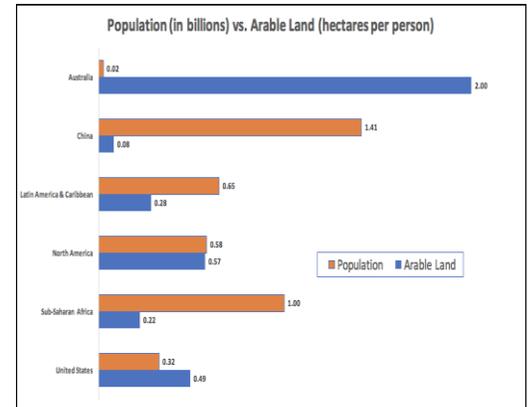
New technology allows fast testing for [purity](#) of ground beef (i.e. does it contain 'guts?')

The annual [Levelized Cost of Energy Analysis](#) from Lazard shows that prices for traditional sources of power generation have risen in the past year, while renewable sources such as solar and wind continue to see costs lowering dramatically.

This article discusses the evolving [supermarket business model](#) (because of different purchasing patterns by consumers.)

Starting in 2018, Australian universities will be required to prove their research provides [concrete benefits](#) for taxpayers and the government, who fund it.

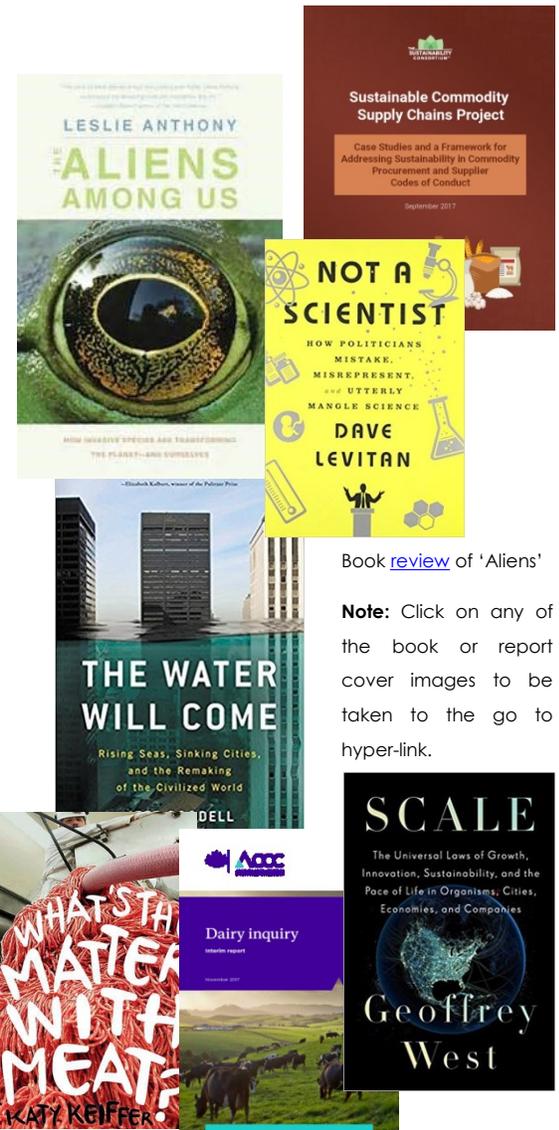
The economic impacts of a potential shale gas development in the Northern Territory – [paper](#).



This [article](#) about China's food security says 'Disparities in arable land vs. population give a clue to the evolution of global food security.'

Graph data from:

<https://data.worldbank.org/indicator/AG.LND.A.RBL.HA.PC?locations=CN>.



Book [review](#) of 'Aliens'

Note: Click on any of the book or report cover images to be taken to the go to hyper-link.

Forward 'looks'

Read a report on the: Future of Midwest Agriculture [here](#).

BMJ [scenarios](#) on: What will global research look like in 2037?

How can we feed the world in 2050? A [review](#) of the responses from global scenario studies

Climate change is an impetus for [scenario planning](#) in an agricultural region of Canada.

Shaping the Future of Global Food Systems: A Scenarios Analysis ([WEF](#))

How is [innovation in aquaculture](#) conceptualized and managed? A systematic literature review & reflection framework to inform analysis and action

Assumptions

This [research](#) by the Oxford Martin School says that governments might not know the economic value of nature, and the extent to which national and global wealth depends on it.

This [opinion piece](#) argues that too many political leaders are drawing the wrong conclusions from the data.

Bloomberg New Energy Finance looks at [most common climate denial memes](#).

A Bank of England blog post suggests that distractions such as [smartphones and social media might be hurting our productivity](#).

[Georgia, USA, is replacing roadside grass to help prevent climate change](#). They are using a perennial grain (Kernza) specially bred to have deep roots that draw carbon down into the soil. And, it might be a revenue source (for paper towel manufacture for example.)

This [assessment](#) suggests that removing animals from US agriculture would reduce agricultural GHG emissions, but would also create a food supply incapable of supporting the US population's nutritional requirements.

Scientists in Australia worry that [removing glyphosate](#) will mean a return to use of more toxic substances (i.e. weed killers.)

The second edition of the federal government's [register of foreign-owned agricultural land](#) shows an overall slight decline in foreign-owned land amid a significant rise in Chinese ownership to 14.4 million hectares, alongside an equally large fall in British ownership to 16.4 million hectares.

This [report](#) 'Our Meatless Future: How the \$90B Global Meat Market Gets Disrupted' has some interesting infographics.

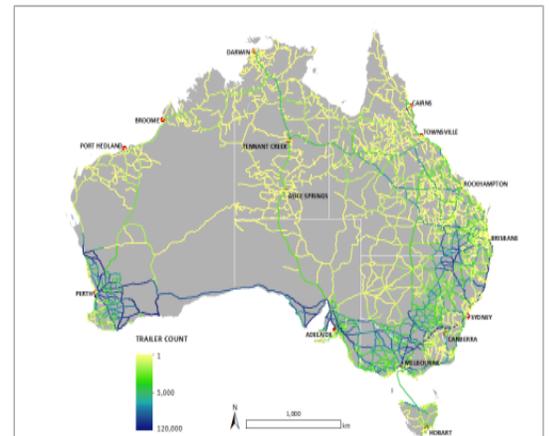
A new [map](#) establishes that there are 4.62 billion acres of croplands in the world, which is 15 to 20 percent higher than former assessments. The change is due to more detailed understanding of large areas that were never mapped before or were inaccurately mapped as non-croplands. The US Geological Survey says the world has [20% more farmland](#) than previously thought.

[Research released by the Grattan Institute](#) shows that income growth and unemployment rates are not obviously worse in regional areas.

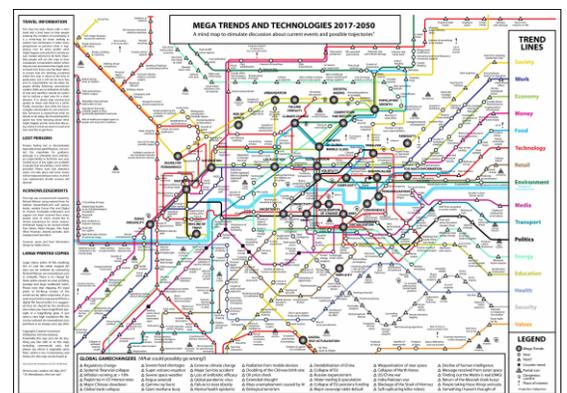
The NZ Prime Minister's chief science adviser (Peter Gluckman) has said there is a growing consumer appetite around the world for synthetic alternatives to meat and milk, which poses an ['existential threat'](#) to the country's economic fortune.



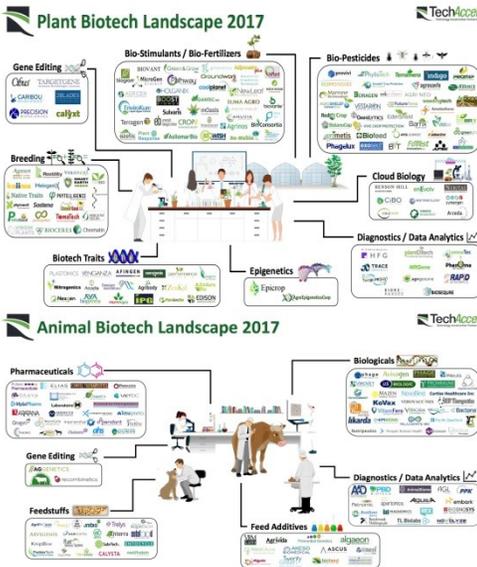
This house is made from grass, straw, tomato stems and seaweed ([story](#).)



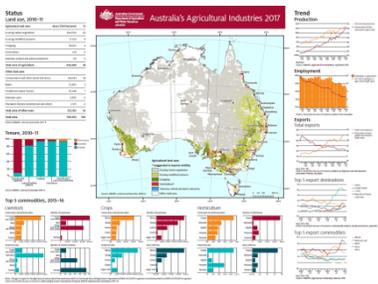
CSIRO issued a final report on TransIT (Transport Network Strategic Investment Tool) - [here](#).



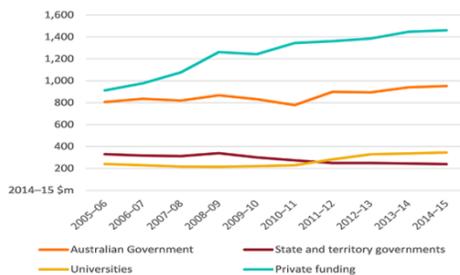
A map of [megatrends](#) and technologies 2017 - 2050



A map of biotech companies in the U.S. ([source.](#))



ABARES [published](#) Australia's agricultural industries 2017.



Click [here](#) (ABARES 2017) for more on Australian funding for rural R&D

Upcoming meetings

Next meeting: tba **April 2018**

News

In a [ruling](#) that could set a precedent for lawsuits over the effects of climate change, a panel of appeals judges on Tuesday found three paint manufacturers responsible for the health hazards of lead paint in California homes. Monsanto Co. and nearly a dozen state and national farm groups are [suing California](#) over the state's decision to list the popular ag chemical glyphosate as a carcinogen. The NSW Environmental Defender's Office (EDO) issued a summons in the NSW Land and Environment Court to a Moree cotton grower Peter Harris on behalf of a range of green groups claiming the grower [illegally extracted](#) water from part of the Murray system. They want return of the water 'stolen' or forfeiture of future entitlements.

Cargill is investing US\$240m in India over the next five years to improve the country's [food processing](#) industry.

The UK Food Standards Agency launched an animated version of their target operating model (TOM) which shows how businesses will navigate the [new system of regulation](#) envisaged under the *Regulating Our Future* initiative.

A [new trial](#) in southeastern Australia will see Alphabet's X lab use drones to drop food and medicine right next to people's back doors (country.)

This [article](#) discusses (remote) community-driven solutions that are helping both to improve food security and to pass down Inuit knowledge to younger generations.

McKinsey has published [an article](#) on 'Successful agricultural transformations: Six core elements of planning and delivery.'

Web

The [Honda Marine Science Foundation](#) formed in 2016 and went public this year, with a mission to help restore marine ecosystems and facilitate climate change resilience.

The [Revelator](#) is a new 'news' sponsored by the Center for Biological Diversity.

Read 'Public engagement: [a practical guide](#)' from Sense about Science.

Reports

AgriFutures Australia published horizon scans that you may enjoy reading:

- Horizon Scan Three – full report
<http://www.agrifutures.com.au/publications/horizon-scan-3/>
- Horizon Scan Two – full report
<http://www.agrifutures.com.au/publications/horizon-scan-2/>

This thesis discusses scenario planning [in practice](#).

IBM published a Blockchain for business. Pages 26– 28 relate to agriculture <https://public.dhe.ibm.com/common/ssi/ecm/xi/en/xim12354usen/XIM12354USEN.PDF>

McKinsey Global Institute's latest report, [Jobs lost, jobs gained: Workforce transitions in a time of automation](#) assesses the number and types of jobs that might be created under different scenarios through 2030 and compares that to the jobs that could be lost to automation.