

117865 REV

**UTTARAKHAND WATER SUPPLY AND SANITATION PROGRAM FOR
PERI-URBAN AREAS**

Environmental and Social Systems Assessment

Date: 21 September, 2017

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Abbreviations and Acronyms

ADB	Asian Development Bank
AE	Assistant Engineer
AES	Acute Encephalitis Syndrome
AIP	Annual Implementation Plan
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
ASHA	Accredited Social Health Activist
BHEL	Bharat Heavy Electricals Limited
BPL	Below The Poverty Line
CBO	Community-based Organization
CETP	Common Effluent Treatment Plant
CFR	Community Forest Right
CNG	Compressed Natural Gas
CPCB	Central Pollution Control Board
CSO	Civil Society Organization
CSS	Centrally Sponsored Scheme
CT	Census Town
CWR	Clear Water Reservoir
DDW	Department of Drinking Water
DIA	District Implementing Agency
DLI	Disbursement-linked Indicator
DO	Departmental Order
DPC	District Planning Committee
DPMU	District Program Management Unit
DPR	Detailed Project Report
DRDO	Defence Research and Development Organization
DWSC	District Water and Sanitation Committee
DWSM	District Water and Sanitation Mission
ECoP	Environmental Code of Practices
EE	Executive Engineer
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EPA	Environmental Protection Act
ESSA	Environmental and Social Systems Assessment
FCA	Forest Conservation Act
FGD	Focus Group Discussion
FICCI	Federation of Indian Chambers of Commerce and Industry
FRA	Forest Rights Act
FTK	Field Test Kit

GBPIHED	G. B. Pant National Institute of Himalayan Environment and Sustainable Development
GO	Government Order
GoI	Government of India
GoUK	Government of Uttarakhand
GP	Gram Panchayat
GRBMP	Ganga River Basin Management Plan
GRM	Grievance Redress Mechanism
HNBU	Hemvati Nandan Bahuguna University
IDSP	Integrated Disease Surveillance Programme
IEC	Information, Education, and Communication
IHHL	Individual Household Latrine
IIT	Indian Institute of Technology
IMIS	Integrated Management Information System
IPQA	Implementation Phase Quadruple Agreement
ISRO	Indian Space Research Organisation
IWMP	Integrated Watershed Management Programme
JE	Junior Engineer
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
KII	Key Informant Interview
KMVN	<i>Kumaon Mandal Vikas Nigam</i>
lpcd	Liters per Capita per Day
LPG	Liquefied Petroleum Gas
M&E	Monitoring and Evaluation
MDWS	Ministry of Drinking Water and Sanitation
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MIS	Management Information System
MoEF	Ministry of Environment and Forests
MoPR	Ministry of Panchayati Raj
MoUD	Ministry of Urban Development
MVS	Multi-village Scheme
MVSLC	Multi-village Scheme-level Committee
NGO	Nongovernmental Organization
NGRBA	National Ganga River Basin Authority
NHM	National Health Mission
NLRSDA	Nainital Lake Region Special Development Authority
NoC	No Objection Certificate
NRDWP	National Rural Drinking Water Programme
NRGBM	National River Ganga Basin Management
NRuM	National Rurban Mission

NRW	Non-Revenue Water
NVBDC	National Vector Borne Disease Control Programme
O&M	Operation and Maintenance
ODF	Open Defecation Free
OHS	Occupational Health and Safety
OHT	Overhead Tank
PA	Protected Area
PAD	Program Appraisal Document
PAP	Program Action Plan
PDO	Program Development Objective
PforR	Program for Results
PMKSY	<i>Pradhan Mantri Krishi Sinchayee Yojana</i>
PMU	Program Management Unit
PPP	Public-Private Partnership
PRI	Panchayati Raj Institution
PTC	Panchayat Training Center
PwD	People with Disabilities
PWD	Public Works Department
RLB	Rural Local Body
RWH	Rainwater Harvesting
RWSS	Rural Water Supply and Sanitation
SADA	Special Area Development Authority
SBM	Swachh Bharat Mission
SBM-G	Swachh Bharat Mission-Gramin
SC	Scheduled Caste
SCP	Special Component Plan
SDG	Sustainable Development Goal
SDM	Sub-divisional Magistrate
SIRD	State Institute of Rural Development
SLB	Service Level Benchmark
SLIP	Service-level Improvement Plan
SLTI	State-level Training Institute
SLWM	Solid and Liquid Waste Management
SO	Support Organization
SPCB	State Pollution Control Board
SPECS	Society of Pollution and Environmental Conservation Scientists
ST	Scheduled Tribe
STI	State Training Institute
STP	Sewerage Treatment Plant
SVS	Single-village Scheme

SWAp	Sectorwide Approach
SWSM	State Water and Sanitation Mission
TSP	Tribal Sub-plan
UA	Urban Agglomeration
UAPCC	Uttarakhand Action Plan on Climate Change
UJN	<i>Uttarakhand Pey-Jal Nigam</i>
UJS	<i>Uttarakhand Jal Sansthan</i>
ULB	Urban Local Body
URWSSP	Uttarakhand Rural Water Supply and Sanitation Program
UUSDIP	Uttarakhand Urban Sector Development Investment Program
UWSSC	User Water Supply and Sanitation Committee
WQMSP	Water Quality Monitoring and Surveillance Programme
WSS	Water Supply and Sanitation
WSSO	Water and Sanitation Support Organization
WTP	Water Treatment Plant
ZP	Zila Panchayat

Executive Summary

1. An Environmental and Social Systems Assessment (ESSA) was undertaken by the World Bank to understand the potential environmental and social risks, benefits, impacts, and opportunities of the likely investments to be made under the program. This ESSA examined the borrowers' program's processes and systems for environmental and social safeguards for their consistency with the core principles outlined in the World Bank's Policy and Directive for Program for Results (PforR) Financing.

2. The key findings of this assessment are based on a review of existing information and field visits, discussion with relevant stakeholders, and consultations with representatives of the line departments and user groups, and with community members.

Environmental Systems

3. The state government has a well-established system to manage environmental impacts. Regulations to address concerns of source sustainability, drainage, waste management, labour and worker safety and protected areas are in place and the state and national levels. *Uttarakhand Pey-Jal Nigam* (UJN) and *Uttarakhand Jal Sansthan* (UJS) have demonstrated their ability to address environmental issues by taking a number of innovative steps for reducing energy consumption, and improving the sustainability of existing water supply systems.

4. Implementation of water supply and sanitation projects in Uttarakhand has, in the past required the implementation departments to work with a number of environmental regulations and take required permissions. Therefore, implementing agencies have had experience with and are familiar with a number of existing environmental safeguards requirements. The state also has well-defined environmental guidelines and related infrastructure, including a network of water-testing laboratories to check for water quality and residual chlorine.

5. The overall impact of the program on the environment and on human health is likely to be positive. Furthermore, there are likely to be some climate change mitigation impacts by a well implemented project. This will come from reduced energy consumption from pumping water either from aquifers to supplement supplies, or due to inadequate pressure of water supplied by the authorities, as is presently the case. However, some environmental risks could arise during implementation. On balance, the overall environmental risks associated with the program are considered Moderate. Some of the environmental risks under the program are indicated below.

- **Water quality.** Presently, all program districts show the existence of diarrheal diseases, and this may be related to water quality issues. The State Pollution Control Board (SPCB) data indicate that a large number of surface water sources are affected by fecal and industrial contaminants and are unfit to be used as drinking water sources. This may affect the use of these sources for schemes under the program. The availability of robust water quality data for groundwater sources is limited. However, sewer systems are largely unavailable in peri-urban areas and residents depend upon septic tanks and pit latrines for their sanitation needs. If the septic tanks

and pit latrines are not properly constructed, there could be some instances of fecal contamination of groundwater. As water is chlorinated before distribution, several water quality issues identified will be addressed under the program. However, the operation of the system would depend on pump operators, who may have limited capacities. This may affect the quality of water supply to customers.

- **Groundwater abstraction.** Most peri-urban areas are dependent upon groundwater sources. The program is likely to improve service levels from the current 55 liters per capita per day (lpcd) to 135 lpcd. Therefore, the overall water abstraction is likely to be negligible. In addition, the Central Ground Water Board data suggest that none of the identified peri-urban areas have any dark zones, making it safe to currently abstract groundwater. However, with rapid urbanization, development, and climate change, some decline in the existing aquifers may occur. According to a 2016 study, in the last decade, the built-up area under the Municipal Council of Uttarakhand has increased by about 50 percent. This could create challenges for source sustainability in some cases, and may require catchment management measures. However, as catchment management and urban development are beyond the UJN and UJS's mandate, this may be difficult to implement, under the program.
- **Site management.** The District Implementing Agencies (DIAs) hire contractors to construct the systems under the program. All construction contracts include clauses for Occupational Health and Safety (OHS) and management of the construction site, including for waste management, erosion control, and site safety. To ensure that these clauses are followed, site supervision may need to be strengthened.

6. A few environmental challenges that may affect the program include the following: (a) some selected areas adjoin the Uttarakhand Protected Areas (PAs) and eco-sensitive zones; some activities may be restricted in these locations, and additional work permits may be required; (b) there are a number of regulations on waste management that will need to be adhered to and may require a change in the current practices, for example, batteries are currently disposed of in general auctions, which is against the regulations; (c) increased water supply, particularly without well-developed wastewater management, sanitation, and drainage systems, may lead to more waterlogging and, subsequently, a rise in the incidents of vector diseases.

7. As a part of program action implementation for environmental safeguards screening of all projects under the program will be undertaken to identify environment related regulatory needs and actions required and to ensure safety during design, construction and implementation; and monitor to ensure implementation or required actions from the screening actions. This is to be done by the implementing agencies responsible for implementation in each geographical area under the program. The SWSM will be responsible for the development of the screening and monitoring formats, and to ensure implementation.

Social Systems

8. The state government has robust systems, progressive policies, legislations, and comprehensive institutional mechanisms to address the social issues that may emerge from current implementation processes and from potential program investments.

9. The program will likely have positive social impacts on the lives and livelihoods of large vulnerable peri-urban and rural communities that still do not receive optimal levels and quality of water supply services. It will also contribute to the achievement of Sustainable Development Goal (SDG) 6 on ‘ensuring availability and sustainable management of water for all’. The program is expected to help reduce drudgery for women and girls of the affected households, who otherwise are made responsible for organizing the drinking water supplies for the family, and will have substantial positive impacts in terms of time-saving, reduced morbidity, and reduced expenditure on health owing to improved water quality. Based on the present assessment, the overall social risks associated with the program are considered Moderate.

10. As in other parts of India, many peri-urban areas of Uttarakhand show signs of low social capital, inequitable benefit distribution, and high disparities in interhousehold social and economic attainments. Uttarakhand’s existing policies related to differential tariffs and pricing and the program’s focus on improving service levels, metering, and consumption-based water pricing will help create a more equitable distribution of water supply services in peri-urban areas.

11. Progressive and transparent national- and state-level policies prioritize habitations with low coverage and focus on household-level water security. The program complements these policies and aims to strengthen inclusive and accessible water supply services delivery in selected areas.

12. The earlier World Bank-supported WSS projects in the state have created a large pool of civil society organizations (CSOs)/support organizations (SOs) that can further community initiatives, contribute to large-scale social mobilization in the peri-urban areas, and support capacity building of various program stakeholders, including the community for facilitating greater ownership and training user committees on their roles and responsibilities under WSS schemes. There are however some gaps and challenges that the program will need to address.

13. **Institutional overlap and accountability.** A large number of institutions with overlapping mandates and unclear roles and responsibilities for construction and operation and maintenance (O&M) of schemes are engaged in Uttarakhand’s WSS sector. This can affect institutional accountability. There is also limited information sharing and coordination among DIAs at the field level, which can affect construction, O&M, and augmentation of WSS schemes.

14. **Systemic disincentives for community management of schemes.** Some existing state policies create systemic disincentives for community management of schemes. These are specifically related to differential power tariffs, wherein community-managed schemes pay power tariffs at commercial rates while DIA-managed schemes pay domestic rates for pumping-based schemes. This can render smaller schemes and schemes with lesser connections (or low

revenue realization) financially unviable, forcing transfer of their management to DIAs. The state is cognizant of this challenge and is exploring options to address it.

15. Role and capacity of Gram Panchayats (GPs). The role of GPs in the management and maintenance of WSS schemes has been limited, even though the state has provided a central role to GPs under the Uttarakhand Panchayat Act by constituting User Water Supply and Sanitation Committees (UWSSCs) as statutory subcommittees of the GP. The World Bank-supported Sectorwide Approach (SWAp) called for a stronger role for Panchayati Raj Institutions (PRIs) in planning and implementation of schemes. However, capacities of many elected representatives in user committees are weak and there is lack of clarity about their mandate and role in managing schemes independently. As a result, the committees and GPs are often heavily reliant on the DIAs for support.

16. Social mobilization. The state has clear protocols on elaborate phases of social mobilization and community capacity building. This is also clearly indicated in several government orders (GOs) and departmental orders (DOs). However, there is still evidence of low or limited social mobilization and consequently of limited ownership in some schemes. This may result in weak linkages between the service provider and beneficiary/ users of such schemes leading to weak ownership of the schemes. During previous World Bank-supported projects, consistent efforts were made to mainstream social capacities among DIAs that traditionally had an engineering focus. This involved several steps, including staff secondment and appointment of Community Development Specialists for strengthening the software component of the scheme - information, education, and communication (IEC); community mobilization; and capacity building on planning, management, and maintenance. There are however still major gaps in the capacities of the DIAs in dealing with social development issues. In addition, there has been some resistance among the DIAs in adopting community processes in WSS schemes as these were time consuming and human resource intensive. This has led to variance in the levels of community participation in planning and management, access, and inclusion in schemes.

17. Some of the risks associated with the program include (a) ineffective implementation of mechanisms to ensure participatory and inclusive planning of schemes, leading to the exclusion of vulnerable and marginalized communities; (b) risk of inequitable benefit distribution in some peri-urban areas because of challenging topography, high population influx, high interhousehold disparities in economic status, large demand-supply gap, competing demands of commercial/domestic users, and low social capital within peri-urban communities; (c) issues of affordability and access in shifting to private connections, especially for the economically vulnerable communities and female-headed households that have traditionally depended on public supplies (stand posts or hand pumps); (d) potential risk of rural-urban conflicts over the use of resources such as sourcing of drinking water supply for urban areas from rural sites; and (e) risk of social conflicts among the residents of peri-urban areas, especially between the old native population and the new settlers due to instances of disproportionate consumption of resources/services (WSS services).

18. Recommendations for managing social risks associated with the program include providing (a) a central role for the local bodies and UWSSCs in the design and implementation

of schemes; (b) integrated and sustainable social capacities within DIAs and deploying staff with social and community development skills in implementing agencies to ensure long-term sustainability; (c) better coordination and information sharing among DIAs; d) formalized institutional mechanisms for resource use/sharing and coordination between the rural local bodies (RLBs) and urban local bodies (ULBs) to mitigate potential social risk or conflict between rural and urban communities; and (e) a ‘Common Grievance Redress System’ for the peri urban sector.

Environment and Social Action Plan

Key Actions	Timeline	Responsible Party	Completion Measurement
Environmental			
Develop and implement safeguard measures to ensure site safety during construction of schemes, and augmentation of source sustainability.	By effectiveness, Implementation: entire program period	SWSM	<ul style="list-style-type: none"> • • System developed and operationalised
Develop and implement an appropriate waste management plan	Plan to be developed in first 6 month of project effectiveness. Implementaton: entire program period	SWSM	<ul style="list-style-type: none"> • Plan developed and operationalized
Social			
Develop and implement social risk screening mechanisms for selecting sites for program implementation and enhance capacities of DIAs in social development skills.	Implementation: entire program period	DDW, GoUK SWSM	<ul style="list-style-type: none"> • Social screening System developed and implemented to screen out high risk activities and capacities of DIAs enhanced.

Note: DDW = Department of Drinking Water; ECoPs = Environmental Codes of Practices; GoUK = Government of Uttarakhand; GRM = Grievance Redress Mechanism; NRW = Non-Revenue Water; PMU = Program Management Unit; and SWSM = State Water and Sanitation Mission.

As most of the key issues will be taken care of in the design of the Program, the combined Environment and Social Program Action Plan is as follows:

Combined Environment and Social Program Action Plan

Key Program Actions	Responsible Party	Proposed Timeline and Activities
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Develop and implement environment and social risk screening mechanisms for assessing impact of program investments	SPMU/SWSM	Year 1 (First half): Develop indicators and procedures for risk screening measurement and verification Year 1 (Second half): Test and roll out implementation of the screening framework
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Chapter 1: Introduction¹

This section provides an introduction to the water supply and sanitation related achievement and challenges for the state of Uttarakhand and then spells out the objectives and scope of the proposed program—its focus and the major strategies that will be deployed for achieving them.

India's urban population has grown by 32 percent in the past one decade. Although the proportion of urban population concentrated in larger cities continues to remain high, there is strong evidence of an increase in the number of urban growth nodes. As the pace of urbanization is increasing, several rural areas now have urban characteristics and there is also an increasing trend toward co-option of predominantly rural areas into the limits of municipal bodies. These areas form the peri-urban interface, the critical region between the urban and rural areas in India. These transitional areas present unique governance, regulatory, infrastructure, service delivery, and environmental challenges for policy makers. The challenges get compounded because of the fragmentation of institutional responsibilities, especially in peri-urban areas close to large and growing cities. Administrative uncertainty resulting from weak links and unclear municipal jurisdiction for infrastructure service delivery along with low priority assigned to these areas by rural departments further exacerbates service delivery issues. This has significant policy implications for the water supply and sanitation (WSS) sector.

The Government of India (GoI) has made significant investments in the WSS sector across urban and rural areas and has shown continuous commitment through bringing in sector reforms, enhanced financial allocations, policy directions, and actions for improvising monitoring and reporting mechanisms in the sector. The GoI's National Rural Drinking Water Programme (NRDWP) and Swachh Bharat Mission-Gramin (SBM-G) are the flagship programs focusing on water and sanitation in rural areas. For urban areas, Swachh Bharat Mission (SBM) (Urban), SMART Cities, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), and the erstwhile Jawaharlal Nehru National Urban Renewal Mission (JNNURM) are the major schemes providing funding support to the WSS sector. These programs/schemes also lay stress on institutional reforms and capacity building of key stakeholders besides providing support for infrastructure coverage. Guidelines of the Ministry of Urban Development (MoUD), GoI, also provide guidance for planning of peri-urban areas and suggest provision of WSS services at par with urban standards.

Despite these efforts, many challenges remain. Issues of coverage and service delivery are persistent with multifold challenges, particularly for peri-urban areas. The state of Uttarakhand faces, in some sense, a larger challenge as compared to the rest of India because of its geographical terrain. Over 88 percent of the state is hilly, and 65 percent area is under forests. Rapid urbanization in the state has led to the expansion of urban centers and the emergence of peri-urban regions around the existing urban centers because of expanding economic activities and job opportunities in cities and towns. One of the fast emerging challenges in the state is to improve WSS service delivery in these areas.

¹ Source: Draft Project Concept Note on Uttarakhand Rural Water Supply and Sanitation Program for Peri-Urban Areas-URWSSPPA of March 23, 2016, and Aide Memoire of February 27, 2017.

The state has seen a multifold increase in the number of Census Towns (CTs) from 12 in 2001 to 41 in 2011, a strong indicator of peri-urban growth. Out of 41 CTs in the state, 7 have a population of 97,588 (2011) and are growing at a decadal growth rate of 90 percent or more. The peri-urban areas have largely been neglected in the planning process, and most consumers are adopting ‘self-provisioning’ coping mechanisms. As a result, service delivery issues in these towns are becoming increasingly prominent.

With regard to drinking water supplies, out of the 81 urban local bodies (ULBs) in the state, 21 have a production level of over 135 lpcd and the rest are below 135 lpcd. At least 34 ULBs have a production level of less than 70 lpcd. However, the actual consumer end supply may be even less because of leakages and losses in the system. Although Census 2011 data show that about 68 percent of all households in Uttarakhand (78 percent urban and 63 percent rural) have ‘access’ to tap water, efficient and equitable services are lacking, with the duration of water supply varying between 1 and 2 hours of daily supply or 3–4 hours of supply on alternate days. Non-Revenue Water (NRW) is estimated at 40–50 percent for most towns. Only 15 percent of the rural habitations are fully covered, and the remaining 85 percent are partially covered if the current norm of 55 lpcd is applied to the rural population. The issue of water supply service delivery is further exacerbated in peri-urban areas, which are yet to be integrated in the planning process.

In 2015–16, the state achieved full coverage in 21,743 out of its 39,309 habitations and partial coverage in the remaining 17,547 habitations (of which 6,336 habitations have coverage of less than 50 percent).² The state more than achieved its target for 2015–16 by covering an additional 478 habitations in the financial year. According to Ministry of Drinking Water and Sanitation (MDWS) Integrated Management Information System (IMIS) data, the state has covered 54 percent of Scheduled Caste (SC) population, 66 percent of Scheduled Tribe (ST) population, and 55 percent of the total population of the state with more than 40 lpcd water. However, only 9.83 percent of the total rural households (1.5 lakh families) have a piped water supply connection till date.³ All the 3 implementing agencies—*Uttarakhand Pey-Jal Nigam* (UJN), *Uttarakhand Jal Sansthan* (UJS), and SWAJAL implement the WSS schemes funded through the NRDWP.

The augmentation and upgradation of distribution infrastructure has not kept pace with the rapidly expanding settlements, and most customers are dependent on private borewell water supply. In most plains of the state such as District Haridwar, water is supplied through both piped water schemes and hand pumps. In districts like Udham Singh Nagar, the coverage is mainly through hand pumps. Equitable access to water supply services is not ensured in these areas, because the distance from service reservoir, limited storage capacity, difference in ground levels, and installation of online pumps to draw water from water-mains affect the service delivery.

² As on March 2016.

http://indiawater.gov.in/IMISReports/Reports/Physical/rpt_RWS_CoverageOfHabitation_D.aspx?Rep=0.

³ MDWS IMIS at

http://indiawater.gov.in/IMISReports/Reports/Physical/rpt_CoverageIndividualHousePipConnection_D.aspx?Rep=0&RP=Y.

Access to sanitation services is also a challenge. Although more than 85 percent households have access to toilets in rural areas of the state, only 1,274 Gram Panchayats (GPs) out of the total 7,972 GPs have achieved Open Defecation Free (ODF) status (as on August 16, 2016), which represents about 16 percent of the total GPs in the state. Achieving statewide ODF status is a priority with the Government of Uttarakhand (GoUK) for meeting the SBM-G targets for October 2019. On the urban front, about 96 percent urban households have access to toilets.

The proposed program development objective (PDO) is *to increase access to improved water supply services in peri-urban areas of Uttarakhand State*. Improved water supply service means a minimum of 16-hour water supply meeting GoI water quality standards, and supplied at an average pressure of 12m at predetermined points in the distribution network for no less than 300 days in a year, unless the service area is declared a disaster affected area. The GoUK has defined ‘peri-urban areas’ as settlements with the following characteristics: (a) a population density of at least 200 persons per square km; (b) located within 10 km aerial distance from the existing limits of a statutory town/municipality or ULB; and (c) not upgraded or merged into statutory town as on the date of negotiations.

Achievement of the PDO will be measured using two indicators: (a) number of people receiving high-quality water services and (b) operation and maintenance (O&M) cost recovery for water services. ‘High-quality water services’ implies 24-hour water supply meeting the GoI water quality standards, supplied at a minimum pressure of 12 m at predetermined points in the distribution network for no less than 300 days in a year, unless the service area is declared a disaster-affected area. ‘O&M cost recovery’ on the other hand, is the ratio (expressed as percentage) of water sales revenue and/or government subsidy to the cost of operating and maintaining water supply systems in targeted peri-urban areas.

Key Program Results

The three result areas to reflect and measure success in achieving the PDO are

- Result Area 1: Increased access to improved water supply services in peri-urban areas; and
- Result Area 2: Improved policy, planning and M&E systems for GoUK’s water supply program for peri-urban areas.
-

1. **Results Indicators:** The following outcome indicators will be used to measure achievement of the PDO:

- (a) Number of people receiving improved water supply services in peri-urban areas; and
- (b) Improved policy, planning and M&E systems implemented in at least 30 peri-urban areas.

Further, a set of intermediate results indicators will be used to measure and track intermediate steps towards achieving the PDO. The Table below shows a summary of the Program results framework.

PDO and Intermediate Results	Results Indicators	
	DLIs	Other Results Indicators (Not Linked to Disbursements)
PDO indicators	•	<ul style="list-style-type: none"> Number of people receiving improved water supply services in peri-urban areas Improved policy, planning and M&E systems implemented in peri-urban areas
Result Area 1: Increased access to improved water supply services in peri-urban areas	<ul style="list-style-type: none"> Number of connections receiving improved water services in peri-urban areas (DLI#1). Improved water supply systems for peri-urban areas (DLI#2). 	<ul style="list-style-type: none"> Length (km) of new pipelines installed in peri-urban areas Length (km) of pipelines replaced/ rehabilitated in peri-urban areas Volume of water produced
Results Area 2: Improved policy, planning and M&E systems for water supply program for peri-urban areas	<ul style="list-style-type: none"> Improved policy for water supply program for peri-urban areas (DLI#3). Strengthened M&E systems for water supply program for peri-urban areas (DLI#4) Number of approved master plans for water supply in peri-urban areas (DLI#5). 	<ul style="list-style-type: none"> Annual report on water services performance in peri-urban areas

Note: M&E = Monitoring and Evaluation.

Two areas for activities have been identified under the PforR financing. The details are,

- **Activity 1: Performance based financing for improved water supply services in peri-urban areas.** The program will support performance based financing for achieving improved water supply services in peri-urban areas including coverage, quality and reliability of services as per service level benchmarks provided by MoUD, GoI. The schemes will include piped network and metered service connections focusing on improving operation and management and strengthening sustainability of the water supply systems with respect to financial, technical and institutional aspects. The improvements in water supply services can be achieved through new schemes and / or rehabilitation, expansion and strengthening of existing infrastructure and augmentation / improvement of water sources.
- **Activity 2: Incentives for strengthening policy, planning and monitoring of water supply program for peri-urban areas.** The Program will support the GoUK's WSS sector program by incentivising development and implementation of a service-oriented water supply sector policy with explicit linkages for peri-urban areas and strengthening the current M&E systems to capture timely and reliable information on water service performance in peri-urban areas. Dedicated incentives for preparation and adoption of water supply master plans for peri-urban areas and strengthening planning processes for

water supply services in peri-urban areas is also envisaged for achieving the PDO objectives.

The Program will also have a Technical Assistance (TA) component under the IPF financing stream. This TA will for,

- Technical and Program Management Support;
- Strengthening of Governance and Accountability programs;
- Technical Assessments and Studies; and
- Capacity Building and Professionalization of sector institutions.

However, this ESSA is only for the PforR component of the Program.

Program Description

The GoUK has prioritized WSS as a key area of its development agenda. It has estimated an investment requirement of US\$3.07 billion for achieving universal coverage for WSS across the state by 2030, including rural sanitation by 2019. An analysis of data on budgetary allocations and releases for the last four years (2011–12 to 2014–15) for the WSS sector (both rural and urban) shows that against an annual requirement of US\$204 million, the current availability of funds is about US\$82 million.

The estimated cost of the Program over the six-year period is USD 150 million. The Program will be financed through a GoUK commitment of USD 30 million and the proposed Bank support of USD120 million. The Bank will provide USD 120 million (IBRD loan) over six years, which represents about 80 percent of the total estimated Program cost. A large portion (92%) of the Bank funding (i.e. USD110 million) will be disbursed upon achievement of pre-agreed results from implementation of activities 1 and 2, as described previously. The remainder (8% or USD10 million) will be used to pay for specific expenditures associated with the TA program in accordance with IPF requirements.

1. The proposed Program will support the GoUK WSS program over a six-year period (2018-24) with total financing of USD 110 million for incentivizing water supply service delivery improvements along with policy formulation, enhancing planning capabilities, and M&E using the PforR instrument. The Program will be supported by TA of USD 10 million for strengthening technical and management capacity for water service delivery using IPF instrument. The PforR Program will be managed in accordance with the Bank Policy on “Program-for-Results financing”, while the TA will be managed in accordance with the Bank’s New Procurement Framework or Bank Operational Policy (OP)/ Bank Procedure (BP) under IPF.

For these peri-urban areas average coverage is 55% which indicates a high potential for additional connections. Water availability for the whole population in these areas is 53.1 litres

per capita per day at production stage, well below the urban norms of up to 135 lpcd at consumer end. However, if only the connected households are considered instead of the entire population, water availability increases to 98.3 litres per capita per day. Households were charged fixed monthly tariff of Rs 158 per connection per month in the year 2016-17. If the actual consumption is considered (assuming an NRW of 40%), the revenue realized per KL supplied to the consumer is Rs 17.7. This is far higher than the Rs 6.8 Rs/ KL tariff applicable for metered connections as per the tariff schedule (2016-17). In effect, the practice of fixed monthly charges and low water availability is yielding a higher revenue per KL for UJS at present. However, this practice provides no incentive to UJS to increase water availability, either by additional supply or through reduction in NRW. Collection efficiency is high at 90% and this can be due to the fact that UJS needs to meet establishment expenditure through own revenues, providing an incentive for better collections. Cost recovery of operations and maintenance expenditure (excluding depreciation) is 86.2% (2016-17), much higher than the cost recovery at overall UJS level of 53.3%. The reasons for this could be partly due to high per KL recovery; but could also be due to cost allocation that is not reflective of true costs of these towns.

Chapter 2: ESSA - Purpose, Scope, and Methodology

This section talks about the rationale for the environmental and social assessment of the proposed program, the methodology employed for the assessment, and its scope. It then goes on to detail the actual steps taken in the assessment and the instruments and sampling used to ensure representativeness of the findings.

PforR Financing and Environmental and Social Assessment

The proposed ‘Uttarakhand Water Supply and Sanitation Program for Peri-Urban Areas’ will focus on improving water supply services in select peri-urban areas of the state. This is to be implemented through the PforR financing modality. Therefore, based upon the PforR requirements, a detailed Environmental and Social Systems Assessment (ESSA) has been undertaken to support the program design. This assessment looks at the relevant policy-legal environment pertaining to social and environmental systems, the program implementation agencies, and their capacities to manage identified environmental and social impacts and risks associated with the Program. Because the ESSA is a systems-level assessment, it also assesses the existing government institutional systems, legislations, and program procedures against the core ESSA principles, that is, the extent to which the program systems are aligned to these guiding principles. These six core principles, specific to environmental and social parameters, are reviewed against proposed program interventions in this assessment, based on the areas in which the program investments are likely to be made.

Apart from assessing the program against the World Bank policies (PforR Financing Policy, July 2015), the assessment also looks at gaps in policies and implementation where systems may need further strengthening for enhancing the programmatic social and environmental impacts. Based on this overall assessment, the ESSA recommends certain program actions for further strengthening the program and for mitigating/minimizing possible risks that may emerge from the likely program investments.

Objectives of the ESSA

This ESSA accordingly analyzes the water supplysector for the state of Uttarakhand as a whole and tries to understand the extent to which the existing program systems align with the following six core principles identified in the World Bank policy.

- (a) Promote environmental and social sustainability in the Program design; avoid, minimize, or mitigate adverse impacts; and promote informed decision making relating to the Program’s environmental and social impacts.
- (b) Avoid, minimize, or mitigate adverse impacts on natural habitats and physical cultural resources resulting from the Program.
- (c) Protect public and worker safety against the potential risks associated with (i) construction and/or operations of facilities or other operational practices under the Program; (ii) exposure to toxic chemicals, hazardous wastes, and other dangerous

materials under the Program; and (iii) reconstruction or rehabilitation of infrastructure located in areas prone to natural hazards.

- (d) Manage land acquisition and loss of access to natural resources in a way that avoids or minimizes displacement and assists the affected people in improving, or at the minimum restoring, their livelihoods and living standards.
- (e) Give due consideration to the cultural appropriateness of, and equitable access to, Program benefits, giving special attention to the rights and interests of the Indigenous Peoples and to the needs or concerns of vulnerable groups.
- (f) Avoid exacerbating social conflict, especially in fragile states, postconflict areas, or areas subject to territorial disputes,

Scope of the ESSA

The ESSA focuses on the capacities of existing institutions and organizations for ensuring environmental and social safeguards, including regulations and procedures that govern them.

The assessment also tried to understand the existing outreach strategies, their ability to prioritize coverage of predominantly ST/SC/minority habitations or fringe settlements, social capacities of implementing staff and user committees, implementation and coordination arrangements for assuring accountability and transparency, extent of community ownership of water supply schemes, potential risks of conflicts emerging from inequity in resource sharing, practices for community engagement in the water supply sector and grievance redress mechanisms (GRMs) available in the state for providing accountable and quality water supply services.

Based on this assessment, ESSA recommendations actions to be included in Program Action Plan (PAP). The draft ESSA will be disclosed and stakeholders will be consulted before its final appraisal. The final ESSA, after incorporating stakeholder comments, will be disclosed on the website of the Department of Drinking Water (DDW) and the GoUK and the World Bank InfoShop.

Methodology for Environmental and Social Assessment

This assessment uses both primary and secondary data to understand the working of program systems. It identifies the strengths, benefits, opportunities, and risks of the current institutional structure and the legal-policy environment at four levels - state, division, district, and panchayats/village/habitation. Because the upcoming program is to be operationalized in peri-urban areas of Uttarakhand, the ESSA visited and attempted to understand issues in similar regions so that specific water supply challenges of peri-urban areas could be identified and incorporated in the final analysis. Thus, peri-urban or rural areas close to larger towns and cities in the Kumaon and Garhwal Division, which included Dehradun-Rishikesh belt of Garhwal and the Nainital-Haldwani belt of Kumaon Division were chosen for data collection. (Annex 1 - List of People Consulted and Places Visited)

Key steps in the ESSA included

- (a) Reviewing the existing environmental and social and legal frameworks relevant to the program interventions and potential areas of investment in the water supply sector;
- (b) Mapping and assessing the existing institutional and organizational systems, processes, and procedures for implementing programs and the existing environmental and social systems in place within these institutions;
- (c) Analyzing the institutional capacities of key stakeholders for managing the potential environmental and social impacts arising from program actions;
- (d) Identifying potential environmental and social impacts and risks applicable to the program interventions;
- (e) Assessing the program system performance with reference to the core ESSA principles of the PforR instrument and identifying gaps in program performance; and
- (f) Recommending actions to address gaps emerging from the assessment to enhance the positive social and environmental impacts of the program.

As part of the methodology development, preliminary consultations were held with key officials of *Uttarakhand Pey-Jal Nigam* (UJN), UJS, and SWAJAL at the state level and visits to some rural/peri-urban areas of the Dehradun-Mussoorie region were done to develop understanding about the nature of challenges and expectations of peri-urban communities with regard to WSS services. This helped in getting a perspective on implementation challenges and framing the methodological questions and instruments for the ESSA.

Review of Secondary Data

- (a) Before this program, the World Bank and the GoUK have been working closely in the Rural WSS (RWSS) sector, because of which there exist a number of progress reports, management information system (MIS) data, studies, and assessments on the implementation of WSS schemes and programs. This includes both social and environmental assessments; implementation guidelines such as Environmental Codes of Practices (ECoPs); capacity-building modules; and information, education, and communication (IEC) strategies. This information was reviewed to get an overall understanding of the sector, past interventions, and their challenges and for developing a perspective on the state's sectoral strategies and understanding the implementation status.
- (b) Relevant state-level information available with various departments and agencies—such as the DDW; SWAJAL Program Management Unit (PMU); UJN; UJS; SWSM; Central Pollution Control Board and State Pollution Control Board (SPCB); State Departments of Forests, Panchayati Raj, Rural Development, Social Welfare, and Urban Development; and State Training Institutions (STIs) like Uttarakhand Academy of Administration and Indian Institute of Technology (IIT) Roorkee—

were collected physically or from the public domain, reviewed, and analyzed. Key GOs and DOs, legislations, policies, program procedures relevant to the WSS sector in Uttarakhand, and existing training manuals/program guidelines for the identified implementing agencies are some of the other secondary data sources that were used by the team for this assessment.

Primary Data Collection

Primary data collection and its assessment took place at four levels - state, division, district, and panchayats/village/habitation. Discussions were held with relevant state-level officials of WSS implementation agencies such as the UJN, UJS, and SWAJAL; officials and agencies or departments that partially or indirectly work in the WSS sector; and nongovernmental organizations (NGOs) working on water and sanitation in the state.

District and field offices of WSS agencies were also consulted with to understand the current status and key issues. This was to get an overall understanding on the implementation of program safeguards in the previous World Bank-assisted RWSS project, GoI-funded schemes, and the statewide approach. Private operators who provide ancillary services were also consulted in this process.

Extensive field visits, including discussions with community stakeholders in peri-urban and rural areas (in regions where the program is likely to be implemented) were also undertaken. This included field functionaries of implementing agencies, User Water Supply and Sanitation Committee (UWSSC) members, elected representatives, staff of NGOs/SOs, and frontline workers. Community members/users, including those from vulnerable groups - SC/ST, minorities, Below Poverty Line (BPL) households, and women were also consulted to understand issues of access, equity, and participation in planning and management of water supply schemes, role of local bodies, community engagement, and grievance redress systems for the sector. These field visits included sites used as water sources, pumping stations, reservoirs, ongoing schemes, water treatment plants (WTPs) and sewerage treatment plants (STPs), households, and so on.

All field visits were made along with field-level representatives of at least one of the District Implementing Agencies (DIAs) designated by the state, and the sites to be visited were finalized in consultation with these representatives. The areas identified for field visits through consultations with government representatives were at the time of the workshop in March 14 to 16, 2016. Therefore, samples were taken from areas expected to be a part of the peri-urban program at the time, and included settlements in the areas around Dehradun-Haridwar and Nainital-Haldwani. Hence, this assessment is specific to the characteristics of peri-urban areas of the plains of Uttarakhand and the lower hills.

Data Collection Instruments

For state, district, and sub-district stakeholders, checklists were used for guiding discussions (Annex 2 - Checklist for the Social Assessment).

At the community level, a consultative process was used to understand concerns, needs, and possible impacts. These include focus group discussions (FGDs) with Panchayati Raj Institution (PRI) members and women's groups, open discussions/meetings, and personal interviews. Discussions were also held around existing community and individual water supply assets with existing users and those excluded from schemes. These discussions centered around issues of technology, O&M, community engagement, capacities and systems, construction, design, and management, apart from issues of equitable access, inclusion, and accountability.

Key informant interviews (KII) and FGDs were also held at the state and district levels with various important stakeholders, including representatives of the DIAs and elected bodies. In most cases, these findings were corroborated through primary research and triangulation before being made part of this assessment.

Sampling for the Field Visit

Uttarakhand is divided into two divisions, Garhwal and Kumaon, which include both hills and plains. The planned program is proposed to be implemented in both these regions of the state. While the program design workshop (March 15–16, 2016) potentially identified six peri-urban areas that could become part of the project, four regions were covered by the ESSA team—two each in Garhwal and Kumaon.⁴ Given the different topography, type of water supply systems, locational variations, and their related challenges and other conditions, those peri-urban and rural areas were selected for field visits that were likely to be representative of the final program area.

The assessment considered a combination of relatively new schemes, old schemes, and schemes handled by different agencies during the field visits. Also, schemes running on surface water and groundwater, including use of different water systems such as springs and traditional water tapping systems such as *gadheras*, rivers, and so on for water supply, were visited to inform the ESSA. In addition, levels of poverty, concentration and spatial spread of vulnerable communities, and nature of local economy were also used as criteria for selection of sites.

The ESSA has tried to capture the diversity (of programs and regions) by selecting areas where multiple parameters could be covered. These include lower hills, foothills, plains, valley, areas with ease of access, and remote areas with scattered settlements. Because Uttarakhand's economy includes pilgrimage centers, where provisioning of water supply services for tourists is an enormous challenge and which have also become peri-urban areas with high population growth, the assessment tried to understand specific challenges of such areas using a social and environmental lens. Other filters that reflect environmental and social concerns, such as proximity to forest areas, disaster-vulnerable areas, and so on, were also considered while identifying this sample.

A total of 18 sites were visited by the ESSA team, and following was the variation captured through these visits:

Characteristic	Sites Visited
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⁴ The study was initiated on March 18 and fieldwork was completed on May 9, 2016, during which time the identification of 35 CTs likely to be part of the new program had not been finalized.

Characteristic	Sites Visited
Representation of regions	Kumaon (7 sites) and Garhwal (11 sites)
Nature of intervention	STPs (4 sites), WSS schemes (14 sites), WTPs (2 sites)
Topographical and cultural variation	Hilly (7 sites), plains (7 sites)
Age of scheme	New schemes (4 schemes), old schemes (10 schemes)
Schemes implemented by different DIAs	6 SWAJAL, 5 UJN, and 11 UJS managed WSS ^a

Note: a. Some WSS schemes had more than one DIA.

A three-member team undertook this assessment. This included two Environmental Specialists and one Social Development Specialist.

Environmental and Social Analysis

The assessment evaluated the water supply subsector considering the proposed program design and existing implementation arrangements around five areas - strengths, benefits, gaps, opportunities, and risks. This included an analysis of existing implementation and identified social and environmental concerns with respect to relevant and prevailing legislations, institutional structures, implementation mechanisms/modalities, and governance structures. It helped in identifying possible project benefits and ways to further enhance social and environmental benefits from the program. The assessment also looked at direct, indirect, and cumulative impacts that may arise and possible externalities that could affect program activities. According to the ESSA methodology, a risk management approach was used to assess the program management capacity and the significance of potential environmental and social effects.

Consultation and Disclosure

Before finalization this report, the draft ESSA was disclosed according to the World Bank PforR requirements, for a period of 15 days, on the DDWS, Government of Uttarakhand and Infoshop, World Bank website, and comments were invited on the disclosed document. This was followed with a stakeholder consultation, which has been summarized in Annex 13. All pertinent issues from the discussion are also included in the ESSA analysis and if required also as a part of the recommendations.

Chapter 3: Existing Environmental Social Management Systems

This chapter examines the existing systems for environmental and social management that are relevant to the water supply and sanitation sector in Uttarakhand. This includes the policy and regulatory frameworks, national and state schemes, and programs for the water supply sector.

Regulatory Framework

The existing regulatory framework for the purpose of this discussion has been grouped into three separate sections. The first is general regulations and policies that are relevant from both the social and environmental perspectives. Here, the relevant policies and regulations are grouped as National and State Regulatory Frameworks. The second part discusses regulations specifically relevant to environmental safeguards, while the third section looks at those relevant to social safeguards. It then discusses the major government notifications and orders relevant to the water supply sector and their components on social and environmental management. It concludes by describing those national- and state-level programs and schemes that either directly work on water supply issues or contribute resources for water supply -related activities.

General Regulations

National-level Regulatory Framework

The National Water Policy, 2012. The policy notes that access to safe water for drinking and other domestic needs continues to be a problem with skewed availability that varies between regions and communities, with unreliable water supply being a potential source of social unrest. It says that lack of access to water for sanitation is a serious problem and along with industrial effluents has the potential to pollute drinking water sources. According to the policy, public agencies in charge of water-related services take decisions that do not involve the local stakeholders resulting in poor, iniquitous, and unreliable services. It calls for transparent and informed decision making based on principles of equity, social justice, and sustainability and involvement of the community in planning, development, and management of water resources. It makes local governments (in addition to center and state) responsible for providing minimum quantity of potable water to each household, while considering the needs of women, SC/ST communities, and other vulnerable groups.

It observes that disparity in stipulations for rural and urban water supply needs to be eliminated and calls for improved water supply in rural areas and creation of least water-intensive sanitation systems in rural areas. It also calls for ensuring minimum base flows of rivers and the need to understand ecosystem needs. The policy suggests the use of hydrological unit as a basis for planning water resources and to consider the impacts of climate change and possible changes in availability of water.

73rd and 74th Constitutional Amendment Acts, 1992. These acts pave the way for decentralization and local governance through the three-tiered system in rural and urban areas. The local bodies are mandated with functions for local planning for economic development of areas within their jurisdiction and to work for social justice, including the development of

socially and economically weaker sections. These acts provide reservation of seats for women, SCs, STs, and other backward communities in each tier/body. The 73rd amendment transferred 28 subjects to the rural local bodies (RLBs) and the 74th amendment gave powers under 18 subjects to the ULBs, which include drinking water supply and sanitation.

Under the 73rd Constitutional Amendment, the panchayat also has responsibilities for water management, minor irrigation, drinking water, maintenance of community assets, minor forest produce, agriculture, agricultural extension and animal husbandry, and health and sanitation within its jurisdiction.

The 74th Constitutional Amendment provides authority to the ULBs to function as bodies of self-governance and include responsibility for urban planning, water supply, public health, sanitation conservancy, environmental protection, public conveniences, and slum improvement and upgrade. Therefore, apart from infrastructure management, they also become responsible for the management of resources and support actions to ensure water quality and sustainability.

The Right to Information Act, 2005. This act provides for transparency and accountability in the functioning of public systems, by allowing citizens to seek and demand information from public and quasi-government offices on a subject relevant to them. The act is also an instrument of grievance redressal because it empowers citizens to demand information on the status of a given issue. The act covers all subjects and institutions funded through public resources and designates focal points in each public institution to be accountable for providing timely and correct information sought by the citizens under the act.

The National River Ganga Basin Management Bill, 2012. There are a number of activities prohibited under the National River Ganga Basin Management (NRGBM) Bill, including diversions of flows or storage of water without considering its ecological flows, dumping of waste in the rivers or active flood plains, and encroachment on river banks or active flood plains.

Restricted activities in Class II and other smaller towns and villages include the restriction of mining on the river bed. It also mentions the need for appropriate authorities to, where feasible, provide sanitation facilities and construct wastewater treatment facilities. The proposed program will have to consider these restrictions and prohibitions while identifying infrastructure and the program design.

State-level Regulatory Framework

Uttarakhand (U.P.) Water Supply and Sewerage Act, 1975.⁵ This act provides for the creation of state-level agencies—the UJN and UJS for implementing and managing WSS-related schemes—and spells out their powers and functions. It makes the UJN liable to render all necessary services with regard to WSS to the local bodies and disburse loans to them for their WSS schemes. The UJS has been assigned the responsibility to plan, promote, and execute an efficient scheme on water supply; provide water supplies in times of any emergency; and acquire

⁵ The act also provides for the UJN to take up O&M functions - Section 14 (X) provides for the UJN to run and operate any waterworks or sewerage system for a specified period, if asked by the state government; Section 19 - where no UJS entity has been established in certain rural areas, the UJN will perform the functions of the UJS.

and possess land to carry out any water supply/sanitation-related works. Section 33 (1) of the act provides that after the UJS is made responsible for an area, all WSS services, including the infrastructure created for them and all the rights, liabilities, and obligations of local bodies to these services and infrastructure, will be vested, stand transferred to, and be subject to the control of the UJS. Where the UJS and local bodies are managing WSS services in a contiguous area, they would be liable to coordinate their activities (Section 35). Section 49 (2A) provides that the state may transfer the management of a WSS scheme to the UJN in case of mismanagement by the local body or by the UJS.⁶

Uttarakhand Jal Sansthan Water Supply and Sewerage Bylaws, 2008. These rules notified in 2011 designate the competent authorities for sanctioning water supply connections in the state. They treat water supplied to hospitals, old age homes, orphanages, religious places, schools, charitable institutions, and rescue homes as consumption for domestic purposes and exempts them from paying commercial tariff. They give the officials of the UJS the power to provide or deny water supply connection based on location and feasibility of the unit and provide temporary connection for house construction. The bylaws consider equity and provide for only one connection per premise and prohibits (and also provides for penal action) the installation of pumping devices on the mains and service pipes or use of water from a domestic connection for nondomestic purposes.

Kumaon Water Rules, 1917 and 1930. These rules substituted the customary rights of the local communities over their water resources with a more formalized and ‘rational’ state system of water allocation for various purposes - drinking, water irrigation, and other uses. The rules marked a shift from the customary handling of water resources based on the principle of ‘prior use’. Therefore, in case of conflicts between individuals, communities, and so on, and where the rights of the state are not in contention, the concept of prior use rights prevail. However, these rules also state that both the beds and water of all rivers and natural streams, lakes, natural ponds, and other collections of still water within the hill tracts of the Kumaon division are the property and subject to the control of the state. The rules also shift from the customary rights to a state allocation of water resources.

Kumaon and Garhwal Water (Collection, Retention, and Distribution) Act of 1975. This act was enacted to regulate and control water resources so as to ensure its rational distribution for various purposes. Through this act, the individual and community customary rights to water were abolished, and all water sources were brought under the jurisdiction of the state. Therefore, in case of any conflict on rights on water resources that includes the state, the rights of the state shall prevail, even if there were earlier customary rights to the resources. Construction of any private water channel, tank, reservoir, or water mill or installation of any pumping machine or pipeline for taking water from any water source requires the permission of the Sub-divisional Magistrate (SDM). With regard to resource conservation, the act empowers the state government to demarcate areas to protect water resources and to declare these areas as a ‘protected area’ (PA). This includes prohibiting cutting trees, bushes, and shrubs or burning dried grass in such

⁶ The act is slightly exclusionary in that it provides for water supply to domestic users at minimal cost for premises situated within 30 m of the existing main, while applicant bears the charge of extension if the distance is higher.

areas without prior permission of the Sub-divisional Officer. However, the government is yet to identify such PAs.

Uttaranchal River Valley (Development and Management) Act, 2005. This act provides for a River Valley Development Authority headed by the Chief Minister to oversee the sustainable use of water and other natural resources in the river valley, set up and maintain grievance redressal cells and water quality monitoring systems at different locations in the river valley, approve/disapprove any development scheme in the command area of the valley, prepare a master plan for the development of the basin, and disallow any construction or development in the catchment of the river valley or dam/reservoir in contravention of the master plan prepared by the authority.

River valley development authorities can be established, as required, in the state under this act, and so far, there is one authority established. This is the Bhagirathi River Valley Development Authority. The aim of this authority is to ensure balanced use of natural resources, maintain ecological balance in the basin, and rehabilitate damaged ecosystems. The authority may also develop a master plan for its jurisdiction that will regulate and define activities in the area. Till such a master plan is developed, the authority has the right to regulate any development activity planned under its jurisdiction. Any activity under the program that takes place in the authority jurisdiction, including sourcing raw material or disposing waste, would require prior approval and adherence of plans to the master plan.

Uttarakhand Water Management and Regulatory Act, 2013. This act ensures sustainable, equitable, and judicious management and optimal allocation of the state's water resources through the establishment of a state water management and regulatory authority. The authority will determine and allocate water resources among various user categories based on availability at the project/utility level and establish a system to monitor and measure the actual use among different user categories; fix, regulate, and monitor a water tariff system; monitor water conservation and management practices; support the enhancement and preservation of the water quality; and determine standards for performance of water supply services and efficient water use by consumers. A water management and regulatory authority is still to be constituted by the state to oversee the implementation of this act.

According to this regulation, the State Water Authority will determine allocation and distribution of water resources based on the State Water Policy. It will also review and clear new water resource projects to ensure their integration with the Integrated State Water Plan and Basin-level Plans. Monitoring and enforcing entitlements is also under the jurisdiction of this authority. In all areas where such plans are made, the actual use of water resources would need to follow identified entitlement. Presently, there is the Ganga Basin Management Plan, and supporting legislation, that would be relevant to this project.

The Uttarakhand Flood Plain Zoning Act, 2012. According to this act, flood plain zoning is to be undertaken for all river flood plains in the state. Based upon the identified zoning, activities should ensure public health and safety and reduce inconvenience to general public. Prohibition or restriction of activities in the flood plain may be notified according to each flood plain area's

specific needs. This act would be relevant for any activity such as the development of rising mains near or in the flood plains.

The Uttarakhand Panchayat Act and Panchayat Laws Act, 1947 (with amendments of 2002, 2005, and 2007). This act assigns the GP functions related to construction, repair, and maintenance of public wells, tanks, and ponds for supply of water for drinking, washing, and bathing purposes and the regulation of sources of water supply for drinking purposes. It also makes the GP responsible for the welfare of the weaker sections including the SCs and STs and the welfare of handicapped and other vulnerable groups by ensuring their participation in social welfare activities and programs specifically aimed at the development of SC/ST communities.

The act also makes the panchayat responsible for maintenance and preservation of community assets and tasks it with the responsibility to prepare Panchayat Development Plans and levy/collection of taxes assigned to it, including a water rate where water for domestic consumption is supplied by the GP. Section 30 provides for the constitution of joint committees of two or more GPs to frame a scheme, exercise powers bestowed on the GPs. Section 33 gives the GPs the power to acquire land by private negotiation or request the District Collector to acquire it on their behalf.

The Uttarakhand Panchayat (Third Amendment) Act 2003 paved the way for giving legal status to the GP subcommittees (such as the UWSSCs) by declaring that the state government may constitute a subcommittee for a particular subject to assist the main committee, by notification, under Section 29 of the 1947 Act.

According to this 2003 state act, the GP will also provide agricultural extension activities, develop and manage ‘wastelands’, manage and distribute water from minor irrigation projects, promote and develop social and farm forestry, and maintain community assets. Therefore, water conservation and the management of water quality and water sustainability are activities that the GP is involved with and require adequate capacity and guidance to perform this role.

The Uttarakhand Disaster Mitigation, Management, and Prevention Act, 2005. Under this act, there is a need to prepare master disaster plans and strategies. These plans and strategies may be relevant to identify vulnerabilities to disasters in the planned project area and develop possible management, mitigation, and prevention actions to ensure minimum impact from disasters to infrastructure developed under the project.

The roles of the State Disaster Management Authority and the State Commissioner for Disaster Management created under this act are also to assist and provide relief to the disaster-affected community; prevent disruption in essential services to the community; and provide relief including food, medicine, drinking water, and so on to the community.

Environmental Regulations

Environment: Environmental Protection Act (EPA), 1986 and EPA Notification, 2006. This act gives powers to the central and state governments to protect and manage the environment and lay down standards as required. The 2006 notification identifies a number of activities that may require an Environmental Impact Assessment (EIA) and includes construction, expansion, and

modernization of Common Effluent Treatment Plants (CETPs) but not STPs. Brick kilns within 200 m of the river are not permitted, and river sand mining without required permits and environmental clearance is banned under the EPA. In case of any work that may affect or is in eco-sensitive zones, clearance under the EPA will be required.

Guidelines for eco-sensitive Zones, 2011. Till states identify site-specific eco-sensitive zones, 10 km from national parks and sanctuaries are considered eco-sensitive areas and protected under the Wildlife (Protection) Act, 1972 and the EPA, 1986.⁷ Also, states may identify further eco-sensitive zones for protection. All eco-sensitive zones are to have specific management guidelines, and each such zone or area needs to have guidelines to protect them. Two eco-sensitive zones have been identified in Uttarakhand, of which the Doon Valley is likely to be partially adjoining or be in the identified project area. However, Uttarakhand still needs to delineate eco-sensitive zones/areas around PAs. Issues that could be relevant for this project may include discharge of effluents and solid waste on land or water bodies, and prohibition of movement of vehicular traffic at night. Felling of trees, introduction of exotic species (which is unlikely under this project as planned infrastructure is to be limited to areas of a maximum of 10*10 mts, and in compounds of the department or other government lands and no landscaping is expected) and air and vehicular pollution are suggested to be regulated. Refer to annexes 4, 5, and 6 for general eco-sensitive areas and zones and list of activities permitted, restricted, and prohibited according to the guidelines; the jurisdiction of the Doon Valley eco-sensitive zone; and the list of all PAs.

Forests and biodiversity: India Forest Act, 1927, Forest Conservation Act (FCA), 1980, The India Forest (Uttaranchal Amendment) Act, 2002, and Uttar Pradesh Tree (Protection) Act, 1976 (Amendment 1998). Any tree and forest clearances and quarrying, including use/removal of forest products from reserved forests is only permitted after taking written permit from the Forest Officer or state government, as appropriate. The state government can make rules as required to manage its forests. For any non-forest activity in the forest area, including acquiring land, permission needs to be taken under these acts. For any forest clearance, reforestation activities would be according to the law. Within reserved forests, cutting or damaging trees, clearing land for any non-forest purposes, and quarrying are not permitted. Similarly, in case of forest land and waste land not belonging to the government, there are a number of activities regulated or prohibited and include clearing of vegetation. The FCA also identifies required procedures for clearances in case of the need to convert forest land for non-forest purposes. The FCA is supported by the Forest Conservation Amendment Rules, 2004, that provide guidelines for transmission lines in forests and compensation for forest land diversion. The Ministry of Environment and Forests (MoEF) guidelines dated October 16, 2000, suggest that certain infrastructure such as underground water pipelines may be allowed to be laid in areas governed under the FCA and specify certainty parameters for this. This permission is to be reviewed based upon the permission period.

⁷ The National Environment Policy 2006 defines environmentally sensitive zones and areas as those with identified environmental resources having ‘incomparable values’ which require special attention for their conservation.

Wildlife (Protection) Act, 1972, and The Wildlife (Protection) Amendment Bill, 2013. Under these acts, any damage or destruction of plants from notified forest land or area is prohibited. Also, permission for any entry or activity in a wildlife sanctuary is to be taken from the Chief Wildlife Warden of the area. PAs under this act are to be managed according to management plans identified for them. Any activity that may affect or be in eco-sensitive zones may require clearance under this act.

Wetland (Conservation and Management) Rules, 2010. Activities such as water withdrawal; impounding, diversion, or interruption of water sources within the local catchment of the wetland ecosystem; or activities that may affect the ecological characteristics require state permission.

These regulations may be relevant to various project activities. The proximity of the planned project area to PAs and forest department land may be relevant, such as in Haldwani where at present, sewage pipelines discharge their untreated effluents directly on forest land and an STP is yet to be built; and Doiwala, a peri-urban area of Dehradun, which is near Rajaji National Park. For any pipelines in the forest areas, clearance under these acts and, if required, the wildlife and environmental protection acts and following their guidelines would be required. Equally, any vegetation and tree clearance would be dictated by these regulations, and required permission should be taken from the state Forest Department. For any activity planned that may need to use any PA land, or lands under these acts, permission from the applicable act would be required and would also need to be included in the area's management plan. The wetland regulations may be relevant for any activity around wetlands described in the regulation.

Environmental quality and pollution: Water (Prevention and Control of Pollution) Act, 1974, and The Water (Prevention and Control of Pollution) Cess Act, 1977. All trade effluents, discharge from any activity, or the disposal of any waste into water systems, including that which may affect subterranean systems, should be in accordance with the standards laid out under these regulations. Also, any construction of weirs, sluices, and so on that may impede the flow and aggravate or lead to pollution is not permitted under the regulations. Any new outlets or discharges from treatment systems or their extensions would require a consent from the SPCB, and follow the procedures laid out by them, before commencing the activity. The legislation on cess states the need to pay a cess based on water consumption, including for domestic purposes. However, there is a 25 percent rebate for installing an STP and cleaning the water before discharge.

The Noise Pollution (Control and Regulation) Rules, 2000. The level of noise from any activity in all areas is dictated by these rules. Therefore, construction and regular running or maintenance activities under the project would need to ensure that the rules are followed.

Air (Prevention and Control of Pollution) Act, 1981. Ambient air quality standards are set by the Central Pollution Control Board (CPCB) and SPCB for industrial, residential, and ecologically sensitive areas under this act and would need to be followed during the construction phase and postconstruction management. Areas where the standards may be relevant are use of diesel generators for energy, construction vehicle movement, and other activities that may result in air pollution. In case of the use of generators for power generation and backup, regulations for

both emission and noise levels have been set by the CPCB. These are for liquefied petroleum gas (LPG), compressed natural gas (CNG), petrol, and diesel generators, such as 800 kW and below diesel generators that require to follow emission standards identified under the Environmental (Protection) (Third Amendment) Rules, 2013, and petrol and kerosene generators of up to 19 kW that need to follow the standards of the Environmental (Protection) (Second Amendment) Rules, 2013.

The running and management of WTPs is likely to create both liquid and solid waste. Their disposal should be based upon standards of these regulations and cess paid as required. Generators procured and used must be of appropriate standards, and their regular maintenance must be assured to ensure emissions and noise levels are within permissible limits. Any construction or other activity would need to be within permitted noise limits as defined by the noise rules.

Waste management: Solid Waste Management Rules, 2016. These regulations are applicable to all waste generators, including the ULBs, outgrowths in urban agglomerations (UAs), and CTs and, therefore, will be applicable to the project. All waste would need to be segregated at sources into biodegradable, non-biodegradable, and domestic hazardous waste and disposed through authorized waste dealers and systems. The ULB, UA, and CT authorities need to prepare solid waste management plans that are to be followed in their jurisdiction, including establishing waste disposal for different waste streams. There are a number of other legislations that support the management of waste and are briefly mentioned here.

Batteries (Management and Handling) Rules, 2001; Manufacture, Storage, and Import of Hazardous Chemical Rules, 1989; E-Waste (Management) Rules, 2016; Plastic Waste (Management and Handling) Amendment Rules, 2011; and Plastic Waste Management Rules 2016. These regulations identify management of waste that includes handling, storage, and disposal of specific forms of waste, most of which is hazardous waste. While all these forms of waste need to be disposed only through authorized dealers and collection centers, in case of e-waste, storage cannot be more than 180 days.

Others: Guidelines/Criteria for evaluation of proposals/requests for groundwater abstraction, with effect from November 16, 2015. According to these guidelines, abstraction of groundwater in notified areas through any energized means will be only for drinking purposes, and after permission as identified in the guidelines and being given a No Objection Certificate (NoC). Guidelines are also given for water withdrawal and use for non-notified areas, including the need for an NoC. These NoCs will need to be renewed, based upon the existing conditions of the aquifers at the time of renewal. At present, there are no notified areas in Uttarakhand. However, as majority of the water supply under this project is likely to be sourced from groundwater sources, these guidelines would need to be followed.

Public Insurance Liability Act, 1991. It will be applicable to those who are not covered under the Worker's Compensation Act, 1923 and may suffer injury because of any accident. Where there is a need to handle any hazardous substance, the agency will need to have insurance so that required relief is provided, if needed.

Mines and Mineral (Development and Regulation) Act, 1957 and The Uttarakhand Minor Mineral (Concession) (Amendment) Rules, 2015. Mining activities under this act are only to be taken based on permissions identified under this act. The schedule of rates for mineral royalty is given in the Uttarakhand rules.

Ancient Monuments and Archaeological Sites and Remains Act, 1958. Area up to a distance of 100 m from protected monuments is protected and no construction can take place. Beyond it, up to 200 m near and adjoining protected monuments are regulated areas, and activity would be according to the regulation in the area. In case of a chance finding during construction or other activities, this act identifies the processes and actions that may need to be taken to protect the area. This would be relevant in areas where project activities may create any repair, addition, or alteration, and construction/reconstruction within these areas need prior approval of the Archaeological Survey of India. Also, this may be relevant for any building procurement, waste disposal, or laying of new pipelines because of project activities.

Construction and Demolition Waste Management Rules, 2016. These rules are applicable for waste such as building material, debris, and rubble from construction, remodeling, repair, and demolition of any civil structure. Waste generators are responsible for all such waste. In case of at least 20 tons per day or 300 tons per project in a month, the waste has to be segregated according to directions of the law, with submitting of a waste management plan, getting required approvals from local authorities before starting work, and paying the required levies. These rules identify activities for the management of the construction/demolition site such as cleaning, storing, and disposal. These would need to be followed for any construction, refurbishing, and demolition activity undertaken for this project.

Uttarakhand Building Construction and Development Bylaws 2011 and its amendments. The bylaws have given standards to be followed for building construction, including for structural safety and safeguarding from hazards. It also gives activities permissible and suggested development concerns while working in PAs and eco-sensitive zones. These bylaws should be followed for all construction activities.

Social Regulations

- **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.** Uttarakhand has a forest cover of more than 65 percent, and several communities live inside the forests or on forest fringe. The Forest Rights Act (FRA) recognizes the customary rights of such STs and other traditional forest dwellers to access services and own resources. It also provides usufruct and community ownership rights to forest-dwelling communities for diverting forest land for creating basic social infrastructure, including sources of water for human and livestock use. Section 3(2) of the act provides for diversion of forest land for creating facilities including drinking water supply and water pipelines for these socially and economically vulnerable communities.
- **Uttarakhand District Planning Committee Act 2007 and DPC Rules 2010.** This act provides for the constitution of a District Planning Committee (DPC) in each

district for the consolidation of plans prepared by the panchayats and municipalities into district development plans. The development plans are to consider matters of common interest of panchayats and municipalities located in the district, including sharing of water, physical, and natural resources, apart from integrated development of district infrastructure. Functions of the DPC also include determining the district-level development priorities and programs, providing sectoral outlays in the plan and budgets (according to district plan outlay), allocating resources for district sector schemes, and reviewing progress of schemes under decentralized planning framework.

- **Uttarakhand Right to Services Act, 2011.** This act notifies a set of services to be provided by the state within a stipulated period of time and are legally enforceable by residents of the state. This act covers 10 departments, including the DDW. This act guarantees a new water supply connection to a consumer within 15–30 days of the application (wherever technically feasible), depending on the size of the connection demanded, subject to technical feasibility, failing which the designated officer will be penalized and the applicant will be provided the right to go in and appeal to the notified appellate authority.

Important GOs and Notifications of the State

- **GO Department of Panchayati Raj, GoUK, No. 622/PGASA//92(25)/2003 dated October 29, 2003 - On bringing 14 subjects and related departments under administrative, executive, and financial control of panchayats.** In line with the spirit of the 73rd constitutional amendment on local self-governance, 14 subjects, which include drinking water, health and sanitation, minor irrigation, and watershed and their related financial and executive control, and cadres have been transferred to the three-tiered panchayat institutions (at the appropriate level). This has been done to decentralize implementation and for ensuring complete accountability to the community. The Zila Panchayat (ZP) is to be given the responsibility to control budgets and make financial allocations to departments against scheme funds received for District Plan/State and Central Sector after inclusion of contributions for the Tribal Sub-plan/Special Component Plan (TSP/SCP) components.

Departments are to directly transfer funds into the *Gram Nidhi* (GP account) for all works; the GP is made responsible for maintaining all assets created in the panchayat and to prepare work plans for all resources received under the 14 subjects for approval of the concerned office. The order brings functionaries of major departments under the administrative control of the panchayat at different levels.

- **Notification of Department of Panchayati Raj, GoUK, 308 /86(16)/2005 dated May 19, 2005 - On roles and responsibilities of the GPs and UWSSCs for drinking water and sanitation.** According to the notification, for conforming to the GoUK order of October 2003, all the GPs are to constitute the UWSSCs to function as the subcommittee of GPs' Standing Committee on Water Management. These

users committees will have beneficiaries of schemes as members, with representatives of all the GPs, *Kshetriya Panchayats*, and ZPs as their ex-officio members. At least 30 percent of members will be women and 20 percent will be from socially vulnerable communities - SC/ST.

The committee is to be responsible for all water and sanitation related works in the panchayat and will collect community contribution (labor or cash) for running these schemes/undertaking works; plan, execute, operate, and maintain WSS schemes; fix water tariff; and ensure coordination with the Water Management Committee and the GP. The GP is responsible for constituting the UWSSC, approving schemes prepared by the subcommittee and will transfer funds for WSS schemes received from District Water and Sanitation Mission (DWSM) from its *Gram Nidhi* to the UWSSC accounts within 15 days and resolve water supply related conflicts arising within the panchayat.

- **DO DDW No. 2121/29/04-2/2004 dated August 17, 2004 - On bringing all WSS-related functions, finances, and functionaries under Panchayati Raj.** The DO, to all implementing agencies (UJN/UJS/SWAJAL), is in conformity with GO. No. 622/PGASA/92(25)/2003 of Panchayati Raj Department and brings the functionaries under the control of PRIs at appropriate level. This order makes the district/division-level officials responsible for supporting PRIs in review of expenditure under the District Plan Budget, inspecting and ensuring quality in execution (new schemes) and repair works (existing schemes) being undertaken in the district, and identifying multivillage schemes (MVSs) and submit them to the government for approval.

The order also brings all district-level officials of the UJS and UJN under the general control of the ZP and directs these officials to act as technical adviser of the ZP for WSS schemes. Block-level officials are to review, inspect, and provide technical support to the GP on O&M; resolve conflicts emerging in single village scheme (SVS); and undertake need identification for new WSS schemes in their block. At the GP level, the functionaries are to support the handing over of schemes/hand pumps and their effective O&M; facilitate the formation of the UWSSCs in the schemes transferred to the GP; seek funds from the GP for the maintenance, repair, and augmentation of transferred schemes; identify sources for new schemes to be proposed for the GP; create community awareness regarding drinking water supply schemes/policies; and support the panchayat in fixing tariff for water use.

- **GO-DDW- No. 738/29 (2)/06-2 (22P)/2004 dated March 25, 2006 - On using a Sectorwide Approach (SWAp) for all WSS schemes being implemented in the state.⁸** In line with the 73rd Amendment Act, decentralized and uniform arrangements for schemes on drinking water and sanitation are being implemented by the state, for all schemes sanctioned from FY2006–07. According to the GO, by the year 2010–11, all schemes, SVSs as well as MVSs, are to be implemented with a

⁸ These were also in line with the sector reform guidelines for *Swajaldhara* issued by the GoI in 2004 and communicated to state agencies through letter No. 2120/29/04-2(22P)/2004 dated August 18, 2004, calling for the transfer of 3Fs (funds, functions and functionaries) to the PRIs in a graduated manner and seeking help from NGOs/community-based organizations (CBOs) in implementation.

SWAp in line with the sector reform policy adopted by the state. In all new schemes, integrated investments are to be done for drinking water, environmental sustainability, sanitation, and source sustainability and strengthening.

The UWSSCs are to be constituted for all new SVSs and MVSs that will have community participation; the GPs will have control over all resources with responsibility for planning, execution, and O&M of SVSs. MVSs are to be developed only if SVS is not technically or financially feasible. Considering the technical complications of MVS, the Multivillage Scheme Level Committees (MVSLCs) will take help from the concerned DIAs for planning and implementation and for getting water from the source to the village boundary. All works within the village boundary will be the responsibility of the UWSSC. All intravillage water supply works will necessarily have a community contribution and financial requirements for O&M of MVS beyond the ‘affordable level’ of the village will be borne by the state government through a transparent process.

- **Gazette Notification by the UJS published in the Gazette of February 2, 2013 Part 1A – (according to powers provided under Uttarakhand [U.P.] Water Supply and Sewerage Act, 1975) - On water and sewage tariff.** Revised rates of water tariff and development charges are to be fixed for metered/unmetered, domestic/commercial, and rural/urban connections, based on whether a scheme is gravity, low-head, or high-head. Water tariff is to be fixed based on the annual rental value of the dwelling unit/size of dwelling in urban areas and on the number of tap connections in a dwelling unit in rural areas. All SC/ST families/infirm/war widows/landless laborers/BPL families are exempt from deposits/advance payments/miscellaneous charges. However, the notification is not clear on different rates/exemptions to these categories of households for new connection and monthly/periodic water tariffs.
- **GO No. 1481/29(2)/15-29(78Pe)/2012 TC-11 dated December 10, 2015.- Designating Uttarakhand Jal Sansthan as the state backstopping agency for World Bank-supported WSS schemes.** The order designates the UJS as the agency for supporting the UWSSCs constituted under the World Bank-funded WSS schemes after December 2015 (project completion). The agency is to provide support in case of major technical problems in the schemes and provide technical and financial support for repairing schemes affected by natural calamities, and periodic capacity building of community and functionaries employed by the UWSSCs.

Government Programs and Schemes Relevant to WSS

- (a) **NRDWP.** The flagship program on drinking water supply of the MDWS aims to enhance access to safe and adequate drinking water, within reasonable distance, to all households in rural areas—as a public good and as a ‘basic right’—through community-based water supply systems; it aims to involve the community in planning, managing, and monitoring of water supply sources/schemes and create an

environment for communities and panchayats to take over the management and maintenance of the schemes in their village.⁹

- (b) **Swachh Bharat Mission-Gramin/Urban.** This flagship program on rural sanitation incentivizes behavior change toward safe sanitation. The Solid and Liquid Waste Management (SLWM) component of the SBM provides resources for the systematic disposal and management of domestic waste. It also provides funds for improving hygiene practices and the use of different liquid/wastewater treatment technologies.
- (c) **Fourteenth Finance Commission (*Dr. APJ Abdul Kalam Gram Badlao Yojana*).** The Fourteen Finance Commission provides a basic grant and a performance grant to all local bodies (the ULBs and GPs) for improving delivery of basic services. The *inter se* allocation of grants is to be based on the criteria adopted by the state for devolving the State Finance Commission grants. The suggested areas for spending the basic grant include water supply, sanitation, sewage, drainage, and solid waste management.¹⁰ In Uttarakhand, the Department of Panchayati Raj and Rural Development is the nodal agency for disbursing and managing grants to the GPs, and the Department of Urban Development for grants to the municipalities. The local bodies have to develop five-year Village Development Plans for using these grants between 2015–16 and 2019–2020,¹¹ highlighting the annual priorities of each panchayat/municipality.¹² All works done under the Village Development Plan are to be executed by the GP. The guidelines provide for using 10 percent of the basic grant for meeting the water supply charges (but not payment of arrears) and preparing technical plans for implementing drinking water and SLWM projects.¹³ These plans should aim at improving the well-being of the vulnerable and marginalized groups - SC/ST/Particularly Vulnerable Tribal Groups-PVTGs/minorities/people with disabilities (PWD)/ elderly/women/children/migrants/bonded laborers/transgenders/victims of trafficking/trans-humans.¹⁴
- (d) **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).** This act provides assured employment of at least 100 person-days to a rural household in the form of guaranteed employment for unskilled and manual labor work. The permissible works under the 2008 Operational Guidelines include source strengthening activities in the form of renovation of water bodies and desilting of

⁹ The NRDWP Guidelines 2013.

¹⁰ GoUK GO No. 1513/XII (1)-2015-96(06)/2015 dated September 3, 2015 and Department of Panchayati Raj and Rural Development GO dated September 10, 2015.

¹¹ Uttarakhand is expected to receive approximately INR 2,347 crores (INR 1,652 crores for GPs alone) between 2015 and 2020 as a basic grant and about INR 350 crores as a performance grant.

¹² Guidelines for the *Dr. APJ Abdul Kalam Gram Badlao Yojana*.

¹³ DO No. G-39011/4/2015-FD, MoPR, GoI dated December 16, 2015.

¹⁴ MoPR. 2015. “Model Guidelines for Preparation of Gram Panchayat Development Plans.”. Guidelines for release and Utilisation of Grant under Fourteenth Finance Commission, NO 13 (32) FFC/FCD/2015–16, Department of Expenditure, Ministry of Finance, GoI.

tanks.¹⁵ However, not much use of this convergence opportunity has been made by the state for source strengthening.

- (e) **AMRUT/JNNURM.** Having an urban focus, one of the objectives of AMRUT and its earlier form, JNNURM, is to ensure that every household has access to a safe and assured supply of tapped water and a sewerage connection in urban areas, particularly for women, based on parameters and standards developed by the MoUD - the Service Level Benchmarks (SLBs).

Water supply, sewerage facilities, and septage management are among the priorities identified by the mission, and include augmentation of existing water supply, WTPs ,and universal metering; rehabilitation of old water supply systems, including treatment plants; rejuvenation of water bodies specifically for drinking water supply and groundwater recharge; special water supply arrangement for difficult areas, hills, and coastal cities, including those with water quality problems (for example, arsenic and fluoride); decentralization; and recovery of operational cost in full.¹⁶ In the context of the program, the scheme becomes relevant for those peri-urban/rural areas notified and brought within the municipal limits of cities covered under AMRUT - Dehradun, Haridwar, Haldwani-Kathgodam, Rudrapur, Kashipur, and Roorkee.¹⁷

- (f) **Ekal Peyjal Yojana.** This is a sub-scheme under the NRDWP of the MDWS for incentivizing the sustainability of community-managed SVSs. This sub-scheme provides an incentive for repair and maintenance to all the SVSs being successfully managed by the community to the tune of 5 percent of the total allocation under the scheme.¹⁸

- (g) **Uttarakhand Urban Sector Development Investment Program (UUSDIP).** Funded through both Asian Development Bank (ADB) and JNNURM/AMRUT funds, this program is implemented by the Urban Development Department, GoUK. It has five components - water supply, wastewater management, solid waste management, slum improvement, and roads and traffic management. Activities relevant to water supply include improving and augmenting water supply and the distribution network; rationalizing, optimizing, and metering water supply; reducing (NRW; and providing 24x7 water supply. For wastewater management, the project will look at improvement of on-site sanitation. A total of 31 towns are covered under this project.¹⁹

¹⁵ http://164.100.129.6/netnrega/state_html/empstatusnewall_scst.aspx?lflag=eng&fin_year=2016-2017&source=national&labels=labels&Digest=DaNMkCT4HZjxosanIifuQ. Uttarakhand has 11.36 lakh job card holders, who have received 20.75 lakh person-days of employment in 2016–17 by January 2017.

¹⁶ AMRUT Mission Statement and Guidelines, MoUD, GoI, June 2015.

¹⁷ <http://amrut.gov.in/writereaddata/oms/Uttarakhand.pdf>. The state is expected to get INR 133 crores as central assistance for these six cities under AMRUT in the financial year 2016–17.

<http://timesofindia.indiatimes.com/city/dehradun/Six-cities-of-Ukhand-get-Rs-133-68-crore-under-AMRUT-scheme/articleshow/50502783.cms>.

¹⁸ As shared by officials of the SWAJAL PMU on March 18, 2016.

¹⁹ <http://uusdip.org/sewerage.php>.

(h) **Integrated Ganga Conservation Mission - *Namami Gange*.** It is for the entire Ganga river basin and works to rejuvenate River Ganga, including consolidation of existing efforts for the management of activities along the river. An action plan has been developed for implementing the program for which seven ministries have been working together. The activities include *Nirmal Dhara*, encouraging water reuse, monitoring water quality, and developing river regulation zones along banks of Ganga as well as bank beautification activities for selected towns along the river. A total of INR 2,037 crores has been put aside for conservation activities and another INR 100 crores for ghat development. *Aviral Dhara* is to look at enforcing river regulatory zones along the banks of Ganga, rationalizing agricultural practices, irrigation efficiencies, and restoration and conservation of wetlands. In Uttarakhand, so far 18 projects have been sanctioned.

Chapter 4: Institutional Arrangements for the WSS Sector

This section discusses the existing institutional system for the delivery of WSS services and the role they play on environmental and social issues. It also describes some of the other departments and agencies that are not directly or significantly involved in the WSS sector but nevertheless play an important oversight, regulatory, or financing role.

There is a well-established and clearly identified institutional structure to deliver WSS services in urban and rural areas of Uttarakhand. This mainly includes the DDW, the SWSM and the three Implementing agencies - UJS, UJN, and SWAJAL.

There are other agencies, which, depending upon their geographical jurisdiction, may also be involved in the delivery of WSS services. Some, like the GPs and ULBs, may be directly involved in the implementation or management of drinking water supply and sanitation schemes, while some others like Social Welfare and Forest Department either provide specific support/funds or provide clearances for such schemes and projects. There are yet others, like the Nainital Lake Region Special Development Authority (NLRSDA), which may, as part of their mandate, undertake specific projects related to water supply, sewage, and sanitation, though this may only be a small part of their overall mandate.

Institutional Framework to Manage Water Supply, Sewage, and Sanitation

Agency	Role in Water Supply, Sanitation, and Sewage	Role in Environmental Issues	Role in Social Issues
DDW	<p>Nodal department for drinking water supply and sanitation in the state. Provides policy direction, budget, and work allocation to the 3 line agencies under the department.</p> <p>Nodal department for the implementation of the NRDWP, SBM, and other Centrally Sponsored Schemes (CSSs) and state sector WSS schemes</p>	<p>Provide overall guidance to ensure safe drinking water and sanitation in the state.</p>	<p>Ensure universal access to safe drinking water supply for all rural and urban habitations.</p> <p>Provide alternate and safe drinking water supply in areas affected by poor water quality.</p>
SWSM - Apex Committee and Executive Committee	<p>The state's apex policy formulating body on rural WSS, responsible for ensuring convergence between WSS schemes through interdepartmental coordination</p> <p>Compilation and analysis of state Annual Implementation Plan (AIP) of schemes under the NRDWP on rural WSS and periodical review of progress of plan and performance of water supply schemes in the state.</p>	<p>Formulate policies to address WSS concerns in the state and implement them.</p> <p>Assist the DDW in smooth program implementation through required support for coordination with various departments.</p> <p>Allocate budgets for activities that support project sustainability, such as source sustainability measures.</p>	<p>Allocate funds for providing stipulated quantity and quality of services to all rural areas of the state according to the NRDWP norms.</p> <p>Provide oversight to regular and inclusive supply of potable and quality water to all habitations, schools, <i>anganwadis</i>, and health institutions and guide program managers to make the WSS services more accessible.</p> <p>Oversee preparation and operationalization of capacity-building strategy for stakeholders, including <i>panchayat</i> leaders, on water and sanitation.</p>
UJN	<p>Planning, survey, design, and execution of rural and urban schemes, SVSs, and multi-village rural water supply and sewage schemes, including undertaking major repairs and augmentation of existing schemes</p> <p>Authorized construction agency for water supply and sewage schemes in the state</p> <p>The UJN has engineers from civil, electrical, and mechanical branches. Ground implementers are usually the Assistant</p>	<p>Identify source and strengthening requirements.</p> <p>Identify appropriate design and technology for the WSS infrastructure.</p> <p>Take permits for activity in Forest Department lands.</p> <p>Ensure construction according to the GoI and other relevant norms.</p> <p>UJN had hired four environmental consultants for all thirteen districts to</p>	<p>Design WSS schemes to provide equitable access to all inhabitants; identify site/land with community for setting up pumping stations, water reservoirs, and other ancillary constructions like treatment plants and break pressure tanks.</p> <p>Provide technical support to panchayats in the design of SVS being implemented by PRIs.</p> <p>Finalize plan and execute schemes in consultation with community/local bodies.</p>

Agency	Role in Water Supply, Sanitation, and Sewage	Role in Environmental Issues	Role in Social Issues
	<p>Engineers (AEs) and Junior Engineers (JEs). AE's are graduate engineers in all three engineering areas. JEs mainly hold diplomas in civil engineering. Engineers implementing in the field are to undertake an SLTI training for technical and social issues.</p> <p>Infrastructure construction is usually done by contractors/companies hired by UJN, and UJN also monitors the construction company.</p>	<p>support implementation of the SWAp project's environmental safeguards.</p>	<p>Establish the UWSSCs and MVSLCs for all new schemes.</p> <p>Provide WSS services to SC/ST habitations through the SCP and TSP components of the NRDWP.</p>
UJS	<p>Planning, operating, and maintaining WSS schemes in the state, including repair and augmentation of old/existing schemes, mainly MVSs</p> <p>Repair and rejuvenation of all schemes affected by natural disasters in the state</p> <p>Planning, executing, and operating sewerage treatment and disposal schemes and treatment of trade effluents. There is a network of 26 laboratories, which were being run by the Federation of Indian Chambers of Commerce and Industry (FICCI) through a contract till recently.</p> <p>Ensuring water supply during emergencies and water scarcities and for social and religious congregations</p> <p>The UJS is staffed with graduate civil, mechanical, and electrical engineers and JEs with civil engineering diplomas. The UJS engineers have undergone technical and social SLTI training activities.</p> <p>The UJS laboratories have a chemist usually with an M.Sc. in chemistry who receives a</p>	<p>Strengthen source and support any further source strengthening activities required.</p> <p>Identify appropriate design and technology for the WSS infrastructure.</p> <p>Under the SWAp, to implement their projects, they had four environmental specialists for all thirteen districts.</p>	<p>Ensure regular supply of drinking water for all in schemes operated by the UJS (and also sewage in areas where it is managing sewage networks).</p> <p>Take formal approval of local bodies/UWSSCs before taking over a scheme from the UJN or UWSSCs.</p> <p>Provide technical support in the design of SVS being implemented by PRIs.</p> <p>Manage schemes in coordination and close consultation with the UWSSCs.</p> <p>Take up schemes for O&M if community requests.</p> <p>Address citizen's grievance with respect to new water connections/regular supply and operation of sewerage networks/systems.</p>

Agency	Role in Water Supply, Sanitation, and Sewage	Role in Environmental Issues	Role in Social Issues
	short training in microbiology. Not all laboratories have microbiologists.		
SWAJAL PMU ^a	<p>Work as a DIA through its district units for RWSS of the GoI and state government</p> <p>Nodal Agency for SBM-G</p> <p>Coordinating and monitoring project implementation</p> <p>Coordinating and monitoring water quality and regularly monitoring water quality across the state through the UWSSCs and District Program Management Units (DPMUs).</p> <p>Reviewing water supply schemes and environmental sanitation activities design, construction, supervision, and leak detection</p> <p>Training and capacity building of village-level workers, PRIs, NGOs, and state and district officials among others identified for the management of RWSS systems.</p> <p>Supporting NGOs in RWSS and environmental sanitation</p> <p>Developing and implementing IEC strategy for RWSS sector</p> <p>Planning and executing SVS in rural areas</p> <p>Undertake training programs for PRIs, rural water supply, sanitation, and water quality monitoring and surveillance for user committees and other key stakeholders.</p> <p>Undertake the programs for IEC and capacity building as the Water and Sanitation Support Organization (WSSO) of the state under the NRDWP.</p>	<p>Identify source and strengthening needs. Create capacity and assist communities monitor and manage water quality.</p> <p>Support PRIs identify appropriate RWSS infrastructure design and technology for each scheme.</p> <p>Create demand and awareness for improved services and management of RWSS services.</p> <p>Create capacity to ensure systems work well and reduce concerns of pollution, ill health, or source degradation.</p> <p>SWAJAL's PMU has water quality and environmental specialists, and there is an environmental specialist in each district. They are qualified and trained in Catchment Area Treatment techniques. There is a health and hygiene specialist in every district who shares information and undertakes communication on behavioral change pertaining to hygiene, water, water handling practices, and vector-borne diseases. Each district team also has engineers to ensure quality of engineering activities in the project.</p>	<p>Implement the SWAp for developing community-led WSS schemes.</p> <p>Facilitate the selection of vulnerable social groups, including women in the UWSSCs.</p> <p>Support participatory planning and community execution of WSS schemes, including collection of water tariff from users.</p> <p>Capacitate the GP leaders and UWSSC members on financial management, execution, and O&M of WSS schemes through trainings and exposure visits.</p> <p>Facilitate social audit for monitoring implementation and access.</p> <p>Support panchayats in the execution of SVSs through its district PMUs.</p>

Agency	Role in Water Supply, Sanitation, and Sewage	Role in Environmental Issues	Role in Social Issues
Rural development	Provide funds through the District Plan for WSS schemes, source strengthening, and surface and groundwater recharge activities, occasionally developing drinking water sources in rural areas (hand pumps) using different funding sources like MGNREGA.	Support source strengthening, recharge, and management of water resources. Support capacity creation for the management of systems.	Ensure universal coverage of socially vulnerable groups in rural areas with water supply schemes. Undertake capacity development of panchayat functionaries and village institutions on water and sanitation using the NRDWP funds.
Urban development/ULBs	Provide finances for water and sanitation schemes in urban areas directly to implementing agencies as well as through the ULBs. Implement AMRUT/JNNURM and other central schemes for developing urban drinking water supply networks. Develop City Development Plans and Master Plans looking at the future development needs of the city.	Ensure availability of water in the urban jurisdiction. Identify WSS concerns and their management needs, including future needs of the city. As appropriate, send demands raised by ward members and other public representatives to the UJS and UJN for WSS. Monitor and take preventive action to ensure public health in the urban jurisdiction. Manage urban drainage systems. Implement required urban environment management actions.	Develop inclusive state action plans and service-level improvement plans for universal water and sewerage connectivity. Assist the UJN/UJS in bottom-up planning through demand generation for the WSS schemes from wards/resident welfare associations for submission to the municipality. Assist the UJN/UJS in ensuring availability of water supply infrastructure to areas to be included in the municipal areas. Wherever required, make resources and common land available for developing WTPs and outfall for treated water.
DWSM	District-level advisory body for providing sectoral guidance and interagency coordination on water-sanitation interventions, mainly sanitation Give inputs and guidance to preparation of district AIPs for water sanitation schemes. Approve budgets for new WSS schemes. Monitor implementation of annual plans and of sectoral central/state schemes and commission third-party monitoring of	Provide overall direction to implement WSS activities within their jurisdiction. Ensure appropriate implementation of water supply and sanitation, including required source strengthening needs. Coordinate between various departments to ensure the smooth implementation of WSS schemes.	Oversee preparation of sectoral district AIPs that are inclusive. Approve funds to the GPs/UWSSCs for new WSS schemes. Ensure outreach of water and sanitation services and schemes to all villages and habitations of the district, especially remote areas and pockets inhabited by vulnerable communities - SCs/ STs. Address concerns and issues escalated to the

Agency	Role in Water Supply, Sanitation, and Sewage	Role in Environmental Issues	Role in Social Issues
	completed WSS schemes.		DWSM by the GPs/community.
District Water and Sanitation Committee (DWSC)	<p>Key implementing agency at the district on water and sanitation, mainly sanitation now. Review and support preparation of district AIPs for WSS schemes, select DIAs for implementing schemes approved for the district, and take steps for capacity building of communities for managing WSS schemes.</p> <p>Finalize the district schedule of rates for the construction of WSS in the district.</p>	<p>Ensure implementation of WSS schemes according to the existing ECoPs and Environmental Management Framework (EMF).</p> <p>Assist GPs/PRIss/UWSSCs implement WSS schemes according to project guidelines (NRDWP/SWAp).</p>	<p>Identify suitable habitations according to district AIP for implementing the WSS schemes in the district.</p> <p>Undertake selection of NGOs/SOs for integrating social processes and community engagement in WSS schemes.</p> <p>Oversee the work of DIAs and SOs with regard to overall progress and community involvement in planning and implementation.</p> <p>Integrate proposals for new WSS schemes for submission to the DPC.</p> <p>Ensure inter-panchayat coordination and conflict resolution in the MVSSs.</p>
Block Development Committee	<p>Block-level agency for interagency coordination and approving schemes for submission to the DWSM and the DPC</p> <p>Provide inputs and demand for the district AIPs and monitor the progress of WSS schemes being implemented in their development block.</p>	<p>Assist GPs/PRIss/UWSSCs implement WSS schemes according to project guidelines (NRDWP/SWAp).</p> <p>Help resolve conflicts on water usage and demands.</p> <p>Assist the UWSSCs and MVSLCs in general operations and undertake measures for source sustainability and to obtain NoCs.</p>	<p>Assist DIAs in increasing the outreach of water and sanitation services and schemes to all villages/habitations of their block, especially remote areas and pockets inhabited by SC/ST communities.</p> <p>Oversee the work of DIAs, address grievances of the GPs/UWSSCs, and ensure inclusiveness and role of GPs/UWSSCs in the planning and implementation of WSS schemes.</p> <p>Ensure targeting/prioritization of villages with water quality and scarcity issues while planning new WSS schemes.</p>
Regional Development Authorities (Mussoorie-Dehradun/Haridwar)	<p>Work in coordination with municipalities/PWD for improving basic services and infrastructure in their jurisdiction.</p> <p>Implement regional master plans and ensure implementation of schemes in coordination</p>	<p>Ensure development of areas under their jurisdiction, through the implementation of various programs and schemes and coordination with other agencies involved in infrastructure development.</p> <p>Create and amend appropriate building</p>	<p>Ensure quality of basic service infrastructure for all habitations in the region.</p> <p>Provide oversight to the implementation of all development schemes including those on housing infrastructure and WSS for the</p>

Agency	Role in Water Supply, Sanitation, and Sewage	Role in Environmental Issues	Role in Social Issues
	with other agencies/departments.	<p>bylaws to address disaster risks.</p> <p>Implement master plan.</p> <p>Address environmental issues and concern of ecologically fragile areas within their jurisdiction.</p>	underprivileged.
GP	<p>Responsible for the overall development of the panchayat and all revenue villages/habitations falling in the GP</p> <p>Constitute the UWSSC for implementing single-village WSS schemes and guide them in their functioning.</p> <p>Guide material and other procurements for WSS and provide funds to the UWSSC for implementation.</p>	<p>Identify village WSS needs and ensure required systems are in place to address the needs.</p> <p>Implement and construct WSS schemes.</p> <p>Ensure WSS systems' sustainability and support any required management actions.</p> <p>Implement government, NGO, and externally aided agency schemes and programs.</p>	<p>Provide safe and regular drinking water supply to all residents of the GP.</p> <p>Pass <i>Gram Sabha</i> resolution demanding new WSS and willingness of the GP to pay for O&M and contribution to capital cost according to scheme norms/guidelines.</p> <p>Constitute inclusive UWSSCs with representation from women, vulnerable communities, and all central and fringe habitations.</p> <p>Approve schemes designed/planned by the UWSSC in the <i>Gram Sabha</i>.</p> <p>Take up capacity development of the UWSSC members on different aspects of WSS.</p> <p>Provide O&M of all assets located within the GP, including WSS schemes.</p> <p>Get beneficiaries identified and plans prepared for schemes under all 14 subjects transferred to the GP, including those on drinking water.</p> <p>Ensure collective source identification and design to optimize benefits to all areas covered by the proposed schemes.</p> <p>If source is weakening, plan and undertake works through MGNREGA. Integrated Watershed Management Programme</p>

Agency	Role in Water Supply, Sanitation, and Sewage	Role in Environmental Issues	Role in Social Issues
			<p>(IWMP)/<i>Pradhan Mantri Krishi Sinchayee Yojana</i> (PMKSY) and other schemes for augmenting source through recharge structures.</p> <p>Undertake periodic social audit on WSS and resolve GP-level conflicts related to drinking water.</p> <p>Nominate those members to MVSLC who can represent the collective interests of the village, including those of marginalized communities.</p>
UWSSCs	<p>A statutory sub-committee of the GP under the State PRI Act, responsible for all WSS-related interventions in the GP</p> <p>Central role in planning and design of SVSSs implemented and maintained by other agencies</p> <p>Has additional role in implementation and O&M of schemes implemented by them. Also undertakes O&M of schemes handed over to them by the DIAs.</p> <p>Collection of water tariff/user charge and taking up of minor repair and maintenance of schemes/distribution system</p> <p>Function as village-level UWSSC for the MVSLC if serviced by an MVS</p> <p>Undertake the sanitation and water quality testing, monitoring, and surveillance.</p>	<p>Run and manage WSS schemes under them.</p> <p>Assure the quality and availability of water.</p> <p>Ensure water quality testing according to the guidelines of the Water Quality Monitoring and Surveillance Programme (WQMSP) component of the NRDWP.</p> <p>Use the UWSSC bylaws and conduct water source measurements.</p> <p>Undertake water quality surveillance for drinking water sources.</p> <p>Identify water supply schemes with reducing yields and mobilize resources and implement strengthening of source activities.</p>	<p>Ensure inclusive planning of new WSS schemes to maximize benefits and outreach;</p> <p>Address issues like time saving, provision of stipulated water quantity for all and needs of residents at the tail end, while planning new schemes.</p> <p>Ensure regular availability of water to all in schemes operated by the UWSSC.</p> <p>Address water supply related needs of residents and escalate major concerns to the block/district agencies.</p> <p>Ensure coordination with the GP and its Water Management Committee.</p> <p>Fix tariff after assessing the communities' paying capacity and make alternate/differential payment arrangement for vulnerable communities. Informally resolve conflicts and redress grievances of the community.</p>
Irrigation Department (Minor Irrigation)	Provide water from public tube wells (not used or partially used for irrigation) for drinking water schemes and manage the	Identify and develop sources for irrigation, support drinking water arrangements if required.	Provide water supply sources in areas with scarcity, especially in peri-urban areas, with limited water use for irrigation/agriculture

Agency	Role in Water Supply, Sanitation, and Sewage	Role in Environmental Issues	Role in Social Issues
	source. In areas with water scarcity, provide drinking water from existing irrigation bore wells; occasionally (in some regions) create water supply infrastructure (bore wells and overhead tanks [OHTs]) linked to existing irrigation wells and handing it over to the UJS for operation.	Monitor yield of sources under their jurisdiction.	but high drinking water demand.
Uttarakhand Academy of Administration	<p>Key Resource Centre and state's Apex Training Institute - State-level Training Institute (SLTI) - social and management on community-led WSS schemes.</p> <p>Build capacities of program managers, master trainers/resource persons (Training of Trainers) and other stakeholders on various aspects of WSS, including sustainability and community-oriented O&M; develop training content on different aspects of community management and monitoring of WSS schemes.</p>	<p>Undertake capacity building under the NRDWP and other externally aided projects for WSS.</p>	<p>Training of staff of NGOs/SOs on community-focused WSS schemes</p> <p>Organize exposure visits for the UWSSCs to successfully managed schemes.</p> <p>Training of engineers of the UJS/UJN on social components and embedding social issues/participation in planning and implementation of schemes.</p> <p>Undertake research studies on issues of access and inclusion in WSS schemes.</p>
IIT Roorkee	SLTI Technical	<p>Create, organize, and undertake training and capacity building for various actors involved to ensure appropriate implementation of WSS schemes.</p> <p>Impart trainings on the technical aspects of WSS including design, feasibility, monitoring, source-centered catchment area protection works, and water quality testing.</p> <p>Undertake water quality monitoring activities as required.</p>	Orient the engineering staff of the DIAs on project principles and community monitoring approaches.

Note: a. The SWAJAL Pathshala conceived as a state-level nodal training agency for WSS is in the process of being operationalized and will start functioning soon.

Environment-specific Departments and Agencies

Certain departments and agencies that specifically work on environment-related activities and would be relevant for activities as identified under the planned program are listed here. Alongside, their specific role that could be important for various activities envisaged, depending upon activities and location, is briefly discussed here.

Agency	Overall Mandate	Relevance to WSS
Forest Department	<p>Manage the state's forests and biodiversity, including the management of PAs.</p> <p>Supervise and manage all work undertaken on forest lands.</p> <p>Ensure protection of forests under their jurisdiction.</p> <p>Support execution of the forest-related regulations.</p>	<p>Give permission for any activity that may involve working in or passing through/accessing areas under their management and protection.</p> <p>Supervise and manage any activities to be undertaken in areas under their supervision.</p> <p>Provide Environmental Clearance under EPA 1986 for eco-sensitive areas in PAs.</p>
Uttarakhand Environmental Protection and Pollution Control Board	<p>Implement and enforce pollution, waste, hazardous chemical, batteries, plastics, and public liability insurance legislations.</p> <p>Give consent and collect cess for discharges from activities such as wastewater and effluent.</p> <p>Monitor water quality.</p> <p>Advise the state government on pollution management.</p> <p>Identify standards for sewage and trade effluent treatment and their discharge.</p>	<p>Develop standards for any activity under the various emission and pollution abatement laws and undertake inspections to ensure compliance to standards.</p> <p>Give permission for and take required fee for discharge of treated sewage from STPs.</p>
National Board of Wildlife and State Wildlife Board	<p>Identify wildlife needs in the area - as an advisory body to develop policy and appropriate conservation requirements.</p> <p>Conserve and promote wildlife.</p> <p>Review all wildlife-related matters concerning wildlife and PAs.</p> <p>Give permission and ensure any work carried out in eco-sensitive areas is appropriate to the area.</p>	<p>Give permission for work in eco-sensitive areas, where the Environmental Clearance is required or according to the guidelines of the eco-sensitive zone there may be a need for clearances for specific activities.</p> <p>Provide advice in areas with possible wildlife conflict where there is likelihood of wildlife concerns.</p>

Social-specific Departments and Agencies

There are some agencies that work on social development and empowerment of the panchayats and vulnerable communities and also provide funds for WSS schemes benefiting these social groups. Such agencies that provide direction and support for social development and inclusion and address other social concerns in the state are briefly outlined.

Institution	Overall Mandate	Related to WSS
Panchayati Raj ^a	<p>Provide resources for the management of panchayat assets, including drinking water supply schemes.</p> <p>Officials of the UJS and UJN are to be under the administrative control of the ZP. Elected leaders are to seek technical advice from the UJS/UJN on WSS-related issues of the district.</p>	<p>Provide approval to schemes to be implemented in the jurisdiction of the respective panchayat tiers.</p> <p>Evaluate the repair works on existing schemes and physical inspection of schemes under execution to ensure quality.</p> <p>Identify the need for MVSs and submit proposal/demand to the government/concerned officer.</p> <p>Ensure that the UWSSCs constituted under the State PRI Act have a central role in the execution and O&M of WSS in the GP.</p>
Social welfare	Work for the welfare and provisioning of basic services for socially excluded groups - mainly SCs and STs.	<p>Provide resources to the DDW under the SCP and TSP for implementing WSS schemes in habitations/regions with substantial SC and ST population.</p> <p>Periodically review the expenditure of funds and its impact on the SC-ST habitations for which the funds were provided to the line agencies of the state.</p>

Note: a. According to GO No. 2121/29/04-2/2004 dated August 17, 2004.

Other Departments and Agencies

Apart from these, there are also a number of other agencies that directly or indirectly also support water supply, sewage, and sanitation in Uttarakhand. This section briefly looks at them.

- (a) **Disaster Mitigation and Management Centre.** It is an autonomous institute under the Department of Disaster Management of the state government. It aims to protect the community and the environment from the impacts of disasters. It supports through the identification of disaster prevention and mitigation measures and disaster preparedness and response plans, including development of State- and District-level Disaster Management Plans. It also identifies disaster and climatic vulnerability prone regions and communities for the development of plans and programs to reduce vulnerabilities to identified disasters.
- (b) **Watershed Management Directorate.** The directorate works on the management of degraded and rain-fed areas though an integrated natural resource management approach. While focused on the livelihood and poverty alleviation actions, it undertakes watershed management activities that have an overall impact on the availability of water resources and resource sustainability in identified watersheds, leading to source strengthening in several cases as a positive spin-off.
- (c) **Irrigation Department.** This department undertakes investigation, planning, and designing of water resources and hydropower development projects. It also undertakes investigation and development of minor irrigation systems, some of which, like the tube wells in Haldwani region, are also used for the provision of domestic water supply.
- (d) **Department of Family Health and Family Welfare.** This department implements a number of health and family welfare programs and includes the Integrated Disease Surveillance Programme (IDSP), National Vector Borne Disease Control Programme (NVBDC), and the National Health Mission (NHM). Of these, the IDSP and NVBDC monitor health parameters that are directly linked to the availability of good water supply, sewage, drainage, and sanitation services and water handling. The Accredited Social Health Activist (ASHA) recruited under NHM is a key link to public health services in rural areas. ASHAs have been trained in and are responsible in Uttarakhand for periodic monitoring of water quality for domestic water supply schemes at the village level and for the identification of sanitation coverage in villages under their jurisdiction.
- (e) **Town and Country Planning.** It is involved with the preparation of long-term regional, urban, and zonal plans for development areas, regulated areas, and Special Area Development Authorities (SADA), including their master plans and bylaws. It also assists the state government formulate policies for urban areas and provide technical assistance to implementing and monitoring agencies, as required.

- (f) **NLRSDA.** The authority is the regional body responsible for the preparation of master plan and implementation of building bylaws; provision of housing, roads, and bridges; slum development; and poverty alleviation. Under its jurisdiction is the Nainital Lake Conservation Project, which is for the lakes of Nainital, Bhimtal, Naukuchia Taal, Sattal, and Khurpatal. The activities under this project include catchment management and conservation, lake water quality improvement, and water quality monitoring.
- (g) **Department of Tourism.** The department is focused in promoting tourism and improving infrastructure for tourism development. As a part of these activities, it provides temporary WSS services for pilgrims. This is mainly limited to the *yatra* route and the pilgrims in and around Haridwar and Rishikesh.
- (h) **Bhagirathi River Valley Development Authority.** The mandate of the authority is to maintain the ecological balance, provide environment protection, ensure sustainable development, undertake required disaster management actions, and establish mechanisms to redress public grievances. The jurisdiction of this authority is upstream of the urban and peri-urban areas of Mussoorie-Dehradun, though the actions for the management of natural resources are likely to affect the availability and quality of water resources that may be used under the project.
- (i) **National Ganga River Basin Authority (NGRBA).** Its mandate is to prepare and implement the Ganga River Basin Management Plan (GRBMP). This plan aims at maintaining environmental flows of the whole of the Ganga river system, assuring the system's quality while also considering sustainable development for the entire river basin. To protect the river basin system, the National River Ganga Basin Management Act, 2012 has been enacted that defines what can or cannot be done in the basin area.
- (j) **Water quality monitoring agencies.** This apart, water quality monitoring activities are carried out by a network of laboratories that belong to a number of different agencies. Apart from the UJS laboratories, this includes G. B. Pant National Institute of Himalayan Environment and Sustainable Development (GBPIHED), Defence Research and Development Organization (DRDO), Pollution Control Research Institute of Bharat Heavy Electricals Limited (BHEL), IIT Roorkee, and some NGOs like People Science Institute and Society of Pollution and Environmental Conservation Scientists (SPECS) in Dehradun. FICCI also supports the UJS with water quality monitoring by supporting the day-to-day running of the UJS laboratories.
- (k) **Kumaon and Garhwal Mandal Vikas Nigam.** Autonomous bodies under the state government, both these agencies are responsible for the development of their respective regions/divisions, which includes creating of employment opportunities, promotion of tourism, and sustainable community development. Under their work for promotion and strengthening of tourism infrastructure, these corporations also

engage in the improvement of water bodies, for example, *Kumaon Mandal Vikas Nigam* (KMVN) is implementing a lake-aeration project in Naukuchia Taal in Nainital District.

- (l) **Ministry of Water Resources, River Development and Ganga Rejuvenation.** Though originally mandated to work on surface and groundwater management for the Ganga rejuvenation, the ministry works through the *Namami Gange* Programme on the issue of water quality improvement and monitoring and support to states for the creation of sewerage infrastructure in the Ganga Basin.

Chapter 5: System Assessment - Capacity and Performance

This section provides an analysis of the program capacity and performance from the perspective of what is mandated and how these institutions and legal instruments are at play during implementation. It examines the effectiveness of implementation—of legal and regulatory provisions, mandated versus actual roles performed by different institutions responsible for drinking water supply and sanitation, and operationalization of related programs and schemes—from an environmental and social perspective.

This analysis is informed by a review of available literature, wide ranging consultations and discussions with different sets of stakeholders (government, civil society, elected representatives, and community members), field observations, and validation of the information collected from different sources. The final analysis is based on the team's professional and objective judgment and understanding.

Environment Assessment

The three major agencies involved in water supply services in Uttarakhand are the UJN, UJS, and SWAJAL. Therefore, this section specifically looks at their performance to implement environment-related actions of relevance to the planned program.

Environmental Safeguard Implementation by the UJN

Most of the UJN's safeguards implementation is during planning and developing Detailed Project Reports (DPRs) and overseeing construction. The UJN engineers receive SLTI training, some of which is relevant for improving their understanding of environmental issues. Issues of relevance to implement safeguards under the planned program include source sustainability, technical and financial feasibility, water quality testing, monitoring and surveillance, management of water quality data and sanitary surveys, and use of field test kits (FTKs). Because of this training, planning, and management of construction activities, the engineers of the UJN are aware of the environmental requirements with regard to source sustainability and source protection, water quality, and catchment management. Also, because they have used ECoPs and screening formats for erosion control, estimation of vegetative cover, water quality risk assessment, and needs assessment developed for the SWAp, they understand major environmental concerns arising while developing WSS projects. According to the UJN, since the SWAp was adopted, these formats and ECoPs were used for all their projects.

For MVSs under the UJN implementation, DIAs were used to mobilize the support and coordination of other key stakeholders and agencies, including departments like the irrigation, PWD, health, forest, watershed management, and rural development. As a part of its regular designing and execution activities, the UJN interacts with the Forest Department and the SPCB to take permission for activities in the Forest Department land and for effluent discharge. Hence, it is aware of these regulations and their implementation needs.

However, there are some implementation challenges. As noted in the field, population estimations are usually done on district averages instead of actual growth rates, which are much

higher, resulting in the need for the augmentation of resources and multiple projects. Also, while the UJN is aware of and interacts with state-level environment departments for various permits, this is limited to only a few regulations. Field discussions suggested there was inadequate understanding of regulations, with no knowledge on eco-sensitive zones and limited understanding of the NRGBM Bill 2012 despite working within the purview of these two regulations on various projects. Similarly, there were no discussions on any of the recent waste management regulations.

Where the UJN hires contractors for construction activities, the contracts include clauses for the Occupational and Health Safety (OHS) and safe management of construction sites, such as waste management, erosion control, and ensuring safety of sites. However, site management by construction contractors does not necessarily show these clauses are followed. Therefore, implementation supervision is clearly inadequate and would need strengthening. Furthermore, now that new regulations on the management of construction and demolition waste have been enacted, this also needs to be included in construction contracts.

Environmental Safeguard Implementation by the UJS

As a part of its SVS activities under the SWAp, the UJS used ECoPs to ensure source sustainability, manage water quality, and assure chlorination. Because of the training through SLTIs, the field officers understand water source yield measurement, catchment delineation, catchment area treatment planning and management, and strengthening of village environmental action plans for sanitation and waste management. Through the involvement with SVSs under the SWAp, the UJS has also worked through multi-agency entities, the DIAs, and included departments like the irrigation, PWD, health, and forest. Therefore, the agency has knowledge on environmental safeguard issues to be incorporated in the project design and uses its knowledge while interacting with the Forest Department.

The UJS, given its role in running water supply schemes, water quality monitoring, and involvement in the SWAp project, understands water quality issues. This includes water quality testing, surveillance, and monitoring and analysis of water quality data, which is also uploaded on the NRDWP website. Overall, while the UJS engineers are in charge of ensuring chlorination before distribution, regular chlorination seemed to be an issue in small water pumping and distribution systems of the UJS, as seen in Haridwar and Srinagar where water was chlorinated at the pump house before distribution. This is likely because of the limited capacity of the operators as discussion of these systems seemed to highlight in Haridwar, where the operator was unaware of the problem. Therefore, some aspects of day-to-day running of systems, especially where there may not be regular oversight by the UJN engineers, the capacity to run and manage systems, may be limited.

For improving monitoring and understanding spatial context and linkages of disease hot spots and water supply issues, geospatial monitoring will be particularly useful for quick and effective response, which is presently not a part of the UJS activities of capacities and presently does not exist.

Actions toward Environmental Responsiveness in the Departments

Two areas where the UJS and the UJN have shown innovative actions have been in source management and improvement and energy management. To improve water availability and respond to changing water levels and possible changes in steam discharge, they have developed the river bank filtration method. The departments' innovation to deal with source tapping mechanism has resulted in the development of the Uttarakhand *Koop*, which reduces filtration costs and can be set up on small rivulets, while addressing issues of the changing course of Himalayan streams; the characteristic streams in Uttarakhand. Also, the UJS has been using its old wells and dried/abandoned hand pumps to recharge aquifers. Rainwater harvesting (RWH) has also been taken up with some systems to recharge the sources.

With regard to energy management, some areas are presently being designed with solar pumps, reducing dependence on the grid and also being less expensive to run. Equally, as seen in Haldwani, a WTP built in 1962 used the energy from the moving water in the WTP itself to supplement the energy needs of the WTP's aerator, reducing an estimated 5 kW energy need.

Environmental Safeguard Implementation by SWAJAL

SWAJAL has been involved in the implementation of the World Bank-supported RWSS project from the beginning. It has the capacity to identify, plan, manage, supervise, and train on various aspects of environmental management. It has a good understanding and strong capacity for the management of RWSS schemes and identifying environmental concerns typical of RWSS, such as source protection and point-of-use water quality handling. It has also undertaken communication activities on hygiene, water handling, and vector-borne diseases. SWAJAL is expected to continue to be a part of the planned program and is to be involved with capacity building activities.

Implementation Systems, Procedures, and Regulations

Water for domestic consumption in Uttarakhand is sourced from both surface water and groundwater sources. Surface water sources mainly include springs, rivers, and rivulets (*gadheras*), and in some cases, lakes. All water sources are to be tested for quality before finalizing a site/water point, and groundwater sources are also to undergo yield and quality tests. In peri-urban areas, most of the water is sourced from groundwater, with limited number of surface water sources also used. Water supply systems are constructed by the UJN and are to be handed over for O&M to the UJS, while simple single-village systems may be handed over to the PRIs. Under the SWAp, all systems constructed and managed were supposed to follow ECoPs developed as a part of the EMF of the project and include their use in the DPR in the construction phase and during O&M.²⁰ Systems under the SWAp also included a number of community-managed systems, where after the community's capacity was created by SWAJAL and the UJS, they were involved in project conceptualization, planning, and construction, and

²⁰ ECoPs exist for source identification, source sustainability and protection, groundwater source protection and sustainability, water quality monitoring, safe sanitation technologies, safe sullage disposal, safe solid waste management, and location of community toilets.

postconstruction management. RWH is also considered to supplement water supply in some areas.

Strengths and Benefits

- (a) The single biggest benefit of this Program is the improved and reliable availability of potable water to residents in the program's peri-urban areas. Peri-urban areas are presently identified as, and provided water supply services for, rural areas. However, they are increasingly reflecting urban lifestyles, resulting in an increased demand for household water. This Program will be therefore catering to these needs. The World Bank has been involved in the WSS projects in the state previously, resulting in an understanding of the World Bank-required environmental safeguards needs, including a number of ECoPs, to address issues like source sustainability and source protection for ground and surface water sustainability and quality. Of these, the ECoP on water source identification lists criteria for selection of appropriate water sources for drinking water supply, that include identification of discharge, safe yields and competing needs, and water quality. It discusses these criteria for both spring and stream sources. The ECoP on surface water source protection and sustainability identifies criteria and measures to ensure sustainability of use through measuring lean period supply and providing water for the ecology and recharge measures. The groundwater source protection and sustainability identifies ways to reduce contamination of the source, and sustainability through catchment management actions like grazing management, organic farming and crop management, check dams and other erosion management actions, and recharge action. There is also a six-monthly monitoring of sources undertaken for both quality and sustainability along with measures identified to manage any issues identified. These ECoPs and monitoring format of the project are available in Annex 7, 8 and 9.
- (b) SWAJAL, which has been involved in the implementation process of the WSS projects previously, both has the capacity and supports capacity creation for sustainability and system management. It also has an understanding of typical water quality, health, and source management issues. They will continue to be involved through the SWAJAL Patshala, will undertake capacity building under the project.
- (c) The state has developed temporary water supply pipelines linked to tankers that cater to religious tourism, most of which is concentrated in a few weeks resulting in very large congregations, sometimes a few lakh people in a single day, in response to this demand.²¹
- (d) There is a well-established system of laboratories in the state, which test water quality at the time of source identification and run systems test for residual chlorine and water quality regularly. FTKs distributed by SWAJAL, after training and

²¹ <http://www.tribuneindia.com/news/uttarakhand/governance/preparations-afoot-in-hardiwar-for-kanwar-mela-in-august/91778.html> accessed July 8, 2016.

handholding, are used for the WQMSP component of the NRDWP and also by communities to monitor drinking water quality themselves.

- (e) Water supply system designs try and ensure quality levels and the supply of potable water through the use of sodium hypochlorite, used to disinfect water before distribution in all systems. Monitoring for residual chlorine and to check for the quality of water is regularly done through the UJS laboratories.
- (f) While not actually focusing on it, the project has a climate change mitigation impact. This is likely to occur from improved availability of potable water. The program focuses on increasing coverage from 45% of existing consumers in the program area to universal coverage, and provide at least 16 hours of pressurized water supply a day. With a well implemented program, there will be no need to pump groundwater or to store water in underground tanks due to lack of head for pumping in household overhead reservoirs and pumping the water into the reservoirs. This will result in reduced need for energy and use of diesel pump sets for pumping or abstracting water, thereby reducing the carbon footprint of individuals for assuring their water supply.

Gaps and Challenges

- (a) Although, ECoPs and other guidance exist for source yield testing, strengthening, and monitoring, the actual implementation of existing environmental guidance is inadequate. Actual addressing of environmental issues is overall limited to existing jurisdiction, knowledge, priority, and understanding. Discussions of project implementation suggest ensuring source sustainability, and catchment management remains a challenge, some of which were because of the constraints of being able to work in Forest Department lands and the source catchments. Post construction, the focus on source monitoring and management was variable, and there was insufficient guidance in place to address the issue, resulting in attention mainly paid to day-to-day running and distribution. Also, monitoring for unaccounted water and leakages and water wastage did not get adequate attention as compared to water distribution, especially in community-managed systems. Therefore, given that, in the peri-urban areas, there is larger dependence on groundwater sources, this issue needs to get greater attention as discussions with both the UJS and the UJN officials in the state suggest.
- (b) There is a need for greater capacity and systematic management of existing systems. According to a report of Asian Engineering Consulting engineers, systematic chlorination of water supplied is not taking place in many of the schemes visited. Another study by Ernst and Young suggests that only 3 percent of schemes surveyed did irregular chlorination. While this was a greater problem in the community-managed schemes, it was also noted in the UJS-run Haridwar and Srinagar schemes. The final Environment Audit Report of the RWSS project undertaken in 2015 mentions that water quality tests showed the presence of e-coli in water samples of many *gadheras* and spring sources in both Nainital and Dehradun districts.

Similarly, according to the SWSM information, 28 of 39,209 habitations are quality affected.²² This indicates the need to be aware of and to address water quality issues. Furthermore, the community perceives local *gadheras* to be of good quality, being a traditional source. This shows a need for better awareness and understanding of water quality among the local population to assure the management of source and systems. Surveys of 2015 show the existence of diarrheal diseases and dysentery in the identified program districts, with about 4 percent to 5 percent of the population reporting diarrheal diseases. About 6 percent to 10 percent of children are reported to suffer from acute diarrhea.²³ However, the actual percentage of population suffering may be much higher as this statistic is only for acute disease cases, and diarrhea is usually highly underreported.

- (c) There are also issues of inadequate management of schemes, chlorination and treatment, O&M, and leakages. Discussions in Village Srikote of Srinagar suggested that about 50 percent of households installed home-level reverse osmosis systems because the water provided was turbid, especially during the rainy season, incurring additional expenses to secure the quality of their drinking water.
- (d) Although there are a number of regulations to manage water quality and address pollution, there are regulatory challenges to manage water quality. Further, a number of possible water sources may be unavailable as potable water sources. Uttarakhand SPCB's data suggest that surface water quality of the planned program area is not uniformly usable. Regular testing is done for 16 stations at Dehradun, Rishikesh, Haridwar, Nainital, and Udam Singh Nagar in the Ganga Basin. Of these, only five stations were classified as Category A or B, and hence possible to use after conventional treatment. The rest ranged between Category D and E.²⁴ This includes Bhimtal and Nainital lakes, both of which are Category E. River Gaula, which is used to supply some water to Haldwani town and its peri-urban areas, is also classified as Category E. This creates a risk of drinking poor quality water and suffering from waterborne diseases, among others.
- (e) The major agencies implementing the WSS programs in the state do not use geospatial information, which is important to understand geo-hydrology for resource augmentation, source identification, source sustainability, source protection, and catchment management.
- (f) Postproject construction and system management may require further focus on disaster and postdisaster management, while many systems suffered from leaks—such as in Haldwani. In some cases, like the intake wells run by the UJS at

²² Asian Engineering Consulting Pvt Ltd, India, December 2015; Ernst and Young. 2015. Environmental Audit Report for Uttarakhand Rural Water Supply and Sanitation Project in Uttarakhand; Sustainability Evaluation Exercise.

²³ GoI, n.d. Annual Health Survey 2011–12 Factsheet: Uttarakhand. Vital Statistic Division, Office of the Register General and Census Commissioner, New Delhi, India.

²⁴ <http://ueppcb.uk.gov.in/> accessed April 7, 2016.

Haridwar, because of their location along the river bed, the wells were also affected by the 2013 disaster.

- (g) A newer dimension and challenge of working in peri-urban areas is rapid urbanization coupled with climatic factors. Increased urbanization and concretization, and the associated urban sprawl of the source's catchment, and an increase in the peri-urban population results in a rising demand for the water supply services. In Bhuvan's geospatial data analysis, rapid urbanization of peri-urban and urban areas and increased population density are seen in the belts of Haldwani-Kathgodam, Dehradun, and Haridwar. This analysis compares data between 1991 and 2014 (annex 11). Similarly, studies on Nainital and Haridwar show rapid increase in population and settlements, with an increase by about 50 percent of the built-up area in the municipal council area of Nainital.²⁵ Also, as seen in Haridwar, there is a tendency toward urban sprawl and disbursed development with a majority of the development along the highways, in urban fringes and city peripheral agricultural areas than in the city center.²⁶ These changes and their impact on the recharge ability of aquifers, may require further studies to understand actual changes likely. Further challenges exist in some areas, such as peri-urban areas of Nainital and the surrounding areas, where migration from other parts of the country and an increase in tourism results in competition for resources.
- (h) Climate change is also likely to result in further pressure to limited water resources. The Uttarakhand Action Plan on Climate Change (UAPCC) suggests that overall there is likely to be an increase in the rainfall in the Himalayan region and in extreme rain events. However, local variations may exist, as noted in Almora with decreasing rainfall. Also change in rainfall peak from July to August will create longer dry seasons and longer peaking demands. Glacier retreat could reduce water in the rivers on a longer-time scale and may also affect aquifers in some areas. Also predicted is the reduction in winter rains. On the other hand, there may be an overall increase in temperature in the state, though with local variations. In case of Pantnagar, the night temperature may increase with a slight reduction in daytime temperatures, and similar trends may also be seen in Haldwani, Udhampur, Singh Nagar, and Rishikesh. In the Lesser Himalayas—such as Almora—the temperatures seem to be increasing.²⁷ Therefore, there are likely to be seasonal changes in water availability, variations in demand with temperature variations, and an increased sediment load where rainfall increases, with fragile ecosystems and catchment degradation, and also increase in disaster risk. There will also be a need to look at climate change and the impacts of climate change, urbanization, and higher dependence on groundwater, which will lead to a number of challenges. These may

²⁵ <https://ugecviewpoints.wordpress.com/2016/03/29/rapid-urban-growth-in-mountainous-regions-the-case-of-nainital-india/> accessed July 5, 2016.

²⁶ Jha, Ramakar and VP Singh. 2008. "Analysis of Urban Development of Haridwar India Using Entropy Approach." KSCE Journal of Civil Engineering, June 2008. <https://www.researchgate.net/publication/225801960>.

²⁷ GoUK. 2014. Uttarakhand Action Plan on Climate Change: Transforming Crisis into Opportunity.

include (i) resource sustainability, (ii) demand increase, and (iii) possible increase of extreme events and disasters. Present infrastructure management actions, however, mainly focus on basic yield and catchment concerns and water quality management. More complex issues of (i) disaster and extreme events, (ii) climate change impact, (iii) challenges of urbanization, and (iv) decrease in recharge are likely to require greater attention, to ensure long-term sustainability of infrastructure. Furthermore, with increased sediment loads, the need and cost for infrastructure maintenance and better water treatment may also increase, through the need for greater maintenance and repair costs.

- (i) Most of the water supply in the peri-urban areas is likely to be from the groundwater sources. Presently, according to the Central Ground Water Board, the identified peri-urban areas do not have any dark zones,²⁸ and therefore, are safe for water abstraction. However, given the concerns of catchment degradation, urbanization, and climate change, and increasing population and rising water demand, there could be a risk of groundwater depletion and competition for limited resources among users on a longer horizon.
- (j) Health statistics suggests the existence of a number of vector diseases prevalent in the state. These include malaria, Japanese encephalitis, acute encephalitis syndrome (AES), dengue, and chikungunya. A few Kala-azar cases were also reported in Uttarakhand, though of the four years' data available, the highest number was in 2012 and a total of seven cases were reported.²⁹ The combination of urbanization and hard surfaces, increasing temperatures along with increasing water consumption, use of individual household latrines (IHHLs), and inadequate sewage and drainage may also result in increased runoff and waterlogging and urban flooding, and a rise in vector diseases. AES may also be caused by drinking contaminated water, a risk from poor sanitation. This may also be related to poorly managed waste, poorly constructed IHHLs, or poor septage disposal. Furthermore, poorly designed and managed RWH systems, which may be used to augment sources, may increase the risk of vector diseases and also result in cyanobacteria in RWH tanks and its associated health risks.
- (k) Household water usage in peri-urban areas varies; while some users only use it for basic domestic needs like drinking and cleaning, others may use it for their milch cattle or irrigation of large gardens. Also, some peri-urban houses have multiple families living in a single house unit, and this has been highlighted in discussions in Haldwani. The existing infrastructure planning does not cater to these different needs and demands, requiring reinvestment for source augmentation and extension of schemes. On the other hand, there is a flat rate at which all users are charged, even though in some areas meters have been installed for all water connections.

²⁸ http://cgwb.gov.in/gw_profiles/Uttarakhand.html.

²⁹ GoI, 2014–15. National Vector Borne Disease Control Program: Annual Report 2014–15. GoI, Ministry of Health and Family Welfare, Delhi, India.

Therefore, even though the usage may differ vastly, everybody pays the same amount, and there is no incentive to reduce water usage or wastage. This increases both the running cost of the system and reduces money available for O&M, even when there seem to be inadequate funds, more so for community-run systems.

- (l) There are multiple agencies and inherent complexities in the program area, further exacerbated by the existence of PAs and eco-sensitive zones. The departments are familiar with some challenges such as permits for water sources in forests. However, the UJS and the UJN are less familiar with other challenges such as working in eco-sensitive areas. Other regulatory areas likely to be relevant, and presently inadequately addressed, are on waste management; some were recently enacted, such as construction and demolition waste, battery and e-waste, and municipal solid waste. They require specific handling and disposal of waste, such as the disposal of batteries from power backup systems and other electronic equipment that may be used in the WTPs should not be disposed in general auctions with other department equipment and waste. The Wetland (Conservation and Management) Rules 2010 may also become relevant in the catchment of wetlands in case water withdrawal and impounding of water changes the wetland ecosystem, and this will require state permission. However, it is unlikely that a single water supply project in itself will result in such an impact, though as a cumulative impact of various projects and other development activities such an impact may take place. Also, in some cases there may be a need to work with a number of different agencies for permits under different regulations, increasing complexities. Without adequate information and knowledge, these issues become hurdles in implementation because design requirements and permits may take time and result in delays in project implementation.
- (m) According to discussions in the field, the state government has asked all minor irrigation tube well systems to also be developed for drinking water purposes, including the construction of an OHT and pumping house. However, there is no design criteria identified, other than the need to build the OHT to the height of 20 m. This may result in inadequate head to supply water to all on the system. Equally, many of these tube wells are likely to be placed for the convenience of their intended use, which is agriculture, and may be surrounded by farm land. Unless organic agriculture is practiced in the area, there is likely to be agrochemical contamination in the water.
- (n) Presently, there is no waste management system available at the WTPs to deal with specific types of waste, such as disposal of sludge from backwash, empty containers, waste oils, batteries and any electronic parts that might be in use. Therefore, there is still a need to address this issue as most of this waste is disposed with other waste from the WTP. Some of the project area may come under eco-sensitive zones, and therefore there will be some animal movement and need to ensure that there is minimal disturbance to wildlife. However, as the planned infrastructure will be

limited to areas of a maximum of 10*10 mts, and within existing government compounds of the UJS/UJN or other government lands with no landscaping expected, and also not forested areas of PA, there is unlikely to be concerns of alien species. Hence, there will be a need to pay some attention to concerns of animal movement both for the safety and minimizing disturbance to wildlife, and to ensure that there is no problem for construction labour.

Opportunities

This project presents a number of opportunities for greater responsiveness to environmental needs, while also improving the existing water supply in peri-urban areas. These include the following:

- (a) Further capacity enhancement for sustainability and system management to support and improve implementation of environment safeguards. It is planned that ECoPs developed in the previous project will continue to be used. Given the new challenges because of the changing nature of the project, further guidance such as checklists and screening systems for the identification of environmental issues and regulations during design and postconstruction management may need to be developed. This could include guidance notes and other supporting information, such as for River Ganga Basin, for working near PAs and in eco-sensitive zones and areas, and for waste and construction management. This will help improve compliance to existing regulations and strengthen the project design.
- (b) While planning, using climate change data and impacts of urbanization on groundwater systems along with improved population estimation, to the maximum extent possible in designing projects, is another possibility. This would make the planning system more robust. This could be coupled with groundwater monitoring for both changing water tables and aquifer quality.
- (c) Development of an audit mechanism that revisits schemes and examines how projects fare after a few years of handing over to understand their management and resource concerns; and develop appropriate management plans and systems for both future work and for existing plans and systems.
- (d) Metering, demand management and awareness, rationalization of water use for cattle and urban garden and agriculture, and incentives to use water-saving devices for consumers may also be considered. This could support ensuring adequate revenue for system management and longer-term reduced consumption, and make infrastructure sustainable.
- (e) Linkages with other departments could also be considered to support actions that could directly or indirectly be affected by activities under this program or affect the availability of existing resources. This could include the following:
 - Dialogue with urban and rural local governance systems to create awareness to develop regulatory mechanisms, guidelines, and awareness programs; and

provide incentives for ensuring minimization of concretization in areas; and increased green spaces while also creating awareness on waste management, as an effort toward groundwater recharge.

- Development of linkages to other programs, projects, and departments to work toward improved drainage management.
- Create linkages with health departments and if an area is being monitored by the ULBs or other local bodies, then create linkages with them to identify any health issues, vector-borne or waterborne, and create an appropriate response system to address the issues.
- Further support for catchment management may also exist through the powers that the Kumaon and Garhwal Water (Collection, Retention, and Distribution) Act of 1975 gives the state government to demarcate PAs that will help protect water resources. Given the dependence in peri-urban areas on groundwater, this may be a useful tool to protect aquifers.

Impact Assessment and Management Actions

Positive Impacts	
Increased access to high-quality water services in peri-urban areas	
	<ul style="list-style-type: none"> • Improved service, resulting in access to better quality water available, and no need to supplement from other sources, which may not be of good quality, or compromising on hygiene and other health uses, resulting in reduction in morbidity in the population and better health. • Reduction in illegal tapping into the system, reducing the possibility of leakages and contamination of water in the supply system, the risk of diarrheal diseases to the population, and the need for maintenance. • Good water supply systems resulting in more people dependent on the formal water system instead of private tubewells and hand pumps, that may result in improved management of aquifer systems as the government may be able to address recharge and sustainability concerns of aquifers, if so required. • Reduced energy consumption for pumping or abstracting water, as requirement for dependence on alternate sources is no longer there, with resultant climate change mitigation impact from reduction in energy to supply water.
Improved policy, planning, and M&E systems for GoUK's water supply program for peri-urban areas	
	<ul style="list-style-type: none"> • Clear perspective on resource use and priorities that support ensuring sustainability and improved environmental health. • Existing standards and regulations that govern water resources and environmental and natural resources are in place. Therefore, a framework to support addressing environmental issues exists and can inform WSS policies, making them more comprehensive. • While prediction of possible climate change concerns in the long run may differ, there is sufficient research on the subject that can help support identification of resource constraints that may need to be addressed as a part of policies to ensure long-term vision on WSS. • Existing systems to plan that include environmental issues are in place through ECoPs. Therefore, a number of required provisions exist on scope and management measures for the WSS infrastructure. • A well-developed plan including environment-related parameters will ensure actual resource availability and consumer behavior taken into account, with appropriate management actions identified.

Positive Impacts
<ul style="list-style-type: none"> • A good M&E system will ensure resource degradation issues are identified on time and required management actions are taken. Improved environmental health will have a positive impact on human health and well-being. • M&E system already exists on complementary aspects like waterborne and vector diseases, water quality, and groundwater levels and with appropriate linkages can be used to improve monitoring and resource availability. • Service delivery institutions are aware of existing systems and technologies and have experience in implementing WSS systems in urban, rural, and peri-urban areas. • Well-planned, well-developed, and well-managed systems will improve overall resource health and reduce environmental degradation. • Robust systems existed in previous World Bank-supported projects, although they were rural and small projects mainly; some of these areas also come under peri-urban. Therefore, there is some basic understanding on how to address environmental issues in program implementation and design for WSS, through the use of ECOPs. • There is knowledge on the creation and management of temporary WSS systems for religious congregations and fairs, which presently are used in municipal limits of Haridwar-Rishikesh for the Kumbh Mela. Hence, such system can be used for other similar needs in the peri-urban areas when required.

Possible Adverse Impacts, Concerns, Risks and Management Actions	
Improved policy, planning, and M&E systems for GoUK's water supply program for peri-urban areas	
Possible Adverse Impact/Concern/Risk	Management Actions
Policy has limited and narrow focus and addresses water and sanitation not discussing issues of resource sustainability.	Policy to also discuss issues and need for source sustainability and the need to monitor sources and management of source catchments to assure water availability.
Inadequate use of data and information and capacity to plan, and thereby not taking into account resources availability and longer-term sustainability of project activities.	At time of planning and development of Detailed Project Report (DPR) all sources to be checked for sustainability, measure discharge to ensure adequacy of water from source and identify source catchment and other activities required.
M&E system inadequate, and data quality not sufficiently robust, resulting in insufficient monitoring and identification of issues of resource sustainability and degradation not identified in time, that may result in infrastructure not being able to cater to planned population.	Ensure M&E includes monitoring of discharge and water quality as a part of post construction activities
Insufficient understanding and use of disasters-related information resulting in infrastructure design not robust enough withstand any disaster.	Ensure all DPR's identify possible disasters that might occur in the planned project area, and make infrastructure robust to withstand identified disasters.
Plan for WSS systems exists but ancillary systems such as for drainage not in place, resulting in an increase in water stagnation, urban flooding, and diseases.	Create awareness among customers to reduce water wastage where possible and ensure minimisation of concretization. Discuss with agencies in-charge of drainage to prioritise storm water drainage in areas where water supply systems are being implemented to ensure minimal water stagnation.

Possible Adverse Impacts, Concerns, Risks and Management Actions	
While laboratories network exists to test water quality, not all have adequate resources and therefore unable to undertake all required tests and assure water quality.	Monitor water quality testing reports, and laboratories resources, including human resources to ensure laboratories are able to function properly.
While the UJS/UJN have their M&E systems, there are no links within departments and units, resulting in business-as-usual practices.	Ensure M&E systems are linked to one another and monitoring takes place comprehensively and any issues identified are able to be handled promptly.
Planned water sources mainly dependent on groundwater, but in the long run with increasing demand, competing users, and urbanization impacts, along with climate change impacts, risk of reduction in groundwater table, and reduction in services.	To the extent possible, ensure source sustainability and source protection measures such as catchment treatment and recharge, and demand management to assure long term sustainability of source for water supply system.
Focus mainly on design, but not adequate monitoring of systems during construction leading to weak enforcement of construction management resulting in poor standards/enforcement of OHS at construction and for construction waste management, resulting in accidents, environmental degradation, disturbance to local wildlife and noncompliance with existing regulations.	Ensure that there is monitoring of construction site and enforcement of required site safety and other measures to minimise risk of accidents and disturbance to human and wildlife that may be in the area.
Plan does not review relevant regulations as a part of the design process, resulting in delays in implementation as regulatory needs not identified in time.	Plans and DPRs to identify required regulations, where permissions required and that might need specific attention, such as waste related regulations, construction and demolition waste regulation, and any protected area regulation that might need specific compliance and permit needs, and ensure these permissions and actions are undertaken in time.
Capacity to manage system, in the community and small systems managed by pump operators, inadequate. Issues of concern are source sustainability, quality, pollution, and system day-to-day management and maintenance.	Ensure training of pump operators and availability of guidance chart at pumping station in local language for pump operators for chlorination and basic maintenance of the area.
Increased access to high-quality water services in peri-urban areas	
Consumer behaviour such as poorly designed IHHLs and inadequate drainage and waterlogging, creating water pollution and resulting in higher maintenance costs for the system and resource degradation.	Create awareness on IHHL designs and impact of poorly designed and managed IHHLs on water quality. Undertake water quality monitoring to identify areas where water quality issues might be emerging as a problem Discuss with agencies in-charge of drainage to prioritise storm water drainage in areas where water supply systems are being implemented to ensure minimal water stagnation.
Inadequate attention for RWH design and management used to supplement water supply with focus mainly on increasing supply, resulting in a variety of health problems.	All RWH systems have proper cleaning and management systems and adequate protection to ensure water quality is protected, and does not result in becoming a breeding ground for vectors like mosquitoes.
Poor management of existing systems, resulting in waste at WTP, sludge from backwash of system and other waste like containers, batteries etc not properly disposed.	Identify a proper waste management and disposal system, and ensure it complies with existing regulations.

Possible Adverse Impacts, Concerns, Risks and Management Actions	
Inadequate training or change in pump operators resulting in poor management, inadequate chlorination and impacting water quality supplied to consumers.	Ensure training of pump operators and availability of guidance chart at pumping station in local language for pump operators for chlorination and basic maintenance of the area.
During construction, focus mainly on design, but not adequate monitoring of systems during construction leading to weak enforcement of construction management resulting in poor standards/enforcement of OHS at construction and for construction waste management, resulting in accidents, environmental degradation, and noncompliance with existing regulations. Possible risk of accidents while laying pipes in densely populated areas, disturbance to wildlife in eco-sensitive zones, possible breaking of old sewage pipelines and contamination, electric shocks from electricity pipelines breakage	Monitoring of construction agency undertaken to ensure compliance to required regulations and safety norms. Construction area cordoned off from public and required notices, lights etc to warn public in place to ensure minimal possibility of accidents. Proper scaffolding in place and safety equipment to workers where working in heights and dangerous areas, Identification of other utility networks and planning of activities accordingly to ensure minimal breakages and damages to any utility. Ensure first aid easily available at site for workers in case of accident. Where wildlife disturbance possible, no working at night or at times where wildlife movement exists, minimise noise and other possible risks. Vehicular movement not to take place at night. Cordon off construction area to minimise risk of wildlife entering the area.
Poor site management, does not take into account terrain resulting in erosion and risk to labour working in hill areas	While working in hilly areas, ensure that required safety is in place to minimise erosion and risk to labour.
Sources identified in PAs, resulting in a disturbance to species in the PA during construction and regular management of system.	Where possible avoid identification of source in PAs. However, where not possible ensure all work is done in day time, with minimal noise and use of minimal noise creating drills etc. Keep the area fenced off to minimise possible entry and accident due to animal movement. No work or movement to be undertaken at night time.
Look at increased access by larger number of sources and pipeline laying, but inadequate attention to resource management which in turn results in catchment and source degradation and reduced yields.	Monitor source and catchment and to the extent possible undertake catchment treatment and management. Protect sources from contamination and degradation.

Social Assessment

Implementation of Legal and Regulatory Provisions

The national legal framework provides adequate legal social protection related to drinking water supply and sanitation.

Strengths and Benefits

- (a) While the National Water Policy provides an overarching framework for providing access to all by considering the specific needs of socially excluded communities,

much of the action is desired at the state level. The national flagship schemes like the NRDWP and the SBM-G are aligned to this policy, and the new NRDWP guidelines talk of providing household-level water security, as against the earlier approach that was based on providing access at the habitation level and did not look at intra-habitation disparities in allocation and access.

- (b) The state provides a supportive policy environment for public grievance redress and legally providing access to basic services including new drinking water connection under the Uttarakhand Right to Services Act 2011. The act provides new water and sewage connection within a time frame subject to technical feasibility. Since the UJS has been made the nodal agency for provisioning new connections, the agency's elaborate online grievance redress systems provide space to citizens for registering and addressing complaints related to delay in new water and sewage connections.³⁰

Gaps and Challenges

- (a) For a state like Uttarakhand, where more than 65 percent of the geographical area is under reserved forest, and where a large population practices transhumance, applicability of the FRA cannot be underestimated. For rural/peri-urban villages with some habitations falling inside the forest boundary, access to water supply scheme can only be facilitated under this act. Performance of the state on implementation of the act per se and Community Forest Rights (CFRs) has been poor,³¹ and the number of community claims filed for creating water supply seem to be very few (for example, Disvanee Malli Water Supply scheme in Dumakot block, Pauri District).³²
- (b) The state has an elaborate legal regulatory framework on water supply as described in the previous section. However, there are challenges when these legal enactments get implemented on the ground. The UJN and the UJS mandated to work on mutually exclusive mandates, of planning/execution and O&M of WSS schemes, respectively, have gradually entered each other's turf, new institutions have come up, or other institutions have started working in the WSS sector. Thus, multiplicity of institutions working on WSS, overlapping mandates/roles, poor accountability, limited ground-level coordination among agencies, and low involvement of local bodies sometimes lead to implementation gaps, less community ownership, and suboptimal performance of schemes.

Similarly, while the UJS bylaws of 2008 are being implemented, limited manpower to enforce its implementation does not allow the agency to ensure strict enforcement either through one connection per premise or prohibition of use of motors on supply mains. Thus, in several rural/peri-urban areas, more than one connection per premise

³⁰ <http://ujsmis.uk.gov.in/Boundary/CRM/ConsumerComplaintForm.aspx?PLINK>.

³¹

<http://tribal.nic.in/WriteReadData/CMS/Documents/201504100257142394311MPRfortheMonthofFebruary,2015.pdf>; and <http://fra.org.in/document>Status%20Report%20March%202016.pdf>.

³² <http://forestclearance.nic.in/writereaddata/FormA/Wildlife/9111612112188YNFLcombinedPDF1.pdf>.

are provided (sometimes by two different agencies) and people use motors on supply lines (Bhimtaal Zone I), use drinking water for irrigating homesteads, or supply to tourist resorts (Thapaliya Mehra GP, Bhimtaal block).

- (c) Not among the stronger PRI state acts, the role of local bodies under Uttarakhand Panchayat Act and Laws (as in the case of several other states) in management and maintenance of water supply and sewerage schemes is limited. The state was progressive in providing a central role to the GPs by giving the UWSSCs a statutory status to anchor such schemes in villages. The World Bank-supported SWAp further facilitated a strong role for the PRIs in planning, execution, and sustenance of such schemes. However, in a large number of schemes, the SWAp has not been followed and the PRIs were observed to have weak capacities and limited roles.³³

Partial enforcement of panchayat laws have meant that actual transfer of funds, functions, and functionaries of line departments is still to take place. While women and members of marginalized communities have been represented in the UWSSCs, the role of these committees as a whole has been peripheral in some cases. As observed during field visits, the role of members other than the UWSSC Chairperson (*Pradhan*) and Treasurer has been minimal in most cases observed. Likewise, while the act makes the GPs responsible for managing and maintaining panchayat assets, at many places, the GPs were not found maintaining Panchayat Asset Registers or not mentioning existing WSS schemes as their own assets, suggesting limited implementation of the legislation and low awareness (among those visited, the only exception was Gaujajali GP in Haldwani block).³⁴ OHTs have been registered as panchayat assets in some cases but not the entire scheme.

The act also makes the GP responsible for collection of water tariffs. However, some amount of political polarization among local communities and unwillingness of elected representatives to take effective steps to increase revenues has resulted in limited tariff collection. Some of the successful community-managed schemes have a tax/revenue collection of around 50–70 percent, affecting the long-term sustenance of these community-managed schemes.³⁵

- (d) Uttarakhand District Planning Committee Act 2007 and DPC Rules 2010 are being effectively implemented; however, lack of clarity about the district resource envelop, parallel implementation by line departments (bypassing the DPC), and ceilings on financial approval by the DPC affect implementation. It is important to mention here that this is not just a bottleneck in the functioning of the DPCs in Uttarakhand, but in several states. For example, in Uttarakhand, the sanctioning limit of the DPC is INR 1 crore per project, as a result of which schemes costing higher are divided into 2–3 phases and get implemented over a couple of years. In a WSS repair and augmentation scheme in Chanoti MVS (covering Chanoti and Siloti Pani GPs, Nainital District), the UJN has constructed a pumping unit, rising mains, and

³³ Observations from the field and discussions with the UJS/UJN staff in state and districts.

³⁴ National Panchayat Asset Directory-MoPR. <http://assetdirectory.gov.in/getDataPanchWiseAssetDtlReport.htm>.

³⁵ Himmatpur Mallah and Bhagwanpur Jaisingh GPs in Haldwani, Nainital District; Markoda GP in Khisru block, Pauri Garhwal District; and Athoorwala, Doiwala block of Dehradun District are some examples.

clear water reservoir (CWR) in the first phase, while in the second phase (FY2016–17), it will seek the DPC approval for laying new distribution lines and extending the old pipelines.

- (e) After the end of the earlier World Bank support in December 2015, the SWAp has seen variable implementation in some schemes. As a result, while there is more community and local body engagement in several SVSs, it is not the case with many others.³⁶

For example, in schemes outside World Bank support, like those that the team interacted with in Madhi-Chauras, Markhoda, and Chanoti GPs, community members as well as PRI representatives had far less clarity about their roles and responsibilities with regard to WSS—some respondents did not recall any capacity-building trainings they had attended, while others recalled trainings but were unable to remember their content. There was a clear distinction between these UWSSC members and those from World Bank-supported projects in places like Himmatpur Mallah, Mukhani, and Gaujajali.

Opportunities

- (a) The Uttarakhand Water Management and Regulatory Act 2013 provides an authority for allocating water resources equitably to different users and also for monitoring water conservation efforts and determining service standards for water supply. But the operationalization of the act has failed to take off because the state is still to constitute the Water Management and Regulatory Authority provisioned to oversee its implementation.
- (b) Water supplies, public health, and sanitation being state subjects according to the Seventh Schedule, the Indian Constitution provides sufficient independence to states to develop and manage their drinking water sources and sanitation infrastructure. In addition, as a result of 73rd and 74th constitutional amendments, local bodies have been given the responsibility of managing issues around public health and sanitation, drinking water, and overall responsibility of maintaining community assets created in the panchayat (Eleventh Schedule). Likewise, for urban areas, municipalities have been made responsible to manage water supplies for all purposes—drinking, industrial, and commercial—apart from looking at public health, sanitation, and solid waste management (Twelfth Schedule). These provisions can be used to further strengthen panchayats and provide them more effective roles in the WSS sector.
- (c) In addition to this supportive legislative framework from time to time, the state has issued GOs for bringing services, schemes, and their functionaries related to WSS under the administrative and financial control of the PRIs, for making the UWSSCs responsible for drinking water and sanitation, and for using the SWAp in all WSS

³⁶ Field observations and discussions with the UJN/UJS officials at the state and district levels.

schemes, irrespective of funding sources, which need to be universally enforced (GOs are listed in the previous section).

Performance of Institutional Structure and Roles in the State

The three key institutions responsible for the implementation of water supply schemes in the state are the UJN, UJS, and SWAJAL PMU.³⁷ While the first two work both in rural as well as urban areas, the latter implements small SVSs only in rural areas. All the DIAs come under the DDW, the GoUK and are supposed to have distinct mandates and mutually exclusive responsibilities. Here, we analyze the performance of these institutions from a governance perspective, considering how inclusive, accountable, and transparent these institutions are in fulfilling their roles and mandates.

- (a) **Staffing constraints and limited social capacities within the DIAs.** All the DIAs implementing WSS schemes have limited staff. For example, the UJS, which is responsible for O&M of a large number of WSS schemes and provides staff right up to the scheme level, has nearly 33–35 percent staff shortage across all levels.³⁸ This limits it from fulfilling its mandate of (i) providing effective O&M services, (ii) providing handholding and technical support to community-managed schemes, (iii) ensuring equitable and inclusive access to users, (iv) taking over new water supply and sewerage schemes completed by the UJN, and (v) taking up O&M of the UWSSC-managed schemes that are facing technical and other difficulties. Likewise, the UJN also has staffing constraints at the implementation level (the last major recruitment took place in 2005 and 2007).

Barring the SWAJAL PMU, which was set up with World Bank support for implementing community-led WSS schemes, the other two agencies have limited social capacities to ensure inclusive and participatory schemes. According to the approved new organization structure, the SWAJAL PMU has a Unit Coordinator (Operations and Social Development), Gender Specialist, Training and IEC Specialist, and a Community Development Specialist. Each DPMU has only six technical staff to support all WSS schemes implemented by SWAJAL in the district, apart from working on water quality monitoring and surveillance, source sustainability, the NRDWP support activities involving capacity building, IEC/awareness, and community mobilization for participatory planning and implementation (apart from implementation of the SBM-G in the district). There are three Community Development Specialists in every district to mainstream social issues and create capacities, and they are complemented by an Environmental Specialist and a Health and Hygiene Specialist.

Some social and community development capacities were created within these organizations through the deployment of social experts in the UJS and the UJN by the SWAJAL PMU during Uttarakhand Rural Water Supply and Sanitation Program (URWSSP). After the program ended

³⁷ Septage and sewerage management is divided between the UJN and UJS; SWAJAL usually does not work in this area.

³⁸ <http://ujs.uk.gov.in/upload/contents/File-36.pdf>.

(in December 2015), these consultants were recalled by SWAJAL for supporting the SBM-G and the NRDWP, leaving such capacities wanting in both these institutions.

While some attempts were made to transfer social capacities to the engineers of the UJN and the UJS through periodic trainings under the previous World Bank support to facilitate community participation in schemes (apart from change management trainings for the UJN/UJS engineers at the Mussoorie Academy), it has led to limited impact with regard to improved participation or community ownership.³⁹

(b) **Coordination issues among the DIAs.** As shared earlier, all three DIAs have the same parent department, but their field units differ and do not overlap in most cases, making field-level coordination difficult.⁴⁰ The UJS and UJN work at the division level through the office of their EEs, while SWAJAL works at the district level through the DPMUs. Technically, there are several forums to facilitate coordination at different levels, like SWSM, Scheme Sanctioning Committee at the state and the DWSCMs, and the DWSCs in the districts; however, there is limited actual field-level coordination among these agencies during implementation. With regard to approach, the UJN and the UJS have a purely technical-engineering focus, while SWAJAL attempts to create a community-led, decentralized model of WSS governance.⁴¹

During the previous World Bank support, under the SWAp, systems were created to strengthen coordination and establish mechanisms for closer working at the state level as well as in the field as a good practice, which has faced several operational barriers.

According to the mandate provided to these agencies by Uttarakhand (U.P.) Water Supply and Sewerage Act, 1975, there is a clear role division by which the UJN is responsible for constructing and executing all MVSs including some large SVSs, apart from augmenting old schemes and undertaking major repair/renovation of old schemes. The UJS, on the other hand, is responsible for O&M of schemes developed and handed over to it by the UJN and for undertaking minor repair works. SWAJAL, which is a later entrant, is responsible for executing and maintaining (through the community) SVS in rural areas.

In practice, however, there are coordination challenges and all three agencies work in each other's domain. For example, the UJS also takes up the execution of new MVSs by positioning them as augmentation works, while the UJN carries out repair and reconstruction of schemes, which according to mandate, should have been handled by the UJS. SWAJAL also implements SVS in rural areas—traditionally a domain of the UJS.⁴² The absence of operational standard protocols at the implementation level reinforcing the roles of agencies means that work

³⁹ Observations in the field and discussion with representatives of Uttarakhand Academy of Administration, Nainital and the UJN.

⁴⁰ The UJS has 28 Executive Engineer (EE) offices or divisions; the UJN has 37 offices under engineering and 15 under its construction division; and SWAJAL has 13 DPMUs.

⁴¹ Some community engagement happens in the UJN/UJS schemes under the SWAp where source identification, technology choice, and the broad design are finalized in discussion with community, though there is strong resistance to using participatory approach within these agencies. Technically, all WSS schemes were to switch to the SWAp after March 2006, but this did not happen.

⁴² Discussions with state- and district-level representatives of the UJN, UJS, and SWAJAL.

allocation to the DIAs by the DWSM is mostly ad hoc. Any agency gets works awarded for which another agency is mandated or competent, and this is a major coordination issue among the DIAs.⁴³

Some other coordination issues confronted in the field are (a) the UJN/UJS/SWAJAL operating different schemes in the same village using different modalities (against the spirit of the SWAp) leading to technical problems, different water tariffs, and, hence, poor community support;⁴⁴ (b) low information sharing among agencies on each other's work;⁴⁵ (c) no handing over of the DPRs and design layouts to the maintenance agency for carrying out repair and renovation in future;⁴⁶ (d) delays in taking over completed schemes for O&M; (e) handing over of incomplete or technically flawed schemes in some cases; and (f) non-transfer of all SVS to GPs.⁴⁷

For instance, in Kainchiwala (Dehradun), while the implementation phase ended in March 2015, the UJS is still to take over scheme maintenance from the UJN. A similar example of Balmada WSS (Kot block of Pauri District) was also cited during the district meeting at Pauri Garhwal (SWAJAL Office, April 13, 2016) attended by representatives of the UJN, UJS, and SWAJAL. In Himmatpur Mallah and Gaujajali GP near Haldwani City, the UJS and SWAJAL operate pumping schemes in the same area but charge different water tariffs.

Similarly, the issue of limited information sharing, including lack of availability of the DPRs, came out during discussions with the UJS staff in Srikote (April 14, 2016 at Pauri Garhwal District) and at Bhimtal (May 3, 2016 in Nainital District). These discussions also highlighted the resistance among the DIAs managing old schemes to hand over their old networks when a new scheme was sanctioned to another agency.

- (c) **Information sharing and coordination with other government agencies.** Coordination and information sharing is required among several state agencies working on water supply, schemes in peri-urban areas. These include Departments of Panchayati Raj, Rural and Urban Development, Irrigation, Forest and Public Works. For example, rural and urban development departments are working individually on drinking water supply and sanitation, and there is limited involvement and information sharing with the UJN and the UJS—the state's designated agencies for this sector. In surface water-based schemes, there are coordination challenges between the DIAs and Irrigation Department, because the management/maintenance of source remains with the latter and the DIAs cannot undertake any source improvement or desilting works. Likewise, minor irrigation bore wells in peri-urban areas (found largely in Nainital District) are being partially

⁴³ Discussions with representatives of the UJN, UJS, and SWAJAL at state and district levels.

⁴⁴ In the SWAp schemes, however, this problem is eliminated to some extent by a system of single rates and joint signatories.

⁴⁵ Each agency uploads its own data on the NRDWP IMIS, while for World Bank-supported schemes, the data is uploaded on SWAJAL-SIS.

⁴⁶ Discussions with the UJS staff in Haldwani and Rishikesh. The UJN representatives in Naukuchia Taal cited the example of an STP and sewage network completed by the UJN that has not been connected to households by the UJS, thus preventing the testing and operation of the system.

⁴⁷ Field observations and discussions with the UJN and UJS representatives at the State and in districts.

or fully used for WSS schemes (as these areas do not have significant cultivable area now), but their handover either to the GPs or to the DIA has not taken place.

In a number of rural and peri-urban areas, the Rural Development Department has installed hand pumps without due sharing of information with the DDW. For example, it tendered and installed a large number of hand pumps in Haridwar District with no involvement of the UJN/UJS for getting technical guidance, or even formal information sharing. The Urban Development Department is implementing the ADB-supported UUSDIP on urban water supply, waste water management, and sewerage and solid waste management in select towns and even in peri-urban areas (amelioration of water bodies in Bhimtal block and OHT construction in and around Haldwani City), but there are no information sharing mechanisms.⁴⁸ Apart from this, limited coordination with the Forest Department (delays in forest clearance) and PWD (lack of prior information on road cutting works or laying of new roads affecting the maintenance and augmentation of existing drinking water and sewerage networks) are some other coordination challenges.

- (d) **Information sharing with PRIs.** The SWAp provides for elaborate systems to ensure due involvement of the GPs in the implementation of WSS schemes, developed under the URWSSP. All schemes under the SWAp need to follow a standard community engagement process, which involves a separate planning phase and an implementation phase where systems are developed for graduated involvement of the community in the planning and management of the WSS interventions.

The planning phase starts with demand creation from the community followed by the constitution of the UWSSCs, defining of roles and responsibilities of the GP/UWSSC and training of members, designing of schemes with technical support from the DIA and SO (NGO), and mobilization of community contribution (cash or labor) for the scheme and ends with the GP commitment on behalf of the community to operate the scheme. The implementation phase involves the signing of the Implementation Phase Quadruple Agreement (IPQA) between the UWSSC/GP/DIA and SO, followed by training of various committee members and functionaries on different operational and financial functions and final handing over.

As flagged earlier, varying application of the SWAp by different DIAs has meant that, in some schemes, involvement of the PRIs and local user committees is only limited to steps where their concurrence is absolutely mandatory. Even in some schemes following the SWAp, it was found that the DPRs and layouts were not available at the GP office or elected leaders were not aware of the nature of water treatment or results of periodic water quality tests.⁴⁹ As cited earlier, in Madhi-Chauras, Markhoda, and Chanoti GPs, community members and the PRI representatives had far less clarity about their roles and responsibilities with regard to WSS as compared to those in World Bank-supported schemes in places like Himmatpur Mallah, Mukhani, and Gaujajali. It

⁴⁸ While these are exceptions and not the practice, as most rural and urban development funds for the WSS sector are usually transferred to the UJN or the UJS, and depending on the case and funding source, these cases are highlighted to flag the overall coordination issues.

⁴⁹ Discussions with the UWSSC chairpersons in different GPs in Dehradun and Haldwani Districts.

is also important to note that differences in community and committee capacities and understanding across schemes could also have been affected by the quality of community mobilization efforts made by SOs or the individual capacities of the UWSSC chairpersons.

In the SWAp schemes where the UJN was the DIA, there was resistance to involving the community in the planning and implementation phases despite elaborate arrangements made to that effect. According to the UJN representatives, the agency wants to come out of the SWAp since “community involvement leads to project cost and time overruns that delay project and reimbursement cycles, especially in the more complicated and large MVS (that usually are executed by UJN) for which UJN is held accountable.”

Effectiveness of Implementation of Programs and Schemes

The effectiveness of the implementation of major water supply, sewerage, and septage programs⁵⁰ in the state is analyzed here against the basic principles of social inclusion, equity and access, participation and community involvement, accountability and transparency, and grievance redressal and citizen’s engagement. Because there are no current programs exclusively focusing on peri-urban areas, issues seen in rural/peripheral urban areas that are likely to be confronted in peri-urban locations have been analyzed.

(a) Social Inclusion

- (i) **Representation of the marginal.** The UWSSC for each scheme needs to have representation from women (30 percent) and members belonging to the SC/ST community (20 percent), and this has been adequately complied with in the formation of the UWSSCs. There are 36 percent women and 24 percent SC/ST members in the UWSSCs constituted in the state, though there are relatively few committees where women are in decision-making roles as chairpersons, secretaries, or treasurers.⁵¹
- (ii) **Resources for vulnerable communities.** Funds are being provided under the TSP and SCP for the provisioning of WSS services to predominantly SC/ST habitations. The total WSS budget of the state for FY2016–17 was INR 43.40 crores. Of this, INR 12.35 crores and INR 3.24 crores have been earmarked for the SCP and the TSP, respectively, in proportion of the SC/ST population of the state. An additional INR 9.02 crores was sanctioned for the construction of water supply schemes in minority villages during FY2015–16 and FY2016–17.⁵²
- (iii) **Inclusive water pricing.** In schemes managed by the UJN and the UJS, differential water tariffs are fixed for the general population and socially excluded communities. The same approach is applied while mobilizing

⁵⁰ The NRDWP, AMRUT, *Namami Gange*, and SLWM component of the SBM.

⁵¹ Discussion with the SWSM representatives on March 18, 2016.

⁵² Data provided by the SWSM Uttarakhand.

community contribution for new schemes.⁵³ However, similar provisions for exemption do not exist for economically vulnerable—BPL. While the DIA-managed schemes stick to these differential rates, community-managed schemes (SWAJAL) have been more equitable in their approach in either exempting the poorest of the poor or women-headed households from paying in times of difficulties or reducing their tariff (Athoorwala GP, Doilwala block, Dehradun).⁵⁴ There are also instances where tariff was brought down based on a decision of the *Gram Sabha* (from INR 164 per month to INR 100 per month in Kainchiwala MVS, Sahaspur block, Dehradun). Similarly, when residents in Sapera Basti could not pay higher water tariff, it was brought down to INR 70 per month for its SC/ST residents (Sahaspur block, Dehradun District) though there are still outstanding payments (between INR 1,000 and INR 2,000) for most residents. The UWSSC has also permitted them to pay the outstanding amount in easy installments.

- (iv) **Support system for strengthening community processes.** The previous WSS projects in the state that worked with CBOs /NGOs led to a large network of organizations with capacities to facilitate inclusion, access, equity, and participation; this would be beneficial for mainstreaming community stakes in all future WSS programs.
- (v) **Exclusion through private connections.** In regions predominantly inhabited by marginalized communities, dependence on public water supplies, especially public standposts/hand pumps, is higher and is preferred over private connections for reasons of affordability. For example, in the *dalit* habitation of Srikote (Srinagar peri-urban area), 3 public standposts supply water for 1.5 hours a day to 50 households and self-regulation (2 utensils per family) is followed.⁵⁵ Though the community is exempt (since two–three years) from paying tariff for using standposts, they want standposts to remain and are willing to even pay for improved public supply.

(b) Equity and Access

- (i) **Equitable policy framework.** For new schemes, the state's priority is to cover habitations with less than 40 lpcd first, then those with less than 55 lpcd to bring them to service levels. In addition, according to the new NRDWP guidelines, the state is now working on first covering all habitations with 0–25 percent household coverage and then those with 25–50 percent household coverage. The program is also trying to work with a household-level water security approach. This strategy is inclusive and has ensured better targeting of vulnerable communities and water insecure habitations. As a result of the

⁵³ GO No. 836 of the DDW dated January 16, 2008.

⁵⁴ For urban areas, the tariff is fixed based on the number of connections (taps/seats), size of the dwelling unit, and the estimated rental value of the property.

⁵⁵ In summers, during power outage or major repairs, there is no water supply for 2–3 days.

SWAp, all WSS schemes, irrespective of their funding source (central and state sector), are to work with this approach.⁵⁶

- (ii) **Effective prioritization.** Prioritization of habitations/villages/GPs for sanctioning new SVS is based on the following criteria:

- Time saving for village in meeting its drinking water needs
- Extent of present coverage
- Water quality
- Receipt of *Gram Sabha* resolution undertaking their willingness to pay for O&M.

This also ensures equitable access to vulnerable communities.

- (iii) **Contingency planning.** Before the onset of summers, when sources are weak and shortfall peaks, the UJS makes advance planning, wherein all habitations with potential water scarcity are identified based on past trends, reports of weakened sources, and likely increase in demand (usually in peri-urban areas and regions with seasonal tourist influx). Based on this assessment, the UJS prepares an Annual Contingency Plan for provisioning drinking water either through existing schemes or through water tankers in coordination with local bodies to such areas.⁵⁷

- (iv) **Inequitable distribution.** In several regions, distribution of safe drinking water is highly iniquitous because of difficult topography, lack of feasible options, sparse population, and limited resources. At present, only 20 percent of the population in the state receives 100 lpcd of water, the remaining gets less than 55 lpcd.⁵⁸ Rapid population influx into peri-urban areas means that there is a large demand-supply gap in areas designated as CTs and out-growth towns.

- (v) **Weakening due diligence.** In the SWAp, there is a system of third-party monitoring to certify completion of the implementation phase and to ensure execution of schemes according to the DPR for equitable distribution of benefits (IPCR). This approach is not being applied to all the WSS schemes now.

- (vi) **Disproportionate allocation for industries and high-volume consumers.** Water connections for commercial users and industries are usually metered and follow different tariff slabs (compared to domestic connections).⁵⁹ However,

⁵⁶ Discussions with the UJN state representatives, March 19, 2016.

⁵⁷ Districts that usually face water scarcity each year are Tehri Garhwal, Almora, and Pauri Garhwal.

⁵⁸ Technical Presentation, Design Workshop, Dehradun, March 15, 2016.

⁵⁹ Discussions with the UJS state representatives and field officers in Bhimtal block, Nainital.

large-scale consumption by such establishments creates challenges to equitable distribution because the source and supplies are limited. Where the DIA is unable to provide water to non-domestic consumer, an NoC is provided by the UJS, development authority/local body, and the power distribution company—DISCOM—for digging bore wells leading to abstraction from the same source as that used for RWSS. This along with low staff deployment by the DIAs like the UJS means that they cannot monitor consumption of individual users/institutions leading to disproportionate consumption.

- (vii) **Trade-off between outreach and pricing.** In some small WSS schemes (with small and dispersed population), the O&M cost is far higher than the revenue collected (for example, in Markhoda GP, Khisru Block, Pauri Garhwal District - smallest GP of the district), which makes operating schemes difficult, and they have to regularly seek additional funds or use MGNREGA funds to cover operational costs.⁶⁰ This creates a difficult trade-off between keeping schemes affordable and creating universal rural access.
- (viii) **Matching pace with high population growth.** Because population in peri-urban areas is growing rapidly, providing connections to new dwelling units is a constant challenge. Significant increase in population has led schemes to go beyond their design population in a matter of few years.⁶¹ This makes access difficult for those dependent on public supplies because existing schemes are already overstretched.
- (ix) **Equitable distribution in an iniquitous society.** Several peri-urban areas (of Srinagar, Haldwani, Nainital, and Dehradun) are now also inhabited by people with superior affordability (farmhouses and modern housing colonies), some of whom consume much more water than the 70 lpcd mandated for rural areas. They also install motors on distribution lines or supplement government supplies (either through private bore wells or by getting public water tankers). As a result, the poorest and the vulnerable who are dependent on public supplies (private connections or standposts) get limited supply.⁶² During FGDs with the UJS staff (May 3, 2016), it was estimated that nearly 15 percent water sources in Bhimtal region have dried up and several others have weakened because of recent population increase and higher than ‘planned’ demand.⁶³ As a coping strategy, rostering has been started to ensure minimal water supply to all areas.

⁶⁰ Discussions with *Pradhan* – GP Markhoda, Pauri Garhwal District.

⁶¹ Several instances were found where recent schemes have reached design population in a few years, for example, Himmatpur Mallah in peri-urban area of Haldwani where population doubled in less than four years or Gaujajali GP in Haldwani where design population in 2008 was 1,400 and it has already crossed 10,000 in 2016.

⁶² Residents of Sapera and Harijan Basti in Bhamiyawala, Dehradun District cannot afford to install motor pumps and receive less water if valves for supplying to other areas are not closed by the pump operator on time.

⁶³ Discussions with the UJS officials in Bhimtaal Zone I, Nainital District.

- (x) **Physical access for marginal communities.** Because most schemes in peri-urban areas have been stretched, residents living on the village periphery or above the reservoir in hilly areas⁶⁴ (usually the marginalized) are at the tail end. As a result, they receive either no water or in limited quantities, as in Madhi MVS in Chauras GP of Tehri Garhwal District (peri-urban area of Srinagar City, Pauri District) or in Sapera Basti (peri-urban area of Dehradun District). Community members in Chanoti and Silotipani villages, Bhimtal, Nainital District, shared that SC households living above the CWR climb down 1 km to access public standposts for which they pay INR 10 per month. In such cases, women and children have to fetch water from alternate sources adding to their drudgery.⁶⁵
- (xi) **Competing demands from industry and institutions.** There is competing demand on water supply in peri-urban areas from institutions, house construction, tourism/hotels, and sometimes even agriculture. Large-scale construction of buildings and houses has created additional pressure on limited supplies, leading to inequitable distribution and problems of access in some peri-urban areas. Hemvati Nandan Bahuguna University (HNB) campus in Madhi village (Chauras GP, Tehri District) adds to the region's water scarcity, because the university is partly supplied from the village scheme and also extracts water for its use from the same source, weakening it in the long term. In addition, nearly 2,000 students stay in hostels in Madhi village leading to increased demand and scarcity for residents.⁶⁶ Similarly, water is supplied from Srinagar main pumping station and Srikote WSS to Virchandra Singh Garhwal Medical College—during summers, the UJS and local body have to supply water to the hospital through tankers.
- (xii) **Enforcement of panchayat powers for ensuring equity.** Thapaliya Mehra, Chanoti, and Siloti Pani GPs fall in the peri-urban area of Bhimtaal (Nainital District)—with several resorts and hotels located within the GP boundary—1 in Chanoti, 6 in Siloti Pani, and 12 in Thapaliya Mehra (according to estimates of the UWSSC chairpersons). Most of them are either using water supplied under irrigation schemes and WSS schemes or abstracting groundwater—all leading to deepening water table and weakening source.⁶⁷ These are in addition to several educational and other institutions that have come up in recent years. No tax is being collected by the GPs from them, though its levy and collection

⁶⁴ SC households located on the higher reaches in Silotipani GP and Thapaliya Mehra GP do not have access to WSS schemes and either have to come down to fetch water from standposts or get it from other sources - springs/gadhera.

⁶⁵ Even if there is no increase in water tariff, community members in peri-urban areas of Srikote shared that they would prefer 2–4 hours of good quality water supply against 24×7 supplies.

⁶⁶ When the hydroelectric power project was sanctioned on Alaknanda River near Srinagar City, the company that was awarded the contract had signed a bond with 10 adjacent GPs assuring smooth water supplies, but no water has been provided so far.

⁶⁷ Thapaliya pumping-based scheme had to be augmented in three years because of poor discharge.

is well within the GPs' power. As connections are not metered, residents are also using this water for homestead farming or kitchen gardening, even while some residents are deprived of drinking water (in Thapaliya Mehra and Siloti Pani GP). The panchayat at times chooses not to intervene for ensuring equity in such cases.

(xiii) **Preference among the most vulnerable for public sources.** In earlier schemes, a combination of private connections and public standposts were provided to address the needs of all sections. However, in recent years, there is a growing trend toward private connections, though some people still prefer standposts because of affordability. This is likely to create difficulties for economically vulnerable communities.⁶⁸ Discussions with members of vulnerable communities at Srikote on April 14 and Gaujajali on May 4, 2016, showed preference for good quality supply from public standposts over private connections.

(xiv) **Urban-rural resource sharing.** In some cases, the ULBs are also servicing the needs of peri-urban outgrowths with respect to water and sanitation. For instance, the Srinagar municipal body is supplying water to the adjoining Ufalda GP, and UJS Zone-I in Bhimtal town is supplying water to nearly 350 households in rural/peri-urban areas. Likewise, the Dehradun Municipal Corporation has allowed solid waste from peri-urban areas of Sahaspur and Vikasnagar to be dumped at designated locations within the municipal limits for collection and disposal. Because pressure is building on urban infrastructure owing to population increase, this is only a temporary facility that would be withdrawn as soon as these facilities reach their capacity. The Dehradun Municipal Corporation is preparing the DPRs for the GPs (in peri-urban areas) that will come within city limits in the next few years for providing water supply according to urban norms and waste collection for these habitations.⁶⁹

(c) Participation and Community Involvement

(i) **Panchayat-centric implementation model.** The *Pradhan* of the GP is the ex-officio UWSSC chairperson of SVS, while in case of MVS, *Pradhans* and the UWSSC treasurer of all GPs are members, and the *Pradhan* of the GP nearest to the source becomes the MVSLC chairperson. Members of those wards that are covered by the scheme are also members of the UWSSC. This has ensured due involvement of PRIs in the O&M, conflict resolution, and revenue collection and is beneficial for sustainability and ownership.

⁶⁸ Discussions at an SC hamlet in Srikote, Srinagar peri-urban area, Pauri District, and community members and NGO staff (SHRADHA) at Kainchiwala MVS, Sahaspur block, Dehradun District.

⁶⁹ Discussions with representatives of *Dehradun Nagar Nigam*, April 12, 2016.

- (ii) **Ownership of the UWSSCs.** Under the SWAp, decision making is technically with the UWSSCs—from selecting the source, design technology, tendering, procurement (through its procurement committee) to execution of the scheme. The DIAs, GPs, and SOs are supposed to facilitate participation in scheme planning and execution. But unlike in SVS, in MVS, limited input is taken from the MVSLCs by the UJN.
- (iii) **Mixed impact of past investment on capacities.** Trainings have been provided in the past to elected representatives, the UWSSC chairpersons, treasurers, and UWSSC procurement committees on roles and responsibilities, feasibility, planning, and O&M. Nearly 654 refresher trainings for about 7,000 participants were organized in recent years. The SO staff has also been trained to facilitate processes and for further capacitating the committees. However, these capacity-building initiatives were found to have mixed impact—while some UWSSCs have aware and empowered members, others had limited awareness and understanding about WSS issues and their scheme, examples of which have been cited in earlier sections. Under the SWAp, there was emphasis on developing capacities of community members and elected representatives on planning, execution, and operation, but in many cases, the impact of such investments is not visible. The UWSSCs have not matured into independent institutions for governing their water and sanitation schemes.
- (iv) **Varied capacities of the SO and the UWSSCs.** There was variation in the capacities of SOs deployed under the SWAp and the NRDWP to handhold the planning and implementation process, which has led to different capacities in the UWSSCs and hence differences in the levels of mobilization and community ownership. Even in the SWAp schemes, there was variation in the degree of the UWSSC awareness and management capacities probably because of differences in intensity of SO support, priority of the DIA, and individual capacity of committee members leading to different levels of participation and community involvement.⁷⁰
- (v) **Limited community participation and contribution.** While community participation has been made mandatory for all WSS schemes, in several areas, mobilization was not very extensive and remained limited to creation of a UWSSC. This happened especially in areas where SOs had limited capacities or GP leadership was weak.⁷¹ This also reflected in difficulties in mobilizing community contribution - one of the reasons why community contribution

⁷⁰ Discussion with SWAJAL-DPMU and SO representatives, Pauri Garhwal, April 13, 2016, SO representatives in Dehradun city, April 15, 2016.

⁷¹ Discussions with SWAJAL-DPMU Pauri Garhwal, community members in Kainchiwala MVS, SO representatives - Pauri Garhwal and Dehradun and GoUK GO No. 836/XXIX/08-2(22Pey)04/2008 of July 2008, which states that the community is finding it difficult to contribute 10 percent in a scheme with high cost, as a result of which contribution is being brought down to 4 different flat rates for (a) general-private connection, (b) general-public standpost, (c) SC-ST private connection, and (d) SC-ST public standpost.

(cash or labor) was brought down from 10 percent of the scheme cost to a flat rate (INR 600 for general households and INR 300 for socially vulnerable) in 2008.⁷²

- (vi) **Disincentives for community-managed schemes.** There are strong system-level disincentives for the community to take over the O&M of MVS and SVSs. The UWSSCs and the MVSLCs pay electricity tariff incurred on pumping and water supply at commercial rates, while other DIAs (the UJN and UJS owing to their statutory status) pay it at a non-commercial rate. In most pumping-based community-managed schemes, electricity cost is nearly 70–80 percent of total operation cost; high energy cost and low tariff collection drive these schemes toward losses, forcing user committees to request the UJS for takeover.⁷³ This is particularly common in peri-urban areas falling in the plains (Haldwani, Dehradun, Haridwar, and Rishikesh) where most schemes are pumping-based. This, as well as the lack of complete support from the DIAs, is also the reason why many communities are unwilling to take over schemes that need to be ultimately managed by them.⁷⁴

(d) **Accountability and Transparency**

- (i) **District-level systems for accountability.** In cases where there are differences between the DIA and the UWSSC with respect to scheme design, the matter comes to the DWSC/DWSM. In community-managed schemes (SWAJAL), technical advice of the UJN/UJS is taken and decision of the agency is final, even though the community is ultimately responsible for the success of the scheme.
- (ii) **Selective takeover of schemes.** In MVSs where O&M has been handed over to the community, the responsibility for maintaining the network from the source to the OHT/CWR is with the UJS, while maintenance of distribution lines lies with the UWSSC/MVSLC, where repair works are needed more frequently. The UJS generally tries not to take over such schemes where it is made responsible for partial maintenance because it involves close coordination with the committee and splitting of revenue (for example, Balmada WSS, Kot block, Pauri Garhwal).⁷⁵
- (iii) **Low handholding support to community-managed schemes.** Though technically the DIAs are supposed to follow up with the UWSSCs and monitor/guide the committees in the management to ensure equitable access

⁷² Discussions with SWAJAL-DPMU Pauri Garhwal, SO representatives - Pauri Garhwal and Dehradun.

⁷³ Exemption of community from paying for electricity consumed at commercial rates in WSS schemes has been pending with the state government for several years now.

⁷⁴ According to community members and the UJN staff, Kainchiwala MVS got delayed for three years due to low community contribution as well as unwillingness of the community to take over the responsibility of independently managing a scheme.

⁷⁵ Discussion with the UJN, UJS, and SWAJAL DPMU representatives, Pauri Garhwal, April 13, 2016.

and overall community participation, in practice, there is limited follow-up and handholding support to the UWSSCs once the schemes have been handed over.⁷⁶

- (iv) **Information sharing on scheme modalities.** There are many areas where two agencies (usually the UJS and SWAJAL) are providing WSS services (referred to in previous sections) under two different WSS schemes operated using different modalities, practicing different management arrangements, and charging different tariffs—even when they are similar schemes (pumping or gravity). This leads to confusion within the community and poor accountability. For example, in Himmatpur Mallah and Gaujajali GPs near Haldwani City, the UJS and SWAJAL operate pumping schemes created at different points in time and charge different tariffs. Because of lack of clarity, community members continue paying for both schemes, though, in some cases, they get drinking water from only one scheme.
- (v) **Accountability for delivering services.** In Himmatpur Mallah near Haldwani City, the UJS scheme has not been providing water since two years, but lack of awareness and the threat of having to pay new connection charges if water supply is restored has forced the community to continue paying water tariff under both the schemes—the UJS and SWAJAL. Similar cases were found in Gaujajali GP, where users are paying for connections under both schemes, though they get regular supply from only one. Some community members also have to get private tankers during the summer season when supply is low.

(e) **Grievance Redress and Citizen's Engagement**

- (i) **Robust and replicable grievance redress systems.** There is an elaborate system of grievance redressal within the UJS. The UJS takes an NoC from the community before entering and exiting a scheme. There is a 24×7 centralized helpline and a web-based grievance system for registering complaints.⁷⁷ Mobile numbers of EEs and other field staff are made available in the public domain in each division/zone for airing grievances. There is also a system of grievance escalation wherein all complaints unaddressed by the respective divisions get escalated to the UJS headquarters, where they are reviewed and redressed. In case of community-managed schemes, all grievances first go to the UWSSC from where unaddressed grievances go to the GP and then to the DWSCs.
- (ii) **Effective right to service provisions.** New water supply connections are under the purview of the Uttarakhand Right to Services Act. The UJS is designated as the main agency responsible for providing connections to different categories of consumers (households, institutions, and commercial

⁷⁶ Discussions with the SWAJAL, UJN, and UJS representatives in Pauri Garhwal District.

⁷⁷ <http://ujsmis.uk.gov.in/Boundary/CRM/Consumercomplaintform.aspx>.

users). In addition, the statewide grievance redress systems like *Samadhan* portal and the Chief Minister Helpline are also used for registering WSS-related grievances by the citizens.

- (iii) **Community collaboration for minimizing grievances.** While the UJN/UJS prefers to work with a technical focus and does not invest in community processes, there is general acceptance that in schemes (under the SWAp) where they worked closely with the community, grievances were far less as compared to schemes where there was minimal community engagement.

Potential Social Effects of the Program

The social impacts presented here are based on several assumptions about the final design of the program—centered around the WSS Program for Peri-Urban Areas.

Social Strengths and Benefits

- (a) The program directly contributes to the Sustainable Development Goals (SDG 6 - Ensure access to water for all) by providing universal and equitable access to safe and affordable drinking water for all.
- (b) The program aims to comprehensively partner with the state government for improving the water supply services in peri-urban areas—by supporting the development of a responsive state WSS policy, capacitating key institutions, and strengthening participatory planning and monitoring processes.
- (c) Capacity inputs to be provided to elected representatives, community members, and other stakeholders under the program will further reinforce learnings created in the previous program, leading to greater ownership and participation.
- (d) By focusing exclusively on peri-urban areas, the program is likely to fill a vital gap in the planning capacities, service delivery, and water supply schemes governance in these areas, which are characterized by rapid demographic changes, weak/eroding institutions, inequitable access, and suboptimal services.
- (e) Improved and equitable access to water will have a positive impact on the well-being of marginal communities, especially women and girl children, by improving livelihood choices and learning opportunities, reducing drudgery, and lowering morbidity and related household health expenses.
- (f) Because the program will closely work with community-based institutions and local bodies, and will invest in enhancing their capacities, it is likely to lead to overall improvement in local governance and encourage responsive, inclusive, and participatory processes.
- (g) The proposed program investments are likely to promote equity as they aim at creating systems for metering and volumetric tariffs, to make different categories of users more accountable and consumption equitable.

Social Gaps and Weaknesses

- (a) At present, there is no dedicated national- or state-level program on water and sanitation for peri-urban areas, with which the existing program can be detailed for sustainability. (National Rurban Mission [NRuM] is still in the process of being rolled out in select clusters)
- (b) There is absence of strong systems for ensuring equity and access in implementation. Limited availability of field staff within the DIAs for close monitoring or for ensuring better enforcement of the 2008 bylaws creates challenges to equity and access.
- (c) Unwillingness of panchayats to get involved in conflict management and create sanctions for non-payers also creates bottlenecks for the sustainability of schemes.
- (d) Community participation is not uniform across locations, which impacts the nature of ownership; limited social mobilization has also led to poor compliance of committee bylaws and low tariff collection in some cases, which can impact scheme sustainability.
- (e) There is lack of state-level systems to regulate water use by large institutions/establishments in peri-urban areas and assure supplies for the community, especially in areas with severe water scarcity.
- (f) Limited coordination between key agencies and the multiplicity of institutions working under different modalities in the same region create challenges in implementation and lead to poor accountability.
- (g) There are challenges to provisioning water supply services in regions with difficult topography, where population is small and dispersed and there are challenges to scheme sustainability. In addition, there is a trade-off between scheme viability and universal access, impacting the sustainability of such small schemes.
- (h) Gaps exist in state policies that create disincentives for community management in the form of different power tariffs for community-managed and DIA-managed schemes.

Social Risks

- (a) High and unexplained trends of population growth make design and planning of schemes that provide universal access to water supply services in peri-urban areas particularly difficult.
- (b) Fractured, polarized communities and mixed populations of old and new settlers in peri-urban areas make social cohesion, mobilization for collective action, and ownership difficult.
- (c) Because of this increasing and assorted population, there is immense pressure to provision basic services (including drinking water and sanitation) and reduce service

gaps. As a result, risks of conflicts because of variations in demands, especially among new and affluent settlers, is high.⁷⁸

- (d) Since the program ‘p’ will be implemented in peri-urban spaces, resource sharing between rural and urban local bodies and creation of water and sanitation infrastructure for urban areas in rural locations, and vice versa, can be a potential cause of rural-urban conflict in future.
- (e) Metering of consumption will tend to exclude those with limited capacity to pay—those that were traditionally accessing public standposts for water supplies at no or nominal cost. For example, discussions with communities in Srikote and Gaujajali showed preference for good quality supply from public standposts as against private connections, because of reasons of affordability.
- (f) Risk of exclusion of communities living on the fringes of habitations—above the reservoir/tank or at the tail end of schemes. Field visits to Madhi MVS in Chauras GP of Tehri Garhwal District (peri-urban area of Srinagar city, Pauri District), Sapera and Harijan Basti (peri-urban area of Dehradun District), and SC households on higher reaches of Silotipani and Thapaliya Mehra GPs showed that residents living on the tail end of a scheme or above the CWR (in hilly areas) are usually from marginalized communities. Thus, they receive either no water or in limited quantities and often have to access public standposts or unsafe sources—springs/*gadheras*.⁷⁹
- (g) Limited involvement of communities and community institutions during planning and implementation phases may affect sustainability of schemes.
- (h) There are also low potential risks of some private land requirement in case government or GP land is not available for creating water and sanitation infrastructure—pumping stations and OHTs..

Social Opportunities

- (a) The state has an enabling policy environment that provides a prominent place to the community and panchayat. This has provided impetus by the national legal policy architecture that encourages states to create participatory, accountable, and inclusive WSS schemes. Program guidelines of the NRDWP, SBM-G, and AMRUT promote community participation and inclusive schemes to address household-level water

⁷⁸ The new settlers include former bureaucrats, retired and serving army officers, serving and retired heads of statutory bodies, businessmen, and so on. Haldwani peri-urban area has seen a host of such housing societies/colonies with high water demand coming up in recent years. For example, in Bhimtaal, a recently developed housing society (of 139 houses) in Bhaktyuda GP has coincided with water scarcity in this GP for the first time.

⁷⁹ Discussions with community members in Sapera Basti and the UWSSC chairperson in Bhamiyawala, Dehradun District conclude that habitations occupied by vulnerable communities and those on the upland get less water when private motors are used by households on their private connections.

security, sustaining community-level sanitation and Service-level Improvement Plans (SLIPs), respectively.

- (b) The state also uses very effective and inclusive criteria for prioritizing schemes and for targeting regions with higher vulnerability. Some agencies also have a system of annual contingency planning to ensure temporary provisioning of water supplies to insecure habitations during peak scarcity to ensure inclusion.
- (c) The state has rich past experience of implementing community-based water and sanitation projects. Major state stakeholders are conversant with and have been strongly oriented on the use of participatory approaches in the WSS sector that the new program can build upon.
- (d) The newly launched NRuM that aims to work in rural growth clusters by provisioning for economic, social, and physical infrastructure facilities (sanitation, piped water supply, and SLWM) creates opportunity for testing convergence, resource leverage, and sustainability in peri-urban areas.
- (e) There is a large network of CSOs in the state trained to facilitate community and participatory processes in the WSS sector on scale and can help in strengthening community capacities for supporting planning and monitoring of schemes in the peri-urban areas.
- (f) Some agencies like the UJS have very strong grievance redressal systems for accountability and responsive service delivery and could be replicated for the sector as a whole.
- (g) The ULBs are servicing the WSS needs of peri-urban areas in select locations, through smooth coordination among local bodies, though this is not a formalized system. This provides opportunity for large-scale coordination and convergence in peri-urban areas.

Chapter 6: Assessment against Core ESSA Principles

This section considers the social and environmental risks flagged in the previous sections and analyses their likely impact and available strategies for risk mitigation against the Core ESSA Principles. It also highlights those risks/weaknesses that remain unaddressed in the current legal-policy framework and for which additional mitigation measures may be required.

Core Principle 1

Environmental and social management procedures and processes are designed to (a) promote environmental and social sustainability in the program design; (b) avoid, minimize, or mitigate adverse impacts; and (c) promote informed decision making relating to a program's environmental and social impacts.

Applicability

This core principle is applicable to both environmental and social management. Activities planned in this program are to focus on water supply and its management. Therefore, there will be a demand for water abstraction for various uses and creation of waste that needs to be disposed. Hence, actions that promote long-term resource sustainability require informed decision making as a part of program design. Equally, impacts through resource abstraction, construction, waste disposal, and day-to-day running and maintenance may occur and would need to be identified and managed. On the social side, systems need to be in place for ensuring the sustainability of institutions created through the program investments and for managing/avoiding any adverse social impacts. Therefore, this core principle is central to the assessment of all actions undertaken in this program.

Strengths

- (a) Water supply and its management is a well-understood subject in the state, and there already exist a number of different systems and technologies that address possible activities planned under the program.
- (b) There has also been more than a decade of work on rural WSS in the state with World Bank support, which also governs the systems in peri-urban areas presently; so, knowledge of institutional strengths, weaknesses, and technological concerns exist and can be incorporated in program design to strengthen outcomes.
- (c) There is a well-developed regulatory framework for environmental management in the country applicable at the state level, including state-specific regulations. Site-specific concerns such as those for PAs, their buffers, and eco-sensitive areas are also addressed through regulatory systems and other guidance. Standards for emission and discharges for various activities are in place. Well planned and well designed, the overall impact is likely to be positive on the environment. Therefore, this program may also help support create environmental sustainability.

- (d) Similarly, a tested governance structure is in place in Uttarakhand that is linked to its Panchayati Raj system that ensures that issues of access, equity, and participation are duly addressed. Past and extensive experience of local bodies of handling WSS schemes makes them competent to address and mitigate any negative social impacts. Additionally, several policies, notifications, and orders are in place that promote people's participation.

Gaps, Inconsistencies, and Risks

- (a) Although a number of regulatory procedures exist, ground implementation is inadequate such as the disposal of waste and sludge from WTPs. Presently, there is no system identified for the disposal of sludge and other WTP waste like oil, batteries, empty containers and old electronic equipment.
- (b) There are a number of regulations to support environmental sustainability. However, not all are adequately implemented, such as the Uttarakhand Water Management and Regulatory Act, 2013. To be implemented by the State Water Authority and to ensure preparation of basin plans and integrated water management and basin plans, an institutional system is required, which is yet to be put in place. Similarly, the Doon Valley eco-sensitive zone notification of 1989 under EPA 1986 needs a master plan developed, resulting in inadequate understanding of existing eco-sensitive zones and areas, to prevent its violation.
- (c) There are a number of regulations, notifications, and rules that address concerns of water resources in Uttarakhand, but there is no single vision or regulatory system to comprehensively look at the management of water resources. Therefore, long-term concerns of both sustainability and for downstream users of the resources may exist. Although, at present, there are no concerns of groundwater depletion or quality degradation, this could become an issue in the longer term without adequate measures in place.
- (d) Local bodies in the state are familiar with community-based models of water and sanitation, but there are limited capacities within key implementing agencies on issues of social sustainability. Despite the enabling policy environment, different agencies have been treating community ownership and participation differently. This is further aggravated by disincentives that exist for community management. Absence of state-level social risk screening mechanisms for large MVSs also leads to risk of negative social impacts.

Opportunities

- (a) For areas where regulatory standards and procedures exist, strengthening implementation by ensuring regulations are followed as required and creating guidance such as checklists to support implementation may be useful.
- (b) The Program may be able to support improving everyday management of the systems through the provision of guidance for ensuring disinfection and routine

system management for pump operators at pump houses; basic guidance for ensuring disinfection and routine system management could be made available to pump operators.

- (c) The program design proposes investments in the capacity of stakeholders for delivering water supply services in peri-urban areas, and this will help in better community participation and management. Several SOs in the state have the orientation to support large-scale capacity development. An IEC strategy developed around creating community awareness will help in ensuring sustainability of investments made by the program.

Core Principle 2

Environmental and social management procedures and processes are designed to avoid, minimize, or mitigate adverse impacts on natural habitats and physical cultural resources resulting from the Program.

Applicability

This core principle is applicable largely to environmental management. Activities under this program are focused upon the built environment. However, the use of natural resources, in relation to abstraction of water from either ground or surface sources, has both direct and indirect impacts on other systems, especially natural resources. The other major area of focus is to be the collection, treatment, and disposal of waste from WTPs. The third area of concern could be the laying of pipelines and construction-related activities. Further complexity could be expected given the nature of the program area, which includes hills, the terai, and eco-sensitive areas along with periodic influx of floating populations that require the setting up of temporary water supply infrastructure. Hence, systems and processes need to be in place to minimize any impacts that may affect the environment adversely.

Strengths

- (a) The government partner agencies involved have technical competencies, experience, and knowledge in undertaking activities under the project, such as the development and management of water supply, including laying pipelines.
- (b) The World Bank has been working in the RWSS sector in the state for a long time and has well developed environmental management systems, such as using ECoPs to manage environmental concerns. Therefore, an understanding on environmental safeguards is available, and technologies and systems to implement such projects exist.
- (c) Institutional systems and procedures for the management of water resources and other related actions, including monitoring of systems, are present through the existence of multiple agencies and their processes. Apart from SWAJAL, UJS, and UJN, there are a number of other relevant agencies including the Ganga River Basin Management Authority, Departments of Health, Forests, and Irrigation, the SPCB, and the State Wildlife Board. At the implementation level, the Panchayati Raj

System also exists. Together, these and other departments ensure various activities that either link direct activities, such as provision of domestic water, or indirect activities, such as monitoring health, water quality, and capacity building, to undertake complementary activities that support the implementation of activities relevant to the project.

- (d) There is a network of laboratories that monitor water quality—at source and during supply at the domestic level, such as the laboratories of the UJS, STPs, SPCB, and IIT Roorkee.
- (e) Environmental regulatory frameworks are largely in place, with revisions presently underway for discharge standards for treated wastewater and disposal of other waste, that cater to existing conditions of water flows in riverine systems. There also exist research, understanding, and processes for the management of the environment and for ecologically sensitive areas.
- (f) While the process to define ecologically sensitive areas/zones continues to be updated, there already are well-defined ecologically sensitive areas within the program. Therefore, implementing activities is likely to be easier as areas and processes are in place.

Gaps, Inconsistencies, and Risks

- (a) There are a large number of agencies working on the issues of water resource management and environment-related concerns. These go beyond the WSS-related agencies and, in many cases, with little interaction between the different agencies and the implementing agencies, risking inadequate regulatory compliance and environmental management. For example, while the Doon Valley eco-sensitive zone has been in existence since 1989 and includes areas in peri-urban Dehradun and Haridwar, there seems to be very limited knowledge on it.
- (b) Extension of water systems may pose a concern in areas where habitations exist such as in hills, around cultural resources, and densely populated areas. It may also require permissions under various regulations, such as the Ancient Monuments and Archaeological Sites and Remains Act of 1958, and may take time, which will need to be accounted for in project planning.
- (c) ECoPs from previous World Bank projects exist, but varying ground-level staff capacities result in the implementation not being very consistent. For example, varying knowledge and practice of chlorination of water before its distribution and water quality monitoring. Also, challenges exist in execution, such as ensuring source sustainability, where issues might be beyond the limits of the local implementing agencies. Source sustainability may be an even greater challenge where sources are dependent on groundwater.
- (d) There are also likely to be new challenges to work in peri-urban areas. These include rapidly rising populations and water demands reflective of urban areas, continuing

keeping of a few milch cattle and large gardens, and increasing population densities. Existing water supply systems are not designed for such additional needs. Equally, without adequate drainage and increased use of water, rising risk of vector diseases and drains being connected to sewer systems may exist.

- (e) Large floating population, mainly for religious purposes, exists in the Rishikesh-Haridwar belt. This includes huge gatherings like the Kumbh Mela, with an estimated 25 lakh people visiting on the second *Shahi Snan* on a single day.⁸⁰ Temporary pipelines are laid within municipal areas for them, though such arrangements are very limited to the *kawaria* gathering, who reside outside the municipal limits and also gather in large numbers. It must also be noted that catering to such large influxes as in the second *Shahi Snan* will always be a challenge.

Opportunities

- (a) Given rising populations, and possible increasing challenges of water resource sustainability, there are opportunities for creating appropriate conjunctive water resource management systems and frameworks that cater to all areas and to upper and lower catchments. This could be of importance in the longer time frame given the high dependence on groundwater and increasing demand.

Core Principle 3

Environmental and social management procedures and processes are designed to protect public and worker safety against the potential risks associated with (a) construction and/or operations of facilities or other operational practices under the Program; (b) exposure to toxic chemicals, hazardous wastes, and other dangerous materials under the Program; (c) reconstruction or rehabilitation of infrastructure located in areas prone to natural hazards.

Applicability

This core principle is applicable largely to environmental management related actions. The canvas of activities would contain construction of new systems, laying of pipelines including in already existing habitations, and day-to-day management of water supply systems. Therefore, risks exist both during construction. The risks maybe occurring both for those who are directly involved in the activities, such as construction workers, and for the public depending on the location of various activities. However, strong management systems are likely to minimize such risks.

Strengths

- (a) For the management of construction-related activities, the GoI has both regulations and guidelines, which in conjunction with other regulations on waste management and worker's safety can ensure proper management of construction sites.

⁸⁰ <http://uttarakhandtourism.gov.in/utdb/?q=ardh-kumbh-mela-hardwar-2016> accessed May 25, 2016.

- (b) Labour laws applicable to construction workers exist and are applied. Therefore, construction workers are ensured and compensation is undertaken for any accident that might exist.
- (c) There has been a long working relationship between the World Bank and the clients. Therefore, processes, procedures, and checks through the use of contractor clauses, among others, are understood.

Gaps, Inconsistencies, and Risks

- (a) Some construction can be envisaged as a part of the program activities such as pipeline laying or the construction of other infrastructure. Any construction activity in populated areas may result in construction-related risks to workers and also local population where pipelines are laid, especially where pipelines are extended in already inhabited areas. Possible concerns would include deep trenches in areas not cordoned off from public or in hilly areas resulting in accidents, water collection in trenches, accidental breakage of older sewage networks and mixing of sewage water, and accidental electric shocks from breakages of underground power cables. Where overhead tanks may be built there will be a need for scaffolding and therefore a risk of accidents by falling.
- (b) Overall management of systems is variable. Both community-managed and UJS-managed water supply systems could be further strengthened, such as chlorination and system repair and maintenance. In Haridwar, it was noted that a pumping station along the river bed had been damaged in the 2013 Uttarakhand disaster, but is yet to be repaired. Also, poor storage and management of sodium hypochlorite may result in spillage and wastage. Equally, as was noted at a community-managed tube well and distribution system and a UJS intake well, the public has access to the area and risks damage to the system. Poor management of systems can also result in accidents and injuries.

Opportunities

- (a) There are a number of opportunities for creating and strengthening implementation, capacities, and awareness. Knowledge and awareness on the proper management of water supply systems and water disinfection can be strengthened. This may require further strengthening to emphasize the need to (a) ensure proper disinfection—before distribution and regular cleaning of the system, (b) ensure minimum contact during disinfection and knowledge of safety precautions for handling the system, and (c) ensure that public access is restricted to minimize damage to system or injury.
- (b) At construction sites, worker safety and availability of safety gear, procedures, and plans for ensuring a safe construction site can be considered.

Core Principle 4

Manage land acquisition and loss of access to natural resources in a way that avoids or minimizes displacement and assists the affected people in improving, or at the minimum restoring, their livelihoods and living standards.

Applicability

This core principle is mainly applicable for social management actions. Most land requirements under the program will be of small-sized parcels and met through use of government or gram panchayat land. It is unlikely that there will be any land acquisition. Further, the legal/regulatory system and Policy in the state includes provisions for compensating for loss of assets and rehabilitation of any affected people.

Usually very small pieces of land are required for the scheme related constructions, which could be 10 square meters at the most and the Gram Panchayat (GP) land is available for this small requirement of land. The Government or GP land will be free from all encumbrances related to land acquisition and therefore will not pose any challenge. In any case, the social specialists charged with overseeing the Program components should undertake a review of the land use requirements under the project after completion of the first year, to assess the nature and scale of land required-both common and private land-and then take a decision on the systems to be adopted by the Program in future. The social risk screening measures recommended for the program will also screen out interventions involving land acquisition. Program will also ensure that the WB guidelines on voluntary donation (Annex 12) are implemented.

Some large infrastructure created for setting up pumping stations, CWRs, and OHTs may require land for which government or panchayat land would be obtained as far as possible and priority will be given to barren or un-productive government land for creation of w/s scheme related infrastructure, and if this land is not available then village panchayat land will be taken up with the community consultation. In the remotest possibility of government or GP land not being available, the Program will be expected to obtain land through voluntary donations or outright purchase and of private land. The existing systems of land donation are accountable, transparent and safeguards the interests of marginalized communities. Social screening and consultative process in the scheme planning will further help to mitigate any land related impacts.

Strengths

- (a) Section 33 of the Uttarakhand Panchayat Act 1947 gives GPs the power to acquire land by private negotiation or request the District Collector to acquire it on their behalf, though this provision is rarely used; mostly, there are precedents of land received as voluntary private donation to the GP. Where government land is available within the panchayat, the GP passes a resolution allocating the land for a specific purpose, informing the Revenue Sub-Division.
- (b) The national legal-policy framework provides adequate safeguards and protection against land acquisition and the resulting impacts on lives and livelihoods.

Gaps, Inconsistencies, and Risks

- (a) Peri-urban areas normally have dense habitation, high land prices, and limited common lands. Since these targeted areas are not new settlements, and ownership of land is mostly clear in these areas. All the more, it is the GPs' responsibility for identifying and making land available for the water supply schemes, but there are instances where the GPs have refused to provide common land for constructing pumping station because of limited land availability or its alternate uses. For example, Mukhani GP (peri-urban area of Nainital District) requires new water supply schemes to cover its entire population, but unavailability of appropriate common land and very high land prices have delayed planning of the new scheme for the GP.
- (b) There are also cases where *Gram Sabha* proposed a site for CWR or pump house, but the DIA did not find it technically feasible to construct it on that location and suggested an alternate private land, which was opposed by the *Gram Sabha* and the land owner.⁸¹

Opportunities

- (a) Use of government and/or common lands, and in remote possibility of voluntary donations, or purchase of private lands through negotiated settlement would be the most appropriate method to avoid acquisition and the resultant negative social impacts. Priority will be given to barren or un-productive government land for creation of infrastructure, and if this land is not available then village panchayat land will be taken up through the community consultation.
- (b) There are some good examples across the country on successful, participatory resettlements with minimal loss to well-being and livelihoods that can be replicated. Tender documents of all the DIAs should clearly spell out the Standard Operating Procedures-SoPs to be adopted in case private land has to be acquired for executing a scheme and should be strictly monitored.

Core Principle 5

Give due consideration to the cultural appropriateness of, and equitable access to, program benefits, giving special attention to the rights and interests of the Indigenous Peoples and to the needs or concerns of vulnerable groups.

Applicability

Access to water and sanitation services will improve well-being and also help in decreasing health-related expenditure of vulnerable communities. However, there is a risk of exclusion of the economically and socially vulnerable communities from water supply schemes, because of either their physical location or lack of economic access.

⁸¹ In case of Ufalda GP in Pauri Garhwal District.

Better regulation, improved services (24x7) and management of drinking water supply, and access to sewerage facilities will come at a price. Metering of consumption, fixing of volumetric tariffs, and reduction of NRW mean that there will be greater emphasis on providing private connection and improving the revenue collection of schemes for efficient O&M. This could lead to the exclusion of female-headed households, vulnerable families, and the poorest of the poor from such schemes because of their low paying capacity.

Strengths

- (a) The state has a favorable policy environment that promotes consultative processes and inclusive impacts of WSS schemes. Improved access to drinking water will help in reducing drudgery for women, free up time for more productive engagements, and help in improving access to education for the girl-children (who also help in organizing water for the household). Because planning of schemes is mandated to be consultative according to the NRDWP guidelines, due consideration is given during habitation selection (prioritization) and scheme designing to time saving for women folk. This helps in engendering impacts of the scheme and making them inclusive.
- (b) Women are also represented in the UWSSCs (at least 30 percent) to ensure that their interests are taken care of in decisions related to drinking water and sanitation management. Likewise, the state policy also makes it mandatory to have at least 20 percent representation from vulnerable communities (SC/ST).
- (c) There are provisions and DOs that allow for the relaxation of tariffs or differential tariffs for communities considering their social and economic vulnerability. There are also instances where tariffs have been temporarily abolished or relaxed by the state for disaster-affected regions. In community-managed schemes or where tariff collection is the responsibility of the GPs, they have the power to temporarily exempt vulnerable families from paying water charges or fixing lower rates, depending upon their paying capacity.

Gaps, Inconsistencies, and Risks

- (a) Sometimes the design of the schemes excludes households on the periphery of habitations or on mountain ridges, because of non-feasibility or to avoid high O&M cost for all members. These areas are usually inhabited by socially vulnerable communities who suffer in the interest of the larger community—as higher cost of provisioning means higher operating costs, and hence higher water tariffs for the entire community. This not only denies them the benefits of such interventions but also sustains the drudgery, for removing which such programs were designed. As observed at some locations (Thapaliya Mehra, Siloti Pani, and Chanoti GPs), the compulsion of having to access unsafe sources and local springs in a government water supply scheme suggests that there is scope for making them more inclusive.
- (b) Inclusion of women in decision-making positions within the UWSSCs as chairpersons, treasurers, or secretaries is limited though their overall representation in the committees is according to policy.

Opportunities

- (a) Schemes need to be designed by prioritizing the needs of the most excluded to ensure physical access to the water supply services; similarly, pricing of services needs to be based not only on their O&M cost but also the community's paying capacity. Principle of equity needs to be applied to ensure that those who can, pay a higher rate to cross-subsidize the poor, apart from the use of consumption slabs.
- (b) Panchayats have the power to raise their own financial resources or use development funds to meet the recurring O&M costs of schemes and also sometimes subsidize costs for economically and socially vulnerable families.
- (c) Community monitoring of the schemes either through a process of social audit or through other approaches can ensure that the schemes are providing equitable access.

Core Principle 6

Avoid exacerbating social conflict, especially in fragile states, postconflict areas, or areas subject to territorial disputes.

Applicability

The area in question is not a conflict area; neither it is a fragile state. There are no such conflicts or territorial disputes in the project area. Residents of peri-urban areas include natives, tenants, urban settlers, and settlers from adjoining regions/upper hills. These regions also have big and small institutions, commercial ventures, petty shops, eateries, and hotels/resorts. There is likelihood of more cohesion and harmony rather than social tension among the old residents and new settlers because the pattern of settlements is guided by the relations that the settlers carry from their native places. As a result, collective action in such areas is not very challenging, and could be achieved through social mobilization and continued engagement.

In addition, because these areas are in close proximity to cities/towns but fall in rural areas, it may happen that under certain situations some rural-urban conflict may arise. There are demonstrated examples in the past where such conflicts are amicably resolved through consultations. And, thus these conflicts may not have sustained impact on the program implementation and operation.

To mitigate this risk, the program focusses on strengthening monitoring and evaluation for comprehensively capturing the impact, including grievance redressal and citizen feedback. This will improve the ability of the GoUK to engage in participatory and consultative processes in the WSS sector on a dynamic basis, including urban and rural linkages for addressing service delivery issues of the peri-urban areas and reducing any situations of social conflict.

It is also recommended that formalized institutional mechanisms for resource use/sharing and coordination between the rural and urban local bodies be established to mitigate the potential social risk of triggering tension or conflict between rural and urban communities.

A ‘Common Grievance Redress System’ for the water supply services in peri urban sector of the state- cutting across implementing agencies, schemes and modalities is recommended. This will be important to address any issues of social conflict, exclusion, and access etc.

Strengths

- (a) Most water supply interventions in peri-urban areas under the program will have a community-focused approach and involve the principles of inclusion and participation. Program investments are likely to promote cohesion and develop a common understanding about the need for improving collective access to sanitation and drinking water.
- (b) The program is likely to take off and build upon from the previous World Bank support and guide the community through an intensive engagement, mobilization, and capacity building to get the required support and ownership to avoid potential conflicts.

Gaps, Inconsistencies, and Risks

- (a) Lack of governance systems or previous experience of schemes/programs specifically designed and implemented in peri-urban areas means that these are largely untested waters. While the program is likely to create pathways for new development interventions targeting peri-urban areas and generate vital learning for future schemes, it will not have the benefit of learning from experiences.
- (b) There are instances (though rare) within the state of rural communities opposing the selection of their local drinking water source for an MVS (in Madhi GP, Tehri Garhwal). Solutions and mechanisms for resolving such conflicts lie in strong community mobilization and formalized benefit-sharing arrangements, wherever possible.

Opportunities

- (a) The stronger role of panchayats in planning, execution, and co-option of a wider set of village-level stakeholders in the UWSSCs, to make it more representative of the local interest groups, will help in ensuring strong participation and ownership.
- (b) Similarly, metering of private connections, especially for institutional/non-domestic consumers, should be complemented with water pricing based on average consumption (higher the average consumption, higher the per unit water tariff) to ensure adequate availability and equitable distribution of drinking water to all habitations covered by the scheme.
- (c) Because all sections of the community will need these basic services, which either are not available currently or are being delivered suboptimally, it is expected that the program will get the necessary community support for successfully implementing the schemes.

Program Activity Screening

The PforR financing does not support activities that may result in any major or irreversible environmental impact or have significant adverse social consequences. All PforR operation proposals are required to be screened for such adverse impacts at an early stage of preparation. The tentative investment areas proposed under the Uttarakhand Water Supply Program for Peri-Urban Areas have been classified below based on their potential environmental and social risks. This screening has been done based on an examination of the type and scale of activities and their potential likely impacts based on the analysis done in the previous sections of this ESSA.

Proposed Investments	Environmental Risk				Potential Environmental Implications
	n.a.	Low	Medium	High	
Developing a state water and sanitation policy			✓		Risks to the system may exist due to sustainability concerns from possible future climate concerns, and may be a challenge to address comprehensively. However, to some extent existing ECoPs, for source sustainability will address this issue.
Strengthening planning process for Water Supply programs in peri-urban areas			✓		Well planned, this may result in well developed and management systems providing potable water to consumers.
Creating and strengthening capacities for implementing Water Supply programs in peri-urban areas		✓			Inadequate attention to repeated learning, affecting long-term infrastructure sustainability and its management
Construction, rehabilitation, augmentation, and extension of existing water supply systems in select peri-urban areas			✓		Poor construction site management, waste disposal, and poor design resulting in regulations not followed and accidents
Providing Water Supply services through 24x7 supply and establishing systems for metering and volumetric tariffs for NRW reduction and improved cost recovery in peri-urban areas			✓		Inadequate IEC for new 24x7 customers so water wastage and inadequate drainage from excess resulting in increased vector disease.
Supporting creation of new service delivery models, including public-private partnership (PPP) options, for improving water supply services in peri-urban areas			✓		Poor monitoring of private sector resulting in poor services and management of systems
Strengthening M&E, including systems for grievance redress and citizen feedback for the Water Supply sector		✓			Inadequate capacity to monitor, therefore monitoring weak; narrow focus not including proxy indicators like health, therefore not always responsive
Overall Environmental Risks - Low to Moderate					

Proposed Investments	Social Risk				Potential Social Implications
	n.a.	Low	Medium	High	
Developing a state water and sanitation policy		✓			Inclusive policy for providing equitable access to Water Supply services/facilities will have sustainable social impacts.
Strengthening planning process for Water Supply programs in peri-urban areas		✓			Planning focused on participatory approaches with larger community role of planning and management will be important for sustainability.
Creating and strengthening capacities for implementing Water Supply programs in peri-urban areas		✓			Trainings reinforcing the role of PRIs while orienting other stakeholders on social issues will lead to culturally appropriate interventions.
Construction, rehabilitation, augmentation, and extension of existing water supply systems in select peri-urban areas			✓		Water supply infrastructure not planned in consultation with the community can reduce positive social impacts and it may inadvertently exclude vulnerable groups; acquisition of any private land for creating structures may impact social security and livelihoods.
Providing Water Supply services through 24x7 supply and establishing systems for metering and volumetric tariffs for NRW reduction and improved cost recovery in peri-urban areas			✓		Cost recovery mechanisms that are not equitable or not planned in consultation with community can lead to the exclusion of economically vulnerable households.
Supporting creation of new service delivery models, including PPP options, for improving water supply services in peri-urban areas			✓		New service delivery models would need to consider potential social impacts and sustainability when developing market/revenue-based solutions for improved supply and services.
Strengthening M&E, including systems for grievance redress and citizen feedback for the Water Supply Services sector		✓			Monitoring of equitable benefit sharing across communities and creation of simple, accessible, and responsive redress systems will have positive social impacts.
Overall Social Risks - Low to Moderate					

Chapter 7: Recommendations and Program Action Plan

This section lists the high-risk activities that are proposed to be excluded from being supported through investments under the proposed program. This is followed by the key environment and social recommendations that need to be addressed to mitigate the risks or minimize their impacts, in case such risks are inextricable from the program design. A set of environment and social program actions are also proposed to address some of the major risks flagged through the assessment.

Exclusion of High-risk Activities

The ESSA team recommends that the following activities be excluded from program support in view of associated high environmental and social risks:

- (a) Support the creation of large water supply schemes that entail land acquisition and displacement of communities.
- (b) Support the creation and development of water supply systems or the disposal of wastes in national parks or wildlife sanctuaries.
- (c) Any scheme/ activity involving large land acquisition and resettlement of people.
- (d) Undertake any activity that uses asbestos.

Environmental Recommendations

Analysis of activities planned under the program will have impacts on the environment, though largely limited in scale. It is unlikely that there will be any major or irreversible impacts by a well-designed and executed program. Equally, a well-designed and executed program will result in reduction in pollution and ensuing environmental degradation and have a positive impact on human health. The discussion below has given a number of recommendations for further strengthening the program and the natural resource based, which in this case is mainly focused on water. However, not all these recommendations may be within the scope of the program and have been identified accordingly.

- (a) **Major environment concerns identified.** The assessment identifies a number of environment-related concerns. These include (i) yield testing, (ii) source sustainability, (iii) drinking water quality management through chlorination; (iv) OHS during construction and system management, and (v) need for screening and management actions by using ECoPs, many of which would already exist. It is understood that ECoPs previously developed will continue to be used for the planned peri-urban project in Uttarakhand. These ECoPs are given in annex 7, 8 and 9. The existing monitoring schedule of six months should be continued and the monitoring format, as given in annex 9, will continue to be used for this program.

Furthermore, there is robust water quality monitoring data available with the Central Ground Water Board, which if required, may also be used.

- (b) **Program execution and design issues.** Program implementation and design are dependent upon those in charge of planning and management activities in the departments. The UJS and UJN, as focal agencies for water supply have experience to design and implement projects in the sector, but have a technical-engineering focus. Therefore, environment-related actions may not be adequately addressed, because these concerns may not always be a part of the planning and design process. Furthermore, because of inherent complexities in the area such as from eco-sensitive zones and regulatory constraints such as from EPA 1986, designing and planning of the program may in some areas be complex. Hence, some other areas identified for further strengthening are (i) metering and use of slab rates and other demand management actions to rationalize water consumption and (ii) addressing disaster vulnerability of infrastructure because of location - such as along river banks through appropriate design and management actions.
- (c) **Capacities to design and implement.** While capacities exist to identify and design and develop water supply systems, everyday management is variable and dependent upon individuals. Not all postconstruction management staff and systems have similar capacities and understanding. Also, previous World Bank-supported projects were focused on rural water supply and IHHLs, mainly for small schemes. The planned program will cater to peri-urban areas with higher population densities and larger schemes. This may require further strengthening of capacities and development of guidelines or ECoPs for environmental management. Areas for further capacity enhancement include (i) day-to-day management and running of water supply schemes to ensure chlorination and undertake small maintenance activities and ensure proper waste handling and disposal (ii) management of groundwater run schemes as identified by the NRDWP guidelines.
- (d) **Ensuring regulatory compliance.** Regulatory needs, such as forest department clearances for access to sources in forest lands, are regularly addressed. However, there are other regulations that may also need to be addressed such as the NRGBM Bill, which is to cover all of the program areas, regulations on eco-sensitive zones that will cover part of project area, and regulations on construction and demolition waste. Therefore, a checklist for the DPR development and postconstruction monitoring to adhere to regulations would be of value to activities under the project.
- (e) **Waste management:** As there will be some waste, such as empty containers, oil waste, batteries and sludge there is a need for a proper waste disposal system to be put in place. Another major source of waste is likely to be sludge and after treatment plant waste, and would need focused attention through the development of a waste management plan. Therefore, a proper waste management system needs to be implemented. In order to do this, there is a need to ensure all waste management regulations available should be used. Where state level regulations are not available,

national regulations for the management and disposal of waste should be used. These are outlined in the section discussing regulations of this ESSA. The implementing agencies need to therefore prepare required guidelines and waste management systems to be used while preparing DPR's, during construction and during the O&M phase of the project. These guidelines should identify required regulatory needs to ensure compliance and also monitor implementation of the waste management system.

- (f) **Addressing OHS.** While construction clauses are supposed to exist in construction contracts, actual implementation OHS can be strengthened. While there is no need for labour colonies as all labour hired is local, as work will include laying of pipelines within settlements, good safety mechanisms such as restricting access to public where trenching is taking place; prior to starting any digging activity identifying other utility pipelines and ensuring there is no breakage, and safety for any scaffolding activities for construction workers. Also, construction site monitoring needs to be strengthened to ensure that required site safety measures are in place.
- (g) **Minimising disturbance due to wildlife movement during construction:** As some of these areas will be in eco-sensitive zones and wildlife movement may be expected, there will be a need to minimize any risks caused by wildlife movement, and an ECoP has been developed and is available in annex 10 to address the issue, if required.
- (h) **Other areas for further action.** There are some areas that may be outside the immediate purview of this program but can increase benefits of the outcome. These are (i) coordination with other departments to improve drainage and work toward ways to reduce concretization, which is often associated with urbanization and will impact aquifer recharge and create urban flooding; (ii) RWH system and guidelines for design and management of system; and (iii) demand management to rationalize water consumption among consumers.

Environmental Program Actions

1. All projects under the program will need to be screened to identify regulatory needs and actions required, to ensure safety at construction sites, management of waste, wildlife related concerns and other environment actions that might arise from project design, construction or in the implementation stage. The overall responsibility will be of the SWSM who will have an environmental nodal person to handle all environmental issues. They will also be responsible for the development of the screening and monitoring formats for each stage of the project and at the state, district and ground implementation level. For implementation in each geographical area, the agencies involved will have identified environmental nodal persons at the PIUs and FIUs to manage implementation. All environmental concerns identified through the environmental screening will be monitored to ensure implementation of required actions.

Environmental Action Plan is given below

Action Description	Stage of project	Due Date	Responsible Party	Completion Measurement
Develop and implement safeguard measures to ensure site safety during construction of schemes, and augmentation of source sustainability.	By effectiveness	Implement: entire program period	SWSM	<ul style="list-style-type: none"> • System developed and operationalized
Develop and implement an appropriate waste management plan	Plan to be developed in first 6 month of project effectiveness.	Implementaton: entire program period	SWSM	<ul style="list-style-type: none"> • Plan developed and operationalized

Social Recommendations

- (a) **Strengthen the role of panchayats and community institutions.** The program aims to create accountable, inclusive, and improved water supply schemes for select peri-urban areas of the state in which the role of the local bodies will be critical for success and sustainability. A strong and central role for panchayats in actual implementation of schemes (across implementing agencies) will be crucial for ensuring equitable distribution of benefits and access. The state already has a precedent in the form of the SWAp, which needs to be further strengthened and universalized for schemes in peri-urban areas. **Promote citizen's engagement for inclusive and equitable benefit sharing.** Peri-urban societies are highly fragmented and represent diverse interests and priorities, some of which may be opposed. The poor governance structures, weak social fabric, and partial community mobilization (leaving behind some interest groups) in these areas add to the complexity of the program environment. Intensive and sustained social mobilization will need to be employed to ensure engagement with all social and political interest groups for getting their collective ownership. Because the program intends to work on service-level efficiency through better O&M and improved cost recovery, it is important that this diverse set of community-level stakeholders is involved right from planning and design phase for positive, sustainable impacts and scheme viability.
- (b) **Strengthen STIs on WSS sector.** While there are a number of state-based CSOs with substantive experience on social capacity development around the WSS sector, it is important that the state improves its in-house capacities for delivering such large-scale trainings. The only STI currently providing regular trainings to the DIAs and community stakeholders is the Uttarakhand Academy of Administration, Nainital - the State Key Resource Center. It also has the responsibility of supporting other states. *SWAJAL Pathshala*, proposed as part of the previous World Bank support, and which is currently being operationalized, will hopefully become the dedicated STI on rural WSS and develop capacities for addressing the unique needs

of peri-urban areas. Because capacity-building mandate of the state is huge, it will be important that the *Pathshala* partners with STIs such as the State Institute of Rural Development (SIRD) and the Panchayat Training Centers (PTCs) to deliver such training on a scale well beyond the period of program support.

- (c) **Create robust grievance redress systems for peri urban sector.** While some DIAs, such as the UJS, have robust GRMs in place, other agencies lack similar mechanisms. It is important to have ‘Common Grievance Redress System’ for the sector cutting across agencies, schemes, and modalities. This will be important to address exclusion, service quality, and access. Such mechanism needs to be user-friendly, simple, and accessible with a complete feedback loop, which redresses grievances and informs complainants about the action before closing it. Analysis of the typology of complaints received and status on complaints received and redressed should be available in public domain for greater transparency and for building trust about the mechanism. A likely way forward could be to build upon the grievance redress system currently deployed by the UJS and adding features for offline and online complaint registration and dashboards providing analysis of complaints received, handled, and closed.
- (d) **Formalize systems for community monitoring.** To ensure that benefits of water supply services are inclusive and participatory and provide equitable access, it is important to establish a system of community monitoring. This will not only help in reinforcing community engagement but will also be an effective strategy for developing community ownership across the different interest groups. Periodic use of social audit (or any other community monitoring tool) will help in ensuring equity, access, and representation of the diverse stakeholders that coexist in peri-urban areas and also act as a platform for articulating a cohesive opinion.
- (e) **Create sustained social capacities within the DIAs at the state and district levels.** Technical staff of the DIAs need to be provided sustained training on social issues so that incorporating aspects such as participation, inclusion, ownership, and transparency become a practice. Repeated trainings and refreshers of technical staff will help in inculcating sensibilities to appreciate the strengths of participation and community ownership for sustainability of schemes. In addition, it is also important to deploy staff with social and community development skills within these agencies to mainstream community-focused approaches. With all major flagships on water and sanitation promoting community-based models of implementation, it will help the DIAs in modifying their approach. Human and technical resources available with the WSSO (NRDWP) and now the *SWAJAL Pathshala* could be used for sustaining such capacities.
- (f) **Improve coordination and information sharing among agencies.** Different modalities of functioning and low coordination among agencies affect the outcomes of schemes. Practical coordination and information sharing in the field that goes beyond the mandatory coordination/sharing that happens through state- and district-

level committees or forums will help in delivering more efficient services to the community. Learning from the SWAp, it will also help in more streamlined and accountable implementation.

- (g) **Avoid land acquisition and minimize related adverse impacts.** Though the upcoming program aims to develop large MVSs that require small parcels of land, the program should avoid land acquisition at all costs and all requirements of land be met through government or GP land. Further, the legal/regulatory system and Policy in the state includes provisions for compensating for loss of assets and rehabilitation of any affected people. The existing systems of land donation are accountable, transparent and safeguards the interests of marginalized communities. The social specialists charged with overseeing the Program components should also undertake a review of the land use requirements under the project after completion of the first year, to assess the nature and scale of land required-both common and private land-and then take a decision on the systems to be adopted by the Program in future. Program should also ensure that the WB guidelines on voluntary donation (Annex 12) are implemented.
- (h) **Avoiding potential rural-urban conflicts by institutionalizing joint arrangements.** Implementing programs in peri-urban areas means that there will be continuous sharing of resources and services between rural and urban areas. It is possible that the ULBs will provide water supply services to their rural/peri-urban counterparts, while the RLBs will offer water sources for urban water supply schemes, whereas in the state UJS is responsible for both ULBs & RLBs. Unless formalized coordination mechanisms are established between the RLBs and ULBs, there is potential social risk of conflicts getting triggered between rural and urban communities.

To avoid these risks, the program focusses on strengthening monitoring and evaluation for comprehensively capturing the impact, including grievance redressal and citizen feedback. This will improve the ability of the GoUK to engage in participatory and consultative processes in the WSS sector on a dynamic basis, including urban and rural linkages for addressing service delivery issues of the peri-urban areas and mitigate any situations of social conflict. The program also envisages IEC and social mobilization in the peri-urban areas and support capacity building of various program stakeholders, including the community for facilitating greater ownership.

It is also recommended that formalized institutional mechanisms for resource use/sharing and coordination between the rural and urban local bodies be established to mitigate the potential social risk of triggering tension or conflict between rural and urban communities.

- (i) **Gender sensitive approaches:** The program will emphasize on mainstreaming gender issues and it is expected to result in significant reduction in drudgery and

time loss for the women and girls of the family, who are tasked with the organizing drinking water for the household. Enhanced availability of quality water will improve well-being, reduce health expenditure, enhance savings and lead to more productive engagement for the women members of the household.

It is recommended that the Program should engage with the stakeholders including community based organizations, comprising of WSHGs, RWAs in the peri urban areas to ensure that women get equal access to the program benefits. Specific training programs will be organised to cover gender issues in the project. Capacity building should be undertaken in such a manner that women, SCs/STs, marginalized and minority communities as well as the handicapped are able to participate in all activities related to the program. SPSU will monitor the women development activities at peri urban areas and will develop forward and backward linkages. Gender issues should be addressed and specific training and exposure visits organized to involve women in program activities. For monitoring of the interventions for women in the peri urban area, gender disaggregated data needs to be collected in the consumer satisfaction survey.

- (j) **Citizen engagement:** The program activities should be carried out through an inclusive and participatory processes that involves active citizen engagement with stakeholders and community based organizations comprising of RWAs, SHGs etc. This should include regular meetings and capacity building activities. During implementation of the program, it should also be ensured that there is focused consultation with the marginalized communities and disadvantaged groups and there will be specific focus on citizen feedback on the program activities. This will help to reduce changes of conflict within the people in peri urban areas and exclusion. This will lead to greater ownership by the local people and encourage them to participate in the program activities.
- (k) Social risk screening mechanism. As envisaged, the proposed program will also include large MVSs. To avoid potential social impacts associated with site selection for water supply systems and to ensure that program benefits are accessed by all, it will be important for the program to develop social risk screening systems for all large-scale interventions. The social risk screening mechanism will ensure that the interventions/ schemes do not create high risks. Such screening mechanisms should consider social and livelihoods impacts of site selection and also community acceptance/concurrence to interventions and assess benefits to vulnerable, SC, ST, and women-headed households as part of recommendations to inform the intervention design. A detailed matrix will be developed and administered for each intervention to assess the schemes on different parameters. Any intervention with a high risk score should be dropped.

Social Action Plan

Key Program Actions	Responsible Party	Proposed Timeline and Activities
Develop and implement social risk screening mechanisms for selecting sites for program implementation and enhance capacities of DIAs in social development skills.	DDW, GoUK, SWSM	• Social screening System developed and implemented to screen out high risk activities and capacities of DIAs enhanced

Combined Environment and Social Program Action Plan

Key Program Actions	Responsible Party	Proposed Timeline and Activities
Develop and implement environment and social risk screening mechanisms for assessing impact of program investments	SPMU/SWSM	Year 1 (First half): Develop indicators and procedures for risk screening measurement and verification Year 1 (Second half): Test and roll out implementation of the screening framework

Annexes

Annex 1: List of People Consulted and Places Visited

Dates: March 18–19, April 11–15, May 2–8, 2016

Level	Name	Organization
State level	Mr VK Sinha	SWSM/SWAJAL PMU
	Mr Shailendra Singh Bisht	SWAJAL PMU
	Mr Vadoni	SWAJAL PMU
	Mr PC Kimoti	UJS
	Ms Neelima Garg	UJS
	Mr Mukul Sinha	UJN
	Ms Neelima Garg	UJS
	Mr Umesh Naudiyal	UJN
	Mr Dhananjay Mohan Sharma, CCF Wildlife	Forest Department, Uttarakhand
	Mr. Gambir Singh, CCF	Department of Forest, Uttarakhand
	Dr. Oberoi, Senior Scientist	State Pollution and Control Board
	Mr. A K Sexena, SE	Namami Ganga

Level	Name	Organization
Dehradun District	Dr. SMA Hussain, Senior Scientist	Wildlife Institute of India
	Mr Sudhir Kumar Astt. Engg, Mr Anil Sharma Junior Engg.	UJN Sahaspur Block
	Mr AP Singh AE	UJS Sahaspur
	Mr Pawan Arya	NGO - SHRADHA
	Mr Chauhan	Dehradun Municipal Corporation
	Mr Nilesh Kaushik	NGO-HIHT
	Mr Vadholni	SWAJAL DPMU
	Mr SS Yadav, Sanitary Inspector	Dehradun Municipal Corporation
	Mr R Bahuguna, Sanitary Inspector	Dehradun Municipal Corporation
	Mr Khushiram Dobal, Senior Health Officer	Dehradun Municipal Corporation
Pauri District	Ms Navneet Ghildiyal APO	DRDA
	Mr. Ajay Kumar	UJS
	Mr Kakkar	Private Sewerage operator
	Mr Praveen Saini-EE Pauri	UJS
	Mr Naval Kumar AE- Pauri	UJN
	Ms Lipika Kavi AE Srinagar	UJN
	Mr RK Nautiyal, Engineer	SWAJAL DPMU
	Mr Puran Singh CDS	SWAJAL DPMU
	Ms Sulekha Pokhriyal, H&HS	SWAJAL DPMU
	Mr Prakash Chandra CDS	SWAJAL DPMU
Nainital District	Mr Pramod Kumar	SWAJAL DPMU
	Mr Anil K Dhondiyal	SWAJAL DPMU
	Mr Arvind Singh	SWAJAL DPMU
	Mr Vijay Prakash Gairala	SWAJAL DPMU
	Mr BP Juyal, President	NGO - Parivartan
	Mr Sohan Singh Jethuri, JE Srikote	UJS
	Mr Shambhu Prasad Bhatt, Mr Kaitheth	VS Garhwali Govt. Medical College
	Mr VK Jain AE-Srinagar	UJN
	Mr Pramod Tewari-DPM	SWAJAL DPMU
	Dr Yogendra Bisth	Uttarakhand Academy of Administration,
	Mr KS Bisth AE Bhimtal	UJN
	Mr Devesh Pant JE Bhimtal	UJN
	Mr Prashant Singh Thapa	Traveller's Paradise (Resort), Chanoti GP
	Mr BC Pal AE Bhimtal	UJS
	Mr Parihar JE Bhimtal	UJS
	Mr Rakampal Singh EE-Haldwani	UJN
	Mr RP Dobwal- AE Haldwani	UJN
	Mr DC Joshi - AE Haldwani	UJN
	Mr Joshi - AE Haldwani	UJS
	Mr DK Pant - AE Bhimtal	UJN
	Mr SK Upadhyaya- SE Haldwani	UJS

Level	Name	Organization
	Mr Lalit Mohan Pande AE Mr Vasheshwar Bhatt AE Mr Deepak Tewari Mr NK Khandpal Mr Hemant Tewari Mr DS Rawat-AE Mr BK Pant-EE Mr BD Bhatt AE Mr. Ram Kishor, Sewer Mistry and Jetting Machine Operator	UJS UJS SWAJAL DPMU SWAJAL DPMU SWAJAL DPMU UJN UJN UJS UJS
	Mr Ashok Singh JE- Sewage Mr Dugal Singh, STP 18 MPLD Mr Uday Veer Singh, STP 18 MPLD Mr Pradeep Chauhan, In-charge STP laboratory	UJS- Rishikesh UJS- Rishikesh UJS Rishikesh ULP Engineers Consortium Limited Plant, Rishikesh
	Mr Mohit, Plant Operator, STP 18 MPLD Priyank Baloni, J.E. STP 18 MPLD Chavan Singh, Pump Supervisor, STP Bajrang Bali Sharma, Pump Operator, STP Jaswant Singh, Pump Operator Madan Singh Sen, JE, Zone III Jwalapur	UJS Rishikesh UJS Rishikesh UJS Rishikesh UJS Rishikesh UJS Rishikesh UJS Rishikesh
District Dehradun	Poorn Singh Pawar Sulochana Mangal Ramidevi Mangal Suman Pawar Bhim Singh Pawar Dheer Singh Sher Singh Chaman Nath Gajendra Singh Rawat, Rajeev Singh, Shyam Singh Rawat Ms Manju Dobal, Mr Suresh Dobal Kamlesh Pal	Village - Domgaon Allakhfarm GP Bhamiyawala GP Sapera Basti, Bhamiywala GP Jolly Grant Village Athoorwala GP Swargashram, Rishikesh
Nainital District	<i>Pradhan</i> -Himmatpur Mallah <i>Pradhan</i> - Bhagwanpur Jaisingh Mr BS Aswal Ms Shabana Faraz Pradhan Mr Lalit Mehra - <i>Pradhan</i> , Mohan, Asha Joshi Mr KK Bhatt, <i>Pradhan</i> Mr Devendra Karnatak, <i>Pradhan</i> Mr Amit, Manager Gaula STP Ms Bhagirathi Devi, <i>Pradhan</i> Mr Rawat, Owner Hotel Natural	Himmatpur Mallah GP Gaujajali GP Mukhani GP Thapaliya Mehra GP Chanoti GP Saloti Pani GP Brisanzia Technologies Pvt Ltd Maanpur GP Bhujiya Ghat
Pauri Garhwal District	Arjun Singh, Raghunath Singh, Lakshman Singh, Jhumpa Devi, Shashi Devi, Shankar Singh Rawat	Markhoda GP
Tehri/Pauri District	Devendra Bhandari, Devendra Bhandari, Jai Kishen Bhatt, MP Ghildiyal, Arvind Bhatt	Chauras, Madhi, Thapli, and Sankron villages

Level	Name	Organization
	Mohan Prasad Maikuli <i>Dalit</i> hamlet - Roshni Devi, Ramesh Lal, Bindra Devi, Beera Devi, Chandrakalan	Srikote

Annex 2: Checklist for the Social Assessment

State Level

- National/State Acts, Policies, Regulations, GOs on implementation of water- and sanitation-related schemes.
- Information on any state schemes on water supply services—design, implementation mechanisms.
- Institutions involved in the implementation of the water supply programs in the state.
- Organisation structure, mandate, and implementation arrangements of the three major institutions on the WSS in the state—SWAJAL, UJS, UJN—including their systems for planning, implementation and monitoring, role of community institutions/PRIIs/municipalities in planning, monitoring, or O&M.
- Composition and functioning of the SWSM for implementation of the SBM.
- Status of implementation of major schemes – the NRDWP, SBM, and AMRUT/JNNURM.
- Major challenges in the implementation of schemes in urban/peri-urban/hilly areas.
- Interagency coordination and information sharing (UJS/UJN/SWAJAL/SWSM/DDW/Department of Rural Development/Department of Urban Development).
- Mandated role of the PRIIs in the water and sanitation sector in the state.
- Nature and mandate of village institutions created for Water-Sanitation—composition, powers, functions, and linkages with the PRIIs.
- State-supported initiatives for promoting community engagement in the water supply schemes.
- Civil society-supported initiatives/examples on community engagement in the WSS schemes.
- Policies on accountability and citizen engagement—social audit, grievance redress.
- Nature of capacities at the state level to address social and community issues.
- State strategies on capacity building, communication, behavior change on the waster supply.
- State-based training institutions providing capacity building inputs on the water supply- mandate, types of trainings, nature of participants, training content, and annual training calendars.

District/Block Level

- Key institutions at the district and block level.
- Role, functions, and constitutions of the DWSC/DWSM.
- Data on the water supply coverage and status and key issues and challenges in implementation.
- District-level initiatives on outreach, planning, implementation, and community engagement.
- Annual planning process of different agencies—habitation targeting and prioritization criteria adopted.
- Functioning of district-level grievance mechanisms including the helplines, weekly public hearings, and right to services, and so on.
- Interagency coordination and planning process at the district and block level.
- Engagement with the elected leaders and members of district/block panchayats and municipalities.
- Scheme specific data on the WSS—RWSS/Urban WSS, SBM—coverage, gap, annual plans, key issues, and challenges in the district.
- Nature of capacities at the district and block level to address social issues.

Panchayat/CT/Peri-urban Area/Community Level

- Nature of the water supply schemes in the locality—not covered/partially covered.
- Agency involved in the implementation of the water supply—UJS/UJN/SWAJAL.
- Specific steps in the planning of schemes (single village/multi-village)—adopted by the implementing agency (pre-feasibility, design outlay, community mobilization and involvement, source selection, O&M).
- Nature of community involvement in planning, site-selection, design inputs, O&M, and management of O&M funds in the *Gram Nidhi*.
- Community perspective on the design, implementation, and adequacy of the schemes, with regard to provisioning of water supply and septage.
- Role of community/PRI after handover of schemes and nature of support extended by the implementing agency post-handover.
- Capacity building provided to elected representatives on the water supply issues—formal trainings.

- Role and mandate of the Village Water and Sanitation Committees- VWSC—functioning and capacities.
- Role and nature of involvement of civil society (especially, SWAJAL implemented project)
- Systems for monitoring—community-led as well as third party.
- Extent of use of GRMs like Right to Information, helpline, other mechanisms and their effectiveness.

Annex 3: Activities Permitted, Regulated, and Prohibited in Eco-Sensitive Zones, General Guidelines

While some of the activities could be allowed in all the eco-sensitive areas, others will need to be regulated/prohibited. However, which activity can be regulated or prohibited and to what extent would have to be PA specific. A broad list of activities (this may need supplementation) that could be allowed, promoted, regulated, or prohibited is given in the table below.

Activity	Prohibited	Regulated	Permitted	Remarks
Commercial mining	Y			Regulation will not prohibit the digging of earth for construction or repair of houses and for manufacture of country tiles or bricks for housing for personal consumption.
Felling of trees		Y		With permission from appropriate authority
Setting of saw mills	Y			
Setting of industries causing pollution (water, air, soil, noise, and so on)	Y			
Establishment of hotels and resorts		Y		According to approved master plan, which takes care of habitats allowing no restriction on movement of wild animals
Commercial use of firewood	Y			For hotels and other business-related establishments
Drastic change of agriculture systems		Y		
Commercial use of natural water resources including groundwater harvesting		Y		According to approved master plan, which takes care of habitats allowing no restriction on movement of wild animals
Establishment of major hydroelectric projects	Y			
Erection of electrical cables		Y		Promote underground cabling
Ongoing agriculture and horticulture practices by local communities			Y	However, excessive expansion of some of these activities should be regulated according to the master plan.
RWH			Y	Should be actively promoted
Fencing of premises of hotels and lodges		Y		
Organic farming			Y	Should be actively promoted
Use of polythene bags by shopkeepers		Y		
Use of renewable energy sources			Y	Should be actively promoted
Widening of roads		Y		This should be done with proper EIA.
Movement of vehicular traffic at night		Y		For commercial purpose
Introduction of exotic species		Y		
Use or production of hazardous substances	Y			

Activity	Prohibited	Regulated	Permitted	Remarks
Undertaking activities related to tourism like overflying the National Park area by any aircraft or hot-air balloon	Y			
Protection of hill slopes and river banks		Y		According to the master plan
Discharge of effluents and solid waste in natural water bodies or terrestrial areas	Y			
Air and vehicular pollution		Y		
Sign boards and hoardings		Y		According to the master plan
Adoption of green technology for all activities			Y	Should be actively promoted.

Annex 4: Doon Valley Eco-sensitive Zone, Its Boundaries, and Allowed Activities

Boundaries of Doon Valley Eco-sensitive Zone. On the north by Mussoorie ridge, in the north-east by Lesser Himalayan ranges, on the south-west by Shivalik ranges, River Ganga in the south-east, and River Yamuna in the north-west. Activities may be restricted, - except those that are permitted by the Central Government after examining the environmental impacts:

Categorization of Industries

Guidelines for Permitting/Restricting Industrial Units in the Doon Valley Area

Industries are classified under Green, Orange, and Red categories for the purposes of permitting/restricting such industrial units in the Doon Valley from environmental and ecological considerations. The industries are listed below.

Category Green

- (a) List of industries in approved industrial areas, which may be directly considered for issue of NoC without referring to the MoEF (in case of doubts, reference will be made to the MoEF):
 - (i) All such non-obnoxious and non-hazardous industries employing up to 100 persons. The obnoxious and hazardous industries are those using inflammable, explosive, corrosive, or toxic substances.
 - (ii) All such industries that do not discharge industrial effluents of a polluting nature and that do not undertake any of the following processes:

Electroplating	Galvanizing	Bleaching
Degreasing	Phosphating	Cooking of fibers and digesting and desizing of fabric
Dyeing	Pickling, tanning, and polishing	Unhairing, soaking, deliming, and bating of hides; washing of fabric
Trimming, pulling, juicing, and blanching of fruits and vegetables	Washing of equipment and regular floor washing; using of considerable cooling water	Separated milk, buttermilk, and whey
Stopping and processing of grain	Distillation of alcohol, stillage, and evaporation	Slaughtering of animals, rendering of bones, and washing of meat
Juicing of sugarcane, extraction of sugar, filtration, centrifugation, and distillation	Pulping and fermenting of coffee beans	Processing of fish
Filter backwash in D.M. plants exceeding 20 kL per day capacity	Pulp making, pulp processing, and papermaking; coking of coal and washing of blast-furnace flue gases	Stripping of oxides
Washing of used sand by hydraulic discharge	Washing of latex and so on	Solvent extraction

- (iii) All such industries that do not use fuel in their manufacturing process or in any subsidiary process, and which do not emit fugitive emissions of a diffused nature.
- Industries not satisfying any one of the three criteria are recommended to be referred to the MoEF.
 - The following industries appear to fall in non-hazardous, non-obnoxious, and non-polluting category, subject to fulfilment of the above three conditions:

<i>Atta-chakkies</i>	Rice millers	Iceboxes
Dal mills	Groundnut decortinating (dry)	Chilling
Tailoring and garment making	Apparel making	Cotton and woolen hosiery
Handloom weaving	Shoe lace manufacturing	Gold and silver thread and sari work
Goldsmithry and silversmithing	Leather footwear and leather products, excluding tanning and hide processing	Manufacture of mirror from sheet glass and photo frame
Musical instruments manufacturing	Sports goods	Bamboo and cane produce, only dry operations
Cardboard and paper production (paper and pulp manufacturing excluded)	Insulation and other coated papers (paper and pulp manufacture excluded)	Scientific and mathematical instruments
Furniture (wooden and steel)	Assembly of domestic electrical appliances	Radio assembling
Fountain pens	Polythene, plastic, and polyvinyl chloride goods through extrusion/molding	Surgical gauges and bandages
Railway sleepers (only concrete)	Cotton spinning and weaving	Rope (cotton and plastic)
Carpet weaving	Assembly of air coolers	Wires and pipes - extruded shapes from metals
Automobile servicing and repair stations	Assembly of bicycles, baby carriages, and other small non-motorized vehicles	Electronics equipment (assembly)
Toys	Candles	Carpentry - excluding saw mills
Cold storage (small scale)	Restaurants	Oil-ginning/expelling (non-hydrogenation and no refining)
Ice cream	Mineralized water	Jobbing and machining
Manufacturing of steel trunks and suit cases	Paper pins and u-clips	Block making for printing
Optical frames		

Category Orange

- (b) List of industries that can be permitted in the Doon Valley with proper environmental control arrangement.
- All such industries that discharge some liquid effluents (below 500 kL per day) that can be controlled with suitable proven technology.
 - All such industries in which the daily consumption of coal/fuel is less than 24 mt per day and the particulars emissions from which can be controlled with suitable proven technology.

- (iii) All such industries employing not more than 500 persons.
- (iv) The following industries with adoption of proven pollution control technology subject to fulfilling the above three condition fall under this category:

Lime manufacture - pending decision on proven pollution control device and Supreme Court's decision on quarrying	Ceramics	Sanitary ware
Tires and tubes	Refuse incineration (controlled)	Flour mills
Vegetable oils including solvent-extracted oils	Soap without steam boiling process and synthetic detergents formulation	Steam generating plants
Manufacture of office and household equipment and appliances involving the use of fossil fuel combustion	Manufacture of machineries and machine tools and equipment	Industrial gases (only nitrogen, oxygen, and carbon dioxide)
Miscellaneous glassware without involving the use of fossil fuel combustion	Optical glass	Laboratory ware
Petroleum storage and transfer facilities	Surgical and medical products including prophylactics and latex products	Footwear (rubber)
Bakery products, biscuits, and confectioneries	Instant tea/coffee; coffee processing	Malted food
Manufacture of power-driven pumps, compressors of refrigeration units, firefighting equipment, and so on	Wire drawing (cold process) and bailing straps	Steel furniture, fasteners, and so on
Plastic processed goods	Medical and surgical instruments	Acetylene (synthetic)
Glue and gelatin	Potassium permanganate	Metallic sodium
Photographic films, papers, and photographic chemicals	Surface coating industries	Fragrances, flavors, and food additives
Plant nutrients (only manure)	Aerated water/soft drink	

Note:

- Industries falling within the above identified list shall be assessed by the SPCB and referred to the Union Department of Environment for consideration, before according NoC.
- The total number of fuel burning industries that shall be permitted in the valley will be limited by 8 tons per day of sulfur dioxide from all sources. (This corresponds to 400 tons per day of coal with 1 percent sulfur).
- Siting of industrial areas should be based on sound criteria.

Category Red

- (c) List of industries that cannot be permitted in the Doon Valley.
 - (i) All those industries that discharge effluents of a polluting nature at the rate of more than 500 kL per day and for which the natural course for sufficient dilution is not available, and effluents from which cannot be controlled with suitable technology.
 - (ii) All such industries employing more than 500 persons per day.

- (iii) All such industries in which the daily consumption of coal/fuel is more than 24 mt per day.
- (iv) The following industries appear to fall under this category covered by all the points as above:

Ferrous and nonferrous metal extraction, refining, casting, forging, alloy making process, and so on	Dry coal processing/mineral processing industries such as ore sintering beneficiation, palletization, and so on	Phosphate rock processing plants
Cement plants with horizontal rotary kilns	Glass and glass products involving use of coal	Petroleum refinery
Petrochemical industries	Manufacture of lubricating oils and greases	Synthetic rubber manufacture
Coal, oil, wood, or nuclear-based thermal power plants	<i>Vanaspati</i> and hydrogenated vegetable oils for industrial purposes	Sugar mills (white and <i>khandasari</i>)
Craft paper mills	Coke oven byproducts and coal tar distillation products	Alkalies
Caustic soda	Electro thermal products (artificial abrasives, calcium carbide, and so on)	Phosphorus and its compounds
Acids and their salts (organic and inorganic)	Potash	Nitrogen compounds (cyanides, cyanamides, and other nitrogen compounds)
Explosive (including industrial explosives, detonators, and fuses)	Phthalic anhydride	Processes involving chlorinated hydrocarbon
Chlorine, fluorine, bromine, iodine, and their compounds	Fertilizer industry	Paper board and straw boards
Synthetics fibers	Insecticides, fungicides, herbicides, and pesticides (basic manufacture and formulation)	Coke making, coal liquefaction, and fuel gas making industries
Basic drugs	Alcohol (industrial or potable)	Leather industry including tanning and processing
Fiber glass production and processing	Pigment dyes and their intermediates	Paints, enamels, and varnishes
Manufacture of pulp-wood, pulp, mechanical or chemical (including dissolving pulp)	Industrial carbons (including graphite electrodes, anodes, midget electrodes, graphite blocks, graphite crucibles, gas carbons, activated carbon, synthetic diamonds, carbon black, channel black, lamp black, and so on)	Cement with vertical shaft kiln technology pending certification of proven technology on pollution control
Polypropylene	Polyvinyl chloride	Polishes
Chlorates, perchlorates, and peroxides	Synthetic resin and plastic products	Electrochemicals (other than those covered under alkali group)

Annex 5: Protected Areas of Uttarakhand

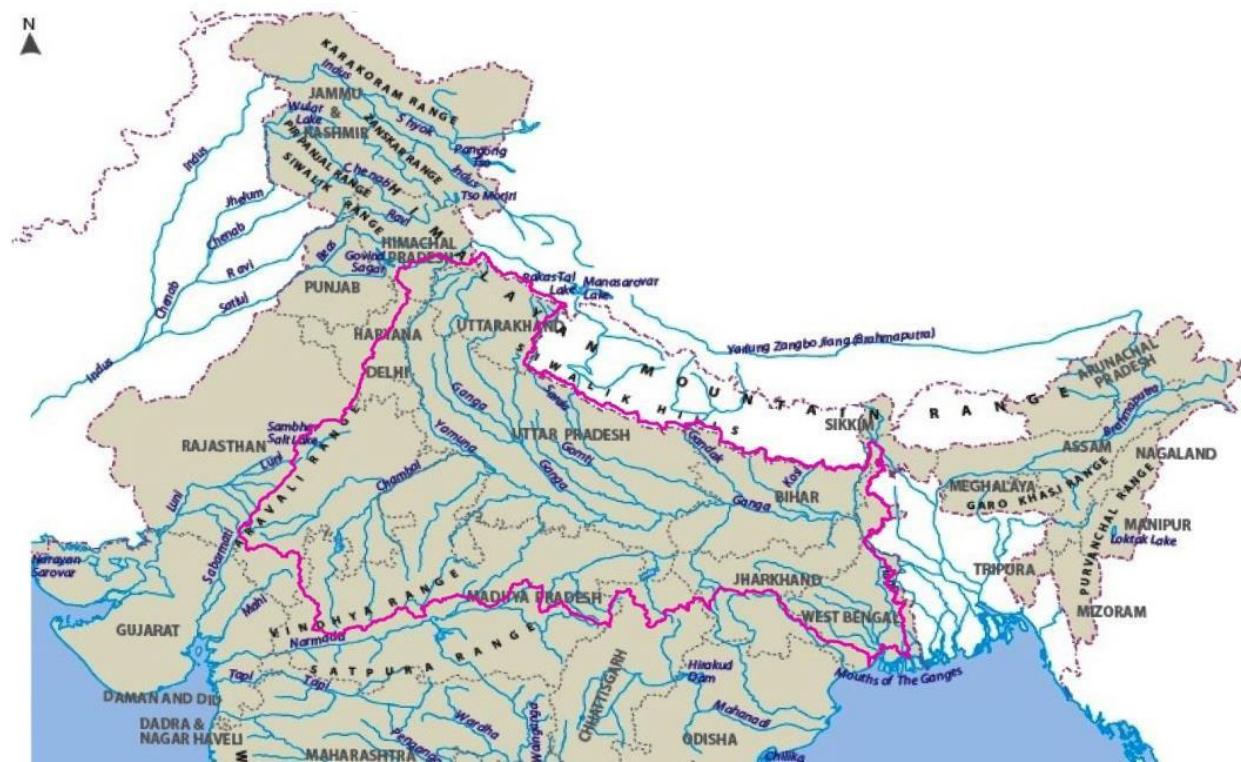
Sl. No.	Name of the PAs	Year of Establishment	Area (km ²)	District
E	Corbett NP	1936	520.82	Nainital, Pauri Garhwal
2	Gangotri NP	1989	2,390.02	Uttarkashi
3	Govind NP	1990	472.08	Uttarkashi
4	Nanda Devi NP	1982	624.60	Chamoli
5	Rajaji NP	1983	820.42	Dehradun, Pauri Garhwal, Haridwar
6	Valley of Flowers NP	1982	87.50	Chamoli
1	Askot Musk Deer WLS	1986	599.93	Pithoragarh
2	Binsar WLS	1988	45.59	Almora
3	Govind Pashu Vihar WLS	1955	485.89	Uttarkashi
4	Kedarnath WLS	1972	975.20	Chamoli, Rudraprayag
5	Mussoorie WLS	1993	10.82	Dehradun
6	Sonanadi WLS	1987	301.18	Pauri Garhwal
1	Rajaji Tiger Reserve			
2	Naina Devi Himalayan Bird Conservation Reserve			
1	Asan Wetland Conservation Reserve	2005	4.44	Dehradun
2	Jhilmil Jheel Conservation Reserve.	2005	37.84	Haridwar

Source: http://wiienvis.nic.in/Database/Uttarakhand_7841.aspx; http://nbaindia.in/uploaded/state-wise/uk/1.list_Protectedareas_uk.pdf.

Note: NP = National Park; WLS = Wildlife Sanctuary.

Annex 6: Boundaries of the Ganga Basin According to the GRBMP

As is seen from the figure below, all of the planned program area will be a part of the GRBMP and, therefore, the NRGBM Bill, 2012.



Source: Consortium of seven IITs. 2015. Ganga Basin Management Plan 2015.

Annex 7: ECoPs for identification and management of water sources

1. ECOPs FOR IDENTIFICATION OF SOURCES OF WATER SUPPLY

OBJECTIVE: To lay down the criteria for selecting appropriate water sources for rural drinking water supply.

(I) Application – SPRINGS

Detailed hydro-geological studies of 279 sites are given (in table 6.10 of EA study report). However, further site-specific geo-hydrological assessment in light of the following measures will provide a better insight for individual schemes.

Measures Suggested –

- There should be enough discharge especially in summers to meet the community's needs (table 6.4 of EA study report).
- The discharge rate of the source during the dry season should be considered as the average source discharge rate under the sub-project. In case of two years of observation, the minimum of the two discharge should be considered for working out safe yield of the source. Safety factors (due to processing, storage, transferring losses) be added on.
- Water storage tank be made a little away (downhill-side) of the source.
- The source should not be disturbed by biotic and abiotic pressures.
- Source should not be within 100 m downhill side of a polluting point (Toilet and soak pit) as per the Pey Jal Nigam guideline.
- Source should be above a village and not immediately below a hillside village.
- Source whose catchment is well – vegetated should be preferred.
- Source in a forested area be preferred than in agricultural area.
- The catchment having least anthropogenic interference will be preferred.
- There should not be any other uses of the source proving drinking water under the scheme.
- The quality of water should be within the safe limits of Bureau of Indian Standard.

(ii) Application – STREAMS

Measures Suggested –

- Discharge measurements taken in the dry seasons (May-June) should only be considered for designing the project. Preferably, the minimum discharge rate to be considered should be 75 % of the average of the two dry season's minimum discharge recorded; as the minimum discharge capacity for the sub-project for designing purposes. Besides, the source should have enough water left after tapping to maintain the stream ecology.
- Proposed tapping point should be above the village path and not immediately below it. If animals drink water (or bathe) from the same stream then their drinking/ bathing point should be below the proposed tapping point.
- Water tapping point should not be below a polluting activity (drain discharge point etc). In case a particular source is already used for multipurpose, the planning team must ensure that the source has sufficient water to meet additional demand.
- Water quality should be tested before installation of the scheme both for bacteriological and chemical pollutants.

2. ECOPs ON PROTECTING SURFACE WATER SUPPLY SOURCE AND ENSURING SUSTAINABILITY

Objective – To lay down criteria for sustaining water supply in a **STREAM**

Measures Suggested -

- While tapping surface water especially in case of small rivulets, one of the key issue that needs to be addressed is the percentage of source discharge required to be tapped. The proportion to be tapped will depend on the other uses to which the water is being used now. If no other competing use of the water exists, about 1/3 rd of the lean period supply must be left to sustain the downstream ecology.
- If possible a small well be dug or a 4 or 5 m. long 4" diameter perforated pipe be laid along the stream at about 60 cm. below ground and then connect it to the pipe taking water to the village. In this way cleaner water from the sand bed will be tapped.
- Streams bank upto a few meters (say 10 m.) above tapping points be fenced to check any anthropogenic disturbance.
- If possible a few check dams be made in the stream above the collection point to increase the water soaking and it will also improve the quality of water.
- For wider streams, spurs will help instead of check-dams.
- Catchment area treatment will be done.

3. ECOPs ON PROTECTING GROUND WATER SUPPLY SOURCES AND IS ENSURING SUSTAINABILITY

Objective – To ensure sustainability of **SPRINGS**

The source has to be protected from physical damage and also be protected from any contamination due to its use by anybody (human or animals). Following proposals are given to protect a spring sources.

Measures Suggested -

- A brick/ concrete chamber will be made of about $2' \times 2' \times 2'$ size around the spring mouth with an iron gate made of close mesh and strong iron strips/ bars so that source is visible and well protected.
- The area around the source required to be fenced. It can be of small size of about $2\text{ m} \times 2\text{ m}$, but should be sturdy so that animals may not breach it easily. Fencing be done by 4 to 5 strand barbed wire upto about 5' ht., supported by wire net of 4" \times 4" to prevent animals to pass-in. Lower 3' ht. be fenced by close mesh wire net and it must be embedded strongly (well nailed in) at least 9" below ground to prevent rodents etc. to enter by burrowing in.
- For long term sustainability, catchment around the source be delineated and protect with the following measures,
 - Free grazing of all animals must be restricted.
 - If possible, protect the area from animals grazing with social fencing.
 - Free animal grazing be restricted as animals dung, urine etc. can pollute water.
 - Open defecation in the micro-mini-catchment should be discouraged.
 - Vegetate the area with broad-leaved trees, bushes and grasses.
 - Controlled grass cutting (close and open range) on contour strips should be adopted.
 - If area has private fields and the land-use can not be altered then encourage only long rotation crops with organic farming (preferable with horticulture species).
 - The catchment should be kept under permanent vegetative cover
 - All activities in the catchment be conducted on contours.
 - Water barriers be made in the catchment in form of various types of check dams, gully plugs, contour hedges etc.

- On wider streams, spurs will help.
- Water recharge will improve by digging narrow, shallow staggered (well protected by grass) trenches. If needed the trench can be filled up by stones, etc. and grass planted down hillside of these trenches.
- No land be left fallow in the catchment.
- Un-necessary disturbance (cattle movement etc.) the catchment be checked.
- Storm water can be led to abandoned wells, troughs etc. for subsoil water recharge.
- Old ponds, channels etc. can be cleaned and desilted to recharge the traditional sources.

Annex 8: Water Quality Monitoring, ECoP and Monitoring Checklist

ECOPs ON WATER QUALITY MONITORING

Objective – The objective is to provide user-friendly guidelines for water quality surveillance under the project.

Measures Suggested -

- Water should be tested before finalizing a source to tap for drinking water in line of the norms stated in Sec. 6.3.1 of EA study report.
- The critical pollutants load of the area must be identified prior to the installation of the schemes.
- In case, water quality exceeding any permissible limit, villager must be explained regarding the mitigation measures
- Water quality surveillance must be undertaken periodically in line of mitigation measures proposed in this EMF, particularly for coliform, parasites and chlorine residues. In case of any epidemic regular water sample testing must be encouraged.
- Any water sample send for water sample analysis must be acidified immediately during collection and get the water sample analyzed/tested within 12 hours of collection.
- Regular chlorination of the main storage tank is recommended and this should be undertaken in coordination with the Health Department. This institutional arrangement for such chlorination already exists in the state.
- Open defecation in catchment area should be prevented.
- Toilets, garbage pits etc. within 30 m. above water source should be discouraged.
- Enclosed table A to G can help in collecting the data for water quality from different types of sources.
- In case of spring sources chlorine dose could be 0.2 ppm while in case of Gadhera source it should be 0.5 ppm.

Annex 9: Existing Monitoring System under previous Program

This format is a part of a larger format presently being used to monitor schemes, and includes financial and other monitoring actions. The sections below are only those relevant for water quality and sustainability issues.

SUSTAINABILITY EVALUATION EXERCISE FORMAT

Note: It is compulsory to give information on all fields. If Not Applicable, write N.A. Carefully read the instructions before filling data.

Part A: Scheme Level General Information

1. Name of Implementing Agency: Swajal / UJN /UJS
2. Name of District : _____
3. Name of Division/DPMU: _____
4. Name of Block : _____
5. Name of GP : _____
6. Name of Scheme : _____
7. Batch : _____
8. Name of Program : Sector Program (URWSSP)/Additional Financing Pr _____
9. Total Population of the Covered Habitation/s as on visit date _____
10. DPR Population for base year _____
11. Design Population as per DPR _____
12. Total number of Households in Covered Habitation _____
13. Total Number of households benefited by Scheme: _____
14. Total Number of Stand Posts proposed as per DPR _____

15. Total Number of Stand Posts installed as per IPCR

Essential Condition: Source Discharge

The Source discharge of the scheme has to be evaluated on the following

16. Total Number of Private Connections proposed as per DPR

17. Total Number of Private Connections installed as per IPCR

18. Total Number of Hand Pumps installed as per DPR

19. Total Number of Hand Pumps installed as per IPCR

Name of Evaluators: _____

Date of Visit: _____

Part B : Water Supply Information

[Details of Schemes]

I	Discharge of the tapped source has increased or remained the same as per the safe yield adopted in DPR (for gravity & pumping schemes) or All the hand pumps are giving adequate water	A
II	Discharge is between safe yield and design discharge as taken in DPR (for gravity & pumping schemes) or Some of the hand pumps are not giving adequate water due to source drying up or depletion of ground water	B
III	Discharge of the tapped source has declined less than safe yield or dried up (for gravity & pumping schemes) or All hand pumps not giving water due to source depletion of ground water	C

Note: If the source is evaluated, as 'C' then the scheme shall be designated, as LSV, even if the total marks obtained are more than 49.

1. Water Supply Scheme Details:

Name of Scheme	Type of Scheme	Date of Commissioning	Scheme Status * (Fully Functional/Partially Functional/Non Functional)	Insurance in O&M Phase (Y/N)

* 1. Fully Functional (FF)- All stand posts/ hand pumps and private connections receiving adequate water

2. Partially Functions (PF) - Some stand posts/ hand pumps and private connections not receiving adequate water

3. Non Functions (NF)- No stand posts/ hand pumps and private connections receiving water

Please note that the functionality of Filtration unit is not to be considered here

2. Duration of Defective Schemes: PF/NF (Since become defective Months)

2.1 Extent of Partial Functionality (to be filled in for schemes other than Hand Pumps):

Stand Posts	Private Connections

Total Number	Functional number	Total Number	Functional number

2.2 Extent of Partial Functionality (to be filled in for Hand Pumps Schemes):

Hand Pumps	
Total Number	Functional number

2.3 If Water Supply system is Partially Functional or Non Functional then specify the reason/ problem in detail (to be filled only for schemes other than Hand Pump schemes)

Drying up of the water source	Depletion in water source	Damage to intake works	Damage to filter works	Damage to supply main	Damage to CWR	Damage to distribution main	Leakage in supply main	Leakage in Distribution main	Faulty operation of valves	Any other (Please specify)

3. Status of Filtration Units

Type of Filtration Unit (SSF/RF)	Whether Covered or Not (in case of SSF)	Functional	Non-Functional	Reason of Non Functionality

4. Major reason/s for non-working of Hand pumps: (specify numbers of HPs in boxes against the reasons)

Sl. No.	Cause of Problem	Scheme 1
1	Failure of bore	
2	Unavailability of spare parts	
3	Unavailability of toolkits	
4	Unavailability of trained mechanic	
5	Any other reason (Please specify in detail)	

5. Is regular chlorination being done? (Not Applicable for HP Scheme)

Yes/ No

5 a) If yes, frequency of chlorination

Daily	Alternate Days	Weekly	Fortnightly	Monthly

5 b) If no, then what is the reason for non- chlorination: (tick the right option)

Sl. No.	Reasons	Please Tick
1	Chlorinator not yet installed	
2	Defective Chlorinator	
3	Non Availability of bleaching powder	
4	VMW/SMW not employed	
5	Lack of skill and knowledge about the activity	
6	Hand pump/RWHT Scheme	
7	Any other reasons (Please specify in detail)	

6. Whether Chloroscope/Field Test Kit TK is available with the UWSSC? Yes

6 a) Is residual chlorine testing being done? Yes/ No _____

6 b) If yes, frequency of residual chlorine testing:

Daily	Alternate Days	Weekly	Fortnightly	Monthly

6c) If no, then what is the reason for non Residual chlorine testing: (tick the right option)

Sl. No.	Reasons	Please Tick
1	Chloroscope not available	
2	Defective Chloroscope	

3	Non Availability of Testing Reagent	
4	VMW not employed	
5	Lack of skill and knowledge about the activity	

6 d). H₂S strip testing in case of Hand Pump Schemes

Regularly	Irregularly	Not Being Done

7. Are spare parts for maintenance easily available: Yes No

8. Are tools for O&M available with the VWSC: Yes No

9. Is VMW Employed: Yes No

10. If yes, Emoluments are being regularly paid to the VMW: Yes

(Tick N.A. only if VMW not employed)

Part E : CACMP

S.No	Details	Units	Constructed/Planted	In Use/Alive
1	Check Dam	Number		
2	Contour Trench	Running Meter		
3	Coolie Walling	Running Meter		
4	Dug Pond/ Chal/ Khal	Number		
5	Percolation Pond	Number		
7	Compost Pits	Number		
8	Garbage Pits	Number		
9	Soak Pits	Number		
10	Recharge Pit	Number		
11	RWHT	Number		
12	Plants	Number		
13	Grass Patch	Number		
13	Does anybody regularly look after the plants?	Yes /No		
14	Has water logging near stand posts been observed	Yes /No		

15. Source Discharge measurement : Done/ Not Done

15. Perceived Benefits of CACMP (not more than 10 words)

- i. Effect on Source Discharge
- ii. Effect on Soil Erosion Control
- iii. Effect on Vegetation Cover
- iv. Effect on Soil Moisture
- v. Effect on Fodder Availability
- vi. Effect on Storm runoff
- vii. Effect on Vulnerability of water supply scheme

P

Part -I: Revised Sustainability Evaluation Exercise Index

Sl. No	Parameters	Maximum Score
1.	<i>Sustainability of Hardware Assets</i>	
A	Status of water supply structures	25
I	Scheme fully functional	25
ii	Scheme partial functional-functionality between 80% to 99%	20

iii	Scheme partial functional-functionality between 60% to 79%	15
iv	Scheme partial functional-functionality between 40% to 59%	10
v	Scheme partial functional-functionality less than 40%	5
vi	Scheme non functional	0
2	<u>Operation and Maintenance</u>	
A	Water Quality	
(a)	<u>Chlorination status</u>	
i	Regular chlorination and residual chlorine testing /H2S strip testing (HP)	5
ii	Regular chlorination but irregular or no residual chlorine testing /H2S strip testing (HP)	3
iii	Irregular chlorination and no residual chlorine testing /H2S strip testing (HP)	2
iv	No chlorination/H2S strip testing (HP)	0
(b)	<u>Filtration Status</u>	
i	All filtration Units functional	5
ii	Some filtration Units functional	3
iii	All filtration Units non-functional	0
A	Highly Sustainable Village (HSV)	75-100
B	Moderately Sustainable Village (MSV)	50-74
C	Least Sustainable Village (LSV) sustainable to some extent	0-49

Total Marks Obtained

SEE Category:

Signature of the Evaluator:

Comments of the Observer & Signature _____

Part J: Challenges & Intervention

(Based on Part-I)

S. No.	Issues	Intervention
1.	Source Discharge	
i.		
ii.		
iii.		
iv.		
2.	Status of water supply Structures	
i.		
ii.		
iii.		
iv.		
3.	Chlorination status	
i.		
ii.		
iii.		
iv.		
4.	Filtration Status	
i.		
ii.		
iii.		
iv.		

Signatures of Evaluators_____

Date _____

Annex 10: ECoP to reduce disturbance to wildlife during program activities

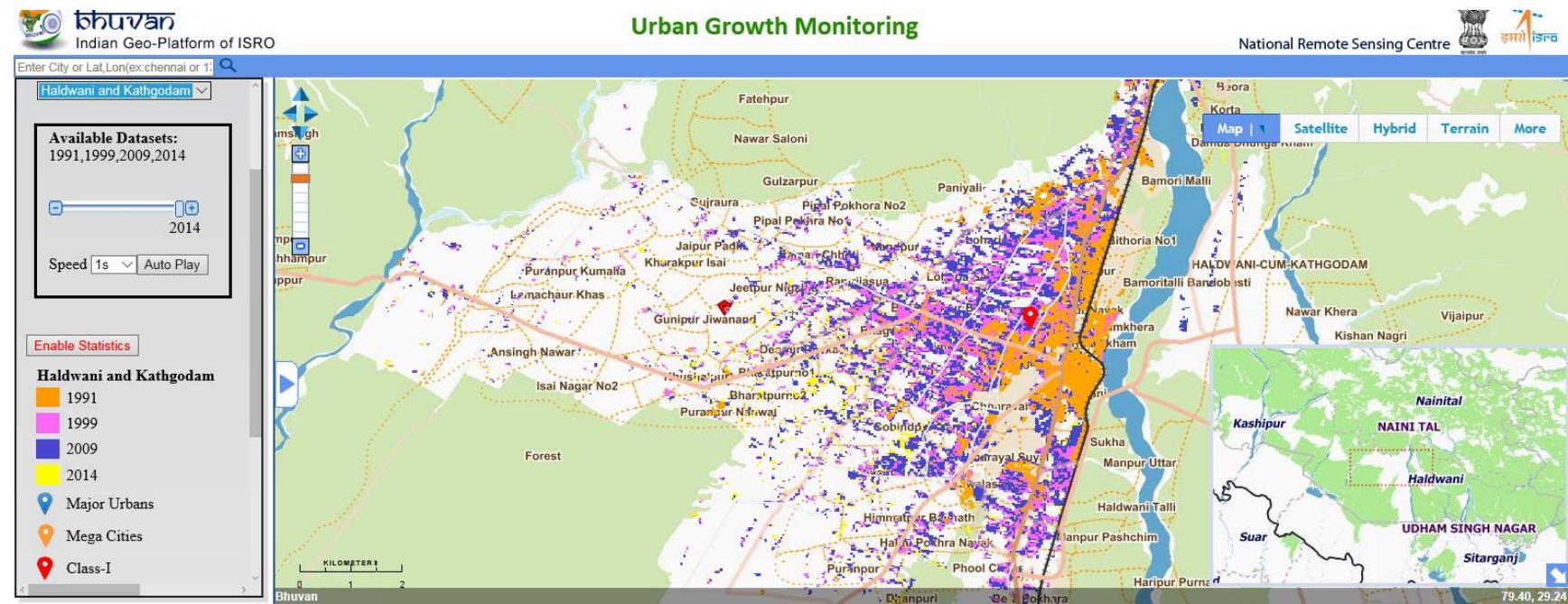
While it is expected that there is unlikely to be any work in a PA, however, as there are eco-sensitive zones and some wildlife movement expected in the program area, wildlife in the area may be disturbed by program activities. The guidance below is to help reduce any disturbance to the extent possible.

- a. In areas where there are animal corridors pipelines should be laid below the ground. Also, it is suggested that there is no other infrastructure built above the ground in animal corridors
- b. In areas of elephant movement and corridors, water pipelines should be laid a few meters below the ground, to minimise possibility of digging and breakage by the elephants
- c. To the extent possible, an area frequented by animals should be avoided while transporting material. However, if not possible, all activities should be done at periods which cause least disturbance, such as during day hours.
- d. In case there are areas where seasonal migration or high activity period of animals exist, these areas should be identified, and any construction activity should be avoided during this period.
- e. Minimum clearance of vegetation during pipeline laying, and where replantation needs to be taken up, ensure local and native species are used.
- f. The design should identify appropriate time for working in the area – so as not to disturb breeding and other important period in the area
- g. Required drainage and erosion management actions that may be needed according to the site must be identified and incorporated in the project design plan
- h. Any machinery etc to be used should be identified to create minimum disturbance, and if required noise buffers be put in place to ensure this
- i. All noise levels should follow that applicable for the area, however if there are no specific noise levels applicable, as might be in uninhabited areas, those for silence or residential areas should be followed, given that animals are likely to be disturbed by noise.
- j. Any plan and schedules identified for the post construction management of the water supply infrastructure must be designed in a way to avoid any high wildlife activity period, such as during migratory season.
- k. The construction contractor's contract must include all clauses to ensure that identified mitigation and management measures for natural habitat are included, understood by him/her and the company has trained personnel to manage the activity as required and identified
- l. Precautions and first aid for snake bites such as a pressure bandage and anti-venom must be available in case required
- m. All digging laying pipes and filling work must be completed simultaneously so that there is no risk of animals falling into the dugout areas and being injured or killed.
- n. Areas where trenches and other digging activities take place should be cordoned off to minimise animals falling, being injured or trapped due to construction activities.
- o. Avoid O&M activities during high wildlife activity and movement times, such as migration, breeding etc in the area

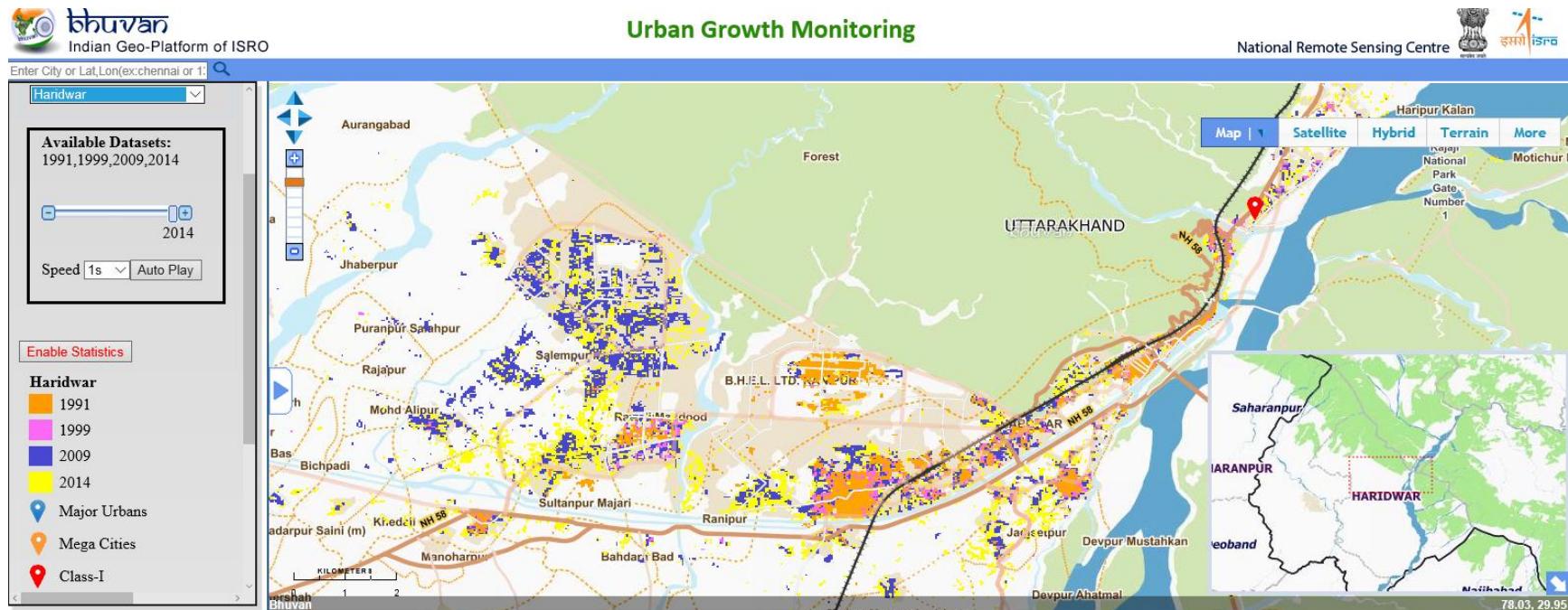
Annex 11: Urban Sprawl in Uttarakhand

Below are the images from the Bhuvan India Geo-platform of Indian Space Research Organisation (ISRO) showing the urban sprawl of three urban areas. This is based on the census data between 1991 and 2014. The sources of all three figures are provided at the end of this annex.

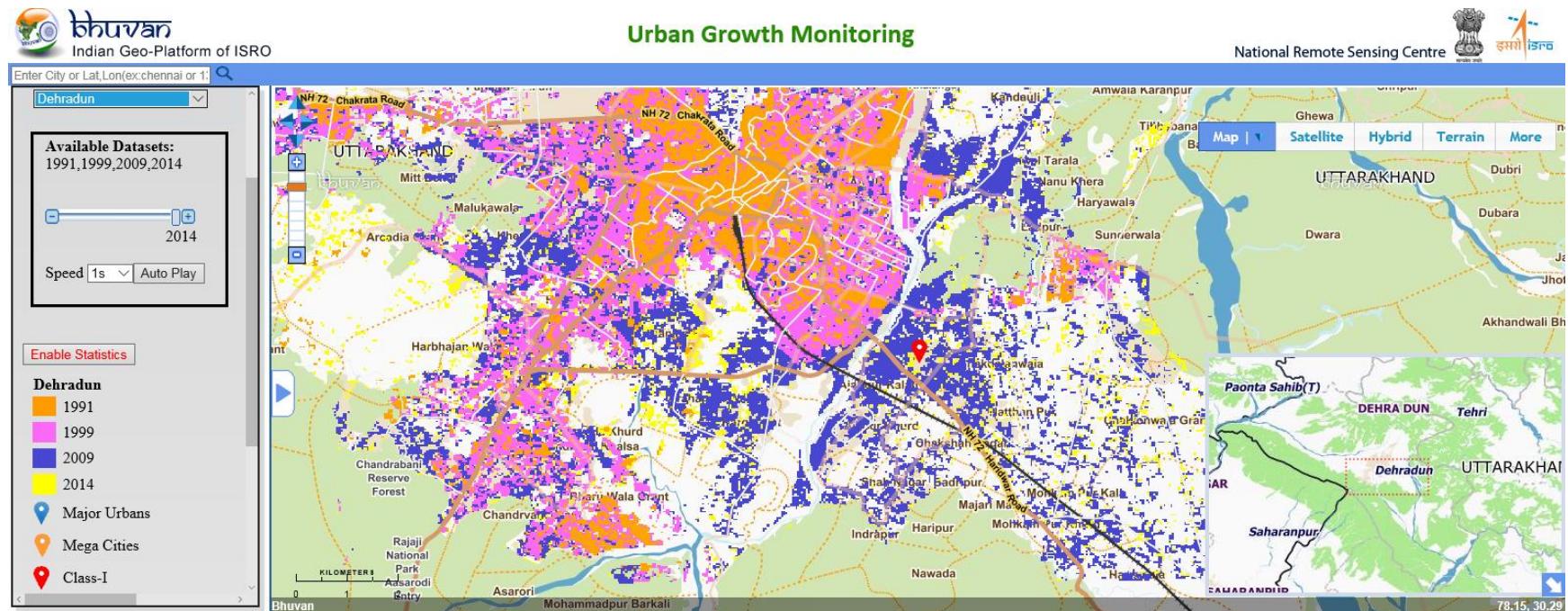
Haldwani Kathgodam Urban Growth



Haridwar Urban Growth



Dehradun Urban Growth



Source: <http://bhuvan.nrsc.gov.in/urban/sprawl/urbangrowth.php#> accessed July 5, 2016, 2:30 p.m.

Annexure 12: World bank Guidelines for Land donation

The Program will make all efforts to minimize if not avoid land acquisition. Under any circumstances, the titleholder/ encroacher will not be subjected to any pressure, directly or indirectly, to part with the land. These actions are expected to minimize adverse impacts on the local population and help in project benefits reaching of the all sections community. If required in remote possibility, the GPs will procure land through direct purchase.

As voluntary donation is one of the options for land procurement, there is an opportunity for overuse/ misuse of this provision. Hence the process of voluntary donation of land will be meticulously documented at all level to avoid confusions, misunderstandings, litigations, etc. at a later stage. Complete documentation along with a copy of the final document will be sent to District Office for records and for inspection at a later date. In order to make this process transparent, the following rules are prescribed:

1. The Titleholder should not belong to the vulnerable sections/ BPL category. The vulnerability shall be assessed by the project and generally The following categories shall be vulnerable groups:
 - BPL households (with a valid proof), as per the State poverty line for rural areas;
 - BPL households without a proof of the same and belonging to the social categories, viz., (i) Women headed households with women as sole earner (ii) Scheduled Caste/Scheduled Tribe and (iii) Handicapped person
2. The project provides for targeted support/ assistance to the vulnerable groups.
3. The voluntary donation should not be more than 10 percent of the area of that particular holding of the Titleholder in that category of land (dry, wet or commercial/ residential). This should not require any physical relocation of the Titleholder.
4. The project technical authorities should ensure that the land is appropriate for sub-project purposes and that the sub-project will not invite any adverse social, health, environmental, safety, etc. related impacts by procuring this land. The project technical team should identify alternative locations in order to comply with these guidelines.
5. The land in question must be free of encumbrances.
6. Verification of the voluntary nature of land donations must be obtained from each of the persons donating land. This should be in the form of notarized witnessed statements.
7. The land title must be vested in the GP and appropriate guarantees of public access to services must be given by the private titleholder.

Annex 13: ESSA Consultation held 10 August, 2017

Discussion: Uttarakhand Peri-Urban Water Supply Program, ESSA Consultation, 10 August, 2017.

The Uttarakhand Peri-urban Water Supply Program Environmental and Social Systems Assessment, consultation meeting was held on 10th August, 2017 at Dehradun. The State Water and Sanitation Mission (SWSM) organized the consultation in their office at Dehradun, Uttarakhand.

There were total 36 participants including the residents from some of the identified peri-urban areas, PRI members from some of the peri-urban Panchayats, Social Welfare department representative and engineers implementing and managing WSS projects in the field, engineers from the Uttarakhand Peyjal Nigam and Uttarakhand Jal Sansthan and SWSM and their consultants, unit coordinator engineering Project management Unit Swajal & Swajal Pathsala.

The consultation started with a welcome address by the Officer on Special duty (OSD), SWSM Er. V.K. Sinha, and a brief self-introduction by all participants. The SWSM, then introduced the planned Program, giving a brief presentation of salient features and scope of activities of the proposed peri-urban program. This was followed by presentations from the World Bank team. At the outset, the WB team introduced the ESSA and its methodology, and discussed the findings and recommendations of the ESSA. There were some suggestions and clarifications and a discussion as a part of the consultative process. The discussions are summarized below.

1. A concern raised by a Gram Pradhan was the possibility of the need for land for the development of a tube-well and pump house. The concern was regarding some GP's where there is no Gram Sabha land and therefore, it is likely to be a challenge to get land in such areas. As a part of this issue, it was also suggested, that while there can be some concern in a few areas, alternates like schools, panchayat ghars etc. will be considered for infrastructure construction, prior to trying to purchase any private land. It was clarified to the participants that very limited land is required as no large infrastructure will need to be developed. The discussions also highlighted that the first preference would be given to government lands, where available. However, if no government land is available, then GP lands are the next best alternative, and was only after that other alternates may be considered.
2. Some UJN engineers highlighted that there was very limited capacity among them to handle social or environmental issues that might come up under the project. Therefore, they suggested that there should be social and environmental professionals hired to be a part of the FIUs of the proposed Program, and that there should be capacity building activities undertaken to ensure that all required social and environmental issues that might arise under the project are well taken care of.
3. While discussing access to potable water in the proposed Program area, some of the community members raised issues of equitable distribution/access of drinking water to all

economic classes. A community member suggested, that if there is a new state water policy drafted by the State then, provisions should be made for subsidy/ or lower tariff rates for critically ill persons, women headed households, widows or other vulnerable community members. This was raised, as it was felt that there are such vulnerable groups who might not be able to otherwise afford potable water, and may lose out on benefits from the project. It was also suggested, that for such groups, if required stand posts that cater specifically to them, may also be considered.

4. Discussing the issue of the community's role in such a program, some of the engineers from the line UJN/UJS explained, that a No Objection Certificates (NoCs) are taken from the community and a signature is take from the Gram Pradhan, prior to any water supply scheme being implemented in the area. They suggested that there is a need to follow a proper procedure wherein through the Gram a written application is made and followed up by a meeting and getting the consent of the majority of Panchayat members and proportionate representatives of targeted community, prior to starting any work in the area. It was emphasised that this is especially important and needs to be done where land is being taken from the Gram Panchayat, so that the land is not later used for something else, as has happened in a few cases in the past.
5. Another issue raised by the community, was the possibility of refusal or dispute during laying pipelines, which might pass through farmlands, private properties or community lands. At times, villagers refuse to allow laying pipelines even though they do not face any long-term disruption. It was suggested that the process of the community consultation be considered to identify any such dispute and possible resolution, and the process should be properly documented for future reference and record.
6. There was a discussion on the various Acts and laws that might be applicable to various project areas and the need to identify required permits, and issues that might need to be considered as a part of the project design. This included a discussion on the need to take permission for access to sources in forests. The engineers from the USs and UJN were aware of the need for permissions required in such cases, and it was suggested that where such issues arise it might be good to identify the project permission needs well in advance, as a forest clearance takes about 6 months and the project should not be held up due to negligence to take action in time. The department engineers also requested that for such permission a Government Order is often useful, as it facilitates taking the permission for the identified land. The State Water and Sanitation Mission, SWSM; representative mentioned that the Government of Uttarakhand, through a Government Order, will notify the names of the peri-urban areas to be undertaken under the proposed program. This GO will therefore facilitate the process of getting permits etc., once the source has been identified.

7. In case of a need for the transfer of land under the Forest Right Act (FRA) and relate matters, it was discussed that implementing agency should follow procedures laid down for forest land transfer under the Act. As required, coordination with the departments of Revenue and Forests at the state and district levels may be contacted and discussions held with them to clarify and follow required processes.
8. As a part of the discussion on forest clearance and that some of the areas may also fall in eco-sensitive zones, and if required additional permissions may be needed, community members and engineers also mentioned that a few possible project areas have wildlife movement and animal corridors, including seasonal elephant movement. These areas include the peri-urban areas of Dehradun, Haridwar and Kotdwara, and Rudrapur. It was therefore suggested that at such times any construction related activity may not be possible as it is a risk to both the workers and the infrastructure being constructed.
9. Continuing discussions on the regulatory environment, it was also noted that there were a number of new waste related regulations, and that the entire state was under the scanner of National Green Tribunal under the National River Ganga Basin Management Bill thus extra precautions need to be taken on these aspects, and there might be an additional set of regulatory requirements that might need to be considered while designing, constructing and maintaining the systems; these included new waste related laws, such as solid waste management rule 2016, construction and demolition waste rules which needs to be taken into consideration during the program execution.
10. Finally, it was also noted that the ESSA had identified a few activities that would be excluded from the program, and included;
 - a. Creation and development of water supply systems or the disposal of wastes in national parks or wildlife sanctuaries.
 - b. Undertake any activities that use asbestos.
 - c. Creation of large Water Supply schemes that entail large scale land acquisition and displacement of communities.

It was agreed, any such work that might result in excess delays or the project being unable to take off, as identified in the list of excluded activities, are best avoided. Finally, the Bank team extended the thanks to the SWSM for facilitating the disclosure and consultation process for the ESSA. The team also thanked the participants for their valuable inputs.

List of Participants

Presence of stakeholders during the Workshop on disclosure of
Environment and Social Systems Assessment Report

Venue: State Water & Sanitation Mission, Uttarakhand

Date : 10-08-2017

S.N.	Name	Designation	Organization Name	Contact Number	Signature
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4	Mamta Madhukar	Computer-op	9917511592	
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6	Kavita				
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15	V. C. Ramola	E.E.	U.P.S.	9412056111	
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17	PO		Durgapur		
18	Deepak Jagdevlal Panwar, AAE	UJS,		9759766179	
19	Munish K. Kasihia	EE.	UK Perjal Nigam, Kotdwara	9412938962	
20					
21	Neetu.	Resident	Nathdwara		
22	Mamta	GP Member	Nathdwara	9917511592	
23	Rekha	Jn. Asst.	Raipur	7300520837	
24	Rajendra Kawat	PRI member	Nathdwara/Kotdwara	9750291931	
25	Sita Ram	Ex. Ex.	UJN,	7830600060	
26	Harsimran	Personnel	Yatra Jodhpur	9411137931	
27	Rita Rokha	Ex. Engg.	Uttaranchal Jalsawla	9411138244	
28	Suresh Chaudhary	Social Devt. Specialist	World Bank	9711185155	
29	Harjeet Kaur	Senior Social Devt. Specialist	World Bank	98800764725	
30					
31	Mohit Chaturvedi	Environment Specialist	World Bank	9870607391	
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33	V. K. Senio	ED.	SWSM.	9837241812	
34	MOPD	U. H. H. UC (Engg.)	SWSM	9456352411	
35					
36					
37					
38					

Photographs of Consultation Process Underway

