

AJASN Newsletter

January – February 2019

Inside

- 1 Public sector
- 2 Read
- 3 Agriculture
- 3 Behaviour
- 4 Defence
- 5 Economy
- 6 Environment
- 7 Foresight
- 8 Health
- 9 Rural
- 9 Science & Tech
- 10 Society
- 10 Resources
- 12 Next Meeting

Next meeting

4 April 2019 in Canberra

Contributors: Thanks to Dr Rhyll Vallis, Dr Stuart Pearson & Dr Louise Osborne



Five EU scenarios 2025 ([here too](#))

The Public Sector

Australia could play a leading role in the [regulation of the new media giants](#) Google and Facebook (after the Australian Competition and Consumer Commission released draft recommendations aimed at supporting journalism as a public good, protecting our privacy and limiting the ability of media companies to manipulate the news that's served up in news feeds and search results.)

Here is an OECD survey on the future of jobs (to take.) [Methodology](#).

This [paper](#) provides a new methodology for setting social security payment levels. Here is a suggestion for tax reform: replace company tax with [cash flow tax](#).

A new UK think tank [report](#) on how people moving jobs too quickly in the civil service is costly and damages trust at all levels.

This [paper](#) shows a decline in trust in government (satisfaction in democracy has more than halved in a decade and trust in key institutions and social leaders is eroding.) 'By 2025 if nothing is done and current trends continue, fewer than 10 per cent of Australians will trust their politicians and political institutions – resulting in ineffective and illegitimate government, and declining social and economic wellbeing.'

This article speculates about a '[Chinese world order](#)' circa 2049. China is now the second-largest performer in terms of R&D spending, on a country basis, and accounts for 20 percent of total world [R&D expenditure](#), with the rate of R&D investment growth greatly exceeding that of the U.S. and the EU.

This speculates about [the future of fact](#) – i.e. answering: How will society change when we can no longer believe what we see, hear, or think?

[Government procurement: the scale and nature of contracting in the UK](#) reveals that four departments – the Ministry of Justice (MoJ), the Department for Transport (DfT), the Department for International Trade (DIT) and the Department for Environment, Food and Rural Affairs (Defra) spent more than half of their entire budgets with external suppliers last year.

COAG issued a [National Drought Agreement](#) that sets out a joint approach to drought preparedness, response and recovery. It replaces the Intergovernmental Agreement on National Drought Program Reform.

The world needs to find a new global consensus fashioned similarly to the Paris Climate Agreement to address an increasingly [problematic food system](#). And, from 2018 a [global system](#) needs to be developed to assess cascading hazards. Researchers should go beyond calculating the statistics of extreme droughts, floods and wildfires in isolation and delve into their interactions with natural and built environments.

German data scientist Andreas Schleicher, the architect behind the PISA test, wants to prepare kids for the age of AI by emphasising what makes us uniquely human. So he's using PISA to assess abilities in creativity, empathy, and collaboration ([here](#).)

[Next 10 years](#): 'The future of governance is not only about the technocratic capacity to make rules (even if they are machine readable rules), but also our ability to construct new social legitimacy for all and by all.'

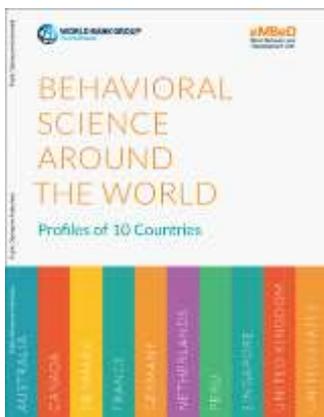
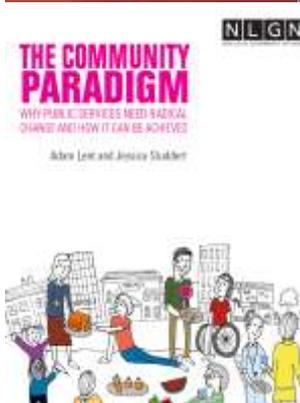
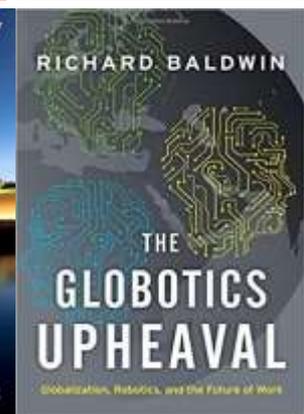
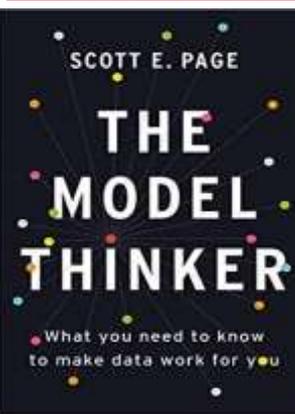
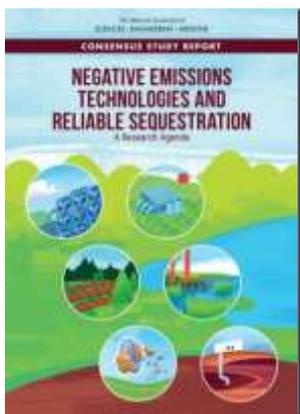
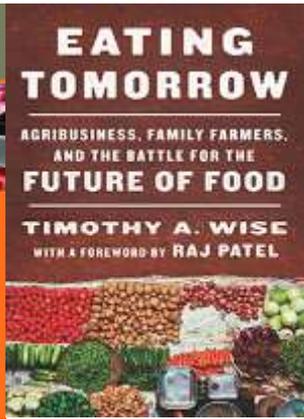
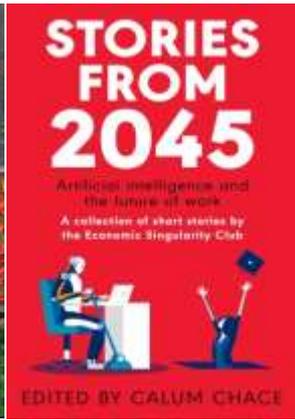
ICYMI: [The utilisation of social science research in policy development and program review](#) – ARC Linkage Project Report, Institute of Social Sciences Research, University of Queensland.

ICYMI: In 2016 the Treasury Board directed departments and agencies to devote a fixed proportion of programme funds to [experimenting with new approaches](#). An Innovation & Experimentation Team was set up in the Treasury Board to provide some central support.

Read



*click on image to be taken to the actual document or an access related link



The Public Sector (cont'd)

Regulatory systems are struggling to cope with the nature & speed of technological change. This new NESTA [report](#) shows how regulators and governments can get better at anticipating change.

A new framework for [measuring public value](#) has four key components. Four domains to measuring public value according to the researchers are. 1. Outcome achievement. The extent to which a public body is improving publicly valued outcomes across a wide variety of areas. This can include social, economic, environmental and cultural outcomes. 2. Trust and legitimacy: The extent to which an organisation and its activities are trusted and perceived to be legitimate by the public and by key stakeholders. 3. Service delivery quality: The extent to which services are delivered in a high- quality manner that is considerate of users' needs. These will be maximised when service users are satisfied, and when they perceive the services to be accessible convenient and responsive to their needs. 4. Efficiency: The extent to which an organisation is achieving maximal benefits with minimal resources. It is expected to be high when the benefits provided by an organisation are perceived to outweigh the costs, when unnecessary bureaucracy is avoided and when an organisation is perceived to offer value for money.

Agriculture (& food)

The OECD launched [a new agriculture web presence](#). [Start by reading four key stories on understanding the global food system](#). They also published [a dozen new policy briefs that explore different topics](#) and make recommendations to policy makers.

[Paper](#) on *Meat analogues: considerations for the EU*. Policymakers in the EU need to respond to new production methods and products in plant-based 'meat' and cultured meat. The decisions that they take now – on the regulation, labelling and marketing of meat analogues, for example – will have a significant influence on the industry's direction and pace of growth.

New [research](#) prepared by the International Livestock Research Institute for the World Economic Forum's Meat: the Future dialogue series looks at the role of the livestock sector in developing and emerging economies to 2030 and beyond.

Timothy Wise's new book [[Eating Tomorrow: Agribusiness, Family Farmers, and the Battle for the Future of Food. New Press, New York, 2019](#)] argues that most solutions currently put forward by government, philanthropic and private sector luminaries are misleading. (Also [here](#).)

Digital flavours: Cutting edge [developments](#) at the intersection between flavour science and artificial intelligence are poised to revolutionise global food systems (e.g. machines learning tech that can predict flavour pairings.) This might impact food related innovation, health, nutrition and environmental impact (e.g. radically optimise flavour formulation and product development.)

Infectious disease outbreaks in plants are a major threat to the world's ecosystems, agricultural crops and food trade. [Research](#) led by mathematicians has identified a way to model disease progression and predict the 'tipping point' of a disease, providing early warning indicators that an epidemic is imminent and action needs to be taken.

The U.S. is still the world's biggest agricultural exporter but [The Netherlands](#) is in second place. Throughout much of the Midwest, U.S. farmers are filing for chapter 12 bankruptcy protection at levels not seen for at least a decade, a Wall Street Journal review of federal [data](#) shows. Weak antitrust law enforcement & oversight by the U.S. Department of Justice has allowed a handful of firms to amass enormous market, economic, and political power over [global seed supply](#).

The UAE plans to be among the top 10 [food secure nations](#) by 2021 the Minister of State for Food Security told a forum discussing the governing of future risk at the World Government Summit (WGS) 2019.

A study in [Journal of Hydrology X](#) describes three different roles water plays in maintaining or disrupting the resilience of a system: water can be the "source" of resilience which maintains important functions of an ecosystem, it can be the "victim" of change caused by for instance land-use change and pollution or it can

also be the “driver” of change, causing significant damage through for instance droughts or floods. (Hydrology X is a new open access journal. A second [new](#) open access journal is Water Research X.)¹

Researchers have pioneered a new method which allows them to rapidly recruit [disease resistance](#) genes from wild plants and transfer them into domestic crops.

A [Lancet commission](#) report hit out at the vested interests of the food industry and its role in obesity and undernutrition as well as climate change. Unease about the influence of big corporations on public health was also highlighted by a study on the political power of [Coca-Cola](#) in the US and protests in the UK over a child health body receiving [sponsorship](#) from baby-formula companies. Is it time to start giving Big Food the same treatment as Big Tobacco? The Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems was [published](#) In January. Here are [eight takeaways](#). Discussion [here](#) too.

[A paper](#) in *Science Advances* found that concentrations of essential nutrients decreased in 18 strains of rice after being exposed to increased carbon dioxide levels in an experiment. The study was the first to show that B vitamins like riboflavin, which helps your body break down food to make energy, and folate, which is important for fetal development, dropped by as much as 30 percent. In this related [article](#) a broader story about nutrient decline in food is told.

[A study](#) says that fluoxetine, a commonly used antidepressant i.e. Prozac, can alter hormone levels and blunt stress responses in an exposed embryo and its descendants (exposure during early development, for three generations of offspring in zebrafish.)

A fisheries researcher (US) found that [oyster aquaculture](#) operations can limit the spread of disease among wild populations of oysters. The findings are contrary to long-held beliefs that diseases are often spread from farmed populations to wild populations.

[Fish populations](#) are declining as oceans warm, putting a key source of food and income at risk for millions of people around the world, according to new research. The study found that the amount of seafood that humans could sustainably harvest from a wide range of species shrank by 4.1 percent from 1930 to 2010. It's 1.4 million metric tons of fish from 1930 to 2010.

Every animal pulled from the deepest part of the ocean had [plastic](#) in its gut.

This [research](#) says that cultured meat is not *prima facie* climatically superior to cattle; its relative impact depends on the availability of decarbonized energy generation and the specific production systems that are employed.

In Missouri legislators enacted a [new statute](#) to limit how companies use the word meat on food labels or in advertisements. The legislation is being challenged in the [courts](#). ([Here](#) too.)

The Ellen MacArthur Foundation released [a report](#) about a circular economy redesign for the food industry, where food is produced locally as much as possible, is nutritious and regenerates ecosystems and where waste and pollution are eliminated. Called Cities and Circular Economy for Food.

The people who hold the most extreme views opposing genetically modified (GM) foods think they know most about GM food science, but actually know the least, according to this [research](#).

[Researchers](#) (U.S. Department of Agriculture Agricultural Research Service) report in the journal *Science* that crops engineered with a photorespiratory shortcut are 40 percent more productive in real-world agronomic conditions.

A growing number of supermarkets sell food without packaging in an effort to reduce the toll of plastic on the environment i.e. 'Zero-[Waste](#)' Grocery stores.

Great resource: From University of California San Francisco on the connections being made between tactics taken by the tobacco industry and other corporations that influence public health, particularly on the issues

¹ The entire editorial board of the Elsevier-owned *Journal of Informetrics* resigned in protest over high open-access fees, restricted access to citation data and commercial control of scholarly work. The same team is launching a new fully open-access journal called [Quantitative Science Studies](#). The journal will be for and by the academic community and will be owned by the International Society for Scientometrics and Informetrics (ISSI). It will be published jointly with MIT Press.

of food, climate change and pharmaceuticals. The [Food Industry Documents Archive](#) contains documents from the food industry related to their advertising, marketing, regulatory activities, and scientific research.

Defence (National security, Emergency Management & Defence)

This paper looked at: perceptions about the [false alarm ballistic missile warning](#) that occurred in Hawaii (United States) in January of 2018, to identify what kind of behaviour or actions people took upon receiving the warning, and to identify what situational or contextual factors are related to perceptions and behaviours.

With \$60 and a few fake Facebook accounts, researchers were able to identify [service members in a military exercise](#), track their movement, and even persuade them to disobey orders.

European [military thinking](#) has to embrace the political and economic cultures of African and Arab countries.

The oversight of U.S. military's food suppliers called into question after a fraud indictment ([here.](#))

[Dealing with China's potential decline](#) could prove just as challenging as its rise (& [here.](#)) Countries in China's neighbourhood are pulling out, reviewing or scaling down [Belt and Road](#) projects.

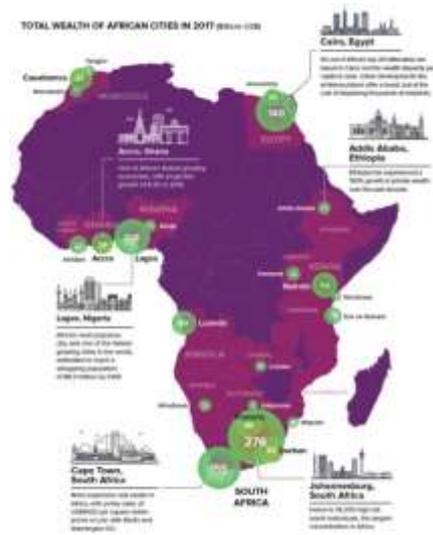
Germany's IT watchdog – the Federal Office for Information Security (BSI) says it has seen no evidence [Huawei](#) could use its equipment to spy for Beijing, news weekly Spiegel reported Friday. All three of Germany's main mobile network operators use infrastructure provided by Huawei. The Chinese firm is also the brand behind some of Germany's most popular mobile phones

Can we [predict](#) when and where a crime will take place? Not yet.

This new [study](#) evaluates the impact of online campaigns to counter violent extremism.

The US will stop sharing intelligence with countries that use Huawei hardware in their core communication systems, US Secretary of State [Mike Pompeo has said](#). [Britain](#), [New Zealand](#), and [Germany](#) have all signalled they may be willing to continue using Huawei gear as they prepare their infrastructure for the arrival of 5G. Pompeo's remarks are a major escalation in tensions between the US and its allies over the role of Huawei.

More than 48 rear admirals, generals + officers who worked under USA presidents all the way back to Eisenhower weigh in on attempts to re-review the National Climate Assessment, warning that it's "dangerous to have [national security analysis](#) conform to politics."



Economy

There is growing [evidence](#) that the USA trade wars are affecting the US economy.

A report, A New Circular Vision for Electronics, Time for a Global Reboot, is [available here](#).

[Article](#): Socialist utopia 2050: what could life in Australia be like after the failure of capitalism?

A January 2018 Accenture [report](#) titled "Reworking the Revolution" estimates that new applications of AI combined with human collaboration could boost employment worldwide as much as 10 percent by 2020.

Japan finds a huge cache of scarce [rare-earth minerals](#) but they will be difficult to extract (below the seabed.) Federal Labor has called for Australia's abundant [lithium resources](#) to be kept onshore to boost local manufacturing for batteries, which in turn would support renewables.

From the Ellen McArthur Foundation: 'The [circular economy](#) is based on three principles. First, waste and pollution are designed out. This means the negative impacts of economic activity that cause damage to human health and natural systems are eliminated. This includes factors such as the release of greenhouse gases, the use of toxic and hazardous substances, the pollution of air, land, and water, and the landfilling and incineration of waste. Second, products and materials are kept in use. This means favouring activities that preserve the most embedded energy, labour, and materials. Examples include designing for durability, reuse,

remanufacturing, and in the last resort recycling. Third, natural systems are regenerated. This entails, for instance, deploying agricultural practices that not only avoid degrading soil, but actually rebuild soil health over time.'

[Older workers or perennials](#), are now the fastest-growing population of workers, with twice as many seniors as teenagers currently employed in the US. In the 30-year span from 1994 to 2024, workers aged 55 and older will go from being the smallest segment of the US working population to the largest, according to the US Bureau of Labor Statistics. Other industrialised nations are seeing similar trends; in Japan and South Korea, the workforce is aging even faster.

One of the largest credit rating agencies in the U.S. is warning cities and states to prepare for the effects of climate change or risk being downgraded. In [a new report](#), Moody's Investor Services Inc. explains how it assesses the credit risks to a city or state that's being impacted by climate change — whether that impact be a short-term "climate shock" like a wildfire, hurricane or drought, or a longer-term "incremental climate trend" like rising sea levels or increased temperatures. This [paper](#) discusses resilience in natural resource systems i.e. why/how some primary industries face high risk of tipping points (social-ecological.)

PG&E bankruptcy has been called the first climate-change bankruptcy (Probably not the last) in this [article](#). Global business leaders have identified the potentially catastrophic effects of climate change as by far the greatest long-term risk facing the world, in a hard-hitting report released by the World Economic Forum ahead of its 2019 annual meeting in Davos. The [Global Risks Report](#), which represents the views of business, academia and government, warned that the world was "sleepwalking into catastrophe" in its failure to produce and implement adequate policies to address the problem.

California's largest power company, PG&E, filed for bankruptcy, citing "the significant increase in [wildfire risk](#) resulting from climate change among its reasons. PG&E bankruptcy has been called the first climate-change bankruptcy (Probably not the last) in this [article](#).

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[Munich Re](#) reported that: Around 40 events in Australia and Oceania caused overall losses of approximately US\$ 1.5bn, of which US\$ 540m was insured. On 20 December, a hailstorm in Sydney caused insured losses of at least US\$ 200m, making it one of Australia's ten largest hail losses of all time. Smaller losses were incurred in Australia and New Zealand from cyclones, storms, wildfires and flash floods. Overall losses from individual events, such as the earthquake in Papua New Guinea in February, and Cyclone Gita on Tonga, remained in the low hundreds of millions of dollars. 164 people lost their lives in the region, the majority of them in the earthquake on Papua New Guinea.

The Public Policy Forum (Canada) issued a [report](#) following an 18-month Consultative Forum on China. The report recommends a strategy of increasing engagement, starting with sectoral trade agreements in less-controversial sectors that don't involve technology transfers and security concerns, such as agri-food (including fisheries), forestry, natural resources, insurance and wealth management, clean-tech, life sciences, engineering services, tourism, education and research.

Wales appointed the world's first – and only (so far) – [future generations commissioner](#) with statutory powers to represent the unborn citizens of Wales.

Environment

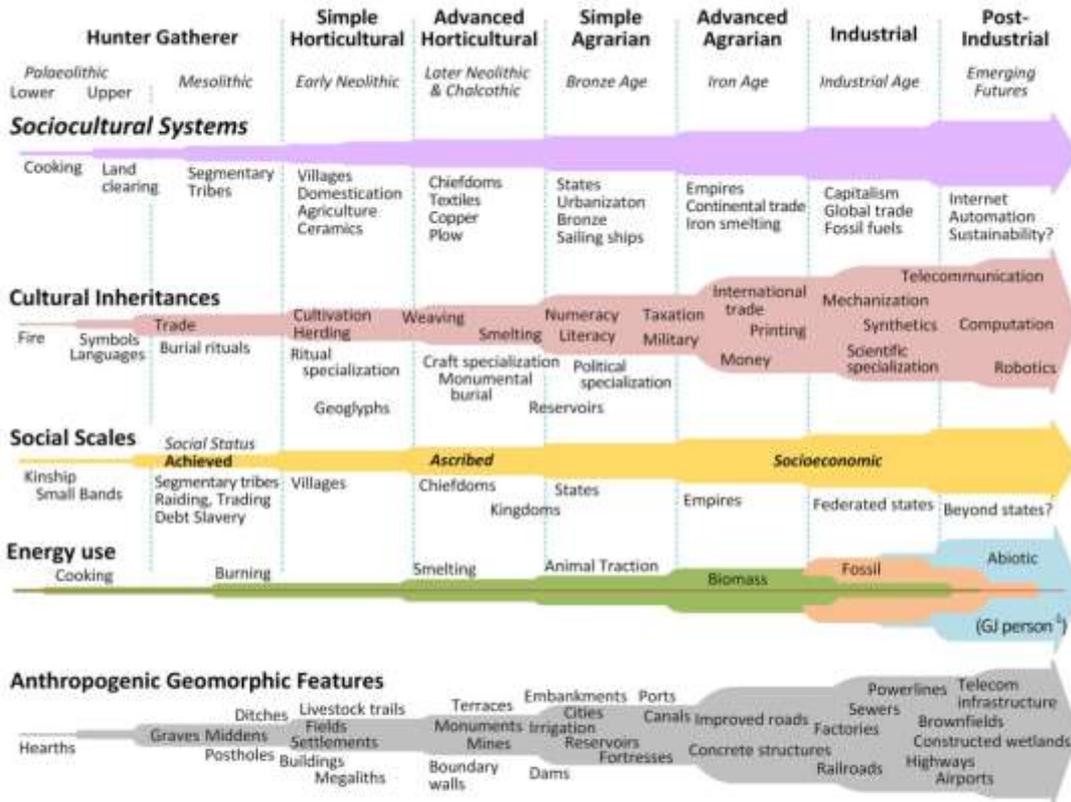


Figure 1. Conceptual diagram of long-term changes in sociocultural systems, cultural inheritances, societal scale, energy use and anthropogenic geomorphic features. Different societies combine different sets of anthropogenic geomorphic features, including both pre-existing and novel, to produce their sociocultural fingerprints across landscapes (this figure expands on Ellis, 2015, Figure 3 and Ellis et al., 2018, Figure 1).

Image source: 'This [paper](#) provides a general framework aimed at integrating geophysical and archaeological approaches to observing, identifying and interpreting the full range of anthropogenic geomorphic features based on their structure and functioning, both individually and as components of landscape-scale management strategies by different societies, or "sociocultural fingerprints".'

A UN Environment Frontiers report explores [emerging environmental issues](#) facing the world, from scientific innovations to options for climate change adaptation.

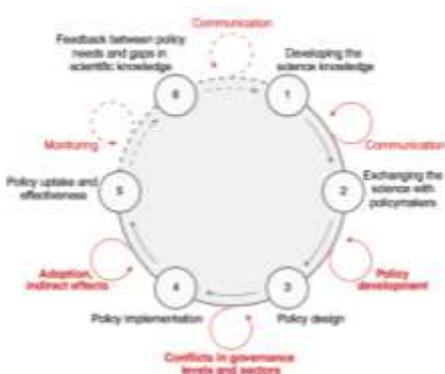


Fig. 1 | The science-policy exchange cycle and associated time lags. Science-based policy-making is a cyclical process that involves potential time lags (red) at each step that may also reduce the ultimate impact of the policies. Although a cyclical relationship is shown, each lag can occur independently of any other and may prevent further progression. Time lags highlighted in bold are those focused on here. Monitoring of policy impacts and feedbacks to new scientific research (dashed lines) are particularly uncertain processes that might not only involve time lags, but might also effectively not take place.

Concentrations of pharmaceuticals in rivers and lakes have significantly increased across the globe over the past 20 years, according to a [new study](#).

Research suggests that fatal, [prion-based conditions](#) like chronic wasting disease are visible in the eye's 'fluorescent signature.' But more money is needed to build a tool that would work in the wild.

Scientists have found [new evidence](#) that the Atlantic Ocean's circulation has slowed by about 15 percent since the middle of the last century. If it continues to slow, that could have profound consequences for Earth's inhabitants. (Earlier studies suggest it would mean much colder winters and hotter summers in Europe, changing rainfall patterns in the tropics, and warmer water building up along the U.S. coast that can fuel sea level rise and destructive storms.)

This paper ([here](#)) says that achieving the Paris Agreement's aim of limiting average global temperature increases to 1.5

°C requires substantial changes in the land system. However, individual countries' plans to accomplish these changes remain vague, almost certainly insufficient and unlikely to be implemented in full (esp. if emissions reductions don't occur.). Also we need to acknowledge overly optimistic assumptions about policy (image might be useful to consider where other policy lags occur.)

The erratic motion of the [north magnetic pole](#) (from Canada towards Siberia) is forcing experts to update model that aids global navigation.

As climate change fuels more intense and frequent wildfires, the number of people who die in the US from [inhaling wildfire smoke](#) could more than double by 2100, jumping from 15,000 premature deaths per year to 40,000 by the end of the century.

Distributed, [DIY geoengineering](#) scheme appears technically feasible and this could lead to rogue geoengineering activities.

When the Australian government relocated Martu hunter-gatherers from their Western Australia lands in the 1960s, no one could have predicted the massive impact their absence would have on the desert ecosystem. A [new study](#) found that in the decades when the Martu were taken out of this food web, the ecosystem shifted significantly, with increased wildfires, reduced biodiversity, and the growth of invasive species — including the camels now wreaking havoc in Australian deserts. Comparing the 1960s food web to the modern food web — and showing all species as nodes on a network — demonstrates that the Martu were the “knitters” of their ecosystem, and that their removal had devastating results.

This [research](#) identified two types of cascading effects for ecological regime shifts (e.g. from forest to savanna.) One-way interactions occur when the occurrence of a regime shift can affect the drivers of another, like a domino effect. Two-way interactions occur when there is a circular pathway (a hidden feedback) that can couple both regime shifts affecting each other. Domino effects and hidden feedbacks are thought to cause structural dependence between regime shifts. They are compared with the case of driver sharing, which can produce correlations but are independent. This [analysis](#) says migrant remittances can reduce the potential of local forest transitions (social-ecological regime shifts.)

Organisation for Economic Co-operation and Development (OECD) OECD Environmental Performance Reviews: [Australia 2019](#) was released on 30 Jan 2019. A [paper](#) on 'Environmental policy evaluation in the EU: between learning, accountability, and political opportunities?' This [opinion piece](#) argues that environmental impact assessments (around the world) aren't protecting the environment.

There is enough room in the world's existing parks, forests, and abandoned land to plant 1.2 trillion additional trees, which would have the CO2 storage capacity to cancel out a decade of carbon dioxide emissions, according to a [new Swiss analysis](#). Eight years' worth of data suggest that the [more diverse the forest](#), the greater the accumulation of carbon. Haiti looks as though it will soon become entirely [devoid of biodiversity](#) as the Caribbean country approaches 100 per cent deforestation.

A paper 'E. Jones et al. [The state of desalination and brine production: A global outlook](#)' says technology meant to help solve the world's growing water shortage is producing a salty environmental dilemma. Desalination facilities, which extract drinkable water from the ocean, discharge around 142 billion litres of extremely salty water called brine back into the environment every day. That waste product of the desalination process can kill marine life and detrimentally alter the planet's oceans.

This opinion piece comments on [rewilding](#) in Australia (i.e. we need to do rewilding differently.)

A [paper](#) on 'Environmental policy evaluation in the EU: between learning, accountability, and political opportunities?' Two studies claim that more than 200 peer-reviewed climate science papers are fatally flawed & the result of *political pressure from climate contrarians* ([study 1](#), [study 2](#).)

A research team used the power of open-access databases and machine learning to predict the conservation status of more than 150,000 plants ([study](#)) i.e. to identify species that were likely at risk of extinction ([here](#) too.)

A [large scale expansion in bioenergy crop production](#) could be just as detrimental to biodiversity as climate change itself, according to this research.

EPA (USA) science adviser allowed industry group to edit journal article "In a regulatory purpose, you really want all the members of the committee to be perceived as impartial and free of [conflict of interest](#)."

One-third of the ice in the Himalayas and Hindu Kush mountains will be lost due to rising temperatures by the end of the century, even if nations take aggressive measures to decrease greenhouse gas emissions, according to a [report](#) by more than 200 scientists.

A new [report](#) in *Nature* compares carbon emissions from 343 cities around the world, including 64 in the United States. The study standardises the results of cities' self-reporting into an analysis of emissions per-capita in an effort to determine which emissions reduction strategies work best. It highlights emissions from industry, agriculture, waste and wastewater treatment, transportation, and building stock.

In the journal *Nature*, journalist Jeff Tollefson recently offered an [overview](#) of the climate challenge and the progress that's been made so far. A Vox writer boiled it down to [three key graphics](#), adapted from Tollefson's piece (which you should read). Here is the first one:

[Cloud loss](#) could create a climate feedback loop that raises temperatures 8°C. Simulation (model) is new and needs to be replicated. ([Paper](#).)

A [study](#) suggests that the current rate of CO₂ absorption (by land) might not last. If land reaches a maximum carbon uptake rate, global warming could accelerate, with important consequences for people and the environment.

This [research](#) shows that as warming brings earlier spring rains in the Arctic, more permafrost thaws, releasing more methane in a difficult-to-stop feedback loop.

An international meeting of [Botanic Gardens](#) managers has learnt that up to a quarter of the plants being grown in their gardens are not expected to survive global warming (held in Victoria, the world's first Botanic Gardens Climate Change Summit.)

Climate change is causing significant changes to phytoplankton in the world's oceans, and a new MIT [study](#) finds that over the coming decades these changes will affect the ocean's color, intensifying its blue regions and its green ones. Satellites should detect these changes in hue, providing early warning of wide-scale changes to marine ecosystems

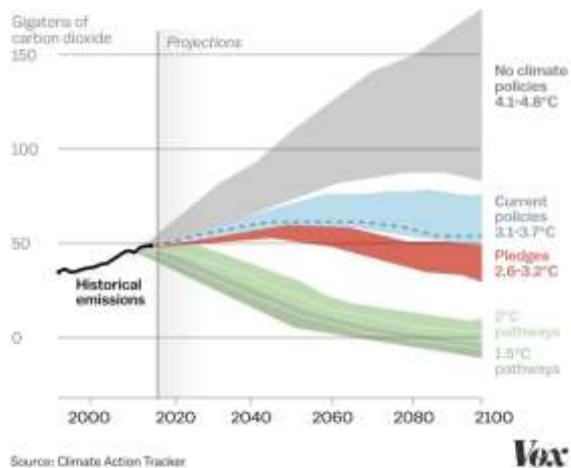
[Interesting paper](#): social media posts reveal humans are subject to 'boiling frog'-type sentiments as the climate warms.

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An article [Wordly Strategy for the Global Climate](#) in the Stanford Social Innovation Review (Fall 2018) discusses how each of three sectors – public, plural and private – tends to favour a different approach to address the problem of climate change. (See [here](#) too.) The article suggests (based on their review of 12 initiatives) that all of these initiatives add up to a collection of separate strategic positions more than a consolidated strategic perspective. Climate change has no invisible hand to reconcile differing perspectives. Each may contribute in its own right, but the synergy that could be had by working together is lost. So the planet continues to warm. (Worse is when the sectors themselves work at cross-purposes.)²

Effect of current pledges and policies

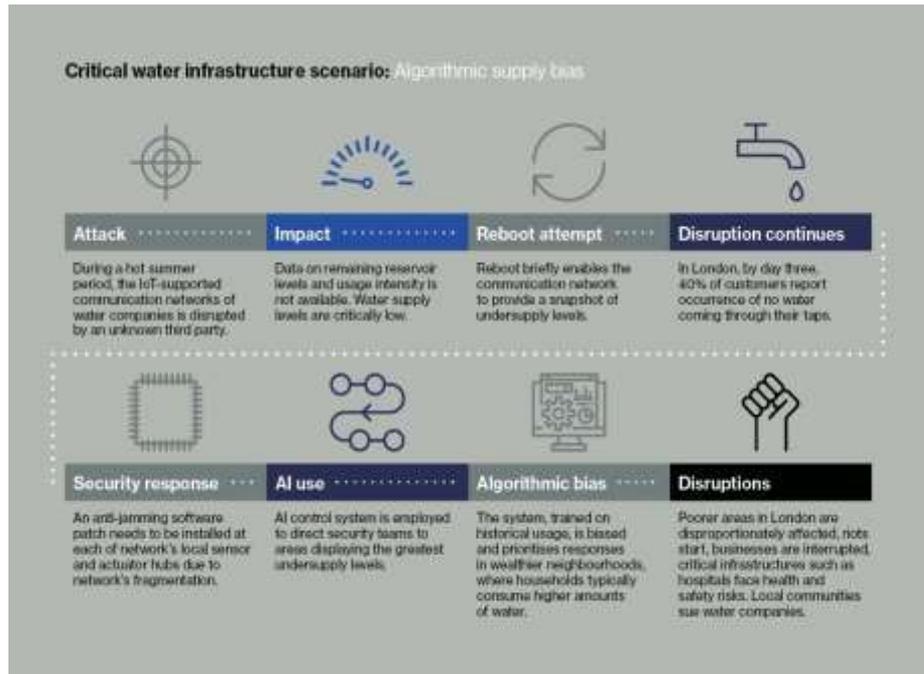
Global greenhouse gas emissions



² 'Orchestrated Planning in the Public Sector' In the public sector, we found an inclination to favour orchestrated planning: climate change initiatives in government tend to be centrally directed, analytically driven, and strategically deliberate. This is usually enacted in top-down fashion: to pledge, plan, and police, from the political leadership to the civil service, and then out to the broader population. Orchestrated planning can use central controls, such as regulations and decrees, or rely on incentives to encourage desired behaviours.

Grounded Engagement in the Plural Sector Plural sector associations tend to favour grounded engagement. Here the initiatives develop from the tangible experiences of learning in action—bottom-up. Think of this as thousands of flowers blooming, many planted in the soils of local communities, usually in response to local concerns.

The Centre of Excellence for Environmental Decisions released its [last magazine](#) (64 pages) canvassing environmental decision science. There are chapters on decision analysis, building models, prioritising investments, valuing information, adaptive management, long-term monitoring, influencing policy, marine collaboration and the social dimensions of decision science. CEED funding has ended so there will be no further issues.



First-ever February Category 5 typhoon https://cimss.ssec.wisc.edu/goes/blog/wp-content/uploads/2019/02/190225_himawari8_infrared_Wutip_anim.mp4

Foresight

Here are four [scenarios on the future of museums](#). Each describes one version of the year 2040 that poses distinct strategic challenges.³ [Our Bright Future](#) Idealists and pragmatists work together to build a sustainable world. [Fragmentation](#) Underground activists fight for equity, privacy, and economic reform. [A New Equilibrium](#) Making the best of a world that's a lot like today only more so. [Wild Times](#) In which social service non-profits save the day

Here is a [paper](#) on 'Legal Professionals of the Future: Their Ethos, Role and Skills' written in Australia.

Here is a report on Foresight [Africa](#). Here is another [article](#) that says the 21st century will most likely belong to China as the Chinese Century. But with a rapid increase in Chinese investment and African innovation, the 22nd century may see the dawn of the African Century.

Autonomous Venturing in the Private Sector Businesses, as independent organizations in the marketplace, are most inclined to favour autonomous venturing, much of this championed by creative entrepreneurs who develop new products, services, infrastructures, and technologies that provide the means to reduce global warming.¹

³ A bright future is based on the hopes and dreams shared by museum people when we asked, "What's the best future you can imagine?" Exploring optimistic outcomes helps organizations test their assumptions, build alignment among stakeholders, and identify actions they can take to make their own vision of a bright future come true.

A dark future embodies the fears that haunt museum people in the middle of the night. Thinking about worst-case outcomes can actually be empowering. Events that at first glance seem to presage the end of the world may turn out to be manageable when confronted with reason and ingenuity. Besides, dark futures make for compelling storytelling and can energize planning by capturing participants' imaginations.

An equilibrium might result from existing limits and challenges as they play out in coming decades. This scenario reflects people's common unconscious assumption that the future will be pretty much like the present, only more so. The details are based on credible, mainstream forecasts on topics ranging from the economy to demographics to climate change. (This scenario was the jumping-off point for Museum 2040, an issue of the Alliance's Museum magazine that explored how museums might thrive in this version of the future.)

Finally, a wild card illustrates the kind of low-probability, high-impact event that can disrupt the best-laid plans. Though you shouldn't obsess about these possibilities, including a few wild cards in your museum's planning deck will help you prepare to respond should the best or worst occur. And as you consider how you could handle these disruptions, you may discover actions that improve the museum's performance whether or not a particular wild card comes into play.

The BBC is offering a series of web articles on what they dub 'deep civilisation.' One [article](#) asks 'Are we on the road to civilisation collapse?' Series link: <http://www.bbc.com/future/columns/deep-civilisation>

A Euromonitor paper [Commerce 2040: Revolutionary Tech Will Boost Consumer Engagement](#) explores what entertainment venues, homes and stores might look like in 2040 (download link.)

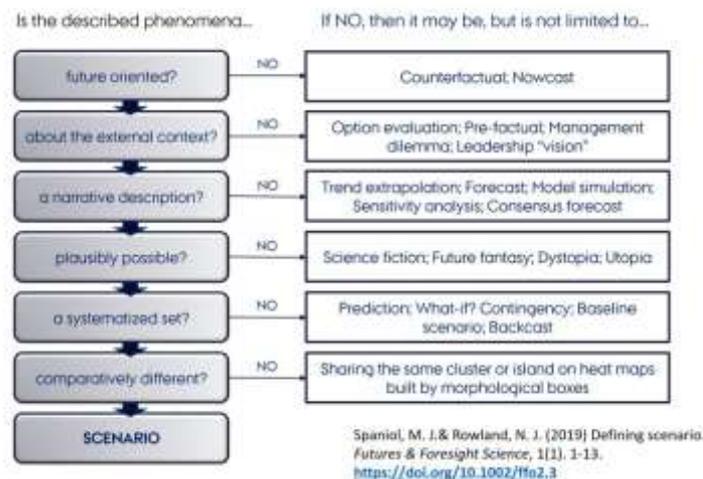
Future of Work Drivers

This framework looks at the question "the future of work, to what end?" from the perspective of customers, workforces, and companies (rows). Three primary drivers (columns) — cost, value, and meaning — shape the decision-making used to achieve these ends.

	COST: SEEK TO OPTIMIZE EFFICIENCY	VALUE: SEEK TO EXPAND OPPORTUNITIES	
Customers	Acquire product or service for minimal resources	Satisfy known and unmet needs	Achieve aspirations for oneself and others
Workforce	Reduce effort and time required for work	Develop skills/capabilities and potential for future advancement	Connect to a larger purpose and do work that achieves more of my potential
Company	Operate faster and cheaper	Grow revenues and expand margins	Articulate a purpose that matters across stakeholders

Source: Deloitte Analysis

Defining Scenarios



Resource: The Actionable Futures Toolkit is a set of canvases made to work for you in building and aligning a future for an organisation, service or a product. The toolkit consists of three parts: [Worldbuilding](#), [Predictive Analysis](#) and the [Optimal Futures](#).

Health

A new [study](#) suggests that there has been a 50% global reduction in sperm quality in the past 80 years. Due to two chemical pollutants commonly found at home. It was retrospectively observed to degrade fertility in both men and dogs.

Transmissible vaccines: According to this [article](#) scientists are taking a leaf from the virus playbook – they are devising vaccines and antiviral therapies that can spread from host to host. An Australian PhD thesis opposing immunisation is being critiqued because of its poor standards and it is causing parents to not vaccinate their kids. The critique indicates that a '[failure of academic rigour](#)' has real-world consequences.' MMR vaccination does not increase risk for autism, or trigger autism in susceptible children according to a major new [study](#) of over 600,000 kids over 10 years.

A [study](#) led by the Sax Institute has revealed a new way forward in helping health policy agencies build their capacity to use research evidence (in Australia.)

[Gene therapy has been successfully used to halt the most common form of blindness](#) – age-related macular degeneration. (A related [story](#), here is [another](#).)

A longitudinal [UK study](#) on the relationship between fruit and vegetable consumption and well-being – this could play a role in enhancing mental well-being

A National Bureau of Economic Research (NBER) [working paper](#) indicates that when students switch to schools with higher levels of traffic pollution, they tend to experience declines in test scores, more behavioural incidents, and more absences

The World Health Organization (WHO) listed vaccine hesitancy (the delay in acceptance or refusal of vaccines despite their availability) as one of its top 10 health threats facing the world in 2019.

A [study](#) found that higher amounts of greenhouse gas in the atmosphere could affect our memory, concentration and decision-making abilities. Raised CO2 in workplaces lacking proper ventilation is known to make employees more sluggish and less able to successfully complete tasks. And climate change is likely to make intellectual impairment a far more widespread problem in the decades ahead, according to the researchers.

A new and ongoing [study](#) from the (USA) National Institutes of Health is testing how screen time affects children's brains.⁴ The first brain scans from the study have been analysed, and researchers have concluded that children who spend more than seven hours a day on screens experience "premature thinning of the cortex." The study also found that children who have more than two hours of screen time a day got lower scores on tests focused on thinking and language skills.

[New research](#) says drawing something, rather than taking written notes, lets our memory perform as well as that of someone decades younger (memory gets worse as we age.) This includes sketches that took just four seconds to draw.

[Researchers](#) analysing soil from Ireland long thought to have medicinal properties have discovered that it contains a previously unknown strain of bacteria which is effective against four of the top six superbugs that are resistant to antibiotics, including MRSA. Antimicrobial Resistance and the Role of Vaccines Special Feature (Free Online) starts with [Antimicrobial resistance and the role of vaccines](#) (several other articles available.)



⁴ When complete, the study will have followed more than 11,000 children for a decade, monitoring how digital screens like smartphones, video games, and tablets are changing the young brain.

Innovation

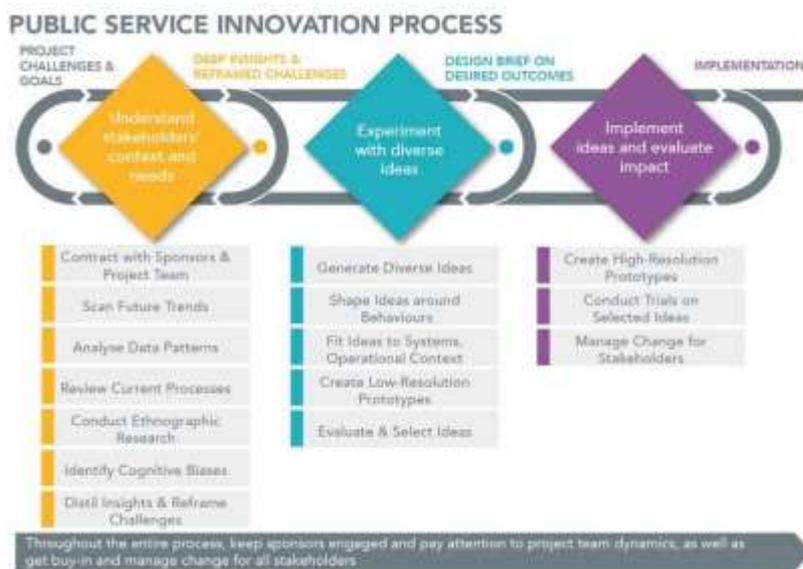
Here is a [story](#) about 'The Accidental Invention of Bubble Wrap.'

This [study](#) looks at whether AI and crowdsourcing can together improve the rate of innovation. [Analogy is one source of innovation (e.g. using origami to learn how to fold a large solar array on a rocket.) Analogy is the ability to [find and apply deep structural patterns](#) across domains.]

This [article](#) raises the question: Is evidence-based policy preventing us from innovating and collecting any new evidence or insights about what might actually work?

[Small teams](#) delve more deeply into the past, drawing inspiration from older ideas that may have long been ignored, while large teams tend to build on yesterday's hits. Also – [here](#) – large and small teams produce different types of breakthroughs, according to an analysis of 50 million patents, software products, and academic papers. "The large teams garner more impact, but it is the small teams that are systematically more disruptive."

Download a copy of the [inaugural](#) European Creativity Report.



Nudges

Here is an [article](#) on 'building better behavioural economics teams.'

There's more to nudges than the choice architecture. Don't overlook the environment. This economic psychology [paper](#) systematically examines how the environment can mess up a nudge. (see Figure)

Nudge, dark nudge, sludge and dealing with the ethics of

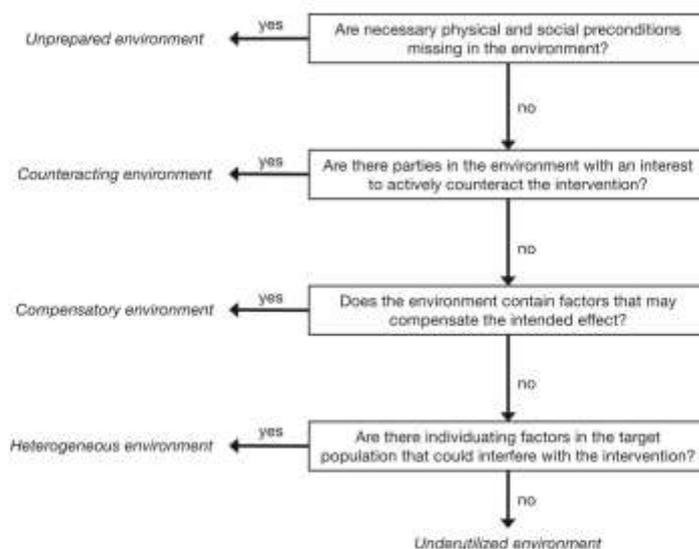


Fig. 1. How is a social policy problem situated within the context of its environment? Different questions can be asked to help identifying environmental factors that are critical to successful interventions (note that these factors are not necessarily mutually exclusive). Only if the answer to all questions below is "No", we face the case of an "underutilized environment" where focusing on the choice architecture only might be sufficient. Otherwise, targeting relevant factors in the environment with a combination of behavioral interventions and more traditional policy-making tools may be indispensable.

behavioural economics – [column](#).

[Researchers](#) found that sending personalised letters telling families how much school their children had missed reduced chronic absenteeism by 14.9% (in the 10 school districts they studied).

The welfare effects of Nudges: A Case Study of Energy Use Social Comparisons (they're [overstated](#).)

Rural

This [research](#) identifies how rural communities in WA are addressing the challenges of recruiting and retaining volunteers at a time of unprecedented demographic change and increasing pressure on the rural volunteer workforce.

There is a New York Times [piece](#) on rural issues and futures (USA perspective.) The author tentatively concludes rural America is not saveable – he wants to accelerate immigration from the country to the city and he likes the idea of rewilding rural areas.

Senate Rural and Regional Affairs and Transport References Committee, Parliament of Australia report on 'The [independence of regulatory decisions](#) made by the Australian Pesticides and Veterinary Medicines Authority' (APVMA): report (1 Feb 2019.)

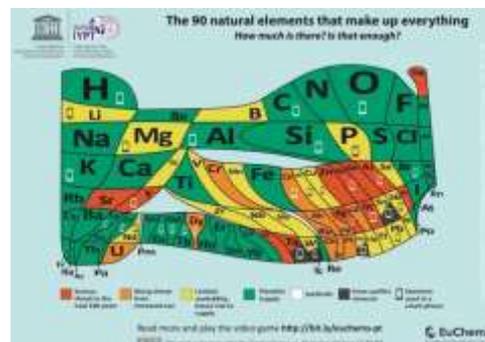
The United Nations warned food security and rural jobs are under threat from loss of biodiversity. The Food and Agriculture Organization (FAO) (dramatic loss of biodiversity = that plants and animals that give us food, plus the organisms that support food production by pollinating plants, keeping soil fertile, and so on.) The FAO on Friday published [its first report](#) into the state of the world's biodiversity, warning that the losses threaten our food, livelihoods, health and environment. And once that biodiversity is lost, it isn't coming back. Rapid population and economic growth are destroying biological diversity – a [study](#) says an effective nature conservation policy needs concepts against population growth and for sustainable consumption.

Science & Technology

Engineers at MIT have created a technique for embedding nanoparticles into plant leaves that make them emit a dim light (i.e. a [replacement to lighting](#).)

[Blockchains](#) are now getting hacked.

Plan S is an initiative of an international consortium of research funders known as [COAlition S](#). Plan S aims to make scientific publications resulting from publicly funded research by national and European research councils and funding bodies directly available in open access journals or platforms after 1 January 2020. Plan S stipulates that all articles should be published in open access mode only, with no paywalls (including in hybrid journals.)



There is a brand-new model of the [periodic table of elements](#) by the European Chemical Society. It predicts which elements will disappear in the next 100 years. Many of the most-threatened elements are being used to manufacture tech-heavy devices like computers and smartphones.

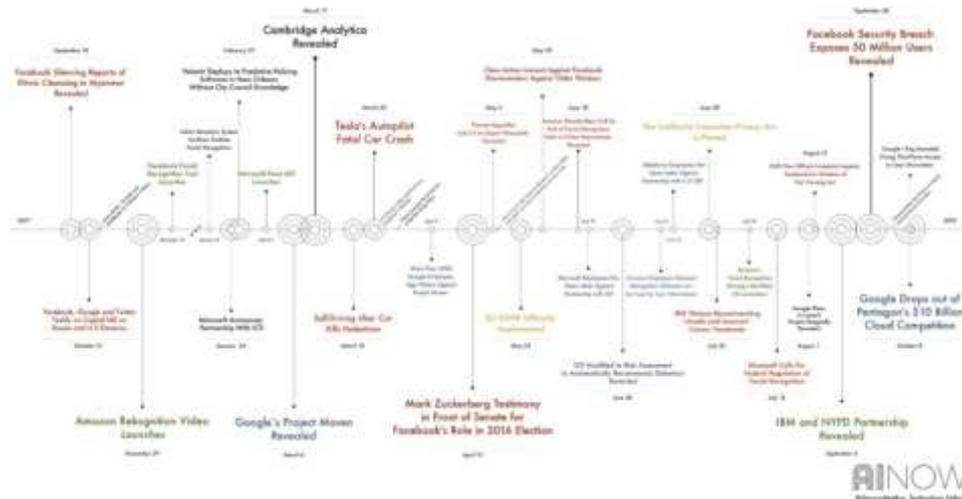
Here is a simple [guide](#) to CRISPR.

At least 14 UK police forces have used or intend to use discriminatory computer programs to predict where crime will be committed and by whom, [according to new research](#) published today by Liberty.

A [warning was issued](#) in December by the United States. The United States, Britain, Australia, New Zealand and Canada, are called the Five Eyes nations that broadly share intelligence. These close intelligence partners have quietly warned technology firms that they will demand 'lawful access' to all encrypted emails, text messages and voice communications, threatening to compel compliance if the private companies refuse to voluntarily provide the information to the governments.

Scientists based at Los Alamos National Laboratory published two papers Monday in the journal Nature Geoscience reporting what they say could be a breakthrough in predicting earthquakes. [Paper 1](#), [Paper 2](#).

MIT analysed 16,625 papers to figure out [where AI is headed next](#). The answer is not clear. [The AI narratives project](#) (Leverhulme Centre for the Future of Intelligence and the Royal Society) examined which narratives currently influence public debates about AI, and how these portrayals might shape public perceptions of the capabilities, risks, and benefits of AI technologies - [report](#). [Article outtake](#): Experts say the rise of artificial intelligence will make most people better off over the next decade, but many have concerns about how advances in AI will affect what it means to be human, to be productive and to exercise free will. Here is a timeline (below) and an [article](#) on AI controversies in 2018. A related [article](#) discusses the complex economics of AI.



[Topbots](#) summarised 10 important AI research papers from 2018 to give you a broad overview of machine learning advancements this year. There are many more breakthrough papers worth reading as well.

Half of the people pursuing [careers as scientists](#) at higher education institutions will drop out of the field after five years - it used to be 35 years. "There seems to be a broad trend across fields in science: It's increasingly a revolving door" – at least in ecology, astronomy and robotics – i.e. a steadily growing temporary workforce of lab technicians, research associates, postdoctoral researchers and other supporting scientists.

This [report](#) makes the case for the need to create a community of practitioners invested in exploring and building the nascent field of public interest technology. A paper provides some useful guidance on research philosophy, methodology and methods for [social sciences in conservation](#).

Society

A [paper](#), 'Losing your temper and your perspective: Anger reduces perspective-taking,' explores how anger and other related emotions can inhibit understanding another's perspectives in a group setting. It also discusses *trash-talking*, and the impact this type of competitive communication has on an organisation.

Researchers who asked people in the US their views on politicians who frequently bend the truth found that fact-checking had little impact, whereas for Australians it [did change](#) their political opinions.

In the UK [age segregation in housing](#) has increased in recent decades, with less likelihood of older and younger adults sharing the same residential area. Research shows that age segregation is higher in areas where housing is least affordable, potentially challenging social cohesion.

The [Human Generosity Project](#) examines why and how human cooperation makes its way through different cultures.

[Poor decision-making](#) is correlated with problematic social media use.

Since beginning a [subsidized childcare](#) program, Quebec has seen the rate of women age 26 to 44 in the workforce reach 85 percent, the highest in the world.

Oxfam's 2019 [report](#) on widening global wealth inequality makes for stark reading. The purpose of the report, which the global charity has been producing since 2016, is to highlight just how unequally wealth is distributed globally. It uses: The total wealth of the world's billionaires, as compiled by the Forbes annual Billionaires List; and the collective wealth of the world's poorest people, taken from Credit Suisse's [Global Wealth Report](#), which the bank says is the most comprehensive estimation of country-by-country household wealth available. Since last year's report, moreover, that bottom half has become 11.1% poorer. At the same time, more people became billionaires, and the richest billionaires became even richer.

KPMG have completed an impact assessment of the Maranguka Justice Reinvestment in Bourke – [report](#).

[Seven moral rules](#) – love your family, help your group, return favours, be brave, defer to authority, be fair, and respect others' property – appear to be universal across cultures.

Personalised Plates Queensland (PPQ) will allow drivers to adorn their number plates with [emoji](#).

Iceland's changing social landscape - encompassing its common beliefs, values and activities - may affect its ability to react to volcanic eruptions – [paper](#).

This [WEF research](#) identified key values that underpin Māori leadership.

Learning resources (professional development)

There are the 7 kinds of talks we savour most, according to new [research](#).

Backcasting: Or, how to apply 20:20 hindsight to museum planning – [here](#).

The first fortnightly edition of the Food Waste CRC [eNewsletter](#) has been published.

This [paper](#) examined four decades of study on perfectionism to answer a more basic question: Are perfectionists better performers at work? The meta-analysis of 95 studies, conducted from the 1980s to today, examined the relationship between perfectionism and factors that impact employees' effectiveness. These studies included nearly 25,000 working-age individuals. The short answer is that perfectionism is a much bigger weakness than job

The World Bank issued a [guidance note](#) on *Machine learning for disaster risk management*.

365 disaster [research](#) articles – here is a 2018 compilation.

190 universities launched 600 free online courses – list [here](#).

Check out this new [report](#) on the Future of Migration in the EU, including a toolkit for stakeholder discussions, interactive workshops, and a board game.

This infographic by Peter Stoyko shows how they public service design labs work.



Next meeting: 4 April 2019 in Canberra