

# SUSTAINABLE DEVELOPMENT OF WATERSHEDS: USING STURGEON SPECIES AS AN INDICATOR IN INTEGRATED TRANSBOUNDARY WATER MANAGEMENT IN THE URAL RIVER BASIN

VIKTOR LAGUTOV

*Environmental Sciences & Policy Department, Central European University, Hungary*

**Abstract:** River basins are the most appropriate geographical units for considering the management of water resources. At the same time rivers and their associated ecosystems and biodiversity provide the basis of life for a large portion of the world's population. Though there is now an international consensus on the need for an integrated approach to sustainable river basin management, there is no standard definition of the term "sustainable" nor consensus on how to reach this state.

Sustainable development of watersheds should consider three main components: economic, social and environmental, which can hardly be reached in real-life watershed management. One of the problems is the selection of sustainable watershed management indicators.

Using sturgeon species as a natural indicator and an incentive for transboundary IWRM cooperation in the Ural river basin is suggested. The only free-flowing river in the Caspian basin, the Ural River, is a unique ecosystem with a preserved natural hydrological regime and the last sturgeon spawning habitats.

Activities towards successful integrated water management will not only work towards sustainable watershed management, but also secure preservation and restoration of sturgeon, this worldwide flagship species. Community-based management of sturgeon stocks also resolves social and economic problems by restoration of the traditional life style of local communities.

High economic and social values of sturgeon allow the combination of both ecological and socio-economic aspects of sustainable development. Investment in IWRM and sturgeon conservation can be largely repaid later by "sustainable extraction" of sturgeon.

The Ural River Basin Project, which aims at sustainable watershed management and sturgeon restoration, is described in this paper. Special attention is paid to integrated assessment and modelling of the Ural river ecosystem.

**Keywords:** Watershed management; river basin; integrated water resource management; indicator species; sturgeon; community-based environmental protection; Ural river; Cossacks; integrated modelling

## 1. Background

Rivers and their associated ecosystems and biodiversity provide the basis of life for a large portion of the world's population. Fresh water is expected to become the most limiting resource in many parts of the world in the near future. The world's freshwater resources are under increasing pressure. Population growth, improving standards of living, blooming economic activities and the degradation of aquatic ecosystems lead to increased competition for and conflicts over the limited freshwater resources.

The need for holistic cross-sectoral approach to water resources management is increasingly recognized and has resulted in a drastic increase in the number of watershed management programs worldwide. Depending on institutional needs and regional priorities various concepts of Integrated Water Resources Management (IWRM) have been developed recently. In brief IWRM is a process which can assist countries in their efforts to deal with water issues in a cost-effective and sustainable way.

Though the issues of sustainable watershed management and development are widely discussed, and though many articles and handbooks have been written and numerous attempts have been made to put this concept into practice, there is no uniform terminology accepted by all stakeholders nor consensus on the best way to achieve sustainability in water resource use. Nevertheless, some fundamental principles underlying best management practices are common for most approaches.

While IWRM principles, approaches and guidelines are numerous, the principles of IWRM proclaimed at Rio-92 are most commonly used. According to this approach the six basic principles of Integrated Water Management are:

1. The river basin is the most appropriate administrative unit for water management
2. Water resources and the land which forms the river basin area must be integrated, in other words, planned and managed together
3. Social, economic and environmental factors must be integrated within water resources planning and management
4. Surface water and groundwater and the ecosystems through which they flow must be integrated within water resources planning and management
5. Public participation is necessary for effective water resources decision making