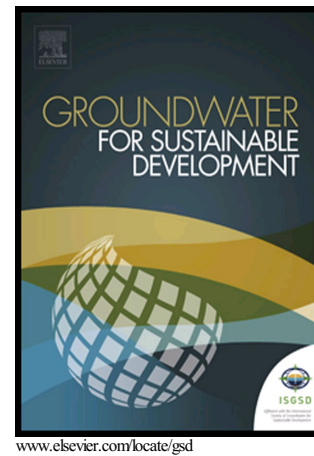


Is depletion of groundwater table linked with disappearance of traditional water harvesting systems (tank irrigation)? Empirical evidence from West Bengal, India

Koushik Chowdhury, Bhagirath Behera



PII: S2352-801X(17)30161-3
DOI: <https://doi.org/10.1016/j.gsd.2018.05.007>
Reference: GSD131

To appear in: *Groundwater for Sustainable Development*

Received date: 9 October 2017
Revised date: 14 April 2018
Accepted date: 29 May 2018

Cite this article as: Koushik Chowdhury and Bhagirath Behera, Is depletion of groundwater table linked with disappearance of traditional water harvesting systems (tank irrigation)? Empirical evidence from West Bengal, India, *Groundwater for Sustainable Development*, <https://doi.org/10.1016/j.gsd.2018.05.007>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Is depletion of groundwater table linked with disappearance of traditional water harvesting systems (tank irrigation)? Empirical evidence from West Bengal, India

Koushik Chowdhury, Bhagirath Behera

Department of Humanities and Social Sciences, Indian Institute of Technology Kharagpur,
Kharagpur, West Bengal - 721302, India

totongeo@gmail.com (K. Chowdhury),

bhagirath9@gmail.com (B. Behera).

*Corresponding author.

Abstract

The present study aims to identify and analyse the factors responsible for the decline of irrigation tanks and depletion of groundwater table in the Indian state of West Bengal, and attempts to establish the link between age-old water harvesting structures such as tanks (surface water) and groundwater recharge. Using district level secondary data for the period 1992-2011 a fixed effect and dynamic panel regression models have been estimated in order to identify the determinants of performance of irrigation tanks and decline of groundwater table respectively. The results indicate that while average annual rainfall positively influence the performance of irrigation tanks, mechanization of farm, density of wells, increased rural population and per capita income adversely influence the performance of tanks. The results of the determinants of decline of groundwater table suggest that while average annual rainfall, density of tanks and forest cover are likely to influence groundwater table positively, density of wells is found to be adversely affecting the groundwater table in the state. The interaction between tank irrigation (surface water) and groundwater table is found to be strong. Hence, both tank irrigation and well irrigation should be used as complementary rather than substitute in order to maintain hydrological balance, and use and manage water resources sustainably in the long run.

Graphical abstract

Download English Version:

<https://daneshyari.com/en/article/8870509>

Download Persian Version:

<https://daneshyari.com/article/8870509>

[Daneshyari.com](https://daneshyari.com)