

***Strengthening Drought Management and
Mitigation in Central Asia:
Report of the Conference Proceedings***



**Tashkent, Uzbekistan
17-18 July 2006**

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Introduction

On 17-18 July 2006 the World Bank Group convened a conference *Strengthening Drought Management and Mitigation in the Caucasus*, in the Grand Orzu Hotel in Tashkent, Uzbekistan. The objectives of the conference were as follows:

- Discuss the regional and country drought management and mitigation strategies produced by World Bank and national consultants under the *Drought Management and Mitigation Assessment for Central Asia and the Caucasus* and identify the requirements for their implementation.
- Examine needs and capabilities in regional cooperation and the feasibility of developing and implementing a Regional Drought Plan;
- Explore needs and capabilities in policymaking to integrate drought management and mitigation into national and regional development strategies and plans;
- Identify follow-up initiatives and activities.

The agenda of the conference was designed to meet these objectives and cover the mandates of the trust fund allocation for the ESW. Three panels were held: Planning and Policymaking for Drought, Drought and the Environment, and Community Management and Mitigation of Drought. Roundtable discussions were encouraged. The agenda of the conference is included into Annex A of this report.

The conference was attended by around 25 representatives of hydrometeorological agencies, line ministries, NGOs, donors, International Financial Institutions, and other stakeholders. A list of participants is presented in Annex B.

The World Bank is grateful to host institution of the conference, the Chief Directorate for Hydrometeorology under the cabinet of Ministers (Uzglavgidromet), for support and cooperation. This conference would not have been possible without the efforts of the following people: Rumiya Garipova of the World Bank Uzbekistan Resident Office in Tashkent, Valentin Nikitin, and Otabek Rashidov. Mike Thurman provided overall organization of the conference, moderated discussion, and wrote the conference report.

Opening Remarks

Mike Thurman thanked the participants for attending the conference and welcomed all guests to Tashkent. He noted that drought is a recurrent phenomenon in Central Asia, which causes significant damage to the economy and society. **Dr. Thurman** described the objectives and activities of Phase Two of the Drought Management and Mitigation Assessment of Central Asia and the Caucasus. The objectives of the conference were emphasized: to discuss these outputs, to explore potential areas of regional cooperation, and to prioritize measures and investments over the short, medium, and long term. In conclusion, it was noted that the agenda had been truncated, owing to inability of invitees from Tajikistan and the Kyrgyz Republic to obtain Uzbekistan visas. Conference participants were encouraged to familiarize themselves with outputs of Phase Two concerning these two countries. Copies of these (as well as outputs concerning other countries of Central Asia) were made available to all .

Panel 1: Planning and Policymaking for Drought

Presentations and Reports

Berik Baymagambetov and Yevgeniya Morozova presented the Draft National Drought Plan of the National Hydrometeorological Service of Kazakhstan.

Mr. Baymagambetov described the process of data collection, which entailed quantitative analysis, as well as significant fieldwork among various stakeholders to examine drought impacts and measures to be taken. In most instances, stakeholders receive no early warning concerning meteorological, hydrological, or agricultural drought. The creation of the Drought Plan entailed liaison with several ministries and the incorporation of data from several sectors. Kazakhstan is extremely exposed to hydrological drought. Moreover, delivery of water is problematic in the municipal and irrigation sectors, owing to the deterioration of infrastructure. Integrated planning and greater interdepartmental coordination are required. He briefly reviewed the matrix of measures worked out under the Plan to combat

Mrs. Morozova presented an analysis of meteorological drought in Kazakhstan. She emphasized the importance of selecting from among the 100 or so available indices for determining drought. This issue has not been resolved to date, and is critical for Kazakhstan, which is subjected to a greater variety of drought stresses than other Central Asian countries, over a greater expanse. Every year meteorological drought strikes one or more areas, resulting in reduced wheat yields, forest fires, and degraded rangeland. Exposure to drought is changing with the climate. For example, the desiccation of the Aral Sea has changed circulation patterns in Kazakhstan. The acceleration of the hydrological cycle in Kazakhstan has led to more frequent and intense severe weather phenomena. Drought is expected to become more frequent during the twenty-first century, despite the fact that all climate change models predict an increase in precipitation.

Zohidjon Nazirov noted that Uzglavgiromet provides prognosis concerning hydrological drought for the entire Aral Sea basin. Work to develop prognoses was interrupted in the 1990s. This factor, together with the deterioration of the observation network, led to less accurate prognoses. After the drought of 2000-01, work to improve prognoses resumed. Due to deterioration of remotely located stations, there has been an effort to utilize satellite data for prognoses. However, the remote stations should be repaired. There is also a need to further work out suitable criteria for determining various types of drought for use in planning.

There is a good foundation for regional cooperation in Central Asia, based upon existing involvements in UNCCD, the GEF-sponsored land management project, and other regional initiatives. To the degree that funds permit, there is constant data exchange. Uzglavgidromet possesses suitable capacity to serve as a regional drought monitoring and early warning center. There have been enough reports written under Phase Two and other studies. What about concrete proposals?

Mike Thurman gave a heuristic presentation designed to promote discussion. He synthesized the results of field work and planning exercise conducted under Phase Two as follows:

- Stakeholders define drought in several different ways. Therefore, operative, site-specific definitions of drought emerging from those most impacted are required for linkage with triggers in contingency plans. Several specializations and perspectives are required for successful planning, which entails the involvement of wide range of stakeholders in the planning process. This process has only begun under Phase Two. It is important that operative contingency plans be developed, as well as constantly updated. If old plans are referred to only after another drought-related emergency situation develops, severe damages will ensue.
- Exposure to drought is changing with the climate. However, regional prognoses of climate are unavailable, and significant discrepancies among the projections of various countries should be reconciled under the Second Communication to UNFCCC. There needs to be greater capacity in determining the likelihood of another drought anomaly on the magnitude of 1998-2001.
- There is a lack of data concerning the present state of groundwater and glacier resources, which are critical for drought management and mitigation. It is necessary to update this data and include it into both short and long term drought forecasts.
- Vulnerabilities to drought and capacities in management and mitigation have changed since the Soviet period, which makes an adjustment in planning and greater community involvement not only desirable, but necessary. For example, kolkhozy used to provide agrometeorological services, and now some other institution must fulfill this function. Many stakeholders would prefer to acquire a more significant role in drought management and mitigation, while in other instances a “dependency psychology is still in place.”

Discussion

Discussion proceeded from **Zohidjon Nazirov’s** proposal to create a regional drought monitoring and early warning center within Uzglavgidromet, which already provides prognosis of hydrological drought for the Aral Sea basin. Participants from Turkmenistan and Kazakhstan seemed to support this notion.

Mike Thurman noted that he is reluctant to promote the creation of regional organizations in Central Asia, given the poor performance of existing regional institutions in water management, such as the Interstate Commission for Water Coordination. However, there are existing linkages between the Hydromets and enough real cooperation among them to make a small center with a simple mandate feasible, if it is created on the basis of existing arrangements for data exchange. It remains to determine the type of early warning services to be provided. **Dr. Thurman** emphasize that he would disseminate within World Bank any concrete proposal provided by the participants. Only preliminary discussion of regional cooperation initiatives was possible during the conference, due to the inability of invitees from Tajikistan and the Kyrgyz Republic to attend.

T.V. Sampath noted that in order for projects to be funded, they must be covered in a Country Assistance Strategy. Hydromets and other stakeholders should lobby their own governments to include drought management and mitigation into national poverty reduction and development strategies that support the CAS. **Janna Ryssakova** encouraged Hydromets to engage the Ministry of Economy and Ministry of Finance of their respective countries. Although this is a cumbersome process, it is the only possible course of action. **Mike Thurman** enquired of the World Bank staff whether or not it was possible to include drought management and mitigation initiatives under existing CASs.

Batyr Mamedov suggested that a regional drought monitoring and early warning center be funded under GEF auspices.

Mirshahid Azizov emphasized that the initial outputs of Phase Two focus primarily upon water management and should more fully consider integrated land and water management. Water is nothing without land. **Mike Thurman** noted that this was also the opinion of the Land Management Department of the Kyrgyz Republic concerning the *Drought Management and Mitigation Assessment for Central Asia and the Caucasus*. He promised to account more fully for land management into consideration while drafting the remaining outputs.

Mike Thurman concluded the discussion by noting that he was pleased to see issues raised early in the conference that would be covered by subsequent panels. These include drought indices, climate change, water distribution and conservation, and land management.

Panel 2: Drought and the Environment

Presentations and Reports

Batyr Mamedov described the severe meteorological and hydrological anomalies that characterized the drought of 2000-01 in Turkmenistan. River flows dwindled to naught in many locales. Rangeland and crops sustained sever damages. It is likely that drought will become more frequent and sever in the future, owing to climate change. However, Turkmenistan's Hydromet has a deteriorated observation network, and many staff require training before the network can be significantly upgraded. The Turkmenistan Hydromet has proposed a small project to World Bank entailing impact assessment of drought and climate change influences upon pasture and agricultural resources, improvement of prognoses, as well as a seminar involving the Government and local population concerning measures to mitigate drought. Drought knows no borders in Central Asia. Therefore, a regional monitoring and early warning center is needed.

Discussion

Natalia Agal'tseva noted that Uzglavgidrimet conducts prognoses for the next year. Medium and long-term prognoses will be significantly influenced by climate change. However, there are not enough long-term observations available, and database management is inadequate. Moreover, the present condition of monitoring is entirely

inadequate for this purpose. If temperatures rise, there are precipitation models yield various results. Glaciers may expand initially and then shrink thereafter. There is no clear prognosis of water resources. The outcomes of predictions depends largely upon the models and scenarios utilized. In general, it is better to discuss long-term projections in terms of “assessment” rather than “prognosis.”

Mike Thurman noted that the condition of glaciers is critical for drought management. However, little data is available, and measurements are generally unavailable for the 1990s.

Natalia Agal'tseva emphasized that glaciers are significant not only for water quantity but also water quality during drought years. In the 1970s a full cadastre was made for glacier resources. In the 1980s this work fell off, and in the 1990s it was discontinued outside of selected areas. An expedition last year in Tajikistan measured the tongues of various glaciers.

Yevgeniya Morozova noted that in Kazakstan the measurement of glaciers continued through the 1990s, unlike in the rest of Central Asia. Projections made upon the basis of these measurements are cautiously optimistic. Precipitation models predict an increase in precipitation in winter and provide various results for other seasons. In general an acceleration of extreme weather events can be expected with climate change.

Berik Baymagambetov noted that Lake Balkhash is fed by glaciers, which are mainly stable. The primary issue with regard to supply of the lake is transboundary water allocation between Kazakstan and China.

Natalia Agal'tseva remarked that the acceleration of the hydrological cycle under conditions of global warming would produce a greater amount of rainfall at the expense of snowpack. The flow regime of rivers would change significantly. However, even with the best data it is difficult to provide a conclusive analysis.

Arustan Joldasov asked whether or not there had been an attempt to share climate change or even short term projections with farmers who will need to adapt. **Natalia Agal'tseva** responded that prognoses are only accurate within the range of one year. Dissemination concerning climate change in Uzbekistan has been conducted through regional educational institutions. However, dissemination of only the most basic results has been possible, owing to their high margin of error. **Yevgeniya Morozova** expressed support for improving early warning and sharing climate change projection with farmers and other stakeholders. However prognosis of drought and other severe weather phenomena such as *zhut* (blizzards which often kill livestock) is difficult. In kazakstan, dissemination is via radion programs. Some publications are deliberately not undertaken, owing to the unreliability of the prognosis. **Arustan Joldasov** suggested dissemination of drought- and climate change-related information via television.

Mike Thurman solicited the opinions of participants concerning linkages between drought and desertification.

Batyr Mamedov noted that in the Kara Kum desert an increasing problem is the shifting of sand dunes, owing to the degradation of ground cover. During the drought of 2000-01 this process accelerated. An economic analysis of these impacts is needed. When dunes shift, microscopic sand particles sometimes migrate long distances.

Mirshahid Azizov interjected that the question of technology should be resolved. There are several new monitoring instruments such as GIS and NDVI, whose exact role has yet to be determined. We need to know how to maintain soil cover under conditions of drought and climate change. Cartographic materials are needed to map vulnerabilities to drought and desertification.

Mike Thurman enquired concerning the linkage between drought, desertification, and the desiccation of the Aral Sea.

Yevgeniya Morozova replied that, due to the Aral Sea drying up, a circulation change had taken place in Kazakhstan that resulted in greater precipitation in the north and less in the south. Atmospheric processes have become more localized, and they have accelerated. Sandstorms from the Aral Sea area are transporting sand and salt over an increasing radius (around 120 km at present). In the upper atmosphere this sand moves rapidly at around 120 km/hour and reaches long distances.

Zohidjon Nazirov noted that in 2000-03 the Central Asia states worked out a sub-regional program under UNCCD, which has become an “umbrella” regional land management program supported by GEF. International organizations are consolidating their partnership for this initiative. **Mr. Nazirov** briefly described the program, its development, and prospects.

Panel 3: Community Management and Mitigation of Drought

Presentations and Reports

Arslan Joldasov elucidated results of fieldwork conducted in Uzbekistan under Phase Two. He first explained the sample design. Within the last few years an agrarian revolution has taken place in Uzbekistan, owing to farm restructuring and partial liberalization of markets. However, there are many problems that remain unresolved in drought-prone areas of Uzbekistan, such as growing conflict over water, expanding land salinization, a “scissors” crisis between farmgate and consumer prices, outmigration of the population from rural areas, excessive water applications, and lack of drinking water.

Farmers receive little prognosis and early warning for drought. Prognosis of drought is by folk methods, and word-of-mouth is the most common early warning. In many instances during 2000-01, even the local government was unaware of the situation. The results of studies concerning drought and climate change are not shared with farmers. Residents of drought prone areas were generally satisfied with the aid provided by international organizations, which was more visible to them than aid from the

Government. The communities covered in fieldwork are more than willing to acquire a greater role in drought management and mitigation. However, several constraints remain.

Iskandar Abdullaev described the creation and roles, rules, and responsibilities of the IWMI international drought center in Tehran. Research concerning forecasting of drought and coping strategies for irrigation systems has been conducted in Turkey, Sri Lanka, Pakistan, Afghanistan, and India. Coping strategies include contingency plans for various degrees of water shortage, improvement of data collection, transmission and management, early warning systems, and allowing farmers to choose their own crops and diversify production.

In addition IWMI has conducted research concerning adaptation needs for climate change in the Syr Darya River basin. The most effective means of coping drought are water conservation and water productivity improvements at the different levels. New water institutions are needed at different levels

IWMI would like to extend its drought initiative to the Central Asian countries and cooperate with other donors in doing so.

T.V. Sampath described various types of drought and used photos to illustrate how inadequate cropland and rangeland management in Tajikistan makes soils vulnerable to drought and erosion. During 200-01 damages were severe, and the ad hoc nature of relief and recovery operations made the cost of the drought much higher than was necessary. Conflicts over water sometimes led to violence and even fatalities. In many instances around three years were required for farmers to restore production. In order to address these issues, the World Bank has created the Tajikistan Community Watershed Project. **Mr. Sampath** concluded his presentation with a description of the components of the project and their contribution to drought mitigation in rural areas of Tajikistan.

Norboy Ghoyipnazarov provided background concerning irrigated agriculture and drought in Karakalpakistan and noted that at present institutional and technological factors have resulted in a low efficiency of water use. **Mr. Ghoyipnazarov** presented the losses to agriculture and negative impact upon drinking water supplies in Kaarakalpakistan and Khorezm during the drought of 2000-01. He noted that many transboundary issues remain outstanding with Turkmenistan in the lower Amu Darya River basin, which led to water scarcity in 2000-01. Water management within Uzbekistan is conducted from “top down,” with inadequate attention to specific local meteorological, hydrological, soil, and agricultural conditions. Water distribution to farms remains inflexible. Water control in terms of measurement and distribution is lacking, owing to inadequate and/or deteriorated infrastructure and maintenance. Water users still do not pay for delivery. Due to the linkage of water allocations with production plans, Water Users’ Associations are unable to cut off supplies to members who do not pay or capture water illegally.

Under an ongoing World bank project to restore drainage and wetlands, WUAs have been created and are presently undergoing training. However, their ability to improve

water management is limited by poor infrastructure and the nature of institutions supplying the WUAs with water. The creation of WUAs is only part of the solution to improving water and drought management, which depends upon a wide range of institutional and technical factors. They can play a positive role only if supported by the organs that supply them water and manage the local government. The ongoing process of farm restructuring will contribute to the reform of these organs. State orders for cotton and wheat should be eliminated, as they impede the development of WUAs. If these issues can be resolved, WUAs will be able to contribute to improved drought mitigation.

Discussion

Janna Ryssakova enquired concerning the profitability of farming in Uzbekistan following farm restructuring. **Arslan Joldasov** noted that farmers prefer to grow cotton and wheat, because it is less risky than fruits. He added that WUAs in the areas studied are in general weak, although farmers are optimistic concerning their prospects.

Nomanjon Shakirov remarked that payment for water delivery requires the installation of measurement devices, which farmers must accept as part of on-farm rehabilitation of irrigation and drainage systems.

Sanjar Jalalov enquired concerning which institutions are most appropriate for early warning. **Arustan Joldasov** recommended the Water Users' Association. **Mike Thurman** noted that in most areas WUAs will be the primary early warning institution, because hydrological drought is paramount over meteorological drought in most areas of Central, which rely exclusively upon irrigated agriculture. No extra responsibilities are required, as the WUA will conduct early warning as part of its seasonal allocation process and should have rules in place for times of scarcity in any case. However, for rainfed cropland in the mountains and northern Kazakhstan, some other institutions must be found. This should not be a WUA, which in the initial phase of its development must limit its functions to operations and maintenance and only afterwards pursue ancillary activities. After some discussion of this issue among various participants, **Bob Davey** suggested that this work be undertaken by an agricultural extension service. **Natalia Agal'tseva** emphasized that early warning technologies must be basic and accessible to all farmers. Bulletins are disseminated primarily to specialists within Government.

Arslan Joldasov raised the issue of identifying the most useful types of data, as well as the end users. Data transmission bottlenecks must be overcome in order for early warning systems to work.

Mike Thurman delivered concluding remarks. He thanked the participants for their input and promised to incorporate it into the remaining outputs of Phase Two. He expressed the wish, commonly repeated by participants, that the creation of national regional drought profiles and strategies not be the final result of this activity. Instead, concrete action was required. **Dr. Thurman** solicited proposals for projects discussed during the conference and promised to disseminate them within World Bank. He seconded the suggestion of **Batyr Mamedov** that a CD of all Phase Two outputs be created and disseminated.

Annex A: List of Participants

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Annex B: Agenda

17 JULY

Registration: (8:30-9:00)

Opening Remarks: Uzglavgidromet and World Bank (TBD) (9:00-9:30)

Panel 1: Planning and Policymaking for Drought (9:30-11:00)

Berik Baimagambetov and Yevgeniya Morozova, Kazgidromet, “Developing a Draft National Drought Plan for Kazakstan”

Zokhidjon Nazirov, SANIIGMI/Uzglavgidromet, “Drought Planning in Uzbekistan.”

Discussion

Coffee Break (11:00-11:30)

Panel 1: Planning and Policymaking for Drought (11:30-12:30)

Mike Thurman, Consultant/World Bank, “Drought Management and Mitigation in the Caucasus and Central Asia: A Synthesis of Survey and Field Work in Support of Planning”

Discussion

Lunch Break (12:30-14:00)

Panel 2: Drought and the Environment (14:00-15:30)

Batyr Mamedov, Turkmengidromet, “Drought and Climate Change in Turkmenistan”

Coffee Break (15:30-16:00)

Roundtable Discussion (16:00-17:00)

Dinner (19:00-21:00)

18 JULY

Opening Remarks: T.V. Sampath (9:00-9:30)

Panel 3: Community Management and Mitigation of Drought (9:30-11:00)

Arslan Joldasov, “Ekspert Fikri” Sociological and Marketing Research Center, “Drought Management and Mitigation in Central Asia: A View from the Villages of Uzbekistan”

Iskandar Abdullaev, IWMI, “On-Farm Water Management and Drought Management and Mitigation in Central Asia”

T.V. Sampath, World Bank, “Community Watershed Management in Tajikistan”

Coffee Break (11:00-11:30)

Panel 3: Community Management and Mitigation of Drought (11:30-12:30)

Norboy Ghoyipnazarov, SANIIRI, “Water Users’ Associations and Drought Management and Mitigation in Karakalpakistan”

Discussion

Lunch Break (12:30-14:00)

Concluding Remarks (14:00-14:30)

Dinner (18:00-20:00)