

Switch On Episode 5: Hydropower in Africa Transcript

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Scott Tinker: One billion people live in Africa. Less than half of them have electricity. Most of that comes from hydroelectric dams. Many African nations have large river systems, and so, like many countries have done in Europe and the Americas, they began their energy development by building dams. This started in the late 1950s, continues to this day, and will continue into the future, since Africa has only begun to tap its vast hydro potential. To understand the benefits and challenges of building these new projects, I went to see the Grand Ethiopian Renaissance Dam, Africa's newest and biggest. The issues they're managing here will be the same ones other countries navigate as they develop hydropower.

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ST: There are nearly 3 billion people today who still live with little or no energy and what I want to know is how they'll finally get it. So this is sort of what it was, and that's the future. I'm Scott Tinker and I study energy. Come with me around the world to meet people and communities as they *Switch On*.

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ST: Kifle Horo is an engineer working for Ethiopia Electric Power on this and other dams for 30 years. He's now the manager of this entire project. Kifle, this is unbelievable.

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Kifle Horo: Yeah, it's a big job.

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ST: I mean, this wall just goes forever, you can hardly see the other end.

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KH: Yeah it's so nearly 5.2 kilometers, maybe 3.6 3.8 miles.

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ST: And this is not the main dam.

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KH: This is not the main dam. It's the second dam.

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ST: Right, the long one but not the

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KH: The long one, not the tall one.

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ST: So we're on the upstream side where it's going to fill, let's go look at the other side of the dam. The downstream. So we're at the top of the spillway.

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KH: Gate to the spillway, will be automatically controlled depending on the inflow.

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ST: This is called the Grand Ethiopian Renaissance. Why renaissance? What does that mean?

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KH: Ethiopia was great some centuries ago, that's why we call it a renaissance. Coming back to our greatness. So we have two powerhouses. We have 10 units here and six units there. The total intended capacity is around 6.3 gigawatts.

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ST: So that's six or seven nuclear reactors.

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KH: Exactly this is a big plot.

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ST: Why is Ethiopia building this dam? Because, like most African countries, its energy demands are rising and that's because its cities and industry are growing. Ethiopia's capital, Addis Ababa, looks like any big U.S. city. In fact, it has a bigger population than all of them, except New York. But this is not unique to Ethiopia. In countries across Africa, cities are growing. Across Latin America and especially across developing Asia, it's happening too. 150 million people move to cities each year. Almost half the people in the developing world already live in urban centers. By 2050, it will be closer to 70 percent. The future of the developing world is urban. Meeting the huge energy demands of these densely populated urban centers will be a great challenge. And in Ethiopia, like much of Africa, hydro will play an important role. I met with Dr. Sileshi Bekele, Ethiopia's minister of water and energy. How was the damn, the Grand Ethiopian Renaissance Dam, how was that conceived?

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Sileshi Bekele: Well, the grand and you know cascade of dams is a Blue Nile that has been in the tow since the 1960s. The US spirit of reclamation identified these sites in Ethiopian Blue Nile gorge. The construction started in 2010.

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ST: It's a big investment, GERD, I've read, some five billion dollars plus or minus. How was that financing put in place and where does it stand today?

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SB: The financing is purely by people in the government of Ethiopia. People buy bonds, and also provide gifts to the construction of the dam. So you can say all walks of life really contribute to the dam.

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ST: So no external funds? SB: No external funds.

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ST: I read that you had a vision in the government: 100 percent electricity by 2024 I think I read by 2025, yes. Are we still on track for that?

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SB: Yeah there is a grid expansion, that grid expansion brings energy from the grid from GERD and other previous dams. Recently we completed our national electrification program where through that kind of approach you can only reach 70 percent of the country. So GERD plays very seriously in the overall economic growth of the country and the well-being of the people.

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ST: Financing the dam and distributing its electricity are two of the biggest challenges in any hydropower project. And not everyone agrees on how to solve them. I met with Rudo Sanyanga from International Rivers, an anti-dam advocacy group.

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Rudo Sanyanga: One of the biggest challenges is that they are very expensive, for the countries they are in debt, the countries for generations. Secondly, Africa needs energy right now. These dams take long. Most of the electricity goes to industry and to urban centers, leaving out the

majority who in Africa tend to live in the rural areas. Africa needs other energy options because grid electricity will not breach the energy poverty.

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ST: Interesting. These things are really expensive, especially big ones. How are they financed? What's the process there to say we're going to build a 5 billion dam. How are we going to get the money?

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RS: The money is from loans.

ST: From loans.

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RS: The World Bank, following the world commission on dams had stopped funding large hydro. The Chinese came in to take that space.

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ST: This Grand Ethiopian Renaissance Dam, is it better or worse than the typical project or the same?

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RS: I've heard African governments kind of actually admiring the courage, if I may use the term, yeah that Ethiopia took. You know you didn't need that outside um support to go ahead and knowingly that it's slated at 4.8 and I think 1.8 is coming from China.

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ST: 1.8 billion?

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RS: To build the dam. But nobody talks about that 1.8, it's like they're raising everything right within Ethiopia.

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ST: In many African countries, China has traded infrastructure funding for mineral rights which could lead to conflict in the future. Chinese involvement in these projects is an important question. I had heard someone say that there were Chinese workers here or is that true?

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Sileshi Bekele: There is one contract which we recently gave to a Chinese company. The main contractor is actually an Italian, yeah. You see at the site at peak time we have around 10,000 local people. 10,000 local workers and it ranges from semi-skilled to skilled professionals. And that's where we have around 200 to 300 expatriates.

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ST: I see, okay. To get an outside perspective on the dam's financing, I called the Reuters Africa Bureau but they hadn't heard anything about Chinese funding. Wow, this is, the scale of this is just crazy. What's the capacity of one of these?

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SB: One generator is 400 megawatts.

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ST: 400 and that's 24/7 365. That's always on if you want it on.

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SB: Yes. ST: That's crazy! And there's 16 of these in this whole facility?

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ST: How much water, just ballpark, is moving through this?

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SB: 350, 330 meter cube.

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ST: 350 cubic meters every second. Unbelievable. I did learn that one Ethiopian contractor had been fired and charged with fraud, another challenge in this kind of project. But overall, I had a very positive impression of the dam and its construction team. What is this dam, how will that contribute to lifting up Ethiopia economically?

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SB: The country is leading toward industrialization. Well agricultural based industrialization. So for industry, having reliable and cheap electricity backbone.

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ST: We've seen some small villages here that are probably unelectrified, I would think. Cooking inside with wood and other things.

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SB: So the government has an aggressive program to electrify the country as well.

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ST: So you'll be able to provide electricity to citizens of Ethiopia.

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SB: And also we are connected to the neighboring countries we are building a big transmission line with a capacity of over one thousand megawatts to Kenya, which will be even to be connected to the southern African grid.

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ST: Right.

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SB: That's not only for Ethiopia, I think it's the pride for Africans, as well not to Ethiopians alone.

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ST: Yeah, for all of Africa. However, like any dam on a river that crosses borders, this one has challenges with international politics. The Grand Ethiopian Renaissance Dam sits on the Blue Nile, upstream of both Sudan and Egypt. While those countries have built their own dams, Egypt in particular is worried about Ethiopia using and controlling the Nile's headwaters.

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Mohammed Morsi: If the Nile river's water decreases by a single drop, then our blood is the alternative.

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RS: We've got a political crisis now with the Nile and it dates back when the Nile treaty was signed. Being sponsored by the British. Giving Egypt and Sudan exclusive rights to the water. Then the Nile countries formed their own, in the last decade, they formed their own grouping and came up with their own agreement and they are basically saying we don't recognize this colonial treaty. We also have a right to, to the Nile. And Ethiopia rightly says so. We have all this water and you can't deny us use of this water.

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ST: At the University of Addis Ababa Dr. Yacob Arsano is an Ethiopian hydropolitics expert. So what does the dam allow Ethiopia to do with the water currently? The water that Ethiopia can keep and use and what it will have to release down through Sudan and to Egypt, is there a plan for that yet?

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Dr. Yacob Arsano: There's a lot of rainfall in Ethiopia from June to September, so that is the time the dam gets filled. The filling will take uh between five and seven years and there is also a provision that if there are drought years, then the filling of the dam does not take place. Egypt does not really want big projects in the upstream. But actually, on this dam, Egyptians are much much more conciliatory because Egypt and Ethiopia have been negotiating through a panel of experts between, you know, leaders of the governments of the three countries.

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ST: Right, so there are plans in place to sell that electricity.

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YA: Yes, oh yes oh yes.

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ST: It's an exciting opportunity. The electricity, the revenue from that electricity, that's a big thing and that maybe encouraged some of these.

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YA: Yes, yes. You know this water must be thought to be owned by everybody in the basin which means the water is shared. But how to do this, they have to work together on it from an economic point of view, from an environmental point of view, from political point of view, from all points of view.

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ST: Kiya Gizahenge is one of Dr. Arsano's graduate students studying Ethiopian public opinion of the dam. Does it change the status of Ethiopia then? Does it make Ethiopia more prominent?

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Kiya Gizahenge: Among the regions, yeah because we are selling electricity to Kenya and Sudan and we are using the river which was not possible for centuries and no other upstream countries have been able to do that.

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ST: Now it'll make a lot of electricity when it's completed. What do the people think will happen with that electricity?

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KG: So as you know, like there are a lot of electric power cuts even in Addis, so that's what people want.

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ST: We've had a couple in our hotel.

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KG: Exactly. So it has been common nowadays tough power cuts uh even in the capital, so later on in the other parts, so be it through this dam or other hydroelectric dams, people need it.

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ST: So when you're visiting with the people what are their perceptions of the dam?

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KG: So it depends on who you talk to. When the construction of the dam started people were not so enthusiastic about the dam.

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ST: So at first they didn't trust the government, just another big project.

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KG: If you go closer to the dam, they didn't, they were not even aware that there was a dam being used.

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ST: The people that live nearby?

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KG: In the valley, but then later on the involvement of Egypt uh the fact that the president threatened war against Ethiopia and everything became a national issue. It was a threat to the nation. So people started drifting from looking at the dam from political propaganda to a national project.

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ST: And people started to say 'This is our water, this is our silt and our soil'.

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KG: But what was interesting, from our research, was most of the people we interviewed were not focused on that. They were more focused on how this can bring the nation together and how uh us as a generation, we can build a legacy.

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ST: Talk a little bit about what your experience is, when you started working on these it was a good thing.

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RS: Yes it was a good thing. I was working for the national parks department of Zimbabwe and working on Lake Kariba. As you know, when Kariba was built it was the world's largest dam. I was very proud to be like part of that whole system and what men had created but then I started visiting the fishing camps. Most of them were the residents of what they called the Gwembe Valley which was flooded by Lake Kariba. And they used to grow their crops and live in that valley but when the dam was filled they were moved off the valley to higher ground but that higher ground is very desert-like, semi-arid. The soils are not good for agriculture and people were struggling.

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ST: So their way of life before depended on the river. They didn't have electricity or energy but they weren't in poverty because they used the resources of the river.

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RS: In the best of cases that we have, people have been compensated for lost assets, right, but they've not been compensated for livelihood loss. And they we find over and over again, three four years down the line, people are struggling to survive.

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ST: Back at the damn site, I talked to Abraham Fisseha, an Ethiopian journalist who's written about the several thousand people who are being displaced by this project. We're sitting here on the upstream side of the GERD. In a few years we would be under about 140 meters of water and there used to be people that lived here in this area and they're going to be displaced as this fills. How did they live?

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Abraham Fisseha: It was a very primitive way of living. Sometimes they are dependent on fishing, but no farm, no other activities. The real location is to give them a better life. They have never been to school, they have no access to clean water, so now with relocating them, schools are open, clinics are open. So at least, at the minimum, they have access.

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ST: Are many of these part of your family?

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Ethiopian Patriarch: This is my whole family. I'm blessed to be able to sit with all of them.

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ST: So your life is very different now.

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Ethiopian Patriarch: We used to live in the bush. We knew nothing of the outside world. Now our children go to school. Wives get medication. Babies get vaccines. I swear to God, my life was completely different. I'd never seen a car, a road. I feel myself blessed.

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AF: As a journalist when I was talking to them, even they have never seen a police force or a judge or a newsletter in their life. Now they are coming to a modernization, they start talking about justice, they start talking about medicine. Now they are having those things. I'm not saying that it's enough, but there is a difference from the previous life to the current one.

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ST: So the electricity, which will come to this pole, comes from the new dam. Your little boy will be able to go to school now.

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Ethiopian Mother: I'd be very happy to see my children read and write.

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ST: I hardly got a complete picture of these people during my afternoon at the village but they, like most Ethiopians I met, seemed enthusiastic for change and hopeful for a more modern future. As you think about Ethiopia and its future, 10, 20 maybe even 50 years down the road, how do you see that playing out?

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AF: We like to see more schools, more clinics, more infrastructure, and we like to see more students going to school.

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ST: Absolutely.

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AF: That is what is the wish of the Ethiopian people.

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ST: So this project has the potential to really change that landscape.

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AF: It has already changed the life of Ethiopians because we have small dams here and there. That has already shown yes how it changed the life of people. So with this mega project definitely there will be a big change.

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ST: Keep reading.

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SB: Without electricity, transformation of economy and coming out of poverty is impossible. So energy is everything, basically. Therefore to improve the livelihood of people you need reliable and sufficient energy. So GERD really adds a lot of value in that within European context.

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RS: Africa needs energy. We can't totally rule out that hundred percent of dams are not good but they have to be properly selected, designed, so that they have minimal impacts and the beneficiaries of that dam should be the people who need it most.

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ST: Since I visited, Ethiopia is nearing completion of the dam and nearing an agreement with Egypt on the schedule to fill its reservoir. An important step for hydropolitics throughout Africa as water and energy demands continue to grow. There will surely be more challenges in this and other African hydropower projects but I got the feeling that the people and their leaders are ready to meet.

