

Springshed Management
Consortium

Appraisal of Springshed Management
Structure for Springs in Uttarakhand:

Recommendations for
Desirable Change

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LIST OF ABBREVIATIONS

APCCF	Additional Principal Chief Conservator of Forests
BAIF	Bhartiya Agro-Industries Foundation
BMC	Biodiversity Management Committee
BMZ	German Federal Ministry for Economic Cooperation and Development
CAMPA	Compensatory Afforestation Fund Management & Planning Authority
CBED	Centre for Business and Entrepreneurial Development
CCF	Chief Conservator of Forests
CEO	Chief Executive Officer
CFD	Centre for Forestry Development
CGWB	Central Ground Water Board
CHIRAG	Central Himalayan Rural Action Group
COVID	Corona Virus Disease
CSR	Corporate Social Responsibility
DFO	Divisional Forest Officer
DTR	Detailed Technical Report
DWSC	District Water & Sanitation Committee
EDC	Eco Development Committee
FES	Forest Ecosystem Services
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GOI	Government of India
GoUK	Government of Uttarakhand
GP	Gram Panchayat
GSI	Geological Survey of India
HESCO	Himalayan Environmental Studies and Conservation Organisation
HNBGU	Hemvati Nandan Bahuguna Garhwal University
HoD	Head of the Department
HoFF	Head of Forest Force
HP	Himachal Pradesh
HPFD	Himachal Pradesh Forest Department
IFS	Indian Forest Services
IHR	Indian Himalayan Region
IIRS	Indian Institute of Remote Sensing
ISFR	India State of Forests Report
IT	Information Technology
JJM	Jal Jeevan Mission
MASL	Metre Above Sea Level
NABARD	National Bank for Rural Development
NGO	Non-Governmental Organisation
NIH	National Institute of Hydrology
NTFP	Non-Timber Forest Produce

NTTI	National Institution for Transforming India
NREGS	National Rural Employment Guarantee Scheme
PCCF	Principal Chief Conservator of Forests
PMGSY	Pradhan Mantri Grameen Swarojgar Yojna
PSI	People's Science Institute
PWD	Public Works Department
RD	Rural Development
SMC	Springshed Management Committee
SRTT	Sir Ratan Tata Trust
UK	Uttarakhand
UKFD	Uttarakhand Forest Department
UP	Uttar Pradesh
VP	Van Panchayat
VWSC	Village Water & Sanitation Committee
WATSAN	Water & Sanitation
WMD	Watershed Management Department
WPO	Working Plan Officer



EXECUTIVE SUMMARY

The Indo-German development cooperation project ‘Sustainable Management of Forest Ecosystem Services (FES)’ Project is being implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in India, on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) in partnership with the Indian Ministry of Environment, Forest, and Climate Change (MoEF&CC) at the national level and the forest departments of Himachal Pradesh (HPFD), Uttarakhand (UKFD), Madhya Pradesh (MPFD) and Uttar Pradesh (UPFD) at the state level. The project aims to strengthen forest and agroforestry management to integrate the Forest Ecosystem Services (FES) approach with emphasis on water availability.

A recent study was commissioned by GIZ India in the state of Uttarakhand, to critically analyse the institutional structure and the role of various departments and associated stakeholders for the Springshed Management Consortium (SMC). The study was instrumental in the formulation of a four-tier structure of the SMC to be established, from State Government level at the apex for the policy decisions, to the Gram Panchayat level bodies for implementation and sustainable management of springs and springsheds. This report highlights the need of springshed management in the Indian Himalayan Region (IHR) based on experiences gathered in Uttarakhand. It outlines a series of recommendations aimed at establishing an institutional framework that promotes inclusive springshed management which can be upscaled in the IHR. These recommendations focus on anchoring relevant stakeholders to ensure the effective management of springs, taking into account the unique characteristics and challenges of the region.



01 BACKGROUND

Recognising the significant dependence of the human population on springs in Uttarakhand, it was deemed necessary to conduct a comprehensive examination of its management. Consequently, GIZ India commissioned a study to thoroughly assess the technological, financial, institutional and capacity development gaps in the management of springs and their associated institutions in Uttarakhand. This study incorporates inputs from various stakeholders, including government officials, civil society representatives, and other relevant bodies. Additionally, the report draws on the experiences of the author, who is affiliated with SMC in Uttarakhand.

The report presents a set of recommendations to policymakers, aiming to support and guide efforts in strengthening the management and governance of springs in Uttarakhand. It proposes a closely knit, four-tiered mechanism involving the state government, line departments, civil organisations, the private sector and the local community. This multi-stakeholder approach is designed to ensure effective management of springs. Furthermore, the report suggests the establishment of cross-sectoral partnerships to manage water resources, aligning with the government's vision and policies. It emphasizes the need for collaborative efforts to address water management challenges comprehensively.

The report has the potential to serve as a valuable policy tool that can be replicated in other states within the IHR, facilitating the management of springs in those areas. By disseminating the findings and recommendations of this report, policymakers and practitioners in other regions can adopt and adapt successful strategies and approaches to spring management. This replication would contribute to the sustainable management of water resources and the preservation of the delicate ecosystems of the IHR.

1.1 SCOPE OF STUDY

The study was performed in close cooperation with the GIZ India team and the Uttarakhand Forest Department. The core tasks of the study included:

1. Documentation of current institutional structures of the SMC along with roles of the associated government line agencies, Non-Government Organizations and other relevant stakeholders.
2. Documentation of achievements by the SMC for management of springsheds in Uttarakhand till date.
3. Scope for strengthening of the SMC (its institution, functioning, stakeholders etc.) focusing on current issues, gaps, and challenges in the overall functioning of SMC for management of springsheds.
4. Presentation of the above-mentioned findings based on consultations with the State Forest Department, Government of Uttarakhand and other associated stakeholders.
5. Provide recommendations for improving and enhancing replicability, functioning, institutional mechanism, funding or any other constraints related to SMC.



02 ABOUT UTTARAKHAND

Uttarakhand, the 27th state of the Republic of India, lies between latitudes 28° 43' & 31° 28' North and longitudes 77° 34' & 81° 03' East. It was carved out of the state of Uttar Pradesh (U.P.) on 9 November 2000, consisting of 13 districts. The geographical area of the state is 53,483 sq. km and the terrain and topography of the state is largely hilly, with large snow covered and steep slope areas. The State of Uttarakhand is of great importance for sharing its boundaries internationally with the countries of Nepal and China (Tibet) and has a major impact on the overall water flow towards other states lying downstream.

The State can be divided into three physiographic zones as follows:

- The Himalayas
- The Shivaliks
- The Terai

The climate is mostly temperate and partially tropical in some areas, with an average annual rainfall of 1,550 mm. Primarily, there are four major river systems viz. Ganga, Yamuna, Ramganga & Sharda originating from the State along with their tributaries. These are major sources of water for drinking, irrigation and hydropower. A significant contributor to the wealth of the state is its forests which are rich in biodiversity. As per an estimate using the 'Water Yield: Reservoir Hydropower Production Model', the total water yield volume for Uttarakhand has been estimated to be 10.46 billion cubic meters (Madhu Verma et. al, 2018). This estimate, however, does not include the consumption as per land use.

A unique feature of the management of forests in Uttarakhand is the community managed forests called Van Panchayats, and this kind of a system is probably the first of its kind in India. The earliest demarcation of forests in the region started off under the British rule in Nainital and Almora districts, with the notification of Forest Reservation Act, 1877. After forest settlement period (1911-17), the management of 'A' & 'B' class forests were kept under control of the forest department, while 'C' class forests were placed outside the forest department's control. The term 'Van Panchayat (VP)' was coined in the year 1921 when these forests were created after the submission of Forest Grievances Report, 1921. Van Panchayat Village Forest Council now stands as an autonomous local institution created for managing village forests. Van Panchayats were formed in close vicinities with villages for sustainable management of forests and their natural resources. Uttarakhand has registered 12,089 VPs that manage around 7350 sq. km. of forests (Uttarakhand Forest Statistics, 2017-18). Therefore, the role of communities is important for where VP institutions can be directly linked to sustainable management of natural resources like water & biodiversity, meeting goals of climate change mitigation and development of green economy to fulfil the Sustainable Development Goals (SDGs) related to forests. In addition, these institutions can play a major role in sensitising the communities towards gender empowerment & equality and an equitable distribution of resources including the deprived.

2.1 FORESTS OF UTTARAKHAND

Uttarakhand, a state in the Western Himalayas, is rich in forests with a total forest area of 37,999.53 km² under 40 different forest types & subtypes, covering around 71% of its total geographical area. As per the Indian State of Forest Report (ISFR) 2021, the forest and tree cover in Uttarakhand is 24305.13 km² which is 45.44% of its total geographical area.

The Forest Department of Uttarakhand has 25863.18 km² of forests under its administrative control which is 68% of the total forest area and 48% of the total geographical area of the State (Uttarakhand Forest Statistics-2017). The number of recorded flora and fauna found in Uttarakhand are 6824 and 4908 respectively (Arun Kumar et al., 2011).

In mountainous areas, the altitude broadly defines the eco-climatic conditions and the resulting biodiversity and production systems. On the basis of this, the State can be broadly categorised into four strata as given below:

Table 1: Altitude zonation of the Himalayas of Uttarakhand

Altitude (masl)	Corresponding climate zones	Socio-ecological features
<1000 (low)	Subtropical	Includes agricultural and most densely populated areas; sub-tropical broad-leaf forests
1000–2000 (mid)	Warm temperate	Intermixed forest and agriculture landscape; extensive forests of pine species; maximum hill settlements
2000–3000 (high)	Cool temperate	Broad-leaf and conifer forests; agriculture and horticulture (not extensive); practice of cattle transhumance
>3000 (very high)	Alpine	Sub-alpine forests; alpine meadows (nomadic pastoralism—sheep and goats); high altitude agriculture

2.2 FOREST ECOSYSTEM SERVICES IN UTTARAKHAND

Forests are a source of various tangible benefits such as timber, fuel wood, pulpwood, fodder, fibre, grasses, Non Timber Forest Products (NTFPs) etc., which support many industrial & commercial activities. They also provide many intangible benefits like maintaining biodiversity, supporting wildlife, maintaining & improving soil quality and soil moisture regime, sustaining other life-support systems essential for food production, human health, producing clean air etc. by a continuous ecological balance.

The protected and conserved stock of Uttarakhand's forests have been evaluated at Rs. 14,13,676.20 crores annually, which includes timber value, carbon stock and cost of land (Madhu Verma et al., 2018). The forests of Uttarakhand are estimated to provide ecosystem services worth Rs. 95,112.00 crores annually at the rate of Rs. 3,88,085.00/ha/annum (Madhu Verma et al., 2018).

In view of the value of these ecosystem services it can be inferred that forests cannot be judged just from their commercial benefits, but for providing far more vital services for sustaining life on earth.





03 SPRINGSHEDS & THEIR IMPORTANCE

Forest hydrology plays a crucial role in influencing water availability in the watershed, both qualitatively and quantitatively. It also regulates the surface and ground water flows and helps prevent desertification of land. The average contribution of glacial melt to the Ganga River System is around 32%. (Maurya et. al. 2010), with the remaining water flow available in the river systems emanating from forest areas. In Uttarakhand, majority of the springs are found in forest areas; though the baseline data for the same is not available. Perennial springs sustain the flow of streams and rivers, both in the rainy and dry seasons. Any significant depletion in the spring's flow will have a definite impact on the water flow of rivers.

Springs are a type of natural water source that occurs when groundwater flows to the earth's surface due to water pressure. When rainwater refills the groundwater aquifer, pressure is exerted on the water already present. This pressure moves the water through the aquifer's cracks and tunnels, and it flows out naturally to the surface at spring locations. However, these essential resources are threatened, and spring discharge is decreasing due to environmental degradation, land use changes, and climate variability. In Uttarakhand, over 90% of water supply is from springs (Environmental Management Framework, State Water and Sanitation Mission, September 2005). NITI Aayog's resource book called 'The Status of Springs in the Himalayas' revealed the declining discharge of springs and called for a scientific management approach to the Springsheds in the IHR. Reviving the drying springs of Uttarakhand and ensuring their year-round flow is highly recommended.

3.1 Need for Springshed Management

In the Himalayan region, about 60 percent of the local people depend on springs for meeting their water requirements (NITI Aayog, 2018). In recent years, a variety of natural and manmade environmental issues have increased the vulnerability of these valuable water resources. Despite being endowed with adequate rainfall, most parts of the Himalayas are considered water-stressed for both agricultural and domestic purposes. Water scarcity in the hilly areas of Uttarakhand has hindered growth and development while also contributing to significant ecological damage. It is essential to revive and rejuvenate springs in the State considering their importance for biodiversity and meeting the water requirements of people, as more than 94% of rural water supply is driven through spring fed systems (Suman Vij et al., 2021).



04 SPRINGSHED MANAGEMENT CONSORTIUM

With a majority of Uttarakhand's landmass falling under the forest category, the Forest Department recognised the need for springshed management in the state. In recent years, several non-governmental organizations (NGOs) in the Himalayan region have adopted spring revival efforts based on hydrogeological principles, becoming widely accepted models of springshed management. CHIRAG, a prominent Uttarakhand-based NGO, published an inventory of 948 springs in 8 districts of the state titled 'Spring Atlas of Uttarakhand' in 2009. Other organizations such as People's Science Institute (PSI), Himmothan, and Bhartiya Agro-Industries Foundation (BAIF) have also made significant contributions towards building up the context, based on the success of pilot work in their respective project areas with community involvement.

An SMC was constituted after a series of meetings with various government agencies, including the Uttarakhand Forest Department, NGOs, research institutions, universities and individual experts working for the improvement of water sector in the State.

An expert consultation meeting on 'Spring Management and Ground Water Recharge for Biodiversity Conservation and Sustainable Livelihood in Uttarakhand' was held on 14 September 2018, under the chairmanship of the Principal Chief Conservator of Forests (PCCF), Head of Forest Force (HoFF), Uttarakhand. The meeting was based on the report titled 'Resource Book on Springshed Management in the Indian Himalayan Region' published by NITI Aayog, Government of India (GoI) on 9 July 2018. The meeting was attended by representatives from various government line departments, NGOs, and experts who discussed ways to manage and conserve springs in Uttarakhand for biodiversity conservation and to meet the water requirements of local people.

An agreement was reached to enhance coordination among stakeholders for effective management of springsheds in Uttarakhand. The meeting concluded that the Uttarakhand Forest Department should spearhead efforts to establish close coordination between the forest department, other line departments and NGOs to ensure the conservation of springs..

As a follow-up to the decision made, the Uttarakhand Forest Department issued an office order on 2 November 2018, establishing the SMC. The consortium is a 20-members committee with scope of including more experts and institutions in the future as needed.

Table 2: List of members of the Springshed Management Consortium in Uttarakhand

S.No.	Name and Department	Designation
1.	PCCF (HoFF), Uttarakhand	Chairperson
2.	PCCF/APCCF, Planning and Financial Management	Vice Chairperson
3.	PCCF, Van Panchayats, Uttarakhand	Member
4.	Addl. PCCF, Uttarakhand CAMPA	Member
5.	CCF, Administration, Uttarakhand	Member
6.	CCF, Garhwal, Uttarakhand	Member
7.	CCF, Kumaon, Uttarakhand	Member
8.	CCF, Environment & Climate Change, Uttarakhand	Member
9.	CCF, Monitoring and Evaluation & Audit	Member
10.	CCF, Publicity and Extension, Uttarakhand	Member
11.	Shri S.T.S. Lepcha, IFS (Retd.), Uttarakhand	Member
12.	Shri Jagat Singh Jangli, Brand Ambassador, UKFD	Member
13.	Himalayan Environmental Studies and Conservation Organization (HESCO)	Member
14.	Head of Department, Department of Rural Technologies, Hemvati Nandan Bahuguna Garhwal University (HNBGU) Srinagar, Garhwal	Member
15.	Chief General Manager, Jal Sansthan, Uttarakhand or his representative	Member
16.	Regional Director, Central Ground Water Board or his representative	Member
17.	Director, Swajal Pariyojana or his representative	Member
18.	Director, National Hydrological Institute, Roorkee or his representative	Member
19.	Chief Executive Officer, State Water and Sanitation Mission or his representative	Member
20.	Director, Indian Geological Survey Department or his representative	Member
21.	Coordinator (WATSAN), Himmothan Society, Uttarakhand	Member Secretary

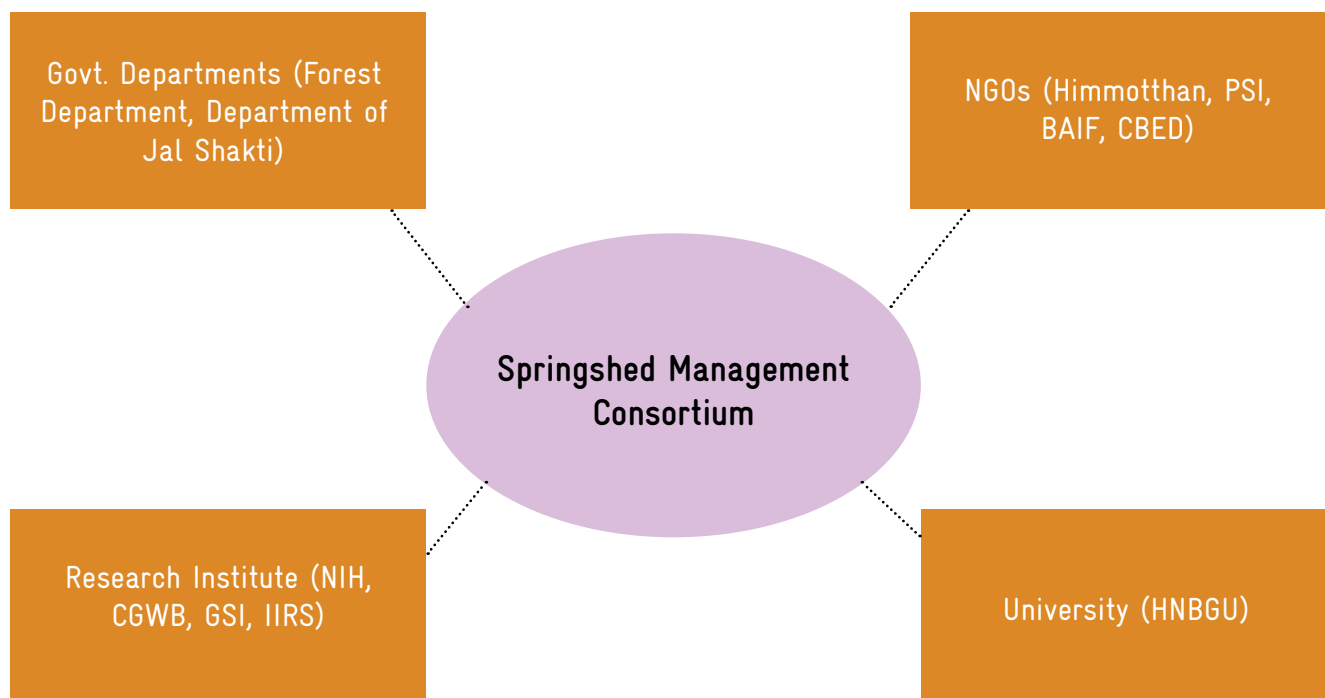


Figure 1: Constitution of the SMC

4.1 Role of SMC

SMC, as per the office order, has been given a significant role in the revival and rejuvenation of springs in Uttarakhand. Its responsibilities include:

- Taking into account the report of NITI Aayog, GoI published on springshed management on 9 July 2018.
- The consortium would effectively implement the work for revival/rejuvenation of springs in Uttarakhand in consultation and support from concerned departments. They will conduct comprehensive mapping of springs and springsheds, set up a data monitoring system, classify spring types, aquifers and recharge areas and dovetail various departmental schemes.
- The member secretary is expected to organise meetings of the consortium and coordinate with NGOs like CHIRAG, PSI, Aqua-dam, Araghyam, and others for capacity building and planning. Possible efforts will be made towards availing financial support of Araghyam, Sir Ratan Tata Trust (SRTT) and other funding agencies for providing additional technical expertise in the consortium as per requirements.

4.2 Key Decisions for the SMC

Following the creation of the SMC, the first meeting was conducted on 17 January 2019, during which the following key decisions were reached:

- Shri Harshpati Uniyal and Swajal to share the data of 900 springs that was further narrowed down to 221 springs based on their location in forest areas, with the forest department.
- A subgroup under the SMC named 'Planning and Implementation' will be created under the coordination of Shri P.K. Patro, CCF, Uttarakhand Forest Department along with six other members. Shri Patro shall be the link person from the Forest Department.
- An action plan to be prepared for management of selected springs.
- A Springshed Management Cell will be established in the Forest Department.

During a strategic planning meeting on 18 April 2019, convened by the SMC to increase spring discharge in the upcoming monsoon season, the following decisions were made:

- The concerned DFO shall coordinate the district level implementation and preparation of Detailed Technical Report (DTR) of selected springs with the help of NGOs.
- Rates for preparation of DTR were decided at the rate of Rs. 40,000/- per DTR.
- Selection of NGOs for preparation of DTRs at district level was done.
- It was decided to prepare the budget for FY 2019-20.

The following meeting of the consortium was conducted on 28 August 2019, with the following major decisions:

- An update on the status of work on 90 springs as per details provided by Jal Sansthan. It was informed that the planning work for 57 springs was completed. It was decided to fund the activity of springshed recharge using Compensatory Afforestation Fund Management & Planning Authority (CAMPA) funds.
- An online portal for dissemination of achievements of SMC will be created by the IT cell of the Uttarakhand Forest Department.
- Details of trainees to be documented in digital format and identifying suitable trainees as 'Master Trainers'.
- Keeping the importance of springshed management in the State, a need of working throughout the year was felt. It was resolved to appoint an expert in the forest head quarter for coordination of the programme with all concerned officials.
- The initiative of springshed management in Uttarakhand to be linked with the Jal Shakti campaign of GoI.

Another meeting of SMC was conducted on 10 June 2020, with the following major decisions:

- The chair was informed that action plan for recharge of 58 springs was prepared in phase I, against which funds have been provided by CAMPA.
- In the second phase, 32 springs have been identified and scientific recharge plans have been prepared. The details to be provided to the Chief Executive Officer (CEO), Uttarakhand CAMPA for funding.
- A revisit to the areas to check whether the work has been completed as per plan.
- The scope of springshed management needs to be widened. Spring recharge shall have a positive effect on the recharge of the rivers as well. Rejuvenation scheme of Kosi and Rispana rivers shall be taken up for discussion in the next meeting of SMC.
- For resolving the field related experts/NGOs, secretary, SMC shall coordinate with the forest department.
- CEO, Uttarakhand CAMPA and APCCF, Planning and Financial Management, Uttarakhand to be included in the SMC as members.

The highlights of the key decisions taken in the meeting of SMC conducted on 23 October 2020, are as follows:

- There were a total of 28 members and invitees present in the meeting.
- A presentation was made highlighting the progress made so far, challenges and way forward.
- Ms. Jyotsona Sitling, PCCF, Van Panchayats, Uttarakhand presented the role of VPs in the management of springsheds. She emphasised on skill mapping, capacity building, prioritising VP areas for springshed management, sustainability of recharged works and committed to include springshed management in the training programmes conducted under strengthening of VPs.
- Mr. R. P. Mishra was of view of integrating springshed management with the Namami Gange Project. He informed that 881 ha area has been treated under the project for groundwater recharge.
- Mr. Pangty, APCCF, Management, Research and Training Uttarakhand, was of the opinion that springshed management should be a part of the curriculum in the forest academy courses.
- Arghyam representative suggested to provide online trainings and management support for the State's SMC Programme.
- Representative of Jal Jeevan Mission (JJM)/Jal Shakti Mission, Uttarakhand emphasized on the convergence of programmes of JJM, National Rural Employment Guarantee Scheme (NREGS), 15th Finance Commission, CAMPA, National Bank for Rural Development (NABARD) etc.
- National Institute of Hydrology (NIH) Roorkee representative suggested providing institutions support for the success of the programme.
- PCCF, Van Panchayat to be included as member of SMC.



05 CRITICAL ANALYSIS OF THE SMC

At the outset, the SMC operated as a knowledge-sharing forum, headed by the PCCF (HoFF) and other stakeholders serving as members. The initial plan was to maintain a flexible structure until the consortium had sufficient pilot results to warrant formal institutionalisation.

Successes:

1. The SMC has made significant progress in reviving springs in the mountains. With scientific coordination, around 80 spring sites have been successfully implanted, and all efforts have been carefully documented for future reference. The success of the consortium can be attributed to its ability to bring together 21 government and non-government organisations under one umbrella to address water scarcity in the mountains.
2. Through the implementation of springshed management techniques utilising the CAMPA funds, the SMC has demonstrated an excellent example of convergence of departmental knowledge and funds. The detailed data of springs shared by Uttarakhand Jal Sansthaan has been utilised to plan and execute these techniques.
3. One of the key successes of the SMC has been the detailed survey of technical plans through an MoU signed between the forest department and civil society. NGOs have fulfilled the technical gap, and the consortium has created considerable awareness for the conservation of springs.
4. Working Plan Officers (WPOs) have included the list of springs requiring revival work in their respective working plans of Chakrata, Garhwal and Dehradun Forest Divisions. Therefore, institutionalisation of spring recharge and documented planning of spring recharge plans are becoming an integral part of the forest management practices.
5. Funding for spring rejuvenation has been allocated in the budget head for soil and water conservation works in the annual plan of the Forest Department under the CAMPA funds. Later, the GoI also recognised the work of spring recharge and has issued guidelines in the JJM hand book.

5.1 Challenges and Issues

The following challenges and issues were observed during the assignment:

- Each government department has set its own priority areas to work on along with a comprehensive financial system and fund allocation practices. However, they do not have a designated budget head specifically for spring recharge management. Mapping of springs, documentation, preparation of spring atlas and prioritisation of springs are some of the other critical areas that require due attention from the departments. Despite the efforts made so far by the SMC in Uttarakhand, data sharing among line departments remains a challenge. While some progress has been made, there is no organised system of convergence of data and data-monitoring. Lack of a common platform for data sharing is a significant obstacle as established hierarchies within the departments can impede progress. Advancement in further research & development with the research institutions and universities has been very slow.
- Frequent transfer or retirement of government officers has also slowed down the process of development.
- The expert NGOs who participated in the preparation of spring hydrogeological surveys and DTRs were not fully utilised for the augmentation of spring recharge practices. Their knowledge and experience could have been leveraged for various activities such as capacity building, community involvement and empowerment, development of livelihood activities, impact assessment and action research. However, this opportunity was missed, and the full potential of these NGOs was not realised in the context of the consortium's efforts. The COVID-19 pandemic has had a significant impact on the progress of the consortium's efforts in the past couple of years. As a result, the momentum that was gained in the early stages could not be sustained. Given the current scenario, the challenge now is to bring the efforts back on track and regain the pace of progress that was seen earlier. One of the ongoing challenges for the consortium is to train sufficient human resources to effectively implement the springshed management measures. This includes organising regular training programs in the areas of data collection, catchment identification and other related activities to ensure that there are enough skilled personnel available to implement these measures on the ground. Creating awareness about springshed management among all the stakeholders including institutions, remains a challenge. Given the involvement of multiple organisations and institutions to revive springs in the mountains, addressing this challenge will require a coordinated and sustained effort to engage with all stakeholders and raise awareness about the importance of springshed management in the region

5.2 Gaps

The SMC was initially formed as a self-initiative by like-minded individuals, based on reflections made by the NITI Aayog report and other ongoing efforts by different organizations including government offices, scientists, and civil society. The structure of the consortium was informal in nature, but now a need for further innovation and consolidation is required to have a formal structure. Currently, there are gaps in the creation and evolution of the entire ecosystem required for the performance of the SMC. These gaps include technological, financial, institutional, training and capacity development and policy support. These gaps are further elaborated below:

5.2.1 Technological Gaps

The identification of spring recharge areas requires the expertise of professionals such as geo-hydrologists or experts who are qualified in radio isotope technology studies. Unfortunately, there are very few individuals who possess such skills. Additionally, new innovative and cost-effective methodologies for catchment identification, treatment measures and other aspects of springshed management are needed. This emerging science is still evolving and requires more course corrections during implementation in the field. Addressing these significant gaps in the implementation of the Springshed Management Programme is crucial.

5.2.2 Financial Gaps

Although around 15 schemes have been identified by the JJM, Ministry of Jal Shakti, GoI, and are currently in different stages of implementation throughout the country, there is a general lack of funds for baseline studies and no designated budget head for spring recharge management. These studies, which involve the identification of springs, assessment of discharge status, documentation and prioritization of springs are crucial for effective implementation of the schemes. Without proper baseline studies, stakeholders and departments may work in silos, resulting in scattered and haphazard efforts that do not yield visible outputs. A separate or dedicated budget head for baseline work is therefore required to address this issue.

5.2.3 Institutional Gaps

To successfully implement the programme, it is essential to establish a robust institutional framework for convergence and coordination among stakeholders. This framework should be recognized and supported by the State Government to provide value, authority, and validity to the new institution.

5.2.4 Training & Capacity Development Gaps

Springshed Management is a relatively new and complex subject that requires specialized knowledge and skills. Government departments and communities need to be trained and developed to effectively implement springshed management practices.

5.2.5 Policy Gaps

Policy support from the State and Central Government is required for the sustainability of the SMC and the programmes and schemes to be implemented under its umbrella.



महिलाओं को नखाना व
धोना बाहरी पर
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06 RECOMMENDATIONS

Uttarakhand is probably the first State in the country which has taken a proactive initiative towards the conservation of natural water springs in the mountains, (post NITI Aayog reports on the Himalayan Springs) in an organised manner. The formation of SMC and the collaboration among different stakeholders is a significant step towards achieving sustainable management of springs. The next step for the initiative is to formalise it. It is therefore recommended to establish a four-tier system in the State for decision-making and implementation of policies, statewide macro/micro-level planning, execution, documentation, and monitoring in an organised manner. The proposed model recommends the formation of an apex-level body at the Government of Uttarakhand (GoUK) level as tier-1, a state-level management body, which is primarily the currently structured SMC at tier-2 anchored in Uttarakhand Forest Department, district-level bodies at tier-3 and finally gram panchayat level bodies at tier-4. The model also recommends the establishment of an SMC Cell at the forest headquarters level for anchoring and coordinating day-to-day activities throughout the year.

6.1 State Government Level/Apex Body

Running a multidisciplinary or multi-organisational programme can be challenging due to the differences in working styles and hierarchical systems across government departments. As a result, decisions made by the SMC may not be equally valued at all levels, which could hinder the implementation of the statewide programme. To address this issue, the proposed model suggests the creation of a state-level body chaired by the Chief Secretary of Uttarakhand, with the Forest Department as the anchor agency, as most springs are located in forest areas. Given the constraints posed by the Forest Conservation Act 1980, it is recommended that the forest department retains control. Moreover, since springshed management involves resource generation, the Forest Department's role in resource generation is crucial.

Assigning control to the top hierarchy of the Forest Department can be seen as a way to simplify the implementation process, improving the ease of doing business in forest areas. The proposed role of the State Government level body is to make policy decisions and establish connections with the GoI on similar initiatives. Following would be the members of this apex body:

- Chief Secretary, Uttarakhand – Chairperson
- Additional Chief Secretary / Principal Secretary, Forests – Vice Chairperson
- PCCF (HoFF), Uttarakhand - Member
- Line Departments' Secretaries working on water including Rural Department (RD), JJM, Forest, Minor Irrigation, Public Works Department (PWD), Jal Nigan, Jal Sansthan, WMD etc. - Members
- Additional PCCF, Environment & Climate Change, Uttarakhand - Member Secretary

6.2 Forest Department Level Body

The Forest Department level body is currently functioning as the SMC, and no changes are proposed except for the designation of the APCCF, Environment, Uttarakhand, from a member to the member secretary. This adjustment is made to ensure the alignment of responsibilities with the relevant work.

His department can monitor the planning and implementation of programmes and key decisions. The role of this body shall be to ensure convergence of different schemes being implemented by various departments and act on the policies decided by the apex body at GoUK level. The following structure is suggested:

- PCCF (HoFF), Uttarakhand - Chairperson
- APCCF, Environment, Uttarakhand – Member Secretary
- Members as per order PCCF (HoFF), Uttarakhand's order dated 2 November 2018 and others could be added as per the same.

6.3 District Level Body

At the district level, the District Magistrate holds responsibility for different line departments and decides on the implementation of state plan budgets, while the DFO is the controlling authority of the forest areas. This committee can be involved in conservation and revival of the springs where the water is drawn from. The role of these bodies will be to facilitate the operational aspects of the programme and link convergence between various departments at the district level. It is important to note that many of the springs are located within forest areas, but the water is primarily utilised by communities residing outside of these areas. The Forest Department therefore has limitation of working in forest areas only, but other departments can take the benefit of spring recharge work by linking the implementation of water supply schemes at their level in such non forest areas where the springs have been revived. This will be a crucial factor in ensuring that the benefits of the increased water flow are transferred to communities outside of the forest areas. The following structure is suggested:

- District Magistrate - Chairperson
- DFO of the nodal forest division - Member Secretary
- District level line departments working on water and other DFOs - Members

6.4 Village/Gram Panchayat Level Body

Given that the Gram Panchayat is the primary level of organization for implementing the Springshed Management Program, it is important to involve the local and sub-committees that have already been established under different Gram Panchayats where the programme is being or has been implemented. These existing bodies can be integrated into the committees formed at the Gram Panchayat level to ensure effective field implementation, feedback and participation of the community in the management of springs. In addition to emphasising the recharge of springs, the key role of this Gram Panchayat level body should be to empower gender and marginalised groups in decision-making related issues to sharing a vital resource like water. Following structure is suggested:

- Gram Pradhan - Chairperson
- Eco Development Committee (EDC)/VP Chairperson – Vice Chairperson
- Forest Guard of the area - Member Secretary
- Biodiversity Management Committee Chairperson – Member
- Other stakeholders – Members

6.5 Springshed Management Consortium Cell

To ensure effective coordination and management of the SMC, it is recommended to establish a dedicated cell within the Uttarakhand Forest Department, anchored at the office of the APCCF, Forest & Environment at the Forest Headquarters. This cell will be responsible for coordinating day-to-day activities throughout the year. The need for a dedicated office to oversee the daily administration, official correspondence and exchange of communication has been identified. To start with, a small establishment is recommended which can be expanded as per the availability of resources.

The Consortium Cell shall assist the PCCF (HoFF) and APCCF, Environment & Climate Change, Uttarakhand for smooth functioning. The suggested role of the SMC Cell shall be:

- **General routine administration** including coordination among different committees/bodies, routine correspondence, data management, project proposals, making efforts towards integrating springshed management with working plans/management plans of the forest divisions, fund sourcing, finance and budgeting etc.
- The officer(s) at the Forest Headquarter level will play a crucial role in the **implementation and follow-up** of the projects and schemes channeled through the SMC. As the concept of springshed management is new, they will need to closely monitor the implementation process and establish linkages with other stakeholders to ensure timely and efficient execution in the field.
- **Maintaining accurate documentation and reporting on the implementation and completion of various works** within the Springshed Management Programme to the concerned agencies, higher committees etc. is crucial for its success. Documentation serves as a valuable resource for future reference, data collection, maintenance, and monitoring. Without proper documentation, the efforts put into the programme may be wasted. Reporting is equally important, as it allows for the analysis of collected data and the assessment of progress at different stages of the project. This information can be shared with higher offices, stakeholders, and funding agencies, and can be used for course correction, research needs, and integrating springshed management into the the working/management plan of the forest divisions or for initiating next implementation process.
- **Trainings and capacity building:** Springshed management is a technical matter and the participation of community is vital for the sustainability of springs. Since this is a programme for the departments and stakeholders, it is necessary to conduct training need analysis and capacity development for all stakeholders. One of the primary tasks of the SMCs should be to identify the training needs, develop training material and plan/impart trainings for the implementing team. This may include staff from the forest department, other line departments and office bearers of district level and village level consortium/committees. If required, the SMC Cell may also hire experts in hydrology, springshed management, community participation etc. to conduct the trainings.
- **Research and studies:** Springshed management is a new emerging science under the umbrella of forest hydrology. Hence, research will play an important role for improvement in the cuurent knowledge about spring hydrology & implementation in the field areas. The cell can coordinate various research and studies among stakeholders such as research institutes, universities, NGOs and departments. For instance, the cell can initiate research to study the impact of climate change on the condition of springs and ultimately on biodiversity. The study can also assess how the measures undertaken for springshed management have helped in combating or mitigating the effects of climate change, biodiversity etc. Research for restoration of biodiversity in the locality should also be an area of focus.
- **Monitoring and evaluation:** Monitoring & evaluation are essential for any programme to measure its efficiency and improvement in field work. Monitoring plays a crucial role in tracking the progress of the program and identifying any challenges that may arise during implementation. This information helps to identify areas that require course correction and provide insights to optimise the program's implementation and yield best results.
- **Establishing linkages and coordination among departments, NGOs, experts:** The improvement/recharging of springs requires multidisciplinary teams to implement the necessary tasks. The SMC Cell is expected to play a vital role in coordination and establishing linkages among different stakeholders.

- **Organising meetings and circulation of decisions:** Meetings provide an opportunity for stakeholders to discuss new issues and challenges that may arise during the implementation of the programme. It also enables the identification of gaps in the programme and provides a forum for stakeholders to collaborate and brainstorm solutions. The cell can play a critical role in facilitating these meetings and ensuring that decisions and updates are circulated to all relevant parties.
- **Deployment of subject specialists:** Since springshed management is a relatively new field, there may be limited specialists available to the department. To overcome this challenge, the cell can play a vital role in identifying and documenting/empaneling appropriate specialists for future use. This resource can be utilized for various activities, including trainings and capacity building, research and studies and fund raising.
- **Increased community participation:** The involvement of communities plays a vital role for the sustainability of springs. Participation of communities in a participatory mode and empowerment in the process of recharging of springs and further sustainable management of springs is essential, as communities are the direct beneficiaries of spring water. The SMC Cell can play a vital role to share the roles and responsibilities of participatory obligation in the process as well as empowering and institutionalising the system at the grassroots level.

6.6 Recommendations for Scope Extension of the SMC

- A cadre of paraprofessionals for groundwater management should be created within the Forest Department and at the community level (VPs and VWSCs).
- To achieve this, a series of training modules on related concepts and issues should be developed and made available in the public domain as well as at the SMC Cell.
- Short and long term learning courses, workshops, trainings, and field facilitation programmes should also be developed to help practitioners, planners and researchers to create awareness on water resources.
- Easy to understand learning materials like leaflets, booklets, pamphlets, posters, documentaries etc. should be created to facilitate understanding of the springs and create awareness on conservation and management of water resources.
- Community participation and empowerment are crucial for the sustainability of springshed management, and therefore, the SMC Cell should play a major role in this entire process.

It is important for the SMC to have the capacity to access funds from various sources and establish a legal framework. The State level SMC can either be registered under the Societies Registration Act of 1860 or be linked to an existing unit registered under Section 28 or Section 8 of the Companies Act. Immediate resources are necessary for basic operations, such as data compilation, report tracking, fieldwork monitoring and coordination with various departments. In the future, the SMC can focus more on forest hydrology, cloud forest management and research to promote a comprehensive approach to forest and water conservation. The proposed institutional framework for the SMC is mentioned in Figure 2.

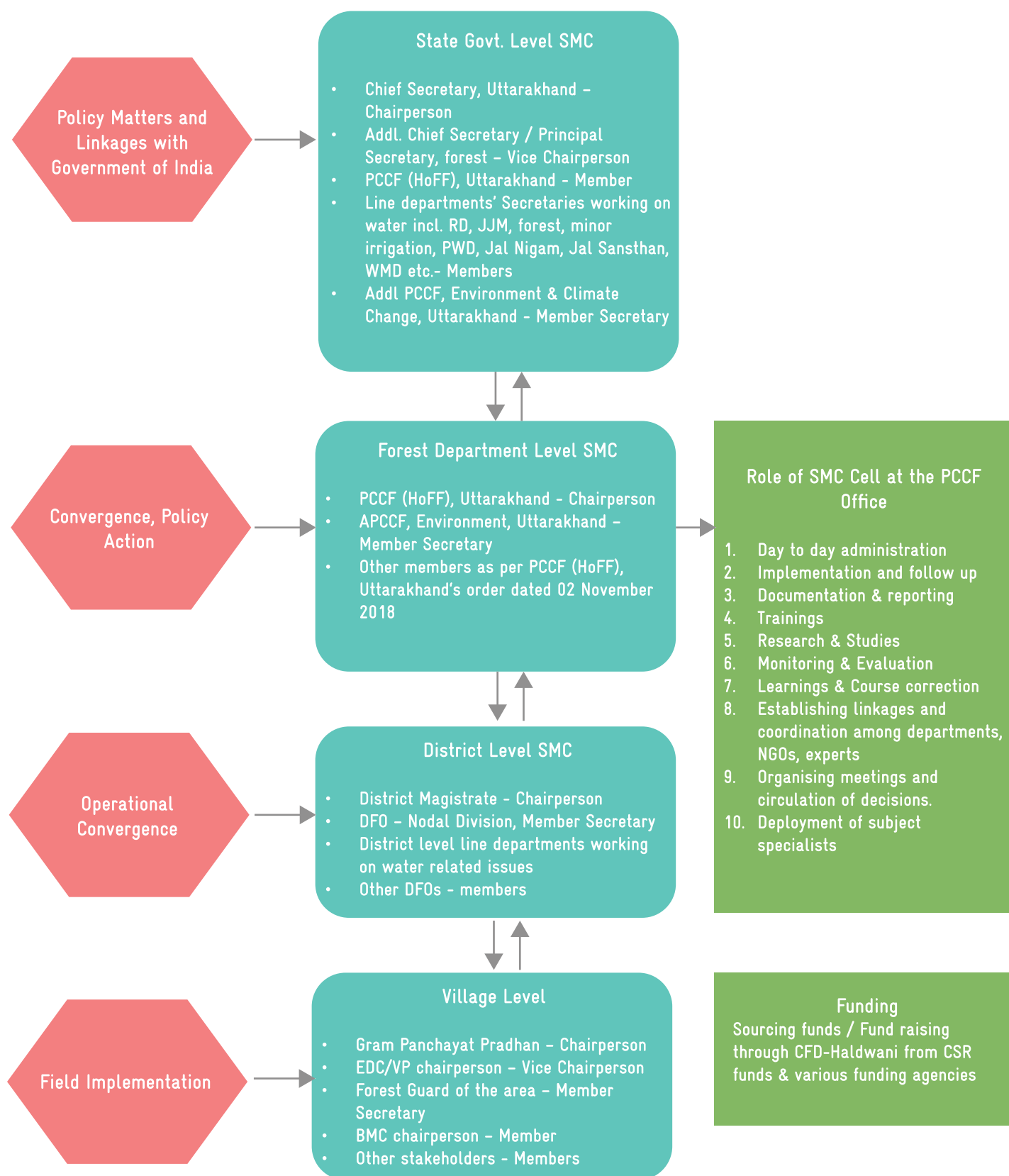


Figure 2: Proposed Institutional Framework for SMC

6.7 Replicability of SMC

This model shall be replicated in the states with large forest areas owned by the Forest Department and with access to CAMPA funds. It presents a win-win situation where the Forest Department takes care of water resource development in forest areas, while other stakeholders focus on water supply and utilization in villages through research, data collection, training, capacity building and awareness generation. The consortium can also facilitate convergence and networking of different schemes running in the state, reducing time, resources and energy for all stakeholders involved.

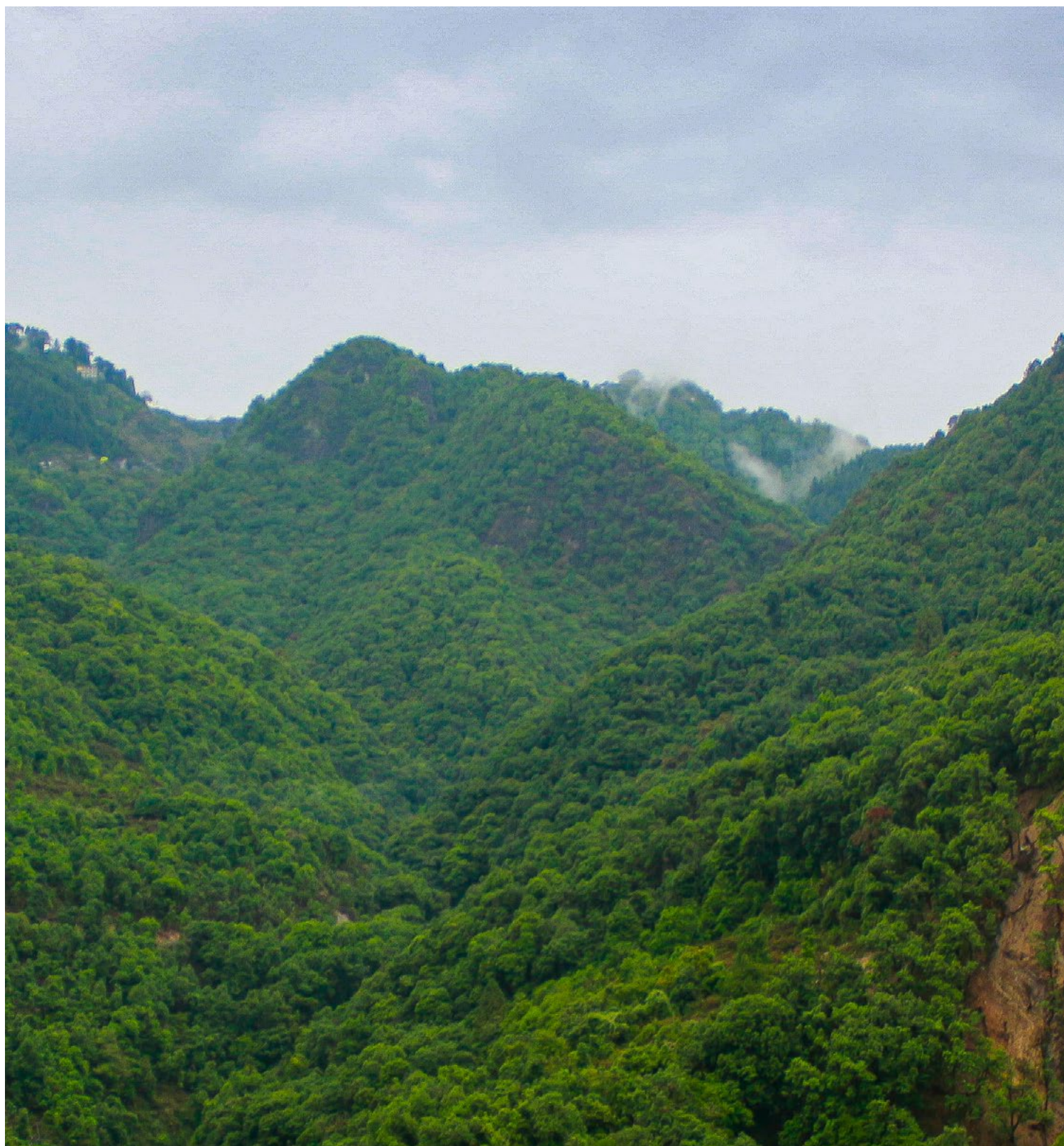
Secondly, the role of NGO/civil society and other related institutions plays a vital role of facilitation of the process of awareness, capacity development, research, data sharing and innovations. Uttarakhand has benefited greatly from the active participation of such organisations in pushing the initial thrust and facilitating the formation and institutionalisation of the consortium.

A similar SMC model is being successfully implemented in Nagaland, Northeast India. However, ownership differs as most of the land there is owned by the community and very little by the state Forest Department. The nodal department is the Land Resource Department, anchoring other stakeholders. The major funding support is being utilised from MGNREGA and other state funds. The NGOs/Civil Society are contributing to training and capacity building of the staff and communities. The model adopted in Nagaland is successfully implementing the activities of springshed management in remote parts of the state.

The model can be adapted to suit the specific needs and conditions of each state. The principle of convergence of schemes and creation of a consortium remains the same. Firstly, the key departments/organisations working in the water sector need to be identified. Secondly, a nodal/anchoring agency should be established to facilitate creation of the consortium in a convergence model. Thirdly, a dedicated funding source such as CAMPA, MGNREGA, watershed development component of Pradhan Mantri Gram Sadak Yojana (PMGSY) scheme etc. should be identified or the SMC should have the ability to converge with Corporate Social Responsibility (CSR) funds, state funds various Central Govt. schemes and other dedicated national and international funding agencies. Around 15 such schemes have been suggested in the 'Operational Guidelines' for the implementation of JJM, 2019. The present model has tremendous potential to replicate in other states, if proper process development is followed in the institutional system.

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