

IMPACT OF GROUNDWATER DEVELOPMENT IN THE URBAN AREAS OF NORTHWEST INDIAN HIMALAYAS: CASE STUDIES IN SUSTAINABLE DEVELOPMENT FOR LEH AND THOISE IN LADAKH HIMALAYAS

Arya Ritesh, Geo-Facts International, Kasauli - 173204 India

Urban areas in north west Indian Himalayas since time immemorable have been developed either on banks of banks of rivers or natural springs. In some cases water is lifted from the streams or rivers to meet the ever increasing demand due to anthropogenic explosion. Prior to 1980's water supply schemes were based on surface water resources only. However these failed to meet the growing water requirement both in qualitative and quantitative aspect. In summers, due to silting and flooding in higher Himalayas due to melting of snow the quality deteriorates on one hand and there is scarcity in lesser Himalayan, plainer and peninsular regions due to drying up of source due to high temperatures on the other hand. In rainy season there is silting and flash flooding and in winters there is scarcity due to freezing problem. As a result water supply schemes based on surface water turn out to be a big failure. In early 1990's detailed studies carried to explore groundwater resources to meet the water requirement of Leh and Thoise (Air Force stations to sustain life at Saichen glacier, which is the highest and the most costliest battlefield in the world, at an altitude of more than 3000 meters above mean sea level) towns, on the banks of river Indus and Shyok respectively in the Ladakh Himalayan. Based on detailed study of more than 5000 borewells these pilot projects (lie in the hydro-stratigraphic zones identified in Himalayas by Arya, 1996) shows that the development of groundwater resources is more economical and sustainable in comparison to surface water resources, in urban towns of northwest Indian Himalayas.