Incentives for and obstacles towards joint wastewater treatment in a conflictive transboundary setting - the case of the Israeli-Palestinian Kidron valley/Wadi Nar

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In transboundary settings, untreated wastewater can be a source of negative transboundary externalities and conflict. Conversely, wastewater treatment may generate net benefits to societies by reducing pressures on the environment and public health, and, at least under conditions of water scarcity, by providing an additional water source. Depending on the geographical setting, it may furthermore be possible to realize economies of scale by treating wastewater jointly, hence there may be incentives for transboundary cooperation. However, joint wastewater treatment may also increase transaction costs as it requires coordination; and it may be difficult to realize under lack of trust.

In order analyze the incentives for and obstacles towards joint wastewater treatment in a conflictive transboundary setting, this paper presents the case of the Kidron/Wadi Nar, a small wadi shared by Israelis and Palestinians. As of estimation in the year 2006, the wadi receives the untreated wastewater flows of approximately 240,000 people in or at the fringes of the catchment (about 140,000 Palestinians and 100,000 Israelis), about 165,000 of whom live in Jerusalem. The untreated wastewater flows from Israeli and Palestinian settlements into the wadi, which is mainly under Palestinian civilian and Israeli military (so called B area), and finally discharges into the Dead Sea. The untreated wastewater represents a potential threat to scarce groundwater resources, an aesthetical nuisance, and may pose a health threat if used for agricultural purposes.

In recent years, three different sites for joint or separate wastewater treatment have been under consideration, but so far no decision has been taken. The Kidron/Wadi Nar option is in area B within the wadi. The Nebi Musa site is in the neighboring Og/Muqalek basin in Area C which is West Bank territory under Israeli administration. The Jerusalem site is on Israeli territory within Jerusalem. The various sites differ significantly in their treatment costs and there are different options to allocate the wastewater to one or more of these sites. Also, after treatment there is the option to reuse all wastewater in agriculture or to let at least a certain amount of treated wastewater flow freely in the wadi for recreational purposes.

In order to determine incentives for and obstacles towards joint wastewater treatment, first a cost benefit analysis (CBA) of alternative physical wastewater treatment and reuse options was carried out. In order to determine non-market benefits, Israelis and Palestinians were asked in a Contingent Valuation Analysis how much they would be willing to pay to remove the untreated wastewater. They were also asked whether they preferred a dry or a wet river. Second, workable combinations of physical and institutional options were identified. Third, the respective physical-institutional options were evaluated in a multi-criteria decision
analysis (MCDA) in order to gain a better understanding of the interests of different stakeholder groups in the region and, thus, of political feasibility.

The CBA of alternative physical options shows that wastewater treatment leads to net benefits only if non-market benefits are taken into account. Second, the economically optimal solution would be to treat all wastewater in one wastewater treatment plant at the Kidron/Wadi Nar site. Thus from an economic perspective Israelis and Palestinians could maximize net benefits of wastewater treatment and realize gains from cooperation compared to separate or unilateral action by agreeing on the construction of a single treatment plant in the Kidron/Wadi Nar. Third, separate or unilateral treatment in two different plants (either to treat all Israeli wastewater at Nebi Musa and all Palestinian wastewater at Wadi Nar and or to treat all Jerusalem wastewater at Nebi Musa and Palestinian wastewater outside Jerusalem at Wadi Nar) are also economically viable but have significantly less returns compared to the one-plant solution. Fourth, wastewater treatment at the Jerusalem site results in negative returns. Fifth, the contingent valuation showed a preference towards a wet river.

The paper further argues that different institutional options may be possible for the various physical options. A joint treatment plant (one-plant solution) could be operated by joint management or outsourcing. The two-plant solution would have to be pursued by coordinated management or by coordinated management with an outsourcing arrangement. Any unilateral solution would be done by separate management (and could also involve outsourcing). These different options were then evaluated in MCDA for political feasibility.

The MCDA shows that from the point of view of political feasibility, despite the potential benefits of cooperation, a one-plant solution (be it on the basis of joint management or outsourcing) has so far not been possible and it is highly unlikely that the optimal Kidron/Wadi Nar solution will be adopted any time in the near future. Instead, the option which prompts at least lesser objections from influential stakeholder groups would be a two-plant solution in which Jerusalem’s wastewater is treated in the neighboring Og/Muqalek basin and the remaining Palestinian wastewater in the Kidron/Wadi Nar basin. It might be easiest to reach agreement on this solution if it is based on an outsourcing arrangement, given that such a system has the potential of being run and maintained effectively by a third party, but even for this solution, the likelihood of adoption is not very high. Unilateral action is also not very likely given the free-riding problem. The political feasibility findings are certainly influenced by the rather problematic geopolitical setting of the Israeli-Palestinian conflict given the depth of lack of trust when it comes to coordinated or joint management.

Overall, the paper thus shows that even if there are clear benefits from cooperation, this may not suffice to prompt cooperation under conditions of conflict and distrust.