Introduction:
The Energy has become the necessity of modern life. It is used in almost every sphere of our daily life. The concept of Power Generation from conventional way by burning coal/Naphtha has become the main problem of Global Warming across the Globe and hence climate change compulsion has forced the world to go for non carbon emission greatly through Renewable Energy (Solar PV, Small hydro, Wind Power, Biomass etc). Now India has got the installed capacity of 38GW out of total Installed capacity of 250 GW. Now Central Government has put target for Renewable Energy for 250 GW (Solar PV Grid tied mode 60 GW, Roof Top Solar 40 GW, Small Hydro-15 GW, Wind Power 100 GW). Now Small hydro projects (3 MW to 25 MW Range) are getting a target of 15GW. The major states under this small hydro projects are Himachal Pradesh, Uttaranchal, Arunachal Pradesh. Currently Himachal Pradesh is leading the race for installed capacity of 1500 MW out of total installed capacity of 4500 MW (33 Percent) due to continuous updating with respect to opportunity funding from India/International Funding and revving the scheme for more and more participation through private sector (local/Outside the state IPPs). Over a period of time from 1994 onwards various experimentation have prompted Pvt sector IPP to come to Himachal for Hydro Destination business hub. Himachal If we see the state specialty with respect to people, policy, climate, cultural heritage as well as tourist destination it is rightly placed to develop the power program purely hydro centric development planning and smooth implementation program. Let us see how it has started and see the inherent strength of the state resource.

In Darjeeling Sidrapong 630 KW small hydro plant was commissioned by the British for meeting the energy need. This project is still operational and now it is modified to higher capacity in frame size. In Mysore another small hydro project got commissioned in 1990s. The small hydro program development activity was initiated in Himachal Pradesh by the local Raja of Chamba (1906) who brought Hydro Turbine from Britain while returning to India after his study and Shimla Project by the British (1914) ruler. Both the projects are still operational. From the Ministry of New and Renewable Energy, The policy
initiatives have started from 1994 onwards by the Guidelines of the Nodal Ministry (MNRE) who is the main policy body to steer the National Hydro Policy. Himurja (State Agency for taking up Renewable Energy Activities under Central/State budget) is responsible to push the Central Govt policy with a little bit of modification to harness Small Hydro Projects in different capacities. In 1994 UNDP/GEF programs were taken up from GOI. In Himachal Pradesh 4 projects were taken up (800 KW at Raskat, 800 KW at Kinnor Velly, 800 KW at Rotang Vally, 250 KW at ....). These projects have shown the path to develop the small hydro projects in different parts of Himachal Pradesh especially at Dharmashala, Chamba, Rohru, Palampur, Kullu. The State Govt has pioneered different schemes for more and more private participation which in real sense grappled the IPP from other states (3 MW and above till 25 MW).

In this context, the research is being taken up for evaluation of development impact study kullu small hydro cluster where initiative has started in 1998 onwards. This huge success has created the Small hydro cluster for 40+ projects in a period (1994-2016) for taking up average 3-4 projects every year with a cumulative total of 262 MW cluster. Now 200+ projects are also allotted in last 2 years out of which 60+ projects are in Kullu valley. The Kullu Cluster is the largest small hydro cluster in Himachal Pradesh as well as In India context. The progress of the Project implementation was mainly due to Private Sector Intervention by State Agency (HIMURJA, Shimla) and Central Govt Agency (MNRE and Indian Renewable Energy Development Agency –A financing arm of MNRE) who has extended low cost fund support as well as International Funding assistance to avail tax incentives to the developers to cut down the project cost to the tune of 6-8 percent of the entire project cost.

The subject research proposal is focusing various development aspects (Techno Commercial, Investment, Infra facility including local support, proximity effect and other allied livelihood issue) of the small hydro project with respect to IPP perspectives. Out of 5 clusters in Himachal Pradesh (Chamba, Kullu, Manali Kangra, Palampur) Kullu is dominating in having max.
small hydro projects in project pipeline due to various reasons which will be highlighted separately.