Climate change: Low-hanging fruit ripe for the picking

November 3 2016, by Marlowe Hood

Greenpeace activists protest at the COP21 United Nations climate change conference in Le Bourget, outside Paris, on December 9, 2015

Earth is hurtling deep into the red zone of dangerous global warming, but experts say there are some low cost, effective options for putting on the brakes.

Under the 2015 Paris Agreement, UN members pledged to cap rising

temperatures at less than two degrees Celsius (2.6 degrees Fahrenheit) compared to pre-industrial era levels.

The big culprit is CO2, the byproduct of fossil fuels that provide the backbone of today's energy supply.

But addressing indirect CO2 emissions—and warming sources that are not from CO2—offer complementary ways of slowing the temperature rise.

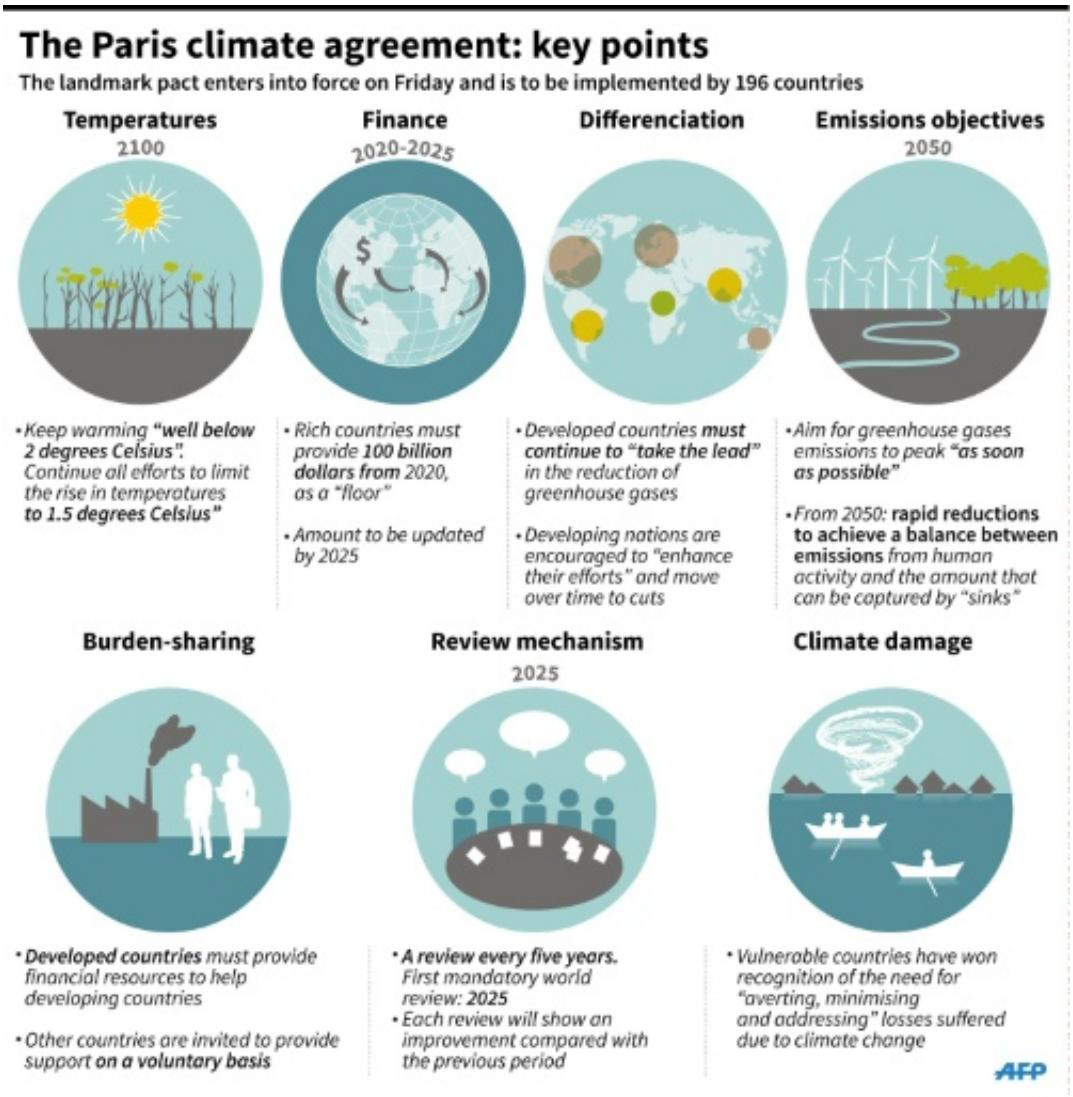
"The overarching objective is crystal clear: we need to cut CO2 emissions, and we need to do it as quickly as possible," said Rachel Cleetus at the Washington-based advocacy group, the Union of Concerned Scientists (UCS).

Here are some of the main options:

HFCs

Hydrofluorocarbons (HFCs) are the poster child of potential "low-hanging fruit" in the carbon cleanup.

These are gases used in air conditioning and refrigeration—invented, ironically, to replace other gases that had ripped a hole in the ozone layer. And they are viciously effective at trapping solar heat—one type of HFC is more than 15,000 times more efficient than CO2 in this regard.



The Paris agreement: key points

An amendment to the 1987 Montreal Protocol signed by nearly 200 countries last month assures the phase out of HFCs by mid-century, avoiding up to a 0.5C (0.9F) of global warming by 2100.

Black carbon

Black carbon –- more commonly known as soot –- consists of dark

particles cast off by the inefficient burning of diesel fuel, wood and other biomass such as dung.

Like CO2, soot contributes to warming in the atmosphere.

But it causes far more damage by settling on snow at high altitude and in the Arctic, regions warming twice as fast as the global average.

Pristine snow reflect more than 80 percent of solar radiation back into space. But when blanketed by soot, it absorb heat instead.

Implementing known solutions "could reduce soot by 70 to 80 percent," said Drew Shindell, a professor at Duke University in Durham, North Carolina.

Global emissions of methane have been rising sharply since 2007 with a large slice of that increase comes from the booming shale gas industry in the United States

Methane leaks

The second biggest contributor to global warming after CO2—methane—comes mainly from oil and gas production leakage, livestock, and rice paddies.

Global emissions of methane have been rising sharply since 2007, and may be twice as high as previously thought, according to an assessment published last month in Nature.

A large slice of that increase comes from the booming shale gas industry in the United States, said Stefan Schwietzke, a scientist at the UN National Oceanic and Atmospheric Administration and lead author of the study.

The good news, he told AFP, is that this jump also means greater "potential to reduce climate forcing from this specific source is also greater."

"We have calculated that -– if you put into place all the existing, proven methods to reduce methane and soot—you could slow the rate of global warming over the next three decades by about half-a-degree Celsius," Shindell noted.

Switching from beef to chicken or pork would reduce emissions by almost the same amount as if all beef-eaters become vegetarians

Agriculture

Global livestock—mainly cows and sheep, both gas-passing ruminants -– is probably a larger source of methane than the fossil fuel industry, according to Doug Boucher, a scientist at the UCS.

"There are some technical ways of reducing methane, such as improving feed for cattle," he told AFP. "But the real potential comes from shifting diets away from high-emission foods, especially beef."

Even switching from beef to chicken or pork would have a big impact, reducing emissions by almost the same amount as if all beef-eaters become vegetarians.

But weaning North and South Americans -– by far the biggest consumers of beef -– from hamburgers and T-bone steaks is easier said than done.

"There is a very strong resistance, culturally," Boucher said. "It is considered food-policing."

Another simple target is food waste.

A different approach to fighting climate change is to enhance the Earth's natural capacity to soak up carbon, a job done mainly by oceans and forests

About a third of all food produced in the world is lost during production or consumption, according to the UN, accounting for about eight percent of greenhouse gas emissions.

Plant trees

A different approach to fighting climate change is to enhance the Earth's natural capacity to soak up carbon, a job done mainly by oceans and forests.

Scientists at Woods Hole Research Center in Falmouth, Massachusetts, for example, are mapping the world's land area -– excluding active agricultural and urban landscapes -– that humans have cleared of forests over the centuries.

"We calculate that on the order of 100 to 200 billion tonnes of carbon could be put back onto land," scientist Richard Houghton told AFP, cautioning that the study is not yet complete.

That is roughly equivalent to a dozen years of global CO2 emissions.

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