CENTRAL ASIA
Nexus Dialogue Workshop
Istanbul, Turkey, 15-17 July 2014
CENTRAL ASIA
Nexus Dialogue Workshop

Workshop Objectives and Agenda
Workshop objectives

1. Gaining an **understanding of how to combine and apply best practices on water-energy-food nexus** approaches for solutions in river basins.

2. Developing an **integrated roadmap to plan for strategic investments in infrastructure solutions** for water, food and energy security, including new technologies such as efficiency-enhancing irrigation infrastructure and renewable energy sources, whose potential remains vastly underexplored in the Central Asian region.

3. Motivating participants to take **practical steps toward implementing water, energy and food nexus planning and practices** in the Amu Darya River Basin.

4. **Exploring new avenues for advancing hydro-diplomacy in Central Asia** in the wake of the successful Conference on International Water Cooperation, held in Dushanbe in August 2013 (and for which EWI served on the International Steering Committee), as well as with the advent of a profound transition in Afghanistan, whose agricultural and hydrocarbon resources will play a key role in post-2014 economic reconstruction efforts.
# CENTRAL ASIA - Nexus Dialogue Workshop

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NOTE: Video and interviews
What is the Nexus?
- Water for energy production currently amounts to about 8% of global water withdrawals (45% in industrialized countries, e.g. in Europe).

- Food production and supply chain is responsible for around 30% of total global energy demand.

- Food production is the largest user of water at the global level, responsible for 80–90% of consumptive water use from lakes, rivers and aquifers.
Global Population

Source: UN Population Division 2008

Population in millions

0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000


Source: UNESCO

Source: UN Habitat
Global Water Use

The grey band represents the difference between the amount of water extracted and that actually consumed. Water may be extracted, used, recycled (or returned to rivers or aquifers) and reused several times over. Consumption is final use of water, after which it can no longer be reused. That extractions have increased at a much faster rate is an indication of how much more intensively we can now exploit water. Only a fraction of water extracted is lost through evaporation.

Source: UNEP 2008
World Energy Mix

Source: National Geographic 2013
World Energy Mix

Source: National Geographic 2013
> 50% irrigated agriculture in areas of high or extremely high stress

Source: WRI Aqueduct 2013; Siebert et al. 2013 Global Map of Irrigation Areas
Increased water stress in many irrigated areas by 2025

Source: WRI Aqueduct 2011 (based on IPCC Scenario A1b)
Water stress data from the Coca-Cola Company. Siebert et al. 2013 Global Map of Irrigation Areas
Climate Change
The Nexus 2050 Challenge

9 Billion People

55 % More Water

80 % More Energy

60 % More Food
Nexus 2050 Trajectories

- Water
- Energy
- Food
Interactions between water, energy and food

What technologies make irrigation more water efficient?

What are water storage options for farmers?

What are energy efficient water-treatment technologies?

How does watershed management help hydropower?

What ways of operating dams sustain wetland fisheries?

How can water re-use reduce food-energy trade-offs?
Nexus @ Forefront of Policy & Scientific Debate
The Nexus Dialogue on Water Infrastructure Solutions
Visit the new website: [www.waternexussolutions.org](http://www.waternexussolutions.org)

Follow us on Twitter @WaterNexus and Facebook

Contact us: [info@waternexussolutions.org](mailto:info@waternexussolutions.org)

Share *your* tools and case studies
NEXUS DIALOGUE ON INFRASTRUCTURE SOLUTIONS

AFRICA
May 2013

LATIN AMERICA
September 2013

ASIA
March 2014

CENTRAL ASIA
JULY 2014
AFRICA – Solutions Identified

• Decentralized water storage

• Strengthen regional, cross-sectoral integration - *Use the ‘power of partnership’*

• Improve / establish sound evidence base for local and regional understanding of water, energy and food nexus
Bogota, Columbia – Sep 24-26 2013

LATIN AMERICA – Solutions Identified

• Eliminate perverse subsidies to highlight the real social and environmental cost of the water
• Mobilise investment in ecosystem restoration (Payment for Ecosystem Services)
• Co-locate water treatment plants in conjunction with bio-digesters for power generation
• Develop decentralised dry season water storage for irrigation using both engineered and natural infrastructure
ASIA – Solutions Identified

• **Influencing the education criteria** - Educational programs at various stages – elementary to tertiary

• **Interdisciplinary planning and designs** - Require engineers, finance experts and social scientists to collaborate on all water infrastructure design

• **Platform for green technology implementation** - Wetlands systems, use of anaerobic systems, air cooling in power plants

• **Data Democratization** - better sharing and collection of data; collaborating with CBOs and implementing within education

• **Stimulate investments** such as public-private partnerships in project that link WEF
International Symposium

SOLUTIONS FOR THE NEXUS:
Building Partnerships to Optimise Infrastructure & Technology for Water, Energy & Food Security

11-13 NOVEMBER 2014 BEIJING, CHINA

Symposium Themes:
- Clean technology (Cleantech) for water, energy and food infrastructure solutions
- Social development and support water stewardship and corporate engagement
- Influencing pathways of investments for in the nexus
- Natural infrastructure/ecosystems in the nexus
- Power dynamics (policy and institutional change/collaboration)
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What is the Nexus in Central Asia?
Amu Darya freshwater withdrawals per country

Figures show the range of actual withdrawals over the last 20 years

- Uzbekistan*: 26–40 km³
- Turkmenistan: 23–28 km³
- Tajikistan: 7.5–8.5 km³
- Afghanistan: 5 km³
- Kyrgyzstan: 0.1–0.5 km³

*Including sub-basins of Zarafshan and Kashkadarya

Source: CA Water Info (www.cawater-info.net)
The Aral Sea Basin

Source: ZOÏ Environment Network, March 2013
The Shrinking Aral Sea

Resource Use Pathways in The Amu Darya Basin

• Hydropower supplies 90% of energy needs

• Livelihood base conventionally dominated by cotton => Irrigation – and the lack of return flows

• Agriculture (grains) – including rice

• Dominant response has been national
• **Major success**: reducing water wastage, increasing productivity, increased stakeholder involvement

• **Challenges remain**:
  • Energy production needs water – timing and demand conflicts across sectors
  • Upstream-downstream challenges on timing, availability, quality
  • Resilience to climate impacts, food price stability and supply, industrial demands (oil, gas, gold, aluminium)
  • Developing societies...

• Potential to be maximised...and dangers to be realised

Source: ZOÏ Environment Network, March 2013
• Dialogue has shown us that solutions and tools are available
• Un-learning is the most difficult part of tackling the nexus – new players, new rules, benefits of sectoral cooperation – not just the planning for it
• Governance aspects – who implements what, where, and when?