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Title : Salinity Constraints to Different Water Uses

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Water and soil salinity are normal hazards in many parts of the coastal area, affecting different uses of water including irrigation, drinking water, household uses, fisheries and functioning of the ecosystem. The present case study is an attempt to delineate the salinity problems in surface water and groundwater, assess the impacts of water salinity on multi-purpose use of water and assess better water management options in terms of source and use, in Tripalli (Kakuibunia-Chinguri) small-scale water resources subproject of LGED, located in Patgati Union of Tungipara Upazila in Gopalganj. The methodology of the study includes application of a range of PRA tools and direct measurement of salinity in different sources.

Salinity in the Sailadaha river starts increasing above the tolerable limits (drinking water standard) from late April and becomes about 3 times the level of April in June. Salinities inside and outside the Kakubunia regulator gate on a particular date are very similar, implying that the gate is not functioning well. From the end of April till the beginning of June, the salinity level is considerably higher than drinking water standards as well as the standards for irrigation water. Salinity levels of groundwater at shallow depths (65-70 ft) are low, whereas salinity levels at deeper depths (840-1350 ft) are very high (from 3000 to > 4000 $\mu\text{S}/\text{cm}$). This is a concern since the hand-tube wells lower at deeper depths is the only source of drinking water in the study area.

Salinity in Kakuibunia canal has been a constraint to irrigation water use, mainly for irrigated boro and aus crops, and also for rabi crops. Salinity has caused considerable yield reduction over the last 4 years, the reduction being from 5-5.5 ton/ha to 2-2.5 ton/ha for boro and from 4.5-5 ton/ha to 2.5 ton/ha for aus. There is a lack of awareness among local people about the salinity problems associated with domestic use. However, people could relate a number of health related problems to salinity, such as diarrhoea, fever, high blood pressure, gastric problem, skin problem, etc.

It is the people's perception that the salinity level in the river has increased over the past few years due to decreased freshwater flow from upstream, which has had negative impacts on fresh water fish. Inside the study area, fishes found in the low lying areas are decreasing due to the intrusion of saline water.

One of the important management options is repairing the regulator gate. There is a lack of initiative from the WMCA, which needs to be resolved. Other possible management options in the study area could be the techniques that require relatively minor changes, such as application of Gypsum (farmers are already doing it), plantation of leguminous crop like Dhaincha (some farmers are doing it), more frequent irrigations, selection of more salt-tolerant crops, additional leaching, heavy pre-plant irrigation, and enhanced fertilization (depending on the soil quality). There is a clear need of raising awareness among the people about health issues associated with high salinity levels. DPHE and NGOs can play a big role in this regard. DPHE needs to play a bigger role in exploring suitable locations for tube-wells, which need to be tested and monitored on a regular basis. Rainwater harvesting can be an alternative source of water.