Crossing Channels Episode 4

Broadband before bridges: can digital technologies leapfrog the obstacles to development?

SUMMARY KEYWORDS

digital technologies, infrastructure, development, digital, leapfrog, people, technology, stephanie, countries, government, stefan, work, terms, investment, bennett, political, question, big, african continent, institute

SPEAKERS

Stéphane Straub, Rory Cellan-Jones, Rehema Msulwa, Stephanie Diepeveen

Rory Cellan-Jones 00:00
Hello and welcome to crossing channels a podcast collaboration between the Bennett Institute for Public Policy at the University of Cambridge, and the Institute for Advanced Study in Toulouse. This series is all about using the interdisciplinary strengths of both institutions to explore some of the many complex challenges facing our societies. I'm Rory Cellen-Jones and we're calling today's episode “broadband before bridges” and asking can digital technologies leapfrog the obstacles to development?

To explore these issues today. Our first guest is Stephanie Diepeveen from the Bennett Institute. Stephanie, remind us of your main research interests.

Stephanie Diepeveen 00:47
Yeah, for sure. So my research looks at digitalization and politics specifically with an interest in this sort of offline-online dynamics.

Rory Cellan-Jones 00:55
Lots to chew on there. And our second guest is Rehema Msulwa. Also from the Bennett Institute. Rehema, tell us briefly about your research.

Rehema Msulwa 01:03
So my research is about the organisational dynamics of large scale infrastructure projects, and the planning and implementation of such projects.

Rory Cellan-Jones 01:12
Thank you. And our final guest is Stephane Straub from the IAST. Stephane, what do you focus on?

Stéphane Straub 01:19
Hi Rory. My research is about infrastructure in the process of development in general, both the impact of infrastructure, but also the institutional arrangement that make this this infrastructure more or less efficient.

Rory Cellan-Jones 01:34
Thank you very much. So three guests all with different insights on this whole question of whether digital technologies can really leapfrog development across the world. So let's start with what we actually mean by digital infrastructure. What is it? And where are we seeing digital technologies playing the biggest role in economic growth and development? Stephanie, you get us underway.

Stephanie Diepeveen 01:55
So the way I see infrastructure, and I mean, my other colleagues might see it differently is, it's really about the material and organisational requirements for how things operate, and how we live our lives. So we think of digital infrastructure, it's specifically the resources and the structures that rely on data in order to operate. And this includes hardware, software, but also the policies and regulations as well, taking a bit of a broad view.

Rory Cellan-Jones 02:25
I mean, we basically talking smartphones and the Internet, is that all this is, or is it much broader than that?

Stephanie Diepeveen 02:30
I mean, it's a lot more than that, if we think about what's going on here as well, too. It's the use of smart technologies for our homes. It's thinking about 5G, it's looking at the apps that we use to track something like COVID-19. And the way that governments sort of track and monitor and relate to citizens. It's the city mapper app that you might use in London to get around the city as well.

Rory Cellan-Jones 02:54
Rehema Msulwa, you are very much focused on infrastructure. What kind of examples are you seeing around the world of digital infrastructure, making a big difference in development,

Rehema Msulwa 03:04

If we consider the African continent particularly, there's a big focus on FinTech and payment systems, given the greater need for payment systems, there's also an opportunity and a large take up of internet access. Where, the Western world, and America, for example, have reached saturation in terms of internet access, India, Africa, are still catching up, if you will, in terms of internet access. So there's been a lot of take up in that sense.

Rory Cellan-Jones 03:48
We're some way into the digital revolution, I suppose. We're 30 years into the sort of web era, and we're maybe 15 years into the smartphone era. Are you actually seeing data out there reflecting the success of employing it for leapfrogging countries ahead?

Rehema Msulwa 04:07
Well, I think that's probably one of the limitations of the revolution, if you will, that we don't necessarily have solid sources of data, or comprehensive sources of data. But there has definitely been an impact in terms of payment systems in terms of integration with the global financial economy, I think, perhaps not the best example. But if we see if we consider for example, trading cryptocurrencies and the like this, there's a big take up of that on the African continent, for better or for worse,

Rory Cellan-Jones 04:44
Stephane Straub, what does your research tell you about what's important about digital technologies in this area, and what the achievement or track record has been so far in development,

Stéphane Straub 04:55
maybe we can say a bit, what infrastructure means for Economists in general. So firstly, it's a network industry. So it's an industry that by nature connects a lot of people, and relies on connecting a lot of people. And that's true for transport, energy and of course, communications. Second, it's an industry that relies on large sunk investments. I mean, if you want to bring internet someplace, you need to have cables, sometimes submarine cables, I mean, these are huge investments that need to be made before it even works. And then, you know, has this public good nature or generate externalities. So it's useful for what we want to do with it, but it's also generating plenty of other effects. And then in terms of the digital dimension, specifically on I think there's something else to it, that it's also what economists call a general purpose technology. It's not only useful for what you do with it, but it's also making all other sectors suddenly work in a different way, potentially more efficient one. That's what, of course, justify the fact that people place great hopes in you know, having digital technologies, changing the process of development

Rory Cellan-Jones 06:11
on the matter of the track record so far of these technologies. I mean, I think we were finding it difficult around the world to measure, despite any sort of productivity boost from the digital revolution so far, but in particularly in developing countries, are we seeing any data suggesting that?

Stéphane Straub 06:27
So yes, I mean, there's actually a few studies that, that document this, I mean, in the case of Africa, there's, there's a very well known paper by Hjort & Poulsen couple of years ago in the

American Economic Review that looks at the arrival of submarine intended cables, along the coast of Africa, and depending on where these cables arrive, they then look at the impact inland have on employment and different measures of economic activity, and they actually find positive and significant effects of the of this new internet connection. So to this, there is this presumption that, that it does indeed have an effect. There are also studies byt, like, Tavneet Suri and coauthors that show that it helps consumption smoothing, so it helps FinTech digital payments help people smooth consumption in case of big shocks. And we do have data and it's building up. I mean, of course, t's a costly process, you need to collect that type of data. But a lot of people work on these issues. Yes.

Rory Cellan-Jones 07:32
Is the term leapfrog technologies actually useful here? I mean, for at least a decade, I've been hearing the idea that mobile tech, for example, will leapfrog various countries ahead through several stages of development. And one example is Mpesa in Kenya, mobile money taking off faster in countries like Kenya than in places like the US, Stephanie, is that a leapfrog technology?

Stephanie Diepeveen 07:58
I mean, I guess just to qualify something here, is I really don't like the use of the word leapfrogging I think when we're talking about something like development, or what's happening here, because I think I'll give my reasons and we can see it, we think about this, but um, one, this sort of idea of leapfrog suggests that we understand the path or development that exists and we understand where we're going, and what it's going to look like, and also that there's sort of a trajectory of how to get there. And I think what's really exciting with something like Mpesa, is not that it leapfrogs to the next stage of this linear model of development. But it actually suggests different ways in which countries can improve economic growth, they can try to bring about inclusion in different systems, that may be taking a different path, or it's sort of a different set of progression than we may have seen in something like the UK or Canada, where I'm from. So in this sense, this particular innovation around mobile money and payments using mobile technology has facilitated financial inclusion, it's allowed for the smoothing of consumption likes to fund spoke about, and it's changing the way in which we might think about what precedes what, as countries try to achieve better economic growth and how they build towards that. So I guess the word leapfrogging for me is a bit misleading, perhaps

Rory Cellan-Jones 09:17
Rehema, do you not like the term leapfrogging either?

Rehema Msulwa 09:19
The application of technology on the African continent is very particular and probably has parallels with India in that it's really about optimising day to day life, right? And part of that is enabling development, enabling technological advancement in a way that can improve people's quality of life. And to suggest a leap frog, as Stephanie said, could sit against existing or alternative realities of path to development that we have seen before. But in this case, it is a question of improving the conditions on the ground and seeing where it takes us and being open to where it takes us

Rory Cellan-Jones 10:07

Stephane, what kind of conditions need to be in place in countries for that kind of technology to deliver is not simply a question, is it of countries saying, right? This digital revolution has arrived? We're going to go for it.

Stéphane Straub 10:22
Just to say word on the leapfrogging, okay people have leapfrogged fixed phones with mobile phones, you know, in places where mobile phones really came in a void where people were unable to get fixed line. But then what do you do with these mobile phones? What do you do with you know, this, this internet access? And behind that there's real activity, you know, people have to produce stuff they have to exchange stuff. I think the concept that I like, and is better than leapfrogging development is the one of complementarity. Because, in fact, what we increasingly see seeing and understanding through so the studies that are being made in this is that different types of infrastructure useful if the if they come in bundles, so of course, it's great to have internet access, you can have a, create a new firm and generate some economic activity, but then, you know, you need to deliver that service and exchange it with some people. And for that you might need roads and you you might need people to have other goods or services they can exchange with you, etc. So it's really more this idea of complementarity. And digital is not going to solve that, you know, alone. It's, you know, of course, part of a general development strategy that that needs to be in place.

Rory Cellan-Jones 11:45
Rehema, give us your take on that. I mean, the other question is, who benefits in some countries, the arrival of these digital technologies, benefits one part of the population and not the others, we've seen all over the world digital divides opening up, is that a concern of yours?

Rehema Msulwa 12:01
So yes, I think in certain African countries, certainly in Tanzania, where I'm from, there's a very clear urban rural divide, right. So the rural population will be amongst the highest who are unbanked, who do not have access to things like fintech, etc. I think in terms of the conditions required, this is related to the work of the late Calestous Juma where he spoke about the importance of basic infrastructure, even for digital infrastructure, not only as an enabler, and as sort of the motherboard, on which or other technological developments are built on, but also as a platform for facilitating skills development, right. So the technical skills, the engineering skills, etc, that are used to develop basic infrastructure can then be leveraged for developing digital infrastructure. So in a sense, basic infrastructure is a one of the conditions for more advanced digital infrastructure, but also can reflect some of the divides, where access to basic infrastructure will, or lack of access to basic infrastructure will almost certainly mean a lack of access to the most sophisticated forms of digital infrastructure.

Rory Cellan-Jones 13:23
I presume that it's intensely political, this debate in a lot of countries, that there can be great resentment if if some parts of the country for instance, are seen as getting access to greater connectivity, and others are not.

Rehema Msulwa 13:37
Absolutely. So it can be I think it can be political on a number of fronts, definitely from a who is serviced versus who was not. When sort of example is the South African context we access to infrastructure was the result under the apartheid regime of specific spatial engineering, right. It

was very specific, who got access and who didn't get access. And we see the legacy of that today. I think it can also be political in that governments can be sceptical of digital technology, digital infrastructure, in that they, potentially see it as a source of political activism or as facilitating political activism.

Rory Cellan-Jones 14:21
Yeah, they may not always see greater connectivity as a positive if they are quite a controlling government. Stephane Straub, is there a danger that in this rush, this huge excitement about digital other types of absolutely vital infrastructure, roads, electricity, water will get overlooked? And that will actually make the whole digital deployment kind of irrelevant anyway.

Stéphane Straub 14:42
So of course, the choice of governments in this type of context, what type of spending and what have public goods they should do as priorities is always a difficult one. I'd say it's to some extent, it's not that bad in that case, because the development of a digital sector is mostly driven by the private sector, because it's profitable. So if we accept from that, like backbone infrastructure, which in many cases has to be subsidised or supported by the public sector, the rest, you know, mobile phones, internet connectivity, you can see FinTech, etc, is mostly driven by the private sector. So there's no real conflict with, you know, a government, on the other hand, doing roads or possibly working on extending the electricity grid. So I'll be less worried on that front.

Rory Cellan-Jones 15:33
Stephanie, what's your take on this government's priorities on where they should be pushing whether they should just be focusing on digital or whether that can be a distraction,

Stephanie Diepeveen 15:43
I think digital is something that can be sort of pushed as sort of a flagship project for governments as well, too. So in that sense, it can capture the political imagination, in the same way, sort of some other large scale capital developments can as well, to me get close to election time, I think, I would agree with Stephane in that it doesn't seem to be distracting from other large scale infrastructure projects. So for example, we can see in Kenya, both an emphasis on digital infrastructure and digital investment, we also see quite large scale capital infrastructure projects with actually a lot of Chinese investment to which adds another sort of political dimension to it around the railway, around the ports, around building new roads. So in that sense, that matters. And I think that also goes back to sort of the bigger question about what is development and yes, it's about the sort of large directions the country is moving in. But as Rehema spoke about, it's also about what happens on the ground and what people are actually experiencing. And in that sense, the sort of more traditional infrastructure and developments matter. I think it's just one sort of aside from that, too. And I wonder if Stephane and Rehema might have more to say here, too, but sort of digital infrastructure relies on very stable other forms of infrastructure. I'm thinking here, specifically around electricity. And one of the sort of underlying conditions that seems to be quite a big deal on the continent is establishing reliable electrical infrastructure to support digital infrastructure, as well as people's sort of everyday livelihoods. And we can even see, in a country like South Africa, we can see the installation of regular loadshedding programmes to sort of control electrical supply.

And I sort of wonder, to what extent can we see digital infrastructure really transforming what people are doing economically without that sort of underlying stable electrical infrastructure?

Rory Cellan-Jones 17:27
You mentioned China, I want to bring us on to another sort of factor here. There's a kind of superpower race in technology. And I think there may be a concern also that the US tech giants in particular Google and Facebook arrive promising to digitise developing countries for quotes "nothing" and end up almost as colonial powers, Stephane is, is that a worrying factor the the sheer power of the US tech giants. And on the other side, the Chinese government?

Stéphane Straub 17:57
Well, I think it's a story that repeats itself for a very long time. The US and European countries have done development project in places around the world, in Africa and South America and in Asia. And they've done that because it was tied to investment. They were basically made by their own firms, and also establishing political power in these places. And now, you know, China is entering the game. And we've seen we feel like it's always doing something extraordinary, but it just doing exactly the same thing that, you know, the US and Europe has been doing for a long time. On what was said before, I just wanted to jump back. I mean, what Stephanie said, I think in terms of digital where the intervention of the public sphere is very important is more in regulation than investment itself, creating stability, creating level playing field rules of interconnection, competition, policy, and all these preconditions that actually make the functioning of the sector more efficient.

Rory Cellan-Jones 19:03
Now, I want to draw this all together an end by trying to work out whether we should be optimistic about what's happened so far, is probably at least 20 years now that this idea that digital technologies can produce a real rocket fuel for development has been in the air. Stephane, just conclude here. How should we view progress so far? How optimistic should we be about what digital technologies can do for development?

Stéphane Straub 19:30
I think we can be optimistic in the sense of this general purpose technology is really a revolution in the way all sectors work. And in that sense, if we make good use of that, we obviously have a new tool to avoid some of the of the main roadblocks and bottlenecks that plague development in in a place like Africa, which on the other hand, as is lagging in roads and energy and other aspects, But then we should probably not forget that these things, as we say, don't work on their own, they need to work as complements. And finally, we haven't mentioned that but you know, that's a big question in the air, you know, digital technologies are extremely energy consuming. And since we are doing this at the world level, I mean, there's there's an issue for for climate here, of how much energy are we going to use in order to digitise the whole economy? And we don't have clear answers to that. And you know, people deserve access to development. Once we have 7 billion people, you know, consuming on the level we are consuming digitally. What does it mean for climate change? I think this is a very serious question.

Rory Cellan-Jones 20:48

It's definitely picking up on that, obviously, on the negative side of the balance sheet, if we're looking at digital technologies and development, isn't it? Do you retain optimism that that can be navigated successfully, and we can use digital to advance development?

Stephanie Diepeveen 21:03
I mean, hypothetically, I would be quite optimistic about the possibilities that the way in which we're seeing digital technologies being used in various ways in the African continent globally is quite exciting opens us up to thinking about how development takes place in different ways. The challenge is, as well as Stephane said, is that we're not looking at development on the African continent in a vacuum. And there are quite big global inequalities in energy consumption, that do have climate implications. And so I think it's definitely possible. But I do think it requires us sitting back and thinking about sort of the distribution of consumption and the distribution of how we use some of these resources as well.

Rory Cellan-Jones 21:40
And Rehema Msulwa, I would imagine, amongst the populations of these African countries, particularly amongst the younger populations, and a lot of them have very young populations, there is still actually huge enthusiasm and excitement about these digital technologies, which will drive them forward. Is that the case?

Rehema Msulwa 21:56
That's definitely my sense of things. I think, as I mentioned earlier, the opportunity on the African continent is to apply technology to sort of improve day to day living, right, everything that we might take for granted here, for example, ecommerce, or wireless payments, etc. That still great opportunity for those for us to exploit technologies that have been that have already been developed in other parts of the world, but also to develop technologies from the ground up that apply to local conditions in different countries. So I think there's definitely a lot of enthusiasm and a lot of potential for the application of digital technologies across the continent.

Rory Cellan-Jones 22:43
A good point to end and that is all we have time for on this episode. Thanks to our expert panel. Stephanie Diepeveen and Rehema Msulwa from the Bennett Institute and Stephane Straub from the IAST. Let us know what you think of this fourth edition of crossing channels. You can contact us via Twitter. The Bennett Institute is @BennettInst, the Institute for Advanced Study is @IASToulouse, and I am @Ruskin147. If you enjoyed this episode, then do listen to our other Crossing Channels editions covering topics of ethical AI, nature in the economy, and running government. And please join us next month when we'll have a new edition looking at the levelling up white paper in the UK, and whether other policies to address regional inequality have worked in the past.