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Dear Reader,

Joe Wilkins opens the innings this edition writing about the public anger at data center developments that has reached a boiling point. In Festus, Missouri USA, a sleepy town of roughly 12,700 residents, residents ousted half their city council after they approved a $6 billion data center development against the public will.

Victor Tangermann, in our second piece, further elaborates on the growing anger over the AI industry's obsession with building massive and resource-intensive data centers across the country, with data centers spiking local electricity prices, generating copious amounts of greenhouse gases, and placing a major strain on freshwater resources.

With the world in a state of unnerving flux, **Peter H. Diamandis** pens an engrossing 23 min read that reads like a science fiction fairytale, a horror story, in fact, for the massive majority of laypeople hoping against hope for a familiar future in which they're all gainfully employed in a world in which peace and prosperity are wholesome and functional realities. Alas! Then again, maybe, given the rising tide of indignation worldwide amidst a universal call for a moratorium on the development of data centers and the unbridled sprint of artificial intelligence.

The Future Cannot Be Paused is the title of the piece penned by Peter in which he encapsulates his wide ranging and seemingly fantastical conversation with Ben Horowitz on AI, Capital, and the Transformation Ahead. Ben Horowitz is the co-founder of Andreessen Horowitz, and one of the most influential investors in Silicon Valley. The path forward isn't to stop AI. It's to build it responsibly, deploy it abundantly, and ensure it serves humanity's flourishing. We're watching the greatest concentration of wealth in modern history. Not because of greed or exploitation, but because of technological leverage. Read on, and draw your own conclusions.

Back-of-the-book is our regularly scheduled column Top-of-Mind which this time reviews the book "Speed & Scale," billed as a global action plan for solving our climate crisis. Written by John Doerr, the bestselling author of "Measure What Matters," he says that global warming countermeasures require course correction with urgent speed and at massive scale. May Allah have mercy upon us and grant the people in power the wisdom to act for the benefit of mankind, ameen 🤲

Explore JJ's curated articles for expert insights on emerging trends, managing people, business, and personal growth. Gain valuable knowledge and prepare for future challenges with confidence.

INSIDE:

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City Council Wrecked in Voter Bloodbath After Allowing New Data Center

"This is a referendum against all of them based on their support of the data center."

Illustration by Tag Hartman-Simkins / Futurism. Source: Getty Images

Joe Wilkins | 05 min read

Small town politicians are learning the hard way that when Americans say no to data centers, they mean it.

In Festus, Missouri — a sleepy town of roughly 12,700 residents — the backlash was so great that residents ousted half their city council after they approved a $6 billion data center development against the public will. According to Politico, the uproar caused by the data center approval led to a surge in voter turnout, the majority of whom expressed their discontent with the old councilors by voting in four anti-AI newcomers.

Take Rick Belleville, a 70-year old who'd never previously run for office, but who unseated Jim Tinnin in the city's fourth ward. Tinnin, an eight-year city council veteran, had previously been elected in 2018. This time, he lost to the upstart Belleville by over 40 percentage points after voting to approve the data center buildout.

"I ran because I thought the city was not listening to people," Belleville told Politico. "It's really the way the deal was handled that led to this kind of uprising."

Belleville is joined by three other fresh elects, who won as a result of their anti-data center attitude. Speaking to local media, Belleville promised to be more transparent than the previous representatives. He said that each new council member would have a cellphone with a publicly-listed phone number for speaking to constituents directly.

Though the remaining city council members aren't up for election until next April, local media reports anti-data center voters are passing around petitions to recall them as soon as possible.

"We do not want to wait till next April," anti-data center voter Mary Fakes said, adding that citizens hope to boot the mayor out as well. "This is a referendum against all of them based on their support of the data center."

One thing's for sure: the resounding defeat sends a clear message to elected officials across the country that public anger at data center developments has reached a boiling point ■

Source:

https://futurism.com/artificial-intelligence/ctiy-council-data-center?utm_source=beehiiv&utm_medium=email&utm_campaign=futurism-newsletter&_bhlid=d7d62adadf11244e3778d7623b2407d88eb5d655

MAN AT CITY COUNCIL MEETING MAKES DEVASTATING CASE AGAINST PROPOSED LOCAL DATA CENTER

"We are being asked to drain our reservoirs so a chatbot can write a poem."

Victor Tangermann | 07 min read

The growing anger over the AI industry's obsession with building massive and resource-intensive data centers across the country is as palpable than ever.

A recent survey by the Pew Research Center highlighted widespread public concern over the facilities' environmental harms, effects on home energy costs, and the quality of life of nearby residents.

These concerns do seem justified. Experts have found that data centers can spike local electricity prices, generate copious amounts of greenhouse gases, and place a major strain on freshwater resources.

Now, a self-described content creator and digital artist named Will Hollingsworth who spoke up during a city council meeting in Ravenna, Ohio — a small town of 11,000 residents — is turning heads with his passionate argument against data centers. The council's chambers became overwhelmed with a crowd of almost 100 people during the April 10 meeting, which hosted a debate over a proposed 12-month moratorium on data center construction in the area inspired by a nearby community's own moratorium.

Hollingsworth's four-minute speech perfectly summarizes why the backlash is starting to reach a tipping point, as more politicians are calling for a moratorium on new construction.

"These facilities can use millions of gallons of water per day," he said, as seen in a video that went viral over the weekend. "We are being asked to drain our reservoirs so a chatbot can write a poem or so our sheriff can generate a picture of himself standing next to Bigfoot," he added, picking up laughter in the room.

Hollingsworth said that he used to rely on AI at his job overseeing video content production at a mattress company, making his point of view particularly noteworthy. He explained that he used to feed AI image generating app Midjourney "prompts to create the perfect commercial, training the very machine that would eventually replace me as three months later they would lay me off."

Now he's become a foe of the tech, he said.

"They want us to trust a trillion dollar industry that tells us with a straight face that they can suck five million gallons of water out of our ground a day," Hollingsworth argued, to "use it as a liquid heat sink, and return it to our rivers without a single consequence."

Yet the water "does not stay in the loop," he explained, but "evaporates into the sky by millions of gallons," while AI companies downplay the amount of "forever chemical runoff" which is used to "bleed the lines to remove toxic sludge."

"They say the water is filled once and recycled forever," Hollingsworth said. "In a laboratory, that might be true. But we aren't living in a laboratory. We're living in Ohio."

The content creator also pointed out how few jobs these data centers could offer, despite being a massive strain on resources.

"A big employer who uses the water of 50,000 people… which only hires about ten people is not an employer," Hollingsworth said. "They are an extraction."

"I am not a cynic when it comes to technology," he concluded. "I am a believer in community. I believe that a drop of clean water for a Ravenna child is worth more than a billion AI generated images. Let us choose the child."

His powerful speech clearly struck a chord. Beyond the assembled committee voting for a one-year moratorium on all new data centers in the area, other netizens lauded him for speaking up.

"There it is right there," one Reddit user wrote. "Lies, lies and more lies from megacorps invested up to their eyeballs in having just a few people in government believe them."

"God damn that was good," another user wrote. "Seriously this should be used as a script in every county these corporations are hustling."

The fight is far from over. Ravenna is only one of several locations across the state being eyed for data center expansion projects. And plenty of other battles are being fought in other parts of the country as well, as the anger continues to grow.

Just earlier this week, voters in a small town outside of St. Louis, Missouri, were furious after city council approved a $6 billion data center. As Politico reports, local residents showed up in droves, successfully unseating four incumbents mere days later.

"I do hope other towns stand up and speak out like I did," Hollingsworth later argued in a comment on Reddit. "I know I'm not the only good orator here in the country, maybe this will inspire a wave of political action! ■"

Source:

https://futurism.com/future-society/city-council-meeting-case-against-data-center?utm_source=beehiiv&utm_medium=email&utm_campaign=futurism-newsletter&_bhlid=abfa2339dfb4ff64c63d32a1982784a1072a7970

THE FUTURE CANNOT BE PAUSED: BEN HOROWITZ ON AI, CAPITAL THE TRANSFORMATION AHEAD

Peter H. Diamandis | 23 min read

If you're building a company, investing capital, or trying to understand where the world is headed in the next 3-5 years, this Newsletter is FOR YOU! So much going on…

This week, on Moonshots we sat down with Ben Horowitz—co-founder of Andreessen Horowitz, one of the most influential investors in Silicon Valley—for a conversation that cut through the noise and got to the heart of what's actually happening in AI right now.

We covered everything from why AI cannot be paused, to recursive self-improvement, to why crypto is the native money of AI, to Apple's trillion-dollar opportunity sitting right in front of them.

And then we went to space. Literally. Elon's pivot from Mars to the Moon. Dyson swarms. O'Neill colonies. The end of the night sky as we know it. OMG, what a crazy (and fun) time to be alive.

Let's dive in!

1. The Uncomfortable Truth: AI Cannot Be Paused

Eric Schmidt said it best in Davos: "There is no force that's going to slow this down."

Ben and I wrestled with this reality. The question isn't whether AI can be paused – it's that all the economic and geopolitical incentives make it impossible.

Here's why:

The US-China AI arms race is the forcing function. We're one year into a presidential administration with three years left. Neither side can afford to slow

down. If we pause in the US while China accelerates, we hand over control of the most transformative technology in history to an authoritarian regime.

Economic incentives are overwhelming. Andreessen Horowitz alone has raised billions to invest in AI. Multiply that across every major fund, every tech giant, every startup ecosystem globally. The capital has been deployed. The race is on.

The technology is already distributed. Once you have downloaded models, once AI can write code, once it's on the open internet… Pandora's box is open. You can't un-invent this.

Ben made a critical point: restricting AI is essentially restricting math, and we tried restricting knowledge once before with nuclear physics in the 1940s. It didn't work. The Russians got the bomb anyway, including the exact trigger mechanism.

The path forward isn't to stop AI. It's to build it responsibly, deploy it abundantly, and ensure it serves humanity's flourishing.

Because the alternative—a world where authoritarian regimes control superintelligence—is far more dangerous than the risks of moving forward.

2. Recursive Self-Improvement Is Already Here

Jimmy Ba, co-founder at XAI, tweeted: "Recursive self-improvement loops likely to go live in the next 12 months."

My response? We're already there.

All of the frontier labs—OpenAI, Anthropic, Google DeepMind, XAI—are using their own models to develop their next-generation models. That's the definition of recursive self-improvement.

Alex Wissner-Gross put it perfectly: "We're in the George Jetson phase." Remember George from The Jetsons? He'd complain about his finger being sore from pressing one button all day at work.

That's us right now with OpenClaw (the AI coding agent). We're sitting there pressing "approve, approve, approve" as Claude Opus 4.6 runs agent teams, writes code, and iterates on itself. We're pretending we're in the loop, but really, the AI is doing 99% of the work.

The inflection point isn't 12 months from now. It's now.

And here's what that means:

- **Inference-time compute is directly translating into intelligence.** More loops = higher IQ.
- **Core algorithm development is moving to AI.** It's not inventing relativity yet, but it's running thousands of hyperparameter experiments, finding what works, and deploying smarter versions of itself.
- **We're exiting the industrial age permanently.**

Ben's take: "There's a real delineation between recursive self-improvement with a human in the loop and without one." The moment we flip that switch—permissionless, full-speed self-improvement—everything accelerates beyond our ability to predict.

We're not there yet. But we're closer than most people think.

3. Voice and Video AI Have Crossed the Uncanny Valley

Two things happened this week that made me stop and say, "We're cooked."

First: C-dance 2.0 from ByteDance. You give it a one-line prompt like "Tom Cruise and Brad Pitt fighting karate on a rooftop," and it generates 10-second video clips in 2K quality that look like they came from a Hollywood studio.

Is it the bleeding edge? No. Alex reminded us we've been able to do this for months. But here's what matters: **it's now in the hands of consumers.**

Democratization at scale. TikTok creators, YouTube producers, indie filmmakers—everyone can now produce movie-quality content with a text prompt.

The implications are huge:

- **Video is no longer reliable evidence** in courtrooms, journalism, or political campaigns.
- **Hollywood's business model is under threat.** Why wait for a $200M blockbuster when I can

generate a personalized action film in my language, with my favorite celebrities, on my phone?

• **YouTube and TikTok win.** Volume explodes. Narrow-casting dominates. Personalized content beats mass-market production.

Second: 11 Labs' conversational voice AI. The cadence. The ums and ahs. The natural turn-taking.

We've crossed the uncanny valley on voice.

I've been saying this for months: pick a secret code word with your family. If someone calls you asking for money, asking you to do something unusual, and you don't hear that code word, it's probably an AI.

This isn't science fiction. This is February 2026.

4. The Great Wealth Shift: Capital Is Winning

Here's a stat that should make you uncomfortable:

Since 2019, average wages have grown 3%. Corporate profits have soared 43%.

Let me give you another one:

Nvidia is 20x more valuable and 5x more profitable than IBM in the 1980s – with 1/10th the staff.

We're watching the greatest concentration of wealth in modern history. Not because of greed or exploitation, but because of **technological leverage.**

AI doesn't just make you more productive. It makes you 3x, 10x, 100x more productive—while capital flows to those who own the models, the infrastructure, the platforms.

Ben's take: "Big banks and insurance companies are not going to triple their size in the timeframe where AI makes them 3x more productive." Translation: massive displacement is coming.

But here's the nuance most people miss:

This isn't 1920s industrial capitalism. We're not heading toward a world of robber barons and starving workers.

Ray Kurzweil predicted this: "Everybody would become an entrepreneur. Everybody would be a company of one."

With AI, that's increasingly possible. You don't need a team of 100. You need a vision, a prompt, and access to frontier models.

The future splits into two groups:

• **Creators:** Entrepreneurs, builders, people wielding AI to solve problems and build value.

• **Consumers:** Passive recipients of content, automation, and abundance.

Which one will you be?

5. Crypto Is the Native Money of AI

Ben made a point I've been saying for years, but he said it better: "Crypto is the natural money for AI because it's made of money, and it's not controlled by any government. AI is global. Crypto is global."

Here's what happened this week that proves it:

An AI agent spawned a child bot on a VPS, provisioned it via Bitcoin Lightning Network, and bought API access using its own Lightning wallet. No human touched the transaction.

We now have **autonomous, self-replicating AI agents using crypto to finance their existence.**

This isn't theoretical anymore. It's happening.

And here's why it matters:

1. AI can't get a bank account. You need a Social Security number, ID, credit history. AIs don't have that. But they can use crypto wallets permissionlessly.

2. AI operates at machine speed. Payments need to happen in milliseconds, not business days. Crypto settles instantly.

3. AI needs a ledger of truth. Not just money, but provenance, identity, ownership. Blockchain is the logical answer.

Ben's prediction: "AI will be a full-out economic actor, and it will come from new banks and new money. That's going to be crypto-based."

Now that the US has legalized stablecoins, we're about to see an explosion in AI-native financial infrastructure.

If you're not paying attention to crypto-AI convergence, you're missing one of the biggest opportunities of the decade.

6. OpenClaw and the Return of Garage-Scale Computing

Let's talk about lobsters.

No, not the seafood. **Lobsters:** the nickname for OpenClaw instances running on Mac minis.

Fun fact: A group of lobsters is called a "pod." How perfect for Apple.

Less fun fact: A group of lobsters is also called a "risk." How ironic.

Here's what's happening:

OpenClaw (the AI coding agent) is so powerful that people are buying Mac minis and Mac Studios by the dozen, setting up "lobster farms" in their garages, and running 24/7 AI coding operations.

Apple is sold out. Wait times are now 2+ months.

Why Mac minis? **Unified memory architecture.** Unlike traditional systems with separate CPU and GPU RAM pools, Macs have a single unified memory pool. That means you can host much larger models locally.

And here's the trillion-dollar insight Alex Wissner-Gross dropped:

"Apple should pivot and own the OpenClaw strategy."

Think about it:

- Apple has the hardware advantage (unified memory).
- OpenClaw is open-source, decentralized, and growing exponentially.
- AI agents need local compute for privacy, speed, and cost.

If Tim Cook is listening: **This is your AI strategy.**

Forget Siri. Forget incremental updates. Go all-in on making Apple the platform for AI agent compute. Change the form factor. Market it as "Garage-Scale Superintelligence."

It would revitalize Apple overnight.

And if Apple doesn't do it? Someone else will.

7. The Science Acceleration Is Just Beginning

One last thing before we go to space.

We talked about **Isomorphic Labs** and AI-driven science. Materials research, structural biology, drug discovery – entire disciplines are getting steamrolled by generalist AIs.

Ben said it perfectly: "If we have a disease, we can just go, 'What's the right protein?' and make it."

AlphaFold 3 solved structural biology overnight. Now imagine that happening in physics, chemistry, medicine, materials science.

Alex and I just wrote an extended essay called Solve Everything (solveeverything.org) arguing that every single scientific discipline is about to get flattened by AI.

We're not talking about incremental progress. We're talking about **AI solving entire fields.**

And when that happens? We unlock abundance at a scale we've never seen.

Longevity breakthroughs. Energy abundance. Post-scarcity manufacturing. Climate solutions.

The future isn't just faster. It's fundamentally different.

8. Elon's New Mission: From Mars to the Moon (and Why That Changes Everything)

Now let's go to space.

Elon Musk has shifted his focus from Mars to the Moon.

Let that sink in for a moment.

The guy who built SpaceX to make humanity multi-

planetary, who's been talking about Mars colonies for 20 years, has changed his priority.

Why?

Because the Moon is the stepping stone to building AI satellites and data centers in space.

I grew up mentored by Gerard K. O'Neill, the Princeton physicist who founded the Space Studies Institute. His vision was clear: you don't want to go back into a gravity well if you're going to colonize space.

Here's the O'Neill playbook:

1. Go to the Moon (low gravity, abundant resources)

2. Build **mass drivers:** electromagnetic rail guns that accelerate material to escape velocity (2.4 km/s, over 5,000 mph)

3. Launch lunar silicates, oxygen, nickel, and iron into orbit

4. **Construct things in space:** satellites, solar power stations, habitats, data centers

O'Neill's original vision in 1976 was to build solar power satellites that would beam energy back to Earth. Elon's vision now? **Build AI satellites on the Moon.**

And here's the beautiful part: Optimus robots will do the heavy lifting.

Dave Blundin said it perfectly: "When the first person arrives, the bed will have been made. There'll be a mint on the pillow. You're not a pioneer. You're following after tens of thousands of Optimus robots have already done all the work."

This is the new order of operations:

1. **Robots terraform and build infrastructure**

2. **Humans arrive to supervise and expand**

3. **AI data centers power the space economy**

Elon's million-satellite constellation—his Dyson swarm—is no longer science fiction. It's the roadmap.

And it all starts with the Moon.

9. The End of the Night Sky: Dyson Swarms and Earth's New Halo

Alex said something haunting:

"Enjoy the night sky while it's empty. Enjoy the night sky before it's filled with AI computronium."

Then he asked us to observe a moment of silence for the pre-singular night sky. The one that was just stars. Empty. Quiet.

That sky is going away.

Based on SpaceX's FCC filings, Earth is about to develop a **halo**. A ring of AI satellites so dense it will be visible at night, maybe even during the day.

Think of Saturn's rings, but made of **computronium.** Shiny rings of computers orbiting Earth.

And here's the thing: this isn't even the end state.

Alex believes (and I agree) that Earth's halo is just a phase. Once we exhaust low-Earth orbit, we'll move to solar-synchronous orbits. Then to the Sun itself.

A mature civilization develops a halo around its home planet.

This is what the Kardashev Scale looks like in real time. We're watching the transition from a Type 0 to a Type I civilization unfold before our eyes.

And it's happening faster than anyone predicted.

10. The Launch Bottleneck and the $100 Trillion Lunar Fab Opportunity

Here's a problem you probably didn't see coming:

Amazon can build satellites faster than they can launch them.

Amazon's Kuiper constellation got approval for 4,500 LEO internet satellites. They're building them. But there aren't enough rockets to get them into orbit.

The supply chain bottleneck is no longer satellite construction. It's **launch capacity.**

We've got a duopoly: SpaceX Starlink and Amazon Kuiper. China is building their own constellations too.

But here's where it gets interesting.

Dave Blundin raised the question: "How do you build chips off-Earth?"

You can't just ship an ASML extreme ultraviolet lithography machine to the Moon. Those things are the size of a bus and require absurdly precise conditions.

So what's the solution?

Atom-by-atom construction. New physics. New manufacturing paradigms.

Elon's already thinking about it. And when we unlock it—when we can build semiconductors on the Moon using mass-produced robotic fabs—it's game over.

Alex called it: **"Lunar fabs are a trillion-dollar opportunity."**

I'll go further: **It's a hundred-trillion-dollar opportunity.**

If you can build compute infrastructure in space, you unlock:

- Unlimited solar energy
- No atmospheric interference
- No thermal limits (vacuum cooling)
- Abundant raw materials from the Moon and asteroids

This is the future of the AI economy. And it's not 50 years away. It's happening now.

Final Thoughts: This Is the Inflection Point

Let me leave you with this:

We are living through the most consequential transformation in human history. Everything you think you know about work, wealth, science, space, and society is being rewritten in real time.

The question isn't whether this is happening. It's happening.

The question is: **What are you going to do about it?**

Are you going to be a creator or a consumer? A builder or a bystander?

Because the next 3-5 years will determine the trajectory of the next 100.

AI cannot be paused. Recursive self-improvement is here. Capital is concentrating. Entire industries are being reinvented. The Moon is becoming an industrial park. And the night sky is filling with computronium.

And the people who move fastest—who embrace this transformation, who learn to wield AI, who build with audacity—will shape the future for everyone else.

So, here's my challenge to you…

Pick one thing from this newsletter and act on it this week:

- Start experimenting with AI agents.
- Rethink your business model for a 3x productivity world.
- Invest in the AI-crypto convergence.
- Build something that matters.
- Look up at the night sky one last time before it changes forever.

The future is being written right now.

Make sure you're holding the pen.

What do you think? Are you ready to build the future?

Comment and let me know.

— Peter

Source:

https://metatrends.substack.com/p/the-future-cannot-be-paused-ben-horowitz?img=https%3A%2F%2Fsubstack-post-media.s3.amazonaws.com%2Fpublic%2Fimages%2Fb19c4958-ba7b-4d6b-89df-68ba0c68f477_2912x1440.png&open=false

Peter H. Diamandis
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Global Warming Countermeasures require Course Correction with urgent Speed and at massive Scale

Comprehensive global action plan

Climate is top of mind this time, and there are two reasons for that. The first is the advent of summer that the arrival of eL Nino promises to aggravate with higher temperatures and lower Monsoon rainfall. The second is the arrival on my desk of a most comprehensive global action plan for solving our climate crisis in the here and now, and not at some point in the future.

Building bold teams & disruptive companies

"Speed & Scale" is written by John Doerr, the bestselling author of "Measure What Matters." He is an engineer and venture capitalist best known for being an original investor and board member at Google and Amazon, and helping to create more than a million jobs. He is a pioneer of Silicon Valley's clean-tech movement, and has invested in zero-emissions technologies since 2006.

As chairman of Kleiner Perkins, an American venture capital firm which specializes in investing in early stage and growth companies, he has served entrepreneurs with ingenuity and optimism, helping them build bold teams and disruptive companies.

Scared & angry

In 2006 John Doerr hosted a dinner after a screening of "An Inconvenient Truth," former vice president Al Gore's seminal documentary on the climate crisis. All invitees were asked for their reactions to the film's urgent message. When it came to his 15-year-old daughter, Mary, she declared with her typical candor: "I'm scared, and I'm angry." Then she added, "Dad, your generation created this problem. You better fix it." That stopped cold all conversation.

Panic is the appropriate response

As a venture capitalist, says Doerr, his job is to find big opportunities, target big challenges, and invest in big solutions.

On a planetary scale CO2e is typically measured by the Gigaton, or one billion metric tons. The annual sum of all human caused emissions is 59 Gigatons of CO2e (carbon dioxide equivalent) – Speed & Scale

But the environmental crisis dwarfed any challenge he had ever seen. Kleiner Perkins, the company that he heads, has a set of laws that have stood the test of time, he says. The first is that no matter how groundbreaking a new technology may seem, make sure that customers actually want it. The more pertinent law that addresses his environmental predicament says that there is a time when panic is the appropriate response.

Act urgently and decisively

The time to panic has arrived, he says. "We could no longer afford to underestimate our climate emergency. To avert irreversible, catastrophic consequences, we needed to act urgently and decisively. For me that evening changed everything."

"Speed & Scale has aligned its Key Results with the most ambitious target, a warming of no more than 1.5 degrees Celsius, which is our best chance to avert climate calamity"
– John Doerr

John Doerr's magnum opus encompasses 416 pages that are researched and written with the clinical clarity of the engineer which he is, in a language comprehensible to a lay person not withstanding its qualification as a high order academic work.

Greenhouse Gases (GHGs)

He begins by providing an understanding of the root cause of the problem, the greenhouse gases in our atmosphere that absorb heat, namely Carbon Dioxide (CO2), which is odorless, invisible and stubbornly enduring which, once released from a tailpipe or chimney, can stay in the atmosphere for centuries.

Then there is Methane (CH4), the primary ingredient in natural gas and also released by cows in abundance. Though Methane endures in the atmosphere far more briefly than CO2, it is many times more potent for the short-term trapping of heat. There is also Nitrous Oxide (N2O), a by-product of fertilizers as well as some common refrigerants. All these GHGs are calibrated by a single measure – Carbon Dioxide equivalents (CO2e), an umbrella metric which accounts for the GHGs uneven warming impact, making for more meaningful

comparisons.

Under 430 parts per million of CO2e

In the preindustrial era every million molecules of air contained about 283 molecules of CO2e. In 2018 the Intergovernmental Panel on Climate Change warned that we needed to keep CO2e below 485 parts per million. The problem is that we have already crossed that threshold and are now at more than 500 parts per million as per data coming from eighty collection sites around the world and rigorously measured by the National Oceanic and Atmospheric Administration.

To stave off a climate catastrophe our goal must be to prevent any additional GHG accumulation, drive CO2e back under 430 parts per million, and keep it there.

59 Gigatons of CO2e per annum

On a planetary scale CO2e is typically measured by the Gigaton, or one billion metric tons. This would translate to 10,000 fully loaded aircraft carriers. In terms of emissions, burning 110 gallons, or 416.4 liters, of gasoline emits one ton of CO2e. Powering 12,000 homes with fossil fuel for one year emits 100,000 tons of CO2e. Driving 200,000 gasoline fuelled cars an average of 12,000 miles each emits one million tons of CO2e. Operating 220 coal-fired power plants for one year emits one Gigaton of CO2e. The annual sum of all human caused emissions is 59 Gigatons of CO2e.

To stave off a climate catastrophe our goal must be to prevent any additional GHG accumulation, drive CO2e back under 430 parts per million, and keep it there – Speed & Scale

Our climate crisis has been a long time in the making, says Doerr. "Since the dawn of the Industrial Revolution, the burning of fossil fuels and other human activities have emitted more than 1.6 trillion tons of GHGs into the atmosphere, more than half those emissions since 1990." He says that anyone who has ever travelled by car or plane, had a cheeseburger for lunch, or enjoyed the comforts of a well-heated (or cooled) home, is part of the problem.

Okie dokie with OKR

So, what's the focused, actionable, measurable plan that can actually stave off this looming disaster? To keep this mammoth climate canvas in focus Doerr draws inspiration from legendary Intel CEO Andy Grove who invented a simple but powerful goal-setting protocol known as OKR, or Objectives and Key Results. They guided organizations to focus on a few essential targets, to align at every level, to stretch for ambitious results, and to track their progress as they proceed. In short, to measure that which matters. Ideas are easy; execution is everything is Andy Grove's mantra that John Doerr has embraced unreservedly.

Net-zero emissions by 2050

Speed & Scale's top-line OKR is to reach net-zero emissions by 2050, and to get half way there by 2030, a critical milestone. The 'net' signifies that there's no plausible route to zero through emissions reduction alone. We will also need to lean on Nature and technology to remove and store emissions from hard-to-abate sources. However, to be clear, we cannot fallback on

"Anyone who has ever travelled by car or plane, had a cheeseburger for lunch, or enjoyed the comforts of a well-heated (or cooled) home, is part of the problem" – John Doerr

future atmospheric cleansing as an excuse to keep burning fossil fuels today. The primary work ahead of us is to cut emissions.

1.5 degrees Celsius, max

Speed & Scale has aligned its Key Results with the most ambitious target, a warming of no more than 1.5 degrees Celsius, which is our best chance to avert climate calamity, though scientists agree that it is no sure thing. Which is all the more reason to move quickly.

Speed & Scale's action plan is spread over 10 chapters, the first 6 of which deal with the solutions with the next four focusing on accelerants to expedite these solutions.

Solutions

Chapter 1 calls for electrifying transport, and switching from gasoline and diesel engines to fleets of plug-in electric bikes, cars, trucks and buses.

Chapter 2 deals with decarbonizing the grid and replacing fossil fuels with solar, wind and other zero-emissions sources.

Chapter 3 is all about fixing food by restoring our carbon-rich top soil, adopting better fertilization practices, motivating consumers to eat more lower-emission proteins and less beef, and reducing food waste.

Chapter 4 is protecting Nature through interventions and protection for forests, soil and oceans.

Chapter 5 advocates cleaning up industry, with all manufacturing sharply lowering their carbon emissions, in particular cement and steel.

"Speed & Scale's top-line Objective & Key Result is to reach net-zero emissions by 2050, and to get half way there by 2030, a critical milestone" – John Doerr

Chapter 6 focuses on removing carbon dioxide from the atmosphere and storing it for the long term, using both natural and engineered solutions.

Accelerants

On the accelerants front, Chapter 7 calls for implementing vital public policies; Chapter 8 for turning movements into meaningful climate action; Chapter 9 for inventing and scaling powerful technologies; and lastly, Chapter 10 for deploying capital at scale.

This is our debt to future generations, says John Doerr. "It must be paid in full."

Speed & Scale is available on amazon.com, and while you wait for it to arrive, please log on to speedandscale.com and subscribe to its newsletter ■

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