
**The Brookings Institution**
**Center for Sustainable Development**

**and**

**The Rockefeller Foundation**

**17 Rooms Podcast**
**"New targets and metrics for energy reliability, productivity, and quality"**
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*Episode Summary:*

In this thirteenth interview of the "17 Rooms" podcast, Clare Boland Ross and Todd Moss discuss new "measurable metrics" to reframe SDG7 energy targets to be more ambitious and location-specific. Ross, managing director of the Power and Climate Initiative at The Rockefeller Foundation and Moss, executive director at the Energy for Growth Hub, moderated Room 7 focused on Sustainable Development Goal number 7—on affordable and clean energy—during the 2021 17 Rooms flagship process.

**MCARTHUR:** Hi, I'm John McArthur, senior fellow and director of the Center for Sustainable Development at Brookings.

**KHAN:** And I'm Zia Khan, senior vice president for innovation at The Rockefeller Foundation. This is 17 Rooms, a podcast about actions, insights, and community for the Sustainable Development Goals and the people driving them.

John, I love all the Sustainable Development Goals, but this one, SDG 7 about affordable and clean energy, is special to me. Twelve years ago, when I joined the Rockefeller Foundation, in just a few weeks I was on a plane to India for our very first grant in this area. We were testing the idea of could we bring a solar mini-grid to a village to provide clean power, but also to promote economic development to help people start businesses and earn a living. And it's been wonderful to see the journey of that work go from something that felt a little bit on the fringes to something that's now becoming mainstream.

**MCARTHUR:** Zia, it is interesting to marvel at how long you've been working on this, but also to take stock on how these debates have evolved. I am not an expert on energy issues. I'm super excited for this conversation because people like me get to learn more about the energy debates. But having followed them from a distance over the years, these energy debates, I've noticed that there is a big shift underway from getting the energy to the household for what people need to get that light burning or charge that phone or plug in that radio to what's the energy that's needed to have a job, to run a business, to power your farm, to irrigate the crops. And that is the electricity to generate income, which is crucial to getting people out of poverty.

So, the people we're going to be talking with today are remarkable for their ability to discuss exactly these issues. Today, we're joined by Clare Boland Ross and Todd Moss to learn about their efforts to develop better energy targets that are better aligned with the vision of Sustainable Development Goal number 7, which aims to provide affordable and clean energy for everyone by 2030. Clare is the managing director of the Power and Climate Initiative at The Rockefeller Foundation. She currently works on the strategy for The Rockefeller Foundation's New Energy Initiative, which she'll talk about a little bit in this episode.

Todd is the executive director at the Energy for Growth Hub. He's a widely recognized expert on energy development, finance, and foreign policy. Clare and Todd co-moderate this year's Room 7, a working group for SDG 7 on affordable and clean energy in this year's 17 Rooms process.

For new listeners, 17 Rooms is an approach to spurring action for the Sustainable Development Goals. It convenes 17 working groups, one per SDG, and asks them to focus on an area within an SDG that's ripe for action and then to define some concrete next steps that can be achieved in 12 to 18 months to make progress. Zia, I'm looking forward to this conversation.

**KHAN:** John, I can't help resist saying this, it's going to be a really energizing conversation as well. Clare and Todd are co-moderators of Room 7, the working group for SDG 7 on affordable and clean energy. This is their story.

**MCARTHUR:** Hi, Clare, welcome to 17 Rooms

**ROSS:** Hi, John.

**MCARTHUR:** And Todd, so nice to have you here too.

**MOSS:** Hey, great to be with both of you.

**KHAN:** Well, thank you both so much for joining us. We like to start these podcasts with folks just telling their stories. How did you come to this issue of energy access and how did you come to 17 Rooms itself? Clare, maybe we could start with you.

**ROSS:** Sure. I guess one of the most formative experiences of my career was when I was working for an impact investment fund in India, and I set up an office in eastern India and I worked on a range of projects. We looked at schools in West Bengal, we invested in a chain of hospitals in Uttar Pradesh, and we helped set up a dairy business in Orissa. And in all of those cases we faced huge challenges and expense from a lack of access to energy. And it was just sort of such a common theme across all of the pieces we worked on and trying to grow the private sector to help meet a lot of these important social issues.

So when the opportunity arose to join The Rockefeller Foundation and focus on that specific issue, I jumped at the chance. That was actually you, Zia, who initially brought me into it because I think you'd helped to launch the RF energy program about a decade ago now. And so I joined about seven years ago, and I've worn a range of hats within the energy program there. We just launched the Global Energy Alliance for People and Planet, which is a joint initiative sponsored by The Rockefeller Foundation, by the IKEA Foundation, by Bezos Earth Fund, and a large number of different partners. I don't know if I should start naming them all, or I'll probably leave some out, but we have multilateral development banks, development finance institutions, key international organizations all coming together as part of the alliance to focus on increasing access to energy, increasing jobs and reducing carbon. We're working across Africa, Asia and Latin America and partnering with governments to develop scalable projects around fossil fuel decommissioning, decentralized renewables and utility scale renewable projects. And we're looking to actually drive significant change at the intersection between energy access and climate.

And so 17 Rooms, when there was this opportunity with 17 Rooms to actually think about, in particular, some of the data issues that we're facing in order to be able to measure the success that we're having and understanding whether we're actually driving change in people's lives was a great opportunity.

**KHAN:** Thanks so much, Clare. Todd, how about yourself?

**MOSS:** So, I got to energy in a really weird way. Most people in the field are either engineers or they're investors or they're climate activists. I came at it because I was an accidental diplomat for the United States. So, I had been working for a think tank, the Center for Global Development. Through a total accident, I wound up becoming the West Africa lead for Condoleezza Rice at the State Department. And I'd been working mostly on aid and debt and finance issues.

But what really struck me is when I was representing the U.S. and meeting with our allies across Africa, we were asking our partners to help us with counterterrorism, help us with democracy promotion, help us with this, help us with that. And I was really struck how often what we were being asked for in return was please help get investment in our infrastructure and particularly in the energy sector. And it really struck me how electricity shortages were just so rampant in every market, including the wealthy markets like South Africa. Electricity was just a major, major constraint. And they were really looking for international partners.

So, when I when I left government and went back to CGD, I started a program on energy poverty and looking at what could the international community do to accelerate the fight against energy poverty. And two things really struck me that led me to then break off and found the Energy for Growth Hub in 2018. So, one was a kind of substantive point, which is that when we talk about

energy poverty, particularly in Africa, people think immediately of lights at people's homes, which is awesome. Everybody should have electric lights at home. But we were really focusing only on just this narrow slice. We weren't thinking about energy for industry, for commerce, for all of the things embedded in a wider economy. So I wanted to focus on something bigger.

And the functional gap is that there are incredible people at universities, think tanks, research organizations, advocacy organizations working on energy. But so much of it was stuck, it was not reaching the policymakers. It was really stuck in the ivory tower and we really wanted to try to pull that out. So that's how we started the Energy for Growth Hub. That's how I got passionate about energy.

And one thing that I've just noticed is when you start thinking about energy issues, you see it everywhere, you see it in health care, you see it in education, you see it in job creation. That's really why I was so excited about joining 17 Rooms.

**MCARTHUR:** I'm curious, Todd, you've been in these policy debates for so long. Many years ago, our younger selves, we sparred over the MDGs and the role of these Goals. And here you are years later trying to help reframe the Goal for energy. And we've talked about our own skepticism on the SDGs, Zia and I in earlier episodes here, and how we've gone through our own journey. I'm curious how you see the role of goal setting as part of these policy and, much more importantly, practical debates at this stage.

**MOSS:** Yeah, it's such an excellent question, John, and this is now going back to the 1990s with all of that. I think I've seen that when you set metrics and you are setting progress indicators and definitions of success, it actually really does have a tremendous impact on the investments people make and what they consider to be positive steps forward. And I know we'll get into this in this discussion, but what's amazing about SDG 7, the energy Goal, is that it's a terrific, ambitious Goal to ensure access to affordable, reliable, sustainable, and modern energy for everybody on the planet. That's an amazing Goal, but it's so divorced from the indicators that we're actually using to track that progress. So beautiful, ambitious goals. Very narrow, like half step kind of indicators. So that's where I think we can really make a big difference by raising the bar.

**KHAN:** I'm wondering about the perceived tension between promoting energy consumption and protecting the climate where consumption of energy is often seen as a bad thing. And we see this in a lot of the debates that happen at the global level. But I'm wondering if you could comment on what at first can feel like a counterintuitive notion of pushing for more energy consumption and then how that relates to minimizing greenhouse gases and such?

**MOSS:** Zia, that's such a great question. The way that I think about it is in the West, we take energy for granted. When I logged on for this podcast, I assumed that my electricity was going to be on, and I actually don't even really think much about my electricity bill. But that is not true for most people on the planet. And when we look historically at the relationship between energy or even specifically electricity consumption and income, they're very, very tightly correlated. And so getting people from consuming very little electricity to consuming a bit more has a huge development impact.

So, somebody who lives in in Nigeria right now will consume less than 200 kilowatt hours per year. That's about half what my refrigerator consumes. So getting a person consuming 200, getting them to 500 or 1,000 or 2,000 is going to have a huge development impact. Well, me sitting just outside Washington, D.C., on average, I'm consuming 13,000. Adding another thousand or another 2,000 is not really going to change my life much and will have a big environmental impact. So that tradeoff

really starts to plateau. It's about 10, 12, fifteen thousand dollars per year that relationship starts to starts to slow down.

Until people are in are in the middle class and they're consuming energy, we really shouldn't worry about that because the development impact is so great. The consumption problem is really among the wealthy. And that's where we need to really worry about emissions over consumption and all of the associated problems.

**ROSS:** I think that's exactly right, Todd. I think the other point is, just as you know, there's been a lot of talk around COP26 and otherwise around the just energy transition and thinking about, you know, who's paying for the cost of this. And if you look historically, the developing nations are only accountable for about 8 percent of emissions overall. And so to think that not increasing their consumption is the way to help, it's not a drop in the bucket on what we need to do. And so thinking about how to make that transition now and drive consumption using renewables in a clean way is exactly what we need to do to sort of think about the long term, maybe not about tomorrow, but about 2050 and otherwise. It's a big piece of the puzzle.

**MOSS:** I think also the concept of global inequality is kind of vague and hard to kind of conceptualize sometimes. You know that the world is unequal. And you know that some regions of the world are richer and some are poorer. But when you look at energy the inequality is mind boggling. We use more electricity playing video games in the United States than the entire country of Nigeria uses for its whole economy. But if you live in Nigeria you think every day, is the electricity going to work? Am I going to have a job? Is this going to impact my income? It's just really a tremendous, tremendous example of global inequality.

**MCARTHUR:** On that note, I'm wondering for our listeners, what's special about energy, how do you help people understand it, because there are all these issues in the world like extreme poverty, food, access to clean water, sanitation. As a very crude number, there's about a billion people who are still without all these basics. And you, Todd, have done a lot of work with colleagues to say, let's measure this better, how do we define basic. And that's of course what your Room is focused on—how do we define minimums. But as opposed to, say, food, which everyone agrees is crucial, or water, which everyone agrees is crucial, but so many don't have the minimum, is there something different that you want people to understand about energy and how it fits into the puzzle of have and have nots?

**ROSS:** I mean, maybe all of these things are really, really important. I think maybe one of the pieces of it is that energy in most cases for all of the SDGs or for most of the SDGs is a necessary condition to drive it forward to have a food system that works, for health care, for education, sort of across the board it is a necessary condition. It's necessary but insufficient, you need other things, you can't have it without. We did a little bit of work on the multidimensional poverty index and did some analysis understanding the role of the different indicators. And if you actually look at energy and access to energy, it is more correlated with having deprivations in other categories than any other piece. So if you are energy poor, you are more likely to have a range of more deprivations, and I thought that was just an interesting example of that connection.

**MCARTHUR:** It is interesting because there are so many economic development 101 graphs that have these pretty straight line correlations between development outcome and GDP per capita, and energy is one of them. But the argument you're making, if I understand it correctly—which I would agree with, but just to see—is that the precondition aspect of this needs to be thought about differently. There is a causal element of why we need to build the energy systems to tackle these other problems. And there's a sequencing question here. Is that a fair summary?

**ROSS:** I think it's exactly right. Yeah.

**MOSS:** I think Clare explained it really well in that the lack of energy has all of these detrimental effects across deprivation. It's also true on the positive side, which is that having abundant, reliable, affordable energy enables all kinds of positive things that cuts across all of the SDGs. And I'm sure you don't want to get into which SDG cuts across the most and is most important. We don't want to do that. But energy does hit all of those markers and we focus a lot on electricity, but it's also energy is necessary for cooking, for transportation, and for heating and cooling. Some of that will be electricity. Hopefully, a lot more of it will be electricity, but a lot of it's not. In fact, the majority of the world's energy consumption is not electricity, it's liquid fuels.

But I do think one thing that we know for a fact is that there are no rich countries that don't also consume high amounts of energy. So, we got the data that we're happy to share with people—it's on our website, it's on Rockefeller's website—but it's simply true that no country is going to grow and become high income without its population consuming at least three, if not five or six thousand kilowatt hours per person per year, which again is like orders of magnitude, 10, 20 times, what a lot of countries are doing. So we hope countries are going to get richer. This is almost unavoidable.

**KHAN:** I've heard people draw an analogy to the energy transition as what happened with the mobile phone transition in Africa of how they were able to leapfrog the building of landline technology and just skipped right over and be more efficient with mobile phones. And I'm wondering, does that analogy hold with an energy transition? Will everyone be able to skip to these renewable technologies and solar panels? Or are there some necessary things like using coal plants or natural gas that we're trying to phase out here in the developed world, but that the developing world just has to go through?

**MOSS:** So, the leapfrogging narrative is very alluring and I wish that it was true. So, it is true for a certain segment of energy. If you're really only looking for basic electricity in a rural household, you don't need the grid, you don't need a power plant. But if you're trying to run an entire modern economy with cities and industry, at least given the technology we're going to have probably for the next 20 years, that's still not possible. You still need electricity and energy systems to do all of these other things in your economy. And I think, though, that there's a really important lesson from cell phones, because the mobile phone revolution is incredible and we do have some lessons there. So if you think of your cell phone, your smartphone, you can charge your smartphone on a little off-grid system no problem. With that smartphone, the charging is less than 1 percent of the energy that that phone needs to actually operate. The 99 percent plus energy to make that smartphone work is in the manufacturing of the phone, in the cell towers, and especially in the data centers—most of it is in the data centers.

And what that suggests is that we think of our phone's energy as what we're charging in the device. But actually, most of it is hidden, it's invisible infrastructure that we don't we don't think about. And that's true in the energy sector—electricity is actually invisible, right? So we don't actually see it in that way. So that's the lesson I draw from the smartphone revolution is that we need to think about the all of the infrastructure that enables a modern digital economy and not just what we see in front of our eyes.

**ROSS:** I think that's absolutely right, that it is much more complex than the analogy that it would be nice to see there. I do think there's a piece, though, in terms of sort of decentralized renewable solutions and the role that they play in the overall solution. Because, no, they're not necessarily going to be what feeds a huge manufacturing hub or a city. But they enable the system to continue to work in a way that it doesn't need to go out and reach all those really far away, really expensive populations. Because when you start expanding the grid that far, it is really expensive to maintain to

do, and it takes utilities under, right, like these are already sort of economically fragile. There's only two utilities in all of sub-Saharan Africa that actually make money. And so you ask them to expand, you're making their situation worse. And so by leapfrogging in some areas, you help to make the overall system stronger.

**MCARTHUR:** It does seem that there is leapfrogging happening in the cost side of energy, potentially. We see these dramatic declines in the cost curves with 90 percent decline in the solar generation, we've got 90 percent roughly decline in the battery storage cost just in 10 years. And these are way faster than the so-called experts like International Energy Agency were predicting 10 years ago. So, I say that not in the naive sense that you just pointed out it's not going to be like a cell phone, but it does seem that some of the technology questions, the pricing questions might get us to a new point to make it even easier than it might have been even last year to think about five years from now for solving some of these problems. I'm not an energy expert, is that in the right direction or how do you see the technology side of this? Because it so much comes down to getting that cost down.

**ROSS:** I think it's critical. It's why we are where we are with renewables is seeing these cost declines. I think, though, an important piece of it is that those huge cost declines that we see particularly in the U.S. and in the western world, don't always translate to the economies that we're working on in Africa and otherwise. The cost of some of these products are three times higher than what you're seeing in the U.S., and some of that is transport and customs and all the other things that add into it. But those declines just haven't translated in the same way. And it's one of the things that we think about a lot in terms of our work is how do we help to bring that cost decline without just you don't even need to invent new technology. That's great, and that needs to be done. But just translating those cost reductions for other economies could make a big difference.

**MOSS:** Yeah, Clare is right. The cost declines are super exciting. I mean, this is an incredible time to be working on energy because the technology and innovation is evolving really rapidly. We're seeing demand across Asia and parts of Africa go through the roof. And there's also a lot of innovation even more than the technology side on the business model side, which is super exciting. What I do think people get a little bit sidetracked is looking at the headline prices for solar are plummeting, and that's exciting. But because of the intermittency of wind and solar as they get cheaper, managing and integrating wind and solar into a bigger grid to make it usable for big cities and industry, and to make it equivalent to a dispatchable energy source like hydro or gas, means that that the enabling infrastructure has to be there as well. And so it means you need smarter, more flexible grids, that means you need storage. The technology needs become greater. And a lot of countries right now don't have that. So Kenya is a good example. They've got Africa's biggest wind farm at Lake Turkana, and it's a very exciting project and I'm looking forward to visiting it soon. But, the addition of about 15 percent of their of their grid coming in from one wind source means that the voltage fluctuation on the grid has gotten a lot worse, and they don't have the pieces in place to take on a lot more solar and wind until they get the grid ready to be able to absorb that.

So, the headline prices is going down is amazing news. But for that to translate into cheaper, better electricity for countries, we're going to need the cost of capital to come down and we're going to need a lot of enabling infrastructure to be put in place. So it's a little bit of sequencing and we want to be a little bit careful that jumping to too fast too soon.

**MCARTHUR:** I want to maybe pivot towards your Room's work if we can. And I want to maybe invite some disagreement. I've always been struck looking at these energy conversations because there's so much that has been about how do we get that light bulb to work. Whereas the question I've spent a little bit of time thinking about is how do I get the pump to the farmer for their irrigation system? Because that is so often the single biggest constraint for that farmer to introduce

the new crop, to have reliable income, to do all the things that actually will help them get out of poverty. I'm curious with all these conversations where that message has been about, get the light bulb, get the cell phone charging unit for the community, linked to the SDGs and SDG 7, have we've been having the wrong conversation? Has SDG 7 distracted us from the types of things you're talking about? And I'm happy to say, I'm worried that it has. But is that wrong?

**ROSS:** I don't think you're going to hear a lot of disagreement between Todd and I, at least, on this one in terms of I think we both agree that we need to be more ambitious in our goals. And that was part of the focus of our discussion in the Room was around [the] SDG as it's framed and as it's written, and Todd read it out earlier, it sounds really ambitious. I think the challenge is there aren't enough metrics to track how are we achieving that. The two light bulbs, that isn't sufficient to drive economic growth. If it's unreliable, that isn't sufficient. If it's not affordable, that isn't sufficient. And so thinking about what are the conditions that are necessary on top of just access, I think is really critical.

**MOSS:** Yeah, I think Clare is right. When we say, okay, everybody's house should have electricity, what does that mean? Well, the way that it gets measured is that somebody either has a connection or the IEA sets a minimum standard for consumption, which is, in a rural area, 50 kilowatt hours a year, which is less than my family uses in a day. So, again, it's enough electricity for essentially two light bulbs, maybe a fan, which is better than nothing. But it's not what we think of as actually living with electricity and having electricity as part of your life and your work and your community.

And so I see SDG 7 as a huge step forward. There was no energy goal in the MDGs. And I really think it's kind of a minor change, which is we need to see the access rate, which is important as step one—everybody should absolutely have basic access at home. But we just can't stop there and say it's good enough. We need to have another step. And that was really the challenge for Room 7 was to think about, okay, what are some other metrics, in addition to enough electricity for light bulbs at home, what else is important for living up to the spirit of SDG 7? That was really where our discussion went and where our proposals came around to.

**KHAN:** Well, tell us a little bit more about the Room, Todd and Clare, in terms of who was in the Room, what were the kinds of debates or discussions you had and what did you land on as the solution and the next steps?

**MOSS:** So, we had we had a really wonderful group. I mean, it wasn't a coincidence, Clare and I helped pick some of the people that were in the room. We had U.N. policy experts; we had people whose careers are built around the just transition; we had energy policy experts; we had a great development economist; we had energy scholars; and we had modelers and people that think about energy, think about climate, think about development. The thing that struck me is that everybody immediately latched on to this idea that productive uses energy was not being fully captured, and by productive uses we mean electricity to generate income, not just to consume at home with your refrigerator or your lights, but to use it in work to generate productivity. And everyone felt that that was really, really very important.

**ROSS:** I agree, it really kept coming out in every conversation. I think the debate and the challenge we were wrestling with is how do you set a target on that? What do you actually use to agree to where you're headed? And I think there were a number of divergent and different perspectives on that that made for a good conversation.

**MOSS:** And in the end, we came around to three proposals which are in our paper, but just to give you a quick summary. So one is, again this is additional, we're not replacing the access metric, we absolutely think that that's a critical first step. But we thought that maybe in the next round of

SDGs or in others that are tracking energy progress that first we had to have a reliability target, because electricity is great, but if it's going out all the time, destroys equipment, it doesn't lead to the productivity gains. And when you have unreliable electricity, what do you do? You set up a generator for backup, so it actually creates environmental and other cost problems when it's not reliable.

The second was having a target specifically on clean cooking. So, most people living in Africa do not cook with a clean source. They cook with wood or some other charcoal or biomass. And that's not only very inefficient, it's bad for the environment, it's terrible for the health of those that breathe that in when they're cooking. So we thought some kind of universal, clean cooking target would also be important.

And then lastly, we thought we needed a second step on the consumption ladder that included productive use of electricity outside the home. And one thing that we at the Energy for Growth Hub have worked on with The Rockefeller Foundation is something we call the modern energy minimum, which is to get everybody to a thousand kilowatt hours per person per year. Again, that's less than I will use in a month, but it's a fivefold increase to what most Africans are using today, and that would include both electricity at home and electricity used in the wider economy.

**MCARTHUR:** Zia, the notion of a modern energy minimum strikes me is pretty commonsensical, if anything. I'm curious, going back to the comment that you launched this initiative 10 years ago, how do you reflect on the delta in the change, in the conversation from 10 years ago, from when you first got into this? There seems to be an evolution here worth capturing.

**KHAN:** What's so interesting, John, when I think back on 10 or really 12 years ago when we started, it felt like the problem we were wrestling with was a technology and business model problem, which tend to be pretty analytical, around this basic idea of how can we introduce electricity into villages that promote economic development. But the work that Clare and Todd and others have been doing is just been pushing it to a whole new scale in terms of countries. And it's no longer just a technical or financial problem, it's also a political and social problem. How do governments commit to long term initiatives when the political cycles change? And how do you decide who gets electricity first and who gets access?

And also, I think this has been an area of work in something, John, that you and I have been emphasizing across 17 Rooms, which is a gender lens. Like, how do we promote access to electricity for women and girls, too? And I'm curious, Clare and Todd, as people try and implement these, like what are the hard political and social issues that everyone needs to wrestle with?

**ROSS:** I certainly think the gender one that you mentioned there is a very big deal, because the disproportionate impacts of not having electricity are often borne by women. But then even if you bring the electricity but you don't think very carefully about how to ensure that women are actually benefiting from it, that you don't see adverse unintended consequences of increased mechanization actually drives women out of the workforce. It really needs to be thought about alongside the arrival of electricity rather than just assuming that when it when it arrives it will fix some of the problems.

**MOSS:** I think the gender angle is really interesting, especially when you think about the kinds of employment opportunities that become available once you have a reliable electricity system. We're talking about basic farming, but really, if you think about moving into the sciences, into I.T.—one of the booming sectors in Nigeria is the creative arts. And again, all of these create new opportunities for women that maybe are not available in an older style economy that's more built around certain kinds of manufacturing or industry. Having these new sectors thrive actually helps to create a lot of opportunities for women and not just at the bottom of the pyramid, but in the in the

middle and upper middle classes. So that we're actually creating a professional class of scientists and engineers and scholars that are far more diverse than what we typically have seen in a lot of markets.

**MCARTHUR:** We're talking about such massive issues. And your Room is focusing on how to sharpen the focus of the issues and elevate the ambition with these three proposals for reliability, for clean cooking, and for modern energy minimum. What do you see as the next steps? You both have such a mix of experiences on the policy, the analytical, the business, the political. Where does this go from here in order to make it tractable? Especially for our listeners who might not know how these goals get carried forward, how do you get someone to adopt the target? What the process that you have in mind?

**ROSS:** This is this is Todd's real area of expertise, and he's taught me a lot about this actually over the last few years. But I think one of the key things is just adopting them and using them and demonstrating to people how they can be used. And so the Global Energy Alliance for People and Planet, which is the initiative we recently launched, is using the modern energy minimum as a way to think about where do we want to play, what are the countries that we work with, what are the targets that we want to set. And I think incorporating that and talking about it with our partners and using it as the bar we want to hit is important.

**MOSS:** So, it's great that the Global Energy Alliance is using that, that will also help promote and socialize this idea that we need to think beyond basic access. So, the North Star, of course, would be if in the next round of Sustainable Development Goals, that there were additional indicators, maybe one for reliability, one for cooking, and one for productive use. Maybe, something along the lines of what we'd like, and we will try to influence that process as the next round of global goals happens.

But also where the rubber really hits the road is at the country level, where countries are thinking about what kinds of investments they want to make in energy so that they can meet their own development goals. And particularly, what's the number one goal for all governments? Is job creation, and really reliability and cost are what drive productivity and jobs.

So I do think that there are countries that will start to say, yes, we want to electrify everybody's home. It's an important social and political goal. But once we have done that or in parallel with doing that, how do we get the reliability to be good so that our companies can compete globally? And how do we drive the costs down so that so that we can compete and that everyone can afford the benefits of modern electricity? My colleague Rose Mutiso calls it magic juice, and there's no reason that everyone on the planet shouldn't have abundant, reliable electricity and take it for granted in the same way that all of us do. That's really where we hope we can go, and hopefully the SDG process can help provide that guiding light.

**KHAN:** You both have described this road map and also a few unknowns and questions when you think about 2030, what would you like to see one concrete thing that would make you feel like we're on track?

**ROSS:** That's a tough question, Zia. I think one of the things that certainly I would like to see is not just increasing the numbers across a little bit everywhere, but actually reaching the majority of the population in a number of places. So really seeing countries that have cracked how to do this across the board using all the different tools: renewables, decentralized renewables as well with different scale of systems. For some places, the solar home systems are going to be the right solutions. But seeing that all come together in countries, and in a lot of countries, honestly by 2030, I think is what we need to see.

**MOSS:** Yeah, I'd hope that by 2030 we'd be past this idea that our climate and our development goals are in conflict. They absolutely do not need to be in conflict. Sometimes there is political theater at work. A lot of it is mercantilist lobbying. But really, we can absolutely get everybody into the global middle class. Everyone can have abundant, reliable electricity and we can do it without destroying the planet, and there's no reason to see those in opposition. I think what's non-negotiable is development of the regions that are not as prosperous as they should be today. That I think has to be our starting point, and we need to figure out how to make that happen within the global carbon budget and within the global international system.

**MCARTHUR:** The vision you're describing seems like something the world can't wait on for eight years or nine years, these three recommendations. And I think this notion of getting countries at least to show how it can be done in a material way to make the case—I call it proof by existence, this can be done, it can work, and it can help be a tip of the spear for broader change. That said, we like to ask a question, you might have just given a version of an answer, Todd, but we'd like to ask every one of our guests the question, What's one takeaway you'd like for the audience to have, especially for people who don't think about energy with the depth and rigor that you are both with your colleagues able to do every day? If there's one thing you'd like them to take away from this conversation, especially about maybe where the world can go in the next few years, what would that be?

**ROSS:** I think my answer to that would have been what Todd just said. It can't be one or the other, and we have to think about them both as mutually reinforcing and as equally important. I think the other one is just the necessity of doing this, and I guess it comes to that connection between the two. But we can't fix any of these problems—we can't fix climate change, we're not going to fix it without doing this, and we cannot fix global economic development without doing this.

**MOSS:** I love Twitter, but these problems are not going to be solved by Twitter debates. So I think if you if you try to ignore some of the noise, there are companies, there are officials, there are NGOs, there's groups like the Global Energy Alliance, which is just getting on with trying to get things done for real people and trying to build the energy systems of the future so that we can all live in a more stable, prosperous, and healthy world.

And I think sometimes we can easily get distracted by all the noise, and sometimes it's fun to engage in the noise. But when you look at what companies are doing, that technology evolution, the actual amounts of investment going in, it's actually an incredible time to be alive to see this, while also recognizing that we are not going to solve energy poverty in my lifetime. And so there's just a ton of work to be done. So that's really my message to people who haven't thought about it, or especially for young people who are thinking about their careers. You know, if you're passionate about poverty, you're passionate about climate change, you're passionate about engineering and energy and all of that, then this is the time to get into the field.

**MCARTHUR:** Well, maybe we can end with a disagreement, because I do think, thanks to the work that you guys are doing, we have a better chance of ending it within your lifetime, Todd and Clare and everyone else. But, Zia, what do you think?

**KHAN:** This has just been a fascinating conversation. I've been involved in the space for a while and to see the leaps and bounds and the potential right now and frankly, the necessity of it, we're just in a completely different place. And I love your call to action, Todd and Clare, all the energy you've been bringing to this work on energy. I thank you both for the broad work and the work in 17 Rooms.

**MOSS:** Great, well, thank you, this has been terrific.

**ROSS:** Thanks, John, and Zia.

**MCARTHUR:** Thank you so much.

Zia, I learned a lot in that conversation. All these dimensions of the energy challenge—reliability, quality, renewables, minimum thresholds. It also gives a sense of the need for a better, sharper vision of what it looks like to achieve energy for all, but also sounds like there's some opportunities for pretty practical progress and some big countries in the next few years.

**KHAN:** And John, what's also exciting about this work is if we make progress on energy access, it'll help work in all the other SDGs. When it comes to health, education, livelihoods, food and nutrition, energy is an underlying infrastructure and it's really key and there's momentum for it now.

To learn more, find this episode at Brookings Dot Edu Slash 17 Rooms podcast. Coming up next, Room 10 with Martin Abregu and Elizabeth Sidiropolous on global vaccine equity for COVID 19.

**MCARTHUR:** I'm John McArthur.

**KHAN:** And I'm Zia Khan, and this has been 17 Rooms.

**MCARTHUR:** Our thanks go out to the guests you heard today, and also to the production team, including Fred Dews and Alexandra Bracken, producers; Jacob Taylor, associate producer; Gaston Reboredo, audio engineer, and Nicolette Kelly, audio intern. The show art was designed by Katie Merris. Additional support comes from Shrijana Khanal, Ian McAllister, Soren Messner-Zidell, Andrea Risotto, Marie Wilkin, Chris McKenna, Esther Rosen, David Batcheck, and Caio Pereira at the Brookings Institution, and Nathalia dos Santos, Sara Geisenheimer, Hunter Goldman, and Miranda Waters at The Rockefeller Foundation.

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