Carbon Engineering

Carbon Engineering Media Highlights

June 2018-April 2019

Prepared by: Yulu Public Relations

Media coverage earned in the first year of outreach

Media Hits

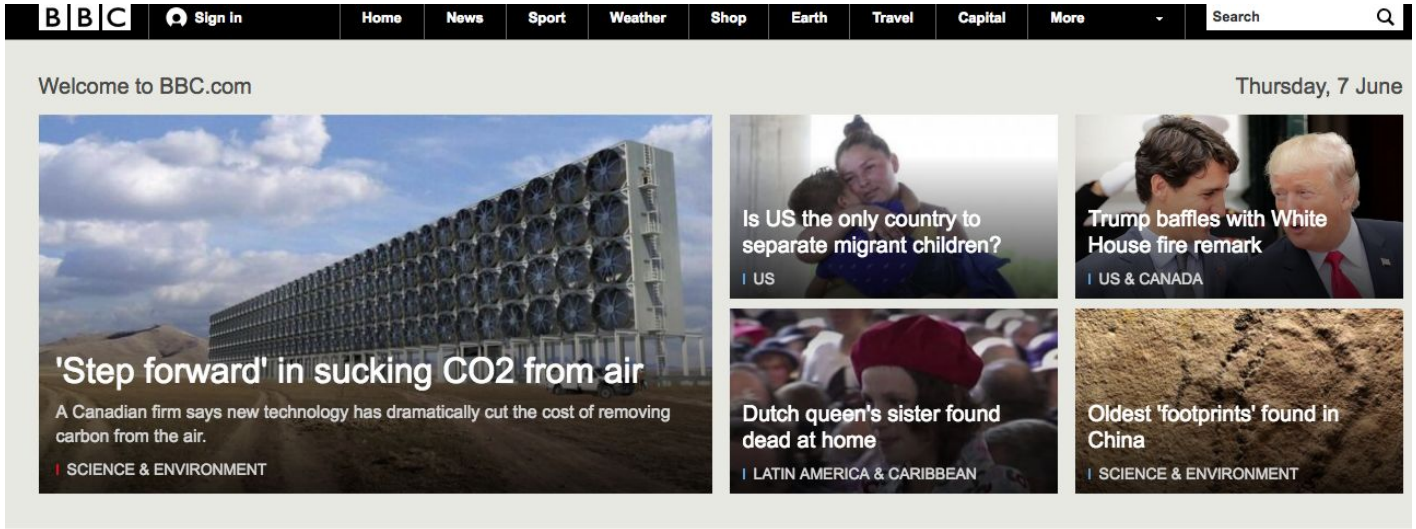
Audience Reach

Brand Impressions

Media Coverage | Top Outlet Placements

Media Highlights

The story was the no. 1 read story on BBC World



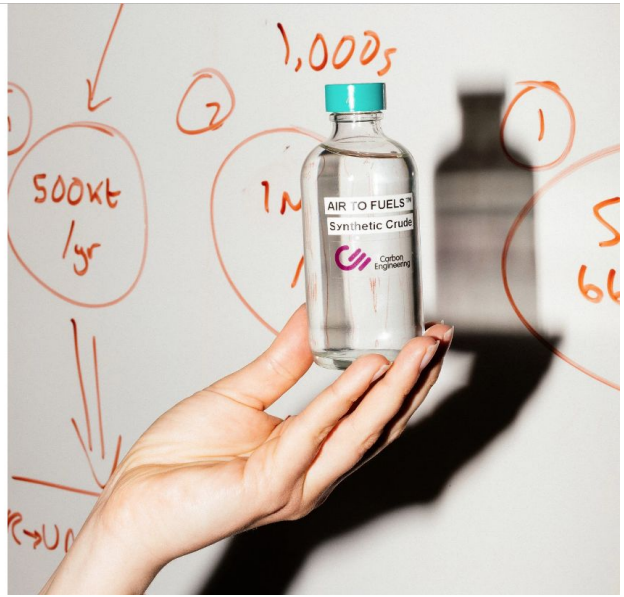
Media Highlights

The New York Times

The New York Times

Blamed for Climate Change, Oil Companies Invest in Carbon Removal

Chevron, Occidental Petroleum and BHP have invested in Carbon Engineering, a start-up developing technology to take carbon out of the atmosphere.



Media Highlights

The Economist — Topics · Current edition · More

Climate change

Extracting carbon dioxide from the air is possible. But at what cost?

The power of negative thinking

FINANCIAL POST

NEWS · INVESTING · MARKETS · PERSONAL FINANCE · FP TECH DESK · FP COMMENT · ENTREPRENEUR · EXECUTIVE · FP
ALL PERSONAL FINANCE · FAMILY FINANCE · HIGH NET WORTH · YOUNG MONEY · DEBT · RETIREMENT · SAVINGS · TAXES

Looking to the sky: B.C. company says it is sucking carbon from air, making fuel

Any country, any region, can have its own fuel. They'd be no longer dependent on the geopolitical situation if Country X has oil and Country Y does not

nature

NEWS · 07 JUNE 2018

Sucking carbon dioxide from air is cheaper than scientists thought

YAHOO! FINANCE

The Best Solution For Climate Change

The Atlantic — Popular · Latest · Sections · Magazine · More · Subscribe

SCIENCE

Climate Change Can Be Stopped by Turning Air Into Gasoline

A Harvard professor says his company should be able to suck carbon dioxide out of the atmosphere, at industrial scales, by 2021.

MIT Technology Review

Sustainable Energy

Maybe we can afford to suck CO_2 out of the sky after all

A new analysis shows that air capture could cost less than $100 a ton.

THE GLOBE AND MAIL · VANCOUVERPR2014

Bill Gates-funded B.C. startup says it can slash carbon-capture costs, replace gasoline at competitive price

NATIONAL GEOGRAPHIC

This Gasoline Is Made of Carbon Sucked From the Air

A Harvard-affiliated Canadian company is making a liquid fuel that is carbon neutral, and they hope the economics will be in their favor.

Media Highlights

VICE ON HBO

Following a half day visit to the CE site in Squamish, VICE HBO, aired a documentary which included a five minute feature of CE, and interviews with CEO Steve Oldham and Founder David Keith. The clip was shared widely on social, and lives on VICE's YouTube channel.

Media Highlights

FINANCIAL POST

Billionaires back Canadian company to build first 'negative emissions' plant

Silicon Valley invests in technology that can scrub a megaton of CO2 from the atmosphere yearly, the equivalent of planting 40 million trees

An engineer holds solid calcium carbonate pellets that were formed by precipitating captured carbon dioxide at Calgary-based Carbon Engineering's first direct air capture plant in Squamish, B.C. *Canadian Press*

"A financial investor invests because they like your business plan. We were able to bring some pretty big Silicon Valley venture capital to us," Carbon Engineering president and CEO Steve Oldham said.

The latest funds will allow Carbon Engineering to bring its technology, which has been pilot tested in Squamish, to market at a commercial scale, Oldham said. The company will also expand its pilot project in Squamish and engineer its first commercial facilities.

THE GLOBE AND MAIL

B.C.'s Carbon Engineering secures $68-million to commercialize CO2-removal technology

Media Highlights

BBC WORLD NEWS

Climate change: 'Magic bullet' carbon solution takes big step

Media Highlights

BUSINESS VANCOUVER

Carbon Engineering closes US$68m round, eyes commercialization ramp-up

Carbon Engineering's carbon capture plant in Squamish, B.C. | Submitted

REUTERS®

Canadian CO2 removal firm secures finance to expand

betakit

BC-BASED CARBON ENGINEERING SECURES $90 MILLION CAD TO ADDRESS CLIMATE CHANGE

Media Highlights

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NEWS

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Science & Environment

Key 'step forward' in cutting cost of removing CO2 from air

Bloomberg

Climate-Changed

One Day, Cars May Run on Fuel From CO2 Sucked Out of the Air

By Jim Efstathiou Jr
June 7, 2018, 8:00 AM PDT

- Carbon Engineering's system makes fuel for $4 a gallon
- Uses standard industrial processes to keep costs down

BUSTLE

Can Climate Change Be Fixed? A New Study Outlines A Way To Suck CO2 Out Of The Atmosphere & It's Not Too Far-Fetched

REUTERS

Scientists say cost of sucking carbon from thin air could tumble

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TECH

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Scientists at a company part-owned by Bill Gates say they've found a cheap way to convert CO2 into gasoline

- Scientists discovered a new technique that pulls carbon dioxide out of the atmosphere, and converts it into liquid gasoline, diesel or jet fuel.
- A similar process could be used applied to trap greenhouse gases, reducing the amount of heat-trapping substances in the atmosphere

Media Highlights

THE TIMES

Sucking carbon dioxide from the sky might not cost the earth after all

The carbon dioxide air-capture system being designed by the Canadian company Carbon Engineering
CARBON ENGINEERING

MOTORTREND PRESENTS

STACKED DAC: A DIRECT AIR CAPTURE CO2-TO-GASOLINE SCHEME THAT WORKS? - TECHNOLOGUE

Why you should care about this refreshingly simple CO2-to-fuel scheme

Los Angeles Times

By EVAN HALPER SEP 07, 2018 | 3:00 AM | WASHINGTON

Carbon Engineering's pilot plant in Squamish, Canada, sucks greenhouse gas emissions from the atmosphere. The firm plans to market a climate-friendly fuel made with the carbon dioxide it captures. (Carbon Engineering)

Media Highlights

MACLEAN'S

Can cars go carbon neutral?

Carbon Engineering might offer the utopian-sounding prospect of a climate-change solution that does not involve eliminating our reliance on fuel

by Adrienne Tanner Sep 20, 2018

CE's pilot pellet reactor and associated equipment. (Carbon Engineering Ltd.)

Forbes

Negative Emissions Technologies: Has Their Time Arrived?

Media Highlights

The Guardian

Steve Oldham, the CEO of Carbon Engineering, said interest in his company has increased in the last few weeks in light of the IPCC report, which he said may be good for business but is overall "kind of scary".

"We think we have a solution that could be part of solving the problem," Oldham said. "But the missing piece in the middle is policy, and policy requires both need and a solution."

DAILY BEAST

OUT OF THIN AIR

What if We Captured Carbon From the Air and Made Energy?

It's cheap, it's efficient, and it works.

"There's a lot of discussion of reducing emissions," says Steve Oldham, the company's CEO. "But imagine you're in a parked car on a parking lot on a sunny day and you have the heat on full blast. The first thing you do is turn the heat off. That's emission control. We absolutely should do that. But it's still hot in the car and it's still going to get hotter. You have to open the sunroof and wind down the windows."

Similarly, Oldham reasons, "We have to reduce the existing impact of CO_2 already in the atmosphere."

Vox

Sucking CO_2 out of the atmosphere, explained

Climate change has backed us into a corner. Scientists say we have to remove greenhouse gases from the atmosphere.

Media Highlights

FAST COMPANY

CO2-sucking factories could anchor a new, clean economy

[Photo: Carbon Engineering]

WIRED

Carbon Engineering says its facility in British Columbia—which works by blowing air over a filter, where proprietary chemicals leach out the CO2—can suck in one ton of carbon a day. (A ton of CO2 is the equivalent of burning around 100 gallons of gas, by the way.) But direct air capture tech remains expensive because there are few incentives to develop it. The authors of the new NAS report say that at the moment, the price to operate these things is around $600 per ton of CO2. But Oldham says Carbon Engineering has gotten the price down to $100 per ton, in part by co-opting technologies in its facility from other industries like water treatment.

Media Highlights

In fight to combat climate change, Squamish Nation joins forces to capture carbon

A rendering of Carbon Engineering's 'air contactor design.' The company uses carbon-capture technology that captures CO_2 directly from the atmosphere, and synthesizes it into clean transportation fuels. (Carbon Engineering)

The Economist

Synthetic fuels could help low-carbon aviation take off

Decarbonised capitalism

From hot air to action

Media Highlights

How One Company Pulls Carbon From The Air, Aiming To Avert A Climate Catastrophe

Following a site visit to Carbon Engineering, NPR published an online feature and broadcast story on the 'Morning Edition' radio show. The piece aired and was published on December 10

Carbon Engineering CEO Steve Oldham stands in front of the company's Squamish, British Columbia, pilot plant. It uses a chemical process to extract carbon dioxide from the air and turn it into a fuel similar to crude oil.

Media Highlights

c|net

SCI-TECH

This CO2 machine could transform the way we fight climate change

Carbon Engineering's affordable, scalable way to capture carbon dioxide from the atmosphere might just wean us off our addiction to fossil fuels.

Mother Jones

POLITICS ENVIRONMENT FOOD MEDIA CRIME & JUSTICE PHOTOS

Can a Canadian Company Put an End to the Era of Oil?

howstuffworks

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Carbon Capture-to-fuel Is Almost Here

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Banks of fans blow air through a carbon dioxide–capturing solution in this rendering of a direct air capture plant. CARBON ENGINEERING

Cost plunges for capturing carbon dioxide from the air

ars TECHNICA

KNOW WHERE YOUR TOWEL IS —

Machines that suck CO_2 from the air might be cheaper than we thought

HUFFPOST

Company Makes Breakthrough By Affordably Removing Harmful CO2 Out Of The Air

Human CO2 emissions have to be stopped, and this could help.

Media Highlights

The New York Times

Sucking CO2 from the air could be a better bargain

earch Bloomberg

OPINION | TECHNOLOGY & IDEAS

Save the Planet. Get Carbon Out of the Air.

POPULAR MECHANICS

This Crazy, Cheap Technology Can Turn Carbon Dioxide into Fuel

Scientists are working on a new method for creating carbon-neutral fuel that sounds like science fiction.

Newsweek

TECH & SCIENCE

SCIENTISTS PROPOSE PLAN TO SUCK CO2 GREENHOUSE GAS FROM AIR, TURN INTO FUEL

Media Highlights

diabetic retinopathy and age-related macular degeneration. The firm is also working on mammography.

Heart disease is yet another field of interest. Researchers at Oxford University have been developing AIs intended to interpret echocardiograms, which are ultrasonic scans of the heart. Cardiologists looking at these scans are searching for signs of heart disease, but can miss them 20% of the time. That means patients will be sent home and may then go on to have a heart attack. The AI, however, can detect changes invisible to the eye and improve the accuracy of diagnosis. Ultromics, a firm in Oxford, is trying to commercialise the technology and it could be rolled out later this year in Britain.

There are also efforts to detect cardiac arrhythmias, particularly atrial fibrillation, which increase the risk of heart failure and strokes. Researchers at Stanford University, led by Andrew Ng, have shown that AI software can identify arrhythmias from an electrocardiogram (ECG) better than an expert. The group has joined forces with a firm that makes portable ECG devices and is helping Apple with a study looking at whether arrhythmias can be detected in the heart-rate data picked up by its smart watches. Meanwhile, in Paris, a firm called Cardiologs is also trying to design an AI intended to read ECGs.

Seeing ahead

Eric Topol, a cardiologist and digital-medicine researcher at the Scripps Research Institute, in San Diego, says that doctors and algorithms are comparable in accuracy in some areas, but computers have the advantage of speed. This combination of traits, he reckons, will lead to higher accuracy and productivity in health care.

Artificial intelligence might also make medicine more specific, by being able to draw distinctions that elude human observers. It may be able to grade cancers or instances of cardiac disease according to their risks—thus, for example, distinguishing those prostate cancers that will kill quickly, and therefore need treatment, from those that will not, and can probably be left untreated.

What medical AI will not do—at least not for a long time—is make human experts redundant in the fields it invades. Machine-learning systems work on a narrow range of tasks and will need close supervision for years to come. They are "black boxes", in that doctors do not know exactly how they reach their decisions. And they are inclined to become biased if insufficient care is paid to what they are learning from. They will, though, take much of the drudgery and error out of diagnosis. And they will also help make sure that patients, whether being screened for cancer or taken from the scene of a car accident, are treated in time to be saved. ■

Climate change

The power of negative thinking

Extracting carbon dioxide from the atmosphere is possible. But at what cost?

IN MAY some 250 scientists and policy types from around the world convened in Gothenburg, Sweden, to discuss a dirty secret of the three-year-old Paris climate agreement. Virtually all simulations which chart paths toward meeting that compact's goal—to keep temperature rise "well below" 2°C relative to pre-industrial levels—assume not just a sharp reduction in actual emissions but also the removal of carbon dioxide from the atmosphere on a massive scale. One reason such "negative emissions" have been absent from climate discussions—the Swedish shindig being the first of its kind—is that no one has a good idea of how exactly to bring them about. The obvious solution is to plant lots of trees, to convert CO_2 into wood. But this would mean foresting an area with a size somewhere between that of India and Canada. Alternative, engineered fixes have been dogged by potentially stratospheric costs, uncertain efficacy or both.

No longer, reckons David Keith. Besides his day job as a climate expert at Harvard university, Dr Keith is a co-founder of Carbon Engineering, a nine-year old firm that counts Bill Gates among its backers. Dr Keith and his colleagues argue in a paper they have just published in *Joule* that the CO_2-removal technique they have been perfecting is no pipe dream—even if it does contain pipes aplenty.

Their process has four steps. First, air is channelled by fans onto a honeycombed plastic slab called a contactor, where CO_2, which is acidic, reacts with aqueous potassium hydroxide, which is alkaline. The resulting solution of potassium carbonate is filtered and exposed to a slurry of calcium hydroxide. This produces potassium hydroxide, which is recycled back to the contactor, and pellets of calcium carb[onate]. These are whisked to the third rece[ptacle] called a calciner. There the calcium carbon[ate] is heated to 900°C to release pure carbon-dioxide gas ready for capture, and calcium oxide. Finally, the calcium oxide is piped to a "slaker", where it is dissolved in water to form calcium hydroxide, which is reused in the second step.

If that all sounds complicated, chemically speaking it is not. Nor is the idea new. A researcher called Klaus Lackner came up with the principles 20 years ago and Dr Keith patented his version in 2015. A pilot plant with a contactor three by five metres across and three metres deep has been running for three years. It extracts a tonne of carbon dioxide from the air per day.

What sets Dr Keith's latest paper apart from his earlier publications—and, indeed, those of other putative carbon-hoovers—is that it offers a hard-nosed estimate of the system's cost and scalability. The results look encouraging.

That is principally because each step in Dr Keith's scheme is adapted from known industrial processes. The contactor was pinched from factory cooling towers. The pellet reactor came from water-treatment plants. The calciner was developed from metal-ore purification apparatus. And the slaker was adapted from pulp mills. The required tweaks were small enough to permit Carbon Engineering to procure the paraphernalia for the prototype plant from existing suppliers. Crucially, this also enabled the suppliers—and an independent engineering consultancy hired by Carbon Engineering—to estimate how much it would cost to build a fully fledged facility (envisaged in the picture above) capable of extracting between 100,000 and[m tonnes] »

The Economist

FINANCIAL POST

B.C. company turns carbon from air into gas

'IT'S REAL'

BOB WEBER

DARRYL DYCK / THE CANADIAN PRESS

A worker drives a forklift at Calgary-based Carbon Engineering's first direct air capture plant in Squamish, B.C. The plant extracts carbon dioxide directly from atmospheric air in a closed-loop industrial process and turns it into gasoline at a price only slightly higher than gas from oil refineries.

t sounds like spinning straw nto gold: suck carbon di- xide from the air where t's contributing to climate hange and turn it into fuel or cars, trucks and jets.

A British Columbia com- any says in newly published esearch that it's doing just hat — and for less than one- hird the cost of other com- anies working on the same echnology.

"This isn't a PowerPoint resentation," said Steve Oldham of Carbon Engineer-

plant in Squamish, B.C., currently pulls about one tonne of carbon a day from the air and produces about two barrels of fuel. Since its components are off the rack, it should be easy to scale up, Oldham said.

"We've bought the smallest scalable unit of each piece of technology we have."

Carbon Engineering's fuel costs about 25 per cent more than gasoline made from oil. Oldham said work is being done to reduce that.

Because the plant currently uses some natural gas, by the time the fuel it produces has been burned it has released a half-tonne of carbon dioxide for every tonne

VANCOUVER SUN

B.C. firm says it is sucking carbon from air, changing it to fuel

BOB WEBER

It sounds like spinning straw into gold: Suck carbon dioxide from the air where it's contributing to climate change and turn it into fuel for cars, trucks and jets.

A British Columbia company says in newly published research that it's doing just that — and for less than one-third the cost of other companies working on the same technology.

"This isn't a PowerPoint presentation," said Steve Oldham of Carbon Engineering. "It's real."

As policy-makers work on ways to try to keep global warming within the two-degree limit of the Paris agreement, fears have been raised that carbon dioxide emissions won't be cut fast enough. Some say carbon will have to be actively removed from the atmosphere.

In an article published Thursday in the peer-reviewed journal Joule, Carbon Engineering outlines what it calls direct air capture in which carbon dioxide is removed from the atmosphere through a chemical process, then combined with hydrogen and oxygen to create fuel.

"If these aren't renewable fuels, what are?" said David Keith, professor of applied physics at Harvard University, lead author of the paper and principal in Carbon Engineering.

At least seven companies world-

Media Highlights

ENERGY

CO2 firm captures oil giants' support

Company says it can scrub carbon from atmosphere

GEOFFREY MORGAN

CALGARY • American oil giants **Chevron Corp.** and **Occidental Petroleum Corp.** are investing in a small Squamish, B.C.-based technology company that has created a carbon-capture system it claims can scrub CO2 from the atmosphere.

Privately held Carbon Engineering Ltd. already counts some big-name investors among its shareholders, including Microsoft founder Bill Gates and Canadian Natural Resources Ltd. founder Murray Edwards.

Now, San Ramon, Calif.-based Chevron and Houston-based Occidental have also made undisclosed investments in Carbon Engineering, which the company says it will use to develop and rollout a commercial version of its pilot facility, which captures CO2 from the atmosphere.

See CARBON on FP4

FINANCIAL POST

PHOTOS: DARRYL DYCK / THE CANADIAN PRESS

Calgary-based Carbon Engineering describes its pilot in Squamish as a "negative emissions facility" that can subtract CO2 emitted by cars, factories and other industrial sources.

Media Highlights

BNN Bloomberg

ECONOMICS | Amanda Lang | climate change | The Takeaway | carbon engineering

Amanda Lang: A small B.C. company could be showing us how to square our energy industry with the climate

BNN Bloomberg's Amanda Lang discusses how B.C.-based clean energy company Carbon Engineering could be showing Canadians a way to reconcile the country's energy wealth with its climate change compromises.

ECONOMICS | Amanda Lang | climate change | The Takeaway | carbon engineering

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Media Highlights

REUTERS®

Chevron, Occidental invest in CO2 removal technology

euronews.

"With an increasing focus worldwide on the need for aggressive emissions reductions, CE's technology can play a major role, and energy industry leaders like Occidental and Chevron will greatly accelerate commercialization of CE's technology," he added.

FT
FINANCIAL TIMES

Carbon Engineering's working pilot plant in Squamish, British Columbia, where it has been removing CO_2 from the atmosphere since 2015 and converting it into fuels since December 2017. *(Source: Carbon Engineering)*

Media Highlights

gasworld

Carbon Engineering receives significant investment to advance low-carbon technologies

Rendering of CE's air contactor design.
Source: Carbon Engineering

Steve Oldham, CEO, Carbon Engineering

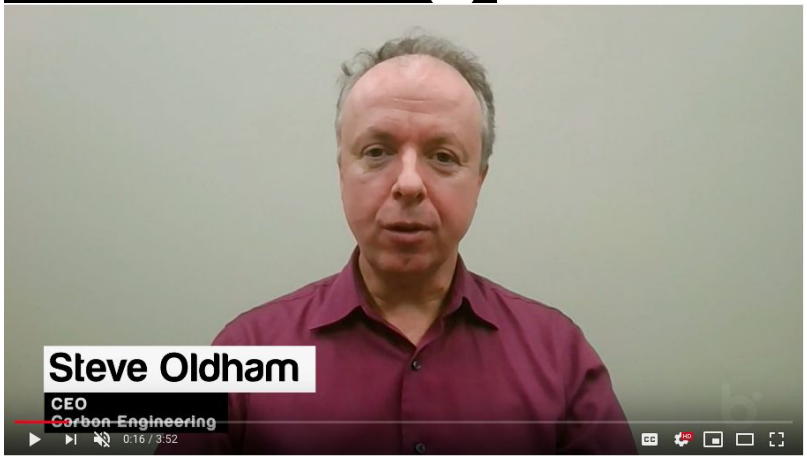
Forbes

Capitalism Versus Climate Change: The Case Of Carbon Engineering

Erik Kobayashi-Solomon Contributor
Markets

Media Highlights

Bloomberg



MIT Technology Review

One man's two-decade quest to suck greenhouse gas out of the sky

Media Highlights

CNBC

Bill Gates: These breakthrough technologies are going to profoundly change the world

Technology that takes carbon dioxide out of the air

"Pulling CO2 out of the air is, from an engineering perspective, one of the most difficult and expensive ways of dealing with climate change. But given how slowly we're reducing emissions, there are no good options left," the MIT Technology Review says.

Innovative companies are working to catch the carbon dioxide and repurpose it. For example, Canadian start-up Carbon Engineering (in which Gates is an investor) aims to produce synthetic fuels with the captured carbon, and Climeworks, based in Zurich, will produce methane from carbon emissions and also sell carbon dioxide to the soft-drink industry, among others.

What if we could stop #climatechange from reaching dangerous levels? Our Direct Air Capture can do that. Watch our new film and spread the word:

But "the ultimate goal is to lock greenhouse gases away forever," the MIT Technology Review said.

BNN Bloomberg

Media Highlights

BNN Bloomberg

New technology dramatically lowering cost of sucking carbon from air

Steve Oldham, CEO of Carbon Engineering, discusses how a new technology can lower the cost of turning carbon dioxide into fuel, and how it can scale.

CTV NEWS

This Canadian company wants to solve the climate crisis by sucking CO2 out of the sky

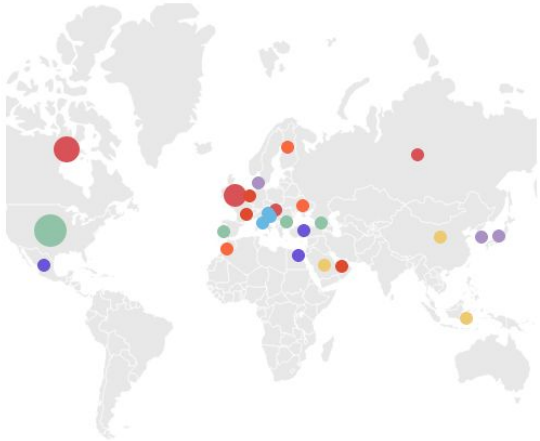
By Jessica Vomiero
National Online Journalist Global News

Comments 9 | Facebook 1.6k | Twitter | LinkedIn | Email | Print | ...

Global

Media Coverage | Geographical Scale

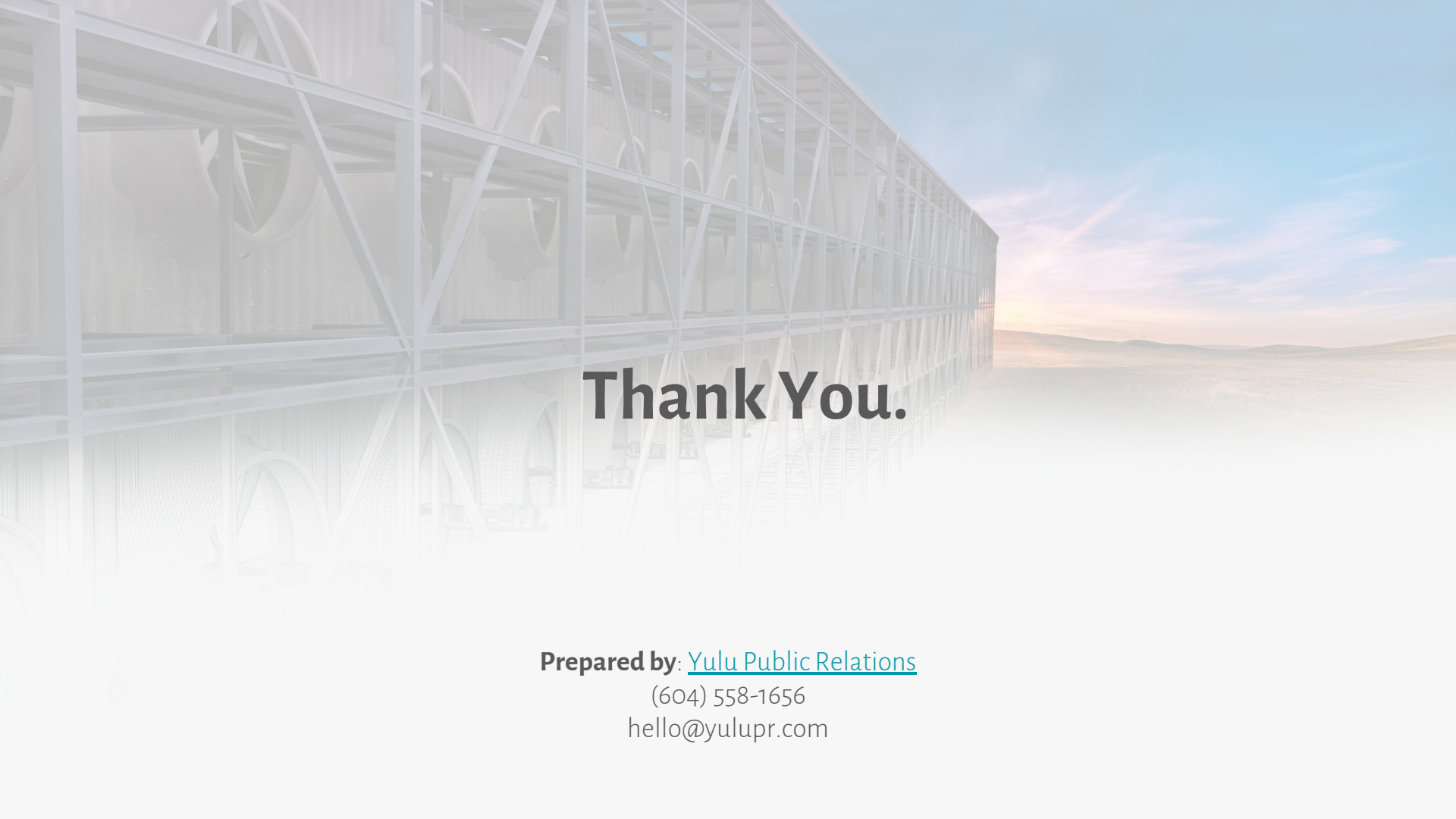
Coverage landed in more than 25 countries, including Canada, USA, China, Egypt, Indonesia, Italy, Japan, Mexico, Morocco, Russia, Saudi Arabia, South Korea, United Arab Emirates and United Kingdom.



Policy Impact | US Senate Committee

The Senate Committee on Environment and Public Works held a hearing entitled, “Hearing to Examine S. 383, the Utilizing Significant Emissions with Innovative Technologies Act, and the State of Current Technologies that Reduce, Capture, and Use Carbon Dioxide,” which Carbon Engineering’s CEO was invited to provide a testimony in favor of the USE IT Act.

Yulu liaised with the Committee’s media department to obtain the live coverage of the hearing, resulting in impactful video content to support ongoing media opportunities.



Thank You.

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