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Problems
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10:30 AM – 12:00 Noon

SESSION 8: Scale Considerations for Water Management

Subsidiarity in International Water Resources Cooperation: A Path Forward? - Jacob Petersen-Perlman, Water Resources Research Center, University of Arizona, Tucson, AZ, USA (co-author: T. Albrecht)

The principle of subsidiarity suggests that social decisions ought to be made by the smallest, lowest or least centralized levels of competent authority. In many cases, this principle is logically applicable for water resources management, especially by water users in watersheds and aquifers that span small geographical areas. Yet water users may find the subsidiarity principle difficult to implement in practice when river basins or aquifers are divided by political boundaries, particularly if those boundaries separate country jurisdictions. Decision-making parties for water resources must weigh whether the risks of cooperation (including risking intrusion on sovereign authority) outweigh the risk of not cooperating. Despite these difficulties, there have been several examples across the globe of 'informal' (i.e., not signing an international treaty) international water resources cooperation between subnational decision-making bodies, bypassing the complications entailed with signing a formal international treaty with their respective national governments. This article explores the effectiveness of these informal, locally-tailored agreements over shared international watercourses. This article argues that this path of informal agreement while still respecting sovereign authority is often a more logical and efficient means of managing shared freshwater in the absence of international treaties or river basin organizations, provided several factors key to international water resources cooperation are in place. The article demonstrates this through highlighting several case studies that demonstrate this principle in water resources.

The Integrated Watershed Management in Israel - Stumbling Forwards - Jenia Gutman, Soil Conservation & Drainage Division Ministry of Agriculture, Holon, Israel (co-authors: B. Yaacoby, E. Ettinger)

The watershed is a space far from the 'concept of place' that most people have and most people do not feel connected to the hydrological watersheds in which they live. Similarly, the ministerial and statutory responsibilities of most governmental and planning institutions do not coincide with the boundaries of the watersheds in which these institutions exist. Despite this, the term 'watershed management' is a common term, strongly incorporated into US and EU water-resource policy visions. The reason for this lies in the fact that the watershed is the only viable reference point for the water and soil resources sustainable management. It includes the uphill, the downhill, and the uses that are made of the water along their flow in the basin. But what about Israel? What is the current situation of the integrated watershed management in the most densely populated OECD country, stressed by desertification and climate change? How the fact that the major watersheds are transboundary affects the integrated efforts? And what is the role of the agricultural sector, in the current situation of no-direct payments

and therefore no environmental cross-compliance? Current work systematically reviews, for the first time, the ongoing projects related to integrated watershed management in Israel. Drainage Authorities in Israel, whose area of responsibility is dictated by hydrological boundaries, were found to be one of the leading stakeholders in the arena. The extent to which the topic of floods was addressed in these projects suggests that there is a long way to go before true incorporation of ecology- society - flood risk mitigation into a holistic, integrated management of the water & soil resources will occur. The agricultural sector was found to play a crucial role in the success of such initiatives, whereas farmers participation was highly non-trivial. Buds of the shifting from flood-risk mitigation to flood-risk management are spotted sporadically. The examples described present an explicit transition from a narrow approach to water resource to a broad approach of integrated watershed management, while the statutory 'watershed umbrella' is reviewed to provide the solid ground of planning and funding.

An East-West Conveyance to Provide a Cost Effective Solution for Supplying Desalinated Water to Israel, Jordan and the Palestinian Authority – Chris Breeds, SubTerra, Inc., North Bend, WA (co-author: Clive Lipchin)

It has long been recognized that while the north south corridors for both passenger and water transportation in Israel excel, there is a shortage of options for efficient transport of either from west to east. The ongoing development of Mekerot's fifth water pipeline from Soreq to Jerusalem will be a major contributor for water and the Tel Aviv to Jerusalem rail line a solution for west-east travel but more needs to be done to complete efficient transport systems for both entities. Contemporaneously, consideration is being given to reversing flows between the Sea of Galilee and the National Water Carrier so that Israel can meet its bilateral water commitments with Jordan without destroying the hydraulic character of the lake.

This paper presents and discusses a project that would provide a cost effective means of transporting desalinated water from Israel's west coast desalination plants to locations in the West Bank and Jordan. The project is presented as part of a much larger endeavor that would also refill the Dead Sea with Mediterranean Seawater finally ending the cycle of sinkhole formation that began when the Dead Sea started receding.

The paper will also discuss how a Med Dead project can mitigate sinkhole formation and other contemporary issues in the Dead Sea region. Summary details will also be presented regarding two hydroelectric projects that are currently in construction in Israel and other contemporary projects that demonstrate the availability of technology and in country skills that can be harnessed to build the project. The cost feasibility and sustainability of the proposed project will be demonstrated through a detailed estimate of the Med Dead project construction costs.

The authors have been involved in the detailed development of the central conveyance route for a Med-Dead project for almost a decade and believe that such a solution would be of great benefit to the region. The project is presented as a complement to the ongoing Red Dead Pilot Project and not as an alternative.

The Cooperative Framework for the U.S.-Mexico Transboundary Aquifer Assessment Program: A Model for Collaborative Transborder Studies - Sharon B. Megdal, College of Agriculture and Life Sciences, The University of Arizona, Tucson, AZ

A common understanding of aquifer conditions is a first step in efforts to explore transborder governance and management. Disagreement about groundwater conditions is likely to lead to different perspectives on approaches to groundwater management. The U.S.-Mexico Transboundary Aquifer Assessment Program (TAAP) team has focused on expanding shared knowledge and understanding. Since 2009, the Cooperative Framework has facilitated successful completion of the transboundary San Pedro aquifer study, with completion of a similar study for the transboundary Santa Cruz aquifer in progress. In addition, binational efforts are continuing for the other TAAP aquifers. The basic elements of the Cooperative Framework can serve as a model for others engaged in transborder studies.