

WATERMILLS REVITALISATION: THE UTTARAKHAND POTENTIAL

Session Theme:
Sustenance From Himalayan Waters

10TH WORLD RENEWABLE ENERGY TECHNOLOGY CONGRESS & EXPO-2019

DELHI INDIA, 21-23 AUGUST 2019

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PRESENTATION PLAN

- History of watermills in Uttarakhand (with data)
 - Tracing the tradition: milling in the village (when did electricity generation start?)
 - Advent of electricity: impact of power milling on small watermills
- The classification of watermills
 - Size classification (with power generation and milling data)
 - Ownership and governance (with data)
- Performance of watermills: Historical and current (with data)
- Policy on watermills (and changes over the years)
- Current and future potential: activities (with data, ie, milling, power generation and others)
 - Conditions required for optimal potential (Comparison with any neighbouring country data?)
- What is the expectation of Uttarakhand's watermills potential?
 - From the people
 - From the authorities (expect to link policy with community expectation here)
- Conclusion



History of watermills in Uttarakhand

- WROTE **V.A. STOWELL, DEPUTY COMMISSIONER OF GARHWAL IN 1953**”, TURN A LARGE NUMBER OF WATERMILLS (GHARAT OR GHAT) BY WHICH MOST OF THE GRAIN IN GROUND... IN A PARTICULARLY FAVORABLE STREAM WITH A STEEP COURSE, A CHAIN OF SIX OR EIGHT MILLS MAY SOMETIMES BE MET WITH IN THE SPACE OF A QUARTER OF A MILE OR SO, THE WATER BEING CARRIED ON IN A CONTINUING CHANNEL (GUL) FROM ONE MILL TO THE NEXT. MILLS ARE OFTEN PERMANENT, SOMETIMES STANDING AMONG IRRIGATED FIELDS AND WORKED BY THE FALL OF THE IRRIGATION CHANNEL; OFTEN, HOWEVER, THEY STAND AMONG THE GAVEL AND BOULDER BEDS OF THE LARGISH STREAM-BED AND WASHED AWAY ANNUALLY IN THE RAINS AND RE-ERECTED IN THE WINTER; OTHERS ON SMALL STREAMS LETS ONLY GET ENOUGH WATER TO WORK IN THE RAINS”.



DISTRICT WISE NUMBER OF WATER MILL SITES IDENTIFIED AND SURVEYED IN UTTRAKHAND

(Kumar, 2006)

Sr. No	District	No. of Sites
1	Chamoli	2589
2	Pauri	1031
3	Uttarakashi	0302
4	Tehri Garhwal	1035
5	Rudraprayag	0671
6	Almora	0073
7	Nainital	0238
8	Pithora Garh	2191
9	Dehradun	0120
10	Udamsingh	0002
11	nagar	0051
12	Champawat	0040
	Bageshwar	8343
	TOTAL	



DISTRICT WISE NUMBER OF WATER MILL SITES IDENTIFIED AND SURVEYED IN UTTARAKHAND

Based on a survey conducted, the status of existing water mill sites found is summarized as follows:

- Almost all the gharats are of vertical shaft type.
- Power output at individual gharat is found to be on average below 1.0 kW. This is particularly low because of very poor efficiency of existing system.
- About 60% of them are working regularly and 40% are seasonal or defunct.
- All are being used for grinding grains and manufactured locally.

(P.C. Behari, 2014)



CLASSIFICATION OF HYDRO POWER PROJECT

Sr. No.	Category	Government	Administered/ financed differently by different bodies	Generation Capacity
01	Large size Hydro Power Plant	Central Government (National Hydro Power Corporation) with the Share of State Government	Done by Central Government	>25 MW
02	Small Hydro Power Plants	Uttarakhand Jal Vidyut Nigam Ltd (UJVNL)	Done by State Government	>2MW to 25 MW
03	Mini & Micro Hydro Power Projects	UREDA and UJVNL	Both bodies are State Government	100 KW to 2 MW (Mini) <100 KW (Micro)
04	Gharats (Water Mills)	UREDA	State Nodal Agency of MNRE	1 KW to 5 KW

Studied only those projects which are operated and maintained by Local People

The District wise Upgraded Improved Watermill Details are as under (Till August 2013)

S.No.	District	Upgraded Water Mill		
		Electrical	Mechanical	Total
1	PAURI	59	3	62
2	Tehri	102	124	226
3	Chamoli	185	113	298
4	Uttarkashi	80	28	108
5	Rudarparyag	47	1	48
6	Dehradun	64	91	155
7	Nainital	90	21	111
8	Almora	36	6	42
9	Bageshwar	55	0	55
10	Pithoragarh	132	18	150
11	Champawat	47	39	86
Total		897	444	1341

Source: <http://ureda.uk.gov.in/pages/display/133-improved-watermill-programme>



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MINI & MICRO HYDRO PROJECTS : STATUS

Total Capacity : 13500 KW

S.No.	District	NUMBER OF MINI & MICRO HYDRO PROJECTS		
		Operational	Non-Operational	Total
1	PAURI	00	01	01
2	Tehri	01	00	01
3	Chamoli	04	09	13
4	Uttarkashi	05	03	08
5	Rudarparyag	02	01	03
6	Dehradun	00	00	00
7	Nainital	02	00	02
8	Almora	00	01	01
9	Bageshwar	05	16	21
10	Pithoragarh	04	05	09
11	Champawat	00	01	01
Total		23	37	60

(Source: As per UREDA, October 2018)



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OWNERSHIP & GOVERNANCE

- 99% OF MHPS ARE OPERATED AND MAINTAINED BY EITHER VEC (VILLAGE ELECTRICITY COMMITTEE) OR GOVERNMENT AGENCIES (UREDA AND UJVNL).
- GOVERNMENT AGENCIES EITHER OPERATE AND MAINTAIN ON ITS OWN OR LEASE IT TO A PRIVATE OPERATOR. PREVIOUSLY IT WAS UTTARAKHAND GOVERNMENT'S DISCRETION TO ALLOT NEW SHP'S EITHER TO UREDA OR UJVNL.
- BUT AT PRESENT, UREDA IS THE NODAL AGENCY FOR DEVELOPING MHP'S.
- UTTARAKHAND'S POLICY 2015 ON DEVELOPING MINI AND MICRO HYDRO PROJECTS UP TO 2MW INDICATES UREDA AS THE NODAL AGENCY FOR MHP'S.
- UREDA IS RESPONSIBLE FOR DEVELOPING HYDRO PROJECTS UP TO 2MW CAPACITY. ABOVE 2MW, IT IS UJVNL WHICH IS NODAL AGENCY FOR DEVELOPMENT OF HYDROPOWER PROJECTS.
- UJVNL HAS TRANSFERRED MANY PROJECTS WITH STATION CAPACITY LESSER THAN 2MW TO UREDA.



GOVERNANCE STRUCTURE OF UREDA

- TRIPARTITE AGREEMENT BETWEEN STATE GOVERNMENT, UREDA, GRAM SAMITI BEFORE THE DEVELOPMENT DECENTRALIZE PROJECTS FOR VECs.
- ALSO TRIPARTITE AGREEMENT BETWEEN UREDA, CONTRACTOR/ PROJECT DEVELOPER AND GRAM SAMITI DURING PROJECT DEVELOPMENT OF DECENTRALIZED PROJECTS FOR VEC.
- THERE ARE TWO MODES OF PROJECT OPERATION
 - DECENTRALISED MODE
 - GRID CONNECTED MODE



GOVERNANCE STRUCTURE OF UREDA

Central Financial Assistance for Watermills and Micro Hydel Projects

•Watermills:

S. No.	Capacity of Watermill	Amount of CFA
1.	Mechanical output only	Rs. 35,000/- per Watermill
2.	a) Electrical output (up to 5 kW) or, b) Both mechanical and electrical output (up to 5 kW)	Rs. 1,10,000/- per Watermill

•Micro Hydel Projects up to 100kW Capacity:

S. No.	Areas	Amount of CFA
1.	International Border Districts (excluding Arunachal Pradesh as it is already covered under the PM package)	Rs. 1,00,000/- per KW
2.	North Eastern and Special Category States (other than 1 above)	Rs. 80,000/- per KW
3.	Other States (other than 1 above)	Rs. 40,000/- per KW

Note: A minimum contribution of 10% of project cost for North Eastern and Special category State (S. No. 2) and 20% for other states (S. No. 3) should be met by the beneficiaries/project owners.



GOVERNMENT INITIATIVES FOR WATER MILL DEVELOPMENT

- GENERALLY, OWNED BY INDIVIDUALS ON LEASE OR RENT. GOVERNED BY REVENUE DEPARTMENT
- GOVERNMENT INITIATIVES TO RE-ENERGISE THE WATER MILLS (GHARATS)
- OPERATION SELF HELP GROUPS (SHGS):
 - INITIATIVE OF RURAL DEVELOPMENT DEPARTMENT
 - 15717 SHGS FORMED : OF THESE 6,144 ARE EXCLUSIVE WOMEN, 4679 OF MEN, 2788 OF SC & 810 OF ST
 - EACH SHGS HAS GROUP MEMBERS BETWEEN 7 TO 20 MEMBERS.
- WATER MILLS CAN BE OWNED & OPERATED BY LARGE NUMBER OF SHGS WITH FINANCIAL ASSISTANCE FROM COMMERCIAL BANKS, WITH SUBSIDIES FROM UREDA, KVIC/KVIB, MNES (NOW MNRE), INDUSTRIES DEPARTMENT, URBAN DEVELOPMENT DEPARTMENT.
- AT THAT TIME, GOVERNMENT OF UTTARAKHAND ENVISAGED TO PROVIDE EMPLOYMENT TO 5,00,000 PERSONS IN FIVE YEARS CAN BE ACHIEVED BY ACTIVATING GHARAT INSTALLATION AND MAINTENANCE ACTIVITIES.
- STANDARDIZATION OF GHARAT INCLUDING MAINTENANCE & SERVICING ETC.



UREDA INITIATIVES - I

- **HYDRO POWER INITIATIVES OF UREDA:**
 - SMALL HYDRO PROJECTS (SHPS): 37 ARE NON OPERATIONAL OUT OF 60
 - UPGRADATION OF WATER MILLS: 1341 ARE UPGRADED OUT OF 15,000 GHARATS IDENTIFIED
- WATER MILL ASSOCIATION WAS FORMED IN CHAMOLI, DEHRADUN, RUDRAPRAYAG, UTTARKASHI, TEHRI GARHWAL.
- WATER MILL DESIGN DEVELOPED UNDER UNDP-GEF PROJECT
- G.O. WAS ISSUED BY CHIEF SECRETARY ON JANUARY 2003:
 - REVIEW BY DISTRICT MAGISTRATE (DMS) OF UTTARA BAHUUDDESHIYA SEWA KENDRAS AND IMPLEMENTATION OF ITS ACTION PLAN AT THE DISTRICT LEVEL.
 - CONSTITUTION OF DISTRICT REVIEW COMMITTEE CONSISTING OF CDO, DFO, GM, DIC & PROJECT OFFICER UREDA.



UREDA INITIATIVES - II

- ACTION PLAN FOR DISTRICT CAMPAIGN
 - ENLISTING OF GHARATS
 - ONE DAY TRAINING OF GHARAT OWNERS
 - COLLECTION OF APPLICATIONS FROM GHARAT OWNERS
 - CONNECTING WITH AUTHORIZED ACCREDITED NGO
 - TRIPARTITE AGREEMENT AMONG APPLICANT
 - MONTHLY PROGRESS REPORT
- FORMATION OF GHARAT OWNERS ASSOCIATION AT THE BLOCK LEVEL AND DISTRICT
- ACCREDITATION OF THESE ASSOCIATIONS AS UTTARA BAHUUDDESHIYA SEWA KENDRAS AT BLOCK AND DISTRICT LEVEL
- COORDINATION WITH TECHNICAL INSTITUTIONS FOR UREDA & GHARAT MOVEMENT
- SELECTION & TRAINING OF GHARAT PARA-TECHNICIANS AT THE BLOCK-LEVEL
- SELECTION & HAND HOLDING OF NGOS
- DOVETAILING WITH GHARAT MOVEMENT WITH VARIOUS RURAL DEVELOPMENT SCHEMES.
- DEVELOPING MARKETING LINKAGES
- CREDIT LINKAGE WITH KVIS/KVIB & PRADHAN MANTRA ROJGAR SCHEME
- CONSTITUTION OF STATE-LEVEL REVIEW MECHANISM
- ESTABLISHMENT OF ONE DISTRICT CENTER OF EXCELLENCE FOR GHARATS FOR EACH DISTRICT.



PROJECTS STUDIED

WATER MILLS

- SAHASPUR
- THAN GAON
- KOTI
- DHALANI
- HESCO

MINI & MICRO HYDRO PROJECTS

- RAMGAAD, NAINITAL
- KARMI, BAGESHAR
- LAMBAGAD, BAGESHWAR
- SATESWAR, PITHORAGARH
- TALUKA, UTTARKASHI

MEETINGS AND INTERVIEWS

- GRAM PRADHAN
- HESCO
- UREDA
- UJVNL
- AHEC
- EXPERTS
- EX. CHIEF SECRETARY, GOVERNMENT OF UTTARAKHAND
- VILLAGE ENERGY COMMITTEE
- GHARAT OWNERS
- VILLAGERS



PEOPLE'S VOICES

- NEED HELP TO SCALE UP THE GHARAT ACTIVITIES
- BUILDING NETWORK OF NEIGHBORING GHARATS
- CANAL GETS DAMAGED EVERY RAINS
- LOCATION DOESN'T ALLOW PEOPLE TO COME FOR GRINDING
- LACK OF PROPER ROAD CONNECTIVITY
- WEAK DEMAND FOR GHARAT PRODUCT
- LACK OF SUPPLY CHAIN OF SPARE PARTS
- INCREASING DEMAND FOR ENERGY
- LIGHTING VS ELECTRICITY AS SERVICE
- WORKING OF VEC IS NOT TRANSPARENT
- MISUSE OF FACILITY



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POTENTIAL ACTIVITIES

- GHARATS PRODUCT CAN BE BRANDED AND SCALED UP
- NETWORK OF DEFUNCT GHARATS CAN BE BUILT AFTER MODERNIZATION
- GOVERNMENT HANDHOLDING IS NEEDED AT ALL THE LEVELS:
 - IN RESTORING THE PLANTS
 - OPERATION AND MAINTENANCE
 - DEVELOPMENT OF MARKET LINKAGES
 - CONNECTING WITH MARKET
- GHARAT AND TOURISM
- GHARAT/WATER MILLS AND FISHERIES
- GHARATS AND ANGLING
- COTTON SPINNING AT GHARATS
- BAKERY AND GHARAT



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PEOPLE'S EXPECTATIONS

- MONETARY BENEFITS FROM WATER MILLS
- SHOULD BE ABLE TO PROVIDE SUFFICIENT LIVELIHOOD
- GHARATI IS LOSING ITS PROUD BEING GHARATI
- MINI & MICRO HYDRO PROJECTS ARE LOSING THEIR RELEVANCE BECAUSE OF GRID ELECTRICITY NETWORK
- STAND ALONE PROJECTS SHOULD BE LEVERAGED BY THE GOVERNMENT
- GOVERNMENT SUPPORT AND HANDHOLDING
- CAPACITY BUILDING OF GHARAT OWNERS
- SUPPORT FOR ENTREPRENEURS

AUTHORITIES EXPECTATIONS

- PEOPLE PERCEPTION TOWARDS GOVERNMENT SCHEMES
- EFFORTS DOESN'T SUSTAIN AFTER THE GOVERNMENT SCHEME
- PEOPLE ARE TOO MUCH SPOON FEEDING
- ATTRACTIONS FOR CITIES IN RURAL AREAS NEED TO BE REDUCED
- MORE FOCUS SHOULD BE ON INDIVIDUAL DRIVEN PROJECTS RATHER THAN COMMUNITY DRIVEN



RECOMMENDATION & CONCLUSIONS

- **MAP ALL WATER MILL DISTRICT & BLOCK-WISE**
- **UNDERSTANDING THE CHANGE IN SOCIAL FABRIC IN HILLS**
- **BETTER/MORE LIVELIHOOD OPTIONS AVAILABLE**
- **INTEGRATING GHARATS AND MINI & MICRO HYDRO PROJECTS**
(WHEREVER IS POSSIBLE)
- **LEVERAGING EXPERTISE AND RESOURCE OF EDUCATIONAL INSTITUTIONS**
- **INTEGRATING VARIOUS PRODUCTIVE ACTIVITIES TO MAKE SUCH ACTIVITIES**
 - **ECONOMICALLY VIABLE**
 - **BANKABLE**
 - **MORE ENGAGEMENT FOR COMMUNITIES**
- **INTEGRATION OF OTHER GOVERNMENT DEPARTMENT**
- **NEED FOR SETTING UP A NEW VALUE CHAIN OF COMMUNITY**

BASED HYDRO POWER PROJECTS



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