Michael Shellenberger (00:00):

Keep them going-

Scott Tinker (00:00):

Next on Energy Switch, we'll conclude our discussion of whether the US needs more or less nuclear power.

Michael Shellenberger (00:08):

Why would the governments of Japan, France, and Britain all be making a move back to nuclear? It's because nuclear is reliable and reliability makes electricity cheap.

Arjun Makhijani (00:18):

The most important thing on climate is time. Nuclear cannot do it. It's simply infrastructurally not possible.

Scott Tinker (00:29):

Coming up on Energy Switch, is it time for more nuclear power part two.

Speaker (00:35):

Funding for Energy Switch was provided in part by Microsoft and by the University of Texas at Austin.

Scott Tinker (00:47):

I'm Scott Tinker, and I'm an Energy Scientist. I work in the field, lead research, speak around the world, write articles and make films about energy. This show brings together leading experts on vital topics in energy and climate. They may have different perspectives, but my goal is to learn and illuminate and bring diverging views together towards solutions. Welcome to the Energy Switch. In part one, we discussed nuclear accidents, nuclear waste, and nuclear weapons. Now, we'll talk about cost, the low cost to run a nuclear power plant and the high cost to build one. We'll talk briefly about new nuclear technology, and we'll talk about time.

Scott Tinker (01:34):

Could we build new nuclear plants fast enough to address climate concerns? My guests, again, are Michael Shellenberger is founder and President of Environmental Progress, the best-selling author of Apocalypse Never and San Fransicko and a former anti-nuclear activist. Dr. Arjun Makhijani is a Nuclear Engineer against nuclear power. He's President of the Institute for Energy and Environmental Research and co-author of Nuclear Wastelands. On this episode of Energy Switch, is it time for more nuclear power part two. Let's dive in. Talk about cost, nuclear cost. Is the cost to run the plant prohibitive?

Arjun Makhijani (02:19):

Most of the cost of nuclear, solar wind is up front. It's the capital cost. The cost to run a nuclear plant is fairly low compared to the capital cost. The cost to run wind and solar is even lower, about a fourth of the nuclear power plant, because no fuel and very low maintenance. And the question is what are the comparative upfront costs? So today solar and wind, according to Wall Street, Lazard about $40 a megawatt hour capital running, everything, new nuclear, not existing. New nuclear, about 160 give or

take. With solar and wind you have variability, but remember the Delta now is four times and solar costs are going that way, and nuclear costs are going that way.

Scott Tinker (03:08):

Is that global, Arjun?

Arjun Makhijani (03:10):

Worldwide basically built about 60, 65, 70 nuclear plants in the last 10 years globally, and that compares to about 60 plants that have been retired. So there's some more generation per plant going on. So we're not making a whole lot of progress.

Scott Tinker (03:27):

But China's building. I'm just wondering on the cost side...

Arjun Makhijani (03:29):

China building is also slowing down. So even in China, in the last two years, only about four or 5,000, megawatts have been built. That's the equivalent about four plants. If you look at renewables in China was 14 times the addition of nuclear.

Scott Tinker (03:46):

Is that just solar and wind or is that hydro and...

Arjun Makhijani (03:48):

Just solar and wind, not including hydro. Only solar and wind.

Scott Tinker (03:51):

Interesting.

Arjun Makhijani (03:51):

These are annual data put out by British petroleum. You can download the spreadsheet.

Scott Tinker (03:56):

Yeah. I've looked at that, but we don't really know the cost to build the plants in China relatively.

Arjun Makhijani (04:01):

The Chinese costs are not very transparent. So in some countries we have a pretty good cost account. Those plants are now very expensive.

Scott Tinker (04:08):

Right.

Arjun Makhijani (04:09):

The nuclear renaissance was advertised at $3,000 a kilowatt.

Scott Tinker (04:14):

Yeah.

Arjun Makhijani (04:14):

It's now 8,000, 9,000, 10,000, 12,000.

Scott Tinker (04:18):

That's all in, though. But to run the plant-

Arjun Makhijani (04:20):

To run the plant-

Scott Tinker (04:20):

... once it's built.

Arjun Makhijani (04:20):

Yeah.

Scott Tinker (04:20):

Pretty low.

Arjun Makhijani (04:22):

Once it's built, it's pretty low initially. And then some of the 30 and 40-year-old plants, you'll need replacement parts. Sometimes the pumps wear out. And steam generators have been very expensive and generally in pressurized water reactors, they've all had to be replaced.

Scott Tinker (04:39):

Okay.

Arjun Makhijani (04:40):

It costs hundreds of millions of dollars.

Scott Tinker (04:41):

You see the cost kind of the same way, Michael, or...

Michael Shellenberger (04:46):

I don't. I think it's important to compare apples to apples. And so what happens sometimes is that people will cherry pick the cost of a particular power plant or project, and then suggest that explains the whole system.

Scott Tinker (04:58):

Yeah.

Michael Shellenberger (04:59):

It's better to compare two countries that are similar over time, and we can do that, because we've had a natural experiment in the form of France and Germany. France spends a little bit more than half as much for electricity, per unit of electricity, than Germany does, and yet it gets more than twice as much of its electricity from zero pollution sources as Germany. Why is that? It's because France is 75% nuclear. Germany is phasing out nuclear and trying to scale up renewables. So Germany by 2025, according to Bloomberg, will have spent $580 billion.

Scott Tinker (05:32):

580 billion.

Michael Shellenberger (05:33):

$580 billion making its electricity almost twice as expensive and 10 times more carbon intensive than French electricity. So, again, you don't have to accept my numbers on it. Just look at France and Germany.

Scott Tinker (05:44):

Yeah.

Michael Shellenberger (05:45):

Look at the countries with the most expensive electricity in the world, though, the countries with the most renewables. So we see Germany has the most expensive electricity in Europe, then Denmark, which is the world leader. Well, maybe that's just Europe, you would say. In fact, look at California. California made a huge investment in renewables over the last 10 years, and it saw its electricity prices rise seven times more than in the rest of the United States. So renewables make electricity expensive, because they're weather dependent. In fact, what we saw in both Texas and in California and then in Europe towards the end of 2021 and early 2022 were power shortages, shortages of electricity, because these are places that relied too much on weather dependent renewables.

Michael Shellenberger (06:30):

They invested too much in solar and wind, and they didn't invest enough interesting in the nuclear and natural gas they needed. So that's why we saw the president of France declare that they were going to massively expand nuclear. We saw the prime minister of England to say that they were going to massively expand nuclear. We saw the Dutch government start to talk about a massive expansion of nuclear, and we even started to see significant resistance in Germany, of all places, against the shuttering of six nuclear power plants, six nuclear reactors, I should say.

Scott Tinker (06:59):

Right.

Michael Shellenberger (07:00):

In Japan and in South Korea, the leading presidential candidates, the new prime minister of Japan, have all said, "We have to restart our nuclear plants and keep them going." If Arjun were correct in that renewables were this magical source of electricity that you can add cheaply to the grid and it's so much cheaper than nuclear, then why would the governments of Japan, France, and Britain all be making a

move back to nuclear? It's because nuclear is reliable, and reliability makes electricity cheap. Making electricity unreliable makes it expensive.

Scott Tinker (07:33):

Interesting.

Arjun Makhijani (07:34):

Well, this is in the realm of electrical mythology issue. The one technical fact that distinguishes Germany from France is that Germany is much more efficient than France in its use of electricity. So Germany runs a much bigger economy than France and a much bigger population for about the same amount of electricity. But I would say the most interesting comparison in rates is between France and California. California is about the same cost as France, and California has invested a lot in renewables and France has invested a lot in nuclear-

Scott Tinker (08:14):

Okay. California has great-

Arjun Makhijani (08:15):

... but old nuclear when costs were lower. Today's nuclear in France would be a lot more than what the French are paying and in Britain as well.

Michael Shellenberger (08:25):

Well, so first of all, Arjun is cherry picking and comparing apples to oranges inappropriately.

Scott Tinker (08:31):

Yeah.

Michael Shellenberger (08:31):

The reason you compare France and Germany is because they're right next to each other. They're similar size economies, and Arjun admitted that Germany is even more efficient than France, and yet it spends almost twice as much per unit of electricity as France does. So you've got a problem there.

Scott Tinker (08:47):

We've got time issues here. So let's come to cost. Do we subsidize nuclear power? And is the subsidy just nuclear? Let's not go solar and wind or anything else.

Arjun Makhijani (08:57):

We've subsidized nuclear in lots of ways.

Scott Tinker (08:59):

Okay.

Arjun Makhijani (08:59):

Lots of costs have been offloaded to rate payers, including cost of all the abandoned construction that was never completed. Loan guarantees, Price-Anderson act costs can be hundreds of billions of dollars of an accident as we're seeing in [inaudible 00:09:15]. But the liabilities are limited to about $13 billion. No insurance company is going to ensure a nuclear power plant. The industry would be dead. So there are lots and lots of subsidies. It's not the only industry with subsidies of course.

Scott Tinker (09:29):

And rate payers cover that [inaudible 00:09:31].

Arjun Makhijani (09:31):

Yeah. And rate payers cover it.

Scott Tinker (09:32):

Okay.

Arjun Makhijani (09:32):

Rate payers have covered the cost of deregulation, the electricity industry, when it was privatized and companies like Exelon bought up nuclear power plants. A lot of the costs were onto rate payers that were not transferred, not taken up by the companies.

Scott Tinker (09:48):

Right. And we know that happened here in Texas with the wind. It was the lots of wind and the rate, everybody pays model. We got a lot of wind and it's been good in many ways.

Arjun Makhijani (09:58):

The one sense-

Scott Tinker (09:58):

Hold on. Hold on.

Arjun Makhijani (09:59):

... is the Union of Concerned Scientists calculated in a 2011 report that the subsidies for nuclear power are roughly comparable to the actual value of the power produced.

Scott Tinker (10:12):

Yeah. Yeah. The Union of Concerned Scientists. And people can Google these things and find out what these groups are.

Arjun Makhijani (10:19):

Right.

Scott Tinker (10:20):

So do we subsidize and is it important for nuclear?

Michael Shellenberger (10:23):

All energy sources receive subsidies and the best available research by the Congressional Budget Office shows that renewables received over 90 times more subsidies per unit of energy than nuclear did. So people can just Google. You'll find that renewables have been subsidized at the state level three to five times more than nuclear has. So, yes, of course, we're making choices with societal wealth of what energy sources to have. So the issue is not subsidies or not subsidies, it's what are we getting for those subsidies? And what we're getting from nuclear is a lot of concentrated and reliable power. What we're getting with renewables-

Scott Tinker (11:00):

With no emissions.

Michael Shellenberger (11:01):

With no emissions. What we're getting with renewables is more expensive electricity, because it's making electrical grids less reliable.

Scott Tinker (11:07):

Come to cost. Cost of new construction.

Arjun Makhijani (11:10):

Iowa has 45% of its generation in wind. Iowa.

Scott Tinker (11:16):

Yep.

Arjun Makhijani (11:17):

Is Iowa's grid less reliable? Not at all. Iowa is part of a large grid. When you have a small fraction of renewables, it doesn't become unreliable. This is just mythology and distortion.

Scott Tinker (11:28):

Okay.

Michael Shellenberger (11:28):

In fact-

Scott Tinker (11:29):

Hold on. That's important.

Michael Shellenberger (11:30):

In fact, the grid operator, both the Midwest and East Coast operator, has warned of less reliability of electricity because of the high penetration of renewables. So Arjun's facts are just wrong on that matter. People can Google that, and you can find that the warnings have been issued. And we saw the chickens come home to roost in the winter of 2021 and 2022 when we had energy shortages around the world, because we had spent too much on unreliable renewables and not enough on reliable power sources.

Scott Tinker (11:58):

When you say a small percentage, that makes sense. But when we get to a large percentage-

Arjun Makhijani (12:03):

Large percentages, then you have to do other things.

Scott Tinker (12:05):

Right. Okay.

Arjun Makhijani (12:06):

You can't... But in Arizona, they put out a bid for peak electricity, natural gas, whatever energy. It was open. Technology neutral bid, it was a couple of years ago. And this was just for the peaking, so the 5:00 to 10:00 PM period. And the cheapest bid happened to be solar plus batteries, which was what was accepted. Now, you have to have the batteries because at 7:00, you're not going to work without the batteries.

Scott Tinker (12:34):

Sure. Sure. New construction. Cost of new construction. We haven't built much in the US since Three Mile Island. What are those costs? And when you think about the expenses, what makes it expensive?

Michael Shellenberger (12:51):

The anti-nuclear movement has been the most successful anti-technology movement in human history. It's succeeded in stopping the US build out of nuclear plants by scaring people about the relationship between nuclear power plants and nuclear weapons, insisting that somehow when a nuclear plant melts down, there's an explosion like an atomic explosion.

Scott Tinker (13:12):

Interesting.

Michael Shellenberger (13:12):

So you're up against a really powerful societal phenomenon that really has to be viewed almost as a religious movement against nuclear. Now, when countries do decide to build nuclear plants, South Korea, for example, it was building them cheaper than coal plants. It's just a matter of practice. There's nothing magical. It's just do you have practice pouring the cement, making the rebar, making the piping? Do you have practice, because we all know that when you do something, once it takes a long time. You do it the second time, much faster, third, fourth, fifth, six times. And the data show that. So the cost of building new nuclear plants comes down when we build the same kind of plant over and over again. Now, the United States, Canada, Japan, it's the same everywhere.

Scott Tinker (13:54):

Okay.

Michael Shellenberger (13:54):

Now, I will say the nuclear industry deserves some blame for this. And the reason is that in reaction to the war on its technology, by anti-nuclear activists and renewable energy industry and many fossil fuel interests, they responded by saying, "Well, we'll change the design again." That is a nightmare for nuclear plant construction. You need to stick with the same design. I think solar actually is a model here. The solar panels we have today are the dominant kind, the same kind that we had from the 1950s, the same polysilicon kind of solar panels, and they've made them cheap. The Chinese made them cheap, not through innovation, not through efficiency. They became 2% more efficient over the last decade. They did it by just producing the same kind over and over again. That's the key to-

Scott Tinker (14:38):

[inaudible 00:14:38] scale.

Michael Shellenberger (14:38):

... making nuclear cheap and also safe by the way.

Scott Tinker (14:40):

Right.

Arjun Makhijani (14:40):

So the cost of nuclear power plants has tended to go up largely for safety reasons. When Three Mile Island happened, costs went up after that, because reactors became safer. When there were the scandalous AEC hearings about emergency core cooling in the early '70s, costs went up. Costs went up even in France, at that time, by 50 to a hundred percent. They weren't very high. They went up much more in this country. The costs of nuclear power plant system as a whole became very high in the '80s. They needed to go up for safety reasons. And we're lucky that they were regulated that way, because we haven't had accidents with these new plants.

Scott Tinker (15:23):

Yeah. No. It's been very safe.

Arjun Makhijani (15:23):

That's very important.

Scott Tinker (15:25):

So the thing's-

Arjun Makhijani (15:26):

To say we can simply go back to some old mythical design and standardize that and it's going to be cheap again is to not live in the real world.

Scott Tinker (15:34):

I'm concerned we really haven't converged too much on cost of these things. So a true lightning round, what makes building nuclear expensive?

Michael Shellenberger (15:45):

Lack of practice and overregulation and the anti-nuclear movement.

Scott Tinker (15:51):

Okay.

Michael Shellenberger (15:51):

We had hundreds of thousands of people in the street protesting nuclear power plants. Each of the three biggest environmental anti-nuclear organizations in the United States have budgets over a hundred million dollars a year. So the idea that the anti-nuclear movement had nothing whatsoever to do with the overregulation of nuclear power plants, it's just silly. We're dealing with a concerted, active, industrial funded movement against this technology. Of course, the mistakes have been made.

Scott Tinker (16:16):

Out of fear.

Michael Shellenberger (16:17):

Out of fear.

Scott Tinker (16:18):

Lack of practice, overregulation, and an anti-nuclear movement. What makes nuclear expensive?

Arjun Makhijani (16:25):

Well, as I have said-

Scott Tinker (16:27):

And how can we reduce it?

Arjun Makhijani (16:27):

... as we have learned more about safety, safety and cost are not compatible. So the French are having high costs with the EPR, their new reactor design, which is really the same concept, the same light-water reactor, pressurized water reactor. It's improvements in safety that they built in after Chernobyl and Three Mile Island.

Scott Tinker (16:49):

So safety.

Arjun Makhijani (16:50):

So safety is very important.

Scott Tinker (16:52):

Cost. It's a big cost.

Arjun Makhijani (16:53):

Yeah. And then you can't make mistakes in nuclear power. So a lot of the problem is practice hasn't made perfect. So if you look at the United States and France, the two biggest nuclear power countries, their costs have gone up over time. So it's a negative learning curve. The more they've done it, the more costly their power plants have become, partly because they've learned about the safety issues and the importance of doing it right.

Scott Tinker (17:22):

Interesting. Okay.

Arjun Makhijani (17:23):

Hundreds of thousands of people in the streets have not, to my knowledge, affected the decisions of the Nuclear Regulatory Commission.

Scott Tinker (17:31):

Okay. Let's talk about nuclear construction. Like anything, it takes time to build plants. So what's it take to build a nuclear power plant? How long does it take?

Arjun Makhijani (17:42):

It takes somewhere between five years and more than 40 years of the plants that have come online. Typically, it's 10, 12 years in the United States. It has tended to be longer recently, France, Finland, China less.

Scott Tinker (17:57):

That about right, five to 10 years longer, depending on...

Michael Shellenberger (18:02):

Sure. You can take 40 years if you have an anti-nuclear movement that stops you from building the plant. If you're actually building the plant, there's no reason it should take more than five years. In fact, you can go faster once the workers have practice doing it. But if they're constantly being interrupted by protests, by regulators over frivolous demands, which is what's occurred, then, of course, it could take as long as those protests would last. So it's not a safety issue-

Arjun Makhijani (18:27):

Could we have a fact on the table here?

Michael Shellenberger (18:27):

... it's just a political question.

Scott Tinker (18:29):

Yeah. Let's talk about some new technologies. They're small modular reactors, NuScale and other are looking at those. Do those have a role to play? Could we build them fast enough or are they scalable to matter?

Michael Shellenberger (18:43):

They aren't there yet, and they're not necessary. In fact, what we see is that every time the industry keeps changing the technology is when costs go up. Workers need practice making the same kind of technology over and over again. So in my view, and I'm a bit of a heretic among heretics among pronuclear people on this issue, we had a great technology that we built the power plants in Arizona. The Palo Verde is our largest nuclear plant with three reactors in Arizona, which, for me, that's fine. So for me, I love a 1400 megawatt water cooled reactor, because we have so much practice with it. I don't feel the need to force some futuristic technology onto an industry that's really not ready for it when what we've seen is that it's that practice. And I also think it's a safety issue. You want your workers and the regulators to all have a lot of experience with the kind of technologies that you have. So I think we have a really good technology [inaudible 00:19:34].

Scott Tinker (19:33):

How about over here?

Arjun Makhijani (19:34):

Scott, facts of the matter.

Scott Tinker (19:35):

I know you have different-

Arjun Makhijani (19:36):

The fact is that practice hasn't made perfect. As time has gone on, it's taken longer, and it's become more expensive. And the redesign is not innovation in some new technology going from water to sodium. It's the same technology that's now taking longer. Pressurized water reactors are the most standard water technology in the work-

Scott Tinker (19:59):

A light-water reactor.

Arjun Makhijani (20:00):

... for reactors, light-water reactor. But now, we're saying, "We need small modular reactors." The ones on the table are really the same technology repackaged, light-water reactors, pressurized water reactors. In 2001, the Department of Energy said, "We'll be ready with half a dozen new, small modular technologies ready to go by 2010." Nuclear Regulatory Commission said a similar thing in 2000, "We'll be ready to go by 2015." Now, the first small modular reactor is not going to be built until the late '20s. And then you have to build a whole system mass manufacturing.

Scott Tinker (20:38):

Yeah.

Arjun Makhijani (20:38):

There's no way in which you can actually imagine a nuclear future that lives in the real world in which you can build up the supply chains, workforces and so on.

Scott Tinker (20:53):

So you-

Arjun Makhijani (20:53):

The practice of the workforce isn't the problem.

Scott Tinker (20:57):

Okay.

Arjun Makhijani (20:57):

The workforce had plenty of practice in the '70s and '80s and '90s when lots of power plants were being built.

Michael Shellenberger (21:04):

Well, that's-

Scott Tinker (21:04):

So your concern, Arjun, for climate reasons is that we can't deploy enough nuclear globally to address the CO2 emissions as a reasonable part of the solution. Is that breaking it down reasonably?

Arjun Makhijani (21:19):

That is correct. Look at the Intergovernmental Panel on Climate Change report. They've said sort of a red flag climate imperative in the most recent report, we need to be 70% CO2 emissions free by 2030, a hundred percent by 2040. Because when you have electricity emissions free, then you can make cars emissions free and so on and so on. That's the fundamental of emissions free. And you cannot get there. Here, the nuclear power is going down. The plants are costing a lot. They're taking very long. There's no way in which the infrastructure and the system can be built up to correspond to even a significantly greater low. It'll take a lot just to keep that 10% going.

Scott Tinker (22:12):

Yeah. That's interesting. Okay.

Arjun Makhijani (22:14):

Nuclear power has declined from 17% of global electricity to 10%. About the same total-

Scott Tinker (22:21):

Demand has gone up. Yeah.

Arjun Makhijani (22:23):

Demand has gone up.

Michael Shellenberger (22:24):

Because of demand.

Arjun Makhijani (22:24):

Right. Demand has gone up, but the fraction has gone.

Scott Tinker (22:27):

Right.

Arjun Makhijani (22:27):

Renewables have gone up from 1% to 12% in the same period.

Scott Tinker (22:32):

In the power sector.

Arjun Makhijani (22:33):

And the demand has gone up for renewables, too, of course.

Scott Tinker (22:36):

Come back to this climate conversation, CO2 emissions reductions, 10, 15, 20 years we have, can nuclear do it?

Michael Shellenberger (22:46):

Yeah. It's the only thing they can. It's the only way. You can't power electrical grids on renewables. There's been a major study of energy returned on energy invested. Renewables only return somewhere between two and four units of energy per one unit of energy invested.

Scott Tinker (23:04):

Right.

Michael Shellenberger (23:04):

Nuclear is somewhere around 50 to 75 to one. Our modern economy requires at least 10 to one energy return on energy invested. So what I worry about is in the name of solving climate change with renewables, we're going to end up really degrading the natural environment, massively increasing humankind's footprint ultimately.

Scott Tinker (23:23):

So you're both very concerned about climate change.

Arjun Makhijani (23:26):

Yes.

Scott Tinker (23:26):

CO2 emissions reductions in the near term. We have different thoughts on how to do that. And you both understand the nuclear power sector. You've come out of an environmental movement and you've changed which most... well, many people don't change the way they think, which is an interesting-

Michael Shellenberger (23:43):

I haven't changed in the sense that my values are the same.

Scott Tinker (23:46):

Right.

Michael Shellenberger (23:46):

I remain an environmental activist. My views of the technology have changed.

Scott Tinker (23:51):

Yeah.

Michael Shellenberger (23:51):

I think that you need nuclear power, whereas I used to think you didn't need it because of renewables. I used to think renewables were benign. I now understand that they have a much larger impact on the natural environment, certainly the nuclear, but also the natural gas. So what's changed for me is just an understanding of the technology. I also know that my own reasons for supporting renewables in the past really had more to do with my own romanticism and my own neuroticism, rather than with any objective view of the technology.

Scott Tinker (24:18):

And I come to you, Arjun, and you come with nuclear expertise, your whole background.

Arjun Makhijani (24:24):

I have a doctorate in nuclear fusion. Yeah.

Scott Tinker (24:24):

Yeah. Your whole history is in it, but you're arguing that it won't address because of the timeframe for the most part.

Arjun Makhijani (24:30):

Well, the most important thing on climate is time. Nuclear cannot do it. It's simply infrastructurally not possible for it to do it. So we need it fast, and it's not going to happen. So there have been lots and lots of studies done on high penetration renewable in the last many years, the National Renewable Energy Lab has done. Many technology neutral studies have been done just in the last 12 months. So if you do technology neutral and throw cost and a time constraint into it, what comes out as the most cost effective?

Scott Tinker (25:07):

Interesting.

Arjun Makhijani (25:08):

And new nuclear is not a cost effective answer with a time constraint in any single one of those studies.

Scott Tinker (25:16):

Okay. My guests agreed the cost to run a nuclear plant are low but couldn't converge on the cost to build a new one, and they disagreed on what makes them expensive. Is it building in safety precautions or an anti-nuclear movement that encourages fear and overregulation? I suspect it's some of both. Neither guest liked the concept of new nuclear technology. Michael wants to stick to the same reactor design we've successfully built. He also felt that nuclear is the only no carbon electricity solution available today at scale. Arjun thinks we simply can't build nuclear fast enough to meet climate goals. However, China is building solar, wind and nuclear at scale and doing it fast. It's hard for me to see us reaching global carbon goals without nuclear.

Speaker 4 (26:36):

Funding for Energy Switch was provided in part by Microsoft and by the University of Texas at Austin.