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Plenary 1: Setting the scene – Innovating to connect the
unconnected

(rough transcript)

>> So thank you to our speakers. We shall begin our first
Plenary. So at this point I'll ask the speakers for the first
Plenary to come up. We have Mr. Mahabir Pun, founder of the
Nepal wireless networking project and we have Kanchana
Kanchansut, IntERLab Asian Institute of Technology, Mr. John
Jack, deputy chief information officer of the Government of
Vanuatu and Mr. John Garrity, advisor of connectivity capital.
     The first Plenary the topic is setting the scene innovating
to connect the unconnected. So community led solutions have
been adopted that enable alternative ways of connecting to the
Internet. This will feature community networks, technology
models, content, services and best practices in the Asia-Pacific
Region. So let us welcome our speakers. And our Moderator for
this Plenary is Mr. Duncan Macintosh, executive director of APAC
Foundation.
     >> DUNCAN MACINTOSH: I am Duncan Macintosh. My apologies
for those of you here at the end of the yesterday that you have
to see me again at the start of another day. I won't put you
through another introduction of the APAC Foundation. I would
however highlight one aspect of the Foundation and that's its
mission state that focuses on increasing investment. And I
really can't think of a better example of an area that we should
all think about increasing investment in the subject that we
have to discuss today.
     So I'm very pleased and I want to thank the Internet
Society and thank ESCAP for this opportunity to moderate this
panel today. I think it would be a very interesting discussion.
I want to suggest but it might be a little hard to imagine that
you should think of this more as a Fireside chat, minus the
fireplace obviously. And we really want to engage with you. We
are all sitting up here and talking to you, we really want to
have a discussion. So we will have some -- we will invite each
of our panelists to talk a little bit about their experiences
and their expertise, but then we are going to throw it out to
questions and discussions from the audience. Please get ready.
There is an enormous amount of knowledge and expertise out there
in the audience. And we don't want that sitting there quietly
and not taking advantage of it.

While our panel has already been introduced and I won't introduce them again I do want to highlight one particular aspect and that we have two very Distinguished Members on our panel. We have two Internet hall of fames but winners of the John B. Postal award. It is the most preeminent award. It is not to compare to knowledge and expertise to John Jack and John Garrity and try not to confuse between the kwo Johns.

I would like to invite Mr. Kanchana Kanchansut to begin by telling us about your experience. You had set up a community network here in Thailand. I think we are particularly interested in your technical process and the process in thinking about why it came about and how you did it. Thank you, Dr. Kanchana Kanchansut.

>> KANCHANA KANCHANASUT: Thank you very much for the introduction. And I thank ISOC and UNESCAP to give us this opportunity to meet and hopefully we can exchange a lot of information. On -- it is an order that Duncan has given me an opportunity to be the first speaker, so I can take more time.

(Laughter)

>> KANCHANA KANCHANASUT: I actually landed in to this community network accidentally because I was simply a professor in computer science and we work on mobile ad hoc network as part of our research. We did a lot of simulations. We never had a real experience using the network until 2006. I decided to run an experiment on using this mobile ad hoc network for post disaster scenario. And we did a very successful demonstration in 2006 in Bukhit. However when we had a big flood in 2011 I tried to introduce the technology to the people working at the disaster center and no one was prepared to listen. So I thought if this is the case we have to introduce the technology to, you know, to the local people, to common people so that people will become acquainted to the technology.

So how to do that? Because we didn't have a big ISP or anything to work on. So we started by using a student camp to set up community networks. So since then it became our part of our interest and the network became our living laboratory. We used individuals who are interested in technology, we used a very small router that we pick our own firmware inside the router. It is based on the mobile ad hoc network protocol called OSOR and our first network is called number. So I think that's enough for my introduction. Thank you.

>> DUNCAN MACINTOSH: I think we will come back with some more questions, but I would like to invite Mahabir Pun to introduce his network and tell us about his story and particularly the TV white space.

>> MAHABIR PUN: I got involved in the community network and I started in 2001. And I have been working for building

community networks and trying to bring the services for the community as much as possible. Based on my experience on what I see is to build community networks and make it successful. The first thing is we need to, you know, find ways to overcome the regulatory hardwares, because in 2001 when I started building the community network we didn't even have a WiFi license in 2001. So in 2006 the Nepal Government legalized delicensed WiFi band and then -- the permission from the regulatory body to build community networks and bring services. So that is also a problem I have to face.

For that I know we had to fight with the Government to, you know, to legalize the community networks or what we call rural ISP in a license because to build community network and bring Internet services in the rural areas we have to have permission from the governments. And there was no, you know, provision to provide license to build small networks. They depend on big commercial operators. So I in 2015, '16, '17, the time I tried to test the TV wide technology in the rural areas and it was to get this -- overcome this regulatory hardware. My experience is to try to overcome this regulatory hardwares to build community networks. Then how to make strategies and programs to overcome this hardwares.

So the first thing to build a community network the community has to be, you know, it has to take the initiative by themselves. There is nobody going to come from the outside and help in the communities, build the community network. They have to take the initiative by themselves, the government should take the initiative because without the support from the Government, no matter how a community works to bring the community networks and build community networks and bring the services in the rural areas, last mile connectivity, it is going to be problems. But I don't know whether -- it is kind of -- it depends on countries. Some countries have taken a very good initiative to bring the Internet in the lats -- in the rural areas but some countries the Government has not taken. So in our case the Government was very (inaudible) for many years but in the last few years the Government of Nepal has also taken some initiatives to bring the Internet in the last mile connectivity using the universal service obligation fund, because in every country it is there to bring this connectivity in the last mile, you know, area but it is simply they are not using their phone for the right purpose.

So a third thing is the big commercial operators, usually what happens in the big commercial operators, they, you know, work in the area where they have the density of the population is big. There is to -- a chance to make money. They don't work in the rural areas or sparse population. So the big commercial

operators also should work, should help as part of their CSR to help build a community network and do the services. It will build community networks to help create entrepreneurships. Not big on (inaudible) but it is smaller skills. There can be people who can have their own -- create their own business who can be an entrepreneur who can come up with an entrepreneur mindset to bring services for the local people. There are challenges, you know, and difficulties to do that.

My experience, the biggest challenge is the bandwidth constraint. In the rural areas when we bring Internet using, you know, WiFi or wireless networks because -- to build optical fiber networks there -- there will be better, people have started, you know, using Youtube. They are using Youtube or, you know, things like that, then there is always short and of bandwidth constraint and they have to find ways to reserve that issue also. Also maintenance and operation, in the rural areas there are not many people who have this technical knowledge, know-how to maintain and operate these networks. So it is difficult to find.

For that we have to find ways to solve that issues by providing training to the local people. They cannot bring in engineers from the outside to solve this local network problem. So our problem is another issue in the rural areas of mostly in the developing -- Developing Countries or poor countries. So to build that we have to use solar or wind or whatever. And also there it is difficult to find the operators in the rural areas because in a rural community network, in the rural area it is not financially, you know -- it is not going to make much money. So we should -- be difficult to find commercial -- operators in the rural areas to build community networks. What I would like to request all of you who participate in this meeting from different countries is to build a community network and operate in successful sustainable, we need to do some innovation.

So based on my experience for working in the rural areas around 20 years what I have realized is necessary to have a center where we can, you know, discuss together and, you know, find the solution. So we have established a national innovation center in Nepal. So through that center, trying to solve this, you know, problems whether it is for the community network or it is for other problem or any other problems in the communities. So what I would like to request you if you have problems, you are facing problems building community networks or bringing services or developing applications. So please let us know. We can work also together and try to find the solution because there should be some -- there is a solution for some problems, for any problems.

So through this community, I mean innovation center that we

have started in Nepal, I am ready to work with anybody around -- and together and find the solution for specific community. Because the problems are different in different areas. They should not be only in the field of ICT, but in any field. So there is something I would like to invite you and request you to let me know if you need any help to work together. We can work together and solve the problem where there it is the community problem or whether it is any other problem facing by the communities. Thank you very much.
     (Applause)
     >> DUNCAN MACINTOSH: Thank you. You have raised some interesting points which I think this morning we can get some time to really unpack and get in to that. You raise one particular point around sustainability for community networks. And Professor Kanchana Kanchansut, just before we move on to the other speakers I want to give you a chance to talk a bit more about how you think about the long-term sustainability of what you are doing. How do you fund it, support it? What are your thoughts on that?
     >> KANCHANA KANCHANASUT: Okay. I resume our introduction. Since we started with the student camp definitely the network could not sustain. What happened is that we had, you know, a series of camps during those few years we learn a lot from the community. Okay. Our approach and Mahabir's approach is different. We are moving in to the community from the university. For his approach he drive their activity from the community. So it is quite different. We were like foreigners, moving in to different rural areas. So we learn a lot from that. And we found that in order to be sustainable we have to get the community to -- to take a responsibility of the expenses. So we started to introduce the, you know, we collect a small fee in order to operate the network. We use the same thing, you use the SR to -- for the initial investment, buying equipment. It is not expensive. And this is the model we are using. We contacted big companies for sponsorship to buy equipment and then we ask students, we set up a camp to use the free labor from students and set up the network and villages pay for their remaining for the operation and maintenance. And during this period we also have a technician to take care of the operation. And soon after we set up a village, our community ISP. And gradually we are getting the villages to be a part of our ISP operation. Yeah.
     >> DUNCAN MACINTOSH: Thank you very much, Professor Kanchana Kanchansut. Maybe at this point I you can invite John Jack from Vanuatu in to the conversation to tell us a little bit about what's happening in Vanuatu and the challenges for development of community networks.

>> JOHN JACK: Thank you, Duncan. I also take this opportunity to take ISOC for giving me an opportunity to be part of the discussion and UNESCAP and also the API Secretariat for allowing Vanuatu to participate in the APIS meeting in the last few days.

Let me sart by saying that our two panelists here are very experienced in community networks, have said quite a lot about community networks. In Vanuatu we haven't actually started a specific community network. However, the projects that are introduced to us, it brings up this thing about, you know, getting the community to be enforced, to be engaged in the project at the very beginning, that creates the demand where the community see where they can come in to play the roles and responsibilities and so projects get sustained in the long term. So we have quite a few number of projects but one specifically which I want to mention today is a project called the (inaudible) in which I was heavily involved back in 2014 and '15 and '16 and '17. It started as a telemedicine project where we want to connect in the community to the Internet so that the elderly can communicate with the doctors in the urban centers and other parts of the world. As the community sees the benefit of now that the elderly worker as has access to information and resources the community is coming forward to help to extend the project.

And I agree with what the other speakers have mentioned about checking with the communities to pack the projects. So for this project the community then takes ownership of the project and started to raise funds to extend the network to schools and to other community centers within the island. It is very challenging at times and funding is not easy. Also getting experts to assist in making sure that they have the proper network where services could be served and people have access to these services. So the community they dedicate themselves to fund training for an expert within the community. It ended up that the -- once the training return from the training it is -- it started to touch the community again, if the total community is invested a lot already to get in to the training and acquire skills and knowledge in order to sustain and look after the network. So that's one of the challenges as we don't have enough experts in our communities in the rural and remote areas. The other panelists have mentioned about getting the commercial operators to service some of these areas. For us in the islands, it is a very big challenge in terms of getting, deploying the infrastructures in some of these very remote areas where you have population of less than a thousand people in a community or even less than 500. So it is very challenging for us. As a Government we want to make sure that the centers of

mobile or data or Internet reach out to everyone and nobody should be left behind according to our SDGs.

So supporting this operators to making sure that they deliver the service to this very remote villages, to these very people in this village it is not easy and it is a big task that the Government is continuing to negotiate and continue to come in to some sort of arrangements for these operators. So we created what we call the universal access program for the government. Even though we have a -- 98% average where we want to connect as many of these people. So on one of the other challenges that we have is the language barrier. Vanuatu we have more than 120 languages. That's a very big challenge. One village, so one other village they talk two different languages and it is easy to negotiate and getting the community to extending in to having networks as such.

And also our culture, where we have to achieve -- we have to last say in the decision-making process, that is also a big challenge for having community networks where for anything that happens in a community, in a village, not achieve us to make the last and final decision. So I think some -- those are some of the challenges that we face. We look forward to working with partners and especially, you know, funding is not easy for us. Of course, one of the other challenges I forgot to mention is the many disaster network disasters that are affecting us in the island nations. That's also something that we need to be, you know, mindful of when we are designing community networks and make sure that those networks they can be -- they can be able to stand, you know, the events that are happening and disasters happening within our region. Thank you.

>> DUNCAN MACINTOSH: Thanks very much. It seems like a good opportunity to bring in the other John because all of you have mentioned the challenges of sustainability and the need for continuing investment. So for connectivity capital maybe set the scene and UR for those who haven't met you this week, but then sort of respond to the comments that you have heard so far, John.

>> JOHN GARRITY: Good morning, everyone. And thank you for the opportunity to participate in this session. It has been a marathon week. It is great that we are ending the week on such an interesting topic. As Duncan mentioned I am here representing Connectivity Capital, which is a private investment market that supports ISPs. So I have been in a range of different roles spanning the private sector and public sector. I was at Cisco for ten years. Silicon Valley and I worked in the U.S. Government and agency for international development and consulting with UNDP and ITU on a few different projects. So really the perspective that I have on community networks from

these various different roles is one of where community networks have been outsized impact. Both at a small level it is possible and we have seen community networks to be sustainable and provide support and services to small communities but also outsized impact in terms of scale.

So we have seen some community networks really grow and have subscriber basis in the tens and hundreds of thousands. And our friends who have been tracking all the community networks around the world that can share with you an example that have a subscriber base in the millions. When you think about on the sort of smaller scale, but still sustainable and being able to provide services to communities, one of the entities that I have engaged with I was at USAID was a small community network in the Philippines. These are communities of small fishing villages that on one side are bounded by large mountainous regions and other side by the sea. So they are very isolated. They are in geographic areas where the Telcos do not want to go and of such small population density and low per capita income that there is no economic incentive for providers to go. They are now self-sustaining and continue to provide 2G and SMS service.

From the USAID our side it was on the social science work to take a look at what were the -- what are the impacts when 2G and SMS are brought to these communities. That's an impact that's sustainable at a small scale. With the work I am doing at Connectivity Capital, if you were here on Monday, I shared some of the ISPs that are in our portfolio, but at least two of them that are funders who provide funding to were community network before they rolled in to becoming private, for profit entities these are Air Javi in Northern India but because of growth and services that was able to provide, then rolled in to a for profit entity and Air Javi has a subscriber base over 230,000 people or so. Similarly Ahabiti. And they continue to provide service to all subscribers that want to participate. They needed to formalize as well.

So then they rolled in to becoming a private or for profit entity and the community network became one of the founding partners on that. From my perspective both in terms of even small community networks as well as large community networks that have the ability to scale there is a role for CNs to play in the continuum of different modalities to provide service to communities that are unserved or underserved. The difficult thing is identifying and establishing the right policy and regulatory frameworks to allow community networks to flourish. And I hope to hear more about that in the sessions that follow. Let me stop there.

>> DUNCAN MACINTOSH: Investment plays an important role,

but I want to go back to another aspect that has an impact and that's technology. How do you think about the impact of new technologies on what you are doing? I mean satellite is one obvious example, but how do you plan for that?

>> MAHABIR PUN: So when I started the wireless network in 2002 I used an indoor router that has this 60 milliwatt power to build long range wireless networks. So using that in the router we built, you know, long range network up to linking that was like 40 kilometers there that was the beginning. Because the technology was developing. So what now is the technology has been developing so fast and it is changing the power of IP routers, access point and all this point to point device. So we had to show, we have to -- add up -- we have to use this new technologies that is coming. Because this new technologies that have, you know, they are more powerful than the (inaudible) ones. For example, I used at the beginning, I used like these devices that had, you know, 7 NDP throughput power. But now I mean those 7 NDPs or core NDPs through the device, that, you know, throughput is not going to, you know, do much. So it is changing.

Now we have been using devices that has like 100 mbps. So and because the bandwidth, you know, the people have started using more and more types of applications and that is valuable in the Internet. So we have to change that.

Building the community networks, another problem we face is the, you know, mostly in the remote mountainous areas we have the problem of, you know, the line of sight also. That creates, you know, difficulties for building the wireless. So that's why we tested this TV wide technology. This is emerging technology. It has not been developed quite well but we have found these technologies can be more useable, but the main problem it is -- the Government bring, you know, regulations for -- by allowing these people networks to use these TV specifics. So we have to change, we have to change ourselves. And we have to use the new technology that is coming because we are not going to develop this technology by ourselves. That's my expertise. Thank you.

>> DUNCAN MACINTOSH: Thank you. Professor Kanchana Kanchansut, what's your thoughts on this?

>> KANCHANA KANCHANASUT: Thank you. I have -- we are in a different -- a very different environment because in Thailand we have as the Ministry of Digital Economy mentioned, that we have this project which kind of extends the fiber optic network to all the villages. So we have different scenarios. And from my experience since, I can't remember, I think it is around 1996, 1997 I work on the satellite network for education with the wide project in Japan. And it took me one and a half years to get a

license to operate the, you know, receiving station. So when I
got involved in this kind of activity, I decided not to waste my
time dealing with licensing. So I tried to -- we tried to adopt
whatever legal, whatever we are allowed to use based on WiFi.
And we try to extend that as much as possible. And we work
around, you know, a technical constraint using our technical,
you know, approach. We try to be smarter to extend the network.
You seen a very limited bandwidth, limited, you know, license.
We also tried TV white space. We were lucky to have a research
grant from the regulator because we are a University.
        So from our experience we still -- we also found that the
technology is still in an emerging stage and not quite ready to
be kind of turn on technology for community networks solution.
It is not easy to operate. And it is not yet ready. Sure, that
is a lot of work still to be done. Thank you.
        >> DUNCAN MACINTOSH: Thank you very much. And John Jack,
I think a lot of people might assume satellites will solve a lot
of problems in -- please Dr. Kanchana Kanchansut.
        >> KANCHANA KANCHANASUT: With satellite I think many years
ago we didn't have any problem. And we work on satellite
protocol that make things better for massive distribution of
content. And I think if we have satellite network that is
affordable, we are happy to switch to satellite. Yeah.
        >> DUNCAN MACINTOSH: John Jack, what are your thoughts?
Will satellite solve all your problems?
        >> JOHN JACK: Thank you. That would be very good.
But -- so we -- with our experience what we are using, the kind
of technology we are using we return on satellite to reach out
to the last miles that we are talking about here. Just I
mentioned earlier the commercial operators will only reach to
places where -- to consider it on the investments. So it is
very challenging and especially in -- they are talking about
different solutions in terms of technologies with satellite. We
still depend very much on satellite. All the bands that we have
access to, we have this project with ITU to have a participant
installed in several sites within Vanuatu. In one of the
discussions that we have had this morning in one of the Pacific
Islands, to have the dish, the infrastructure already set up.
There is still not in our resources to sustain that
administration that has been set up quite a number -- a few
number of years ago.
        So now we are talking about another band. We are talking
now about KA will be available. But we have this set up to be
used but since that we don't have the resources to sustain this,
there is a new technology that is coming in. How can we get
this to work together. Those are the kind of technologies that
we will need for places like small island nations where it is

legal to reach, because one will be challenges with flights as well as most of the experiences they don't have access to good quality where you can travel by vehicle and fix the issue and then back to you.

So satellite would be one option but making sure that the service that is provided to us to the satellite we are able to afford and also sustain the technology that can be used to make this -- of course, WiFi will be the best option. In this -- most of these islands, most of our communities it is impossible to get fiber. One you have to -- these are not distances that we can say walk across and install fiber cables. We have to go up mountains and some of the landscapes in our countries in this part of the world, where there is mountains but for us there is oceans. That's more challenging for us. I think I will stop there.

>> DUNCAN MACINTOSH: Thank you. John Garrity from an investment point of view how do you think about changing technologies and how do you prioritize an investment decision around what technology is being used? After John's comments I am going to open it up to the audience. So please get your brains working and questions working and when John finishes we will open it up.

>> JOHN GARRITY: Even though it is a sector specific capital investment firm it is a debt capital investment firm. A lot of standard ratios that are used in assessing debt investments are applied here. There is nothing magical about it. It is making sure that these ISPs that we are looking at are running net positive cash flow. Running current ratios where assets are larger than liabilities. So a lot of standard metrics apply. But what is interesting is that for a number of these entities whether you are running over microwave and WiFi for backhaul or you are using cellular technology, a lot of the Capex deployments have dropped over the last decade or so. So if you are running a community cellular deployment and you are serving a small community that has a radius of five kilometers or so and you only have a few thousand people you don't need to build a carrier grade 50 meter tower that you are sourcing from Ericsson or Nokia. You can purchase and build towers that are a small percentage of the cost there. Or you can be even going to open source technology where we have seen a lot of interesting developments around open source hardware and software for BTS.

Same thing on the WiFi side. It is a very, very dynamic ecosystem. And TV white space is still a bit of a nascent ecosystem. It is not as dynamic in terms of hardware. That's one of the things that we are hoping. You need the regulatory policy to change that so you can allow service providers to run commercial deployments of TV white space. And then you have

equipment manufacturers to provide more investment and drop the price on hardware but until -- but somebody has to move first, otherwise you are not going to see that ecosystem really develop as quickly as some of these others. From our perspective in terms of investments in ISPs or small and local carriers, the goal -- it is a standard ratio that applies but there are dynamics within the sector that really are reducing the cost of Capex for these entities.

    >> DUNCAN MACINTOSH: Thank you. So yes, I will invite questions from the audience now. Yes, the representative from the (inaudible) and then Christopher. Please.

    >> Thank you, Chair.

    >> DUNCAN MACINTOSH: I know you are Thomas, but maybe identify yourself and where you are from as well to help the panel.

    >> Okay. Thank you, Chair. Let me introduce myself. I'm Shari from the Maldives. Thank you for some very interesting conversations. I think as you rightly pointed out the last mile connecting, connecting the last few billion is really important. And in the Maldives the burning question right now is that of municipal networks or networks based on the open access network kind of concept versus those of operator owned networks.

    Now let me give you a little bit of context to this question, although I know every country is different and I would like to hear not only from the panelists but from the other countries' experience as we try to decide on a way forward. In the Maldives we do have tiny islands with a handful of households. Two slightly larger islands we call cities, three or four cities maybe with 10,000 population plus. Right? But most of the time we have populations of less than 300 or maybe residential populations below 300 for many of the cases. For these cases in the past, in the early 2000s the tool that we use towards the tool of policy, our communications policy at the time obligated the service providers, what we call the universal connectivity obligation to have one telephone in every island. And thus we had 100% coverage very quickly, very early on with a telephone booth in every island. And this was a major milestone because very soon (inaudible) started forming in front of this. And we could see the elasticity in the market and the need. And then following on that 2G, 3G we have 100% coverage. The earliest real community kind of led initiatives for their own community networks was in the area of television. Cable TV was the first (inaudible) to set up local networks. And now the ISPs are actually partnering with these guys to provide Internet services through the -- this sort of cable. So it started with wireless cable, wireless cable TVs and now we have coax and in some island going in to fiber. These smaller companies but they

are not community owned. They are the small SME space where you
have kind of not ISPs, but it is a very interesting idea.

What is emerging now with the emergence of the players
understanding that there is real -- a real appetite for data,
even when there are a few people in the Maldives case, really
there is an appetite to go to the islands, but what happens when
everyone wants to invest in their own infrastructure in these
small islands, ultimately the citizens bear the cost. The
affordability in Maldives is the challenge, but can they afford
it in the islands and for those reasons this question comes to
the forefront now. Should we have one network? We should be
open access and share. And then should we ask everyone has to
write this. But then on the other side people say now you are
creating a monopoly of a carrier here. And that may have
negative consequences. So I would like to hear from the panel
and from the rest of the participants. Thank you.

>> DUNCAN MACINTOSH: Thank you very much. Panel, would
anyone like to grapple with that question? Should they have one
open access in the Maldives?

>> MAHABIR PUN: In a small island, in a small population,
so I think it is still good to have some competitors because it
raises a monopoly of this one operator, they will not be good in
terms of the affordability you are talking about. At least it
is good to have some competitors, not have this one operators
there. That's my solutions.

>> DUNCAN MACINTOSH: John Garrity, yes?

>> JOHN GARRITY: Just to follow up on that. And I will
defer to -- I see a number of experts in the room here who have
worked on open access policy, particularly for core network
infrastructure, middle mile networks but just to say from
previous experiences, so, for example, when I was at USAID and
we would fund middle mile infrastructure, there were certain
principles that we would follow. For example, if there was
going to be any public investment in the middle mile
infrastructure yes, we require open access policy at market
rates or, you know, there are cases where you have yes, a very
dominate provider. And you don't want to duplicate a lot of
that investment, open access policy would be put in place.
There are a lot of examples that other folks in the room would
be able to point to to help in the Maldives case.

>> DUNCAN MACINTOSH: Thank you.

>> Maybe you could consider it a new point. You want to
continue on this line?

>> DUNCAN MACINTOSH: I am happy to take a couple of
comments, but I do recognize that Christopher has a different
question. A few minutes on this discussion if that's okay. Go
ahead.

>> A comment from John Garrity where he talked about the unit costs and how these things change. A lot of noncommercial initiatives begin with -- I mean at a certain point and you are planning, you look at the unit costs of deployment and you look at the unit cost of deployment of the commercial entity, licensed operator and the -- there is a gap and the noncommercial or the local or the small network is viable, but as you were pointing out, these numbers change all the time. What was economical in year X is economical in year X plus 2. So when then happens is that the big guys move in and the previous innovative inclusive activity becomes pushed out. It is not limited to telecom only. I have seen it happen in (inaudible) where the grid comes out and then the nongrid solutions go out to actually creating financial difficulties for people who invest in them. How do we deal with this issue in a dynamic environment? Interaction between the commercial and the noncommercial so to speak.

>> DUNCAN MACINTOSH: I know that raises a question, but I do also want to bring in and again I should have said to introduce yourself.

>> I am Suresh from India. I want to add to a single solution, I want to give a multi problem. We are delivering optical fiber. And we have created a backbone network. We also had the idea of how we should go to the retail market in the smaller areas. So we went in to a joint partnership model with local cable TV operators. The cable TV operators they have been managing the local cable network. They have strengthened managing the local people and collection of money. In partnership with many cities and smaller towns we have an arrangement of 50, 50% initiative. So we provide bandwidth. So either they come to our awareness station and connect their cable network. We provide a modem cable TV signal, they are both carried out and the solution that deliver to local cable television requests. So they can just try where the -- some Government entity can enter in to every island and provide their fiber network with Internet bandwidth. Then later on all the local cable TV share that. That can be one of the solutions to the Maldives problem.

>> DUNCAN MACINTOSH: I will give the panel an opportunity to respond. If not I will invite Christopher and then the gentleman from Japan. Sorry.

>> JOHN GARRITY: I know that Christopher's questions will be very difficult. I will use my time here. But I think it is really a good one and I think it is something that we struggled where we try to encourage more investment in last mile connectivity initiatives this issue comes up. There is an issue of knowing where there is a lack of connectivity infrastructure

in areas. So that goes back to some of the discussions that others have had around better network access information, mapping open telecom issues. It is difficult where you don't know the network actually extends to be able to invest in some of these areas. That's a different question.

So there is different risk appetite thresholds for private network investors and public subsidy and even if you have the same level of risk with a Telco coming in to an area and essentially pushing out or undercutting some smaller community network or initiative that's trying to connect this community, I think the private sector investors will be more reticent to participate, versus public sector and public subsidy. In the end the public policy objective of reducing the cost of access to that community will be met even though it may be a private sector entity moving in there. So it is not a great answer. But I think one of the ways to think about it, is that yes, if you do provide public subsidy to connected community and in two or three years, if a private entity does come in, then at least the public policy objective is still served even if there may be not as much cost recovery on the initial investment.

>> DUNCAN MACINTOSH: I do recognize other people, but I will allow Christopher. And introduce yourself for those of us who don't know you.

>> Okay. My name is Christopher Yu. I teach at the University of Pennsylvania in the United States, but we are leading a project called one more connected. On this one issue, there is one caution about open access models which is most of the policy models were developed for open access to private carriers for legacy infrastructures that have been already built out and not ones that require new investments. When looking at literature on open access there is a lot of support for it under those circumstances, through unbundling but that doesn't port over to publicly funded green field new capital investment problems. And it is a private investment if you have an open access regime that means any upside will be dissipated and all the downside will be borne by whoever invested the capital. You have a growing empirical literature that on the private side who has deterrence on investment. Everyone else, wait and see if it pays out. If it works you jump in. And if it doesn't work you let whoever built it eat all the losses.

I'm delighted to have a chance to talk here and to thank the wonderful panelists for presentations. And I appreciate Nepal Wireless and Vanuatu. The Nepal Wireless is one of our first case studies and what they are doing and wiring in Nepal. If you don't know about the number of 200 plus communities that have been able to connect and Vanuatu through what deputy CIO Jack is talking about through the viral network is simply

amazing. It is not -- an example of an atypical build it is not end user based. Where use initial connectivity to connect clinics for low diagnosis because it takes about two days to get to a hospital.

So the big question is what is that worth undertaking, and second, hospitals on different islands treat different specialties. We have demonstrated that we believe it has actually saved 60 lives within a short amount of 18 months. Support for people to undertake the trip. It has been a fascinating development.

I have two questions. One, I think that John Garrity brings up an excellent point, that much to the surprise of people with telecom space the problem is not capital expenditure. It is operating expenditure. And that's coming up very dominantly in all the studies we are doing. The biggest problem backhaul and I would love to hear from both the panelists and from other people who are building community networks in the room how they are solving this because that's where a little information sharing would be tremendously helpful to the entire community.

The second point I would like is that was all the panelists talked about sustainability and generating revenue as the Thai examples and others do. What is striking is almost all the Asia community networks have scaled successfully in revenue models. A vast majority of community networks in other parts of the world don't, which means that provide survival grant funding and they will almost certainly collapse when the funding stops because they have no sustainable means.

I am very curious why Asia has been so much more successful in thinking about stability and making sure that the community networks have enduring success than other parts of the world because if you look at it, I think 80, 90% of other community network around the world have no revenue whatsoever and are struggling to make a transition from a fee service to a revenue based service. And there are -- they are trying to keep it affordable, but there has to be some sustainability. And so I -- I am curious if anyone has any insights in to what is unique about the Asia region that has made it more successful in generating a sustainability community network and the project.

>> DUNCAN MACINTOSH: I can see people interested in your question in the audience. Let me invite the panel.

>> MAHABIR PUN: Sure. So regarding your question about this backhaul problem, solving the backhaul problem for building the community network, that's the main issue. Because building community network, you know, we need to get connected somewhere. We need to get connected to the Internet and building, you know, the backhaul is the main cost. It is the most expensive part of

the program. So I try -- we face that. And because we have
been building a wireless network more than 200 villages out from
the cities, it takes like several days, not only one or two days
or three days, like seven, eight, days of walking to get to
those villages because there are no roads, nothing. To build
backhaul is the main problem.

     So to solve that problem I had suggested the Government of
Nepal to build the backhaul using the universal service funds.
In the last few years they have started after the earthquake,
where we started building the backhaul to connect this to the
local Government, the -- to the office of the local Government.
We have -- now we have a system in Nepal and we have around 740
local Governments all over the countries and the local
Governments wants to get connected to the Internet. And they
use the internet for providing services to the people. So in
our case the Government is using the universal service
obligation fund to build the backhaul because all these
commercial operators, this is not possible to invest that much
money to build a backhaul because investing that money, that
much money they are not going to get much turn in short time.
So that's what they are doing.

     So what they are doing is using that money, they are
helping to build, to using optical fiber or it is not possible
to build an optical fiber. They are building the wireless
network to connect the office under the local governments and
schools and clinics. So something that we are doing. So I
think this is very important and somebody has to spend money to
build a backhaul. And it should be the Government should help
to do that.

     >> DUNCAN MACINTOSH: Just on the backhaul question,
Professor Kanchana Kanchansut.

     >> KANCHANA KANCHANASUT: As for Thailand as I mentioned
earlier, we have a better situation where in the last five
years, the Government started to address this backhaul problem.
And they started to build this personal network. However I
don't -- I think that backhaul, that Government has built they
also have a sustainable problem because they -- they don't have
a plan to -- how to maintain the network which is very
expensive. And I'm not sure if that network will -- will
survive after the Government changes in the future. However,
you know, this kind of expansion has created demands and, you
know, all kinds of positive impact on the expansion from the
private sector. So I tend to believe in competition and their
expansion from the private sector. And I believe that it will
sustain and our network will try to use. So far we have not
connected our network to the network. I believe if you have
good competition in the backhaul network to expand.

>> DUNCAN MACINTOSH: Thank you very much. Maybe I can
invite members of the audience to respond to Christopher's
second question. Anyone care to explain why community networks
in Asia are more profitable or sustainable than the rest of the
world? Yes, sir.
    >> Well, my name is Hani. I am working for the United
Nations office and Government with Korean Government this last
year. In relation to your questions about the approach of how
the community network contribute to the network in their
community, so we can say two things. One is the community
network is not only the geographical community. Sometimes the
professional community is also the community for like this
community. So it -- we call the information villages. So those
information village was the -- conveyed by the Korean Government
initiatives. It is not the self-made community networks. So it
is actually the last mile but in the Korean, the local
Government provides some subsidies for maintaining those
infrastructure. After then -- a number of proposals to why the
information village can be made. One is connection or
communication with the rest of the family who invest in their
hometown. And the other one provide the arena for the local
product.
    So each villages or community in geographical community
produce their own local product. So they can make the market
online market and open to Internet Society in national level.
So they can make some projection through the online. Sometimes
they advertise some events relating to the tour or sometimes
they provide accommodation. So all mode of BNB. Sometimes they
provide home staying. Community make their own entrepreneur.
So they contribute to increasing the revenue of the community
served.
    >> DUNCAN MACINTOSH: Thank you. Yes, I know that the
gentleman has been waiting very patiently. Osmar, I see you.
We can come back to the subject and other subjects.
    >> I work for interstate projects in Japan. I used to work
for the community networks in the'80s before the Internet.
Actually a few days ago I was in Katmandu spending a day with my
very good friend and he was not talking too much about the
wireless network at all but national innovation center. So I
have this question, similarly we take note that pipes or the
information super highways are sort of giving something good.
Is it really true? Or should we start there or elsewhere? For
some lower and upper societies the completion is fine. They
might choose one or the other. To do what? To be
entertainment. Games on SMSs. They are necessary for the
previllage people that we are talking about.
    So I think we perhaps make some distinction about what

exactly is community networks or broadband or pipes will deliver
to the people. Because I -- I was here with the other Summit
talks. Too much emphasis might be put on the pipes. I'm happy
with that. Sorry about that. I used very much trying to
promote broadband in Japan. So it is a real good starting point
or if you build it, will they really come, what do they
come -- because when I was in the past villages after the
earthquake, some study about what exactly they delivered. What
we found was more (inaudible) with the comparative study, the
more information they needed to save the lives or get some food
or water, it was not online on the Internet. Internet rescue
services, Government. From the daily lives to save or improve.
So what we perhaps this approach, I wouldn't deny the fact that
we sometimes want to help entertainment but that's not enough
perhaps. And most of it come from these entertainments, not
basic communities perhaps. It depends on local communities but
we want to focus on solutions or resources to change these
lives. That was my question and comment thank you.
      >> DUNCAN MACINTOSH: Thank you very much. John, please.
      >> JOHN GARRITY: Just maybe a quick comment. Thank you
for that. I think a lot of people share your concerns. And if
you follow some of the discussion, I think it was even here this
week but also a lot of the reports that have been coming out,
for example, from the pathways for public commission out of the
UK, somebody mentioned earlier that funds for Internet are doing
this but people are trying to elevate this notion of what is
meaningful connectivity. What is meaningful universal access.
And so there is a lot of more focus on making sure that what we
are creating in terms of Digital Economy is also something that
is really providing agency to users to participate to be
producers and not just consumers. So there is a lot of work
there.
      Digital literacy, a lot of focus on private issues, but
that being said I think it is also important that, and this is
an issue we have in international development. We don't
necessarily play a paternalistic role to say what people should
be doing on the Internet. As long as it is legal and we have to
drop there. But if it is really entertainment and the ability
to communicate with relatives that have brought people online,
really let's be honest. That's one of the reasons why people
have really gravitated to participating online. This is the
reason why the mobile miracle was substantive. We should not be
paternalistic. We want to focus on improving the income and
telemedicine. And an Article in Economist about a month ago
that showed a lot of data that people are spending time on
Internet in time passed activities. They are going on to
communicate and then moving up to the sort of ladder to

participate in productive uses. So yes, we need to focus on
what do we mean by meaningful access and connectivity, but we
have to be careful not to be prescriptive on what people should
be allowed to do online.
    >> DUNCAN MACINTOSH: Chris, go ahead and then (inaudible)
next.
    >> So I take the question seriously, that there is to me
demonstrated we have to make the case for how this is going to
work. And I take this also from the question from the
representative from Iran yesterday about what does it mean how
we operationalize this in concrete terms. What I saw -- so the
missing link here is proof even if you are convinced there are
benefits of that connectivity, based in health care. Should we
invest in education. Should we invest in digital literacy.
What are the sufficient turnover of dollars of development of
limited resources. What I do find is I think that to overcome
skeptical audiences we have to demonstrate it, but even if there
is convinced audiences we have to demonstrate it.
    So I will give you some concrete examples. We have a lot
of anecdotal things how to approve education, health care. We
are doing a pilot in a rural area with in-house connectivity for
one disease which is diabetes and estimates that on a per
hospital and -- it is saving them a minimum of $300,000 a year
and what we need to find out if how robust that number is and
how it can be expanded, but all of a sudden you have hospital
administrators, telecom companies, other providers and health
Ministers deeply engaged in this process. And they can ask the
question is it better off using it for this or something about
heart failure or other health issues. It helps health is no
longer enough. And it will help education. We don't know if
that means lower school education, upper school education.
    One of the things that we are studying digital literacy,
basic technical skills and best provided over apps or in person,
how long it has to be. And these are all things we are testing
to get real numbers on. I can't say that this will be
scientifically great. But when you are starting with nothing,
anything that is in the ballpark is helpful. And our hope is to
create communities, reach a stage where we need a real evidence
base for decision makers who are facing many demands on limited
resources to understand how to use them in a way that benefits
citizens the most. And I think that the conversation we are
starting down here is an important part of that.
    >> DUNCAN MACINTOSH: Thank you. I am getting a signal
that we coming to the end. I will allow Mahabir to have a final
comment.
    >> MAHABIR PUN: Regarding necessity of community network
and Christopher asked why community networks in Asian countries

are doing well, I can tell about other countries. They are survising because they don't have any choice. Because mostly the area where we build community network is in remote areas with help to make it sustainable. So the communities are working really hard to make it sustained.

But another issue is how to make this sustainable is, you know, other than the no choice, the services has to be beneficial for the people. In the services, in the community network can bring, you know, services that is good for the communities, or the communities need that it will survive. If the services is not useful, then it doesn't matter how strong a network you build and -- builds to bring the Internet. How much Internet broadband, Internet will bring, the network is not going to survive. So to do that, so what we are doing in the call is we are trying to bring services that is useful for people suggestions, telemedicines or health programs and education programs and, you know, digital literacy programs.

So there is several other programs that the community needs. We need to ask the communities what they need. And then we need to try to bring that services for them. Not that we should tell them that you should -- you need these services and we brought the services and use the services. We tell that like that. And it is not going to work. So we need to develop programs based on the need of the communities. That's what we are trying to do through the innovation center. What we are trying to do we are asking the local governments to let us know what they need in the communities. So these are upon the problems, based upon the requests. So we try to develop, you know, services that is beneficial for them. Thank you very much.

>> DUNCAN MACINTOSH: Thank you. And my apologies to those of you who still had questions and comments, but thank you all for your participation. And thank you to the panel. And I will hand back to the master of ceremonies.

(Applause)