



REDUCING TRANSBOUNDARY DEGRADATION IN THE KURA ARAS RIVER BASIN

Enhancement of sustainable development of the Kura Aras River Basin through ecosystem-based Integrated Water Resources Management (Countries - Armenia, Azerbaijan, Georgia)



PROJECT COMPONENTS

Transboundary Diagnostic Analysis

Update 2007 draft version: institutional changes, new information, trends in water use, revised Causal Chain Diagrams

National IWRM plans & Strategic Action Program

Capacity needs assessment for IWRM; From priority national water resources issues to transboundary agreed management actions; inter-sectoral and inter-regional cooperation.

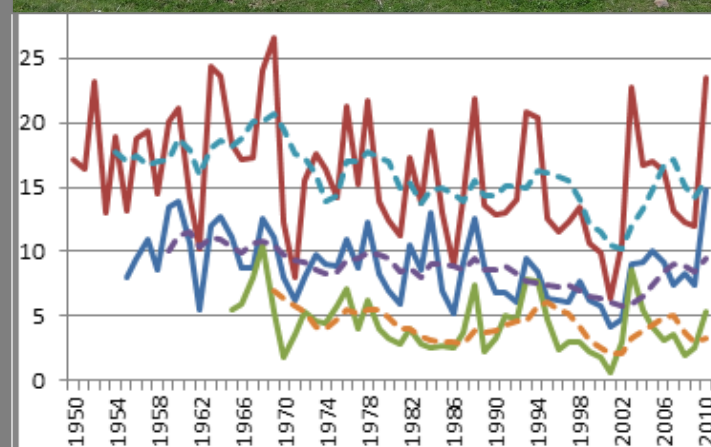
Awareness Raising

NGO Forum, IWRM M.Sc. curriculum development with 3 local universities; school aquatic monitoring program

Demonstration Project

Training in Bio-monitoring, Rapid Ecological Inventory, Environmental flows; field data collection; indicators for Environmental Quality Objectives to reach good ecological status.

Recommendations for decision makers; Basin Management Arpa River



KURA ARAS RIVER BASIN

Countries: Turkey, Georgia, Armenia, Iran, Azerbaijan

Surface – 190,190 km²

Climate: variable, from moist warm temperate foothills, wet mountains, dry subtropical to semi-desert steppe

Landscapes: large variation due to geology, climate, topography - Alpine meadows, broadleaf & coniferous forest, steppe & semi-desert, floodplains & wetlands

Large variety of ecosystems, species – Caucasus Biodiversity Hotspot

Abundance of relic & endemic plant species

Vulnerable & rare fauna species: Lynx, Gmelin's Mouflon, Geoffroy's Bat, Pallas Cat, Goitered Gazelle, Armenian Steppe Viper, Sturgeon species, Thick Shelled River Mussel, Caucasian Toad

ENVIRONMENTAL DEGRADATION IN THE KURA ARAS RIVER BASIN

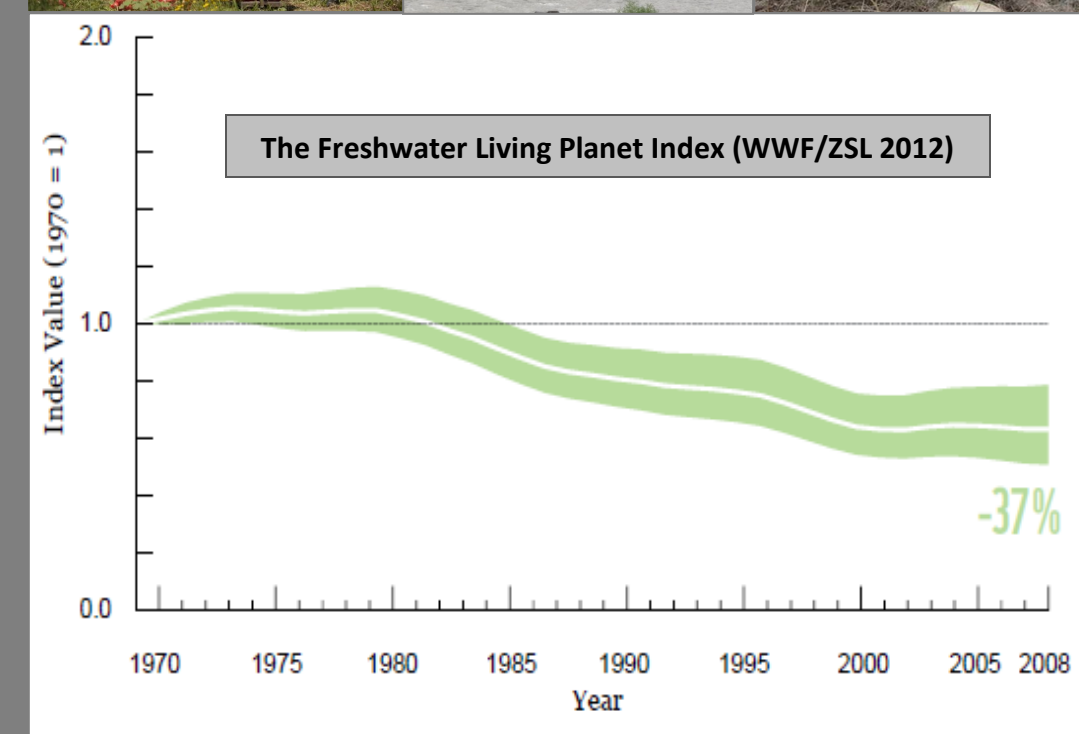
CAUSES

- Urban land development
- Dams, levees, impoundments
- Arable agriculture (irrigation)
- Overgrazing
- Deforestation
- Untreated waste flow (industry, communal)
- Human population growth
- Wealth & welfare
- Energy demand
- Climate change
- Others

STRESSORS

- Pollution / Contaminants
- Habitat loss / destruction
- Water flow alterations
- Water availability
- Invasive species
- Diseases
- Unseasonal temperatures, precipitation
- Climate-induced disasters
- Increased erosion / siltation
- Others

Overexploitation



DEMONSTRATION PROJECT COMPONENT - SCIENCE FOR BETTER DECISION-MAKING

INTEGRATED WATER QUALITY ASSESSMENT

Seasonal integrated collection of physico-chemical, biological, hydro-morphological quality elements

Biological groups susceptible to pressures – macrophytes, fish, birds, macro-invertebrates

Assessment of impact on ecology over time

Approximation – EU Water Framework approach of good ecological status compared to undisturbed “reference”



TRAINING & CAPACITY BUILDING

Four-day training for 32 participants from government, NGO, science community from three countries

Rapid Ecological Assessment

- Principles & approaches
- International examples of REA application
- Linking water quality & quantity with ecosystem conditions
- Data collection & indices
- Data integration & management
- Needs for REA in the Kura Aras river basin

Bio-monitoring

- Bio-monitoring in the EU Water Framework Directive
- Indicators and monitoring design
- Sampling procedures – collection, processing, analysis & interpretation
- Practical example – Nile river bio-monitoring program

Environmental Flows

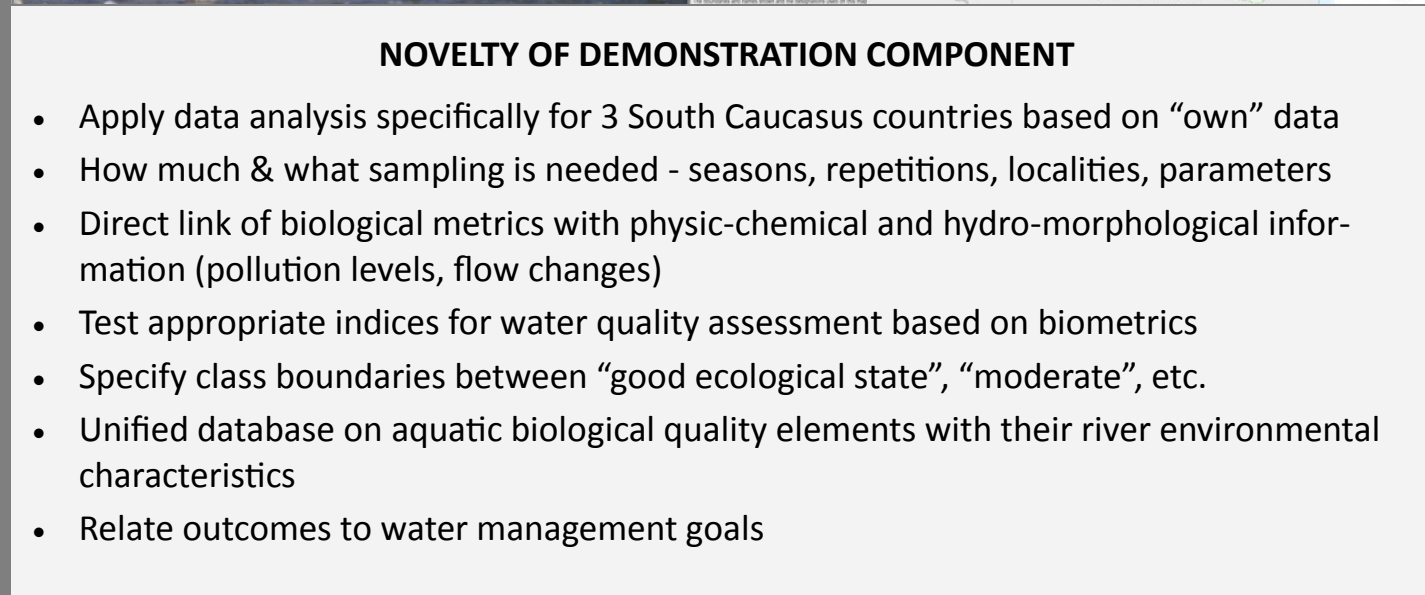
- Principles, approaches, calculations
- EFs to evaluate water resources management policies

SEASONAL 3-COUNTRY FIELD SURVEYS

Selected pilot sites - 16; transboundary upstream-downstream, “undisturbed” vs. “disturbed”: flow regulation, agriculture, pollution, land degradation, erosion; Seasonal sampling – 5 campaigns

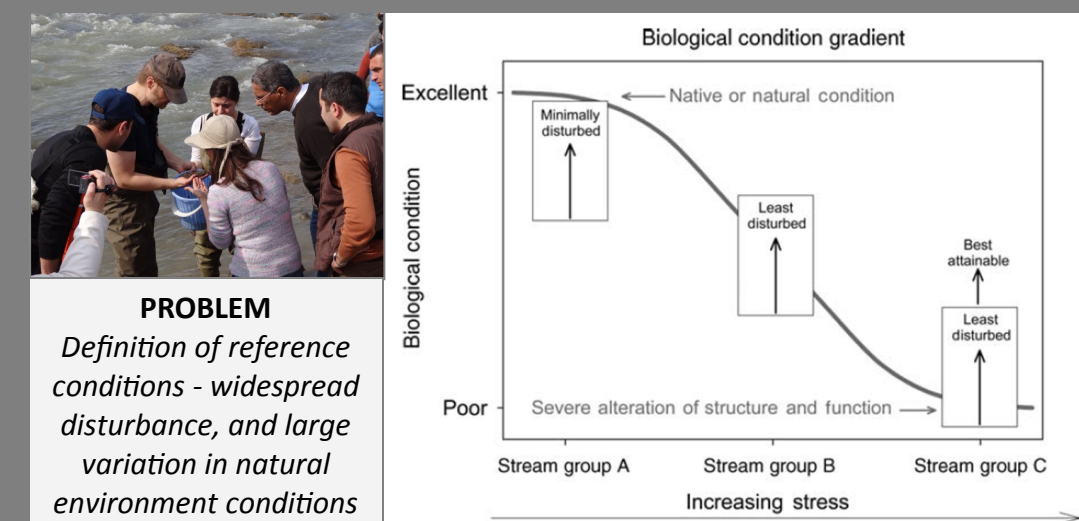
National floodplain forest study for Azerbaijan

River Basin Management Plan for the Arpa River basin



NOVELTY OF DEMONSTRATION COMPONENT

- Apply data analysis specifically for 3 South Caucasus countries based on “own” data
- How much & what sampling is needed - seasons, repetitions, localities, parameters
- Direct link of biological metrics with physico-chemical and hydro-morphological information (pollution levels, flow changes)
- Test appropriate indices for water quality assessment based on biometrics
- Specify class boundaries between “good ecological state”, “moderate”, etc.
- Unified database on aquatic biological quality elements with their river environmental characteristics
- Relate outcomes to water management goals

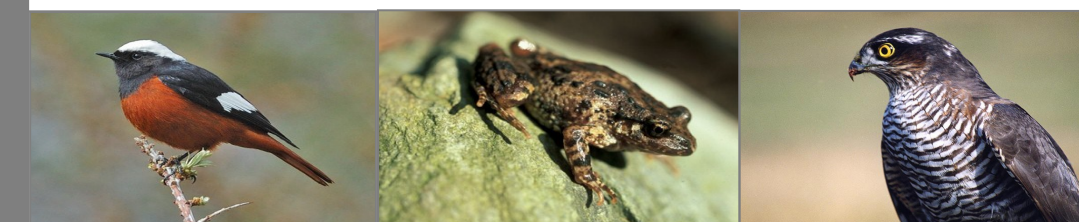


PROBLEM
Definition of reference conditions - widespread disturbance, and large variation in natural environment conditions

FROM SCIENCE TO DECISION MAKING

- Quantify and simplify complex ecological phenomena to easily interpretable outputs
- Observe long-term change trends in aquatic ecosystem health
- Impact assessment of human development initiatives
- **RESPOND:** Ecological status classification sets the baseline for management interventions
 - Goal setting - maintain or act towards “good ecological status”
 - Define target indicators
 - Formulate actions
 - Integrate into National IWRM plans and Regional Strategic Action Program - towards a Program of Measures

Project recommendations to Governments: operational monitoring network requirements (sampling, data integration, staffing, capacity building); further research needs



Contacts:

Dr. Mary M. Matthews - Chief Technical Advisor / Project Coordinator

mary.matthews@kura-aras.org

Ir. Harald J.L. Leummens - Demonstration Project Coordinator / Science Officer

harald.leummens@kura-aras.org

WWW.KURA-ARAS.ORG