



Recommendations for a Sustainable Water Resources Management in Central Asia

Swan Project Water Centers



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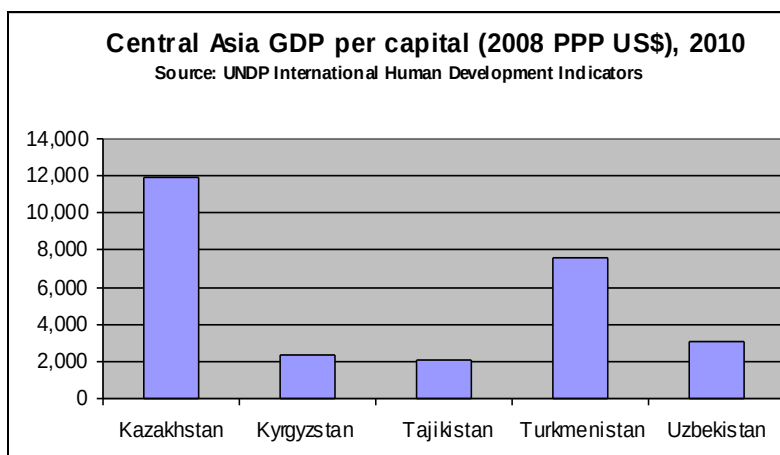
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1. INTRODUCTION: SUMMARY OF WATER ISSUE IN CENTRAL ASIA

Central Asia is home to sixty-one million citizens spread across five countries: Uzbekistan, Tajikistan, Turkmenistan, Kyrgyz Republic, and Kazakhstan. As the chart below illustrates, there is a high level of poverty in the region. The notable exception, in terms of economic performance, is Kazakhstan, which has relatively low poverty levels and the highest Gross Domestic Product (GDP) per capita due to their large fossil fuel reserves.

Lack of cooperation and regional dialogue in Central Asia is a problem for the region. However, one conflict area deserves special attention: water. Regional cooperation on water management is both a multi-faceted and complex issue.



The two main sources of water in Central Asia are the Syr Darya and Amu Darya Rivers, which is the larger of the two. The Amu Darya originates in Tajikistan and flows along the border between Afghanistan and Uzbekistan, and goes through Turkmenistan before returning to Uzbekistan and discharging in the Aral Sea. When combined, the Amu Darya and Syr Darya rivers have about 77 cubic kilometers of water, 96 percent of which is used for irrigation. Other major inter-state rivers include Chu, Talas, Tarim, and Irtysh.

At the heart of the problem of lack of cooperation and dialogue on regional water management are conflicting interests in how these water resources are to be used and whether they are seen as a commodity or public good. Downstream countries, Kazakhstan, Turkmenistan and Uzbekistan, are dependent on irrigated agriculture, whereas upstream countries, Kyrgyz Republic and Tajikistan, are focused on expanding reservoir capacity and hydroelectric power generation.

After the collapse of the Soviet Union in 1991, the newly independent states decided to pursue their own diverging national interests. Although the countries decided to sign the 1992 Almaty Agreement and maintain Soviet Union water quotas, it is now outdated and thus, limited in its effectiveness. Regional and international efforts have failed to find a lasting solution because of the mistrust and low political will to cooperate among the Central Asian leaders. Other contributing factors include crumbling infrastructure due to economic conditions within the countries, unequal distribution of natural resources and climate change.



This report, “Water Crisis in Central Asia: Key Challenges and Opportunities” was prepared for our client, the United Nations Development Programme (UNDP), to provide an assessment of the key challenges, opportunities and recommendations for increasing regional cooperation with regards to water management. The aim was to propose viable options which could, through increased regional collaboration, lead to an acceptable arrangement that is sustainable and peaceful. This report is composed of seven sections: Introduction, Overview, Major Challenges, Regional and International Efforts, Case Studies, Lessons Learned, and Recommendations.

The research paper was the culmination of the “Practicum in International Affairs,” a capstone course of the Graduate Program in International Affairs under the New School for General Studies. The research group was composed of Diana Castillo, Lisa Marie Izquierdo, Mari Stangerhaugen, Bob Nixon, and Gloria Jimenez. The project was supervised by Ambassador Rafat Mahdi, who rendered invaluable support in the completion of this project. In preparation for our research, we met with our client and provided a draft for review before submitting our final product. We also conducted a number of interviews with Permanent Representatives from the Central Asian states and other experts which gave us insight into the complexity and intricacy of the region’s water issues. The paper will be presented to both UNDP and the Graduate Program in International Affairs at the New School University.

2. CHALLENGES

2.1 Distribution of Natural Resources

Overall, Central Asia is blessed with a range of natural resources such as oil, gas, minerals and hydropower, which could drive the region forward socially and economically. However, the distribution of resources favors the downstream countries (Kazakhstan, Uzbekistan and Turkmenistan), which possess oil and gas reserves that are sought after by Russia, China and Europe. The upstream countries (Tajikistan and Kyrgyzstan) have glaciers that produce the water for downstream irrigation and hydro-electricity and also selected mineral resources like gold, rare earth metals and aluminum. The downstream countries have used oil and gas resources, and agricultural exports to boost their national incomes and level of development. Kazakhstan has been the most successful. Upstream countries, especially Tajikistan have few options for development other than exploiting water resources through hydropower development. The two upstream countries are the poorest nations in the region. This unbalanced distribution of natural resources has created the dynamics of the “haves” versus the “have nots” between the upstream and the downstream countries.

Kazakhstan has done the most to leverage its crude oil resources by linking up to pipelines to China, Russia and Europe. The country has 30 billion barrels of crude oil in proven oil reserves and more oil reserves are expected to be explored soon in the



Caspian Sea. The country has doubled its oil production over the last decade, mostly for exports. American and Russian oil companies have been brought to help extract this oil. Kazakhstan also has significant reserves of coal that was developed in the Soviet era, and it continues to be exported to other Central Asia countries. In recent years Kazakhstan has linked up to a number of oil and gas pipelines including the Russian controlled Caspian Pipeline Consortium, the Kazakhstan-China Pipeline and the Baku-Tbilisi-Ceyhan Pipeline, supported by the United States and Europe, seeking to undercut Russian influence over energy supplies to Europe.

Turkmenistan, with major reserves of natural gas is only beginning to enter into the new “great energy game” of playing off Russia, China and Europe and the United States. Over the last decade, Turkmenistan dealt exclusively with Russian pipelines but that is beginning to change. With the 4th biggest globally proven reserves of natural gas, Turkmenistan has inked pipeline deals with Russia and China in 2007. Energy hungry China has become a big customer for Turkmenistan, to the extent of hiring a Russian construction company to finish the natural gas pipeline to China. China is also seen as likely investors in Turkmenistan’s state energy companies, fueling further growth.

On the other hand, there are two real restraints to new energy resurgence: the “resource curse” and the growing impact of climate change that are raising temperatures in Central Asia. A growing literature on the natural resource curse in developing countries has emerged in recent years. Resource rich countries like Nigeria and the Democratic Republic of the Congo remain desperately poor and corrupt nations. One variation of the theory is that natural resources especially crude oil both undermine the economy and empower dictatorial leaders to ignore the rule of law.

Kazakhstan is very aware of the downfalls of the resource curse. Since it opened up oil exploration, it set up a natural resources fund, the National Fund of Republic of Kazakhstan that is capitalized with over \$20 billion. It is modeled after the Norwegian energy fund and Central Asia’s richest state is trying to diversify its economy beyond its current dependence on hydrocarbons. So far, resource funds remain untested in developing countries that rely on energy resources. Ongoing problems with corruption and poor governance can undermine these funds as has happened in Venezuela, where the government has raided the fund over the years.

2.2 Climate Change

Global warming is already being felt in Central Asia with melting glaciers in Tajikistan and Kyrgyzstan and rising temperatures in the downstream countries that will have a real impact on agricultural practices. A World Bank report on climate change in Europe and Central Asia observed climate change will inflame even further the current conflict over transboundary flows of water. Climate change acts as a “threat multiplier” for the entire Central Asia water crisis, making it more severe. Since the 1970s, temperature



has risen twice as fast in Central Asia compared to global levels. This report noted that increased winter precipitation will be offset by hotter temperatures in the summer causing increased evaporation. A projected 20 percent decline in river runoff in the upstream countries will only complicate the current unsustainable water management practices and increase demand for water in Central Asia. There will also be an increased risk of natural disasters like destructive mudslides in Kyrgyzstan.

Research from the Institute of Water Problems and Hydro Energy at the National Academy of Sciences in Kyrgyzstan found that the ice melted from glaciers has tripled from 1950 levels. In recent decades, upwards of 20 percent of Kyrgyzstan's glaciers have already melted. Rising temperature and water shortages will likely inflict damage on arid soils and harm plant productivity of irrigation-intensive crops like cotton. Climate change is spurring growing desiccation in Central Asia. Food yields could decline by 30 percent. Small farmers will also be the hardest hit from climate change. Tajikistan in recent years experienced recent droughts and extreme weather which had a severe impact on the rural poor. The country in 2008 survived a severe cold winter, with temperatures falling to 20 C below zero for an extended period. This cold weather has damaged many crops, orchards and killed nearly all of the livestock. Moreover, aging energy infrastructure collapsed under the pressure of cold temperatures. Tajikistan experienced a 40 percent decline in food yields after the cold snap and drought.

Kazakhstan with its reliance on coal and oil has made it a leading emitter of greenhouse gases (GHS) along with Turkmenistan and Uzbekistan. Yet, the level of economic growth in these polluting countries has not returned to the 1990s levels, due to the overall industrial decline in Central Asia. On the other hand, Tajikistan and Kyrgyzstan with its reliance on hydropower emit low rates of GHS.

Many countries are now undertaking planning for adapting over the long term to climate change. This process will require developing nations to place greater emphasis on water resources and seek out adaptation funding from the Global Environment Facility, financed by the World Bank. Most experts believe freshwater resources will be one of the areas that will be affected early by climate change. Central Asian countries could be helped by "carbon financed" green investments like small-scale renewable energy technology from the Clean Development Mechanism facilitated by the Kyoto Protocol to fight climate change. The region could also benefit from the growing concern by the international community about the fate of glaciers in the greater Himalayas, which is the source of water for over a billion people in South and Southeast Asia.

There is growing concern that increased climate change could lead to more political instability in Central Asia as seen by the crisis in Kyrgyzstan. In 2007, UK based International Alert placed the entire region in its global list of countries facing potential political instability from the impact of climate change and increased stress on natural resources and food security. Freshwater resources could be one of the first areas hit by climate change. Additionally, social tensions from rising temperatures may raise the risk that weak governance in Central Asia causes.



2.3 Management of Water Sector

The Central Asian countries have some of the largest irrigation schemes in the world, and some 22 million people in these countries depend directly or indirectly upon irrigated agriculture for their livelihoods. Entire communities came into being solely because of irrigation development and settlement schemes during the Soviet era. Today twenty to forty percent of the GDP of these countries is derived from agriculture, almost all of which are irrigated, and without irrigation, much of the land would revert to desert scrub.

Irrigation benefited from massive investment during the Soviet era, but water was not well managed. Water application rates were extremely high, which reduced the quality of farmland through the rising water table and salinization. The irrigation systems were in poor condition even before the Central Asian countries became independent in 1991. Since the collapse of the Soviet Union, the situation has worsened considerably. Both government budgets and farm incomes have fallen dramatically, water management institutions have weakened and institutional structures are generally not strong enough to ensure efficient water management. Thus, much of the infrastructure is fast approaching collapse. Canals are silted up or damaged, gates broken down or non-existent and pumps held together by improvised repairs and parts taken from other machinery. The problem is exacerbated by the shrinking of the Aral Sea, and winter floods caused by excessive reservoir drainage. The United Nations Development Program (UNDP) reports that the Central Asian region loses \$1.7 billion a year, which constitutes three percent of the region's GDP from the poor water management that lowers agricultural yields.

3. RECOMMENDATIONS

3.1 For the Central Asian States

- Efforts be made to improve governance to ensure equitable water distribution within the country so that all areas and all sectors of the population can benefit from a just and efficient planning mechanism;
- Effective monitoring and regulation of any water sharing arrangement must become an essential part of the national policy fully backed by legislative measures adopted through the support of the public representatives;
- Concerted effort be made to merge these national policies in a broader regional framework with the support of the political leadership in the Central Asian States so that the system could work successfully;



- Any arrangement thus achieved must be supported by regional organizations, civil society and the media giving it the necessary validity and political endorsement;
- To reap the social and economic benefits of an integrated water management system all parties must try to make compromise and make some concessions for the larger public good;
- Regional agreements rather than bilateral arrangements could prove more effective and durable;
- In view of divergent positions of States acceptable agreements could be promoted through third party mediation;
- For improved efficiency in water use and management it is critical for Uzbekistan, Tajikistan, Turkmenistan and the Kyrgyz Republic to complete their IWRM and WE plans and integrate them into national laws;
- To find a solution to the Aral Sea and the overall water crisis effort ought to be made to strike a balance between economic growth and environmental rehabilitation;
- Extensive reforms should be introduced to resolve the major water related issues and must include substitution of heavy water intensive crops like cotton by crops requiring much less water;
- To address climate changes the Central Asian States should seek the assistance of the Clean Development Mechanism from the Kyoto Protocol and other climate finance funds through the World Bank;
- To meet the dearth of technical experts capable of handling the growing water related issues it is necessary to develop a pool of existing experts to deal with emergency situations and simultaneously to invest in the education and training of the next generation of engineers and technicians;
- The 1992 Almaty Agreement should be revised to reflect current water levels and the water needs of each state;
- Any long term water scheme must include Afghanistan as an important stakeholder in view of its increasing demand for water.
- On the same lines as the Mekong River Commission, the five Central Asian states should prioritize funding for their respective agencies responsible for data exchange, for monitoring water utilization, irrigated agriculture, watershed management, flood management and small-to-Medium hydro power options exploration ;



3.2 For the International Community

- Creation of an International Fund for the upkeep and strengthening of the infrastructure of water distribution built by the Soviets. A similar initiative was included in the Indus Waters Treaty with positive results;
- In an environment of tension with conflicting national interests, a spirit of understanding and compromise could be promoted through the good offices of a benign go-between as was experimented with success in the negotiations for the Indus Waters Treaty. With favorable circumstances, this could lead to a new acceptable agreement for water sharing and also allow review and revision of the Almaty Agreement;
- An international group of water/climate/environmental experts, preferably from neutral states, be established to provide technical advice to the policy makers on all matters relating to water sharing and utilization in a way that cooperation and understanding are enhanced allowing for equitable and acceptable arrangements;
- In view of the growing importance of water related issues and their political impact in the region, it is advisable to create a multilateral organization with representation from all member states of the United Nations with the purpose of granting the Group of Experts the much needed political backing and its decisions necessary validity;
- Expanded role of IFAS and SPECA be considered as a viable option and their interaction with the Group of Experts and the proposed multilateral body be encouraged;
- Similarly the potential of existing regional intergovernmental mechanisms such as the Shanghai Cooperation Organization and international and regional financial institutions should also be utilized for resolving existing and emerging problems among the Central Asian States;
- Incentives need to be offered by the international community to downstream countries to enable them to diversify their economies and to encourage them to adopt and implement more rational policies for water use and crop substitution along with adapting modern irrigation practices;
- South-South, North-South and triangular cooperation for water management should be fostered by sharing of experiences, best practices and lessons learnt as well as benefiting from environmentally sound technologies and technical expertise;
- International donor community can incorporate water into the broader framework of development cooperation and focus on the often neglected water related components of the Millennium Development Goals;
- Russia with its position of the "regional influential" should engage itself more meaningfully persuading the Central Asian States to negotiate and arrive at a workable



and acceptable arrangement; Russia should also aid with technical assistance to repair and upgrade water infrastructure;

- China too with its significant political clout in the region may play a more prominent role in the resolution of water disputes in Central Asia.