

# Sustainability Matters

Compiled and published by Ray Skinner, FCA

Business achieving a tomorrow for tomorrow's children

21<sup>st</sup> February 2019



Designed by  
[www.vecteezy.com](http://www.vecteezy.com)

## Ambitious Danish Island Ends Fossil Fuel Use

"Tackling climate change is urgent. It's too urgent to be feasible, say some critics. But as one Danish island ends fossil fuel use, its story shows it may be time to think again. ...

"The island of Samsø, off Denmark's east coast, has wasted no time. Between 1998 and 2007 it abandoned its total dependence on imported fossil fuels and now relies entirely on renewables, mainly wind and biomass. It's been singled out as the world's first 100% renewable island by the Rapid Transition Alliance (RTA), which says Samsø can teach the world some vital lessons about changing fast and radically.

"In 1997 Samsø, with 4,000 inhabitants, entered a Danish government competition to develop a model renewable energy community, aiming to prove that the country's target of reducing carbon emissions by 21% was achievable.

"Samsø's winning proposal was based on strong community engagement and a cooperative ownership strategy. It showed how to make renewables a social, economic and energy success ....

"Samsø, the argument runs, proves the effectiveness of setting ambitious targets – and meeting them. The Alliance says Samsø's transition is impressive because it was achieved with the active buy-in (both figuratively and financially) of the local community.

"Winning hearts and minds was crucial. ...

"The islanders embraced the transition, but not because of climate change. Instead, most looked to its potential to provide jobs, strengthen the local economy and secure greater energy independence.

"Key to Samsø's success, the Alliance believes, was the insistence on transparency, consultation, and starting from what people wanted. ....

"So the plans were changed, even though this meant choosing another site where turbine installation was more difficult and less energy could be generated.

"The Alliance says: 'This meant that the community felt genuine ownership over the siting of the wind turbines, which helped to dispel any negative feelings around them.' ....

"Policy-making is too often limited to what is do-able in the short-term; establishing an ambitious mission can help reframe a problem, making the impossible possible.'

**More:** <https://climatenewsnetwork.net/ambitious-danish-island-ends-fossil-fuel-use/>

**Source:** *Carbon News*, 13<sup>th</sup> February 2019. ©

## Fixing the New Zealand Building Code

"Our [N.Z.] uncomfortable, unhealthy homes can be linked to the Building Code.

"Our Building Code is enshrined in statute and comprises a performance-based set of rules to achieve a minimum standard. The code has eight key areas that range from protection through to energy efficiency. Any new building, or one undergoing major renovations, is required to meet these standards. This ensures the building will be durable and stand the test of time.

"However, when compared to building standards around the globe, our code just isn't up to scratch. Our newly built

houses are cold, mouldy and unhealthy, while countries in the European Union are charging towards zero-energy homes.

"It's easy to see where we're lagging. It comes down to having too low a standard with two main housing factors – warmth and ventilation. You would expect a newly built house to be warmer and healthier than an older one, but this isn't always the case. ...

**More:** [www.consumer.org.nz/articles/fixing-the-new-zealand-building-code](http://www.consumer.org.nz/articles/fixing-the-new-zealand-building-code)

**Source:** *Consumer*, 2<sup>nd</sup> February 2019. ©

## Ecolabel to Develop Construction Waste Specification

"The New Zealand Ecolabelling Trust has begun developing an ecolabel specification for construction and demolition (C&D) waste management to help reduce the amount of waste going to landfills.

"The Trust administers the Environmental Choice New Zealand (ECNZ) ecolabel on behalf of the Government, and the specification will form the basis of an ECNZ licence which waste management organisations can apply for, to prove their C&D waste disposal processes are environmentally preferable. Development of the specification has been made possible through a \$35,000 grant from Auckland Council's Waste Minimisation and Innovation Fund.

"Trust General Manager Francesca Lipscombe says the specification will enable procurers of C&D waste services to differentiate service providers in terms of environmental impact. 'It will recognise top performers.'

"The Trust decided to develop the specification following a feasibility study in March 2017 which found the most significant issue around C&D waste was simply the amount that went into landfills rather than being reused. A Ministry for the Environment survey in 2008 found 75% of the waste in municipal landfills could have been diverted; the MfE also estimated around 700,000 tonnes of C&D waste ended up in landfills in 2011. ...

"Ms Sood says the Trust's initiative will help to activate and support a shift in current building practice and increase interest and awareness of waste minimisation and diversion for the construction sector, as well as driving adoption of deconstruction and soft strip methods within the demolition industry. 'With Auckland's goal of becoming a Zero Waste City by 2040, we're proud to support the project as part of our efforts to cut back on the amount of C&D waste.'

**More:** [www.scoop.co.nz/stories/BU1902/S00150/ecolabel-to-develop-construction-waste-specification.htm](http://www.scoop.co.nz/stories/BU1902/S00150/ecolabel-to-develop-construction-waste-specification.htm)

**Source:** *SBC Weekly Pānui*, 7<sup>th</sup> February 2019. ©

## Drought Turns Part of Iran Into a New Dust Bowl

In this corner of the Middle East, a changing climate and debilitating dust storms have brought life to a standstill.

**More:** [www.nationalgeographic.com/environment/2019/01/drought-climate-change-turn-iran-sistan-and-baluchestan-into-dust-bowl/](http://www.nationalgeographic.com/environment/2019/01/drought-climate-change-turn-iran-sistan-and-baluchestan-into-dust-bowl/)

**Source:** National Geographic, 31<sup>st</sup> January 2019. ©

## The Hidden Environmental Toll of Mining the World's Sand

"By far the largest mining endeavour globally is digging up sand, mainly for concrete used in buildings. An estimated 40 billion tons of sand is excavated each year. This week at *Yale Environment 360*, our contributing writer Fred Pearce reports on how this little-noticed and largely unregulated activity is exacting a serious environmental toll from China to Ethiopia to Texas. Licensing is delegated to local authorities; environmental impact assessments are rare; corruption often occurs; and laws are routinely flouted. As a result, sand mining around the globe is damaging rivers, wreaking havoc on coastal ecosystems, and even wiping away entire islands.

**More:** <https://e360.yale.edu/features/the-hidden-environmental-toll-of-mining-the-worlds-sand>

**Source:** *Yale Environment 360*, 8<sup>th</sup> February 2019. 

## The Sixth Extinction: An Unnatural History, by Elizabeth Kolbert

"Over the last half a billion years, there have been five mass extinctions, when the diversity of life on earth suddenly and dramatically contracted. Scientists around the world are currently monitoring the sixth extinction, predicted to be the most devastating extinction event since the asteroid impact that wiped out the dinosaurs.

"This time around, the cataclysm is us. In *The Sixth Extinction*, two-time winner of the National Magazine Award and New Yorker writer Elizabeth Kolbert draws on the work of scores of researchers in half a dozen disciplines, accompanying many of them into the field: geologists who study deep ocean cores, botanists who follow the tree line as it climbs up the Andes, marine biologists who dive off the Great Barrier Reef.

"She introduces us to a dozen species, some already gone, others facing extinction, including the Panamanian golden frog, staghorn coral, the great auk, and the Sumatran rhino. Through these stories, Kolbert provides a moving account of the disappearances occurring all around us and traces the evolution of extinction as concept, from its first articulation by Georges Cuvier in revolutionary Paris up through the present day. The sixth extinction is likely to be mankind's most lasting legacy; as Kolbert observes, it compels us to rethink the fundamental question of what it means to be human.

**More:** <https://www.pulitzer.org/winners/elizabeth-kolbert> plus <https://www.goodreads.com/book/show/17910054-the-sixth-extinction> 4.12 Rating score from 34,102 ratings and 3,931 reviews; the book has deeply touched many folks – some reviews are very long

**Source:** Editor – received as a gift; an excellent reading time investment, 19<sup>th</sup> February 2019. 

## Manila's Zero Waste Neighbourhoods

"Plastic polluted neighbourhoods in Manila are taking things into their own hands by creating systemic zero waste programs that collect all recyclables, compost all organics, and push for corporate accountability. [3:55 minute video]

**More:** [www.youtube.com/watch?v=N6rFLNvMqns](http://www.youtube.com/watch?v=N6rFLNvMqns)

**Source:** The Story of Stuff, 28<sup>th</sup> January 2019.

**Editor:** A simple message articulated well and simply told. 

## The Rush for White Gold

"As demand soars for powerful batteries, Bolivia dreams of striking it rich by extracting lithium from its huge salt flat. But will its people benefit?

**More:** [www.nationalgeographic.com/magazine/2019/02/lithium-is-fueling-technology-today-at-what-cost/](http://www.nationalgeographic.com/magazine/2019/02/lithium-is-fueling-technology-today-at-what-cost/)

**Source:** National Geographic, 4<sup>th</sup> February 2019

**Editor:** Two articles with 'stunning' photos and videos. 

## World in Grip of 'High Impact Weather' as US Freezes, Australia Sizzles

"High impact weather' has gripped much of the world so far this year, the United Nations World Meteorological Organisation (WMO) has reported, with 'dangerous and extreme cold in North America, record high heat and bushfires in Australia, heavy rains in parts of South America, and heavy snow on the Alps and Himalayas.

"The WMO assessment of January's weather, describes it as 'a month of extremes', with large parts of North America gripped by bitterly cold temperatures, caused by the influence of the Polar Vortex.

"In southern Minnesota, reports the UN weather agency, the wind chill factor pushed readings down to -53.9 degrees Celsius on 30<sup>th</sup> January1.

"The [US] national low temperature record was measured at -48.9°C.

"Disturbances in the jet stream and the intrusion of warmer mid-latitude air masses can alter the structure and the dynamics of the Polar Vortex, sending Arctic air south into middle latitudes and bringing warmer air into the Arctic.

"This is not a new phenomenon, although there is increasing research into how it is being impacted by climate change, the agency said. However, climate sceptics should be careful before equating the frigid conditions with a rejection of the ...

**More:** <http://econews.com.au/59930/world-in-grip-of-high-impact-weather-as-us-freezes-australia-sizzles/>

**Source:** *eco-News* 5<sup>th</sup> February 2019.

**Editor:** See about the high impact weather project at [www.wmo.int/pages/prog/arep/wwrp/new/high\\_impact\\_weather\\_project.html](http://www.wmo.int/pages/prog/arep/wwrp/new/high_impact_weather_project.html) Their mission: To promote cooperative international research to achieve a dramatic increase in resilience to high impact weather, worldwide, through improving forecasts for timescales of minutes to two weeks and enhancing their communication and utility in social, economic and environmental applications.

A co-chair of steering group and a member are NZ'ers. 

## What is Important to You is More or Less Important to Me [OR, Perceptions of Fear Shaped by Where We Live]

"Climate Change Still Seen as the Top Global Threat, but Cyberattacks a Rising Concern and worries about ISIS and North Korea persist, as fears about American power grow.

"The Intergovernmental Panel on Climate Change released a report last year expressing serious concerns about the possible impacts of climate change, both in the near and distant future. Broadly speaking, people around the world agree climate change poses a severe risk to their countries, according to a 26-nation survey conducted in the spring of 2018. In 13 of these countries, people name climate change as the top international threat.

"But global warming is just one of many concerns. Terrorism, specifically from the Islamic extremist group known as ISIS, and cyberattacks are also seen by many as major security threats. In eight of the countries surveyed, including Russia, France, Indonesia and Nigeria, ISIS is seen as the top threat. In four nations, including Japan and the United States, people see cyberattacks from other countries as their top international concern. One country, Poland, names Russia's power and influence as its top threat, but few elsewhere say Russia is a major concern. .... [Long article with graphs and tables]

**More:** [www.pewglobal.org/2019/02/10/climate-change-still-seen-as-the-top-global-threat-but-cyberattacks-a-rising-concern/](http://www.pewglobal.org/2019/02/10/climate-change-still-seen-as-the-top-global-threat-but-cyberattacks-a-rising-concern/)

**Source:** *eco-News*, 13<sup>th</sup> February 2019. 

## New Hunter Valley Coalmine Rejected on Climate Change Grounds

"After a landmark ruling in the New South Wales Land and Environment Court today [8<sup>th</sup> January 2019] that cited the impact it would have had on climate change, a controversial coalmine at Rocky Hill in the Hunter Valley will not go ahead.

"Chief judge Brian Preston dismissed an appeal by Gloucester Resources, which was seeking to overturn a decision of the conservative Liberal-Nations state government to reject an open-cut mine because of its impact on the town of Gloucester, north of Newcastle.

"The Environmental Defenders Office (EDO) joined the case last April, arguing on behalf of its client, Groundswell Gloucester, that the mine's detrimental impact on climate change and on the social fabric of the town should be considered as part of the merit appeal.

"Guardian online reports David Morris, the chief executive of EDO NSW, called the decision 'momentous' and said it would be "profoundly influential" in the approval of future fossil fuel projects.

"It's very difficult to see how any future coal project avoids the judge's finding about this being the wrong time for it', he said.

"In his judgment, Justice Preston explicitly cited the project's potential impact on climate change, writing that an open-cut coalmine in the Gloucester Valley 'would be in the wrong place at the wrong time'.

"Wrong place because an open cut coal mine in this scenic and cultural landscape, proximate to many people's homes and farms, will cause significant planning, amenity, visual and social impacts', he wrote.

"Wrong time because the GHG (greenhouse gas) emissions of the coal mine and its coal product will increase global total concentrations of GHGs at a time when what is now urgently needed, in order to meet generally agreed climate targets, is a rapid and deep decrease in GHG emissions.

"These dire consequences should be avoided. The project should be refused.'

"In a 'first of its kind' hearing, the EDO had argued the mine should be refused in part because of its impact on Australia's commitments to the United Nations sponsored Paris Agreement on climate change.

"In his judgment, Justice Preston noted while there was 'no proscriptio' on the approval of new emissions sources such as coalmines under the Paris Agreement, approval of the project 'cannot assist in achieving the rapid and deep reductions in GHG emissions that are necessary' to meet the goals of the agreement.

"It matters not that the aggregate of the project's greenhouse gas emissions may represent a small fraction of the global total', he said ....

**More:** <http://econews.com.au/59995/judge-rejects-new-hunter-valley-coalmine-on-climate-change-grounds/> plus [www.smh.com.au/environment/climate-change/we-won-landmark-climate-ruling-as-nsw-court-rejects-coal-mine-20190207-p50wer.html](http://www.smh.com.au/environment/climate-change/we-won-landmark-climate-ruling-as-nsw-court-rejects-coal-mine-20190207-p50wer.html)

**Sources:** *eco-News* and *Climate Weekly*, 9<sup>th</sup> February. 

## The Rosewood Trade: An Illicit Trail from Forest to Furniture

"The most widely traded illegal wild product in the world today is rosewood, an endangered hardwood prized for its use in traditional Chinese furniture. It's traded far more than elephant ivory and rhino horn put together and is often called the 'ivory of the forest'. This week at *Yale Environment 360*, journalists Sandy Ong and Edward Carver follow the illicit rosewood trail of destruction and corruption from the forests of Madagascar to furniture showrooms in China. What they

find is a chillingly efficient network operating largely in the open, with rosewood being cut illegally inside Madagascar's largest national park and then shipped to China, where it is sold in luxury furniture showrooms.

**More:** <https://e360.yale.edu/features/the-rosewood-trade-the-illicit-trail-from-forest-to-furniture>

**Source:** *Yale Environment 360*, 1<sup>st</sup> February 2019. 

## What Could Other Countries Learn from Costa Rica?

"Costa Rica is getting something right. The Central American country of stunning beaches, rainforests, and biodiversity, is also known for its stable democracy and educated population.

"Its president, Carlos Alvarado Quesada, said at Davos 2019: 'Seventy years ago, Costa Rica did away with the army. This allows for many things. Eight percent of our GDP is invested in education because we don't have to spend on the army. So our strength is human talent, human wellbeing.'

"By comparison, World Bank data shows the US spent less than 5% of its GDP on education, while the world average is just 4.8%.

"President Alvarado said not spending on the armed forces also allowed his country to protect the environment. Costa Rica generates more than 99% of its electricity from renewable sources, with the vast majority from hydroelectric dams.....

**More:** [www.weforum.org/agenda/2019/01/sun-sea-and-stable-democracy-what-s-the-secret-to-costa-rica-s-success](http://www.weforum.org/agenda/2019/01/sun-sea-and-stable-democracy-what-s-the-secret-to-costa-rica-s-success)

**Source:** Michael Smith, LinkedIn, 7<sup>th</sup> February 2019. 

## Philippines –12M Houses Needed by 2030

"The Philippines has one of Asia's fastest-growing populations and it desperately needs more houses –12 million by 2030, according to estimates. ...

"But it also has an abundance of quick-growing bamboo which can be processed into durable building materials.

"Enter Earl Forlaes, a young engineer and entrepreneur from Quezon City. He's come up with a way to turn bamboo into compact but functional pre-fabricated homes that can be assembled in just four hours. ...

"Does he have the answer to the Philippines' housing shortage – and could his idea go global? ...

**More:** [www.bbc.com/capital/story/20190207-the-tiny-home-that-can-be-built-in-four-hours](http://www.bbc.com/capital/story/20190207-the-tiny-home-that-can-be-built-in-four-hours) 2:51 video

**Source:** Deon Abrahams LinkedIn 'like' 9<sup>th</sup> February. 

## Australia Found a Way to Save Water From Plastic Pollution and We Can Start Doing the Same

"Plastic contamination is a tremendous issue nowadays, as it has genuinely harming impacts on our condition, well-being, and nourishment.

"As indicated by National Geographic: Every year, an expected 18 billion pounds of plastic waste enters the world's sea from waterfront areas. That is about comparable to five basic supply sacks of plastic junk heaped up on each foot of coastline on the planet. [Pics]

"..... A net is put on the outlet of waste pipe outlets which gets extensive flotsam and jetsam ....

**More:** [www.organichomeremedies.com/2019/01/26/australia-found-a-way-to-save-water-from-plastic-pollution-and-we-can-start-doing-the-same/](http://www.organichomeremedies.com/2019/01/26/australia-found-a-way-to-save-water-from-plastic-pollution-and-we-can-start-doing-the-same/) People are asking about the outcomes for creatures which inhabit the waterways; cats, dogs and children too – no answer up to now.

**More pics:** <https://brightside.me/wonder-curiosities/good-news-australia-found-a-way-to-save-water-from-plastic-pollution-and-we-can-start-doing-the-same-650510/>

**Source:** Craig Skinner, Facebook, 15<sup>th</sup> February 2019. 

## World-first Water Quality Project Improves Tested Stream

"Nitrate levels have significantly reduced at a North Canterbury [NZ] stream less than two months into a pilot project to improve its water quality.

"The Institute of Environmental and Scientific Research (ESR)-led denitrification wall trial at Silverstream Reserve, near Kaiapoi, has resulted in nitrate levels in groundwater dropping from 7.1mg/l to 0.5 mg/l.

"The 25 metre-long wall, installed in November, is a world first, having never been tested in a fast-flowing gravel aquifer system before. ....

"The project aims to filter nitrates out of groundwater using a permeable barrier made from woodchip and gravel.

"ESR senior scientist Lee Burbery said he was delighted the wall was working as he anticipated....

"The denitrification wall acts as a groundwater filter. Woodchip mixed with gravel removes nitrate from the groundwater that passes through the wall. Carbon from the woodchip provides a food source for bacteria that then convert the nitrate into the harmless di-nitrogen gas (N<sub>2</sub>), which makes up 80 per cent of the air we breathe. ....

"The trial will run for two years ...

"We're trying to establish guidelines on how denitrification walls work, and this site will provide a practical example.' ...

**More:** [www.stuff.co.nz/the-press/news/north-canterbury/109547727/worldfirst-water-quality-project-improves-test-stream](http://www.stuff.co.nz/the-press/news/north-canterbury/109547727/worldfirst-water-quality-project-improves-test-stream)

**Source:** *SnippETS*, 14<sup>th</sup> February 2019. 

## Living Wood Fair

"Who doesn't love wood? The burrs and knots and grooves and rings? The *Living Wood Fair* is a celebration of wood and an enjoyable, educational community event for all ages. ...

"The *Living Wood Fair* will appeal to anyone who likes wood, including lifestyle and forestry-block owners, farmers, woodworkers and millers, self-builders and tiny home enthusiasts, forestry advocates, environmentalists and so on. It is also a fun day out for families ...

"The *Living Wood Fair* is a place to learn new skills, think new thoughts, discuss challenges and find solutions, and purchase among other things timber, furniture, handmade arts and crafts, and tools. ...

**When/Where:** Sat/Sun 21/22 April, Golden Bay (Nelson)

**More:** <http://events.stuff.co.nz/2018/living-wood-fair/golden-bay>

**Source:** Living Future NZ Collaborative, 9<sup>th</sup> February. 

## Striking for their Lives

"Turns out we were right to start the year on a hopeful note. We've already seen some amazing steps forward in 2019: from a cancelled gas pipeline, to youth leading on-point actions, like this one outside of Germany's commission to sort out the end of coal in the country.

"But plenty of contrasts abound: from record inequality to record temperatures, we've got our work cut out for us. As blistering heatwaves took their toll in Australia these past weeks, tens of thousands of students were simultaneously marching in snow-dusted streets in Europe.

"One thing's clear – we have to keep making our movement heard. Can you please share *Fossil Free News* with a friend to spread the word?

**More:** <https://gofossilfree.org/fossil-free-news-14/>

**Source:** 350.org, 29<sup>th</sup> January 2019

**Editor:** Very interesting content in this brief newsletter of happenings around the world e.g. in Kenya. 

## 'If Not Us, Who?' Failure of Representation Drives Youth Climate Strike

"It had been a day for grown-ups to show climate leadership.

"On a cold 25<sup>th</sup> January, Germany's coal commission gathered at the federal ministry for economic affairs and energy in Berlin to decide the future of coal in the country. Outside, armed with signs, stood an estimated 5,000 students.

"Fridays for Future (F4F), the student-led movement for school strikes for climate on Friday, had announced their plans to demonstrate weeks ago. Peter Altmaier, the minister of economic affairs and energy, had asked whether he could address the rally – in vain. Instead, Altmaier had to content himself with a meeting with three representatives, ..... shoehorned before the start of the demonstration.

"We asked him what age he'd be in 2050', Merle Tennie, a 20-year old F4F organiser from Munich, told *Climate Home News*, 'He was like: 'yeah, maybe I won't be alive any more!' (Altmaier was born in 1958). 'So we're like: 'okay, that's the problem! You have to realise that you can't be so short-sighted.' ...

"For young people it's much easier to see things in black and white. Either we save the world and we stop the climate crisis, or we don't. Seeing how slowly everything moves in politics, you think: 'If not us, who?' .....

**More:** [www.climatechangenews.com/2019/02/14/not-us-failure-representation-drives-youth-climate-strike/](http://www.climatechangenews.com/2019/02/14/not-us-failure-representation-drives-youth-climate-strike/) plus <https://theconversation.com/climate-change-young-people-striking-from-school-see-it-for-the-life-threatening-issue-it-is-111159> --> Today's young people are the first generation to have lived their entire lives under the threat of catastrophic climate change. They're now positioned as future leaders, forced to take urgent action on an issue which older generations have lacked the political will, organisation and authority to address.

**Source:** *Carbon News*, 15<sup>th</sup> February 2019.

**More:** [www.theguardian.com/environment/2019/feb/15/uk-climate-change-strike-school-pupils-children-environment-protest](http://www.theguardian.com/environment/2019/feb/15/uk-climate-change-strike-school-pupils-children-environment-protest) per *Climate Weekly*, 16<sup>th</sup> Feb. 

## Sooner or Later, We Have to Stop Economic Growth — and We'll Be Better for It

"Both the U.S. economy and the global economy have expanded dramatically in the past century, as have life expectancies and material progress. Economists raised in this period of plenty assume growth is good, necessary even, and should continue forever and ever without end, amen. Growth delivers jobs, returns on investment and higher tax revenues. What's not to like? We've gotten so accustomed to growth that governments, corporations and banks now depend on it. It's no exaggeration to say we're collectively addicted to growth.

"The trouble is, a bigger economy uses more stuff than a smaller one, and we happen to live on a finite planet. So, an end to growth is inevitable. Ending growth is also desirable if we want to leave some stuff (minerals, forests, biodiversity and stable climate) for our kids and their kids. Further, if growth is meant to have anything to do with increasing quality of life, there is plenty of evidence to suggest it has passed the point of diminishing returns: Even though the U.S. economy is 5.5 times bigger now than it was in 1960 (in terms of real GDP), America is losing ground on its happiness index.

"So how do we stop growth without making life miserable – and maybe even making it better? ....

**More:** [www.postcarbon.org/sooner-or-later-we-have-to-stop-economic-growth-and-well-be-better-for-it/](http://www.postcarbon.org/sooner-or-later-we-have-to-stop-economic-growth-and-well-be-better-for-it/)

**Source:** Post Carbon Institute, 1<sup>st</sup> February 2019. 