7TH COMMUNITY NETWORK XCHANGE (CNX) – ASIA PACIFIC 2023

"Connecting Indigenous & Mountain Communities"

REPORT
JANUARY 2024

7th Community Network Xchange (CNX) – Asia Pacific

November 24 – 25, 2023
Royal Global University (RGU)
Campus, Guwahati, Assam, India

7th CNX 2023

Host Organiser:
Council for Social and Digital Development (CSDD) & North East Development Foundation (NEDF)

Host Institute:
Royal Global University (RGU), Guwahati, Assam, India
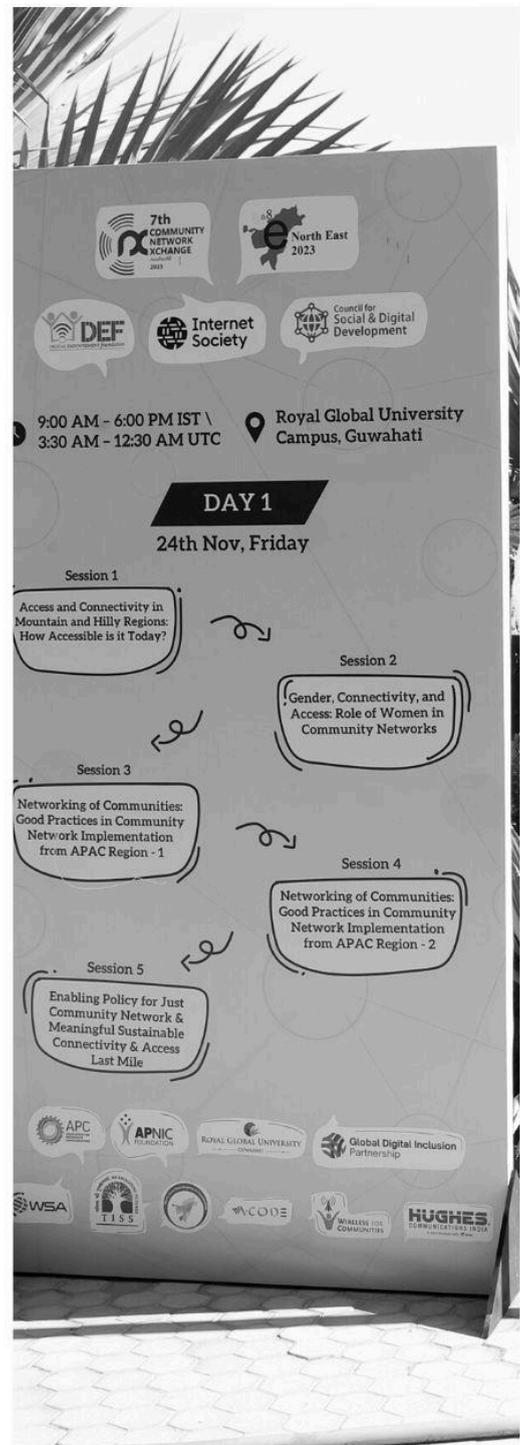
Promoter:
Digital Empowerment Foundation

Partners:
The Internet Society, Association for Progressive Communication (APC), APNIC Foundation, Hughes Communication India

Report by:
Violina Barman & Farheen Jia
(Council for Social and Digital Development)

7TH COMMUNITY NETWORK XCHANGE (CNX) – ASIA PACIFIC 2023

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1. INTRODUCTION TO CNX – ASIA PACIFIC

Community Network (CN) is a proven technology, model and an approach, with success stories in connecting last mile communities, in absence of mainstream networks in network dark areas, and there are positive stories from India, Nepal, Tasmania, Spain, East Timor, Indonesia and from far and wide, world over.

The Community Network Exchange (CNX) was launched in 2017 as an Asia-Pacific Regional platform where community network solution providers can share their learning, experience around regulatory, spectrum, licensing, technological barrier and challenges and opportunities around it, to build an alternative pathway for last mile sustainable connectivity and inclusion. It was aimed at providing opportunity for stakeholders to collaborate, share and support in training & exchange activity, share their learning and experiences and share policy briefing papers, and knowledge resources to contribute to the CN ecosystem in the Asia Pacific Region.

CNX Objectives

i. **Knowledge and Networking:** Engage the wider CN providers and stakeholders in the Asia-Pacific Region to share learnings, experiences and technological innovations in one platform, while creating a consortium of CN providers and social funders for the purpose of sustainability purpose of sustainability in Asia-Pacific; to provide support to community network gatherings and hands-on work meetings at regional level for advocating and addressing regional policy issues and challenges; to share recommendations from the summit at other international forums such as Internet Governance Forum (IGF) and World Summit on the Information Society (WSIS), among others.

ii. **Policy and Advocacy:** To discuss sustainable business models around community networks with sound understanding of social and economic challenges; to identify various issues such as spectrum, technological, regulatory, content and localisation, among others, that need to be addressed in the national and international framework of policies; to develop a series of policy briefing papers that focus on regulatory issues that need to be addressed; to make community networks visible to policy makers so that they can be considered as an actor within the telecommunications ecosystem.

iii. **Training and Exchange:** To develop a comprehensive and self-contained guide to strengthen grassroots expertise by training community members in basic wireless technology; to enable individuals (barefoot engineers) to not only to run and manage these networks but to also further transfer their skills to others creating a multiplier effect; to organise country-level exchange programmes for learners and barefoot wireless network engineers who can visit and engage in other country networks and learn from their experiences.

Past CNXs

Towards this goal, the Digital Empowerment Foundation (DEF), Internet Society (ISOC) and Association of Progressive Communities (APC) came together to launch the first annual Community Network Summit 2017 to collaborate within and among community network providers. The theme of the first CNX was *'Understanding the Social & Economic Sustainability Approaches of Community Networks in Asia Pacific'*. The primary objective of the Summit was focused on understanding sustainable business models for community networks running in the Asia Pacific region, with the Summit having representation from more than 10 community network providers, community radio stations and practitioners from 8 countries. The Second CNX in 2018, held in New Delhi with the support from ISIF Asia, Commonwealth of Learning (COL) and UNESCO focused on identifying *synergies between community networks and community radios in promoting public Wi-Fi access in Asia Pacific countries*, which saw representation from 10 countries. The Third CNX in 2019 focused on *"Community Networks and Internet of People,"* with over 50 representatives from 12 countries representing the community networks, community radio stations and their communities participated.

The Fourth CNX 2020 focused "Meaningful Access with Community Networks", while acknowledging Community Network as a technological alternative to the Internet for people's communications system,' which is infrastructurally independent. CNX 2020 took place in a new reality because of the COVID-19 pandemic, the effects of which were felt locally, nationally and globally. In this new set of circumstances and faced with unique questions, CNX 2020 found itself shift to an online medium, with conversations taking place over six days, with over 40 speakers' participants from 23 countries, joining in for the sessions of the conference. The Fifth CNX held virtually across 3 days in 2021 with the theme, 'Community Network for Social Good,'. The CNX APAC 2022 (the Sixth Edition) took place over the five series from June 2022 to October 2022, with 31 panellists from the Asia-Pacific region joining online, with multiple deliberations and presentations around the main theme of 'Walking the Talk with the Internet', with the objective of presenters across countries narrating community network journey while sharing experiences in the CNX online.

2. CNX SINCE 2017 – KEY HIGHLIGHTS

Since 2017, CNX has been focussing on critical areas around Community Network and its growth in the Asia-Pacific Region:

☞ **Sustainability of Community Networks:** This needs to be contextual—it needs to be localised keeping local issues and cultural issues at hand. While some models can be replicated elsewhere, others need to be contextual. A better understanding of sustainability is required; sustainability of CN models is gauged beyond pilot phases and achieving the maturity stages.

☞ **Guidelines:** Understanding and measuring of the socio-economic impact of community networks is required to form guidelines for benchmarking.

☞ **Measuring Impacts:** Basic datasets need to be collected to monitor to measure the impact of CN on community for scaling, replication and advocacy for a wider adoption.

☞ **Focus on Deserving Communities:** CNs should focus on indigenous communities in the Asia Pacific region, involving the rural, remote, vulnerable ones that are restrained due to social, economic, cultural, institutional and terrain barriers.

☞ **Consortium of Best Practices:** Consortium is critical to bring together CN best practices around infrastructure, content and user capacity building in CN in varying technology, tools, regulations and socio-economic and cultural conditions ensure Internet connectivity, instead of these efforts are scattered around the globe, and mostly implemented in silos by community network operators.

☞ **Research & Evidence Building:** Timely data-oriented studies are important for old and existing community networks to test their economic and technical viability to learn for future models.

☞ **A Rights-based perspective**: CNs are and need to be seen from the prism of freedom of expression that has impacted lives but which require measures for privacy, safety and security of access.

☞ **Convergence of community network and community radio players** calls for mapping out synergies between community radios and community networks; identify and discuss their role in creating public WiFi access spaces; while creating barefoot community network engineers with the help of community radio stations; showcasing best practices around infrastructure, content & user capacity building; and demonstrating community network technology solutions that can be adopted by community radio operators

☞ **'Synergies Between Community Networks and Community Radios** in Promoting Public Wi-Fi Access in Asia Pacific, with more engagement between them and community network operators, as both sectors have strengths that can empower each other. The physical infrastructure, remote wireless reach and available human resource at various community radio stations across Asia Pacific are pool of opportunities, waiting to be leveraged.

☞ **Connecting the unconnected population** is not lucrative enough for the private Internet Service Providers (ISP), therefore, the government needs to relax policies to make room for community network operators to leverage unlicensed spectrum and even TV white spaces.

☞ **Active producers of local content** can complement availability of CN infrastructure to empower the communities. The Internet is an empowering tool for potential content producers, as it allows people to share their knowledge without necessarily knowing the script of any language.

☞ **Community networks need to be considered not as an alternative** but as serious players in providing internet connectivity in the last-mile space. There is a lack of bottom-up movement for CN and related to this is the continued challenge of finding human resources at the community level to establish and operate the CN.

☞ **Governments should promote infrastructure sharing and access to rights** through policies that allow smaller networks to share infrastructure and build infrastructure in a more cost-effective manner.

☞ **CN can also learn from other community-based initiatives** such as successes as well as failures of telecentres and community radio networks in the region, particularly in planning and engaging with communities to address needs, developing relevant content, establishing community ownership and sustaining the initiatives.

☞ **There is a need to address issues of privacy and security** in CN, given the rising incidences of security breaches, as well as misinformation and fake news on social media.

☞ **There is a need to develop South Asia and South East Asia community network principles** that share common values, vision, tactics and strategies. Such guiding principles will be useful for self-reflection.

☞ **There is a need to focus on "responsible connectivity"** which enables people to benefit from digital opportunities without undermining anyone's human and digital rights.

☞ **It is important to reduce the barriers for obtaining an operator's license** for community networks along with reducing fees, and the bureaucratic and administrative bar. Transparency and access to information on the location of towers, fibre, access points, and spectrum usage will make it easier to plan and deploy networks. Access to spectrum is also a key enabler.

☞ **It is about working 'with' communities, not working 'on' communities.** Initiatives need to be community based and community paced with people who understand the community and the local context, including local cultures and norms. Effective partnerships are those that take into account the needs of the community.

☞ **Gender sensitivity** should be an integral part of deploying community networks. This extends to how and where people can access the network as well as who is part of the deployment and operation.

☞ **Ongoing capacity building** in CN is important to ensure community network operators are able to continually improve their technical skills and benefit from best practices.

☞ **Community networks are successful and sustainable** when the local community can see the value of digital connectivity and the opportunities it provides.

3. 7TH CNX 2023

3.1. About CNX 2023

The theme for the 7th edition of CNX in 2023 was *Connecting Indigenous and Mountain Communities* with a focus on the Asia Pacific region. It was a two-day event that took place at Guwahati in Assam, one of the eight provinces/states in the North East Region of India. The event, held in hybrid mode and the main event at the Royal Global University (RGU) Campus in Guwahati, Assam in India, provided a platform for the stories of dedicated individuals contributing in improving digital connectivity in challenging geographical terrains and emphasized how their unwavering commitment and passion play a pivotal role in extending internet access to their respective communities.

3.2. Objectives

i.   To engage existing and new stakeholders for understanding, sharing experiences, learnings and good practices;
ii. To provide opportunity for learning, training on CN;
iii. To network for partnership, collaboration at different levels.

Partners

The 7th CNX 2023 had a strong partnership support from the following:

- Organiser: Digital Empowerment Foundation (DEF)
- Local Host & Organiser - Council for Social and Digital Development (CSDD)
- Host Institute: The Royal Global University (RGU), Guwahati, Assam, India
- Principal Partners - APNIC Foundation, the Internet Society, the Association of Progressive Communication (APC) and the Hughes Communications India

4. 7TH CNX - DAY 1: NOVEMBER 24, 2023

4.1. Inaugural Plenary Session - 'Connecting the Indigenous & Mountain Communities'

The inaugural plenary of the 7th CNX-Asia Pacific deliberated on critical aspects of connecting the communities, that are unconnected, unreached and inadequately networked, due to social, cultural, economic, institutional and geographical barriers. Panellists:

- **Atsuko Okuda**, Regional Director, ITU Regional Office for Asia and the Pacific
- **Sylvia Cadena,** Acting Chief Executive Officer, APNIC Foundation [Online]
- **Bikram Shrestha**, President, Nepal Internet Foundation & Founder / Past President, Internet Society, Nepal Chapter
- **Hasina Kharbhih**, Founder & Chairperson, Impulse NGO Network, Meghalaya, India
- **Dharmendra Singh,** Vice President - New Business, Hughes Communications, India
- **Carlos Rey Moreno**, Co-lead Local Networks: Policy and Strategy, APC [Online]
- **Prof. Sasmita Samanta**, Founder & Chairperson, Sustainable Outreach and Universal Leadership Limited (SOUL)
- **Akanksha Sharma**, Program Officer, ITU Regional Office for Asia and the Pacific
- Prof (Dr.) S. P. Singh, Vice Chancellor, Royal Global University (RGU), Assam

The session was moderated by: Osama Manzar, Founder & Director, Digital Empowerment Foundation

Discussion summary:

In the inaugural session of CNX, the panel engaged in a comprehensive discussion on the state of access and connectivity in mountainous and hilly regions. The insights provided by the esteemed panellists shed light on the difficulties faced, ongoing initiatives, and the transformative impact of internet access in these challenging terrains.

- The session was opened by **Atsuko Okuda** who began by delineating the elusive nature of universal and meaningful connectivity even as there is better availability of internet services. In consideration of the crucial role it plays in achieving SGD goals, the International Telecommunication Union (ITU) and the Office of the United Nations Secretary-General's Envoy on Technology established a new set of aspirational targets for 2030 across internet connectivity. To be able to achieve the targets in a timely manner there is a need to build better and stronger partnerships across stakeholder groups. ITU's Smart Villages and Smart Islands (SVSI) Initiative is one such collaboration with involvement of the Ministries, UN agencies private sector, civil society, academia, and implementing partners. The ITU started the ITU Area Office and Innovation Centre in March 2023 in New Delhi, India which will greatly facilitate building new projects and forging partnerships in the region, including North East India.

- **Sylvia Cadena** reflected on some of the challenges faced by APNIC Foundation, the fundraising arm of the technical organisation APNIC (Asia Pacific Network Information Centre). The maintenance and operations costs of internet and connectivity infrastructure in remote regions often mean that the engineers and personnel required for maintenance are often stationed at places hours or days away. For network operators- ISPs, community organisations, university campuses, etc. that deploy networks at the service of communities- the cost of upgrading a network and deploying new networks that are interoperable with the previous infrastructure is hindered by taxation. Additionally,

there are market barriers to accessing the internet bandwidth that people will be distributing because even if it is owned and operated by the community, they still need the internet to come from somewhere- at times they are not capable of establishing links with the industry due to various reasons as the remoteness of the location, market ecosystem, etc. Lastly, some caution needs to be exercised when supporting top-down approaches of companies that claim to be capable of remedying low connectivity in remote locations while also not engaging with the local infrastructure and the local stakeholders.

Sylvia spoke about how there is a need for better documentation and of sharing knowledge and the success stories in the field of community networks. There are several communities facing similar challenges in getting access to digital connectivity who can utilise the cases as inspiration. She also emphasised that organisations working with communities in remote locations should assist the people in articulating their suggestions when comments and submissions are invited for changes in regulatory framework.

- **Bikram Shreshtha** spoke about the crucial role that civil society organisations and individuals have played in consistently working towards the cause of connecting the remote and hilly regions of Nepal. The government does not have policies addressing last mile connectivity. With decades of experience in the sector via several organisations, Shreshtha and his collaborators were able to establish a <u>community network for the people of Khunde and Khamjun</u>, roughly 30 kilometres from Everest base camps. He spoke about the 3Cs that can help address this issue of fast-forward processing of improving meaningful connectivity - **coordination, collaboration, and cooperation**. In his decades of experience in the sector in Nepal, he has been engaged with working in several places that would otherwise be considered the last mile to come online in Nepal.

- **Hasina Kharbih**, drawing from her experience working for over three decades in the social development sector foregrounded that often the government policies announced in respect to the North East Indian region are not made actionable.

She spoke about the challenges faced in particular context of two projects the Impulse Case Management Centre, and as the implementing partner of Meta Small Business Academy in the several of the eight north east Indian states. The Impulse NGO Network became aware of the magnitude of human trafficking in Meghalaya while working in the region. The ICMC is an exemplary project which compiles and records all relevant information on human trafficking cases reported to them. The scalability and relevance of the project has meant that the Impulse Model has won global recognition for their efforts. Kharbih emphasised on the importance of capacitating all police stations at the last mile with the internet as lack of connectivity also contributes in leaving criminal cases unreported and under-reported. She also spoke about the scale of additional resources her NGO has to deploy to maintain the ICMC database as vast regions where the NGO operates remain outside of network and connectivity considerations.

Similarly, as the implementing partner of the Meta Small Business Academy in the north east Indian states, a region where establishing and maintaining internet connectivity continues to be a challenge, the NGO has to deploy additional resources. Among other challenges, the organisation often has to collect the particulars of the beneficiaries and manually upload their credentials from their headquarters for certification by Meta, a task which could have been made redundant with better connectivity.

According to Hasina, it is important to co-create when working on a multistakeholder collaboration as it often happens that if organisations do not co-create, they become competitors. Kharbih put forward that the unique location of the north eastern states and the Eastern Himalayan region, much of which shares international borders has room for innovations in network connectivity to assist the people living and working in the region.

- **Dharmendra Singh**, Vice President - New Business at Hughes Communications India spoke about how even as there are several initiatives underway to connect the unconnected regions to the internet in India there is still a scope for more. He suggested that the Big 3 of telecommunications company should revisit their policies

on how they may contribute to connecting the unconnected. He also emphasised that even if the network is operated in a community set-up, the funding needs to consider the costs of maintaining and operating the networks.

According to Singh, the government is assigning funds for extending internet connectivity, yet, there are still places which remain without 3G or 4G connectivity. Firstly, areas without connectivity need to be mapped. He is of the opinion that it is best if some of the companies/organisations collaborate to work on a POC (proof of concept) to demonstrate the technology models that work for the North east Indian region. The next step would be to approach the government with the POC through the channels made available and the big mobile network operators or providers like his company can join in as an implementing partner. On being asked to elaborate further on how he would like to contribute to the north eastern regional states' issue of poor connectivity, Singh said that Hughes Communications would be willing to extend support to locations that are completely unconnected in about 2 states. They are willing to support in terms of equipment, installation so that the local teams may run these networks to be able to present to the government for replication of one of the models that can work for such regions.

- **Carlos Rey-Moreno,** Co-lead Local Networks: Policy and Strategy Co-lead Local Networks: Policy and Strategy, Association for Progressive Communications (APC) spoke about the need for alternative network systems which are not driven by the commercial telecom companies. Providing meaningful and local value services require involvement of the community. He finds that there are positive changes supporting the entry of actors other than the commercial telecom companies in providing reliable connection. This will greatly expedite the process of bridging the digital divide. In its most recent, the Bangladesh government closed its public consultation on the national broadband policy. The government had included community network in its policy. Indonesia has also started consultations regarding the viability of community

networks for connecting their last mile. Carlos appreciated that there are some places which were connected as a result of the CNX. He added that there are also some places which have connectivity but it is not utilised for various factors ranging from pricing, to lack of utility to the community. He added that from APC they are open to initiating collaborations and finding common agendas.

- **Sasmita Samanta** spoke about her experience in working as an academic and then in education, healthcare and livelihoods as an organisation. She feels that community learning will prove important in improving access and meaningful connectivity. Her <u>organisation</u> recently developed a product for virtual ICUs for patients who meet with an accident in remote locations. She said that in the age of rapidly advancing AI, we should be more considerate towards giving value to human emotions and willpower. We also need network connectivity to connect people across the globe. She appreciated the panel for starting a discussion on how technology and internet support can be extended to people left unconnected.

- **Akanksha Sharma**, Program Officer, International Telecommunication Union (ITU), in regard to fast-forwarding meaningful connectivity, said one of the first things that ITU does is mapping all the pain points, learning about the issues faced on the ground in connecting a people to the internet. As had been mentioned by Ms. Atsuko Okada in her address, the SVSI initiative is one such endeavour. Recently ITU had extended operations in Mongolia, a country which has a sizeable peripatetic population. They are working with companies such as CISCO and other companies who may have the relevant solutions for the community. She believes that connectivity is not the only issue, but should be backed with security, skills, devices, etc.

- **Osama Manzar** closed the session by focussing on a few positive developments in this sector. He appreciated that ITU now had an office in Delhi, that the private sector is now interested in supporting the people to set up community networks. He appreciated the participation of diverse collaborative entities on one platform. He said that it is imperative that the networks are well capacitated in terms of security and trustworthiness. He also noted the importance of community in mobilising to raise their issues with connectivity, as also in terms of digital public infrastructure (DPI). He termed this the C3- connectivity, capacity and community.

4.2. CNX SESSION 1: Access and Connectivity in Mountain and Hilly Regions: How Accessible is it today?

Speakers:

• N Jairam, Marketing head and Sr. Director for Enterprise business - Hughes Communications India

• Michael Ginguld, Co-Founder, Director, Strategy & Operations, AirJaldi - Rural Broadband Pvt. Ltd, India [Online]

• Bikram Shrestha, President, Nepal Internet Foundation

• Hasina Kharbhih, Founder & Chairperson, Impulse NGO Network, Meghalaya, India

• BC Nayak, CTO, Reliance Jio Infocom Limited

Moderator: Carlos Rey Moreno, APC [Online]

• **N. Jairam** underlined the difficulties in mountainous areas in terms of consumers, technological availability, and government offices. Adoption of sophisticated technology necessitates proper power operation—power operation as in solar electricity, satellites, and so on. However, it comes with a significant problem because gaining access to them is a challenging undertaking, particularly in rural regions. The population's ground-level input has been acknowledged as community participation.

• **Michael Ginguld** talked about accessibility as he has been working in mountainous areas for ages. He focused on four elements - 1. Connectivity in the remote regions needs to be fulfilled; 2. Should be established by someone who is technically sound; 3. The connection installed should have speed and stability; 4. It needs to be sustained and affordable. To achieve such an aspiration to connect mountain and hilly regions, there needs proper planning that is economically sound. In India

above 20 MBPS is desired, and a good internet connection is always preferred with a price that can be easily afforded by the general masses.

- **Bikram Shrestha** presented the Khunde Community Club case. Khunde, a village in Nepal, is also well-known for its magnificent landscape, which draws a large number of visitors. The club was set up with the goal of providing internet access. This aided in improving education for children in a location with limited connections and resources. It gives access, opportunities, and advantages. Marketing on social media platforms has impacted the life of the residents of Khunde village since the onset of internet connection.

- **Hasina Kharbhih**, focused on how with the goal of preventing human trafficking, she focused on how internet outages might stimulate risky motion, which can lead to human trafficking. Another key goal of Kharbhih was to improve the economy by promoting local artisans (indigenous women) from various tribes to create sustainable living with the use of internet access. Access to the Internet offers both advantages and disadvantages. Digital security is another viewpoint on the internet and technology. Cybercrime, identity exploitation, basically misuse of the internet have become prevalent in India in recent years.

- **BC Nayak**, CTO of Reliance Jio, discussed digitization and connectivity challenges, as well as how the younger generation values internet access. He also addresses how customs have evolved, with money transfers now taking place online rather than through money orders in the past. He emphasised how disconnected hilly and mountainous regions might be integrated into the huge array of networking, and therefore considerable innovation is required in terms of developing improved infrastructure, assuring community collaboration, and so on. "Connectivity is instant," he remarked. Recently, internet connectivity was made

available in three Assam districts: Karbi Anglong, West Karbi Anglong, and Dima Hasao, which encompassed 332 villages. When analysing the needs for a community network, it is critical to consider power requirements. To function successfully after digitalization, network bandwidths of 2 Mbps, 3 Mbps, or 4 Mbps must be highly accessible and continually given by the government. "Data will one day be the future of the planet, we won't be able to survive without internet connectivity," he said, quoting Mukesh Ambani. Thus, he provided two examples that "power is essential." First, during the COVID-19 time, students living in internet-remote places had to climb trees and study outside of their homes to get an internet connection. The second is the international border. Earlier, internet access and connection were denied at international borders, but with progressive development, the Ministry of Telecommunication relaxed the limits that had been imposed.

4.3. CNX SESSION 2: Gender, Connectivity and Access: Role of Women in Community Networks

Speakers:
- Maria (Mia) Perez, Switch! National Coordinator, Philippines [Online]
- Isha Suri, Research Lead, Centre for Internet and Society, India [In person]
- Amrita Choudhury, Director CCAOI, Chair AprIGF [Online]
- Dr Rajashree Joshi, Programme Director, BAIF Development Research Foundation [In person]
- Gayatri Buragohain, Executive Director, Feminist Approach to Technology (FAT), India [In person]

Moderator: Sarbani Belur Banerjee & Carlos Rey Moreno, APC

The second session of CNX focused on the pivotal role of women in community networks, exploring their contributions, challenges, and the transformative potential of gender-inclusive connectivity. The panel featured diverse speakers and presenters, each offering unique insights into the intersection of gender, technology, and community development.

- **Mia Perez,** the National Coordinator at Switch in the Philippines, discussed Switch's mission to empower women and those identifying as gender non-conforming. Mia highlighted the importance of approaching community networks from various perspectives, addressing technical aspects, and power supply concerns, and aligning with the objectives of APNIC. Mia is actively researching ways to enhance women's involvement in community networks through affordable technical solutions. Her focus is on providing training and certification to empower women to handle reliable, secure, and safe networks, thereby ensuring global stability and accessibility.

- **Isha Suri,** Research Lead at the Centre for Internet and Society in India, emphasized the need for women's self-representation and advocacy to address their marginalization in diverse settings. She underscored the impact of gender restrictions on mobility, access to skills, and community involvement. Isha called for better-designed regulations to overcome discrepancies and highlighted the importance of gender-aware policies. She stressed that the implementation and effectiveness of policies are crucial, especially in ensuring women's access to public technological resources.

- **Amrita** discussed the significance of women's representation, considering they constitute half of the global population. She delved into the value of networks and communities in the context of the modern world, emphasizing their role in empowering women.

- **Dr. Rajshree Joshi**, Programme Director at BAIF Development Research Foundation, highlighted the paradox of women's significant use of social networks and technology, juxtaposed with the lack of recognition of their vulnerability in online spaces. She shared an anecdote from a rural district in Uttarakhand where women engaged in mask-making during the pandemic, showcasing the vital role of internet connectivity in generating employment.

- **Gayatri Buragohain** underscored the importance of ensuring appropriate representation of women in the tech industry. She advocated for gender parity and diversity, emphasizing that diverse perspectives lead to creative problem-solving. According to Gayatri, women's influence on and contribution to technical developments will be crucial in shaping the future.

In summary, the session provided a comprehensive exploration of the role of women in community networks, touching on empowerment, representation, policy implications, and the transformative potential of gender-inclusive connectivity. The diverse perspectives offered by the speakers highlighted the multifaceted nature of the challenges and opportunities in this crucial domain.

4.4. CNX SESSION 3 -Networking of Communities: Good Practices in Community Network Implementation from APAC Region -1

Presentations:

•   **Model Building of Community Networks** by Gomer B Padong, Institute for Social Entrepreneurship in Asia (ISEA) - [Online]

•   **Kacific next-generation in Asia Pacific**, by Beatrice Mok, KACIFIC - [In person]

•   **RedEsperansa.tl ("network of hope")** by Ramon Roca, Naroman Esperansa, Timor-Leste - [Online]

•   **Bluewave Samoa District Connectivity Project**, by Togisala Tony Sua Leota, BlueWave Wireless [In Person]

Moderator: Arpana Sharma Singhal, Deputy Director, Digital Empowerment Foundation

•   *Model Building of Community Networks by Gomer B Padong, Institute for Social Entrepreneurship in Asia (ISEA)*

Gomer B Padong, a dedicated member of The Institute for Social Entrepreneurship in Asia (ISEA), significantly reflected upon a learning and action network established by social enterprises, resource institutions, and scholars. The speaker emphasized about the collaborative effort that aims to foster knowledge creation, capacity development, and movement-building for social entrepreneurship throughout the Asia-Pacific region.

Under Padong's leadership, ISEA has successfully made provision for connectivity across the region, benefiting businesses, schools, hospitals, and other institutions, including generation of over 2000 jobs in the past four years. According to the speaker, the committee, comprising a network of 3000

workers, establishes crucial links between educational institutions, workplaces, and rural areas. The implemented DRS system claim to boasts a range of approximately 250 meters, delivering high-speed connectivity of around 85 Mbps, therefore, emphasizing the importance of meaningful connectivity.

There was evident emphasis on choosing the right reseller, as local expertise and success play a vital role in ensuring effective distribution. Furthermore, it was claimed that the innovative approach of using vouchers instead of paper vouchers for internet connectivity facilitates seamless transitions for individuals relocating to new cities, with plans designed to be cost-effective. The speaker further insisted on the institute's commitment to social entrepreneurship and emphasized that connectivity has not only created economic opportunities but has also established a sustainable model for inclusive growth in the region. The speaker had set the instances of the institute's exemplary specific work initiatives, i. e, Community Network Initiatives in the Philippines region including Philippine Rural Reconstruction Movement and Philippine Coffee Alliance.

- *Kacific next-generation in Asia Pacific, by Beatrice Mok, Director, KACIFIC*

Beatrice Mok is the director of the KACIFIC foundation, which promises to deliver high-quality satellite internet at an affordable price using a small, easy-to-install, and low-cost antenna. Mok cited increasing variety of production in rural areas, and that they have successfully put such satellites in 25 places. She stressed the need for "meaningful connectivity," which includes affordability.

She had identified three crucial practices:

1. Selecting the best reseller and discovering the type of business and consumers around the area and the challenges they face.

2. Community marketing and awareness.

3. System flexibility, where resellers are allowed to use their own voucher system.

The speaker considered the infrastructure aspect as quite expensive. Therefore, to facilitate its availability, Mok emphasized utilization of both private and public funds to utmost advantage. In this context, she emphasized and referred to the instance of Information Society Innovation Fund (ISIF).

- **_RedEsperansa.tl ("network of hope") by Ramon Roca, Naroman Esperansa, Timor-Leste_**

The speaker specifically referred to the context of networking. Roca had significantly outlined availability of private connectivity. In this regard, he referred to it as a part of Naroman Esperansa, a school that is rooted in Timor-Leste's environment, culture, and values. Further, Ramon saw the significance of internet access and its benefits in the lives of teachers as well as pupils. He declared that a company's strategies must be adaptive and long-lasting. With an economic model in place, they may attain sustainability. Ramon defines sustainability as the use of technology only where it is helpful and adaptive to the local people.

- **_Bluewave Samoa district connectivity project, by Togisala Tony Sua Leota, BlueWave Wireless_**

The speaker referred to the BlueWave Wireless' initiative that seeks to givecommunity connectivity and digital literacy to schools, as well as to assist women within social-cultural environment through medium of technological education. According to Tony, BlueWave has adopted a unique strategy for implementing internet connectivity services, focusing mostly on the community because they rely on the service/connectivity they provide. They strive to figure out what model works best and proves feasible for them and to their problems. Infact, the speaker emphasized on actions instead of having theoretical notions.

4.5. CNX SESSION 4 -Networking of Communities: Good Practices in Community Network Implementation from APAC Region - 2

Presentations:

• The Prayuters Library: bringing Internet connectivity and digital skills to rural populations, by NAY Maneth, Open Development Cambodia Organization (ODC) - [In Person]

• Better Access and Connectivity (BEACON) project, Philippines. - Online

• Hello Hub, Nepal Community Network, by Rabiraj Khadka, Technology for All, [In person]

• Janata; Affordable Internet for the community, by Mainul Hassan Alin, Bangladesh [Online]

Moderator: Jenny Sulfath, DEF

• *The Prayuters Library: bringing Internet connectivity and digital skills to rural populations, by NAY Maneth, Open Development Cambodia Organisation (ODC)*
As a founder of the Prayuters Library, Maneth recalled his personal experience while translating Prayuter , who is considered as someone who fights for knowledge. The speaker highlighted the motivation behind establishing such a wonderful foundation was to provide access to e-books, and digital literacy instead of access to physical books. He emphasized the relationship between ICT and digitalization. He further emphasized the connections between education, literacy and connectivity.

• *Better Access and Connectivity (BEACON) project, Philippines*
John Garrity, representing USAID/Philippines' Better Access and Connectivity (BEACON) project, had addressed the imperative of enhancing connectivity in

remote locations and underserved communities through the Department of Information and Communications Technology - Philippines' Free Public Internet Access Program (FPIAP). Drawing significance on a wealth of technical resources, including collaborations with Aminata Amadou Garba and Arndt Husar, Garrity underscored the significance of community network models for connecting unserved and underserved regions.

Emphasizing sustainability and scalability, the discussion had highlighted successful practices such as revenue-sharing arrangements, rural fibre deployments, and fixed wireless access options. The importance of having comprehensive network mapping and serving as an anchor tenant for commercial internet service providers (ISPs) to extend services to unconnected areas was emphasized.

Garrity also advocated for the consideration of emerging satellite technologies like LEO, MEO, and microGEO, coupled with sustainability mechanisms and policy adjustments that foster the adoption of evolving wireless technologies. By presenting these insights, Garrity effectively conveyed the importance of adopting innovative and community-centric approaches to bridge the digital divide in the Asia-Pacific region. Lastly, he emphasized improving the capacities of marginalised stakeholders, improving access to productive resources and markets, and increasing productivity.

- *Hello Hub, Nepal Community Network, by Rabiraj Khadka, Technology for All*

Hello Hub, which Rabiraj developed, is a community network with 18 locations in

Nepal. He demonstrated how the organisation offered tablets at the hub with educational software installed through visual illustrative content. The hub provides 24-hour Wi-Fi that allows numerous devices to connect in addition to individual internet access. Such initiatives would facilitate adults and children together that may utilise the hub for learning or recreational purposes. The services provided are free and the hub never charges for the services that are utilised.

- **DHANIRAM**

Dhaniram, being a native of the Totopara village in the Alipurduar region, West Bengal, India, embarks on an endeavour to preserve and promote the Toto language and culture. His particular adventure began in the year 2007 when he recorded his voice as his own tribe never had a script for their language. With this endeavor, he was able to create 350 words. According to him, the absence of script among Toto tribe and alphabets was due to a lack of an adequate educational system, since his community is being located in an isolated location, with a lack of appropriate system promotion, and a thin population, with 310 females per 1000 men.

He believes that his actions meant to preserve his community culture and tradition should be visualized as an example to motivate and encourage others in retaining their own cultural traditions. For his dedicated work towards his community, he was conferred upon Padma Shri in 2023.

- *Janata; Affordable Internet for the community, by Mainul Hassan Alin, Bangladesh*

His speech revolved around the discussion of affordability and mobility. Having set up Janata WiFi in Bangladesh, Mainul set out a mission to provide free and affordable internet for the community.

He mentioned how the government also look forward to improving internet accessibility through Smart Bangladesh Vision 2041. Mainul further talked about the funding and regulations of the government. There is no regulation yet in distributing WiFi for ISPs but they are trying to build a negotiation with the government.

4.6. *CNX SESSION 5: POLICY & REGULATION: Enabling Policy for Just Community Network & Meaningful Sustainable Connectivity & Access Last Mile*

Speakers:

• **Gustaff Harriman Iskandar,** Director, Common Room Networks Foundation [Online]

• **Isha Suri,** Research Lead, Centre for Internet and Society, India [In-Person]

• **Dharmendra Singh,** Vice President - New Business, Hughes Communications, India [In person]

Moderator: Osama Manzar

• Gustaff spoke about the importance of skill building at the local level when trying to set up a community network. He noted that in Indonesia, currently there a lack of awareness among people about policy and regulation operational in the country in this space. He also noted that there is a need for documentation and case studies in this space so that there can be co-learning and exchange of the best practices.

• Sharing insights from their research, Isha noted that community networks do have to have a rigid set-up. When it comes to PM-WANI, this government initiative to provide internet at minimal cost, it can only service areas which have backhaul available. The process requires OTP authentication. She mentioned that there are places where the individual has to travel a minimum of 20 kilometres to obtain the OTP. Community Networks are a good alternative technology to provide services to areas which are not found to be commercially viable by telecom companies. She also feels that licensing for providing services can be relaxed further. There is a lack of interest in building adequate backhaul infrastructure. Taking the suggestion of including internet connectivity as an essential service, Abhishek Raj said that there is an opportunity to include connectivity at the level of the Gram Panchayat Plan

released every 5 years. This could provide some necessary funds to set up a community network. PM-WANI is not progressing at the speed as expected because of various reasons such as lack of backhaul infrastructure.

- Dharmendra said that unless internet connectivity is recognised as an essential service as nation, only limited area based and project-based funding will flow in. The areas which still remain unconnected in India all require a targeted approach. He noted that the relaxation of India's licensing policies for satellite operators (such as Eutelsat OneWeb, Starlink, etc.) will allow smaller entities to apply for satellite connectivity services. He is of the opinion that while the companies can provide the capital expenditures in infrastructure and technology, the community has to step in to create employment and cover the operational costs.

- On being asked about innovative policies Indonesia has in place for community networks Gustaff Harriman Iskandar said that internet connectivity in Indonesia began with community networks drawing from internet connection in universities. Over time, the participation of community has diminished giving way to government and telecom companies. He spoke about how there was a movement in Indonesia to allow the use of 2.4ghz frequency which facilitated the use of wireless devices without licensing. This led to the proliferation of community networks in Indonesia.

- Osama Manzar asked why so many areas remain outside of connectivity consideration despite the availability of infrastructure such as Rail-tel. To this Darmendar Singh says that rail network largely goes through sub-urban and rural areas. It still requires infrastructure (mast, radio access network, etc.) for last mile distribution. Additionally, telecom companies kept acquiring subscribers but haven't invested in the radio networks in the same proportion. There are also areas which do not have any backhaul available.

5. 7TH CNX SECOND DAY 2: NOV 25, 2023

5.1. CNX - SESSION 6: Presentations: Good Practices in Connectivity & Access in North Eastern Himalayan Region of India

Speakers / Presenters:

• Brahmaputra Community Radio, by Bhaskar Bhuyan, BCRS, Assam, India - In person

• Karma Bhutia, DEMI Solutions, Sikkim (India) - In person

• The Zero Valley community network project, Arunachal Pradesh, India - In person

• The Char Chapori Networking project, India - In person

• Project Internet Roshni: Connecting the Tea Tribe & Adivasi (Indigenous) community in Assam, India - In person

• **Brahmaputra Community Radio Station, Bhaskar Bhuyan, Assam, India**

In the wake of the Supreme Court's recognition of radio as private property, India has witnessed a surge in community radio stations, now boasting around 400 across the nation. These grassroots stations, such as those found in Assam, typically covers a radius of 20 to 30 kilometres, ensuring localized outreach. With approximately four community radio stations in Assam alone, these platforms play a pivotal role in connecting

communities and fostering communication at the regional level.

Brahmaputra Community Radio Station, also known as Radio Brahmaputra 90.4MHZ, is the first grassroots community radio station in North East India, located in the district of Dibrugarh, Assam. Its mission is to provide a platform for marginalized communities living in geographically isolated and media-dark regions such as river islands, tea gardens, and remote villages, facilitating to those who speak local languages and dialects that are often not included in mainstream media programs.

- **DEMI Solutions, Sikkim by Karma Bhutia**

It is a community of successful, innovative, smart minds. Established in 2013, DEMI's main aim is to increase wealth & benefit its community of stakeholders, by promoting a culture of innovation and competitiveness of its products, solutions and services. At DEMI, Bhutia sees it as a supportive platform for the growth of innovative ideas, people, process & technology across sectors such as Education, Mobility, Cloud Computing, Bigdata, 3D Printing, Robotics, Biosciences, Green Technologies and Sustainable Agriculture.

- **The Ziro Valley Community Network project by Nani Monya, Arunachal Pradesh, India**

In the remote landscapes of Arunachal Pradesh's Zero Valley, a community network initiative has emerged to address challenges of historical connectivity. Initially, issues included confrontation with transportation obstacles due to poor road connectivity, hence the organization undertook surveys to gauge the readiness of students and teachers to embrace technology. Recognizing the transformative potential of the internet, particularly for the Aratani tribes, the community focused on overcoming conservative attitudes

towards technology. With the establishment of WIFI in four schools, a central hub facilitated broadcasts to three high schools and one primary school. The introduction of WIFI not only brought connectivity to previously isolated regions but also opened up education opportunities, with children providing coaching and classes through PM WANI at a remarkably low cost, marking a significant and life-changing development for the community.

- **The Char Chapori Networking Project by Manjuara Mulla, India.**

In the Char Chapori region of Assam, the transformative journey of Amrapari began in 2020 under the dedicated leadership of its founder. Starting with a modest stall and a team of 10 women, the initiative has burgeoned, now empowering a network of 100 females. Operating in livelihood centres, the organization leverages internet connectivity to bridge the gap between these women and the marketplace across seven active centres. Despite challenges in the Brahmaputra area, where internet and electricity are scarce, the founder envisions scaling up impact with increased capital and entrepreneurial opportunities.

Amidst the region's persistent gender-based discriminations, connectivity issues further complex the struggle, hindering mobility and access to education. Taking a proactive stance, the organization mobilizes groups of 30 women to combat child marriages, acting as a crucial link to the administration in cases where intervention is necessary. Recognizing the hurdles faced by girls unable to attend school during adverse weather or menstruation period, the founder advocates for digital solutions. Through digitalization efforts, she aims to create informative videos to disseminate accurate information, empowering girls in these areas to overcome challenges and access education despite the limitations imposed by nature and societal norms.

- **Project Internet Roshni: Connecting the Tea Tribe & Adivasi in Assam by Austin Kawa.**

In Assam, a pivotal initiative is underway to connect the tea tribe community, also indigenously known as Adivasi, which constitutes 20 per cent of the state's population. The tea tribe community has been historically marginalized on their arrival during colonial times as labourers. Since then, they have faced significant challenges in accessing social, economic, and digital rights. Compounded by their remote locations and the absence of Internet Service Providers (ISPs), these communities were excluded from the digital realm.

Recognizing the urgency to bridge this gap, an innovative solution emerged — a community network that provides digital services at a remarkably low cost, prioritizing the most backward and remote societies. This endeavour aims not only to uplift these communities within Assam but also to expand its reach to other states. In collaboration with the state government, the plan ensures that no one is deprived of their rights in the evolving digital landscape. The concept of community networks, exemplified by initiatives like Guifi Net, underscores the importance of networks managed by the community for the collective benefit of tribes, villages, or any group. In Assam, the Community Information Resource Centre, operating under the title "Soochnapreneur," embodies this spirit, working towards empowering and connecting communities in their journey towards digital inclusion and socio-economic upliftment.

5.2. CNX SESSION 7: Workshop: Building Community Network Capacity in local context for last mile internet access and reach; & SESSION: 8: Community Networks (CNs) and digital initiatives in APAC region: A Mapping

In the workshop session, the attendees were asked to answer the following questions which are, what is a Community Network? What are the requirements of a Community Network along with the What makes a "network" a Community Network?

A community or a collection of people creates, owns, and runs a community network, which is a localised and decentralised communication infrastructure. It is intended to meet the unique requirements and preferences of the local community, frequently in places where conventional telecommunications infrastructure may be inadequate or non-existent. There are many different kinds of community networks, such as mesh networks, local Wi-Fi networks, and other kinds of connectivity options.

Regarding the Community Network's requirements, the following significant points were covered in the submissions. Active participation and engagement of community people are crucial. The community should be involved in the network's design, implementation, and upkeep. The hardware needed to build up a network, such as routers and access points, is referred to as networking equipment when discussing the infrastructure of the community network.

When a community or a collection of people who share a common interest or live close by creates, owns, and runs a network, it is referred to as a community network. A community network can be distinguished from conventional, for-profit networks by several essential features: The community it serves owns and runs a community network. Community members decide on issues about its creation, layout, and administration together. Community members actively participate in decision-making processes under decentralised, participatory governance arrangements.

At the end of the workshop session, the attendees were asked to create a utopian village of their choice; which resulted in a varied array of responses ranging from small community networks connecting a few institutions such as a local community, and school, to a few homes to a wide community network connecting one or two villages.

6. RECOMMENDATIONS FROM THE 7TH CNX 2023

1.   The International Telecommunication Union (ITU) and the Office of the United Nations Secretary-General's Envoy on Technology established a new set of aspirational targets for 2030 across internet connectivity. To achieve these targets in a timely manner there is a need to build better and stronger partnerships across stakeholder groups.

2.   There is a need for better documentation and of sharing knowledge and the success stories in the field of community networks. There are several communities facing similar challenges in getting access to digital connectivity who can utilise the cases as inspiration.

3.   Organisations working with communities in remote locations should assist the people in articulating their suggestions when comments and submissions are invited for changes in network and connectivity related regulatory frameworks.

4.   There are 3Cs that can help address this issue of fast-forward processing of improving meaningful connectivity - coordination, collaboration, and cooperation.

5.   It is important to co-create when working on a multistakeholder collaboration as it often happens that if organisations do not co-create, they become competitors.

6.   That the unique location of the North Eastern States and the Eastern Himalayan region, much of which shares international borders has room for innovations in network connectivity to assist the people living and working in the region.

7.   While there are several initiatives underway to connect the unconnected regions to the internet in India there is still a scope for more. The Big 3 of telecommunications company in India should revisit their policies on how they may contribute to connecting the unconnected.

8.   Even if the network is operated in a community set-up, the funding needs to consider the costs of maintaining and operating the networks.

9. There are places which remain without 3G or 4G connectivity in India. These areas without connectivity need to be mapped. It is best if some of the companies/organisations collaborate to work on a POC (proof of concept) to demonstrate the technology models that work for the North East Indian region. The next step would be to approach the government with the POC through the channels made available and the big mobile network operators or providers can join in as an implementing partner.

10. There is need for alternative network systems which are not driven by the commercial telecom companies. Providing meaningful and local value services require involvement of the community.

11. There are positive changes supporting the entry of actors other than the commercial telecom companies in providing reliable connection. This will greatly expedite the process of bridging the digital divide.

12. Adoption of sophisticated technology necessitates proper power operation—power operation as in solar electricity, satellites, and so on. However, it comes with a significant problem because gaining access to them is a challenging undertaking, particularly in rural regions.

13. Accessibility in mountainous areas leads to four elements - Connectivity in the remote regions needs to be fulfilled; Should be established by someone who is technically sound; The connection installed should have speed and stability; and it needs to be sustained and affordable.

14. Disconnected hilly and mountainous regions might be integrated into the huge array of networking, and therefore considerable innovation is required in terms of developing improved infrastructure, assuring community collaboration, and so on.

15. There is importance of approaching community networks from various perspectives, addressing technical aspects, and power supply concerns, and aligning with the objectives of APNIC.

16. There is the need for women's self-representation and advocacy to address their marginalization in access and networks in diverse settings. There is need for better-designed regulations to overcome discrepancies and importance of gender-aware policies. The implementation and effectiveness of policies are crucial, especially in ensuring women's access to public technological resources.

17.   The importance of ensuring appropriate representation of women in the tech industry cannot be overstated. There is need to advocate for gender parity and diversity, emphasizing that diverse perspectives lead to creative problem-solving.

18.   There is utmost importance of skill building at the local level when trying to set up a community network. Currently there a lack of awareness among people about policy and regulation operational in this space. There is a need for documentation and case studies in this space so that there can be co-learning and exchange of the best practices.

19.   Unless internet connectivity is recognised as an essential service as nation, only limited area based and project-based funding will flow in. The areas which still remain unconnected in India all require a targeted approach.

20.   Relaxation of India's licensing policies for satellite operators (such as Eutelsat OneWeb, Starlink, etc.) will allow smaller entities to apply for satellite connectivity services. While the companies can provide the capital expenditures in infrastructure and technology, the community has to step in to create employment and cover the operational costs.

CNX 2023 in Images

7th Community Network Xchange (CNX) 2023 will be hosted alongside the 8th eNorth East 2023 in Royal Global University, Guwahati, Assam, India

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