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'Artificial trees' to cut carbon

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Artificial trees could be used in areas where carbon emissions are high

Engineers say a forest of 100,000 "artificial trees" could be deployed within 10 to 20 years to help soak up the world's carbon emissions.

The trees are among three geo-engineering ideas highlighted as practical in a new report.

The authors from the Institution of Mechanical Engineers say that without geo-engineering it will be impossible to avoid dangerous climate change.

The report includes a 100-year roadmap to "decarbonise" the global economy.

No silver bullet

Launching the report, lead author Dr Tim Fox said geo-engineering should not be viewed as a "silver bullet" that could combat climate change in isolation.

He told BBC News it should be used in conjunction with efforts to reduce carbon emissions and to adapt to the effects of climate change.

Many climate scientists calculate that the world has only a few decades to reduce emissions before there is so much carbon dioxide in the atmosphere that a dangerous rise in global temperature is inevitable.

The authors of this report say that geo-engineering of the type they propose should be used on a short-term basis to buy the world time, but in the long term it is vital to reduce emissions.

They define two types of geo-engineering, said Nem Vaughan of University of East Anglia.

"The first category attempts to cool the planet by reflecting some of the sunlight away. The problem with this is that it just masks the problem," he said.

"The other type of geo-engineering is to remove carbon dioxide from the atmosphere and

store it."

Hundreds of options

The team studied hundreds of different options but have put forward just three as being practical and feasible using current technology.

A key factor in choosing the three was that they should be low-carbon technologies rather than adding to the problem.

Dr Fox told BBC News: "Artificial trees are already at the prototype stage and are very advanced in their design in terms of their automation and in the components that would be used.

"They could, within a relatively short duration, be moved forward into mass production and deployment."

The trees would work on the principle of capturing carbon dioxide from the air through a filter.

The CO₂ would then be removed from the filter and stored. The report calls for the technology to be developed in conjunction with carbon storage infrastructure.



The captured carbon dioxide could be stored in empty north sea oil wells

Dr Fox said the prototype artificial tree was about the same size as a shipping container and could remove thousands of times more carbon dioxide from the atmosphere than an equivalent sized real tree.

Another of the team's preferred methods of capturing carbon is to install what they term "algae based photobioreactors" on buildings. These would be transparent containers containing algae which would remove carbon dioxide from the air during photosynthesis.



Algae units could be designed into new

buildings or retrofitted to old ones

The third option focuses on the reduction of incoming solar radiation by reflecting sunlight back into space. The report says the simplest way of doing this is for buildings to have reflective roofs.

The authors stress that all of these options will require more research and have called for the UK government to invest 10 million pounds in analysis of the effectiveness, risks and costs of geo-engineering.

Dr Fox said: "We very much believe that the practical geo-engineering that we are proposing should be implemented and could be very much part of our landscape within the next 10 to 20 years."