produce more than incremental progress. Opening the two-week meeting, Prime Minister of Fiji Frank Bainimarama invoked the "*talanoa* spirit" — a term used in his small Pacific state to describe inclusive and transparent dialogue. His plea underlined the push, led by poorer countries disproportionately vulnerable to the consequences of global warming, for accelerated climate action by the world's leading economies.

It is a dire political setback that the United States, the world's largest economy (and second-largest emitter of carbon dioxide, behind China), intends to leave the Paris agreement in 2020. But market forces will bolster the expansion of carbon-cutting efforts in the US energy and transport sectors, regardless. And several US states, cities and large companies have promised to honour the Paris goals. In Bonn, the more than 170 parties, including the European Union, that have ratified the agreement pledged solidarity.

Unfortunately, data released while the talks were happening highlight a worrying disconnect between rhetoric and real-world trends. After three years in which global CO_2 emissions have remained flat, they will probably surge by 2% in 2017, reaching a new record level, according to researchers with the Global Carbon Project (see *Nature* **551,** 283; 2017). And despite countries' commitments to cut carbon, the global demand for fossil fuels is set to rise until at least 2040, according to this year's World Energy Outlook, released last week by the International Energy Agency (see go.nature.com/2hg2hzp). Emissions are exceedingly unlikely to peak earlier.

In fact, many industrialized countries — including Japan, Germany and the EU — are struggling to meet their climate goals. By contrast, China is on track to reach its emissions peak before its 2030 target, although its coal consumption seems to have surged again this year. Reliance on coal for electricity also hampers progress in India, which is expected to contribute almost one-third of the projected 30% rise in global energy demand by 2040. For conference hosts Germany, often regarded as a leaders in the race for clean energy, it is embarrassing that coal comprises 40% of its power mix.

Even if — and it is a huge if — all countries meet their current Paris pledges, the world will probably heat up by substantially more than 2 °C above pre-industrial temperatures, with grave consequences for ecosystems and societies. Countries must do more, and must be more transparent in their plans and achievements. In particular, they must strive to break free of the coal trap. A worldwide carbon-pricing scheme would be the most effective way to phase out burning of the cheapest, most plentiful and, alas, dirtiest fossil energy source. At the least, governments should clearly lay out the steps and incentives — taxes, carbon-pricing schemes or clean-technology subsidies, for example — through which they hope to reduce emissions, and should be candid about what efforts will cost. Countries should also open up their national pledges for review by scientists and economists, to increase trust and transparency.

"Countries must do more, and be more transparent in their plans and achievements."

Science can help in other ways. Fair burden sharing depends on reliable methods of reporting and verifying human-caused CO_2 emissions. Research funders must provide sustained support for accurate atmospheric measurements to allow carbon researchers to disentangle emissions from human activity and natural processes.

The Intergovernmental Panel on Climate Change is preparing a special report on the impacts of 1.5 °C of warming, due for release next October. It is sure to add urgency to the next round of climate talks. But for nations, regions, cities, companies and individuals, the need for yet more action is immediate. ■

Nurture negatives

Awards recognize that science cannot be self-correcting when information is missing.

Two research prizes signal a shifting culture. One, announced earlier this month by the European College of Neuropsychopharmacology, offers a €10,000 (US$11,800) award for negative results in preclinical neuroscience: careful experiments that do not confirm an accepted hypothesis or previous result. The other, from the international Organization for Human Brain Mapping, is entering its second year. It awards US$2,000 for the best replication study — successful or not — with implications for human neuroimaging. Winners, to be announced next year, are chosen for both the quality of the study and the importance of the finding being scrutinized.

Research cannot be self-correcting when information is missing. The sorts of information most likely to stay in the shadows come from the negative results and replication studies that these two prizes put into the limelight. Indeed, in many fields, independent replication can be an advance in itself. Biomarkers and drugs, for example, must be tested in different patient populations from those of the initial studies to show that they work broadly and reliably — or, more importantly, that they don't. Working out why can inform clinical approaches and elucidate the underlying biology.

Then there is all the time wasted when many scientists attempt the same thing. A researcher might not need to explore a particular hypothesis if others have spent months carefully doing so. But in today's science system, those who toil but find no evidence for a hypothesis, or find similar evidence to others, have scant means or reason to publicize their efforts.

Why do such useful results remain hidden? They are often harder to assess. There are so many reasons why two researchers might get different results. (We at *Nature* are developing ways of more deliberately supporting significant replications and refutations of *Nature* papers.) Another barrier is cultural. Those who publish replication studies that yield different results risk the wrath of the original researchers, who may be more concerned with preserving their status than with understanding why someone else found something different. Those who argue that the entire burden of proof should be on replicators are putting scientific reputations before science itself.

New kinds of papers that encourage replication are gaining traction, particularly in psychology. For registered replication reports, journals adjudicate proposals for studies that could be replicated. These are then carried out, often by more than a dozen labs in consultation with original researchers. Just this week, *Perspectives on Psychological Science* released such a report. Replication studies by 23 labs could not confirm much-cited work claiming that priming people to think of themselves as scholarly improves performance.

What these prizes attempt to do is counteract risks (including the risk of wasted effort and potential backlash from original researchers) and boost rewards for negative results and replications. They provide a line on winners' CVs that committees can see and value. The hope is that such recognition will encourage researchers to present work that would otherwise languish on their hard drives.

Another tack is to fund researchers to actually do replication studies. This July, the government of the Netherlands gave grants to nine projects intended to replicate studies that have become important in public policy. One of these — on whether pupil dilation reflects personal interest in a subject being viewed — is more than 50 years old. So far, a total of €3 million has been allocated for such investigations over a planned three funding rounds. Encouragingly, they are competitive: with 85 applications in the first round, fewer than 1 in 9 was successful.

That fact suggests strong interest in doing replications if duly supported, whether results are negative or confirmatory. It may take only small shifts in encouragement to realize their value to science. ■

CORRECTION

The Editorial 'Nurture negatives' (*Nature* **551,** 414; 2017) erroneously stated that *Psychological Science* had released a report involving replication. In fact, the report was in *Perspectives on Psychological Science*.