INTEGRATED WATER RESOURCES MANAGEMENT

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ABSTRACT. – **Integrated Water Resources Management.** Nowadays, the highest priority issue of water resources management is supply of increasing water demand with limited water resources. Water resources are a basis of sustainable development, so sustainable approach should be based on usage and management of water resources. In the twenty first century, the world is faced with a major water crisis. And the problems are originated from deficiencies and errors in the management of water resources. Thus, sustainable use of water resources is crucial for humanity. The sustainable development is defined as supply objectives and needs of today without jeopardizing objectives and demands of future generations. The long-term objectives instead of short-term ones should be considered in the assessment of water resources. Water resources are handled as a whole in basin management. This approachment constitutes the notion of integrated water resources management.

Keywords: Water Resources Management, Sustainability, Integrated Basin Management.

1. INTRODUCTION

In 20th century, world population trebled according to 19th century, but use of water resources increased sixfold (WSSD, 2002). As a result of this, a significant water crisis occurred in the world. Reason of the appearing water crisis is originated from inadequacy of management, not exiguousness of water resources. In World Water Development Report that is published as a result of 2003 Kyoto 3rd World Water Forum, it is diagnosed that water crisis problem is occurred by lacks and errors in water resources management for the first time and it is emphasised that sustainability management must provided.

Sustainable management and use of water resources are very important for ecosystem from the point of providing the basis for sustainable development, because of water resources are matter of vital for human being. Forming of sustainable management and use consciousness is also very significant in water resources engineering. Integration of environment with its all natural resources and obligation of being materialized of all improvement plans in philosophy of sustainability development result necessity of integrated water resources management.

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2. INTEGRATED WATER RESOURCES MANAGEMENT

Integrated management principles on solution of global water crisis are come to the forefront in consideration of occurred developments in recent years. The European Union Water Framework Directive, effectuated in 2000 has formed water policies with watershed-based management approach and purposed protection and control of water resources in terms of both quantity and quality.

For sustainable management politics, phenomenons of social, environmental, economical, technical and institutional should handled as a whole. This approachment generated concept of "integrated water resources management". Integrated water resources management is based on the equitable and efficient management and sustainable use of water.

Integration of environmental medias are provided by regarding integration of social, economical, political, institutional, technical and legal factors with environmental factors (sustainability), integration of disciplines, integration of actors (coordination), integration of financial resources, integration of management tools, climate change and risks in integrated water resources management.

Integrated basin management model must consisted of identification, data system, decision support system, implementation, inspection and discussion stages respectively.



Fig. 1. The Processes of Integrated Water Resources Management Model

Demanding water stakeholders should present a participative approachment in works while all these stages are practiced. Dispersion of water resources by area of usage must regarded in integrated water resources management for stakeholder analysis.



Fig. 2. Estimated Annual World Total And Dispersion by Sectors (FAO, 1993).

First of all, determination of purposes of actors and management, identification of basin system, assessment of issues and specification of expectations processes must carried out.

Afterwards, data relevant to basin is collected by making stakeholder analysis. Basin is modeled with data analyses and transfers by constituting data bases. Decision models are determined by generating various scenarios.

After test of decisions and impact assessment, management decisions are determined and performed. Interrogation of actors, management aims and proposed management plan is provided by observing continually progression of management stages and basin state.



Fig. 3. The Diagram of Integrated Water Resources Management Model

3. CONCLUSIONS

Issues of water famine, water pollution and water management oblige to handle watersheds with integrated water resources management in all water resources. Integration of environment with its all natural resources and obligation of being materialized of all improvement plans in philosophy of sustainability development result integrated management necessity of water resources. Protection of water resources and provided of sustainable use can realized only by integrated management system. Integrated water resources management is for protection and betterment of water quality by considering all activities in the basin.

REFERENCES

 Harmancioğlu, H. N., Gül, A., Fistikoğlu, O. (2002), Entegre Su Kaynakları Yönetimi (Integrated Water Resources Management), TMMOB İnşaat Mühendisleri Odası Türkiye Mühendislik Haberleri Dergisi (Union of Chambers of Turkish Engineers And Architects, Chamber of Civil Engineers, Journal of Turkey Engineering News), No. 419, p. 29-39.

- Efelerli, S. S. (2010), Entegre Havza Yönetimi (Management Planning of Integrated Water Basins), TMMMB 8. Teknik Müşavirlik Kongresi (Association of Turkish Consulting Engineers And Architects, 8th Engineering Consultancy Congress), Ankara, March 25-26.
- 3. *** (1993), *The State of Food and Agriculture*, Food And Agriculture Organization Of The United Nations, Rome.
- 4. *** (2002), World Summit on Sustainable Development (WSSD), Johannesburg, August 26 Semtember 4.