



German Chancellor Angela Merkel (left) and US President Donald Trump attend a morning working session at the G20 economic summit in Hamburg, Germany.

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Signs of a power switch

Both international diplomacy and new research give cause for cautious optimism about the prospect of progress on addressing climate change.

Earlier this month the “Group of 20” most powerful countries (New Zealand is not a member; but Australia is) met in Hamburg to discuss the biggest issues facing the world; well, their world anyway. It is a mark of how far we have come in the fight to protect a liveable future that the biggest issue they wanted to talk about was the climate. Not international banking, not international trade, not world security, but the climate. It is not that long ago (2009) that the Copenhagen meeting of the UN Climate Change Convention ended in disarray with no international commitment to address climate change. If we had reason then to despair for our future, there are grounds now for cautious optimism. But don’t airbrush out the word cautious. The initiatives now under way will not keep us within the 2degC of warming that we must achieve. And of course one of the G20 was conspicuously stepping away from this international consensus. But the initiatives under way are a big first step in the right direction with more steps to come.

Just prior to the G20 meeting in Hamburg, Climate Transparency (an international consortium of climate research teams) published a report on how well G20 countries are doing in responding to the climate challenge. Titled *Brown to Green*, the report weighs up the progress



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that these big powerful countries are making in transitioning from an oily-brown to a sustainable-green global energy and economic system.

As a group, G20 countries account for 75% of the world’s greenhouse gas emissions, so what happens here is crucial to success. They also have the lion’s share of assets tied to the brown economy; carbon-producing power stations, huge fleets of petrol-driven vehicles, industrial processes dependent on fossil fuels. It is these assets that must be replaced with low-carbon technologies, and by 2050 with technologies that emit no greenhouse gas at all. So how are they doing?

GHG emissions in the G20 are still rising, by a third between 1990 and 2014. This trend has to be reversed, and emissions begin to decline sometime in the next five years, if the 2degC target is to be achieved. But G20 economies grew more than three times faster than their emissions, so we are clearly learning how to build economies that do not use the brown stuff. For three years in a row, emissions from industry have not risen, and may well have peaked.

This overall global picture hides considerable differences between countries, the EU and Brazil actually reducing GHG emissions since 1990 to a level below 10 tonnes per capita. At the other end are the brown economies of Canada, Australia and the US with emissions of 20 tonnes or more per capita (New Zealand is not far behind at about 18 tonnes per capita), and the getting-browner countries of Russia, Saudi Arabia, Japan, India, China and Korea where emissions per capita are still growing



Chinese workers prepare panels that will be part of a large floating solar farm project on a lake caused by a collapsed and flooded coal mine in Huainan, Anhui province, China. The floating solar field, billed as the largest in the world, is built on part of the collapsed Panji No. 1 coal mine that flooded more than a decade ago. When finished, the solar farm will be made up of more than 166,000 solar panels that convert sunlight to energy, and the site could potentially produce enough energy to power a city in Anhui province, regarded as one of the country’s coal centres. Local officials say they are planning more projects like it. China’s government says it will spend more than \$US360 billion on clean energy projects by 2020 to help shift the country away from a dependence on fossil fuels, and earlier this year, Beijing cancelled plans to build more than 100 coal-fired plants in a bid to ease overcapacity and limit carbon emissions.

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strongly by 8%-30% per year.

Looking at energy sources, nine countries still get more than 20% of their energy production from coal, the most emission-intensive of all fossil fuels. These include the US, Australia and Germany, with China (67%), India (48%) and South Africa (70%) the most coal-intensive of all. By contrast, the contribution of renewables to energy production for most G20 countries is only 5% to 10%, with Brazil a stand-out star at 38%. Of course, this is one statistic where we in New Zealand are the greenest of all, with more than 80% of our energy production coming from renewable sources, principally hydro and geothermal.

These statistics tell us about the current balance between

brown and green, and of course it is still too brown. The more relevant question is how is that balance changing?

A good measure here is the amount of money that G20 governments and development banks provide to finance brown as against green energy investments, because these investments will be with us for decades to come. Across the G20 as a whole, governments still provide \$US88 billion a year to finance the brown economy, four times their support for green, renewable energy projects. Amazingly, between 2013 and 2015, G20 countries financed an average of \$13.5 billion a year for exploration of new fossil fuel resources when there are already three times more proven reserves

than we should ever burn if we are going to keep global warming below 2degC.

But once again, the overall G20 story hides substantial differences across countries, and for many the balance is tipping towards a green future. For countries where per capita emissions have been growing fastest, the oily grip of the brown economy still has a strong hold. New investments in energy production in China, India, Korea and Saudi Arabia are still among the most emission-intensive in the world: in excess of half a tonne of CO₂ per megawatt hour. But even here there are signs of a green transition: China and Korea have more than doubled energy supply from renewables over the past five years. And the countries that are most deeply-embedded in old, brown, high-emission economies, the countries that most need to change direction — Canada, Australia and the US — are clearly shifting their investment in new power production towards green alternatives, with much lower emission-intensities of about a 10th of a tonne, and Australia’s at nearly zero.

Assembling all this evidence, the image that springs to mind for me is the scene from *Titanic* (a good metaphor, I think) in which the mighty engines that have been powering the glorious ship at full speed across the Atlantic are brought to a stop and are poised, motionless, ready to be thrown into reverse. Like *Titanic*’s passengers, we must all hope that the world’s leading economies manage to back out of brown and into green in time to avoid hitting (or in our case melting) the icebergs.

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