GLOBAL INFORMATION SOCIETY WATCH 2021-2022

Digital futures for a post-pandemic world

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MEXICO

LESSONS LEARNED ON THE DESIGN OF A STATE CONNECTIVITY PLAN FOR INDIGENOUS AND RURAL COMMUNITIES DURING COVID-19

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Introduction

The arrival of the COVID-19 pandemic in 2020 marked a turning point in the social, political, economic and cultural life of almost every country in the world. Under these sudden and unexpected circumstances, access to the digital world appeared to many of us as the "great solution to the pandemic". However, since 2020, the inequalities generated by the digital divide have become increasingly evident, bringing with them a series of public policies and actions undertaken by various stakeholders.

This report reflects on the public policies aimed at expanding coverage and access to telecommunications services in Mexico, which have not been particularly successful during the pandemic. What we have observed is the repetition of public connectivity policies that have not been successful in the past.

The report offers a brief review of these federal strategies before considering the importance of local and state governments in creating enabling environments for the full access of their population to telecommunications services. The report then describes the design of a strategic connectivity plan, developed by the civil association Redes por la Diversidad, Equidad y Sustentabilidad (REDES) for the Coordination of Digital Policy (CPD), an office set up by the government of the state of Chihuahua which was in power from 2016 to 2021.

This report draws on the results of a collective process of research and analysis in which many organisations have been involved, including REDES, Construcción de Mundos Alternativos Ronco Robles, Rhizomatica, and the civil association Telecomunicaciones Indígenas Comunitarias, among other stakeholders who are committed to developing relevant digital strategies in Chihuahua.

What is the status of Mexico's national digital strategy?

A quick look at connectivity rates in Mexico shows that there is continuous growth in the number of internet users. According to a national household survey on technology availability and usage, *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares 2020*,[1] the number of internet users over the age of six in 2015 was 62.4 million (57.4%), rising to a total of 84.1 million (72%) in 2020. This means that in five years, the number of total users increased by over 20 million, or 14.6% of the target population. However, a close analysis of the statistics suggests that this continuous growth has not been the same for *all* the people living in the country. For example, in rural areas only 50.4% of the population uses the internet, compared to 78.3% in urban areas. This data helps us to understand the problem that accessing and exchanging information through information and communications technologies (ICTs) poses for half of the rural population and a little more than 20% of the urban population in Mexico.

The actions developed by the Mexican federal government during the COVID-19 pandemic have focused on the dissemination of information, not on the expansion of access to telecommunications services among the unconnected population. For example, ICTs have been used to disseminate information about the pandemic through daily media conferences that have been streamed live on social networks and broadcast on some mass media, and television and radio were used to broadcast educational content to the millions of children who could not go to school. Yet public connectivity policies have not undergone significant changes since the arrival of the pandemic.

This does not mean that the importance of connecting the unconnected is not understood, but rather that the imagination and understanding of the problem by policy makers has not gone beyond the unsuccessful strategies that have already been developed. That is, they see the solution primarily through the expansion of coverage. Instead, it may be a matter of starting from communication and access to information needs rather than connectivity, so that public policies can become more targeted and relevant.[2]

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1   INEGI. (2020a). *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares*. https://www.inegi.org.mx/programas/dutih/2020

2   Baca-Feldman, C. F., Belli, L., Huerta, E., & Velasco, K. (2018). *Community Networks in Latin America: Challenges, Regulations and Solutions*. ISOC, APC, FGV Direito Rio & REDES AC. https://www.internetsociety.org/resources/doc/2018/community-networks-in-latin-america

Throughout the government of President Andrés Manuel López Obrador (2018-2024), actions related to the national connectivity strategy have been assigned to the Comisión Federal de Electricidad (CFE), under the name of CFE Telecom Internet para Todos ("Internet for All").[3] Although there is no well-defined comprehensive strategy,[4] we can highlight two actions undertaken by this agency. The first is the creation of the shared network and the second the implementation of "digital villages" in rural localities.

The shared network is a wholesale network operated by Altán Redes[5] where mobile virtual network operators (MVNOs) offer 4.5G services to end users. With this network, the government expects to provide coverage to 92% of the population by 2024.[6] However, although the shared network infrastructure has been deployed in a large part of the country, it has not become competitive in the market. Despite this, it is important to note that this network has allowed new players to enter the mobile telecommunications market , including the first Indigenous MVNO in the world: Wiki Katat, run by the civil association Tosepan Limaxtum.[7]

The digital villages consist of internet access points using the state's satellite capacity to connect rural localities.[8] However, recent history has proved that in many parts of the world, projects that aim to create access points in rural areas manage to solve an immediate problem, but lack sustainability strategies that would allow them to function in the medium and long term.

Because of these challenges, it is necessary to look at the problem from different angles to achieve enabling environments that allow for efficient and sustainable connectivity projects over time. Following this, it is crucial to address the fact that the connectivity strategy promoted by a government should not seek to centralise its projects, concentrate solely on extending coverage, or think only in the short term. In general, to mitigate access barriers, it is necessary to contextualise and reflect on the livelihoods, development objectives and communication needs that exist in the localities to be served.[9]

In this sense, the role of local and state governments becomes fundamental: because they are closer to their populations, they can design very diverse strategies and address issues from a different point of view.

What are the challenges of designing a connectivity policy in Chihuahua?

The strategic connectivity plan for the northern state of Chihuahua, developed by the civil association REDES in a consultancy for the CPD, was part of the hyper-convergent connectivity plan[10] through which the state backbone network was expanded and modernised and issues of redundancy were dealt with. The main questions they addressed were 1) how to enable the state's infrastructure to meet its connectivity targets, and 2) how to support the drive for universal coverage and appropriation of ICTs.

The state of Chihuahua has specific challenges in the development of a digital strategy. It is the largest state in the country, covering 12.6% of the total Mexican territory. Some 43.5% of this is taken up by the Sierra Tarahumara mountain range, one of the most rugged territories in the country. In addition, the population density is only 15 inhabitants per square kilometre – 7.5% of the population lives in communities of less than 250 inhabitants while 9.5% lives in towns of between 250 and 5,000 people.[11] It is also important to note that four Indigenous peoples live in Chihuahua's territory: the Pimas (O'oba), the Guarijíos, the Tepehuanos and the Rarámuris. Almost all of these Indigenous peoples are highly marginalised, whether they live on the outskirts of the main cities or in one of the 5,349 rural Indigenous communities in the territory.[12]

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3   https://www.gob.mx/cedn

4   The main criticisms of this strategy have been the lack of a diagnosis and analysis of the challenges faced by the country's unconnected population, as well as the need to address barriers that go beyond coverage and the repetition of unsuccessful government programmes. More information is available in Spanish in Flores Ramírez, G. (2021, 17 August). La Estrategia Digital Nacional que no es. *El Economista*. https://www.eleconomista.com.mx/opinion/La-Estrategia-Digital-Nacional-que-no-es-20210817-0013.html

5   https://www.altanredes.com

6   There is no definition yet of what will happen to the 8% of the population that will not be covered by this scheme. Models such as community networks have been proposed, but there is no real effort to develop such schemes.

7   This initiative is part of a comprehensive autonomous communication project developed by the Unión de Cooperativas Tosepan Titataniske in the Sierra Norte de Puebla, which includes different ICTs such as community intranets, community radio and creation of local content, among other projects.

8   Bravo, J. (2022, 7 January). Aldeas inteligentes. *Revista Proceso*. https://www.proceso.com.mx/opinion/2022/1/7/aldeas-inteligentes-278711.html

9   A methodology that allows the choice of relevant technologies in community contexts can be found in: Parra Hinojosa, D., & Baca-Feldman, C. (2021). *¿Y si repensamos las tecnologías para la comunicación?* REDES AC. https://bit.ly/2OhnXCQ

10 El Economista. (2019, 1 August). Chihuahua invertirá 600 millones de pesos para red de telecomunicaciones. *El Economista*. https://www.eleconomista.com.mx/estados/Chihuahua-invertira-600-millones-de-pesos-para-red-de-telecomunicaciones-20190801-0127.html

11 INEGI. (2020b). *Censo Nacional de Población y Vivienda*. https://www.inegi.org.mx/programas/ccpv/2020

12 Comisión Nacional para el Desarrollo de los Pueblos Indígenas. (2010). *Catálogo de Localidades Indígenas*. https://www.inpi.gob.mx/localidades2010-gobmx/index.html

In terms of access to ICTs, 78% of the population uses the internet and 80% uses mobile phones.[13] However, these percentages correspond mainly to 65.5% of the population living in the state's two largest cities. In terms of territorial coverage of 4G mobile networks, Telcel, the largest mobile operator in Mexico, covers only 4.8% of the state, while Altán Redes covers 2.3%. Both have the highest coverage. Their competitors AT&T and Telefónica do not even reach 1%.[14]

Although the state's strategic plan does not specifically focus on the actions needed to address the COVID-19 crisis, it does intend to address one of the main problems underlying the inequalities exacerbated by the pandemic: full access to telecommunications services. The problems brought by the current pandemic intersect with others that pre-existed in Chihuahua, such as the presence of extractive industries and organised crime, the lack of economic resources, irreversible environmental deterioration, discrimination against the region's inhabitants, and a dependency on charitable organisations.

In this context, a public digital policy must be sufficiently robust, and consider all the necessary interrelated factors that determine meaningful access, while remaining open enough to avoid creating projects that depend only on the state. In other words, it has been necessary to closely analyse the intersectionality of factors that must be addressed to deal with a crisis such as the one arising from COVID-19 in terms of access to digital services.

Outcomes and proposals of the strategic plan for connectivity in Chihuahua

A key element in connectivity strategies must be the attentive choice of technologies relevant to each context, and the existing ways of life and needs of the people in these contexts. Because of this, the main methodology used in the consultancy was the idea of "percolation".[15] This methodology proposes the identification of three main elements – the ways of life, the characteristics including the communications needs of the users, and the characteristics of the physical environment of the territory – and produces appropriate alternative access models that can be developed.

For example, in order to determine the most appropriate network for each of the social groups in the Sierra Tarahumara, during field research, Indigenous authorities pointed out that while it was important for them to communicate with each other, it was not necessarily crucial to have access to the internet all the time. In contrast, the mestizo people living in the region emphasised the importance of access to information and online tourism and agriculture services. This distinction was fundamental to understanding that a connectivity strategy is not just about internet access, but about the uses of technologies that are specific and necessary in each context.

Considering this information and other data such as the size of the locality and its political organisation, it was proposed to use high frequency (HF) networks for communities of up to 200 inhabitants, almost all of them Indigenous. This was suggested not only because of the range of HF networks (a few thousand kilometres), ease of use, and price, but also because of the history of local use of HF devices, which the people called *radiecitos chismosos* (gossip radios).

In the larger localities or meeting points in the region, internet connectivity is offered through the resale of tokens for Wi-Fi connectivity lasting one hour to several days. But the cost of these services for users is very high, and there is no real benefit for those who resell the tokens in the communities. This contrasts with the accepted idea that through internet access, the economic conditions of the population will improve. In reality, the people are negatively financially affected by internet access as it implies a very high cost for families. Therefore, a public connectivity policy in these cases must work in coordination with regional internet service providers (ISPs) and people from the communities themselves. For example, free access points can be established in exchange for infrastructure subsidies to reach communities. In the strategic connectivity plan, combinations of local ISP services, community mesh networks and local 4G MVNOs were proposed for communities bigger than 200 inhabitants.

The final document was divided into two parts. The first part consists of an infrastructure and services plan, which addresses elements such as the use of the active and passive infrastructure of the state network, and changes to regulation to encourage access to information on coverage and essential

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13 INEGI. (2020a) Op. cit.

14 Instituto Federal de Telecomunicaciones. (2020). *Quién es Quién en Cobertura Móvil en México*. http://www.ift.org.mx/sites/default/files/contenidogeneral/politica-regulatoria/qesqmovil2020t4.pdf

15 The percolator is an instrument used to make coffee through the circulation of pressurised water. Due to the increase in temperature, it manages to transmit the essence of the coffee. In this case, the methodology refers to the identification of characteristics that shape community life to discover the essence of the processes that create the community, allowing the choice of relevant technologies. More information in Mallalieu, K., & Rocke, S. (2007). Selecting Sustainable ICT Solutions for Pro-Poor Intervention. In H. Galperin & J. Mariscal (Eds.), *Digital Poverty: Latin American and Caribbean Perspectives*. International Development Research Centre. http://dirsi.net/sites/default/files/dirsi_07_DP06_en.pdf

infrastructure. The second part focuses on the design of a public policy model for universal coverage and ownership of ICTs, including these main elements:

- Collaboration with local ISPs for the deployment of infrastructure and improvement in the quality of services.
- Development and support of technical training programmes aimed at community technicians.
- Promotion of technological innovation, entrepreneurship and applied research in community contexts.
- Creating the conditions for training in content production and dissemination, and the preservation of local content.

In mid-2021, an opposition government took power in the state of Chihuahua, bringing Javier Corral's administration, which had run the state from 2016 to 2021, to an end. Since then, many of the projects undertaken during the previous administration have been dismantled. The CPD disappeared, and the strategic connectivity plan has remained a document only.

However, the importance of this process, beyond government implementation, was the strengthening of a network of key actors dedicated to developing strategies to mitigate the lack of connectivity in the Sierra Tarahumara. By February 2022, the network had held training workshops on the creation of audiovisual content by children, trained community technicians in the deployment of HF radio networks, and developed cybersecurity strategies for civil society organisations working in the territory.

Conclusion

The process of designing a state connectivity strategy taught us many lessons. These included the importance of creating public connectivity policies for local or state governments, in Mexico and other countries with a similar political structure, without absolute dependence on what is dictated at the national level. To achieve this, solutions must be provided in collaboration with key actors, such as local wireless ISPs, civil society organisations and universities, but above all with the target communities themselves.

It is also important to stress that although the COVID-19 pandemic has intensified people's need for connectivity, we should always address this problem in relation to the many other issues they face. In other words, public connectivity policies are indispensable today, but to develop them properly it is necessary to look beyond the same "infrastructure-only" strategies that have failed time and again.

Regardless of the possibilities of implementing the recommended actions, a good example has been set by the Chihuahua state government under Corral by allowing the development of the plan, taking the necessary time to understand the communication needs and the context of the local communities from an external viewpoint. This may also present benefits for other local or state governments that want to consider this experience as a reference for the design of their own connectivity policies.

One last remark: despite the push for connectivity as a vital necessity from which it is impossible to escape, as far as possible, it remains important to allow for communities to be disconnected. Access, in other words, should be determined by community needs, rather than by a top-down coercion of internet use through the provision of essential services online only. This is why is important to keep in mind a digital strategy that outlines the most appropriate communications platforms for each person, community or organisation. It is important to define how, when and for what purpose communities want to connect. How would the role of states and the different key actors change if this was the approach? This is a question that remains crucially open.

Action steps

To develop meaningful state-level connectivity plans, it is important to:

- Consider the information access needs of those who do not have access to the internet, as well as those who are already online. Simply providing information online is not sufficient to meet the information needs of the population. This was a key learning from the COVID-19 crisis.
- Think in terms of solving communication needs rather than simply connecting communities.
- Consider challenges in relation to each other, rather than in isolation from each other. The pandemic has taught us that understanding how issues relate to each other is a starting point for sustainable and useful connectivity projects.
- Think about how to collaborate with local governments and stakeholders like ISPs in defining connectivity strategies that are contextually relevant and sustainable.
- Always take into consideration the choice of relevant technologies and the communities' right to be disconnected from the internet.

DIGITAL FUTURES FOR A POST-PANDEMIC WORLD

Through the lens of the COVID-19 pandemic, this edition of Global Information Society Watch (GISWatch) highlights the different and complex ways in which democracy and human rights are at risk across the globe, and illustrates how fundamental meaningful internet access is to sustainable development.

It includes a series of thematic reports, dealing with, among others, emerging issues in advocacy for access, platformisation, tech colonisation and the dominance of the private sector, internet regulation and governance, privacy and data, new trends in funding internet advocacy, and building a post-pandemic feminist agenda. Alongside these, 36 country and regional reports, the majority from the global South, all offer some indication of how we can begin mapping a shifted terrain.

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