International Water

Achieving Security through Technical Collaborations

Background

Access to fresh water is a critical international security issue. Experts predict that by 2015 nearly half the world's population—more than three billion people, mostly in Africa, the Middle East, South Asia, and China—will lack access to fresh water. Agricultural, industrial, and municipal demand for water in many regions already outstrips supply. Severe water-related stress—caused by inadequate supply, pollution, and the lack of transboundary management—limits economic development, jeopardizes public health, and exacerbates regional political tensions. Besides the importance of water to international peace and security, the U.S. has strategic interests in many water-stressed regions around the world. Examples include:

Less than half of India's one billion people have reliable access to safe water. At least 100,000 Indian villages face severe water shortages.

Egypt's plan to divert five billion cubic meters of Nile water for new agricultural communities in its Western Desert conflicts with rapidly increasing demand for water in Sudan and Ethiopia.

The water table under some of the major grain-producing areas in northern China is falling at a rate of five feet per year.

Along the Tumen River that connects North Korea, China, and Russia, lack of wastewater treatment for municipalities and large industries has rendered 80 percent of the river unfit for industrial or agricultural use.

Georgia, Armenia, and Azerbaijan share a transboundary watershed

The Central Asia Republics of Kazakhstan and Uzbekistan share highly contaminated watersheds. The Syr Darya, one of the major rivers in Central Asia, is polluted with heavy metals, petroleum products, and pesticides at 2-3 times international standards. Health surveys show that in the last 15 years, chronic bronchitis and kidney and liver diseases have increased by more than thirty-fold, and arthritic diseases by sixty-fold.

Sixty-five percent of the rivers in the Caucasus are polluted with hydrocarbons, solvents, metals, fertilizers, and pesticides at concentrations in excess of 10-100 times international standards.

Approach

It is in our national interest to increase stability and to reduce the likelihood that regional military and diplomatic conflicts will erupt over water issues, such as the availability of adequate amounts of freshwater. To meet this challenge, Sandia can help facilitate regionally-designed and sustainable approaches to transboundary watershed management by working with the U.S. Government to:

Integrate methods for developing domestic and international watershed management strategies;

Prioritize and develop pilot international, regional watershed projects; and

Build supporting private sector partnerships.

Research and Existing Projects

The Cooperative Monitoring Center (CMC) is well-suited and experienced to support the efforts of the U.S. Government to increase regional stability and to reduce the frequency of international water-related disputes, conflicts, and possible wars. The CMC brings technical and political experts together to develop international cooperative projects on strategic issues. The CMC has been successful developing cooperative international science-based projects with regional stakeholders. Current CMC initiatives on environmental and water issues include:

Cooperative Watershed Monitoring in South Asia

Researchers from Sri Lanka, India, Pakistan, Bangladesh, and Nepal collect, share, and analyze data from the Indus River and Ganga River basins as well as coastal areas throughout the region to promote transboundary water-quality analysis and cooperation.

Cooperative Radionuclide River Monitoring in Central Asia

Researchers from Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan collect and share data from the Syr Darya and Amu Darya rivers and their tributaries to strengthen nonproliferation and encourage transboundary water-quality analysis and cooperation.

Sustainable Land Use in the Middle East

Researchers from Israel and the Palestinian Authority exchange meteorological data and agree to establish other joint environmental projects to support regional economic development and cooperation.

Airborne Radiation Monitoring in Northeast Asia

Researchers from Japan, South Korea, Russia, and Taiwan collect and share air-quality data to strengthen nonproliferation and promote cooperation.

Cooperative River Monitoring in Northeast Asia

Proposing that researchers from North Korea, Russia, China, and South Korea collect and exchange data from the Tumen River to engage North Korea with its neighbors and improve regional water quality.

Data Sharing and River Modeling on the US/Mexico Border

Researchers share data on water resources in the Rio Grande/Rio Bravo basin through an internet-based database and use these data to work collaboratively toward a whole-basin dynamic simulation model.

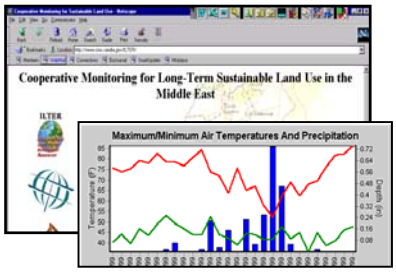
Cooperative Watershed Monitoring in the Caucasus

Proposing that researchers from Georgia, Armenia, and Azerbaijan collaboratively monitor, analyze, and manage their transboundary watershed.

Installing a meteorological station near the Israel-West Bank border

Sample collection on the Chirchik River in Uzbekistan

Water sampling at the India-Pakistan border



Sharing of data from the Middle East through a CMC web site

Related Sandia Water Activities

International Water is one component of Sandia's Water Safety, Security, and Sustainability Initiative. Other areas include: Water Infrastructure Risk Assessment, Water Use Management, Water Quantity, and Water Quality.

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