



warming within safe thresholds.



# **BY SOPHIE YEO**

he coast of Majuro, a coral atoll in the Pacific Ocean, is dotted with concrete walls, boulders and piles of vegetation to stave off storms and rising sea levels. But the barriers haven't stopped the flooding and erosion that threaten Majuro, which is the capital of the Marshall Islands and home to 27,000 people. The government is fighting back with a new protection programme, funded with more than US\$19 million from the World Bank and \$25 million from the Green Climate Fund (GCF), a flagship United Nations entity set up in 2010 to help vulnerable nations ward off and adapt to the effects of climate change.

The Pacific Resilience Project, as it's known, is one of a plethora of initiatives around the world, from low-carbon energy systems to drought-resilient agriculture, that require some type of financial assistance if nations stand a chance of avoiding the most dangerous consequences of a warming globe. But funding such projects has been a perennial sticking point at climate meetings. In 2009, at a UN summit in Copenhagen, wealthy countries resisted calls to directly compensate Rising sea levels threaten the low-lying Marshall Islands, where parts of this coastal cemetery have already been washed away. poorer nations that are harmed by their carbon emissions. Instead, they agreed to channel \$100 billion a year to these countries to help them deal with climate change. The pledge, usually described as developed nations mobilizing finance for developing ones, aimed to reach this target by 2020; the GCF was set up as one of the ways to distribute the money.

A decade after that Copenhagen summit, arguments still rage over whether the \$100-billion goal is close to being met — partly because negotiators never agreed what kind of financing counts. Some estimates include loans and private finance leveraged by public money, for instance, whereas others say only direct grants, a much smaller sum, should be included.

A rethink of these spending targets is coming. This year the GCF, which was pledged an initial \$10.3 billion and is running out of money, needs wealthy nations to refill its coffers. And countries are now discussing a new promise to low-income nations, something that they have committed to deciding before 2025.

More broadly, such international financing is only a fraction of the money aimed at climate-related efforts around the world. Groups that track the economics estimate that, all told, more than half a trillion dollars a year is going into climate-related activities. Much of that does not cross borders, but is spent by private investors in wealthy nations on projects such as solar plants (see 'Key questions about climate finance'). The figures are rising, but researchers say that banks, investors and gov-ernments are not spending anywhere near enough money to stem the impacts of climate change — and they continue to fund projects that worsen the problem.

The UN's Intergovernmental Panel on Climate Change (IPCC) says that an annual investment of \$2.4 trillion is needed in the energy system alone until 2035 to limit temperature rise to below 1.5 °C from preindustrial levels. (That is around 2.5% of the world's economy.) And the effort to tackle climate change goes beyond transforming energy systems: it includes spending on reforestation, coastal-defence systems and many other efforts to cut emissions and adapt to, rising temperatures. Spending on adaptation efforts is particularly low, according to analyses.

"Neither the amount of financial flows nor their direction is sufficient to keep temperatures below 2 °C, let alone 1.5 °C," says Ottmar Edenhofer, director of the Potsdam Institute for Climate Impact Research in Germany, and a former co-chair of the IPCC's working group on mitigation of climate change.

# **COUNTING CLIMATE CASH**

Estimates of how much climate finance is flowing around the world depend on who is doing the counting. The Climate Policy Initiative (CPI), an international thinktank that publishes annual analyses, says that total climate-related financing was \$510 billion to \$530 billion in 2017, the latest figures available, up from \$360 billion in 2012. The UN's Framework Convention on Climate Change (UNFCCC), put it at \$681 billion in 2016. The framework relies partly on the CPI's methods, but adds information on energy-efficiency financing, which the CPI excludes because it judges the data to be of insufficient quality. But these bodies readily admit that their reports can give only partial estimates because of numerous data gaps, limited systematic tracking and a lack of agreed accounting definitions. What's clear from the CPI's analysis, however, is that the private and public sectors contribute about equally to money flows, and that most of the financing remains in its country of origin.

The fraction of this cash that's raised by wealthy countries for those less well off is the most politically contentious. Tracking progress towards the \$100 billion Copenhagen pledge has been notoriously difficult. The Copenhagen accord spoke of including "a wide variety of sources, public and private, bilateral and multilateral", but it has been left up to external organizations to come up with their own methodologies.

The most comprehensive effort has been undertaken by the Organisation for Economic Co-operation and Development (OECD), an intergovernmental body made up mostly of rich countries, and the CPI. Its

# **KEY QUESTIONS ABOUT**

A decade ago, developed countries pledged to channel US\$100 billion annually to developing nations by 2020, to help them mitigate climate change and adapt to its effects. That promise is politically important, but accounts for only a small fraction of the financing that is currently flowing into efforts to address climate change, most of which does not cross borders. Not all can be easily tracked, but estimates suggest the total has risen to more than half a trillion dollars annually. Even so, \$2.4 trillion per year is needed just to transform energy systems enough to limit global warming to within 1.5 °C, according to the Intergovernmental Panel on Climate Change.

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# **HOW MUCH CLIMATE FINANCE IS THERE? HOW IS IT SPENT?**

Two organizations Initiative (CPI) and the United Nations Framework Convention on Climate Change (UNFCCC) — have differing estimates of climate finance. Renewable-energy sources, such as solar and wind farms, account for the biggest share of funding, mostly from the private sector.



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Of the \$455 billion spent on climate

finance in 2016, most didn't cross borders.

\*Private spending on adaptation could be significant, but is difficult to track

DOMESTIC US\$370 billion				INTERNATIONAL 85	
Non-OECD 214		OECD 156			
D, Organisation for Economic Co-operation and De	velopment			From OECD	Other
MUCH IS	FINANCE FROM DEVELOPED TO DEVELOPING COUNTRIES		'ED <sup>to</sup> RIES	to non-OECD 45	international 40
WING TO	💋 Grants	Other public	Private		
ELOPING NATIONS?	2013	39.5	12.8		
7, around \$71 billion flowed	2014	45.	1 16.7	·	
leveloped to developing nations, ling to an OECD estimate — gh much was in loans, not	2015 //////	44.6	No estin	nate	
	2016	4	8.5 10.1		
grants.	2017		56.7	14.5	

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### PLEDGES TO THE GREEN CLIMATE FUND (GCF) WHO BACKS US\$10.2 billion THE GREEN **CLIMATE FUND?** United States 3 Japan 1.5 United Kingdom 1.2 France 1 Germany 1 Sweden 0.6 Other nations 1.9 This flagship UN climate fund was set up in 2010, GCF ALLOCATED FUNDS US\$5.2 billion -The United States has but has been pledged only withdrawn \$2 billion around \$8 billion; its of its promised funds largest donor is Japan. Other nations 4.4 Brazil 0.3 Egypt 0.3 Mongolia 0.2

### TOTAL (billions US\$) BREAKDOWN OF JAPAN'S FUNDING WHICH RICH Japan Climate fund Thailand Qata **NATIONS ARE** Germany 101 TRANSFERRING To other THE MOST France multilateral MONEY institutions. Switzerland **ABROAD?** such as the World Bank PER CAPITA (US\$) According to data that 2.1 countries report to the UNFCCC, Japan Switzerland 437 Luxembourg 249 Kenya Panama Bangladesh Egypt 0.8 transferred the most -0.4 0.3 Germany 123 \$13.1 billion — to developing countries in Finland 116 2016. Japan has a history Japan 103 Vietnam of reporting coal-related Other nations projects as climate PER TONNE OF CO2 EMITTED (US\$) and groups finance, however. 0.9 Switzerland 94 Switzerland transferred Sweden 23 the most per capita, and Bolivia per tonne of its own Luxembourg 0.5 16 carbon emissions. Finland 13 Of Japan's \$13.1 billion, \$2.4 billion Germany 13 came through multilateral institutions

report, released just before the 2015 UN Paris conference, seemed to contain good news: some \$62 billion had been mobilized in 2014 for spending on developing countries, of which \$45 billion was public finance. But the report caused outrage in some developing countries. India released a rebuttal suggesting that the OECD was a "club of the rich countries" that had reported "inflated" numbers, and that only around \$2.2 billion in climate finance had actually been spent, because, the nation argued, only money from dedicated climate funds should count, and not any that might have been transferred from other development or aid budgets. And, last year, the charity Oxfam suggested that public climate-finance flows were closer to \$16 billion to \$21 billion in 2015–16 — largely because, it argued, only grants, and not loans, should be counted.

"The significance of the \$100 billion is to prove commitment, and as far as I'm concerned there's been a lack of commitment by developed countries to addressing climate change, in particular, adaptation," says Angelique Pouponneau, who has advised the governments of small island states on climate finance at the UN negotiations, and now runs a Seychelles trust fund focusing on climate adaptation and conservation. "I'm just not convinced that we are on track to meet the \$100 billion unless we are being very broad in the way that we are defining mobilization of finance. Very broad."

The OECD's latest assessment, released last week, put public spending at \$56.7 billion in 2017. This in turn leveraged \$14.5 billion in private finance, for a total of \$71.2 billion. Meanwhile, the UNFCCC calculates that developed countries had already channelled more than \$70 billion in climate finance to developing nations in 2016, of which around \$56 billion was public money. The trends are certainly positive, but a definitive answer to whether that \$100 billion goal will be met next year seems unlikely. "I think it inevitably will attract attention, and given the lack of definitions, there might be outcries," says Barbara Buchner, the CPI's executive director.

## **FUNDING THE WRONG THINGS?**

Just as important as the money itself, is where it is being spent. The GCF, for instance, is supposed to fund transformative projects, but critics say that hasn't always happened. In 2017, it approved a \$50-million proposal to update a hydropower facility in Tajikistan that was built during the Soviet era; the mountainous nation relies on hydropower for almost all its electricity. But some activists argued that increasing Tajikistan's dependence on hydropower wasn't sensible in a warming world, because there will be less ice and snow to feed the country's dams. "That money should have been used to diversify energy sources," says Liane Schalatek, an associate director at the Heinrich Böll Foundation in Washington DC, who has attended GCF board meetings as a 'civil society observer' sent by developed nations. Even the GCF's first executive director, Héla Cheikhrouhou, has said that the fund was not backing gamechanging projects. That's partly because there was political pressure on the fund to approve projects quickly, so institutions dusted off ideas that had been waiting for funding, suggests Joe Thwaites, a climate-finance analyst at the World Resources Institute, an environmental think tank in Washington DC. "I think that's happening less now," he says.

Overall, renewable-energy systems, energy-efficiency projects and sustainable transport take the lion's share of climate financing, the CPI analysis shows. And adaptation projects are funded very poorly — they receive just \$22 billion a year, compared with \$436 billion for mitigation activities such as building solar power plants. The CPI records no private-sector funding for adaptation projects, but says there might be activity that it cannot track. "Renewable-energy projects now have a pretty good rate of return, generally speaking, but adaptation projects — building sea walls and infrastructure upgrades — it's harder to find a business case for a private-sector player," says Megan Bowman, who researches climate finance and regulation at King's College London.

Agriculture, forest and land-related initiatives have also struggled for funding — receiving just \$9 billion in 2016, according to the CPI — even though this sector was responsible for almost one-quarter of the past decade's emissions, according to the IPCC's latest report on land use. Anna van Paddenburg, who focuses on natural capital and sustainable landscapes at the Global Green Growth Institute, a sustainability organization in Seoul, says it's still risky to invest in such projects because of complexities such as land ownership and multiple stakeholders.

And at the same time, fossil-fuel projects are still being heavily subsidized by governments. In 2018, fossil-fuel subsidies totalled more than \$400 billion, according to the International Energy Agency, more than double those received by renewables. The International Monetary Fund has tried to calculate the hidden costs associated with continuing to burn oil, coal and gas — such as air pollution and global warming — and estimated that the unpaid damages caused by fossil fuels could amount to \$5.2 trillion in 2017 alone. Energy experts say that the gap points to wider difficulties in refocusing our financial system towards a zero-carbon world: too much money is still being spent supporting fossil fuels and other sources of greenhouse-gas emissions.

## **FINANCING FUTURE**

Nations are going to wrestle with these problems as they consider fresh goals for climate finance. At a UN meeting in Paris in 2015, countries decided they would build on their Copenhagen pledge with a new, higher quantified goal. There are still six years of discussions ahead, but the goal already looks set to be more detailed and analytical than the hastily-agreed 2009 promise. At a meeting in Katowice, Poland, last year, nations set out a detailed list of information that needed to be provided by all countries: those footing the bill need to include precise details on what is being provided and how, and recipients must describe what they need and what they've already got.

Negotiators are already making their stances clear. Wealthy countries must make precise commitments to transfer a certain amount of public money, not to be conflated with loans and leveraged private funding, each year, says Andrés Mogro, a veteran climate negotiator for a coalition known as Like-Minded Developing Countries. Nations should also think about measuring the true impact that this money is having, rather than focusing exclusively on a numerical goal, he says: simply announcing a target that is higher than \$100 billion will be of little help to low-income nations that argue they are not seeing the full value of the money that they are told is coming their way.

The most immediate political issue is whether wealthy nations will support the GCF as it asks for another round of funding. There is no protocol for how much each should pay. Last year, Germany and Norway pledged to double their previous donations, with the United Kingdom and France following suit in August; but in 2017, the United States announced that it would not pay the remaining \$2 billion of its \$3-billion pledge, and last year, Australia's prime minister, Scott Morrison, said that the nation would no longer "tip money" into the fund.

Many people involved in climate finance say that a massive transformation is needed to unlock the trillions required to help the world shift to a low-carbon future and build resilience to climate change. Financiers will have to step away from approaching climate change on a project-by-project basis — a wind farm here, a solar plant there — and start thinking about the carbon impact of every dollar spent. That means an end to projects that lock in unsustainable futures, such as ill-designed buildings, agricultural practices that degrade land and destroy forests, or polluting transport systems. And since investors generally calculate in terms of profitable returns, it's really up to policymakers to incentivize this shift by financially discouraging the wrong kinds of projects, says Edenhofer. He and many economists argue that putting a tax on carbon, or finding some other way to charge for emissions, could help create this shift. "If carbon prices increase, that would change the profitability of all investments," he says.

But even though policymakers across the world are announcing plans to pursue carbon-neutral economies by 2050 or earlier, Edenhofer says, financial markets aren't expecting significant risks from fossil-fuelheavy investments. "It's a very strange situation," he says. "In the end, this is a message to policymakers that the markets do not really trust their announcements."

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