



# Global Information Society Watch

## 2018



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*This edition of GISWatch came into being alongside a brand new baby boy. Welcome to the world, Ronan Diga!*

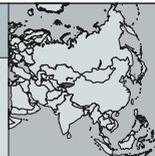
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**Internet Society Kyrgyzstan Chapter**  
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### Introduction

The Internet Society (ISOC) Kyrgyzstan Chapter is setting up a community network in the village of Suusamyр in Chui, the northernmost region in Kyrgyzstan.<sup>1</sup>

Roughly 25% of Kyrgyz citizens are online, with 64% of these living in urban areas.<sup>2</sup> While community networks can help rural citizens access the internet and narrow the digital divide, they are not mentioned at all in the country’s information and communications technology (ICT) policies. Radio spectrum is also heavily regulated and one has to apply to register frequencies. The process can take around six months.

The aim of the Suusamyр community network is to create business opportunities in tourism for the community, as well as to offer the community a chance to learn new skills and develop human capital. The internet will also improve the quality and availability of social services, and promote accountability through enabling the closer monitoring of municipal bodies. This report outlines our progress so far, and what we need to do next.

### From “barefoot engineers” to building antennas: Getting inspired about community networks

The ISOC Chapter in Kyrgyzstan was established in 2014. ISOC officers from headquarters in the United States then presented the idea of community networks to us, giving the example of the so-called “barefoot engineers” in Nepal who went from village to village and set up community networks. This example got the Chapter members very excited. Later in 2016 the ISOC Kyrgyz Chapter hosted a roundtable on community networks and brought a presenter from India, who spoke about a community network that helped an Indian village enter the e-market with their unique handmade textiles.

One of the participants at the roundtable was a self-employed engineer who built antennas that strengthen the signal of the mobile internet for people in locations with poor coverage. He was very excited about the idea of community networks. The Chapter immediately took him into consideration as an engineer for the community network project. We started applying for ISOC’s Beyond the Net funding<sup>3</sup> in the hope of securing a grant.

Applications for Beyond the Net funding are primarily accepted from ISOC Chapters or projects with an ISOC Chapter actively involved. ISOC supports projects that help the community, providing tools and skills and creating visibility for the Chapter.

### In search of a village to connect

We started looking for a suitable location. The main criteria was that it should have no internet of any kind, which meant no mobile data coverage, and that internet service providers (ISPs) were not likely to offer services in the community any time soon. We found a promising village near the famous tourist attraction called San Tash – two large piles of stones in the Karkara Valley, which have intrigued archaeologists for centuries. There are several theories about how and why they came into existence.

The history of San Tash goes back more than half a millennium. One explanation of the piles of stones goes like this: When the Mongol warlord Tamerlane (also known as Amir Timur) was going to

1 The ISOC Kyrgyzstan Chapter is involved in a number of other initiatives too. One is the installation of an internet exchange point (IXP) in the city of Osh, located in the Ferghana Valley. This project will help decrease the internet access costs for people in the southern regions of Kyrgyzstan. The initiative also has the potential to impact on access costs in Tajikistan and Uzbekistan, where costs are extremely high. The other project is “Spring of Knowledge”, or internet-in-a-box for schools in Kyrgyzstan. It involves the installation of an Orange Pi Zero minicomputer, a Wi-Fi router and a two-terabyte external hard drive in 20 rural schools that have no internet access. This equipment will give high schoolers offline access to Wikipedia, the Khan Academy Lite, as well as many other digital learning materials in local languages. Together with the help of ISOC headquarters we are also organising capacity-building events on IXPs and community networks for regional operators, field professionals and academia.

2 DR Analytica. (2017). *Kyrgyz Republic: The 2016 ICT Sector Overview*. <https://analytica.digital.report/wp-content/uploads/2017/07/Kyrgyzstan-The-2016-ICT-Sector-Overview.pdf>

3 <https://www.internetsociety.org/beyond-the-net>

battle, he told each of his warriors to find one stone and throw it onto a pile. They did so, and by the time they finished there was a huge pile the size of a hill. When they returned from the battle, Tamerlane told them to do it again. As a result, there were two hills of stones, both hills of different sizes. That is how he counted his losses.

The piles have been there for centuries. Many people from all over the world come to see them. The locals make business from the tourists, and we hoped that internet access via a community network would help the community attract more tourists, and make searching for accommodation and other services more accessible to the visitors.

Winter passed and fortunately for the villagers a government-owned ISP had begun offering connectivity to the village. For us it meant that we had to once again search for a suitable location. The search was long, as the criteria were hard to match and even harder to verify since we had to physically travel to all the possible locations. We needed a village that was not connected – preferably not even with mobile data – but was still within 50 km from the backbone of any ISP that was willing to cooperate (many do not want the competition of a community network).

We travelled all around the country, which is relatively small but very mountainous. There were several other promising villages. One of them was Sheker, a village in the Talas region in the northwestern part of the country, and home of Kyrgyzstan's most prominent person, the writer Chyngyz Aitmatov. One of his greatest novels is called "The First Teacher", a story about the first educated person who came to a remote village to teach children during the times of Lenin. This year will be the 90th anniversary of Aitmatov's birth, and it will be widely celebrated throughout the Turkic world and the former Soviet Union. It would be great, we felt, to give Sheker another "first teacher" in the form of a community network. However, later we found out that it was impossible to connect the village using our equipment, as it required more than one repeater.

### Reading a map of the backbone to find a village

We needed to hasten the search, so we found a wholesale ISP with the second-largest backbone in the country, Elcat,<sup>4</sup> and negotiated with them. They shared a map of their backbone infrastructure with us, which included coordinates of their nodes. This

narrowed down our search dramatically and we finally decided on the village of Suusamyr. We visited the village and spoke to the head of the Local Self Government (LSG). He informed us that there was no internet of any kind available in the village. The reason is that the valley – also called Suusamyr – is surrounded by high-altitude mountains, making it hard to connect to the internet. The winter in the valley also lasts for six months instead of three.

The population of Suusamyr is 2,674 people according to the 2009 population census. The length of the valley where it is located is 155 km. The altitude of the bottom of the valley ranges from 2,000 meters to 3,200 meters above sea level. The valley is full of beautiful vistas: mountains, forests, lakes and rivers. It is one of the top tourist destinations in Kyrgyzstan. Some popular tourist activities include hiking, rafting, horseback riding, paragliding, and *kumis*, the seasonal mare's milk detox.

### Building a bridge

The first stage of the project involves setting up a wireless link that will connect the village to Elcat's fibre-optic backbone. The wireless link will use AirFiber AF-5X 5.8 GHz radio systems, with 34 dBi antennas installed on 15-metre-high masts. To increase the speed, a MIMO Multiplexer will be installed, allowing us to use four airFiber radios with a single dish antenna.

The second stage is building a fibre-optic network in the village. This will include the installation of several distribution boxes at the crossroads in the village where the fibre-optic highway runs. At first we aim to connect 50 subscribers free of charge. These will include schools and municipal buildings, as well as low-income families.

### Expected community benefits and challenges

One proposal that the community made was to increase the presence of local businesses on the web. For example, guesthouses in Suusamyr would be registered on websites such as Booking.com, making them more accessible to modern tourists.

However, overall, most villagers should benefit from the community network, as it is common for people to share resources with fellow villagers, especially given the fact that most villagers are related to each other. For example, one can go to a neighbour's house to use the internet for a short time to search for necessary information or get some social service that is provided by the government online. The community network will increase the availability of a number of social services that are available online and otherwise would require

4 [www.elcat.kg/en](http://www.elcat.kg/en)

travel to the regional centre many kilometres away. These include applying for a passport, registering a vehicle or real estate, registering a marriage or getting a divorce, and for biometrical registration.

The main obstacle that made us lose all our hope was the requirement to register the use of frequencies. We thought that we could use certain frequencies as long as nobody else was using them. When we found out that we needed to register them and that it takes half a year just to go through the application process, we were devastated for about a week. It would be helpful if obtaining frequencies took less time – one month, for example. In comparison, obtaining a data transfer licence takes three to four weeks, and is not that hard.

Because of this we started looking for alternative solutions. It was most feasible to find a company that had registered frequencies and that was willing to cooperate. We discovered Skynet Telecom LLC. Skynet will be buying internet bandwidth from Elcat and selling it to the community network at a small margin.

Another challenge, but one we anticipated, was the terrain. There is no direct visibility from the Elcat node to the village. We still need to connect to the Elcat backbone, so that Skynet can buy the bandwidth for the village. We have to install a repeater that has direct visibility to both the Elcat node and the village. We have found a perfect location for the repeater and are currently installing a mast on the hill.

## Action steps

We are currently in the process of applying for a licence for data transfer that needs to be obtained from the regulator, the State Agency for Communication. It is also necessary to have the head of the LSG establish a municipal enterprise together with the ISOC Chapter. LSGs were established by law in 2011 in Kyrgyzstan as part of a process of the decentralisation of state power. Municipal enterprises are usually established by LSGs to provide community services such as trash disposal and street lighting among other local-level services.<sup>5</sup>

One of the most important aspects of our initiative is scalability – and we want the community in Suusamyр to be able to help other communities to set up their networks. In this way we feel the project can be replicated from unconnected community to community and village to village, where the community members themselves become the barefoot engineers witnessed in Nepal. During the roundtable on community networks back in 2016, among the participants were a number of heads of LSGs who stated that they have the budget to set up community networks and would love to learn how. We plan to send a concept note on community networks with all the necessary steps described in detail to all of the 453 LSGs in Kyrgyzstan, including the contact information of the engineers in Suusamyр whom we will train to make them able to train others.

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5 Post script: We are actually moving away from this concept because of an issue with the State Committee for National Security. Every ISP is obliged by law to buy and install SORM (Russian: Система оперативно-разыскных мероприятий, “System for Operative Investigative Activities”). This is the technical specification for lawful interception interfaces of telecommunications and telephone networks operating in Kyrgyzstan (first implemented in Russia). The current form of the specification enables the targeted surveillance of both telephone and internet communications. It costs between USD 40,000 and USD 100,000. Obviously our little project cannot afford it. We will have to keep Skynet as our alternative solution, including when it comes to the billing of the subscribers.

# Community Networks

THE 43 COUNTRY REPORTS included in this year's Global Information Society Watch (GISWatch) capture the different experiences and approaches in setting up community networks across the globe. They show that key ideas, such as participatory governance systems, community ownership and skills transfer, as well as the "do-it-yourself" spirit that drives community networks in many different contexts, are characteristics that lend them a shared purpose and approach.

The country reports are framed by eight thematic reports that deal with critical issues such as the regulatory framework necessary to support community networks, sustainability, local content, feminist infrastructure and community networks, and the importance of being aware of "community stories" and the power structures embedded in those stories.

GLOBAL INFORMATION SOCIETY WATCH

2018 Report

[www.GISWatch.org](http://www.GISWatch.org)



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