

Side event at the sixth session of the Meeting of the Parties
to the Water Convention

THE WATER-FOOD- ENERGY-ECOSYSTEM NEXUS
A THEMATIC ASSESSMENT

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Development opportunities/benefits in the nexus – conceptual model

1. Energy production

- Water use in all steps of the thermal energy value chain
- Water storage for hydropower
- Water for bio fuels

3. Industry & urbanization

- Domestic use
- Industrial use
- Waste water treatment
- Tourism

2. Primary production

- Agriculture (irrigation & rainfed)
- Forestry
- Fisheries

4. Ecosystem services

- Water quality management
- Biodiversity & conservation
- Flood & drought protection
- Navigation

Action Fields

Society

Accelerating access,
integrating the bottom
of the pyramid

Economy

Creating more
with less

Environment

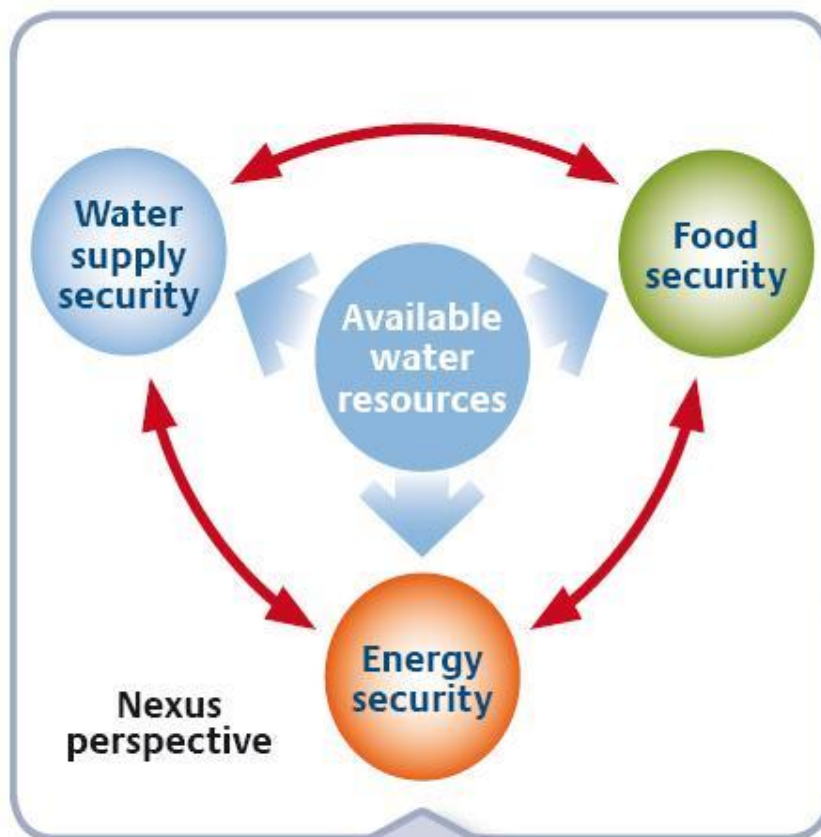
Investing to sustain
ecosystem services

Finance

Governance

Innovation

Enabling
factors/
incentives



Urbanisation Population growth Climate change
Global trends

To promote:

Water / energy /
food security
for all

Equitable &
sustainable
growth

Resilient,
productive
environment

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Bonn2011 Conference
The Water, Energy and
Food Security Nexus
Solutions for the Green Economy
16 – 18 November 2011

Understanding the Nexus

Background paper for the Bonn2011 Nexus Conference



Proposed strategic objectives for thematic WEFE assessment

- Develop and deploy with key partners in a transboundary basin context:
 - a modular fit for purpose integrated assessment to analyse transboundary opportunities, constraints and tradeoffs
 - The relation to key water use sectors and climate change drivers
- Support subsequent discussions on institutional gaps and options at the TB level

Quantitative methodology option

- Build a standard macro-economic model for macro-regions under consideration that can be applied to all case study areas
 - Run four scenarios based on sectoral policy targets (high level growth; medium growth; low growth and negative growth)
- Deploy SEI Long Range Energy Planning Model (LEAP) taking macro-economic parameters into account
 - Broad scope: demand, transformation, resource extraction, GHG & local air pollutants emissions, social cost-benefit analysis, non-energy sector sources and sinks
- Deploy & integrate SEI Water Evaluation & Planning (WEAP) System Model
 - Reservoirs, off-takes, supply, groundwater, return flows
 - Determine the impact on water demands that are national and transboundary in character
 - Energy, agriculture, domestic & industry, ecosystem services
- Stakeholder driven dialogue with the aid of three model packages
 - Define opportunities, constraints & tradeoffs

1. The California case application WEAP/LEAP

- Quantify the impact on water imports, electricity demand from the water sector, and greenhouse-gas emissions
- Meeting 5% of Southern California's current urban water demand with desalinated seawater through 2049



2. Options for Cooperative Action in the Euphrates and Tigris Region

A hydro-economic model to support basin-wide dialogue

- Iran, Iraq, Syria and Turkey
- Lack of cooperative arrangements
- Major regional issues: salinity, dust and haze, loss of ecosystem values, health and loss of economic opportunities
- 2 yrs project with government stakeholders & regional organisations
 - Remote sensing, GIS & publicly available data
- Baseline hydropower value: USD 3.5 billion/y
- Irrigated agriculture USD 4.8 billion/y
- Shadow values for environmental flows
 - Range between 286 to 515 million USD
- Modelling & results can improve dialogue between riparian countries on regional integration benefits
 - Governance
 - Measures to improve water use efficiency



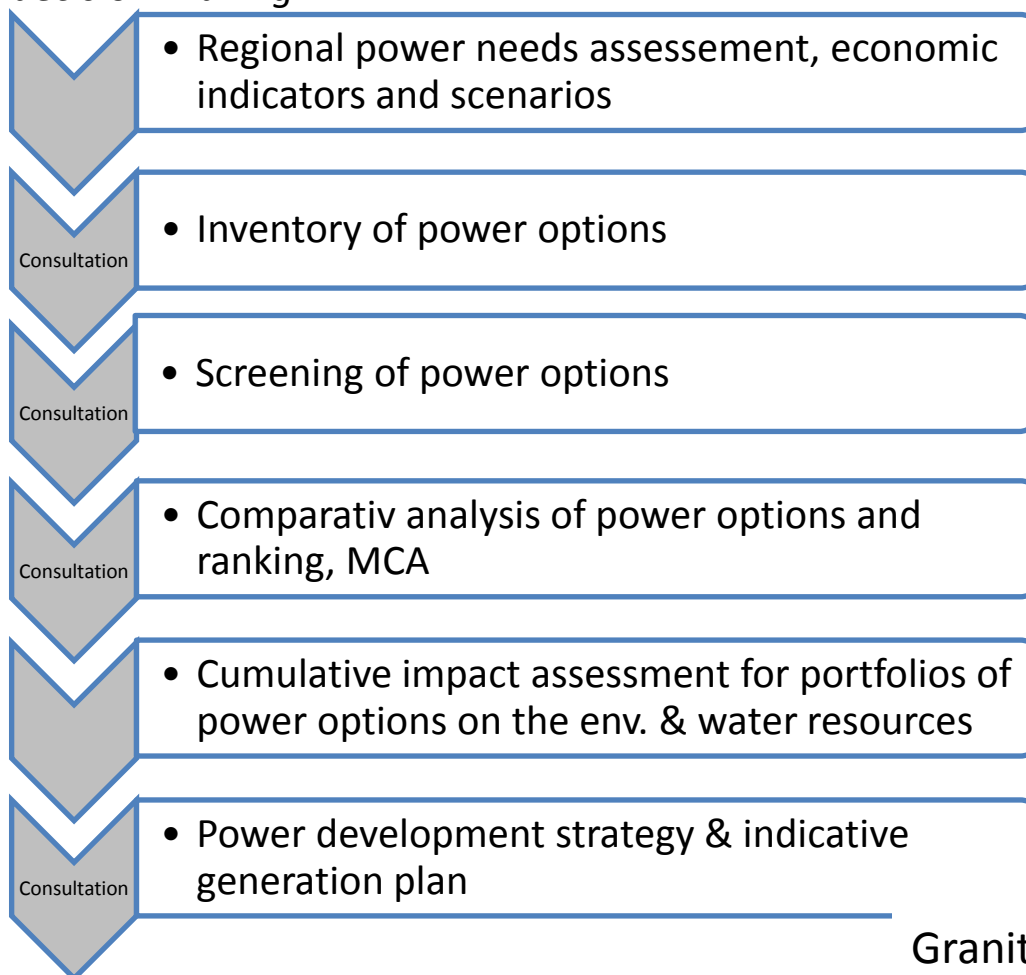

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OPTIONS FOR COOPERATIVE ACTION IN
THE EUPHRATES AND TIGRIS REGION

STOCKHOLM, MARCH 2012

3. SEA as a pre-investment tool in Nile Equatorial Lakes (NBI) Economic development, electric power, water resources, climate change, World Bank 2007

“A systematic, and comprehensive process of evaluating the environmental effects of a policy, plan, or programme and its alternatives... and using the findings in publicly accountable decision-making”



Results include:

- Bujagali 250 MW HEP, Uganda
- Feasibility study, Rusumo Falls 60 – 80 MW HEP, Burundi, Rwanda & Tanzania
- Feasibility & financing decision of # regional transmission lines, Nile Equatorial Lakes Region
- Feasibility study Ruzizi 3 HEP, Burundi, Rwanda & DRC
- 3 feasibility studies HEP project on the Blue Nile/Abbay River

Or a more qualitative approach?

- Desk study with data input from TB basin and region partners
 - Assess ongoing work in WEFE nexus

Method development:

- Macro-economic trends (quantitative)
 - Sub-region beyond TB basin as relevant
- Sector plans & impacts (qualitative or quantitative)
 - Water for energy production
 - Water for food production
 - Water for ecosystem services
 - Climate change
- Proposed measures to be applied in the nexus and per sector (qualitative)
- Political economic analysis
 - Governance, institutions, gaps and options



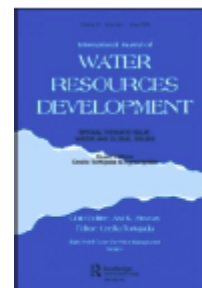
REGIONAL WATER INTELLIGENCE REPORT CENTRAL ASIA

Baseline Report

*By Jakob Granit, Anders Jägerskog, Rebecca Löfgren,
Andy Bullock, George de Gooijen, Stuart Pettigrew
and Andreas Lindström*

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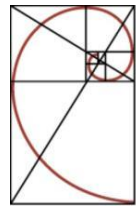
Regional Options for Addressing the Water, Energy and Food Nexus in Central Asia and the Aral Sea Basin

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A thick, solid blue vertical bar positioned behind the letters 'IWI' of the SIWI logo. At the bottom of this bar, there are three horizontal wavy lines in a lighter shade of blue, resembling water.