CLIMATE CHANGE

Newsletter on Global Warming for ANZ Friends

October 2013

Introduction:

The first article is from UK Friends on divestment in fossil fuels. In New Zealand at least two Anglican Dioceses are doing this. Then, in the "We Need to Power Down Now article, do follow the link to Kevin Anderson's Nov. 6th. 2012 speech at Bristol" "This is a wake up call to where our rose-tinted spectacles have brought us," says Dr. Anderson. "Real hope, if it to arise at all, will arise from a bare assessment of the challenge we now face."

Kevin Anderson, Co-Director of the Tyndall Centre for Climate Change Research, UK talks about climate change scientists keeping quiet about the climate change figures put out by governments, and about conferences hiding catastrophic climate change. We may reach 4° of warming by 2050, with more to follow.

As the introducer says, "Be prepared for some shock and some discomfort". I know that some Friends are unhappy with this approach, nevertheless, when the International Energy Agency; Price Waterhouse Cooper; the Director of the World Bank Group and others all say the same, and that we must use this information to shape all our decision-making, there is no doubt we should sit up and take notice. Call it our responsibility to our children, to children everywhere, to the future of civilisation, to God, whatever, we have to face the fact that we have five years in which to start to change the energy system.

The article headed Eco-farming is an introduction only to a long one on the place of small, mostly organic, farmers in feeding the world. Email to sjplusam@gmail.com for the full story. You'll come cross a couple of stories about electric transport later in the newsletter. They come from the depths of an affluent culture and I'm not sure are completely apposite in a future hotter world, where poverty and people pressure might well be the defining features of future societies. This is where we need to develop a vision of what might be.

The wave power story from Australia points one way forward, as does the following one from Australia. We must bear in mind that as the globe warms and more of it becomes uninhabitable for one reason or another, New Zealand will increasingly be seen as a desirable destination by people there and other southern hemisphere countries.

Then more from our neighbours across the Tasman, where there is a lot of good stuff going on. Though those who make use of the NZ ETS – do you remember what Jeanette Fitzsimons said about it in her Quaker lecture this year? – might not like it so much.

These stories are followed by two about electric transport, something we might well press for in New Zealand.

Then come reports from a study published in the journal, "Nature" about climate change effects in the tropics, which are forecast to feel the effects earlier than the rest of the world. Though I have read that some climate scientists have been attributing at least some climate change influence in the central U.S. and Australian droughts.

There's good news from France where transport firms are now required to report on their emissions engendered in taking passengers and goods into the country.

Lastly a collection of responses to the, typically, cautious IPCC AR5 report.

As usual, please send your responses/reactions to:- sjplusam@gmail.com

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UK Quakers to disinvest from fossil fuels

News Release
8 October 2013

Quakers in Britain today (8 October) took steps to disinvest from companies engaged in extracting fossil fuels. The decision was taken by their Investment Committee, under responsibilities devolved by the Trustees.

Quakers say that investing in companies which are engaged in fossil fuel extraction is incompatible with their commitment made in 2011 to become a sustainable low-carbon community. Since then they have been speaking out to create pressure in the UK for an energy system and economy that does not rely on fossil fuels.

Quakers have been praised by the environmental campaign group, Operation Noah, for being the first Christian denomination to divest from fossil fuel extraction. Operation Noah's recent report, Bright Now, says "For the sake of humanity's survival, we cannot afford to invest in fossil fuels any longer."

The move is backed by overwhelming support from Quakers all round the country who attended Quakers' Meeting for Sufferings (their representative decision-making body) at the weekend. That meeting heard that Britain Yearly Meeting, as the body

of Quakers is formally known, currently has about £21 million invested in the stock market, including in Statoil and BG Group. As at 30 June this year BG Group represents 2.94 percent of the portfolio by value, while Statoil accounted for 1.23 percent. Trustees, who oversee this investment, are to review their entire investment policy.

The minute of the meeting recording their wish to disinvest said: "We want to invest in renewable energy and energy-saving schemes. Action we will take as individuals, as meetings and as Britain Yearly Meeting Trustees should aim to minimise damage and strengthen our advocacy position.

"We have expressed our difficulties, especially since we all depend in many ways on fossil fuels, but we need to make positive steps towards the change we want to see," the minute concluded.

Local Quaker Meetings are being encouraged to engage in these issues, especially during Ethical Investment Week [13 to 19 October].

WE NEED TO POWER DOWN NOW!

From: Radio Ecoshock.

Then Anderson reveals a startling twist on what we need to do now. He says we do not have time to implement large scale alternatives. We need not focus on the supply side, like the Tar Sands, Arctic oil, fracked gas, alternative energy or nuclear power. Those technologies all take more time to implement than we have to save the climate.

Anderson concluded in a science paper published by the British Royal Society, only a planned economic downturn accompanies by severe energy austerity by the one percent who use 50% of the world's energy - that's us! - can avoid this climate disaster. We needed to start action yesterday. We start, we must campaign, on the demand side. We still have time to each and every one of us drastically slash our energy use.

As he tells us, just to burn a 100 Watt bulb demands several times that amount of energy down the power chain, to mine the resource, transport it, burn it with only partial efficiency, and then lose another 50% or so in transmission. So turning off the bulb grows in impact up the power chain, if we can all cut back deeply, quickly.

The result of that energy austerity of course, when we stop buying useless consumer junk with all that embedded energy, is an economic crash. Is that better than a climate that wipes out at least half of all living species, possibly including ourselves? You be the judge.

We must always keep in mind the target of keeping under 2 degrees C of warming was always an arbitrary political decision. It doesn't necessarily guarantee a safe climate, as we are already finding out these days. The droughts, super-floods, super-storms like Sandy, and drastic melt-back of Arctic sea ice all come when we are only officially approaching 1 degree of warming over pre-industrial times. 2 degrees gives us double that, at the very least.

Anderson says scientists have been keeping quiet about the tendency, one could even say "plot" to underplay everything about the looming climate catastrophe.

Anderson should know. He's working every day with scientists from around the world who "just keep quiet".

In reality, once we factor in continuing emissions coming from things like agriculture and deforestation, there is no room left for emissions from the developed countries.

EVEN WORSE NEWS: WHAT KEVIN ANDERSON DOESN'T TALK ABOUT

Anderson also leaves aside the whole issue of natural climate feedbacks that could dramatically add more carbon dioxide and methane to our atmosphere. He's a specialist in energy, even working in that field for companies like Shell Oil in the past. In this speech Dr. Anderson takes us on a straight path through the impacts of our fossil fuel extraction and burning alone. He acknowledges there may be much more, but says science knows too little about them at this time.

We can think for example about recent science finding methane coming from the Siberian sea bed, and from the warming waters along the East Coast of North America. Other studies, in speeches already broadcast on Radio Ecoshock, show that melting permafrost in the Arctic and sub-Arctic could add far more greenhouse gases than all fossil fuel burning.

Rob Hopkins, founder of the Transition Town movement in the UK, did a written interview with Kevin Anderson in Hopkins' blog "Transition Culture" published on November 2nd, 2012.

In the comments, we find this compact addition to the warming forces Kevin Anderson did not cover, written by the Wales farmer **Lewis Cleverdon**:

Kevin Anderson said: “Rapid and deep emissions reductions may not be easy, but 4 degrees C to 6degreeC will be much worse”.

In the comments at transitionculture.org, Lewis Cleverdon writes:

"*I’m sorry to say that this presents a false dichotomy. And doubly sorry to hear it from one of Anderson’s standing.*

Taking a credible best case for emissions reduction of getting to near zero output by 2050,

- regardless of whether that is by personal virtue demonstrations suddenly sweeping the whole world -

- or by determined popular global efforts at steering the politics to achieve an equitable and efficient global climate treaty -

- or by the latter adamantly supported by the former

- we are going to emit enough GHGs by 2050 for at least 0.6C of further warming.

Adding this to 0.7C of warming now time lagged "in the pipeline" of ocean thermal inertia, plus the 0.8C of warming already realized, would give 2.1C of warming as a total, but for one critical factor.

Ending our fossil fuel emissions means ending those of fossil sulphate which maintain the "Sulphate Parasol" that veils the planet. As Hansen & Sato reported, the loss of the Sulphate Parasol will mean a rise of warming by 110%, (+/- 30%), raising the projected 2.1C to a total 4.41C (+/- 0.6C), that would be realized by about 2080, due the time lag of around 30 years after 2050. Our "best case" for emissions control would thus give between 3.8C and 5.0C of warming.

However, there is a further critical factor, namely that of the interactive mega-feedbacks, of which at least six are already accelerating and several have the potential to dwarf anthropogenic GHG emissions. The most advanced of these, cryosphere decline (loss of snow & ice cover) causing albedo loss, is reportedly already causing warming equivalent to around 30% of our CO2 emissions. This feedback alone is already nearing the capacity to offset the 43% average annual intake of our CO2 output by the natural carbon sinks.

In the 68 years between now and 2080, under our "best case" emissions control, those feedbacks would have continuously intensifying warming to drive their interactions and outputs far beyond any possibility of our control. Under this scenario we should certainly have substantially more than 5.0C of warming in 2080, and warming would then continue at a pace dictated by the interactive feedbacks.

Arguments over emissions control via personal virtue or via collective political action for the global climate treaty are thus missing the point. Even the best case of emissions control is patently not remotely commensurate with our predicament."

Lewis Cleverdon goes on to say only geoengineering to increase our albedo effect, namely by spraying natural seawater into the air to brighten clouds, and thus turn

away some solar energy, could possibly save us. That is the least toxic, and most easily reversed proposal for geoengineering, but it's a topic for another day.

The main point here is this: **Kevin Anderson's speech sticks to the simple math of our fossil fuel trajectory. That alone promises to take us to at least 4 degrees hotter, and possibly much more if we don't act immediately.** The mega feedbacks and warming hidden by pollution loom as even greater shadows over this already dark picture.

In his November 6th speech in Bristol, UK, Anderson warns again and again, we allow ourselves to be fooled, year after year.

The American scientists are playing the same incredible game, pretending world emissions peaked in the past.

NO... WE WON'T SUCK ENOUGH CO2 OUT OF THE AIR TO GO BACKWARDS IN TIME

Every big report assumes we will rescue ourselves by sucking CO2 out of the air by some magic as yet undiscovered technology assembled almost instantly on a massive scale. It's geoengineering, the technical fix. And it presumes a kind of magic that goes like this: "*if we reduce the CO2 in the atmosphere, things will go back to the way they were*."

Except nature doesn't work like that. If you could reduce greenhouse gases, by the time you do, the whole ecosystem has already changed. A large percentage of species will be extinct. Coral reefs won't be around. Like the Amazon rainforest won't either. There is not backward path through time. **It's a huge fallacy in the public mind, and in too many government reports.**

Anderson notes there is not a single big commercial scale operation taking CO2 out of the air, and storing it for long periods, anywhere in the world.

Most schemes, and governments use this idea in most big reports, involve taking **biomass, burning it in power plants, capture the CO2 as it goes up the stack**, and then burying that CO2 somewhere in a geologically stable hole. Anderson dissects this idea and finds giant leaks of greenhouse gases into the sky at every step.

We must grow the biomass - agriculture and the food industry contributes about 30% of all human-made emissions currently. Producing fertilizers (often from fossil fuels), transporting things around, it all adds up to emissions. Then the power plant only burns at a peak of about 70% efficiency. More wasted. The best smokestack capture techniques only grab 70 to 80%, so at least 20% will still go into the sky as greenhouse gases. Then we have to store the CO2 somehow, and that hasn't been worked out yet. It's like nuclear waste, where everyone expects a solution will come up in the future, that hasn't developed so far. Bottom line: it's not going to work, at any scale comparable to our current energy use, and more importantly - such a massive energy change would take at least 20 or 30 years to implement (we haven't

even started yet) - and we don't have that long! Fail. It all sounds good on paper, but fail.

AND THE SCIENTISTS KEEP QUIET...

In the radio show, I play you a longer passage from Dr. Kevin Anderson as he spoke at the Cabot Institute at the University of Bristol on November 6th. I recorded the speech from the webcast. Download the whole speech here.

Anderson gives example after example of scientists, policy advisors and government ministers who (a) know the 2 degree target is no longer attainable, and (b) admit the public can't be told this. Our awful predicament is being hidden by official process, deliberate underestimates of known facts, and scientists keeping quiet. No one wants to alarm the herd, and politicians want to win the next election. Corporate board members want the next big quarter's profits, and big investors want their payback. Nobody rock the boat!

DON'T DESPAIR?

Don't despair Anderson tells us. We are the very people who can do something to save the climate, right now.

Anderson goes into an interesting analysis that finds half the world's emissions are coming from about 1 percent of the world's population. It's almost a play off the Occupy 99% and 1% model. We need to reach those high carbon emitters, and get them to change.

It's likely this expose of sweetened climate projections, with known bad numbers and reassuring official talk, could be my speech of the year.

Now you've got the tools you need to take another hour out of your life, to hear the truth about climate change. Download the November 6th speech by Professor Kevin Anderson at the Cabot Institute.

Listen, learn, worry, and rededicate yourself to change, before the new out-of-control climate changes everything and everyone we love.

Thank you for taking the time, and having the courage, to listen.

I'm Alex Smith, for Radio Ecoshock.

Eco-farming addresses hunger, poverty & climate change

Agriculture must be redirected to environmentally sound, socially just production methods to address the food and energy crises, hunger, poverty and climate change, reports **OLIVIER DE SCHUTTER,** Special Rapporteur to the UN on the right to food. Agroecology, which mimics natural processes, has had remarkable successes in the past decade, improving incomes and livelihoods for many millions of the world's poorest, small-scale farmers and has improved the resilience of food systems. Supporting small-scale farmers to make the transition to agroecology worldwide is vital to avoid more food and climate disasters in the 21st century. This article is abridged from the report, Agroecology and the right to food.

Industrial farming on large plantations will not solve hunger or stop climate change. The solution lies in supporting small-scale farmers' knowledge and raising their incomes so as to contribute to rural development' – Olivier de Schutter

To see the full (good but very long) article please email a request to: sjplusam@gmail.com

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Wave-Powered Desalination Plant to Open in Australia

By Leigh Hutchens August 29, 2013 Wave power

Wave energy developer Carnegie Wave Energy Limited (CWE) in Perth, Australia is poised to become the very first company in the world to build a wave-powered desalination plant and the first to have a wave energy project that delivers both electrons and fresh water.

Carnegie has announced that it has received $142,692 as the first payment of its $1.27m AusIndustry grant to support a **CETO** Seawater Desalination Demonstration Pilot Plant.

The pilot desalination project is slated to begin now that Carnegie has signed a cooperation agreement with the WA-based Water Corporation. The pilot will be built

by the Perth Wave energy demonstration project that is being constructed close to the Garden Island naval base.

reddit this!

Carnegie's project will integrate reverse osmosis technology with the wave energy project.

Water Corp built the very first mainland desalination plant in Australia at Kwinana in 2006 and started building a second plant at Binningup in 2013. These two plants will supply 100 billion liters of freshwater between the two of them, close to half of the city's drinking water needs.

Perth sees **desalination** as a long-term solution for a safe and clean water supply as well as an environmentally friendly choice since it produces no **greenhouse gas emissions**. If this project is successful, it will be the world's first wave-powered desalination plant.

Activists meet to build movement for safe climate

Green Left Weekly
Saturday, June 29, 2013

By Kerry Smith

Panelists said the science of climate change becomes ever more alarming. Photo: Australian Climate Action Summit/Facebook

About 400 activists from across Australia converged on Sydney over June 21-23 for Australia's Climate Action Summit 2013.

As the science of climate change becomes ever more alarming, and as the refusal of business and political elites to act becomes ever more glaring, the activists met to share ideas and strategies to build a strong movement for a safe climate.

At a main plenary session on the latest climate science, the Climate Communication Fellow at the University of Queensland and editor of skepticalscience.com, John Cook, said: "Our planet is building up heat at an astounding rate.

"Over the last four decades our planet has been building up heat at a rate of about four Hiroshima bombs worth of heat every second." Watch his presentation here.

Australian Climate Commissioner and ecologist Professor Lesley Hughes said climate change is already driving more extreme weather events and species extinctions worldwide.

"The climate is now very different from what it was 50 years ago. It now contains more heat and more water. So in that way, all extreme weather events are affected by climate change in some way." Watch her presentation here.

Professor Colin Butler, from the University of Canberra, said runaway climate change will have dire social consequences, particularly for the world's poorest.

He said fossils fuels "are in fact Earth poisons which we are liberating to poison our atmosphere and oceans and, indeed, our common future". Watch his presentation here.

Other sessions and workshops at the conference discussed various campaigns across Australia to support renewable energy, cut carbon emissions and keep fossil fuels in the ground. These sessions included speakers about campaigns against coal and coal seam gas, the threat climate change presents to public health, how to best communicate climate change science, and discussions about the wider economic and social changes required to deal with the climate threat.

Environmental journalist George Monbiot addressed the conference via video link on June 22 and called for a campaign against the "political corruption" that has resulted from fossil fuel company campaigning and donations to political parties.

He said no government around the world is "doing the thing that must be done above all others, which is to leave fossil fuels in the ground".

Attendees at this year's summit were noticeably older than in past years.

This raises an important issue for next year's organisers: how to reconnect with a younger generation of climate activists.

Another big difference from previous climate summits was the attitude expressed toward the Labor government's carbon price scheme. The first Climate Action Summit, held in Canberra in 2009, unanimously voted to prevent an earlier incarnation of carbon pricing — the Carbon Pollution Reduction Scheme — from passing into law.

In 2011, the summit said it could not support a carbon price that helped roll out fossil fuels (especially gas), subsidised polluting industries, locked in low targets or hindered rapid emissions cuts.

But criticism of the Labor-Greens carbon price scheme — which does all of the above-listed things — was not a strong feature at this year's summit.

Several plenary session speakers, including Climate Action Network Australia's Anna Malos, Greens federal Senate candidate Cate Faehrmann and the Australia Conservation Foundation's Tony Mohr, urged climate activists to support the carbon price scheme, despite its flaws.

But in his plenary presentation, former *Green Left Weekly* editor Simon Butler pointed to the collapse of Europe's emissions trading scheme and urged climate activists to "stop saying yes to a price on carbon.

"We cannot deal with climate change through crisis-prone markets that subsidise dirty energy firms."

Butler called instead for an Australia-wide campaign to build publicly owned big solar thermal power plants and a commitment to a "job-rich public energy sector".

The summit's final session adopted a resolution calling for rapid carbon emissions cuts in line with the climate science and agreed that next year's Climate Action Summit will be held in Brisbane.

From GLW issue 971

- See more at: http://www.greenleft.org.au/node/54408#sthash.hsWY4ecs.dpuf

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The WALL STREET JOURNAl

7:53 am
Aug 27, 2013

Companies Devise Wireless Charging for Electric Buses

By Jeyuup S. Kwaak

A slew of companies world-wide are betting on electric buses as the future of mass transit, and the direction most are taking is towards wireless charging while on the move.

One of South Korea's OLEV buses
Korea Advanced Institute of Science and Technology

South Korean engineers claimed a victory earlier this month when they beat rivals by

fielding the world's first wireless electric buses that can charge in motion. The so-called On-Line Electric Vehicle buses recharge using power supply underneath the pavement as they roll on the 15-mile course in Gumi, a regional city 150 miles southeast of Seoul. The in-motion process known as "dynamic charging" increases fuel efficiency by reducing the buses' battery size and puts an end to lengthy charging sessions at the end of the route, the engineers say. The buses can also charge while parked.

Engineers from the Korea Advanced Institute of Science of Technology say the power transfer system they devised shapes electromagnetic fields to a specific direction to minimize lost energy while in transit. The receiver picks up 100 kilowatts of electricity at a 20 kHz frequency with up to 85% efficiency, according to the institute. The buses also employ "regenerative braking" found in hybrid cars, which converts energy from the vehicle's motion to help power it.

Electric buses that charge wirelessly have been in service for a decade in Turin, Italy. But they have to be parked while charging at the designated points. These buses made by Conductix-Wampfler, subsidiary of Delachaux Group, would lower the pick-up device to the road surface to pick up the charge.

Here are some others working on wireless charging technology for public transport vehicles:

– Utah State University has developed a wirelessly powered electric bus that picks up power from under the pavement, with transfer capacity of 25 kilowatts at 90% efficiency, according to the developers. Its spin-off firm WAVE Inc. has partnered with China's BYD Inc. to provide electric buses to cities in California and Utah.

– ABB Ltd.ABBN.VX -0.38%, the Swiss engineering group, is testing a city-to-airport service in Geneva with a bus that charges in 15-second bursts along its route, using a charging station that connects to the top of the vehicle.

– South Carolina-based Proterra, Inc. also touts electric buses that connect to a high-power charger above the vehicle, with charging times from five to 10 minutes. It has signed deals with transit systems of nine cities across the U.S.

– Bombardier Inc.BBD.B.T -0.84% is set to provide its own opportunity-charging wireless electric buses to the German city of Mannheim next year. The buses receive their power supply from underground chargers.

Qualcomm Inc.QCOM -0.84%, on the other hand, is working with Mercedes-Benz and Nissan Motors Co. Ltd. to develop wirelessly-charging cars, with plans for dynamic charging in the future. Siemens AGSIE.XE -1.57% and BMW AGBMW.XE +0.33% have partnered for a similar project.

Electric-mobility: Turn up, plug in, join motoring's social revolution

Meeting the experts and enthusiasts at an electric car convention, Matthew Bell asks if we should all be doing the Smart thing

MATTHEW BELL GREEN LIVING

SUNDAY 25 AUGUST 2013

As recently as five years ago, electric cars seemed like an eco pipe dream. They arrived promising a green revolution, but were expensive and flimsy, and looked unlikely to replace the combustion-engined car. But, as thousands of enthusiasts gathered yesterday for "smart times 13", the world's biggest micro-car convention, industry experts now say that electro-mobility is becoming the norm, not the exception.

Certainly, if the crowds at the Buochs military airport in Switzerland were anything to go by, this is no longer just for the avant garde. T-shirt-wearing men and women of all shapes and ages, including 300 Britons, had travelled from around the world to the Swiss lakes. They camped, they played volleyball, they ate candy floss, and they showed off their pimped rides.

"We may seem like geeks, but it's fantastic fun," said Briony Baker, who had driven with her husband, Robert, 60, from Chichester in West Sussex. "Our children think it's a bit geeky, but what other manufacturer puts on an event like this?" The Bakers came in their rare Crossblade model, of which there are only 25 in Britain. (The lack of a windscreen and roof – or, indeed, any weather protection – could be a reason.) "We wear motorbike helmets. We had a lovely drive over the Alps."

Smart cars celebrate their 15th anniversary this year and, though most are conventionally powered, the theme was electro-mobility. Last year, Smart launched an electric bicycle in Britain, and there are plans for an electric scooter. Almost all car manufacturers are investing in the technology. Can Smart foresee a time when all cars are electric?

"No, I can't," says Dr Annette Winkler, the global head of Smart. "But electric drive will become more and more important for urban mobility, and it's now becoming more affordable with a scheme where you buy the car but hire the battery."

Dr Jorg Beckmann, the chief executive of Swiss eMobility, which campaigns for electric motoring, says cars are becoming part of the public transport network through share schemes. "There is a social change as well as a technological one," he says. "The typical car before had an internal combustion engine and was privately owned. Now, it could be electrically powered and be part of a car-sharing scheme. We are talking about a transformation of the entire transport infrastructure."

Car-sharing schemes have been successfully rolled out in British cities including Bristol, Brighton and Manchester. Though beloved of early-adopters, the problem, says Dr Beckmann, is getting the infrastructure in place for the so-called "late majority". "You need to be able to offer them the same services that are already in place for combustion-engined cars," he says. "In Switzerland, road infrastructure is funded by fuel tax, so that's a problem."

Dr Winkler says the Chinese market is growing. "They are crazy for it," she says, "It's our third biggest market, after Germany and Italy."

Smart times has become a major annual event. Next year's could be in Britain, as Brighton is one of three shortlisted cities. "We'll do something even if we don't win," says James Hemson, 24, who is helping the campaign. "There are thousands of Smart Club UK members. Once you drive one, you realise how fun they are."

Dr Winkler agrees. "Smart has always been a polarising brand. People used to ask, does the world need a car like that? Now we have produced 1.5 million of them, and will soon launch the next generation." Whether electro-mobility will ever replace the conventional engine remains to be seen, but it is certainly here to stay.

Thursday 10 October 2013

The INDEPENDENT

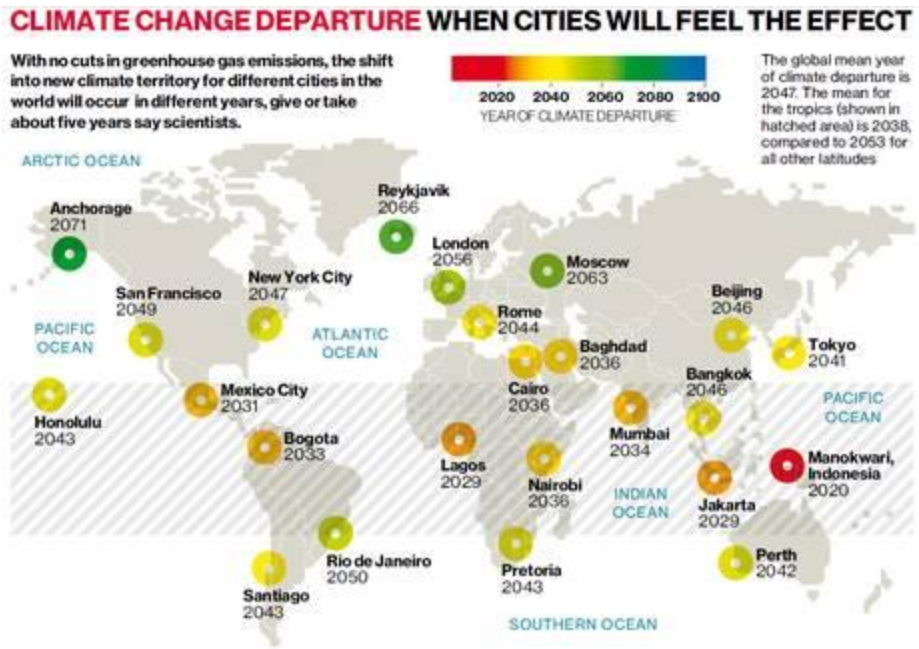
Unprecedented shift in temperature will begin to hit tropics in less than a decade

Areas with highest densities of wildlife and most vulnerable human populations will be hardest hit, says study

Steve Connor

Science Editor

Wednesday 09 October 2013



Tropical regions will experience the greatest shifts in climate this century with some equatorial areas experiencing unprecedented changes as early as the next few decades, a study has found.

Click image above to enlarge graphic

Scientists discovered that the tropics, which are home to the highest densities of wildlife as well as some of the most vulnerable human populations on the planet, will be hit hardest and earliest by climate extremes.

A "meta-analysis" of future climate predictions culled from 39 global computer models used in climate research found that tropical regions are expected to cross the threshold into unprecedented climate change significantly earlier than other areas of the world. If industrial emissions of greenhouse gases remain unchanged in a "business-as-usual" scenario then some tropical regions, such as Jamaica and Indonesia, could see a shift into new climate territory as early as the next decade, the scientists warned.

"The results shocked us. Regardless of the scenario, changes will be coming sooner. Within my generation, whatever climate we were used to will be a thing of the past," said Camilo Mora of the University of Hawaii, the lead author of the study published in the journal Nature. "On average, the tropics will experience unprecedented climate [change] 16 years earlier than the rest of the world, starting as early as 2020," Dr Mora said.

Although the Arctic region has seen some of the greatest changes in climate, with the region warming significantly faster than the global average, it is in the tropics where the changes will hit hardest because it is here that wildlife and human populations are accustomed to relatively constant natural variations in the climate, the researchers said.

"Scientists have repeatedly warned about climate change and its likely effects on biodiversity and people. Our study shows that such changes are already upon us," Dr Mora said. "These results should not be reason to give up. Rather, they should encourage us to reduce emissions and slow the rate of climate change. This can buy time for species, ecosystems and ourselves, to adapt to the coming changes," he said.

Coral reefs in northern Sulawesi, Indonesia (Getty)

The study analysed minimum and maximum temperature ranges from 1860 to 2005 – the period of accurate instrumental readings – to provide a baseline of recent climate extremes. It then looked at computer climate projections into the next 100 years to see where future temperatures are likely to go for any given location on Earth.

The scientists wanted to find the date when a point on the Earth is likely to slip into a new climate state that it had not experienced during this historical period. For

instance they wanted to see when, for each place, the lowest monthly-average temperatures will be hotter than anything experienced over the past 150 years.

For the business-as-usual scenario of greenhouse gas emissions, London is expected to slip into this unprecedented climate state by around 2056, whereas Nairobi will reach it in 2036, Mumbai in 2034 and Manokwari in Indonesia in 2020 – give or take five years in each location.

A rainforest in Ecuador, South America (Getty)

The researchers said that tropical species, which have evolved for millions of years within a fairly narrow range of climate extremes, will find it hard to survive. They will either have to move, adapt or go extinct, they said.

"This work demonstrates that we are pushing the ecosystems of the world out of the environment in which they evolved into wholly new conditions that they may not be able to cope with," said Ken Caldeira of the Carnegie Institution for Science in Stanford, California.

"Extinctions are likely to result. Some ecosystems may be able to adapt, but for others, such as coral reefs, complete loss of not only individual species but their entire integrity is likely," Dr Caldeira said.

Transport firms working in France must report carbon

Sarah-Jayne Russel; The Environmentalist

2 October 2013

UK companies taking passengers and goods into France must be able to report how much carbon is being generated by each journey, under new reporting rules

As of 1 October, all organisations providing transport services in France are required by law to inform their clients of the carbon footprint of journeys.

Article 14 of French Decree 2011-1336, which has now come into force, mandates carbon reporting for passenger and freight transport services in line with article L1431-3 of the French Transport Code, and follows the publication of emissions factors in April 2012 (to see the rest of this article, email sjplusam@gmail.com).

September 27, 2013

Expert reaction to IPCC AR5

Reaction to the fifth assessment report (AR5) of the IPCC, announced on the 27th September, from lead authors and 3rd party scientists.

Prof Kevin Anderson, Deputy Director of the Tyndall Centre for Climate Change Research, Professor of Energy and Climate Change at the University of Manchester, said:

"What has changed significantly since the last report is that we have pumped an additional 200 billion tonnes of CO_2 into the atmosphere. Annual emissions are now 60% higher than at the time of the first report in 1990 and atmospheric CO_2 levels are the highest they have been for over 2 million years.

"So what are we doing in the UK to help reverse this reckless growth in emissions? Record levels of investment in North Sea oil, tax breaks for shale gas, investment in oil from tar sands and companies preparing to drill beneath the Arctic. Against this backdrop, the UK Treasury is pushing for over 30 new gas power stations, whilst the government supports further airport expansion and has dropped its 2030 decarbonisation target – all this alongside beleaguered plans for a few wind farms and weak energy efficiency measures.

"Governments, businesses and high-emitting individuals around the world now face a stark choice: to reduce emissions in line with the clear message of the IPCC report, or continue with their carbon-profligate behaviour at the expense of both climate-vulnerable communities and future generations."

Prof Corinne Le Quéré, Director of the Tyndall Centre for Climate Change Research and Lead Author on Chapter 6 (Carbon and Other Biogeochemical Cycles), said:

"This is not just another report, this is the scientific consensus reached by hundreds of scientists after careful consideration of all the available evidence. The human influence on climate change is clear and dominant. The atmosphere and oceans are warming, the snow cover is shrinking, the Arctic sea ice is melting, sea level is rising, the oceans are acidifying, and some extreme events have increased. CO2 emissions from burning fossil fuels need to substantial decrease to limit climate change."

Dr Tim Johns, Met Office Hadley Centre and Lead Author on Chapter 12 (Long-term Climate Change: Projections, Commitments and Irreversibility) said:

"As the IPCC Working Group I contribution to the Fifth Assessment Report (AR5) - Climate Change 2013: The Physical Science Basis – is released, my overriding impression is of the massive worldwide scientific effort, expertise and rigour woven into the production of this assessment, underpinned by a rapidly developing science base. The report presents a robust picture of a progressively warming world, reducing Arctic sea ice extent, melting ice sheets and glaciers, rising sea level, ocean acidification, and large-scale hydrological cycle changes under the influence of anthropogenic emissions of greenhouse gases. Despite some inevitable scientific limitations to understanding of the physical climate system, the central conclusions in the Summary for Policymakers are more sharply drawn in many respects than in the IPCC's 25-year history.

"Climate models play a central role in the assessment of attributed historical climate change and projected climate change through the 21st century and beyond. An unprecedented worldwide modelling effort known as CMIP5 - described as "the moon-shot of climate modelling" by eminent US climate scientist Gerald Meehl – was undertaken to feed the most comprehensive model-based evidence ever about past and future changes and their uncertainties into AR5. Common experiments using different models were run by teams in several countries in Europe, as well as the USA, Canada, Russia, China, Japan, Australia and South Korea. Climate models have undoubtedly improved since the last report (AR4), and the new generation of "Earth System Models" increasingly incorporate biogeochemical cycles that reflect important additional climate change feedbacks, providing the means to quantify the policy-relevant issue of how much carbon-dioxide emission is compatible with a given climate stabilisation pathway.

"Taking results from the latest generation of models for a range of Representative Concentration Pathways (RCPs; future emissions scenarios), AR5 concludes that cumulative anthropogenic carbon-dioxide emissions would need to be limited to around 1000 petagrams (10 to the power 18 grams) of carbon to be likely to limit global warming to no more than 2 degrees Centigrade, relative to the early industrial era (1861-1880). However, half or more of this anthropogenic carbon budget has already been 'spent', and accounting for climate forcing agents other than carbon-dioxide tends to reduce the future carbon budget available to be likely to achieve a given warming target.

"The science has spoken and the potential for dangerous climate change in this century is increasingly clear."

Prof Bob Watson, Tyndall Centre for Climate Change Research and the University of East Anglia, said:

"The latest IPCC report strengthens its earlier conclusions that most of the observed warming since 1950 has been caused by human activities, and future changes are inevitable. Also, many of the other changes observed in the climate system, such as the rate of loss of Arctic sea Ice, melting of mountain glaciers and the Greenland Ice sheet are unprecedented. Without immediate reductions in global emissions of

greenhouse gases, the world will not be able to achieve the political target of limiting the increase in global mean surface temperatures to 2 degrees C, but rather we are likely to see an increase of 3-5 degrees C. Time to act is running out if we are to take the threat of human-induced climate change seriously."

Prof David Lee, Professor of Atmospheric Science at Manchester Metropolitan University and Lead Author on Chapter 8 (Anthropogenic and Natural Radiative Forcing) said:

"This report represents a major milestone in our increased and better understanding of the science of the causes of climate change. The report highlights that the warming is 'unequivocal', and observations show how the atmosphere and oceans have warmed, snow and ice extent have decreased, and sea level has risen.

"Of course the big question is: have the observed increased concentrations of greenhouse gases, including CO2, caused the observed changes? We have shown that global mean surface temperatures have increased by 0.85 degrees C over the period 1880 – 2012, which is more than the last assessment report in 2007. Our increased scientific understanding of the causes has led us to conclude that the human influence on the climate system is clear, and that it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th Century.

"2013 represented a watershed in terms of CO2 concentrations in the atmosphere, when they reached 400 parts per million, unprecedented levels for 800,000 years. The sobering part of the science of CO2 is that for every tonne we emit, 30% will be removed from the atmosphere in a few decades, 50% in a few centuries, and the remaining 20% over millennia. So what we emit today has massive long-term impacts for the future. The climate simulations in the IPCC report show that there is substantial 'committed warming' already, and if emissions are not reduced over the next 20 years, temperatures may increase beyond the value of 2C by 2100."