

Contributing to Sustainable Mountain Development by Facilitating Networking and Knowledge Sharing through ICT - *Collaboration between Rocky Mountain States and Central Asia*

Baktybek ABDRIAEV, R.E. “Rusty” BUTLER,
Utah Valley University
800 West University Parkway, Orem, Utah, United States

Zamira DZHUSUPOVA
Center for Electronic Governance
United Nations University- IIST
P.O. Box 3058, Macao, Macau SAR

Asylbek AIDARALIEV
International University of Kyrgyzstan
255, Chuy Avenue, Bishkek, Kyrgyz Republic

ABSTRACT

This paper highlights new opportunities for sharing knowledge and networking through the use of information and communication technologies to better contribute to Sustainable Mountain Development and Millennium Development Goals. It analyzes current challenges in mountain countries in Central Asia where political instability and weak governance, in addition to their challenging natural conditions, constitute major constraints for peoples' lives. The authors examine possible ways to tackle the major obstacles through IT-enabled knowledge sharing and networking. They discuss a number of collaborative initiatives between Rocky Mountain States in the United States and mountain nations in Central Asia aimed at promoting the values of a democratic society and good governance through networking between educators, legislators. Also, these initiatives are aimed at fostering critical thinking through independent e-media. Based on the analysis, they suggest further ways in facilitating networking and knowledge sharing for Sustainable Mountain Development through the use of information and communication technologies by joining the efforts of all active players and also eliciting more contribution from the mountainous communities of the United States.

Keywords: ICT for Development, E-Government, Knowledge Sharing, Open Source, Sustainable Mountain Development, Mountainous Nations.

1. INTRODUCTION

The United Nations (UN) agenda on Sustainable Mountain Development (SMD) emphasizes the potential of networking including on the basis of information and communication technologies (ICT) for mountain nations in order to share experience and work out joint policies and instruments to address the obstacles. Key issues in mountain areas were already thoroughly researched by expert communities with recommendations about actions toward promotion of SMD [1].

However, there is still a lack of practical examples of collaboration and knowledge sharing between developed and developing mountain nations, which could provide valuable experience of mutually beneficial cooperation as an additional contribution to the achievement of the Millennium Development Goals (MDG).

Needless to say, there are many barriers to people in mountain countries for access to ICT that gives tremendous opportunities for connecting different regions in the world and enable them to communicate and share information and knowledge within global and regional networks. Difficult living conditions because of rugged mountain terrain constitutes one of the main constraints in developing countries in addition to weak governance, limited infrastructure, and lack of necessary equipment, hardware, affordable software and low Internet penetration. Due to that, citizens in such area lack an understanding of new opportunities made available by ICT. However, it is well known today that new communication opportunities foster networking and knowledge sharing across the world which helps to discuss crucial global problems and find better solutions through the collective efforts of different regions, nations and communities.

This paper highlights the new opportunities for sharing knowledge and networking through ICT to better contribute to sustainable mountain development pursued by the UN as a part of the MDG agenda. It analyzes current challenges in mountain countries in Central Asia (CA) where problems of political instability and weak governance in addition to their difficult natural conditions constitute the main constraints for peoples' lives and it examines possible ways to tackle the major obstacles through IT-enabled knowledge sharing and networking. This paper reveals a broad potential of ICT use for mountainous developing nations in Central Asia and discusses a number of collaborative initiatives between Rocky Mountain States (RMS) in the US and mountain nations in CA aimed at promoting the values of a democratic society and good governance through networking between educators, legislators and fostering critical thinking through independent e-media. Based on the analysis,

the paper suggests further ways of facilitating networking and knowledge sharing for SMD through the use of ICT by joining efforts of all active players and more contribution from the mountainous communities of the United States.

The authors of this paper have participated in a number of activities and initiatives discussed in this paper.

The paper is organized as follows: starting with background information in Section 2, it discusses the broad potential of new communication technologies for networking, knowledge sharing and learning in mountainous regions in Section 3. Subsequently, Section 4 considers the initiatives for networking, knowledge sharing, capacity-building and supporting independent electronic media outlets within cooperation between the RMS of the Northern America and CA, in particular Kyrgyzstan, and discusses the way forward. Finally, the paper concludes with recommendations for future work in facilitating networking for SMD through use of ICT by joining efforts of all active players and more contribution from the mountainous communities of the US.

2. BACKGROUND

In the modern context, all definitions of CA consensually include the five republics of the former Soviet Union: Kazakhstan with 16.0 million population, Kyrgyzstan with 5.5 million, Tajikistan with 7.3 million, Turkmenistan with 5.1 million and Uzbekistan with 27.6 million, for a total population of 61.5 million as of 2009. Other areas often included are Mongolia, Afghanistan, northern and western Pakistan, northeastern Iran, Kashmir, and sometimes parts of Western China (Xinjiang, earlier called East Turkestan) and southern Siberia in Russia [2].



<http://www.snowleopardconservancy.org>

Figure 1: Map of Central Asian mountain countries as a part of Eurasia

Located in the heart of Eurasia between China, India and Russia, CA covers an area of 3,882 thousand square km. Over 10% of the area in Central Asia is covered with mountains. Kyrgyzstan and Tajikistan are almost entirely located in the mountains as shown at Figure 1.

Among the major obstacles and challenges in Central Asian mountain countries for SMD are the following: i) weak governance resulting in increasing corruption and political instability; ii) potential threat from terrorist groups, drug dealers and radical Islamic fundamentalists; iii) ethnic conflicts and conflicts over natural resources; and iv) geopolitical significance.

Because of the Soviet legacy, these countries are still struggling with introducing political reforms and a free market economy. On this new way they are facing tremendous resistance to democratic changes due to corruption at different levels of governance which affect relations in the society and business in particularly. With the collapse of the Soviet Union, five countries gained independence but officials from the former Communist Party retained power in most CA countries. None of the new republics could be considered functional democracies although Kyrgyzstan and Kazakhstan have made great strides, unlike Uzbekistan, Tajikistan, and Turkmenistan [3].

The geographical location of the CA region which shares borders with Iran, Afghanistan and Pakistan in the south, where terrorist groups and Islamic fundamentalists have been active, created additional challenges for peace and stability in the region and obstacles for sustainable development.

The climate of the region with high aridness has made agriculture difficult, and its location far from the sea cut it off from much trade. Traditionally, relations between the nomads and the settled people in Central Asia were long marked by conflict. The nomadic lifestyle was well suited to warfare, and the steppe horse riders became some of the most militarily potent peoples in the world, limited only by their lack of internal unity. Historically, great leaders would organize several tribes into one force and create an almost unstoppable power.

The rich amount of water resources flowing from the mountains are not only a boon to the region but also a major cause of conflicts [4].

Moreover, the region holds geopolitical significance for powerful players such as China, the Russian Federation, European Union, and the US. The CA nations with highly literate populations and richly endowed natural resources are considered as potentially important players for regional and global trade and development. Further integration of CA to the regional trade with a prospect of a large increase in land-based cargo could bring them benefits because of their location at the intersection of some of the largest markets in the world: China, India and Europe.

One of the active promoters of the idea of SMD is the Central Asian nation of Kyrgyzstan. It has a population of 5.2 million. Over 90% of its territory is covered by vast mountains and 65% of its population lives in mountainous areas [5]. This land-locked, mountainous country has a predominately rural population that is relatively poor. At the same time, the country

has some advantages. Kyrgyzstan is committed more than its neighbours to democratic reform and has a vibrant civil society, including a vigorous NGO sector and a clear independent, although small, media sector [6]. The National Strategy “ICT for Development of Kyrgyz Republic” with focus of effective use of ICT in the area of governance, economy and education was approved in 2002 and Council on ICT for Development was established under the President of Kyrgyz Republic [7]. More than 150 public access points were established in the regions with the assistance of the international donor community with the aim to provide access to computer literacy courses and Internet services. Although the mountainous terrain of much of Kyrgyzstan makes network expansion countrywide a difficult task, but there is clearly a potential for growth [8].

Kyrgyzstan was one of the first countries which proposed in 1998 the initiative for the international community to focus on the problems of the mountainous nations world-wide caused by such features of geography as high altitude, remoteness, harsh natural living conditions, etc. Due to that, mountainous areas are experiencing high unemployment, poverty and becoming a breeding ground for violence and terrorism. For example, data for 2006 says that out of the 27 military conflicts around the world, 25 took place in the mountainous areas [9]. Unfortunately, the change of regime in Kyrgyzstan in April 7th, 2010 had become one more example to prove the relevance of concerns, which were raised from the beginning by the global mountain community and the Kyrgyz representatives about the very high probability for the mountain nations in transition to experience violence and conflicts. Their difficult living conditions also create tensions with the communities living in the valleys because of the corruption, stifling political freedoms and mismanagement of economy by the government, etc. In June, the tragedy in the Ferghana Valley of Kyrgyzstan which caused hundreds of deaths and forced hundreds of thousands people to flee from their native lands was also a vivid demonstration of clashes between the groups living in the valleys and the ones, which arrived to the city of Osh from highlands of neighboring Alay region.

Due to the region’s remoteness, integrated infrastructure, shared natural resources, and limited domestic markets, regional and global cooperation is necessary for effecting the sustainable development of the region. A wide-range of bilateral ties between CA countries and the US has been established since gaining independence in 1991 with particular focus on collaboration between mountain countries in CA such Kyrgyzstan and Tajikistan and the RMS in the US.

The RMS are usually split up into two regions known as the Northwest and Southwest. Idaho, Montana, and Wyoming are considered part of the northwest while, Arizona, New Mexico, Colorado, Nevada, and Utah are considered part of the southwest (Figure 2).

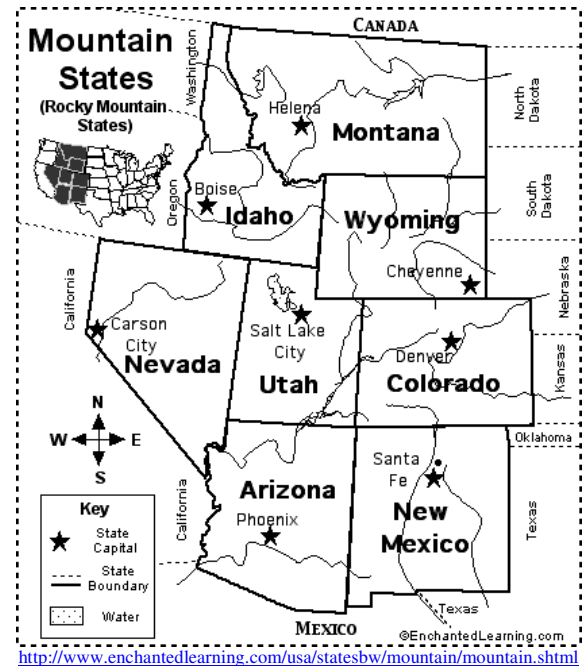


Figure 2: Map of the Rocky Mountain States

Tables 1 and 2 below include some data about mountain RMS in the US and in CA as well

Table 1. Some data about Rocky Mountain States

#	Mountain State	Population	Income per capita, USD	Highest point, m
1	Arizona	3,936,000	17,119	3789
2	Colorado	3,566,000	20,124	4270
3	Idaho	1,099,000	16,067	3839
4	Montana	839,000	16,062	3901
5	Nevada	1,389,000	20,266	4005
6	New Mexico	1,616,000	15,353	4011
7	Utah	1,860,000	15,325	4123
8	Wyoming	470,000	17,423	4207

Macmillan Color Atlas of the States

Table 2. Some data about mountain States of Central Asia

#	Name of the State	Population	Income per capita, USD	Highest point, m
1	Kazakhstan	15,233,244	8,200	6,995
2	Kyrgyzstan	5,213,898	417	7439
3	Tajikistan	7,320,815	420	7495
4	Turkmenistan	5,042,920		3,139
5	Uzbekistan	27,307,000	1,800	4,301

The World Bank, CIA

As one can see from both Tables, sustainable development in RMS and in a majority of the territory of CA is synonymous with the development of mountains. In pursuing sustainable development, leaderships in both regions have to deal with similar challenges defined by the natural conditions and they

have mutual interests related to that. At the same time, it provides for the states of the Rocky Mountains a very unique chance to play an important role through SMD in accomplishing both the goals of the foreign policy of the US in assisting countries of the region to strengthen their independence and sovereignty and in achieving by them MDG goals.

RMS, like Montana, Utah and Wyoming and mountain countries in CA, like Kyrgyzstan and Tajikistan have a number of common features, such as terrain and climate, comparable sizes of populations. Moreover, the level of awareness and desire to work on the agenda of SMD as a part of MDG gives also some similarities. However, each of them has different resources for collaboration and joint initiatives, and diverse groups of interests.

3. ICT POTENTIAL FOR MOUNTAINOUS DEVELOPING COUNTRIES

The Declaration of Principles, adopted on 12 December 2003 at the World Summit on the Information Society in Geneva [10], emphasized that the development of ICTs provides enormous opportunities for people in remote areas who should be key actors in sustainable development.

With taking into account the typical challenges in mountainous developing countries, it is evident, that ICT can provide more opportunities for people in remote areas by creating an environment, including through training, where they feel comfortable participating in community development activities and advocating their needs and priorities of economic empowerment. In this regard, it is important to develop ICT-based tools that address specific needs in mountains.

High illiteracy rates of citizens in remote regions and lack of ICT training are two of the most serious barriers that prevent them from entering the information economy. Continuing gaps in education due to lack of mobility and socio-cultural practices that downplay the importance of education in remote regions, constitute enormous challenges for the mountain nations. New technologies allow the process and content of education to be adapted to students' preferences and priorities, thus opening up possibilities for designing and providing education in forms that are locally relevant. ICT literacy programmes, business planning courses, e-trainings access to market and trading information services and e-commerce initiatives can offer economic opportunities in employment and entrepreneurship for people in the mountains.

It is well known now from the world-wide experience that ICT is a forceful tool to improve governance and strengthen democracy and citizen empowerment [11]. In recent years, e-governance has become a priority area of many governments resulted in the implementation of programmes that apply ICT in delivering public services and promoting transparency and accountability [12]. The main focus of e-governance shifts on using new technologies to strengthen public participation in the democratic processes and reduce the digital divide [13]. It can help foster transparent governance by enhancing interaction between government and citizens in the mountain regions, revitalizing civic institutions and public debate, promoting equity and equality, and empowering minorities. The best world

experience shows that citizen centric governance involves meaningful participation of people particularly from remote area in all levels of decision-making and ensuring greater transparency and accountability in government.

Table3. E-government development in Central Asia

Country	E-government development index value		World e-government development ranking	
	2010	2008	2010	2008
Kazakhstan	0.5578	0.4743	46	81
Uzbekistan	0.4498	0.4057	87	109
Kyrgyzstan	0.4417	0.4195	91	102
Tajikistan	0.3477	0.3150	122	132
Turkmenistan	0.3226	0.3262	130	128
Sub-regional average	0.4239	0.3881		
World average	0.4406	0.4514		

UN E-Government Development Knowledge Base

CA has made the most significant improvements in e-government development as a region from the 2008 UN Survey, with Kazakhstan making one of the most dramatic leaps in the 2010 UN Survey to continue to lead the region (Table 3). Uzbekistan, Kyrgyzstan and Tajikistan have all improved their national and ministerial websites [14].

Aiming to respond to the development challenges and improve governance through use of ICT, a number of international organizations have been supporting mountainous CA countries. For example, the United Nations Development Program (UNDP), the World Bank and United Nations University-International Institute for Software Technology (UNU-IIST) provide support to the Kyrgyz Government in the field of ICT4D and e-governance. They help the country's integration into the world information society by fostering the use of ICT as a tool in achieving the MDG. They promote improvement of public services delivery and access to them by supporting the development of e-public services and building human and institutional capacity in government institutions.

The UNDP assists the country in three key areas: national policy formation, capacity building in ICT4D and e-governance, and also practical implementation of related projects. In terms of practical ICT implementation, the UNDP helped the government to establish a national computer network and create its own web presence through the governmental portal www.gov.kg and www.govservices.kg. As a result, Kyrgyzstan received the highest ranking in the 2010 UN Survey among national portals in the region. The national portal includes transactional aspects and was strong on citizen engagement. Kyrgyzstan as well as Kazakhstan stand out for embracing the concept of e-participation. Their national portals allow citizens to initiate their own proposals, which the government reviews in the decision-making process. Citizens receive acknowledgement

that their inputs on e-deliberations or e-opinions have been received. The national portals allow discussion via social networking tools and they also post past forum debates. Their senior officials respond directly to the opinions from the online forums [15].

UNDP assisted also the private sector with creation of the Association of Telecommunication Operators and with other donors the first Public Access Points (PAPs) have been established.

Among the latest initiatives of UNDP within the Democratic Governance Program in Kyrgyzstan are 12 pilot e-Ayil Okmotu (e-municipalities) in rural villages mostly located in mountain regions like Naryn, Alai, Talas, Ozgon. Within this initiative aimed at promoting decentralisation and strengthening local-self governance, Public Information Centers (PIC) and IT-enabled management system for municipality have been established. They provide to citizens of these villages and also for neighboring areas an access point to information and public services, e-trainings for different groups and also knowledge resources available via Internet [16]. As a result, citizens in those areas before going to the government agencies to receive any public service can familiarize with rules and procedures for services from the government web sites. PICs provide trainings on computer literacy and e-training for different groups in the mountain regions on a reasonably chargeable basis. The main priorities are small- and medium-business planning and land relations. It was revealed during monitoring visits to such pilot areas that the local people really appreciate and enjoy the new opportunities of communication and sharing of information and knowledge in the global networks. Computerized municipal management systems including land and local tax administration were developed and implemented within the e-Ayil Okmotu initiative that helps municipalities improve planning, budgeting and enhance management of local resources. In addition, it gives them new opportunities for e-reporting and e-communications with the central and provincial government institutions and departments and other municipalities for sharing experience and learning lessons from each other.

UNU-IIST Centre for Electronic Governance is contributing to capacity building activities within the partnership with National IT Centre and Kyrgyz-Turkish Manas University (KTMU). Such activities include UNeGov.net schools for different levels of public managers from the Kyrgyz Government and Parliament [17] as well as through a fellowship program for teaching staff from KTMU to develop IT leadership, organizational and technical skills required for e-government implementation.

Among the successfully implemented World Bank initiatives with proactive use of ICT in Kyrgyzstan was the project on Land and Real Estate Registration where “the network of registration offices and the digitization and information technology systems were developed progressively in line with evolving management and technical capacity” [18]. Within this project a unified automated registration system was developed and implemented in all 50 local registration offices across the country including mountainous regions like Alai, Chon Alai, Kara Kuldga, Naryn, Talas, Jeti Oguz, Tup, etc. The main outcomes of the use of new technologies in land management and registration of rights on the land parcels, buildings and houses for people in such regions are that they are now served much faster and in more convenient way. They do not need to

visit the registration office several times like before computerization, which was costly and challenging for them.

However, it should be noted that there is a need to widen e-municipalities with Public Information Centres in mountainous areas. This will help to provide a multitude of services like Internet, e-mail, computer literacy courses and e-trainings in all Ayil Okmotu all over the country. They would offer an invaluable resource to enable people to use, produce, disseminate and share knowledge and information, and thereby to contribute to their communities’ and countries’ economic and social growth. Education and trainings in computer skills should be extended in the mountain regions. To make more affordable and accessible ICT facilities in rural area, Open Source technologies should be used more widely for knowledge sharing and distance learning.

New technologies like web 2.0 and mobile channels open up possibilities for sharing information and knowledge in much faster and easier ways, providing e-learning centres to support training that is most relevant to people who live in mountainous regions. People in remote mountainous areas can improve organizational and personal knowledge and skills through the use of new e-tools. On the other hand, organizations in mountain regions gain access to expertise and know-how on specific issues related to the life in the mountains that allows them to conduct research and participate in global mountain initiatives, collect and share information.

Programmes and initiatives in some remote areas have demonstrated how ICT became an instrument for economic empowerment. E-commerce initiatives can link producers and traders from the mountains directly to markets at national, regional or even global levels, allowing them to restructure their economic activities and bypass middlemen and male-dominated and exploitative market structures. As producers and distributors of goods and services, they can capitalize on the potential of these technologies as knowledge and networking tools. ICT has to be used to connect citizens in mountain regions to new and emerging markets, broaden their social networks and provide them with information that opens up important economic opportunities.

The Information Society enabled women's empowerment and their full participation on the basis of equality in all spheres of society and in all decision-making processes. It stated also that gender perspectives should be mainstreamed into all sectors of development and ICT used as a tool to that end. UN General Assembly resolution 58/146 [19] emphasized the need to ensure that rural women have access to and fully participate in the area of ICT.

Thus, new communication technologies can significantly help mountain developing countries to address the vital problems of inequity and inequality caused from one hand, by the remoteness and from the other hand, by weak governance and corruption. ICT can significantly contribute to the improvement of governance, strengthening democracy and citizen empowerment which is crucial for mountain nations. E-governance, capable to improve delivery and access to public services through ICT-use, and promote transparency and accountability, has become a priority area of many mountainous nations [20] and was successfully implemented by many of them as well [21]. New communication technologies can empower people living in

mountain areas through networking and better opportunities for knowledge sharing and learning.

4. COOPERATION BETWEEN THE ROCKY MOUNTAINS AND MOUNTAIN NATIONS OF CENTRAL ASIA

Central Asian mountainous nations since independence have developed ties with several of the RMS, such as Utah, Montana and Wyoming with an emphasis on SMD. The UN designated 2002 as the “International Year of the Mountains (IYM)” [22] and held a First Global Mountain Summit in Bishkek as a sign of recognition of contribution of Kyrgyzstan to this initiative [23-24].

Further, a new coordinating institution for global mountain activities, “Mountain Partnership” was created under the United Nations Food and Agriculture Organization in Rome [25]. There were the World Bank, different U.N. institutions, developed countries like Switzerland, France, Germany, many mountainous countries in transition and NGOs among the major supporters of the “Mountain Partnership”.

Central Asian mountainous nations managed to convince several institutions from the Rocky Mountains and Utah Valley University (UVU) to be pro-active in that area. As a first step, they joined the Mountain Partnership in 2006 and held different regional events in the states of the Rocky Mountains on the basis of existing worldwide programs of cooperation with a focus on Central Asia.

The US supported the UN resolution celebrating IYM and various institutions and NGOs participated in the activities under the IYM agenda, including the Global Mountain Summit in Bishkek and some of them joined “Mountain partnership”. However, the US on a federal level was not actively involved in subsequent activities promoting the UN sponsored SMD initiative, as it was done by such European nations as Switzerland, Italy, France, etc. This could be explained by the different priorities of the US on a federal level and not enough level of awareness of those issues among the mountain constituencies nation-wide. Therefore, the initiative of CA and the RMS in joint cooperation under SMD agenda was very timely and got support from the Mountain Partnership.

Further along, the paper describes initiatives on advancing SMD agenda with involvement of particular states among RMS and nations of CA as a part of efforts of global mountain communities. The paper also describes the activities of two such players, as Utah Valley University (UVU) and International University of Kyrgyzstan (IUK), which doesn't mean that there were not relevant activities in those areas before by other institutions and individuals in both regions. On the contrary, both UVU and IUK would like to invite all such interested institutions to work together as a part of regional networks, which would be important to expand in both regions in order to contribute in a more effective way to the SMD agenda promotion through joint efforts.

A number of exchange initiatives and ongoing projects discussed below intend to facilitate networking and knowledge sharing processes between the mountain nations in the US and CA.

4.1 Networking

IUK, as one of the hosts of the First Bishkek Global Mountain Summit in 2002 and an active promoter of SMD continues its partnership with UVU in the further expansion of networking between the key institutions in the RMS and CA interested in SMD.

International Conference “Women of the Mountains” highlighted the new approach and potential for networking in particular. Dedicated to the fifth anniversary of the IYM, it was hosted by UVU jointly with IUK and Kyrgyz National Centre for Development of Mountain Regions on March 7-10, 2007 in Orem, Utah. It was supported by the UN, the World Bank, and others. Their representatives, the US State Department officials, the Ambassadors from 5 mountainous nations to the US and the UN took part at the Conference together with 110 officials, scholars and experts on women issues from 22 nations [26].

The event has broken the old stereotype about the negative attitude towards the UN in the rural part of the US. The Conference, which was held in a friendly and hospitable environment, was a success from all points of view. It has allowed for the first time in the US, a gathering of representatives of the majority of its mountainous states under the UN agenda. Its final document titled “The Orem Declaration of Mountain Women” defined a strategy for mountain communities to deal with challenges for women's life in the mountains globally and helped the communities of North America to be deeper integrated with the activities of the UN-related institution like the Mountain Partnership and the Mountain Forum as well [27]. It also achieved an important goal to assist mountainous nations in SMD. Currently UVU is working on preparations for the second Conference “Women of the Mountains”, which is scheduled to be held in spring of 2011 in Orem, Utah, economic realities permitting.

A permanent interactive web site of the Conference www.WomenoftheMountains.org was developed in order to disseminate information and stimulate dialogue between mountainous nations.

In this regard, the Secretary General of the U.N. in his report to the General Assembly of the UN on SMD on August 9, 2009, mentioned among the major developments in this area that “the Rocky Mountains there established a regional network on sustainable mountain development” between mountain nations in Central Asia...“ [28].

Legislative exchanges represent both a priority area for networking and a way to promote democracy-building.

- At the beginning, the Speaker of the Kyrgyz Parliament Marat Sultanov visited Utah on February 3rd-5th, 2007 at the invitation of President John Valentine, Utah State Senate. During the visit, the Kyrgyz side took part at a conference call between legislators of the state of Utah, Montana, State Department and Speaker of the Kyrgyz Parliament, when all participants discussed the possibilities of further building networks and exchanges between legislators from both regions.
- In reciprocity, President John Valentine visited Bishkek on October, 1st 2007 together with Montana Senate Majority Leader Carroll Williams as a first bi-partisan legislative

group from the RMS ever to visit CA. As a practical step in further networking and capacity building, President Valentine and Senator Carroll Williams discussed the idea of creation of the Parliamentary Center at Kyrgyz National University (KNU) with active use of ICT as a platform for dialogue and capacity building.

- Then, on February 2008, President John Valentine hosted in Utah a group of former members of the Parliament and opposition leaders of Kyrgyzstan led by Mr. Omurbek Tekebaev, Chairman of the “Ata-Meken” party, whom he invited during own visit to Kyrgyzstan. The visit further strengthened potential for networking of legislators between two regions. Mutual trust and friendship established during visits helped to smoothen relationships between the United States and a new leadership of Kyrgyzstan, which came so unexpectedly to power in Kyrgyzstan as a result of a change of regime in Bishkek in April 2010. New Government interim included many former legislators, who visited then Utah and were not happy with a treatment from the U.S. Embassy in Bishkek during Bakiyevs’ reign in power.
- The same approach was used when the delegation of the members of the Tajik Parliament visited Utah in December 2007 and the following trip to Dushanbe of the group of the State Senators led by President John Valentine took place in June 2008. The goal of each visit was to exchange experiences in particular areas of SMD with further deepening of networking potential between two regions. Initiative was supported by the “Open World” program of the Library of Congress, which has sent several Central Asian delegations to Utah during 2008-2009.

Cultural Exchanges as essential tool in facilitating understanding and dialogue between both regions helped to build networking as well. UVU hosted in January 2008 a music group “Kut” from Kyrgyzstan as a part of their tour to the Rocky Mountains, arranged by VISTA 360 from Wyoming.

4.2 Knowledge Sharing and Capacity Building

A number of collaborative initiatives in the area of knowledge sharing and capacity building included educational exchanges and programs between institutions in Utah Valley and Kyrgyzstan.

Educational Exchanges and Programs - UVU has ties with such educational institutions in the region as:

- IUK as a main partner in promoting the agenda of SMD between the two regions. In parallel with traditional programs of exchanges of students and faculty partners both sides are developing a network of different NGOs and public institutions in CA interested in cooperation with the Rocky Mountains. The IUK expanded currently its existing project on distance education with the Contemporary Humanitarian Academy in Moscow with involvement of several universities in the region, including UVU. UVU works on applying for a Fulbright scholarship for its faculty members with experience in capacity building and knowledge sharing in mountainous areas of Mexico who will be hosted by IUK during 2011-2012.
- Kyrgyz-Turkish Manas University (KTMU), which cooperates with UVU on a number of projects, including a

joint research project on the traditions of the rule of law and good governance among the people of the region on the basis of the 11th century manuscript “Glory of Wisdom” written by the famous philosopher Yusuf Balasagun. During the Conference in August 24-28, 2009 in Bishkek, partners organized an on-line session of the paper presentation by UVU representatives, who took part at the Conference.

- In parallel with the networking efforts from the President of Utah State Senate, UVU is working with the KNU on establishing the independent Parliamentary Center in Bishkek as a research and analytical institution, with enabling knowledge sharing and capacity building across CA. As a part of the contribution to the Centers development, UVU will provide access to its e-library for students and faculty of KNU.
- Two Fulbright scholars on independent media from UVU and Brigham Young University (BYU) just finished working at AUCA. UVU already has several students from Central Asia.

4.3 Independent E-Media Outlets

Project pursues two intertwined goals aimed at the audience in CA: first, to promote best examples of SMD in both regions by using capacities of local media; second, to promote ideas of open societies and critical thinking in particular through presenting a diversity of views on current situation in the region and worldwide from different global sources of information.

Current regimes in the region have tightened controls over the flow of information and have put more restrictions on freedom of speech [29]. Due to that, it has become even more important to expose CA to the broadest possible diversity of opinions from the international mass media. The easiest and the most accessible way to do so is to publish articles translations in Russian and Kyrgyz languages about the region and global politics from international English media outlets on different CA websites and printed media.

A project is aimed at disseminating such type of publications by posting them to a web-site www.Zpress.kg, of the independent news agency “Zamandash-press” created in 2007. This agency focuses on the problems of migrants from Kyrgyzstan in foreign countries.

The project was developed by the Fulbright scholar Dr. Kuban Taabaldiev at the University of Montana in Missoula (2007), who studied the experiences of local media outlets in the United States. In parallel, he was involved in SMD agenda and presented a paper on the media situation in Kyrgyzstan at the International Conference “Women of the Mountains” at UVU. Back in Kyrgyzstan, he helped to implement joint projects for UVU with IUK, KTMU, KNU, etc. As a director of a news agency he also made the issues of the SMD and cooperation between two mountainous regions an additional priority to the activities of his agency. The Web-site has already posted under special banners information about ongoing projects between UVU and IUK, KTMU and others.

As a result, the agency translated and disseminated via more than 50 different Web-sites and regional media outlets in Russian and Kyrgyz languages 80-120 articles monthly during 2008-09. The materials produced have been published with

further translation into Kyrgyz in local newspapers, such as "Uchur", «Achyk sayasat», «Zaman Kyrgyzstan», etc. More than 40 western media outlets were used as sources for the original articles, including the New York Times, Economist, Financial Times, etc. Special attention is paid to the translations of the articles from Rocky Mountain media outlets, dedicated to the SMD and issues of cooperation between two regions.

Currently, the agency plans to expand its services by including media sources in languages different from English. On its part, UVU involves students and faculty of UVU in the project by providing additional translated materials to the ones done by the news agency in Kyrgyzstan. It also is developing a new web site for the agency.

4.4 The Way Forward

The partnership on the state level with U.N. related Mountain Partnership and Mountain Forum have the potential for deeper involvement of the US mountain states in SMD globally and in CA in particular. Joint efforts of the most active actors in SMD from one side and ICT4D and e-governance from the other side will facilitate SMD through ICT. Such an approach will allow mutually beneficial interactions between the two regions. One of the specific features of cooperation between two regions is the engagement of private IT companies from the US to support joint projects and activities.

Human and institutional capacity building in mountain countries of CA, ICT-enabled networking and knowledge sharing with US mountain states and also research activities in the area of democratic governance and ICT4D are the key among joint initiatives to better contribute to SMD. Special interest for CA and Kyrgyzstan in particular represents the experience of Utah as one of the leading states in the US in e-governance [30]. Exchange of the best practices and other knowledge resources related to e-governance and mountain development can provide significant benefits to the partners from both sides.

An approach to breach the technology gap between mountainous developed countries and the ones in developing world including CA is the use of Open Source technologies, which offer a variety of applications that will greatly enhance business and government operations at a very reasonable cost [31]. It will be also very important and effective tool for enforcing women's potential in the countries of the region.

As one of the practical approaches to do so, it has been proposed to establish a training program at one of the universities in CA and in particular at the AUCA. The main goals are to train business and government leaders, women entrepreneurs and leaders of NGOs as well in the use of Open Source software applications. As envisioned, the program will eventually offer both undergraduate training for students at the regional university as well as seminars for government and business leaders throughout the region as follows:

1. Undergraduate training will consist of coursework that specifically teaches the skills needed to use a wide variety of open software applications. In addition to that, the applications will be incorporated into the teaching protocols of the faculty at the university itself. In this way, all students will become familiar with the applications and their uses in the organizations where they will be employed in the future.

2. Training seminars will be one to two week long taught at the University for business, government leaders, women entrepreneurs and leaders of NGOs from CA countries. This training will familiarize attendees with current open source applications and give hands-on experience in their use.

It is anticipated that the program will start by focusing on the students of the university and leaders from around Kyrgyzstan in the first year. Once the program is well established, an effort will be made to promote the training throughout the region and to bring both students and leaders from other neighboring mountainous countries to participate in an expanded training program. The size of the program will be determined by the funding that can be secured.

The selection of the applications to be taught is critical to the success of the program. The courses to be taught will need to be carefully developed to meet the needs of the mountainous region. At this moment UVU is discussing with representatives of the local universities in CA, international financial institutions and several private ICT companies in the US details of the joint activities under the umbrella of this project.

5 CONCLUSION AND FUTURE WORK

As a result of discussions in the previous sections, we can conclude that new communication technologies open up significant opportunities to the mountainous developing nations for SMD pursued by the UN. Due to the high level support of UNDP, World Bank, UNU-IIST and other international organizations in developing countries, ICT became a powerful tool for better governance, access to information and knowledge, human and organizational capacity building and hence, achievement of MDGs. The collaborative initiatives discussed in the paper demonstrate the increased interest among various players to SMD. Furthermore, new communication technologies enable mountainous communities of the US in networking and knowledge sharing as well with further ability to participate in SMD worldwide.

In this paper, we argue that ICTs provide significant potential for networking, sharing experience and expertise, training programs and independent e-media channels through various initiatives to promote critical thinking among the people of mountainous developing nations. We consider possible ways to better contribute to SMD, based on cooperation of mountain communities of the RMS of Northern America with partners from CA by engaging active research institutions and private IT companies.

Based on the findings of this research we can recommend for future work in the domain the following initiatives and activities:

- 1) Establishing close partnerships and networking between the most active actors both in SMD and ICT4D, in particular UNU-IIST, UVU and such Universities in CA as AUCA, IUK, KTMU, KNU for building human and institutional capacity in CA region in the area of Electronic Governance, ICT4D, Knowledge Management and also for joint research related to SMD through ICT.
- 2) Further mobilizing private ICT companies from the RMS to support joint research and development projects between

UNU-IIST, UVU and CA educational institutions and to foster effective use of Open Source technologies.

- 3) Further strengthening of the on-line Mountain Forum by further expansion of regional Rocky Mountain network of all institutions and individuals interested in SMD and coordinating its activities jointly with the regional CA mountain network.
- 4) As a continuation of deepening ties between RMS and CA mountainous nations to organize a second International Conference “Women of the Mountains” with the special focus on gender issues and role of ICT in women empowerment.

6 REFERENCES

[1] Price F. Martin, Jansky F. Libor, and Iatsenia A. Andrei, editors, **Key issues for mountain areas**, Tokyo, New York, Paris: United Nations University Press, 2004,

[2] Wikipedia: http://en.wikipedia.org/wiki/Central_Asia

[3] Ibid.

[4] Asia Pacific Mountain Network/Mountain Forum Secretariat, **Central Asian Communications Needs Assessment - ICT 4 Sustainable Mountain Development perspective - with a focus on Kyrgyzstan and Tajikistan**. Project report, executed by the Mountain Forum in the framework of support to the Mountain Partnership Secretariat (FAO/ LOA PR 38828), August 2008

[5] UNESCO, **Cultural and Eco-tourism in the Mountainous Regions of Central Asia and in the Himalayas: Kyrgyzstan**, Paris, 2009,
http://portal.unesco.org/culture/en/ev.php-URL_ID=2204&URL_DO=DO_TOPIC&URL_SECTION=201.html

[6] Clifford J. Levy, Strategic Issues, Not Abuses, Are US Focus in Kyrgyzstan, **The New York Times**, July 22, 2009

[7] United Nations, **Towards Knowledge – Based Economy: Kyrgyzstan – Country Readiness Assessment Report**, New York – Geneva, 2002

[8] UNESCAP Report, **ICT Sector Development in Five Central Asian Economies: A Policy Framework for Effective Investment Promotion and Facilitation**, International Conference on Strengthening Regional Cooperation for Managing Globalization, Moscow, Russian Federation, 28-30 September, 2005.
http://www.unescap.org/tid/projects/globalize_ure.pdf

[9] Asylbek Aidaraliev. **Mountain Initiative**, Presentation at Utah Valley University, 28 September, 2009

[10] World Summit on the Information Society, Declaration of Principles, **Building the Information Society: a global challenge in the new Millennium**, Document WSIS-03/GENEVA/DOC/4-E 12 December 2003
<http://www.itu.int/wsis/docs/geneva/official/dop.html>

[11] Council of Europe, **Recommendation CM/Rec(2009)1 of the Committee of Ministers to member states on electronic democracy (e-democracy)**, Adopted by the Committee of

Ministers on 18 February 2009 at the 1049th meeting of the Ministers’ Deputies

http://www.coe.int/t/dgap/democracy/Activities/GGIS/CAHDE/2009/RecCM2009_1_and_Accomp_Docs/Recommendation%20CM_Rec_2009_1E_FINAL_PDF.pdf

[12] United Nations Public Administration Programme, **Fostering Democracy and Development through E-government**, 3rd Global Forum on Reinventing Government 15-17 March, 2001, Naples, Italy
http://www.unpan.org/DPADM/GlobalForum/3rdGlobalForum/tabid/607/Default.aspx#Link_Training

[13] Maksym Ivanyina and Anwar Shah. “Citizen-Centric Governance Indicators: Measuring and Monitoring Governance by Listening to the People and Not the Interest Groups”. Economics Discussion Papers, **E-journal**, No 2009-27.
<http://www.economics-ejournal.org/economics/discussionpapers/2009-27>

[14] UN E-Government Development Knowledge Base
<http://www2.unpan.org/egovkb/datacenter/CountryView.aspx?reg=ASIA%20-%20Central%20Asia>

[15] UN Public Administration Programme, **Leveraging e-government at a time of financial and economic crisis**. The United Nations E-Government Survey 2010,
<http://unpan1.un.org/intradoc/groups/public/documents/un/unpan038851.pdf>

[16] Kent Millington, Zamira Djusupova, Ulan Brimkulov and Alexey Semyonov, Baktybek Abdrisaev, **Role of ICT in Enforcing Women’s Potential in the Mountainous Regions: Case Study of Kyrgyzstan**, International Conference “Women of the Mountains. March 7th-10th, 2007, Orem, Utah, Utah Valley State College, 2008

[17] United Nations University-International Institute for Software Technology, Center for Electronic Governance, **UNeGov.net - Building a Community of Practice for e-Governance**, Project, UNU-IIST, 2008
<http://www.egov.iist.unu.edu/cegov/projects/UNeGov.net-Community-of-Practice>

[18] The World Bank, **Kyrgyz Republic, Land and Real Estate Registration Project, (Credit NO. 3370-KG)**, Project Performance Assessment Report No.: 55382-KG, June 29, 2010
http://www-wds.worldbank.org/external/default/WDSContentServer/WDS/IB/2010/08/05/000333037_20100805014721/Rendered/PDF/553820PPAR0p0411Cdisclosed08131101.pdf

[19] Resolution of the General Assembly of the United Nations A/RES/58/146, **Improvement of the situation of women in rural areas**, United Nations, New York, 19 February 2004,
<http://www.undemocracy.com/A-RES-58-146.pdf>

[20] Dzhusupova Zamira, Ojo Adegboyega, and Janowski Tomasz, 2009, Organizing and Managing Knowledge for e-Government: Issues, Practices and Challenges. *In*: Kecheng Liu, editor, **Proceedings of the International Conference on Knowledge Management and Information Sharing (KMIS2009)**, Madeira, Portugal, 6 - 8 October 2009, The Institute for Systems and Technologies of Information, Control and Communication (INSTICC).

[21] Rutgers University, **Maine, Oregon and Utah Achieve Top Rankings in State E-Governance**, Press-release, Rutgers – SFSU State E-Governance Survey, 19 July, 2009,

<http://news.rutgers.edu/medrel/news-releases/2009/07/maine-oregon-and-uta-20090715>.

[22] Resolution of the General Assembly of the United Nations A/RES/53/24, **International Year of Mountains, 2002**, 19 November 1998, <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N98/776/23/PDF/N9877623.pdf?OpenElement>

[23] FAO Council Session, **Proclamation of an International Year of Mountains**, Rome, 23 - 28 November 1998
<http://www.fao.org/unfao/bodies/council/c1115/X0414e.htm>

[24] Bishkek Global Mountain Summit, **Final Document: Bishkek Mountain Platform**, 2002
<http://www.ourplanet.com/imgversn/134/bishkek.html>

[25] Mountain Partnership secretariat under FAO, UN-FAO, Rome,
http://www.mountainpartnership.org/members/members_en.asp

[26] Gilles Rudaz, Amy Krause, "Women of the Mountains: An International Conference", **Mountain Research and Development**, Vol. 27, №2, 2007

[27] Mountain Partnership, **The Orem Declaration of Mountain Women**, UN-FAO, Rome, 2008
<http://www.mountainpartnership.org/common/files/pdf/OremDeclaration.pdf>

[28] Report of the Secretary-General to the General Assembly, **Sustainable mountain development**, 3 August 2009
<http://www.mountainpartnership.org/doc/N0943922.pdf>

[29] Gulnura Toralieva, "The EU's approach to the development of mass media in Central Asia", Policy Brief, EUCAM, **EU-Central Asia Monitoring**, No. 6 - June 2009
http://www.eucentralasia.eu/fileadmin/user_upload/PDF/Policy_Briefs/PB-6-eversion.pdf

[30] Ibid, 21

[31] B.D. Abdrisaev, Z.S. Djusupova, A.I. Semyonov. "Case study: Kyrgyzstan's experience in promoting Open Source for National ICT development", **Journal of Systemics, Cybernetics and Informatics**, Vol.2, №7, 2006