

Annex IV

Project Report

Central Asian Communications Needs Assessment

-ICT 4 Sustainable Mountain Development perspective -

with a focus on Kyrgyzstan and Tajikistan



Executed by the Mountain Forum

in the framework of support to the Mountain Partnership Secretariat (FAO/ LOA PR 38828)

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1. EXECUTIVE SUMMARY

The Central Asia communication needs assessment was undertaken in the frame of the Asia Pacific Mountain Network's support to the Mountain Partnership Secretariat. It included telephonic and e-mail discussions with stakeholders from Kyrgyzstan and Tajikistan, supplemented by online research.

Characteristic for the region is the transition to a more decentralized free market economy since the collapse of the Soviet Union in 1991. Liberalisation of the telecom sector has brought infusion of capital and competition in the ICT sector. Since the early 2000s, Internet use has exploded in the region, and use of cellular telephony increased substantially. However, internet, landline, or mobile penetration into rural mountain areas has been minimal. The Trans-Europe-Asia fibre optic line, being laid down across Central Asia, and the launch of KazSat communications satellite from Kazakhstan, can help bridging the rural-urban, and rich-poor 'divide' by bringing costs down considerably.

ICTs have a role to play in the development of the region. Kyrgyzstan's strategy to have ICT sector contribute 5% to its GDP by 2010 is a ringing endorsement of this view. ICTs are key for addressing communication and information needs of mountain people and organisations. These relate to sustainable management of natural resources, cultural and biodiversity, water issues, natural hazards and risks, and climate change and adaptation for sustainable mountain development. They cover aspects of addressing decentralization, mainstreaming gender, empowering mountain communities, promoting participatory bottom-up approaches, management of natural resources, customary laws and practices and indigenous knowledge. These ICTs - such as eCenters and community radio - can foster information exchange, transboundary cooperation, and collaborative action in addressing mountain issues.

Central Asian governments realise the importance of sustainable mountain development, as documented in the Central Asian Mountain Charter, adopted in 1999, and the Global Bishkek Mountain Summit of 2002.

Donors and I/NGOs - such as SDC, ADB and AKDN - have been seeding initiatives such as the Central Asia Mountain Programme, Alliance of Central Asian Mountain communities, eCenters, and community radio or working with community-based organisations on various priority areas, including ICT 4 Development, in mountain areas of Central Asia. There is a need for supporting mountain stakeholders in the region so that their 'voices' are heard in key national, regional and international fora, for advocacy and policy support, as well as opportunities for partnership beyond the region for sustainable mountain development and transition of mountain societies to knowledge-based societies. The MF/APMN and MP could be instrumental.

2. BACKGROUND AND SET-UP

The Communication Needs study was undertaken in the frame of the Mountain Forum (MF) and its regional node's collaboration with the Mountain Partnership Secretariat (MPS). MPS was earlier supported by MF in conducting broad band connectivity studies in Nepal and Romania, and this study was undertaken in the same vein vis-à-vis Central Asia.

The study was undertaken by the Asia Pacific Mountain Network (APMN), the Asia Pacific node of the Mountain Forum. The APMN has experience working in Central Asia. It held in 2000 a sub-regional seminar on sustainable mountain development issues in Kyrgyzstan and a training course for mountain professionals from Central Asia in 'Internet Technologies and Web Publishing' with participants from Turkmenistan, Uzbekistan, Kazakhstan, Tajikistan, and Kyrgyzstan. It also supported the formation of the Central Asian Mountain Information Network.

The study focuses on Central Asia, with special reference to Kyrgyzstan and Tajikistan. The reason for the focus on these two countries is that they manifest the highest degree of mountain topography in the region. For instance, 40.8% of Kyrgyzstan's and over 50% of Tajikistan's territory lies above 3,000 meter above sea level.

The study had a two-fold objective;

- To explore the ICT infrastructure development trend in the mountain countries of Kyrgyzstan and Tajikistan as a "proxy" for the entire region;
- To explore how ICTs, networking and other practices can address some the communications needs for the sustainable mountain development of the region.

For conducting the initial phase of the study (April 2006 – June 2007), a consultant was hired by the APMN. The consultant conducted telephonic as well as email-based discussions with stakeholders in Kyrgyzstan and Tajikistan. The stakeholders included development experts, media and communication specialists, academia, government officials and others with expertise and interest in ICT for sustainable mountain development. The consultative approach was, moreover, complemented by online research and analysis.

3. PROFILE OF CENTRAL ASIA

Central Asia (CA) covers an area of 3,882 thousand square km with a population of over 60 million. The region includes states such as Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, all of which used to be part of the Soviet Union until its collapse in 1991. The region borders Iran, Afghanistan and Pakistan in the south, China in the east and Russia in the west and north.

Today these republics are shedding off legacies of their Soviet past, embracing decentralized free market economy, and introducing political reforms at varying speeds. The transition has not been easy for the republics but with highly literate populations and richly endowed natural resources, the region shows immense potential. Moreover, the region holds geopolitical significance for powerful players such as China, the Russian Federation, European Union, and the USA.



Figure 1: Map of Central Asia

Over 10% of the area in Central Asia is covered with mountains. Kyrgyzstan and Tajikistan are almost wholly located in the mountains, especially the Tien-Shan and Pamir. Rivers flowing from these "water towers" provide water resources to contiguous countries such as Uzbekistan, Tajikistan, Kazakhstan and eastern part of China. These so-called transboundary rivers are not only a boon to the region but also a major cause of conflicts. The two major river systems of Central Asia, the Amu Darya and Syr Darya (Darya=river) flow into the Aral Sea, a poster child of environmental disasters in the region. It is also a stark reminder of what can go wrong in Central Asia.

Owing to the region's remoteness, integrated infrastructure, shared natural resources, and limited domestic markets, regional or transboundary cooperation is necessary for effecting the sustainable development of the region.

3.1. KYRGYZSTAN

Kyrgyzstan, located within the boundaries of eastern flanks of Tien-Shaan and northern part of Pamir-Altai mountain systems, is a mountain country. 94.2% of its territory lies above 1000 meters above sea level, and 40.8% above 3000 meters above sea level. It is home to the Issyk-Kul salt lake, a Ramsar site of globally significant biodiversity hotspot and part of the Issyk-Kul Biosphere.

After the collapse of the Soviet Union in 1991, the country dealt with the loss of Soviet subsidies through external borrowing, depletion of assets, a reduction in private consumption, and increased government expenditures.

Kyrgyzstan has since implemented broad systemic reforms to lay down the foundations of a market economy. It has so far managed the transition fairly well. It is the first among the Central Asian republics to accede to the World Trade Organisation.

Lately, the traditionally strong sectors of agriculture and mining are lagging behind other rapidly growing sectors such as construction, power, and service sub-sectors of transportation, communication, and trade.

Challenges for Kyrgyzstan are: reducing poverty, diversifying the economy, and increasing regional cooperation on water, energy, and trade. The last is especially critical as the country is mountainous, and landlocked with limited access to world markets.

Profile: Kyrgyzstan

(Source: MDG Monitor, July 2008)

Total surface area (sq. km)	199,900
Total population (millions)	5.3
GDP per capita (PPP US\$)	2,024
GDP growth (annual %)	2.7
Population living below the national poverty line (%)	41.0
Unemployment (% of total labor force)	8.5
Life expectancy at birth (years)	65.3
Literacy rates of 15-24 years old (% both sexes)	99.7
Human Development Index (Rank 1 - 177)	110
Land area covered by forest (%)	4.5
Access to improved drinking water sources (% of total population):	77
Internet users (per 100 people)	5.6

3.2. TAJIKISTAN

Over 50 % of Tajikistan's territory lies above 3,000 meters above sea level and is covered by mountains of the Pamir range, and is known as a mountain country.

Soon after gaining independence in 1992, Tajikistan found itself in a long drawn out civil war, which resulted in human losses of up to 50,000 lives and rendered close to 0.5 million people homeless. Following an agreement between the government and the opposition in 1997, some semblance of peace and stability was achieved.

Since the transition in 1991, Tajikistan has experienced high levels of migration to Russia. The volume of remittances was USD 1.5 billion (36% of GDP) in 2007. Cotton and aluminum, traditional sectors of the Tajik economy, contributed 9 percent to GDP. Yet, their contribution to GDP has been declining steadily.

The country is rich in natural resources, most importantly water and hydropower potential, but these, too, are coming under increased pressures.

Of all the Central Asian republics, Tajikistan is arguably the least developed and most unlikely to meet the Millennium Development Goals.

The challenges facing the country include reducing poverty, strengthening weak institutions and governance, improving energy services delivery, and developing the country's export capacity.

Profile: Tajikistan

(Source: MDG Monitor, July 2008)

Total surface area (sq. km)	143,100
Total population (millions)	6.7
GDP per capita (PPP US\$)	1,454
GDP growth (annual %)	7.0
Population living below the national poverty line (%)	-
Unemployment (% of total labor force)	-
Life expectancy at birth (years)	65.9
Literacy rates of 15-24 years old (% both sexes)	99.8
Human Development Index (Rank 1 - 177)	122
Land area covered by forest (%)	2.9
Access to improved drinking water sources (% of total population)	59
Internet users (per 100 people)	0.3

4. ICT INFRASTRUCTURE

ICT infrastructure is a broad term connoting any deployment of installations or hardware systems that support access to or use of ICTs, and these could include VSAT installations, communications satellite, optical fiber, ISPs, wireless broadband services, dial up services, including devices such as landline telephones, cellular telephony, Internet services, community radio, tele-centres and the uses to which these technologies or configurations or applications are put: telemedicine, distant education, networking, e-governance, information sharing, social networking etc. ICT infrastructure is a term used here in its broadest sense.

4.1. IN KYRGYZSTAN

The Kyrgyz government's ICT strategy is to have the telecom sector contribute 5 % to gross domestic product by 2010. However, a number of key obstacles limit Kyrgyzstan's ability to expand its telecom operations, and these include tough mountain terrain, high poverty rate and a nascent legal and regulatory framework.

As part of the modernizing process, the government has liberalized the state-owned Kyrgyztelecom to foreign and domestic investors. To that end, it has put a majority stake (up to 77.8%) in the public utility up for sale to private sector. An independent regulator has been established to oversee the telecom sector.

Kyrgyztelecom has been steadily upgrading its outdated and poorly distributed network. Following the launch of a second GSM network by MegaCom in 2006, KT Mobile, the non-operational mobile subsidiary of Kyrgyztelecom was granted frequencies in December 2006 for GSM 900 and GSM 1800 mobile services. With a mobile penetration of around 35% in late 2007, the market still has plenty of room to grow.

The Internet use exploded after 2000. Between 1999 and 2005, the number of Internet subscribers increased from 3,000 to 263,000. They were some 12,300 Internet hosts in operation in 2004.

This country currently lacks telecommunications bandwidth capacity. ISPs provide internet access through satellite backbone communication lines linked to Russia, Germany, Ukraine, and Kazakhstan. Dial-up services are the main way to access the Internet. There are several ISPs - Kyrgyz Telecom, Elcat, Asiainfo, Transfer Ltd, Totel, Megaline, Aknet, Intranet, Saima Telecom, Rikonet, AlaTV (Cable TV operator providing high speed internet access primarily to Bishkek), ExNET, IPVICH, etc. - that provide broadband internet access using different technologies such as xDSL (up to 8 Mbit/s downlink), ISDN, Leased Line (transfer speed of up to 64 Kb/s), and Ethernet. Although prices for Internet access have been falling due to free market competition, they are still high for most of the population.

Access to the Internet in Kyrgyzstan, as with other telecom services, has been strongly biased towards the urban customer. Internet penetration in rural areas has been minimal. Smaller town and villages are

accessed through radio links, although the radio network needs up-gradation and digitalization to move towards complete coverage of mountain areas.

Thanks to the forward looking ICT policy and improving infrastructure in tele-density, 5.3% of the total population is internet users and the number is growing at a healthy pace. Kyrgyzstan ranks second in Central Asia in the UN global ranking for e-governance. On the Digital Opportunity Index Kyrgyzstan ranked 134 out of 180 countries and 114th on the Networked Readiness Index (NRI) among 127 countries. The major issues in ICT sector in Kyrgyzstan have been absence of law governing intellectual property rights and cyber crimes. The country lacks coordination with international bodies and watch dogs working on these issues.

There is a major telecommunications project under construction - The Trans-Asia-Europe (TAE) Fiber Optic Line, connecting Shanghai, China and Frankfurt, Germany, with the capacity of 622 Mbit/s, where Kyrgyzstan has completed its component. Add to that the June 2006 launch of the KazSat communications satellite from Kazakhstan, which will reduce the dependence of all the Central Asian countries on European and U.S. telecommunications satellites. Launch of a second KazSat is planned for 2009. Once these two projects are completed, the broadband internet prices should come down considerably in the region, including Kyrgyzstan.

Trans-Asia-Europe (TAE) Project

Sponsored by NATO, the Trans-Asia-Europe Project, agreed to in 1993, is the world's longest overland fibre-optic system extending from Frankfurt to Shanghai along the ancient Silk Route. Built by a consortium of telecom companies, including Deutsche Telekom and China Telecom at an estimated US \$560 million, the TAE line crosses 27,000 kilometres and provides digital circuits for transmitting voice, data, fax and video information to hundreds of cities in over 20 countries: China, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan, Iran, Turkey, Ukraine, Belarus, Poland, Romania, Hungary, Austria, Germany, Georgia, Azerbaijan, Armenia, Pakistan and Afghanistan. It is able to carry voice telephony and data traffic with a 155 Mbps capacity, equivalent to between 13,000 and 15,000 simultaneous telephone calls. The TAE line covers Kyrgyz republic, where only 50 percent of the exchange lines are digitized, thus limiting more efficient and widespread use of internet for communication purposes.

Source: Trans-Asia-Europe Project, URL: <http://www.science-arts.org/internet/node37.html>

4.2. IN TAJIKISTAN

Tajikistan lacks an ICT infrastructure. In 2002 a new law on Telecommunication was approved opening the telecom sector to liberalization. State-owned Tajik Telecom has been unbundled and the Ministry of Communications entrusted to coordinate with the private sector in facilitating increased private sector investment. Duties on import of capital goods have been reduced with a view to encouraging investment by domestic companies. Over the last decade a significant number of private operators have been allowed to compete in the telecom market, notably in the mobile and Internet sectors.

Of all the countries that emerged from the former Soviet Union, Tajikistan arguably has the least developed telecommunications network. The network is still tiny, providing service to a subscriber base that represents a land-line teledensity of less than 5% coming into 2008. The country is still at an early stage of IT development. A large proportion of the network has not yet been converted to digital. Privatisation of the state-owned Tajiktelecom was expected to be completed by end-2007.

The highly competitive mobile sector experienced a major growth surge in 2006 and 2007, the subscriber base jumping by around 200% over this two year period; this expansion looks set to continue.

A new era dawned when Tajik Telecom connected to the Internet via X.25 Global One in 1998. There has been some progress in terms of Tajikistan connecting to international e-banking. Although about 250 Internet-sites have been registered in Tajikistan so far, only 80-100 of them are active. There are currently 10 first level Internet service providers (ISP) in Tajikistani Internet market. Internet is VSAT technology. Only 2 out of 10 ISPs have access to TAE2. By 2006, the country had 12 ISPs providing a variety of services.

The Internet is beyond the reach of much of Tajikistan's population due to a combination of inadequate telecom infrastructure, the lack of appropriate legislation and the cost of Internet access. Personal computers are expensive and after sale service quite poor even in larger cities and towns. Khoma, a local nongovernmental organization (NGO), estimates that 1 percent of households own PCs and over 1 percent of them access Internet from home, mostly using dialup service. Internet access remains largely of reach, as the average monthly salary in the country is in the range of US\$ 30–40, while the minimum salary drops to US\$ 7. In general, one hour of Internet access in cybercafés costs US\$ 0.41; unlimited monthly access by dialup services costs around US\$ 29.41, and limited ADSL access costs about US\$ 25.8. Currently there are only 0.1% of Internet users out of the Tajik population. Empirical data show the number of active Internet users to be growing quite rapidly, as the demand for Internet usage is high, especially among the youth. Broadband Internet access though is virtually non-existent in the country (although the country already has 3G mobile services available).

NGOs are at the forefront in providing IT access to remote locations. The private sector, mainly the service based industries, is fast turning to internet based networking solutions. A Tajik-Indian joint venture, Shabakai Osmoni (Sky Network) became the first provider of VSAT services in June 2008. It rolled out solutions to problems associated with Internet access, video-conferencing, and e-governance.

Tajikistan ranks 98th globally in terms of the networked readiness index (NRI) out of 127 countries , and ranks 139th on the Digital Opportunity Index (DOI) 2005-06 .

Lack of trained workforce, limited supply of services and weak infrastructure are dampening the growth trajectory of the IT sector. However, there is tremendous potential for increased use of IT in education, telemedicine and distant learning purposes. Copy right and licensing issues plague the whole of Central Asia. Overall Internet penetration remains weak, even though the telecom sector is relatively deregulated.

5. CENTRAL ASIAN MOUNTAIN ISSUES

Mountain issues tend to be quite similar the world over as they derive directly or indirectly from the main mountain specificity - *verticality*. However two things need to be said to put Central Asian mountain issues in context. First, the region has many relatively distinctive characteristics that set it apart from other regions, say East Asia; and second, Central Asian mountain issues need to be understood in the context of the region's past, including the Soviet past.

Relatively unique features of the region:

- Horse culture – mare milk, horse breeding & racing;
- Nomads– livestock breeding and management is a big part of rural Central Asian life, nomadic herders typically live in movable Yurtas;
- The Silk Route – enterprising people, with instincts for barter and trade;
- Islamic region, colored by Turkic-Mongolian influence;
- Route of drug trade, opium;
- Geopolitically strategic region;
- Elements of Islamic fundamentalism active in certain pockets;
- Resurgence of ethnic national pride after the collapse of the Soviet Union.

Soviet legacies:

- Nuclear waste dumps;
- Contamination of water sources from extensive mining (e.g. Mercury);
- Centralized planning and top-down approach;
- Large scale cotton farming;
- High literacy;
- Russian language widely spoken and understood.

The number one mountain issue in Central Asia is the 'water tower' issue. It has many manifestations such as:

- *Water rights*: how to distribute equitably 90% of the region's available water resources stemming from two major rivers, the Amu Darya and the Syr Darya, with their origins in the Tien Shan and Pamir?
- *Contamination of water sources*: Dangerous nuclear waste dumps near the town of Maily-Suu, high up in the mountains of Kyrgyzstan, for example, threaten to spill into rivers, potentially affecting ten million people living downstream.
- *Big water projects (river diverting, irrigation, etc)* with scant regard for the environment have resulted in displacement of hundreds of thousands of people and ecological disasters such as the Aral Sea.
- *Global warming and potentially dangerous glacial lakes*: Glaciers are melting rapidly, owing to global warming. Glacial lakes formed in seismically active zones have the potential to breach, devastating large areas of inhabited land and displacing hundreds of thousands of people downstream.

Other issues include:

- a) *Cultural diversity* - Mountain culture, heritage and diversity should be conserved. Systems of intellectual property rights should be developed for indigenous or local knowledge, recognized and enforced. Mountain identity, mountain languages and other forms of cultural expressions need to be protected and promoted.
- b) *Sustainable development* - Decentralization should emphasise measures to empower and involve local communities and institutions in decision making process. Gender needs to be mainstreamed to improve women's participation, access to information services and education. Cost-benefit analysis of development interventions in mountain areas must take into account not just economic but also environmental costs and benefits. Improved food security, energy security and security from conflicts over resources should be provided, especially to disadvantaged and marginalized mountain groups.
- c) *Production systems and alternative livelihoods* - Mountain economies need to be diversified with new sustainable livelihood options such as tourism, micro enterprises, and handicrafts. There must be respect for community ownership of resources, including proper recognition of customary laws and practices governing resource use, principle of subsidiarity, ownership of indigenous knowledge, and the need for compensation. While outmigration has made remittances a big part of the mountain economy, this must be balanced against its adverse impacts on socio-cultural fabric of the mountain society.
- d) *Decentralized renewable energy options* - Emerging technologies must be explored for generating renewable energy. Improved cooking stoves, multi-purpose watermills, bio briquettes, solar energy, etc. should be promoted. With climate change topping the global agenda, implementing mitigation measures such as conserving forests and tapping renewable options can earn much needed revenues in a carbon market.
- e) *Tourism* - Promotion of environmentally friendly home stays, mountaineering, hiking and trekking, etc has the potential to benefit local mountain communities. Tourism may be tied to other imperatives such as conservation (e.g. snow leopards), and cultural promotion (e.g. traditions). Adventure sports also offer a big potential in this day and age of thrill seekers. However, countries need to develop quality (as opposed to quantity) tourism development strategies – community-based or –managed - based on unique or creative selling points that benefit local economies. Development of infrastructure to support tourism is a necessary first step.
- f) *Mountain biodiversity* - Trans-boundary cooperation is needed to conserve mountain biodiversity. The adequacy of laws, policies, national environmental action plans, and other institutional structures for national implementation of the biodiversity convention with specific reference to mountain areas needs to be assessed and rectified. Environmental impact assessments should be made mandatory for all projects and programmes in mountain areas.

- g) Climate change and natural hazards* - Initiatives to build resilience of mountain communities to climate change are needed. Capacity building in accessing the adaptation fund and implementing adaptation measures – based on modern and indigenous knowledge – is needed. Monitoring of climate change impacts – glacial retreat and GLOFs, permafrost melting, change in rainfall and agricultural patterns, availability of water resources - is key to devising appropriate adaptation measures. Systems should be developed to anticipate hazards, along with strategies for disaster preparedness, prevention, and rehabilitation. There is a need to combat or reverse desertification of mountain areas.

Central Asia countries recognize many of the issues outlined above. This is evidenced by the fact that the region adopted the Central Asian Mountain Charter in 1999. Moreover, Kyrgyzstan hosted the Bishkek Global Mountain Summit in 2002, which led to the Bishkek Mountain Platform, the concluding document of the Summit, which serves as a global blueprint for Sustainable Mountain Development. What needs to be done is redressing many of these issues and implementation of the formulated recommendations.

6. COMMUNICATION NEEDS VIS-A-VIS SUSTAINABLE MOUNTAIN DEVELOPMENT

ICTs are important for providing forums to the people in mountain areas to air problems and find solutions. ICTs – such as those served by wireless broadband – have the potential to link remote mountain areas to the global knowledge base. As the Central Asian republics liberalize their ICT sectors, opening them up for foreign and domestic investors, we can begin to see ICTs make inroads into rural mountain territories of Central Asia. These will address lots of communication needs of mountain populations in isolated pockets. The government, including international donors, and the private sector have a work cut out for them in paving the information highway.

Once ICTs are in place, NGOs – like missionaries everywhere - can become very instrumental in promoting the uses of ICTs to address communications needs for the development of the region.

Mountain people, like people everywhere, engage in communications for various purposes, from simply sharing information to engaging in collaborative action. Formal platforms such as village women's self-help groups, dairy producers' cooperative, etc. are geared toward addressing the communication needs of specific groups of people. These could range from raising awareness, mediating conflicts, and engaging in collaborative action to further the groups' self interests.

Introduction or expansion of ICT-assisted communications tools is critical to sensitize the mountain stakeholders about their potential and benefits vis-à-vis sustainable mountain development. It is just as important to ICT-enable mountain stakeholders to influence policies and support decision-making on emerging or critical Central Asian mountain issues.

Quite aptly, the Kronberg Declaration in a forward looking way states that knowledge acquisition and sharing will increasingly be technology mediated (e.g. online), and thus traditional educational processes will be revolutionized and new knowledge communities will be formed.

Trends:

- a) **Telecenters:** There are very few telecentre projects in Central Asia. The Consultative Meeting for the Establishment of Regional Knowledge Network of Telecentres in Central Asia held 6-7 May 2008 in Baku, Azerbaijan intends to do just that – i.e. extend the United Nations Development Account project entitled “Knowledge networks through ICT access points for disadvantaged communities” to Central Asia. The project aims to empower the poor and disadvantaged communities, women in particular, through transforming selected existing ICT access points (also called Community e-Centres (CeC), telecentres, or multi-purpose community centres) into knowledge hubs of global knowledge network to provide, develop, organize, share and disseminate knowledge pertinent to these communities. Already a step has been taken in this direction with the establishment of 11 eCenters in Kyrgyzstan as of April 2008. These have already had impacts in terms of providing computer literacy, imparting job skills, facilitating job search, and seeding small businesses. The project has been replicated in Tajikistan, with the establishment of two eCenters, with more to follow.

There is a need to link up these telecenters regionwide to have a broad-based positive impact in Central Asian mountain areas in creating local micro-enterprises, improving access to markets for local produce and products, promoting tourism, as well as providing exposure to the communities to the wider world.

- b) Community Radio:** The first community radio of its kind in Central Asia, Radiomost (“Radiobridge” in Russian), has been broadcasting since July 2007. Located in Talas in northwest Kyrgyzstan, the radio station aims at bridging the local information gap and promoting dialogue and mutual understanding.

<http://finndxer.wordpress.com/2007/12/09/first-community-radio-in-central-asia-launched/>

Community radio is ideal for mountain regions such as Central Asia to provide information services to rural people on: weather forecasts, road/bridge safety, disaster preparedness, agriculture and pest control, livestock management, mobile health and school clinics, non formal education, etc.

- c) Telemedicine:** There is an ongoing demand for healthcare in remote areas of Central Asia. Rural health presents a number of challenges such as lack of hospitals, medicines, nurses and doctors, and equipment, and limited access to adequate primary health care facilities and inadequate follow up. Advance care is almost non-existent.

Telemedicine can potentially revolutionize rural health care, allow rural patients to directly communicate with professionals in cities via the telemedicine devices installed in rural e-centers. Telemedicine can reign in health care costs. Telemedicine has the potential to go farther in rural areas if complimented by regular mobile health clinics.

- d) Distance education:** Some major Russian universities have partnered with universities in Central Asia to provide distance education in the CA region. This is made possible by a combination of satellite and Internet technologies. Videoconferencing services are increasingly used by Central Asian educational institutions that do not have sufficient financial resources to invite foreign lecturers and pay for their work. One of the biggest projects expected to contribute to expansion of distance education in Central Asia is the Virtual Silk Highway, as it provides fast and effective Internet connection via satellite to a network of Universities in the region, European countries and the Caucasus.

Distance learning offers tremendous potential for educating young mountain populace, and stemming outmigration

- e) Networking or sharing information on Central Asian mountain issues:** In the early 2000s, the APMN supported Central Asian Mountain Information Network by providing technical training on information management and dissemination. It is no longer active. Together with ICIMOD, it also provided training to NGOs and government agencies of Central Asian republics on Internet and web publishing so that they could put out information on their work, thus strengthening e-governance. Several mountain networks are in existence in Central Asia now –Central Asian

Mountain Programme-initiated networks in select countries as well as an Alliance of Central Mountain Communities.

The communication needs of Central Asian mountains are many, and these include: globalizing local, national and regional mountain issues such as drug trade, terrorism, trans-boundary water sharing, climate change and its impacts on mountain ecosystems and adaptation; networking with partners beyond the national boundaries; accessing funding sources wherever they may be for projects and programs; and linking with larger global networks such as the Mountain Partnership and the Mountain Forum for policy support and advocacy. Addressing these needs is especially important now that each of the Central Asian Republics, including the Uighur Autonomous Region of the People's Republic of China, has its own Regional and National Strategies for Sustainable Development of Mountain Areas funded by Asian Development Bank, not to mention the Central-Asian Mountain Charter. Networking is especially important to promote the spirit of the homegrown Central Asian mountain agenda at local, national, regional and global level for the sustainable mountain development of the region.

Certainly addressing the communication needs need not be limited to just the above. As ICTs make inroads into rural mountain communities, more and more uses for ICTs will be found, some homegrown and some adapted from elsewhere. ICTs can play major roles in documenting, publicizing and generating public opinion in support for complex mountain topics such as:

- *Documentation and mainstreaming of local and indigenous knowledge in development;*
- *Capacity building: Training on project management, M &E, writing grant proposals, etc;*
- *Provision of ICT-enabled public services to remote mountain communities (e-governance);*
- *Preservation and promotion of culture, heritage, spirituality, and traditions by linking all these with tourism;*
- *Support to income generating activities (diversifying livelihoods) through e-commerce;*
- *Support to biodiversity conservation or pollution monitoring;*
- *Diffusion of appropriate technologies, manuals, etc;*
- *Early warning systems for food insecurity, natural disasters, conflicts, wars, ethnic cleansing, and human rights violations;*
- *Blogs, photographs, video clips on local issues for sharing with the rest of the world;*
- *Mobilization of resources: accessing funding opportunities, scholarships, research and travel grants, etc, expertise, partnership;*
- *Platforms for policy dialog and advocacy;*
- *Social networking.*

7. POTENTIAL MOUNTAIN PARTNERS IN CENTRAL ASIA, ESPECIALLY KYRGYZSTAN AND TAJIKISTAN

Multi- and bilateral donors and I/NGOs – such as the SDC, ADB, DFID, OxFam and AKDN – have been active in Central Asia aiding in the political and economic transformation of the region, especially so since the collapse of the Soviet Union. Countless regional and national NGOs have come into existence and are working with community-based organisations on various priority areas – many with a mountain focus – in the region, including on ICT for Development issues. In addition the **EBRD** launched a program to 1) stimulate Rural Communication Infrastructure by providing Universal Access to all villages, and 2) Creating Business Incubators to support ICT-enabled businesses involving universities.

Listed below are key organisations working on key themes or in mountain areas in the region, which could play a role in fostering future SMD activities.

	Name	Description
Kyrgyzstan		
1	National Centre of Mountain Regional Development (NCMRD) of Kyrgyz Republic	NCMRD is the arm of the Ministry of Environment Protection of the Republic of Kyrgyzstan in charge of the execution of the Pamir-Alai Sustainable Land Management Initiative in the country. NCMRD's work aims at mainstreaming rational use of natural resources and integrated development of mountain regions in Kyrgyzstan. Its activities include coordination of research on the obstacles to and possibilities for sustainable mountain development and information dissemination; development and implementation of national and international collaborative projects related to sustainable mountain development; establishment of mountain village development models; development and submission to the government of proposals for projects, policies and legal measures for sustainable mountain development in the country. URL: www.mecd.gov.kg
2.	Interbilim	InterBilim is an independent organization that supports the NGO community in Kyrgyzstan by providing information, training and services particularly to those organizations working in areas of poverty alleviation, health, environment, human rights, and education. Interbilim publishes a newsletter of the same name to inform NGOs of training opportunities and events of interest. The newsletter contains articles about NGOs in Kyrgyzstan and other countries, and articles for NGOs to use as reference materials. The newsletter is published in Kyrgyz, Russian, and English. URL: www.interbilim.org
3.	Agentstvo Razvitiya i Investirovaniya Kyrgyzskoj Respubliki (ARIS)	ARIS is a semi-governmental agency responsible for the implementation and monitoring of sustainable rural development in Kyrgyz Republic. Under the direction of Elmira Ibraeva, ARIS Executive Director, ARIS received 15 million USD of financial assistance from the World Bank to act as lead implementing agency of the Village Investment Project. This project will affect some 300,000 rural residents every year. URL: www.rdcelet.kg/en/?doc=partners/aris
Tajikistan		
4.	CARE Tajikistan	CARE Tajikistan is a national chapter of CARE International - one of the world's top three aid agencies, fighting poverty and injustice in 70 countries around the world and helping 55 million people escape poverty. Care Tajikistan distributes food, improves education by helping local organisations gain more influence over educational policy, raises awareness about violence against women and improve agriculture, for example by teaching farmers new techniques. URL: www.care.org
5.	Department for International Development - Tajikistan	The Department for International Development (DFID) is the part of the United Kingdom Government that manages Britain's aid to developing countries and works to get rid of extreme poverty. DFID has been present in Tajikistan since 2003 and is working with the Government and donors to support the eradication of poverty and promote sustainable development. URL:

		http://ukintajikistan.fco.gov.uk/en/working-with-tajikistan/dfid-in-tajikistan
6.	Oxfam GB in Tajikistan	Oxfam is a vibrant global movement of dedicated people fighting poverty. Doing amazing work. From saving lives and developing projects that put poor people in charge of their lives and livelihoods, to campaigning for change that lasts. In Tajikistan, Oxfam's focus is on sustainable livelihoods, health, disaster preparedness, and improving supplies and sources of food and clean water. URL: www.oxfam.org.uk/
7.	Social Enterprise and Environmental Development System) (SEEDS)	SEEDS became the first ecologically based Tajik National NGO in early 2007. Its work is focussed on issues of sustainable land management, ecological preservation, and improved economic stability for local populations. URL: www.tajikseeds.org
Others		
8.	Pamir's Bridges	This is a Swiss NGO for construction and rehabilitation of bridges on mountain roads in Central Asia, particularly in Kyrgyzstan and Tajikistan. URL: www.pamirbridges.ch
9.	The Aga Khan Development Network (AKDN)	AKDN focuses on health, education, culture, rural development, institution-building and the promotion of economic development. It is dedicated to improving living conditions and opportunities for the poor, without regard to their faith, origin or gender. URL: www.akdn.org
10.	Development & Cooperation in Central Asia (DCCA)	Capacity-building and the strengthening of non-governmental, religious and public organizations (civil society organizations) for sustainable development and the empowerment of the marginalised layers of population in Central Asia. URL: www.dcca.kg
11.	Eurasia Foundation of Central Asia	The Eurasia Foundation of Central Asia (EFCA) was created in 2005 to better meet the needs of Eurasia Foundation's local partners in Central Asia and to devolve management responsibilities to local staff. Based in Almaty, Bishkek, Dushanbe and Osh, EFCA staff manages a broad portfolio of programs, developing local organizations via technical assistance and grants. Eurasia Foundation (EF) and EFCA have invested more than \$40 million in Central Asia to support local initiatives in community development, private enterprise, education and public administration. URL: www.efcentralasia.org/en
12.	Rural Development Centre "RDC-Elet" (RDC-Elet)	RDC-Elet is a public, not for profit, and nongovernmental organization that supports social, charitable, cultural, and educational and other socially useful initiatives of local communities to alleviate rural poverty in Central Asia. The activity of the foundation is coordinated by the Supervisory Board that includes representatives of the Department for International Development (DFID) and consulting companies HTSPE Limited (UK) and Scanagri (Sweden). URL: www.rdcelet.kg
13.	Central Asia Mountain Partnership (CAMP)	In 2003, CAMP, a SDC funded partnership since 2000, initiated the establishment of the Alliance of Central Asian Mountain Communities (AGOCA) in order to promote interests of the mountain communities in the region, improve communication between mountain villages and exchange of successful experiences. Today AGOCA unites 32 villages from three countries and its activities include the annual AGOCA conference, exchange visits among villages, publication of a magazine highlighting experiences of mountain communities in the region and in the world. The Alliance is based on the model of the Alliance in the Alps, which today unites 225 mountain communities in seven European countries. Today CAMP is a network of organizations working in mountain villages in the Central Asian region. It is comprised of CAMP Consulting in Kazakhstan, CAMP Ala-Too in Kyrgyzstan and CAMP Kuhiston in Tajikistan, AGOCA and Mountain villages partnership and development foundation (MVDF). URL: www.swisscoop.uz/en/Home/Regional_Activities/Mountain_Partnership
14.	Alliance of Central Asian Mountain Communities	In June 2003 the Alliance of Central Asian Mountain Communities was founded in the Tajik capital Dushanbe on the model of the "Alliance in the Alps" network of municipalities. Like its sister organisation in the Alps, this Central Asian community network is active in the field of sustainable development in mountain communities and knowledge-sharing at the community level. With a programme of mutual visits, excursions and information-sharing, the organisation has become a platform for good practice and successful projects. URL: www.cipra.org/en/netzwerke/zentralasiatische-bergdorfallianz
15.	Central Asia Regional Environmental Centre (CAREC)	The CAREC is one of the Regional Environmental Centres in the CEE and NIS network established to support environmental efforts in the region. The CAREC was established by a decision of the 4 th Pan-European Environmental Ministerial Conference (Aarhus, 1998), on the initiative of the Central Asian (CA) states, with support from the European Commission (EC) and U.S. In July 2000, the Parliament of the Republic of Kazakhstan ratified an international agreement on CAREC's working conditions among the

		Republic of Kazakhstan, the EC and the UNDP, which, together with the Centre's Charter signed earlier by the representatives of the CA governments, the EC and UNDP, established the legal framework for the Centre. Under the charter (with further amendments in 2002 and 2003), the CAREC is an independent, non-commercial and non-partisan international organization. URL: www.carec.kz/english/index.html
16.	University of Central Asia (UCA)	UCA was founded in 2000 by the governments of Kazakhstan, the Kyrgyz Republic and Tajikistan, and His Highness the Aga Khan to promote the socio-economic development of Central Asia's mountain societies, while at the same time helping the diverse peoples of the region to preserve and draw upon their rich cultural traditions and heritages as assets for the future. UCA currently exists but not yet in its fullest capacity. In addition to the School of Professional and Continuing Education, which is beginning its enrolment in 2006, it is anticipated that UCA will have three world-class residential campuses in Teleki, Kazakhstan; Naryn, the Kyrgyz Republic; and Khorog, Tajikistan by about 2012. URL: www.ucentralasia.org

8. CONCLUSIONS AND RECOMMENDATIONS

The general conclusion is that the ICT infrastructure development is continuing apace in Central Asia. As the Central Asian republics liberalize the telecom sector and open up the ICT sector to private sector, both foreign and domestic, things should pick up. With high literacy, the region is already making fast progress in the adoption and innovative uses of ICTs to address sustainable mountain development. Many of the new concepts in facilitating one- or two-way communications such as eCentres, telemedicine, community radio and cellular telephony have already made inroads into the region with promising results. With right policies and incentives in place, the region can easily play fast catch up with the rest of the developing world. In many ICT areas, the region is already far ahead of much of the developing world, with perhaps the exception of Tajikistan and Turkmenistan.

- There is a need to replicate and upscale the e-Centres projects across the region. Not only that but also to link all these e-Centres with one another to facilitate regional communications thereby fostering trust, collaboration, and cooperation. The e-Centres hold the promise to address many of the communications needs of the region in a comprehensive way. For example, e-Centers can serve as a starting point for not only providing computer literacy in mountain areas, but also for implementing telemedicine and distance education. Linking the e-Centres to the Trans-Europe-Asia optic line could unleash the potential of the eCentres many times over and open new possibilities. A structured approach to monitoring costs of access, highlight innovations and good practices seem beneficial.
- Community radio is probably for now the most economical and effective way to provide information services to isolated mountain communities. The additional merit of community radio is that it provides local content in local language. While community radio is in its infancy in Central Asia, exchange visits could be arranged with countries like Nepal and the Philippines, which have a much longer history of community radio. A movement for community radio in Central Asian republics must be initiated. Lessons learnt from Bangladesh and India can provide a boost to this movement. Certainly, the Mountain Partnership and the Mountain Forum have a role to play here.
- MF/APMN, and MPS could support jointly ICT4Development in Central Asian Mountains in the area of capacity building in sharing information and networking for sustainable mountain development. Training in managing and using calendar of events, e-conferences, e-discussion platforms, the OLL and who=who would go a long way. It could provide national and local organisations the opportunity to access larger networks beyond the region – especially, experiences, lessons learnt and expertise from other mountain regions such as the Andes, Alps and the Himalayas.

- Sustainable mountain development is high on the agenda in Central Asia, thanks to the Central Asian Mountain Charter, the Bishkek Mountain Summit of 2002, and ADB-funded national/regional strategies for sustainable development of mountain areas of the region. Also EBRD focuses on ways for enhancing ICTS.
- There is a general lack of awareness about the Mountain Forum and Mountain Partnership in the region. APMN as the Mountain Forum's Asia-Pacific arm, together with the Asia-Pacific decentralized hub of the Mountain Partnership Secretariat could develop sub-nodes in the region. This would bring the diverse mountain players from the region into the folds of the MPS and MFS and linking them with the Mountain Agenda. Central Asian Universities could be a key partner in this venture. Depending on the funding availability, a future meeting of the Mountain Forum could be held in one of the Central Asian republics, inviting potential key partners from the region such as AKDN, CAMP etc. as observers to raise interest and engagement of MF/MP in the region. Mongolia and the Uighur Autonomous Region of People's Republic of China may be included in the operational definition of Central Asia, as they share similar geography and issues as the five Central Asian republics.

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ANNEX 2: LIST OF PEOPLE/ORGANISATIONS CONTACTED IN TAJIKISTAN/KYRGYZSTAN

S. No	Name	Address	Contact person
Kyrgyzstan			
1	Batken State university	21, Batken city, Batken region Kyrgyzstan Tel: 996 03622 36223 Fax: 996 03622 3624	
2.	Univesity of Central Asia	207 Panfilova str., Bishkek Kyrgyzstan Tel.: +996 (312) 691 822 Fax: +996 (312) 696 029 Website: www.ucentralasia.org	Mr. Ryzsbek, IT Specialist
3.	Ecological Initiative	Rm.114, 208, Ogonbaeva Str. 720011, Bishkek Kyrgyzstan Tel: 996 502 320160 Fax: 996 312 298852	Andrey Vladimirovich FESENKO Chairperson
Tajiikistan			
4.	Aga Khan Development Network	8-10 Gani Abdullo Str., Dushanbe, 734003 Tajikistan Tel.: +992-37 224 65 00 Fax: +992-37 51 00 66 Website: www.akdn.org	Ms. Nisa Bazizova, Communication Officer
5.	Agency for Technical Cooperation and Development	15 Rajabov Str., Dushanbe Tajikistan Tel.: 221 92 89, 227 03 67 Fax: 251 01 12 Website: www.acted.org	Mr. Safar
6.	Aga Khan Fund for Economic Development	4th Floor,137 Rudaki Avenue, Tajikmatlubot building, Dushanbe, 734002 Tajikistan Tel.: (992 37) 224-65-65, 224-74-61	Mr. Albaikenove,
7.	CARE Tajikistan	25 Behzod Str., Dushanbe Tajikistan Tel.: 221 00 91, 221 17 83 Fax: 221 17 78 Website: www.care.org	Mrs. Srriyov Nuri
8.	CESVI - Cooperazione e Sviluppo	84, Kh. Khakimzoda Str., Dushanbe, 734000 Tajikistan Tel.: 221 37 23	Project Manager
9.	Department for International Development (DFID)	65 Mirza Tursunzade Street, Dushanbe Tajikistan Tel.: 224 22 21	
10.	Deutsche Welthungerhilfe (German Agro Action)	32 Pavlova Str., Dushanbe, 734013 Tajikistan Tel.: 224 72 36	Mrs. Strobel, Regional Director for Central Asia

11.	Eurasia Foundation of Central Asia	18 Sovetskaya Str., Dushanbe, 734001 Tajikistan Tel.: 221 73 11 Fax: 221 69 86	
12.	Focus Humanitarian Assistance (FOCUS) USA	4th Floor, 137 Rudaki Avenue, Tajikmatlubot building, Dushanbe Tajikistan Tel.: +992 (37) 221-98-31	Karim
13.	Food and Agricultural Organization of the United Nations	37/1 Bokhtar Str., floor 6, Dushanbe, 734024 Tajikistan Tel.: 701 14 80, 701 14 81	Mr. Nauk, Coordinator
14.	International Federation of Red Cross & Red Crescent Societies	120 Omar Khayom Str., Dushanbe, 734017 Tajikistan Tel.: 224 59 11	Mr. Surna Keive
15.	International Research and Exchanges Board (IREX)	Apartment 1, 40 Pushkin Str., Dushanbe, 734002 Tajikistan Tel.: 224 58 62	Program Officer
16.	Millennium Development Partners	27 Aini Str., Kurganteppa, 735140 Tajikistan Tel.: (3222)2 51 35 (3222)2 51 87	Ms. Annova, Communication / IT Specialist
17.	Oxfam GB in Tajikistan	53 Ibni Sino Str., Dushanbe Tajikistan Tel.: +992 372 24 53 52	Ms. Katavan Gatashve
18.	Tajik Branch of the Regional Environmental Centre for Central Asia	2 Bokhtar Str., apt. 16, Dushanbe Tajikistan Tel.: 221 87 05	
19.	United Nations Development Programme in Tajikistan	39 Aini Str., Dushanbe, 734024 Tajikistan Tel.: +992 47 441 06 41 Fax: +992 47 441 06 46	
20.	Social Enterprise & Ecological Development Systems (SEEDS)	# 12 Istravshan Apt #3 Tajikistan Tel: 992 93 5014903	Geoff Hathaway, Country Director

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Global partners	
Swiss Agency for Development and Cooperation (SDC)	 Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra Federal Department of Foreign Affairs FDFA Swiss Agency for Development and Cooperation SDC
Mountain Partnership	
The Mountain Institute (TMI)	
Mountain Research Initiative (MRI)	
Mountain Research and Development (MRD)	
Global Mountain Program (GMP)	
Institute de la Montagne (IM)	

Mountain Forum Regional Networks		Hosting Institutions	
African Mountain Forum (AMF)		World Agroforestry Centre	
		The African Highlands Initiative (AHI)	
Asia-Pacific Mountain Network (APMN)		International Centre for Integrated Mountain Development (ICIMOD)	
European Mountain Forum (EMF)		The Association of Elected Mountain Officials (AEM)	
Latin American Mountain Forum - InfoAndina		International Potato Center (CIP),	
		Consortium of Sustainable Development of the Andean Ecoregion (CONDESAN)	
North American Mountain Forum (NAMF)		Mountain Culture at The Banff Centre	