5 tech innovations that could save us from climate change

New technologies are helping to fight global warming Image: Roxanne Desgagnes

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The year 2016 was historic in many ways. One of its most significant moments happened when the Paris Agreement on Climate Change came into force.

But tech giant and philanthropist Bill Gates argues that we need much more than a cut in global emissions to solve our climate problem – "we need an energy miracle," he says.

So he, along with some of the world's richest people, have launched a fund to invest in solutions driven by technology. It will bring together governments and research institutions and billionaire investors who will try to limit climate change.

These are five technological innovations that could help them achieve their goal.

Power generation

We already know that nuclear power is a way of producing electricity free of carbon emissions, but we have yet to harness it in a way that is truly safe and cost-effective. We may be closer to

an answer, however.

Canadian company General Fusion aims to be the first in the world to create a commercially viable nuclear-fusion-energy power plant.

“Fusion produces zero greenhouse gas emissions, emitting only helium as exhaust. It also requires less land than other renewable technologies,” says the company. “Fusion energy is inherently safe, with zero possibility of a meltdown scenario and no long-lived waste, and there is enough fusion fuel to power the planet for hundreds of millions of years.”

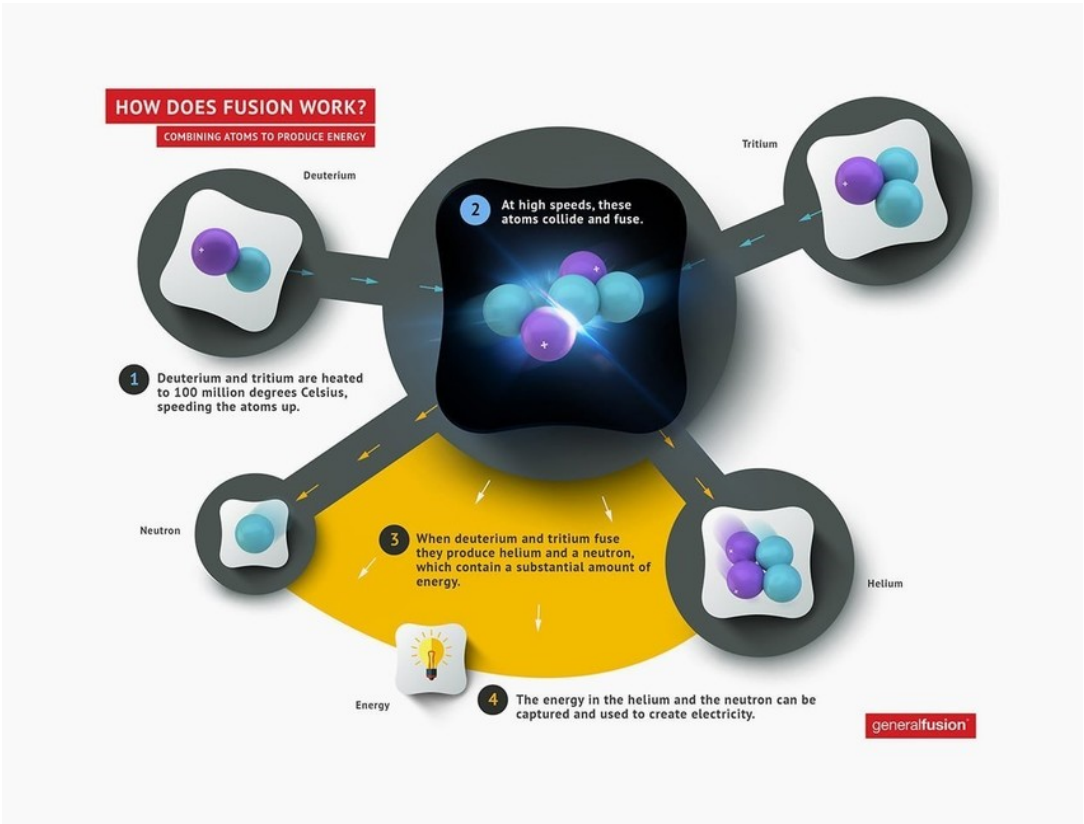

Image: General Fusion

Transport

Transport represents 23% of global energy-related CO2 emissions. But the demand for transport is only going to increase.

We have already found alternative ways of powering vehicles, such as with electricity, but in order to do it on a wide scale, we need much more efficient batteries and much more efficient battery-charging technology.

Researchers at the University of Surrey say they have made a scientific breakthrough in this regard. They say they have discovered new materials offering an alternative to battery power and proven to be between 1,000-10,000 times more powerful than the existing battery alternative, a supercapacitor.

"The new technology is believed to have the potential for electric cars to travel to similar distances as petrol cars without the need to stop for lengthy recharging breaks of between 6 and 8 hours, and instead recharge fully in the time it takes to fill a regular car with petrol," says the university.

Food

About a quarter of all global emissions come from feeding the world's 7 billion people, and part of that comes from the consumption of meat. "There is no way to produce enough meat for 9 billion people," said Bill Gates in a 2013 blog post.

One of the alternatives is to start producing lab-grown meat, and to produce meat substitutes that look, taste and feel like the real thing. It might seem like the stuff of science fiction, but companies and investors alike are taking it very seriously. The company Beyond Meat, already supported by Bill Gates, has created the world's first meat burger that is entirely plant based. It's made mostly from vegetable protein found in peas.

Image: Beyond meat

Manufacturing

Making the things we use every day puts an enormous strain on the climate – about 30% of emissions come from industry.

But what if we could take those CO2 emissions out of the air? Carbon Engineering is a Canadian start-up which is working on exactly that – taking carbon dioxide directly from the atmosphere and then using it to produce fuel.

According to the company, "direct air capture can remove far more CO2 per acre of land footprint than trees and plants". The company is already running a demonstration plant in Squamish, British Columbia, that is removing one ton of CO2 from the air every day.

Image: Carbon Engineering

Buildings

The greenhouse gas emissions of buildings is also significant. We need lighting, power, heating and cooling whether at home or in the office, at school or in a hospital. The combined emissions from these sources contributes almost 20% of global emissions.

Part of the answer is to build smarter cities.

That's what a company called Sidewalk Labs (which is part of Alphabet Inc, the parent of Google) is doing, harnessing digital technologies to solve today's pressing urban problems. One of their current projects involves looking at how traffic flows through a city and how hotspots of congestion might be solved. This could dramatically reduce air pollution in our cities.

Image: Sidewalk Labs

Members of the Breakthrough Energy Coalition (BEC), which numbers among its members Jeff Bezos from Amazon, Jack Ma from the Ali Baba group and Richard Branson, have committed to investing more than $1 billion in new technologies over the next 20 years.

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