

## Evaluating the Impact of Future Scenarios on Water Availability and Demand Based on Stakeholders Prioritized Water Management Options in the Upper Awash Basin, Ethiopia

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**Abstract :** Conflicts over water are increasing mainly as a result of water scarcity in response to higher water demand and climatic variability. There is often not enough water to meet all demands for different uses. Thus, decisions have to be made as to how the available resources can be managed and utilized. Correspondingly water allocation goals, practically national water policy goals, need to be revised accordingly as the pressure on water increases from time to time. A case study is conducted in the Upper Awash Basin, Ethiopia, to assess and evaluate prioritized comprehensive water demand management options based on the framework of integrated water resources management in account of stakeholders' knowledge and preferences as well as practical prominence within the Upper Awash Basin. Two categories of alternative management options based on policy analysis and stakeholders' consultation were evaluated against the business-as-usual scenario by using WEAP21 model as an analytical tool. Strong effects on future (unmet) demands are observed with major socio-economic assumptions and forthcoming water development plans. Water management within the basin will get more complex with further abstraction which may lead to an irreversible damage to the ecosystem. It is further confirmed through this particular study that efforts to maintain users' preferences alone cannot insure economically viable and environmentally sound development and vice versa. There is always a tradeoff between these factors. Hence, all of these facets must be analyzed separately, related with each other in equal footing, and ultimately taken up in decision making in order for the whole system to function properly.

**Keywords :** water demand, water availability, WEAP21, scenarios

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