GROUNDWATER IN HIGH ALTITUDE, COLD, MOUNTAIN DESERTS OF INDIAN HIMALAYAS: SUSTAINABLE SOLUTIONS FOR 3rd MILLENNIUM.

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Present paper for the first time emphasise the need for groundwater development in arid and semi arid climatic zones in high altitude, cold mountain deserts of Indian Ladakh Himalayas for sustainable development. Prior to this study the enter Ladakh and Lahaul Spiti regions of the northwest Indian Himalayas were considered to be devoid of any considerable groundwater resource potential. Entire planning to solve drinking water in this cold desert at an altitude of more that 11,000 feet were based on tapping of surface water resources from Indus and Satluj river respectively for meeting the basic drinking water requirement. However due to silting in summers and freezing problem in winters, the entire system of water distribution was a big failure. Detailed studies carried out for Tibetan Sonamling Settlement at Choglamsar, at an altitude of more than 11,000 feet above mean sea level showed that the drinking water problem which was persistent in the settlement for the last 50 years (this was the time when Tibetans fled Tibet, following Chinese aggression in 1959, and started settling in the glacio-fluvial deposits on the banks of river Indus, which represents the Indus Tsangpo Suture zone) was solved in one year in 1998, by exploring and developing groundwater resources. Pilot water project for the Tibetan government in Exile for His Holiness the Dalai Lama was sponsored by Water Aid, a charitable trust in England. The successful completion of this project shows that exploration and development of groundwater is the only solution to solve the water problem in the high altitude, cold, mountain deserts of the world on sustainable basis in the 3rd millennium.