

Kelly Brownell: Hello and welcome once again to Policy 360. I'm Kelly Brownell, Dean of the Sanford School of Public Policy at Duke University. It's estimated that 1.2 billion people around the world live without electricity. That's right, billion with a B. 1.2 billion people lack electricity. Another billion have only limited access to electricity. Billions more lack access to things many in the west take for granted. Things like clean fuels and technologies for cooking. Here to talk about a new project designed to address the energy needs of the world's poor is Subhrendu Pattanayak. Subhrendu is an economist and a Professor of Public Policy at Duke University in the Sanford School of Public Policy, specializing in global health economics and public policy. Welcome, Subhrendu.

Subhrendu Patta: Thank you.

Kelly Brownell: First, what are the regions of the world that we're talking about? Who is most deeply affected by this issue?

Subhrendu Patta: As usual, this problem is heavily concentrated in Sub-Saharan Africa. Of course, what is a bigger puzzle is that South Asia, which has been growing and prospering, also has a very large swath, about 750 million people, so that's three Americas sitting right there in one country or region if you add Bangladesh, and Pakistan, and Sri Lanka to that.

Kelly Brownell: If we take a country like India, just as an example, can you give us a sense of about what percentage of the population might be affected by this?

Subhrendu Patta: For sure, rural areas are more affected by the lack of access to electricity and clean fuels, but there's plenty of people where there is a light bulb in the community, but that means nothing for their personal lives. That means there's an electricity pole, people aren't connected to those. By and large, it is a rural problem, but it's also in the slums. It's at the edges of cities, and in some ways India has, I mean, big Indian cities with 20 million people. You would say, 40 to 50% of that is affected by the lack of access to reliable energy.

Kelly Brownell: Your own research has taken you to some of these places. Can you paint a picture or tell us a story about some people or a group of people that might be affected by this and how their day-to-day lives might be influenced?

Subhrendu Patta: I've had the good fortune of traveling around the world. As you know, I work in almost all parts of the world. I'll start with a personal narrative. I think there's a recent story about how Cape Town is facing drought and for the first time there will be no water. I remember that being the case with electricity in New Delhi when I was growing up. That there would be hours of the day or days when there would be no electricity and that never went away. We, living out in the west, you forget only after a major storm, or an event, that you have to survive with candles, and other kinds of supplies. Cities around the world are still doing this, but for sure, the countryside, and people in villages, and communities are suffering that on a daily basis. That's with access to something like electricity.

Probably the most compelling narrative here is the source of energy for these people is some form of biomass. Most of us have gone camping, or had a cookout, and we burn charcoal or firewood, and so that's what they have to do to make their first cup of tea, prepare their meals, get going. Usually that's in a small confined space. It's almost a gas chamber. I mean, they'll be trying to serve you tea when they're having some conversations with you, and your eyes are streaming, you're trying to smile, you're trying to be polite, but you know that this is the way they live on a day-to-day basis, and you wonder, "How can it be in this day and age?" Whereas, the rest of the world is consuming many, many times more energy. It's a justice issue as much as it's an inefficiency issue.

Kelly Brownell: What are the health consequences of that kind of exposure?

Subhrendu Patta: The biomass fuel, I mean, you can burn firewood like my in-laws in the mountains of Virginia, in a very efficient stove, but because of the technology that is available to these people, most of that biomass burning generates these small particles, and those small particles are what is commonly known as household air pollution, or indoor air pollution. WHO scientists and others compute, what is the threat to the world from the various diseases? Indoor air pollution ranks number two, so it's not some obscure problem affecting just a small percent of the people.

It's the second ranked problem in the world. On top of that, there's a global level impact because this air pollution doesn't just sit in the lungs and escape. Most of it just goes up in the sky and it lands on glaciers, it gets into the lower atmosphere, and it's actually the second or the third biggest contributor to global warming. There's a global effect from this practice. Your and my climate is being impacted by the cooking practices of billions of people across the world.

Kelly Brownell: What are some of the barriers to getting electricity energy to people in places like that?

Subhrendu Patta: Because it's so hydra-headed and multidimensional, it almost is no one's bailiwick. The health community pushes so far. They only look for the technologies and solutions that are dealing with the health outcomes, but when you point out that the current technologies don't achieve as great of health outcome as possible, they're disappointed and they back away by the existing [inaudible 00:05:54] of technologies. You need the forestry sector, the energy sector, to be interested and certainly the climate guys should be in the discussion and they're not there. One, it's multidimensional. Many of the barriers are cultural. Food and cooking is so central to how people live and grow up. It's generational. It's the way things are.

Whenever you are trying to sell a new product or a technology, a shiny glossy thing, which is different from the way your mother and your grandmother had baked something, it's not going to go off that easily. Our proposed solutions to some of this doesn't fully appreciate all the ways in which fire and smoke is used in communities and we are trying to fix one piece of it, like just the air emission.

You forget that the taste matters. All these other dimensions. These are problems of the poor people. Research and technology doesn't allow follow the problems of the poor. The [RND 00:07:03] dollars that are often spent in this domain are a pittance.

Kelly Brownell: You painted a picture of an extremely serious problem that affects the lives of countless people, affecting their health, and affecting the climate of the world. That makes the energy access project that you've been centrally involved with especially important, and I'd like you to tell us more about that. It was established by a gift from Jim Rogers, the former CEO of Duke Energy, and his wife, M.A. Rogers, along with funding from the Bass Connections Challenge at Duke University. Tell us a little bit about the project and what its aim is.

Subhrendu Patta: The energy access project officially started at the beginning of the year, or halfway through the year, but in some ways it arrived here because faculty on this campus were already working on energy access. The university seeded a project. I'm just going to describe one project, one network, and why this project can build on that to keep this in context. The provost and other Duke University partners, including the former Dean of this school, gave us some amount of money to consider a renewable technology where you use dung, which is often thrown away, or not used properly, to extract energy out of it. If you cook the dung in a closed chamber, you can get gas out of it. Now you're recycling a local resource. It's gas, so it's clean.

The Medical School, the Engineering School, the Nicholas School, and Sanford with us leading, had an incubatory project to figure out if we could even figure out how to talk to each other about the kinds of measurements that are necessary, and a couple of dissertation chapters came out of this. That kind of creative combining of a problem focused interdisciplinary initiative, which drew in faculty from four different units on campus, was inspiring to others and the Swedish government actually gave us almost as much resources as this project to start a network which connects universities in four Sub-Saharan African countries with university partners in India, Vietnam, China, Chile, Costa Rica, and Mexico, with us as being the coordinating entity to do more social science work on the cultural aspects, the economic aspects, the anthropological aspects of this rate.

We've been leading this network for a while. Then, along comes Jim Rogers and notices all this budgeting excitement on campus. At some level, it gives us more resources. I can dedicate more time to it. We will certainly end up doing more research. That's what RO1 University does, we will do more research. The real piece of this, which is unique, is we are going to try to merge, practice, and research much more closely. The energy access project is co-led by a practitioner who came from Washington D.C., who's been doing a bunch of electricity projects, off grid, other renewable energy projects here, so he's very much in the practice space. We are going to try to close that gap.

Kelly Brownell: Subhrendu, let me end with the following question. This is a pretty daunting enterprise that you're undertaking. Very important one, to be sure. Are you optimistic that you can make a difference?

Subhrendu Patta: Oh, absolutely. I mean, this is one of the reasons why you wake up in the morning and don't feel like, "What am I going to do today?" I have a big problem to work on. These are signs, so I look at the glass as half full. I'm thinking back to just going back five years when I first made some efforts on campus to try to integrate. There was some enthusiasm. It would've been a dream at that point to announce that in less than three years we would have a big donation and new project, which has been matched by the Swedish government. I see things moving very quickly.

Whether it changes things at the political level to get ... Remains to be seen, but at some level we don't have to go to the standard handouts from western governments, as I just signaled. Countries like China, India, and Brazil are getting to lead on their own, because they realize this is not someone else's problem to solve, this is their problem to solve. In some ways, academics have to catch up for the practice, because the practice is moving, the energy markets are moving faster than we can study them. Our business is to figure out that they're actually doing the things which are backed up by science, and that's why I come back to closing the [inaudible 00:12:04] gap.

Kelly Brownell: Good. Well, it's nice to hear that you're optimistic and congratulations for the important work you're doing and we look forward to updates as we go into the future. I very much appreciate you joining us today.

Subhrendu Patta: Thanks very much.

Kelly Brownell: Good. My guest today has been Subhrendu Pattanayak. Subhrendu, faculty member in the Sanford School of Public Policy and the Director of the Energy Access Project at Duke University. Until next time, I'm Kelly Brownell.