THE EMERGING STARTUP ECOSYSTEM

SOSV CLIMATE TECH SUMMIT

The Best Insights from the Summit's Top Speakers

VIRTUAL | OCTOBER 20-21, 2021 | GLOBAL | SOSVCLIMATETECH.COM

Foreword

We prepared these slides to summarize some of the key ideas put forward during the SOSV Climate Tech Summit held on October 20-21, 2021.

This event aimed to convene the climate tech startup ecosystem of founders, investors, technologists, corporates, policymakers and media to discuss how to accelerate everyone's work on climate..

We hope readers find inspiration in the thoughts and hopes of great entrepreneurs and investors. **Just because we haven't seen the future doesn't mean we can't invent a better future.** The crazy aim here is to save the planet.

Sean O'Sullivan
Managing Partner
SOSV

There will be 8 to 10 Teslas coming out of this space.

BILL GATES

SOSV

Accelerating Viability

“There will be 8 to 10 Teslas and only one of them is well known today. There will be a Microsoft, Amazon, Google, coming out of this space.”

“The people who take the high risks in the hard areas are the ones who deserve credit for trying to solve the global problem.”

Bill Gates is committed to heading off a climate catastrophe. It came as no surprise in 2015 when Gates launched Breakthrough Energy, a network of investment vehicles, philanthropic initiatives, and policy programs designed to accelerate the clean energy transition.

Can climate tech startups spin up fast enough to “transform virtually every activity in modern life and every major sector of the economy: electricity, agriculture, manufacturing, transportation and buildings” by 2050, as the Breakthrough mission suggests?

Bill Gates

Founder,
Breakthrough Energy

SOSV

Getting From Zero to Funded

"Founders need to understand the right type of capital -- strategic, VC, angels, grants and other pathways: customer relationships, purchase orders… what is the best route for the company. And be very thoughtful"

"Rather than thinking they know everything, successful founders always ask questions, build trust within the community and bring people smarter than them to take them to success."

"We are looking for empathy, connection, trust- building. Understanding that aspect is what it takes to do great things in this world."

"Be curious, and build a great team."

"When you couple executing furiously with being intellectually honest, it becomes very potent—and that's the kind of founders we love to back."

SOSV

Capturing Carbon

“Where we’re headed is a world where fuels and chemicals can be made from waste. There is enough waste carbon above the ground where we don’t need to dig any more out of the ground.”

“We’re going to get this done.

We have to get this done!”

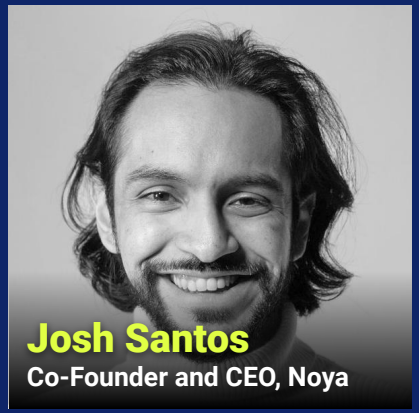
Dr. Jennifer Holmgren

CEO, LanzaTech

SOSV

“When Life Gives You CO_2...”

“We need to remove a trillion tons of CO2 from the atmosphere by the end of the century. Carbon removal needs to become the size of the oil and gas industry: a trillion dollar market. Today it’s about a billion dollar industry.”



“More than ever, there is a surge of interest of people that previously had jobs outside of climate that are looking at moving into climate. We need the federal mandates, but none of it matters if we don’t have people to do it!”

“We need patient capital. Investors willing to support a multi-stage scale-up process, as you go from a lab benchtop to floor scale, to field pilot, to demo scale to small, large, and very large commercial scale. And that takes years.”

WHAT TO DO WITH CO_2?

The Biden administration just pegged the price of CO_2 emissions at $51 per ton, and China launched its ETS in July, with prices hovering between $7 and $8 per ton. Globally, carbon offsets are traded on ETS generally well below $100/t$CO_2$. The trouble is that most solutions for carbon capture and storage still cost well above $100 per ton (Stripe shared the prices of some of their carbon removal providers, ranging from $200 to over $2000/t$CO_2$). Who will close the gap?

SOSV

Source: Shiok Meats

Source: New Culture

SOSV

Beyond “Beyond”– Alternative Proteins

Dr. Lisa Dyson
CEO, Air Protein

“We’re all doing new science. Many of the skills we are looking for may be in places that are not that obvious.”

“The initial companies were focused on taste; now there is more talk about trade-offs between taste and nutrition.”

Dr. Inja Radman
Co-founder, CSO, New Culture

“One popular debate in our field is ‘Are you making a hero ingredient and are an ingredient provider, or are you a consumer-facing food company brand?’ and how you plug into channels and the supply chain.”

Sandhya Sriram,PhD
CEO and Founder, Shiok Meats

“We are looking at a rapid increase in mass production of alternative proteins in the next decade, and that’s not going to happen by 5 or 10 companies, it has to happen by a couple hundred.”

THE US PEAK MEAT EXPECTED 2025

70% of Americans have tried alternative protein products, yet their market share is still only 3%.

Air Protein turns CO2 into a microbial protein, offering consumers carbon-negative alt-meat.

Shiok Meats uses cell-based methods with plant-based blends to produce crustaceans like crab, lobster, and shrimp.

New Culture makes mozzarella for the $50 billion pizza market with precision cow milk casein proteins for the same taste, texture, melt, and stretch as the original.

SOSV

Source: Upside Foods

SOSV

From Lab to Table

Uma Valeti
CEO & Founder,
Upside Foods

“We've come a long way in five years, from a field that started in science fiction.

It's been one barrier after another being lowered.”

A cardiologist by training, Dr. Valeti spent a decade researching the potential of cultivated meat to offer products practically indistinguishable from the “old way.” to celebrate the pleasures of the table. His company Upside Foods (formerly known as Memphis Meats) graduated from SOSV’s IndieBio program in 2015 and produced the world’s first cultured chicken, duck and beef meatball. It raised $200 million from Softbank Vision Fund, Temasek Holdings and more.

While challenges remain with scaling production of cultivated meat and the regulatory response, will it be the food sector’s equivalent to electrification?

SOSV

Source: Pivot Bio

SOSV

The Fertilizer Revolution

“We’re building a company for the long term. Agriculture is truly generational and nitrogen is a required fuel source for their assets.”

“The really powerful ideas are the ones that do something that’s never been possible before, and the ripple effect just happens to be climate friendly.”

Following its $430M series D, Pivot Bio is on a mission to make agriculture cleaner. The company introduced the first commercial microbial nitrogen in 2019 and has replaced synthetic nitrogen on more than one million crop acres in 2021 alone—more than five times the size of New York City.

Its technology eliminates the adverse effects of synthetic nitrogen and could prevent $200 billion in environmental damage over the next decade, all while delivering consistent yields and profits for farmers in the face of a volatile climate.

Dr. Karsten Temme

CEO & Co-Founder,
Pivot Bio

SOSV

Decarbonizing Steel

Tadeu Carneiro
Chairman & CEO,
Boston Metal

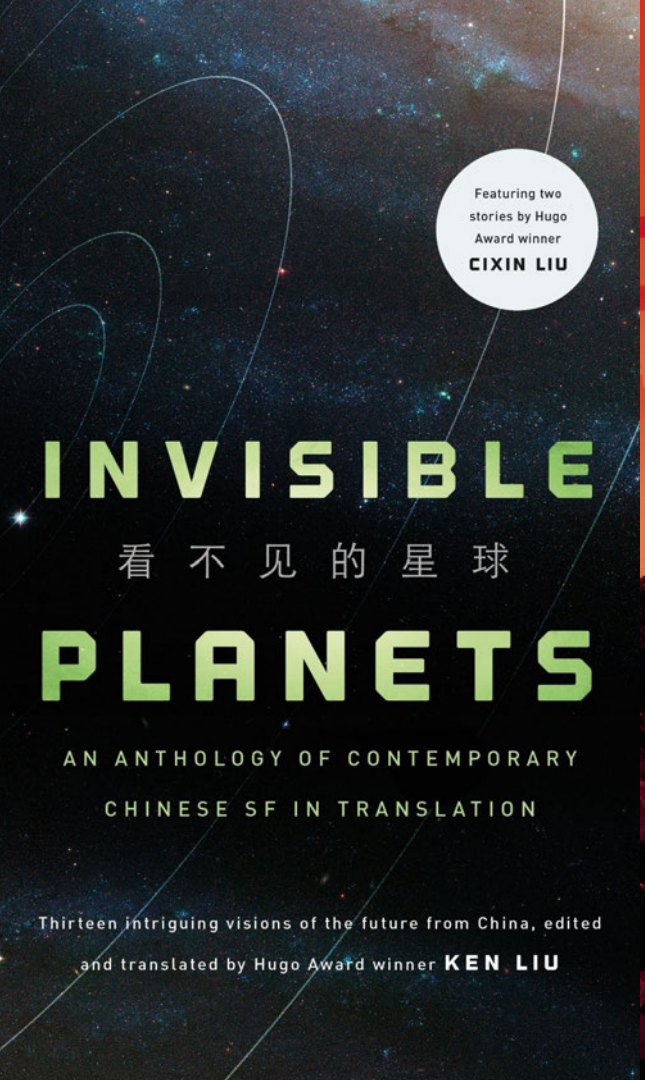
"Steel is one of the most important engineering materials in the world and will continue to be. The largest steel manufacturers are already making pledges to be carbon neutral by 2050, and they need a roadmap and very effective technology to accomplish that."

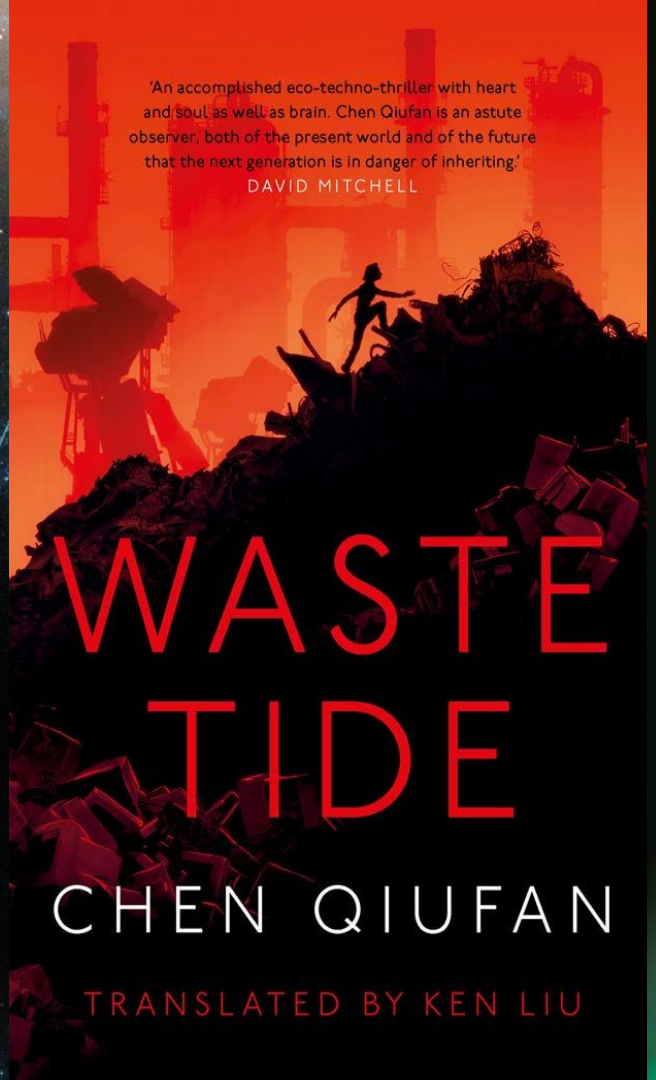
"There is an amazing demand for green steel, therefore the pressure is on us to deliver the technology commercially, and I don't see a problem getting to the end of the journey."

Spun-out of MIT in 2012, Boston Metal has invented a coal-free, emissions free, modular method of industrial steel production based on the use of electricity, providing the metals industry with a greener solution for the production of several metals and alloys from a wide variety of feedstocks.

In 2021, it raised a $50M series B led by Piva Capital and Fidelity Investments. Joining the round were a who's who of climate investors, including Vale, OGCI Climate Investments, Energy Impact Partners, Devonshire Investors, Breakthrough Energy Ventures, BMW i Ventures, Prelude Ventures, and The Engine.

SOSV


Featuring two stories by Hugo Award winner
CIXIN LIU
INVISIBLE
看不见的星球
PLANETS
AN ANTHOLOGY OF CONTEMPORARY
CHINESE SF IN TRANSLATION
Thirteen intriguing visions of the future from China, edited and translated by Hugo Award winner KEN LIU


'An accomplished eco-techno-thriller with heart and soul as well as brain. Chen Qiufan is an astute observer, both of the present world and of the future that the next generation is in danger of inheriting.'
DAVID MITCHELL
WASTE TIDE
CHEN QIUFAN
TRANSLATED BY KEN LIU


BESTSELLING AUTHOR OF AI SUPERPOWERS
KAI-FU LEE
'Brings to life a vision for AI that addresses both our curiosity and our fears... Captivating'
SATYA NADELLA, CEO, MICROSOFT
AI 2041
TEN VISIONS FOR OUR FUTURE
CHEN QIUFAN
AUTHOR OF WASTE TIDE

Looking Back on the Future

"Science fiction can inspire people, especially younger generations, and create curiosity and compassion for science and technology."

"Biology and cybernetics might converge, and help us solve problems: from bacterias eating plastic waste to – who knows? – viruses making batteries more efficient."

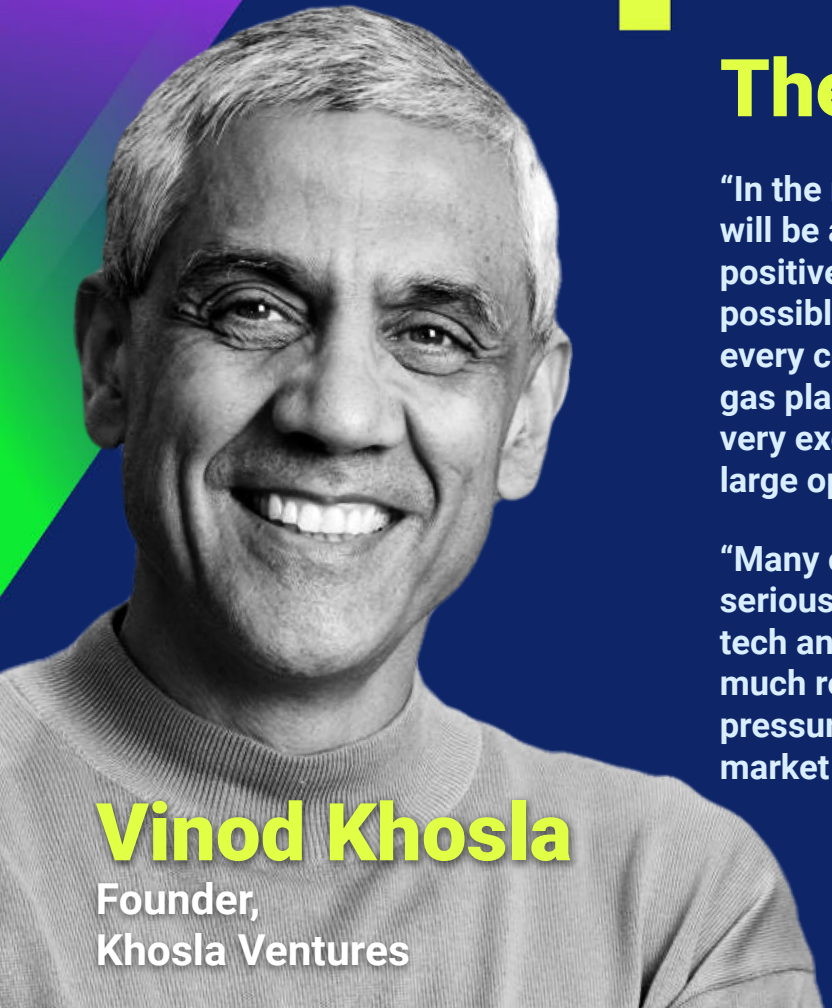
Growing up on Arthur C. Clarke, Isaac Asimov, Blade Runner and 2001: A Space Odyssey, Chan published his first story when he was in high school. He joined the tech industry after graduating from Peking University at the dawn of the internet boom, first at Baidu (China's Google), then at Google, then at a virtual reality startup.

While some of his early stories touch upon the intersection of nature, technology and climate —like in The Fish of Lijiang (2006) where nature in the picturesque city has been digitized and perfected with climate control—his first novel, The Waste Tide, that depicts a hellish society built around electronic waste.

Stan Chan (Chen Qiufan)

Sci-fi author,
The Waste Tide, AI 2041

SOSV



The Difference This Time

"In the next 3 years, we will be able to prove that positive net energy is possible [and] replace every coal and natural gas plant by 2040. That's very exciting and a very large opportunity."

"Many corporates are serious about climate tech and see it as not so much regulatory pressure as really large market opportunities."

With over $5 billion under management, Khosla Ventures has invested in numerous climate tech startups, including Impossible Foods (plant-based burgers), Commonwealth Fusion Systems (nuclear fusion), and QuantumScape (solid state lithium metal batteries for electric cars). The last went public via a SPAC in December 2020 and is currently valued over $10 billion.

Vinod believes a "Clean Dozen" entrepreneurs with breakthrough technologies could "change the climate crisis into societal transformation."

Vinod Khosla

Founder,
Khosla Ventures

SOSV

Getting to seed and beyond

"You need to ensure each scientist believes they could be entrepreneurs, and back people who don't look like the people who have won before."

"We need to re-materialize our economy, it's a $100-trillion opportunity."

"I worry about scientists who have brilliant ideas but not the means to try it out."

"You need to understand that today you're four people in a lab, but how are you going to transition that into multiple capabilities that will allow it to scale?"

"It's a Golden Age of breakthrough science and deep tech."

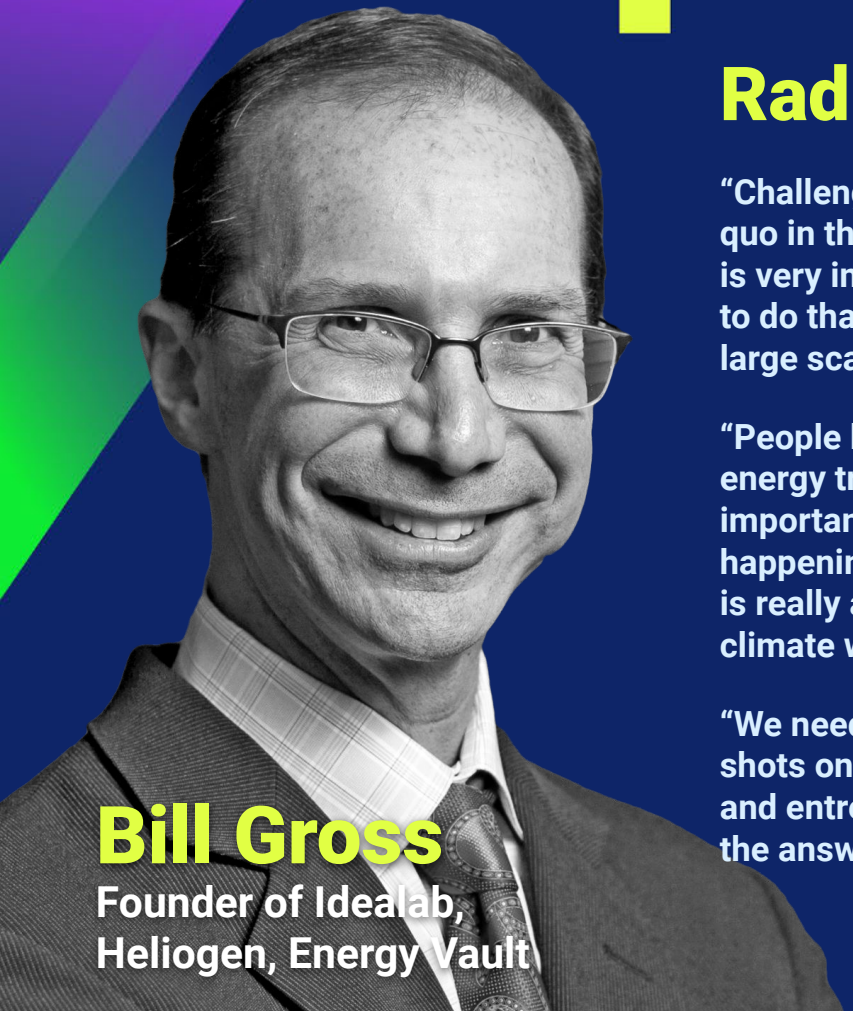
"It's the second inning for EVs, but first inning for agtech, etc. with a lot untouched, undercapitalized."

SOSV

Source: Heliogen

Source: Energy Vault

SOSV



Bill Gross
Founder of Idealab, Heliogen, Energy Vault

Radical Ideas, Radical Companies

"Challenging the status quo in the energy transition is very important. We need to do that on a large, large scale."

"People believe that the energy transition is real, is important, and is happening—and that timing is really a tailwind for all climate work right now."

"We need thousands of shots on goal to do it, and entrepreneurship is the answer."

Over the past 30 years, Bill Gross has started more than 150 companies, leading to more than 50 IPOs and acquisitions, including seven $1B+ exits.

He founded Idealab, the world's longest running technology incubator, and knows a few things about why startups succeed or fail. (see his TED talk here).

Bill's journey in climate tech started as a teenager, selling plans of DIY solar panels. Today, he is the founder of two startups headed for $1B+ market capitalizations: Heliogen and EnergyVault.

SOSV

Reinventing the Material World

"You can't see someone wearing your academic paper."

"PhDs used to give jobs. Invent things! Some might have economic merit and give people jobs.

It's an exciting and scary journey on a very fast learning curve."

"Regardless of industry, we can't keep playing ping-pong across the Pacific to get cheap [products] on shelves."

We need local, decentralized manufacturing."

THE STUFF WE MAKE—FROM BUILDINGS TO FASHION—CONTRIBUTE A WHOPPING 31% OF GHG

There is much more to do to reach the elusive goal of net-zero emissions across industry. Fortunately, hard-tech startups are tackling every category of product.

Sublime Systems is decarbonizing cement-making.

Spintex uses biomanufacturing to produce high performance silk fiber, using dramatically less energy.

Unspun aims for zero-waste and local production by making custom-fit denims on demand while making standardized sizes irrelevant.

SOSV

THE Paris... CLIMATE 10 years PLEDGE Early

Amazon invested more than $1 billion in Rivian and expects to deploy 10,000 EVs by 2022 and 100,000 by 2030

SOSV

Amazon's $2 Billion Pledge and Founders

"Amazon resembles the world at large. We have transportation, data centers, our own devices, we make movies, we have airplanes…"

"If it works for Amazon, it works for a lot of companies."

"Our goal is to create a closed-loop supply chain."

"We think that making batteries more sustainable – by recycling and driving down production costs – will enable the fully electric future of transportation."

AMAZON HAS COMMITTED TO NET-ZERO BY 2040, 10 YEARS AHEAD OF THE PARIS ACCORD.

Amazon has also committed to 100% renewable energy consumption by 2025 and is already a top purchaser with over 10GW of capacity.

Its $2 billion Climate Pledge Fund aims to invest in startups that will help Amazon close the carbon gap across many sectors—from transportation and logistics to facility operations.

Redwood Materials, one of the fund's investments, focuses on sustainable materials for EV batteries, Redwood was founded by Tesla co-founder and former CTO J. B. Straubel.

SOSV

How High Impact Brings High Returns

“We’ve seen incredible evidence of impact investing being a thesis that can deliver top investment returns.”

“There is an influx of great entrepreneurs. It all starts with that. It’s young, or tech execs, or serial founders wanting sustainability for their next company. Capital follows entrepreneurs, not vice-versa.”

Ira Ehrenpreis has dedicated the past 25 years to impact investing. He was an early investor in Tesla, where he has served on the board for almost 15 years since it was a small, private company.

He currently supports multiple DBL investments, including Apeel, Better Place Forests, The Boring Company, Mapbox, Planet, R-Zero, and SpaceX. He is now investing the $600M+ of his 4th fund.

Ira Ehrenpreis

Founder & Managing Partner, DBL Partners

SOSV

DC and Brussels: Billions to Invest

"We are the most risk tolerant agency at the DoE."

"We work with startups on a quarterly basis from both the technical and market sides. We're impact-based - and if startups don't succeed, they won't have impact."

"We're looking for high-risk, high-reward projects with societal impact.

"Among others, our iCorps program trains startups to identify whether there is a market pain point to address."

"When the science is good it's good. When the IP is good it's good. But if you do not have the right team, it will never work."

The National Science Foundation (NSF) runs the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, to encouraging domestic SMEs to engage in R&D with for commercialization. Those programs invest up to $2B in an average of 400 startups per year.

ARPA-E is The Advanced Research Projects Agency – Energy, from the U.S. Department of Energy. It supports projects related to energy production and storage, building efficiency, transportation, and more.

The European Innovation Council (EIC) manages part of the EU budget (€100B) set for research and innovation for 2021-27. It allocates grants to EU-based projects up to €2.5M and equity investments up to €50M.

SOSV

Getting to the Big Checks

"We have capital that is long duration capital.

I am not patient capital: right now it's a moment so let's not be patient. Let's be aggressive."

"When we get involved, our expectation is that we want to be there throughout… We have multiple different pockets of capital for companies in all stages."

"In a time like this where capital isn't as scarce as it has been, and where innovators have choice among capital providers, it is that more important that they take the time to really get to know these prospective partners."

Temasek is one of Singapore's sovereign funds. Representing over $225 billion in 2020, it has long been climate tech investor, in line with Singapore's grasp of the risks posed to the small nation.

Generate Capital brings capital and operational expertise to clean energy and infrastructure projects. With $2 billion raised in 2021, the firm funds projects around the world—including small-scale and early stage deals—with a long-term view.

Prelude Ventures is founding member of the Breakthrough Energy Coalition. Prelude has invested in over 40 climate tech companies since its founding in 2013, including in energy storage, plant-based protein, micro-mobility, direct air capture, and more.

SOSV

Making Renewable Reliable

"We make low-cost, multi-day, scalable energy storage for the grid. Nothing in this world is without some trade-offs, and that's especially true in the world of energy storage… part of the process for Form Energy is to think about those tradeoffs and very deeply and analytically understand them—and then make the right ones."

"Your next job is going to be in climate, whether you know it or not."

Currently, lithium-ion batteries are expensive and can't hold a multi-day charge. This is the problem Form Energy CEO Mateo Jaramillo—an energy veteran and former vice president of products and programs for Tesla's stationary energy storage program — set out to tackle by founding the firm in 2017.

The company identified iron-air batteries as the most promising technology and is now on a mission to reach the holy grail price of $20 per kWh, combined with up to 100 hours of storage — enough to face a polar vortex in Minneapolis.

Mateo Jaramillo
CEO & Co-Founder,
Form Energy

SOSV

The Next Revolution

Tony Fadell
Principal,
Future Shape

"Since Greta and COVID, everything has changed. We [realized] we're all on this small globe together."

"We're in the industrial revolution 2.0. There is no one silver bullet here. We have things in transportation, agriculture, materials, manufacturing. We have to reinvent all of that. [Today], every company has some problem with clean to solve."

"It is an industrial revolution at a global scale. It's pretty exciting, frankly."

The inventor of the iPod, the iPhone, and Nest thermostat is focused on making the world a better place for his kids (and all of us) to live in.

And he's doing so through Future Shape, his investment and advisory firm—a no-LP fund that has made 200+ investments from climate tech to biosciences to energy and manufacturing.

Fadell is also an early investor in Impossible Foods and a strong believer in the future of bio-manufacturing and connecting everything with electricity.

SOSV

About SOSV

SOSV is a global early stage fund with over $1B AUM and a strong focus on **planetary and human health**.

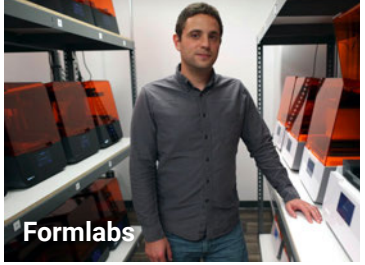
- SOSV was ranked the **#1 investor in Climate Tech** by Pitchbook between January 2020 and Aug 2021.
- The SOSV Climate Tech 100 lists our top climate portfolio startups, and analyzes their many founders and investors.

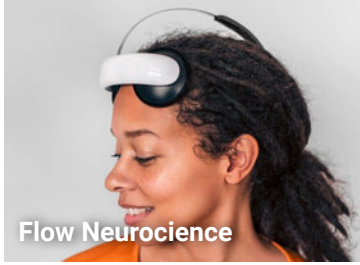
SOSV PROGRAMS

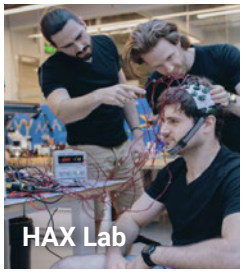
We invest in over **100 startups per year**, notably via our programs in **biology** (IndieBio) and **hard tech** (HAX).

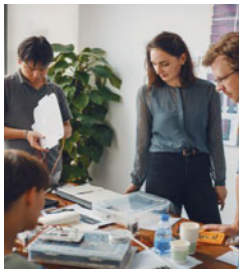
- Programs are equipped with labs in SF, NYC, Newark (opening in 2022), Shenzhen, and expert staff and community of founders.
- Alumni include unicorns Opentrons, NotCo and The EVERY Company.

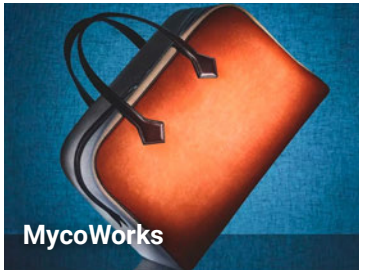
Apply: www.sosv.com











Additional Resources

NEWSLETTERS

- Climate Tech VC
- Cipher, by Amy Harder and Breakthrough Energy
- Exponential View, by Azeem Azhar

PODCASTS

- My Climate Journey, by Jason Jacobs
- Exponential View, by Azeem Azhar

REPORTS & DATA

- The State of Climate Tech 2020, by PwC
- Rethinking Climate Change, by RethinkX
- Carbonomics, by Goldman Sachs
- The Future of Climate Tech, by Silicon Valley Bank
- Introduction to Climate Tech, by Pitchbook
- 2021 Tough Tech Landscape, by The Engine
- List of Climate Tech Unicorns, by HolonHQ

BOOKS

- How to Avoid a Climate Disaster, The Solutions We Have and the Breakthroughs We Need, by Bill Gates
- Speed & Scale: An Action Plan for Solving Our Climate Crisis Now, by John Doerr (preorder)
- The Exponential Age: How Accelerating Technology is Transforming Business, Politics and Society, by Azeem Azhar
- Technically Food: Inside Silicon Valley's Mission to Change What We Eat, by Larissa Zimberoff
- Decoding the World: A Roadmap for the Questioner, by Po Bronson and Arvind Gupta

SOSV

Acknowledgements

THE SOSV TEAM WOULD LIKE TO THANK:

- The 2000+ participants who attended the event.
- The 91 startups that participated in the Expo.
- The pre-seed and seed-stage investors and incubators who participated in breakout sessions.
- The support teams at Hopin and Socialive.
- All the organizations and people who helped us spread the word!

THE SESSION MODERATORS:

- Amy Harder, Executive Editor, Cipher by Breakthrough Energy
- David Rowan, Founder, Voyagers
- Jonathan Shieber, Editor, Footprint Coalition
- Larissa Zimberoff, Investigative Reporter
- Sophie Purdom, Co-founder Climate Tech VC
- Jason Jacobs, Host, My Climate Journey
- Jason Pontin, Partner, DCVC
- Connie Loizos, Silicon Valley Editor, TechCrunch
- Danny Crichton, Managing Editor, TechCrunch
- Kevin Samy, Growth Strategy & Sustainability, R-Zero Systems
- Darrell Etherington, News Editor, TechCrunch

This event was a success thanks to all of you!

SOSV

THE EMERGING STARTUP ECOSYSTEM

SOSV CLIMATE TECH SUMMIT

Videos: youtube.com/sosvvc

Download: sosclimatetech.com

Comments: climatetech@sosv.com

VIRTUAL | OCTOBER 20-21, 2021 | GLOBAL | SOSVCLIMATETECH.COM