

PRINCIPLES AND CONCEPTUAL MODELS FORMED IN THE INTERNATIONAL MANAGEMENT OF WATER RESOURCES

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Abstract

This article analyzes the main principles and conceptual models developed in the international management of water resources. In particular, it examines the content, legal, economic, and environmental aspects of the IWRM (Integrated Water Resources Management) approach, as well as the FAO, IWMI, GWP, UNESCO, and Dutch models. The advantages of each model for Uzbekistan—such as ensuring fair and sustainable water use, promoting stakeholder participation, and supporting ecosystem stability—are discussed. Recommendations for adapting these models to national policy are also provided.

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INTRODUCTION

In the field of water resources management, internationally developed principles are becoming increasingly important against the backdrop of today's global climate, economic, and political changes. Water is not only a natural resource but also a strategic asset directly related to societal stability, human rights, food security, and ecological balance. Therefore, in international legal relations, a system of conceptual principles aimed at ensuring the sustainable and equitable management of water resources has been formed, with the IWRM (Integrated Water Resources Management) approach at its core.

IWRM is a concept of integrated management of water resources that entered the international legal discourse based on the decisions of the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992. The IWRM principle aims to ensure a balance between environmental, economic, and social interests in water resources management, expand the participation of stakeholders in decision-making, and serve the goals of sustainable development.

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This approach has been promoted by prominent organizations such as the UN, GWP (Global Water Partnership), IWMI (International Water Management Institute), and FAO, and has been reinforced through international legal instruments, conventions, and regional declarations. According to the GWP, IWRM is “a coordinated process that ensures the equitable and sustainable use of water resources to achieve social and economic well-being.”

The main components of the IWRM principle are:

Sustainability principle – ensuring that current use of water resources does not compromise the needs of future generations;

Subsidiarity principle – decisions should be made as close as possible to the local level by the bodies most closely related to the resource;

Stakeholder participation – active involvement of government agencies, civil society, the private sector, and communities in policy-making and implementation;

Gender equality and fairness principle – ensuring equal distribution of water rights and protecting socially vulnerable groups;

Recognition of water as an economic resource – developing tariffs and management measures that take economic efficiency into account.

The IWRM approach has also had a significant impact on the system of international water law. For example, the 1997 “Convention on the Law of the Non-Navigational Uses of International Watercourses” adopted by the UN General Assembly incorporated IWRM’s legal mechanisms such as reasonable and equitable utilization, no-harm principles, and information exchange.

Moreover, IWRM principles have been directly or indirectly enshrined as legal norms in documents such as the EU Water Framework Directive (2000), the African Union’s “Africa Water Policy,” bilateral agreements among South Asian countries, ASEAN water conventions, and other regional instruments.

The significance of IWRM lies in the fact that it has transformed water resources from being viewed solely as a technical object into an object of legal, environmental, and social governance. For this reason, it is one of the most widely applied and internationally recognized management approaches on a global scale.

Sustainable water resources management is one of the key areas in today’s global policy and system of international legal norms. In particular, conceptual models developed by international organizations such as the UN, FAO, IWMI, GWP, and UNESCO play a decisive role in shaping the governance paradigm of global water policy. These models are adapted to various regional conditions, political structures, climatic and demographic contexts, aiming to ensure fair, efficient, and environmentally sound management of water resources.

The conceptual approach proposed by the Food and Agriculture Organization of the United Nations (FAO) evaluates water resources “not as a mere resource, but as an object of socio-economic relations.” In the FAO model, the right to use water, relations linked to land ownership, infrastructure ownership, and management systems are determined on a legal basis. FAO’s approaches in the areas of “Irrigation Management Transfer” and “Water Governance” focus on management based on user participation, which requires strengthening the normative and legal framework.

The FAO model is particularly relevant for agrarian countries such as Uzbekistan, as it calls for clarifying local-level water use rights, institutionally coordinating water management approaches, and maintaining a balance among stakeholders.

IWMI Model – Management Based on “Water Productivity” and Accountability

The model developed by the International Water Management Institute (IWMI) is based on the concept of “water productivity” – the benefits derived from water use. In the IWMI paradigm, developed by Perry (1999), water is assessed not merely as a technical resource but as an element of a dynamic system influenced by climatic, economic, and social changes.

The strength of the IWMI model lies in its coverage of the technological, institutional, and political stages of water flow management. It gives special attention to resource accounting and monitoring, reuse, distinctions between “open” and “closed” basins, the characteristics of used water (evaporation, filtration, return flow), and its legal status (ownership or consumption rights).

In the context of Uzbekistan, the IWMI model can serve as a basis for technological reconstruction of irrigation systems, democratizing management through Water Users Associations (WUAs), and enhancing measures for improving drainage systems.

GWP (Global Water Partnership) Model – Integrated Political Governance

The IWRM (Integrated Water Resources Management) concept promoted by the GWP is one of the most widely implemented models internationally. This approach advances principles of managing water resources in an integrated manner—across stakeholders, institutions, sectors, and geographical scales. According to the GWP, IWRM is defined as “a political process that ensures the efficient, equitable, and sustainable use of water resources.”

The GWP model provides a primary legal and socio-political platform for transboundary water issues (such as the Amu Darya and Syr Darya basins), national strategies, and regional integrations. Its strength lies in its emphasis on subsidiarity and human rights-based principles of water use.

The model advanced by UNESCO is based more on an ecosystem-oriented management approach. In this approach, water is regarded as a medium of interaction between nature and society. In its 2003 report “Water for People – Water for Life,” UNESCO evaluates the cultural, social, and environmental needs for water in an integrated way. This model calls for considering the right to life, cultural heritage, and the uniqueness of local communities in water resources management.

For Uzbekistan, this model is of significant importance, as under the ecological crisis in the Aral Sea region, water is seen as a tool for maintaining ecological balance. The UNESCO model is useful for legally reinforcing environmental security, promoting the “rights of nature” principle, and implementing innovative approaches in the Aral Sea area.

The above conceptual models each have their own legal, economic, and environmental foundations, offering important practical directions and normative criteria for developing countries like Uzbekistan. Their common feature is recognizing water as a multifunctional resource, legally strengthening stakeholder participation, and increasing accountability over resources.

When adapting these models to the legislation of Uzbekistan, attention should be paid to the following aspects:

- Legally establishing a system for clarifying and registering water use rights;
- Defining an independent legal status for Water Users Associations and basin management bodies;
- Integrating ecosystem and social justice principles into national policy;
- Increasing transparency in water use through digital monitoring and control systems.

The Netherlands is one of the countries with the oldest and most effective institutional systems for managing water resources. In the country, the right to use and manage water is guaranteed at the constitutional level, and water security is regarded as an integral part of national security. The Dutch model is decentralized but strictly based on legal foundations and relies on a high level of civic participation.

The core of governance lies in the Water Boards (Waterschappen), which are organizations formed through elections by water users. Water Boards have authority over water safety, drainage, water quality, water distribution, and infrastructure management within their territories. They form their own budgets, levy taxes, and provide reports. Most importantly, these bodies are directly managed and elected by water consumers themselves. In other words, the Dutch model is founded on civic oversight and financial independence.

Through the Waterwet law, which came into force in 2009, water resources were unified into a single system, and every user operates under strict regulations. Article 21 of the Constitution defines

environmental safety and resource protection as a primary duty of the state. This approach can also be applied in Uzbekistan through the institutionalized role of local water users.

CONCLUSION

In conclusion, it can be stated that the management of water resources in Uzbekistan, in cooperation with international organizations, is not merely a diplomatic or technical matter but a comprehensive strategic direction that encompasses political, economic, environmental, and social dimensions. The recommendations developed in this section aim to strengthen Uzbekistan's stable, constructive, and progressive position in regional and global water policy.

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