

SOCIOECONOMIC MODEL OF ARSENIC MITIGATION: A CASE STUDY in INDIA

SUSHANT SINGH¹ AND NEERAJ VEDWAN²

¹Department of Earth and Environmental Studies, Montclair State University, New Jersey, 07043, US.

(*Correspondence: sushantorama@gmail.com)

²Department of Anthropology, Montclair State University, New Jersey, 07043, US.

(Email: vedwann@mail.montclair.edu)

Widespread groundwater Arsenic (As) contamination is one of the biggest challenges to the policy makers in ensuring As-free potable water to more than 10 million people in the Mid-Gangetic Plain (*MGP*) in India. The central goal of this study is to develop sustainable, community-based, socioeconomic models of As mitigation. A total of 340 households covering a population of about 2500 were surveyed in three As-affected villages in the *MGP* in Bihar, India. A stratified sampling method was applied to conduct the socioeconomic survey. Rainwater harvesting units, arsenic treatment units, deep tubewells, open dugwells, and piped water supply systems were evaluated as sustainable As mitigation options. This is the first time that we would be applying a *Decision Tree Model (DTM)* to develop socioeconomic models of As mitigation using WEKA (The Waikato Environment for Knowledge Analysis), a machine learning technique, popularly known as data mining tool for data analysis and statistical modeling by java-based algorithms. The *DTM* predicts sustainable As mitigation solution for specific communities based on their socioeconomic conditions. The models produce visual outputs in graphical form, which are easy to understand and interpret by the decision makers.