



# Study of Challenges Faced by Six Towns of Uttarakhand

(Nainital, Almora, Haldwani, Mussoorie, Pauri and Champawat)

Report  
**PAURI TOWN**

December, 2024



**State Institute of Urban Development**

**Dr. R. S. Tolia Uttarakhand Academy of Administration, Nainital**

# **Study of Challenges Faced by Six Towns of Uttarakhand (Nainital, Almora, Haldwani, Mussoorie, Pauri and Champawat) Research Project Report - Pauri Town**

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## **FOREWORD**

It is a matter of satisfaction that the State Institute of Urban Development (SIUD) is publishing this research study, a collaborative effort between the State Institute of Urban Development (SIUD), Dr. R.S. Tolia Uttarakhand Academy of Administration, Nainital, and the School of Planning and Architecture (SPA), New Delhi. This study covers six prominent towns of Uttarakhand—Nainital, Mussoorie, Almora, Pauri, Champawat, and Haldwani—and focuses on three crucial urban sectoral areas: Solid Waste Management, Urban Transportation & Parking, and Water Availability & Supply.

Uttarakhand's hilly towns face unique urban challenges due to their geographical constraints, fragile ecosystems, increasing pressures of urbanization, and tourist inflows. These challenges are further exacerbated by fast-changing land use patterns and the impacts of climate change. Addressing these issues requires well-researched, practical, and sustainable solutions. The findings of this study provide valuable insights that will assist Urban Local Bodies (ULBs), policymakers, and planners in devising effective strategies for urban management in the region.

I take this opportunity to commend the dedicated efforts of the research team from SPA, New Delhi, and SIUD, Nainital, for their meticulous fieldwork, stakeholder consultations, and data-driven analysis. Their work will serve as an important reference document for urban development practitioners in Uttarakhand and beyond.

I am confident that this study will contribute significantly to the ongoing discourse on sustainable urbanization in the Himalayan region and inspire further research and action toward resilient and efficient urban management.

(B. P. Pandey)

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## MESSAGE

I am pleased to note that the State Institute of Urban Development (SIUD), Dr. R.S. Tolia Uttarakhand Academy of Administration, Nainital, in collaboration with the School of Planning and Architecture (SPA), New Delhi, has undertaken an important research study on the challenges faced by six towns of Uttarakhand — Nainital, Almora, Haldwani-Kathgodam, Mussoorie, Pauri and Champawat. This study focuses on three critical urban issues: Solid Waste Management, Urban Transportation & Parking, and Water Availability & Supply. Urbanization in hilly regions presents unique challenges that require innovative and sustainable solutions. The recommendations from this study will undoubtedly contribute to policy formulation, improved urban governance, and enhanced quality of life for residents of these towns. Addressing these issues effectively demands collaboration between Urban Local Bodies, related Parastatal Organisations, the Private Sector, and communities. I am also delighted that the State Institute of Urban Development is publishing this research study, which will serve as a valuable resource for Urban Local Bodies (ULBs), policymakers, and urban planners and will enable them to develop informed strategies that are key to ensuring that our towns become more liveable, sustainable, and resilient. I extend my best wishes to the Dr. R.S. Tolia Uttarakhand Academy of Administration, SIUD Nainital, and SPA New Delhi for their commendable efforts in addressing the pressing urban challenges of Uttarakhand.

  
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## **ACKNOWLEDGMENT**

We are thankful to Dr. R. S. Tolia Uttarakhand Academy of Administration, Nainital, Uttarakhand for giving us an opportunity to undertake this research study. We place on record our gratitude to Shri Bhagwati Prasad Pandey, IAS (Retd.), Director General, Dr. R. S. Tolia Uttarakhand Academy of Administration, Nainital, Dr. Mahesh Kumar, Joint Director, Dr. R. S. Tolia Uttarakhand Academy of Administration, Nainital, and Shri Manoj Pande, Programme Director, State Institute of Urban Development (SIUD), Dr. R. S. Tolia Uttarakhand Academy of Administration, Nainital, for their support. We are also thankful to Smt. Ragini Tiwari, Consultant, KRC, DRSTUAoA and Smt. Asha Joshi, Training Manager, SIUD from DRSTUAoA for their support. We also thank all the officers of various organizations for providing us with valuable data and actively participating in the consultations.

Further to the Stakeholder's meeting on 14<sup>th</sup> October 2024, the valuable suggestions made have been duly incorporated.

Subsequently, a Post Study Workshop was held at Nainital on 10<sup>th</sup> December, 2024 and the valuable suggestions given have been incorporated.

**24<sup>th</sup> December 2024**

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## Abbreviations Used

BPL	Below Poverty Line
CPHEEO	Central Public Health and Environmental Engineering Organization
DCHB	District Census Handbook
GoI	Government of India
GIS	Geographic Information Systems
HH	Household
kL	Kilo Litre
km	Kilo Meter
MLD	Million Litres per Day
MSWM	Municipal Solid Waste Management
MTPD	Metric Tonnes Per Day
NH	National Highway
NP	Nagar Panchayat
NPP	Nagar Palika Parishad
OHT	Over Head Tank
PJNU	Peyjal Nigam Uttarakhand
PPH	Person Per Hectare
PPP	Public Private Partnership
PWD	Public Works Department
SC	Schedule Caste
ST	Schedule Tribe
SWM	Solid Waste Management
TCPO	Town and Country Planning Organization
ToR	Terms of Reference
UUSDA	Uttarakhand Urban Sector Development Agency
UJS	Uttarakhand Jal Sansthan
ULB	Urban Local Body
URDPFI	Urban and Rural Development Plan Formulation and Implementation Guidelines 2014, MOHUA, GOI
MOHUA	Ministry of Housing and Urban Affairs

# Chapter 1

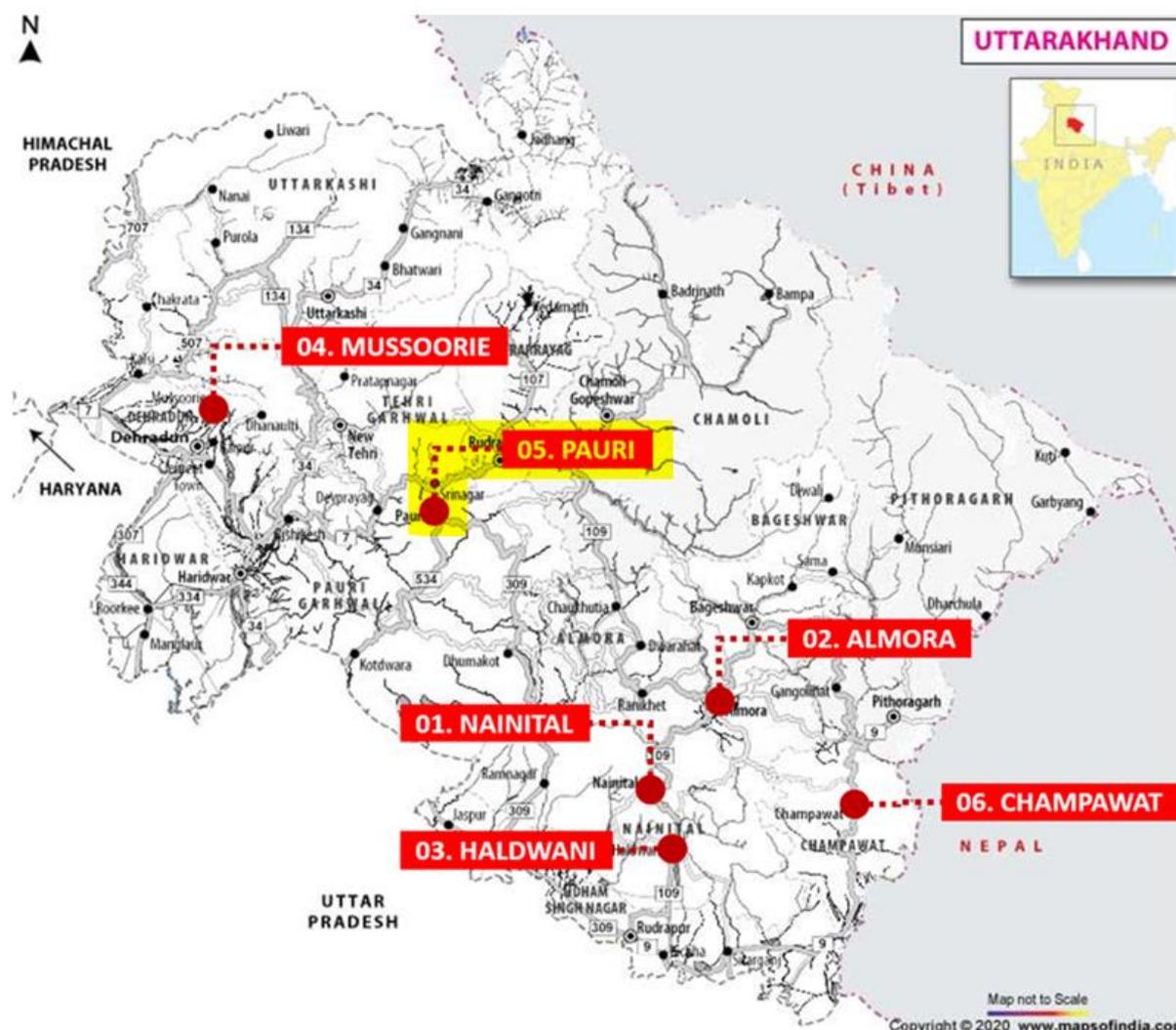
## Introduction

## Chapter 1. Introduction

This Final Report is for Pauri Town as required in the Terms of Reference (ToR). It contains the proposed Scope of Work under each of the three activities i.e. a) Solid Waste Management b) Urban Transport and Parking and c) Water Availability and Supply, Methodology, detailed Plan of Action, Timeframe for completing the tasks, State Profile and Town Profile.

The Map 1 below shows the location of the study-area i.e. all the six towns namely: Nainital, Almora, Haldwani, Mussoorie, Pauri and Champawat in the state of Uttarakhand.

Map 1: Location Map of all the Six Towns Highlighted on the Thematic Map of the State of Uttarakhand



Source: Base Map: (Maps of India, 2024)

From all the above-mentioned areas this report is for Pauri Town.

# Chapter 2

## Objectives of Research Project

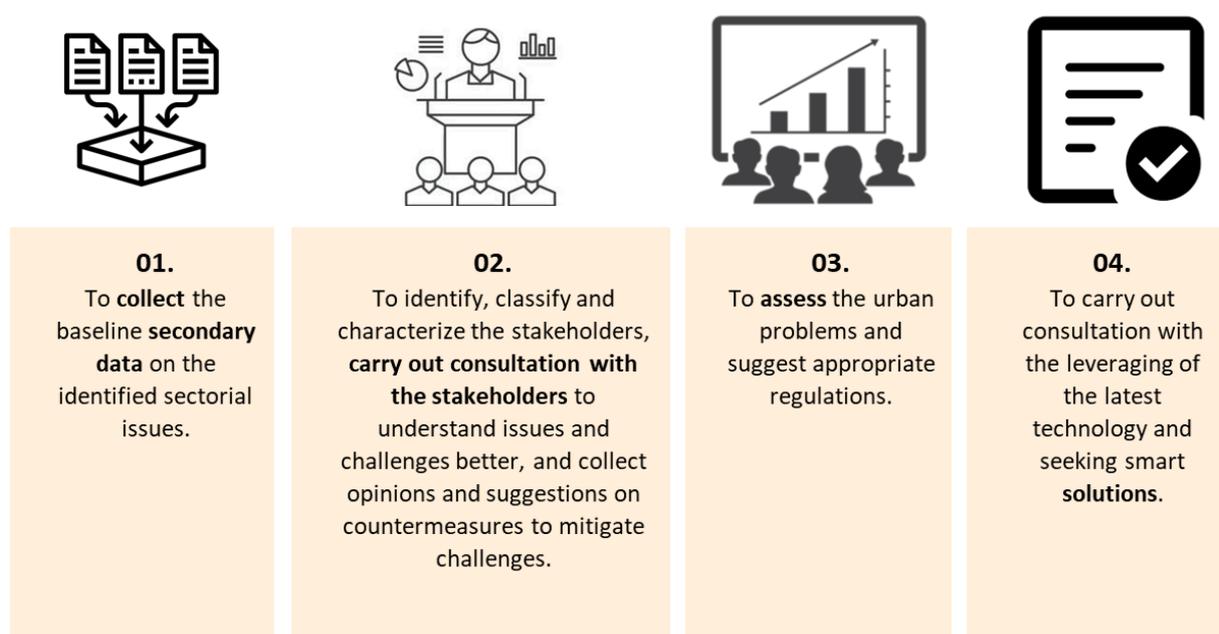
## Chapter 2. Objectives of Research Project

The broad focus of the research study is to analyse and understand the current situation and the issues related to the Municipal Solid Waste Management (MSWM), the Urban Transportation and Parking and Water Availability and Supply in selected towns of Uttarakhand Viz. Nainital, Almora, Haldwani, Mussoorie, Pauri and Champawat. The SPA Delhi shall conduct a comprehensive study to provide actionable recommendations to improve the sectoral areas.

### ***The objectives of the Research Project are:***

1. To collect the baseline secondary data on the identified sectorial issues.
2. To identify, classify and characterize the stakeholders, carry out consultation with the stakeholders to understand issues and challenges better, and collect opinions and suggestions on countermeasures to mitigate challenges.
3. To assess the urban problems and suggest appropriate regulations.
4. To carry out consultation with the leveraging of the latest technology and seeking smart solutions.

Figure 1: Objectives of the Research Project



# Chapter 3

## Scope of Work

### Chapter 3. Scope of Work

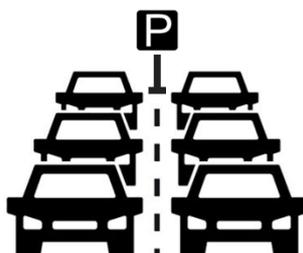
In this report Pauri Town will be covered for following parameters as mentioned in ToR.

- a) Solid Waste Management.
- b) Urban Transport and Parking.
- c) Water Availability and Supply.



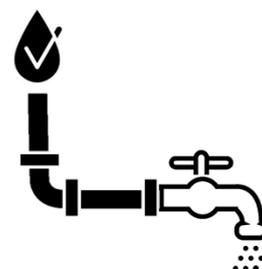
A.

Solid Waste Management



B.

Urban Transport and Parking



C.

Water Availability and Supply

The present issues related to the above-mentioned parameters in Pauri Town are identified in this report. Along with this a Stakeholder Consultation Meeting was also conducted on 14<sup>th</sup> October, 2024. After the brainstorming sessions in the Stakeholder Consultation Meeting appropriate possible solutions and suggestions for improvement are prepared and recommended in this report based on the feedback provided by the officials for Pauri Town.

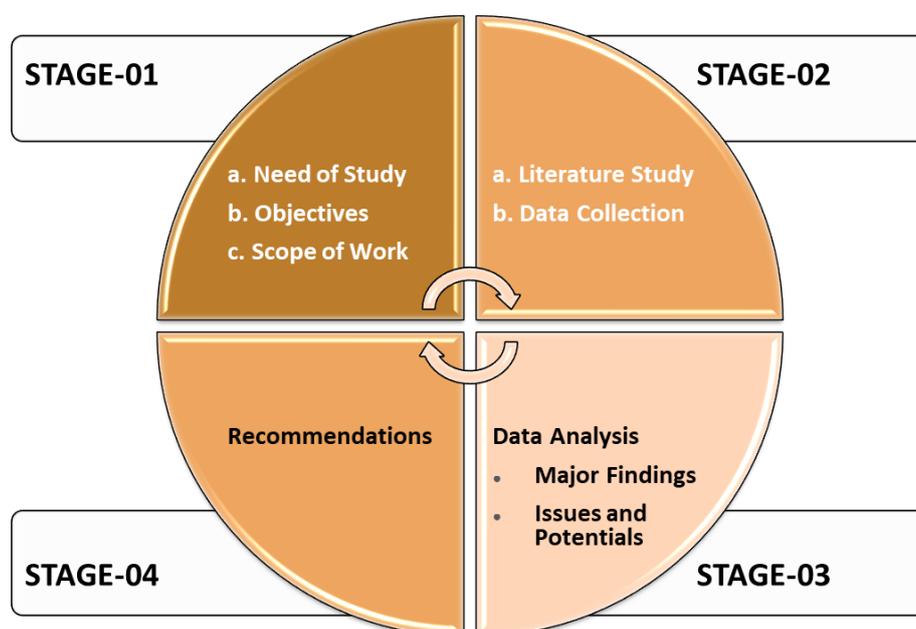
# Chapter 4

## Methodology

## Chapter 4. Methodology

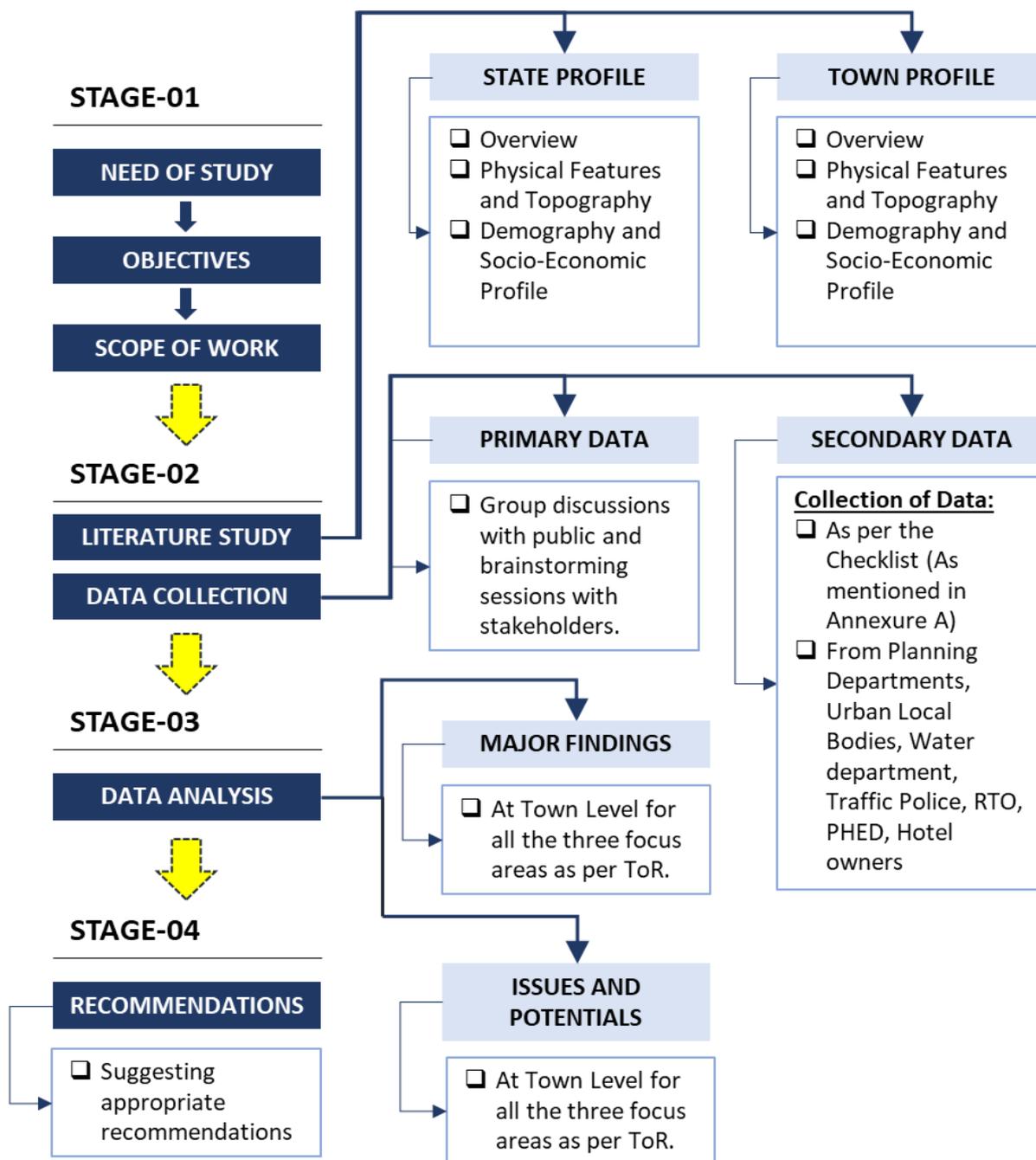
The Research Project Methodology is divided into four stages namely Stage-01, Stage-02, Stage-03 and Stage-04, as shown in Figure 2. Stage-01 consists of: the Need of Study, the Objectives defined and the Scope of Work as mentioned in the ToR. Stage-02 consists of Literature Study and Data Collection for the Research Project for the parameters mentioned in the Scope of Work. Stage-03 consists of the Data Analysis based on the Major Findings and Issues and Potentials Identified and the final Stage-04 consists of the possible solutions and suggestions for improvement along with appropriate recommendations based on the previous stages and brainstorming sessions with the stakeholders in stakeholder consultation meeting, held on 14<sup>th</sup> October 2024 for Pauri Town.

Figure 2: Methodology Stage Chart



The detailed work-flow for the above-mentioned Methodology Stage Chart is described in Figure 3 below.

Figure 3: Methodology Flow Chart



#### 4.1. Data collection tools

Table 1: Data Collection Tools

<b>Primary Data</b>	<ul style="list-style-type: none"> <li>Group discussions with public and brainstorming sessions with stakeholders.</li> </ul>
<b>Secondary Data</b>	<ul style="list-style-type: none"> <li>Collection of data from TCPO, Uttarakhand, Nagar Palika Parishad, PWD, Traffic Police, Police Department, RTO, Uttarakhand Jal Sansthan, Pey Jal Nigam Uttarakhand, Hotel owners, Tourism Department, NGOs and other Government offices Identified.</li> <li>Government Websites and Reports available.</li> </ul>

#### 4.2. Data Analysis Plan

The data analysis is further divided into three parts:

##### First stage:

- Detailed analysis of all the data collected for each town.
- Comparative data analysis for each town for the three focus areas as per ToR.
- Providing inferences as per the above study.

##### Second stage:

- Identifying the major findings driven from the inferences of the first stage
- Identifying Issues and potential

##### Third stage:

- Prepare implementable action plans
- To assess the identified issues and potential and suggest appropriate recommendation.

# Chapter 5

## Uttarakhand – A Profile

## Chapter 5. Uttarakhand – A Profile

### 5.1. Overview

Formerly called Uttaranchal, Uttarakhand at present is the 27<sup>th</sup> State of India. It was formed on 9<sup>th</sup> November 2000 out of the Hills Districts of Uttar Pradesh and is the 19<sup>th</sup> largest State of India with respect to its geographical area. It is also known as the “Devbhoomi” (The Land of Gods) because of its various holy places and shrines. It is popular for its scenic beauty, cultural heritage and simplicity of its people. A great tourist destination because of its religious significance and natural beauty. It pilgrimages to the sacred Char Dhams of Uttarakhand: Sri Gangotri, Sri Yamunotri, Sri Badrinath and Sri Kedarnath. The State flower is Brahma Kamal, State Bird is Monal, State Animal is Musk Deer and State Tree is Buransh (Rhododendron) as shown in Image 1.

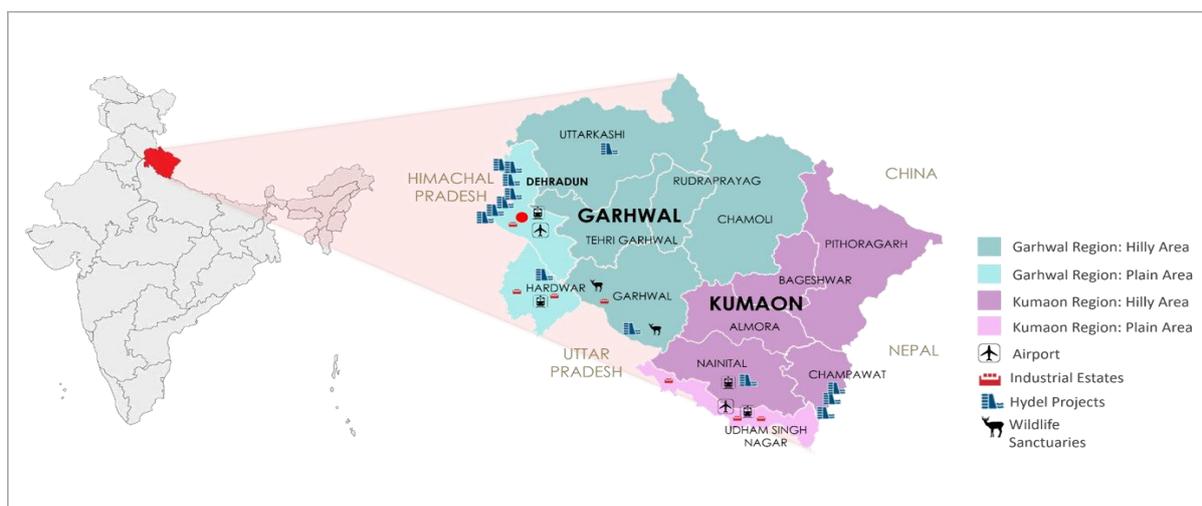
Image 1: Uttarakhand State Flower, Bird, Animal and Tree Image



Source: (Google Images, 2024)

As shown in Map 2, Uttarakhand is situated on the Northern part of India and located on the foothills of the Himalayan Mountain ranges. The state lies in between 28°43' – 31° 27' N Latitudes and 77°34' – 81° 02' E Longitudes. It has a land spread over an area of around 53,483 sq. km. Uttarakhand is at a distance of 355 km from Delhi, NCT of India.

Map 2: Thematic Map of India Highlighting the Location of the State of Uttarakhand and its Administrative Division, Location of: Airport, Industrial Estates, Hydel Projects and Wildlife Sanctuaries



Source: Base Map: (Google Images, 2024) and (Thematic Map Library, Uttarakhand.org, 2024)

As shown above in Map 3, the State of Uttarakhand shares international and inter-state boundaries. It shares its boundaries with China in the North, Nepal in the East, Himachal Pradesh in the West and Uttar Pradesh in the South. The state is broadly divided into two main regions known as Garhwal and Kumaon. It further comprises 13 districts namely Dehradun (State Capital), Haridwar, Udham Singh Nagar, Uttarkashi, Tehri Garhwal, Pauri Garhwal, Nainital, Champawat, Rudraprayag, Chamoli, Almora, Bageshwar and Pithoragarh.

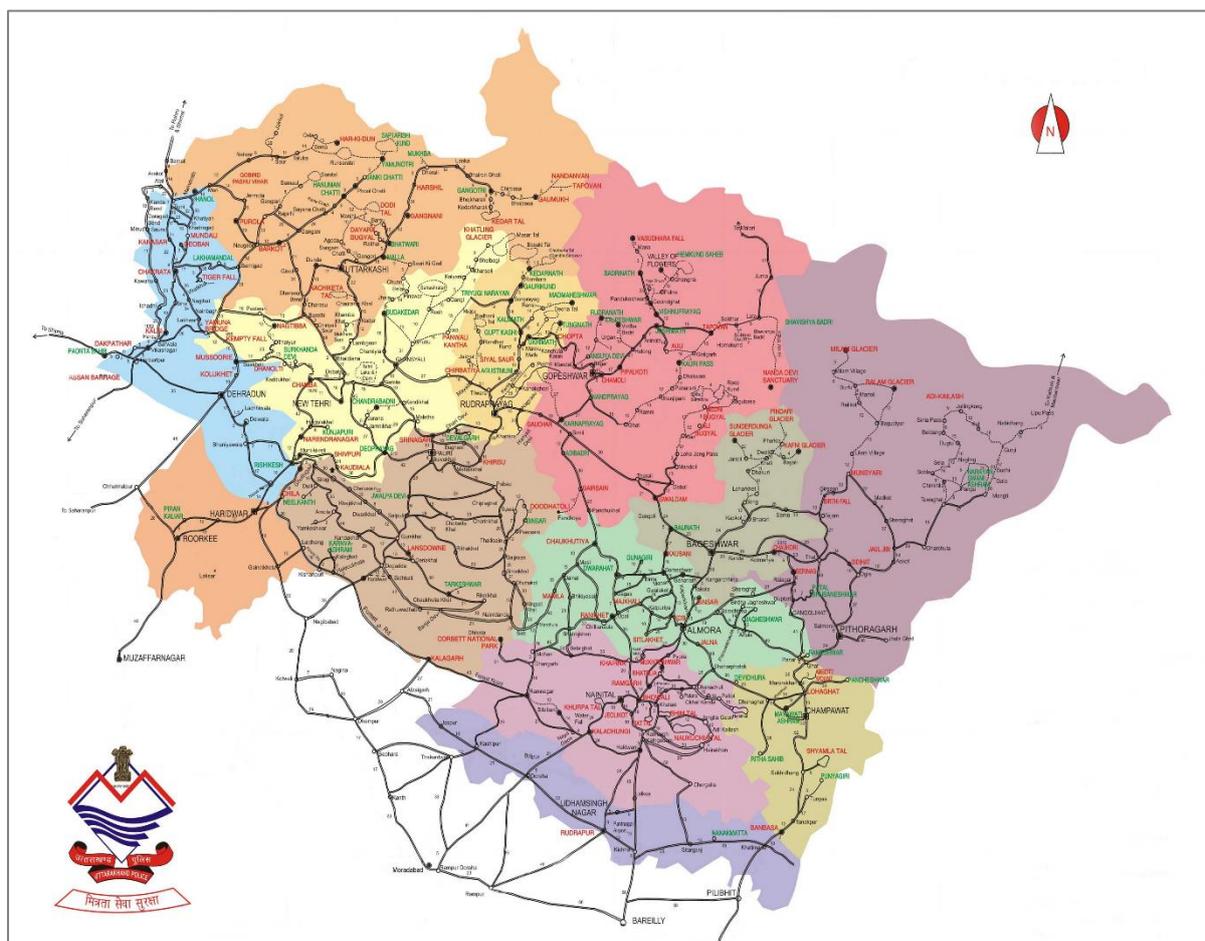
Map 3: Thematic Map of the State of Uttarakhand's Administrative Division



Source: Base Map: (Thematic Map Library, Uttarakhand.org, 2024)

As shown in Map 4, the State provides major connectivity through its road network. As per the (Public Works Department, Government of Uttarakhand, 2024), the State exhibits a huge network of roads consisting National Highways of 2,091.34 km road length, State Highways of 4,516.91 km road length, Major District Roads of 2,113.17 km road length, Other District Roads of 2,714.60 km road length, Village Roads of 23,953.58 km road length, Light Vehicle Road of 536.68 km road length and Bridle Roads/ Border Tracks of 3,580.25 km road length. There are more than 1000 major bridges in the State. Uttarakhand Transport Corporation (UTC) is the public sector passenger road transport corporation that provides bus services in the State.

Map 4: Road Network Map of Uttarakhand

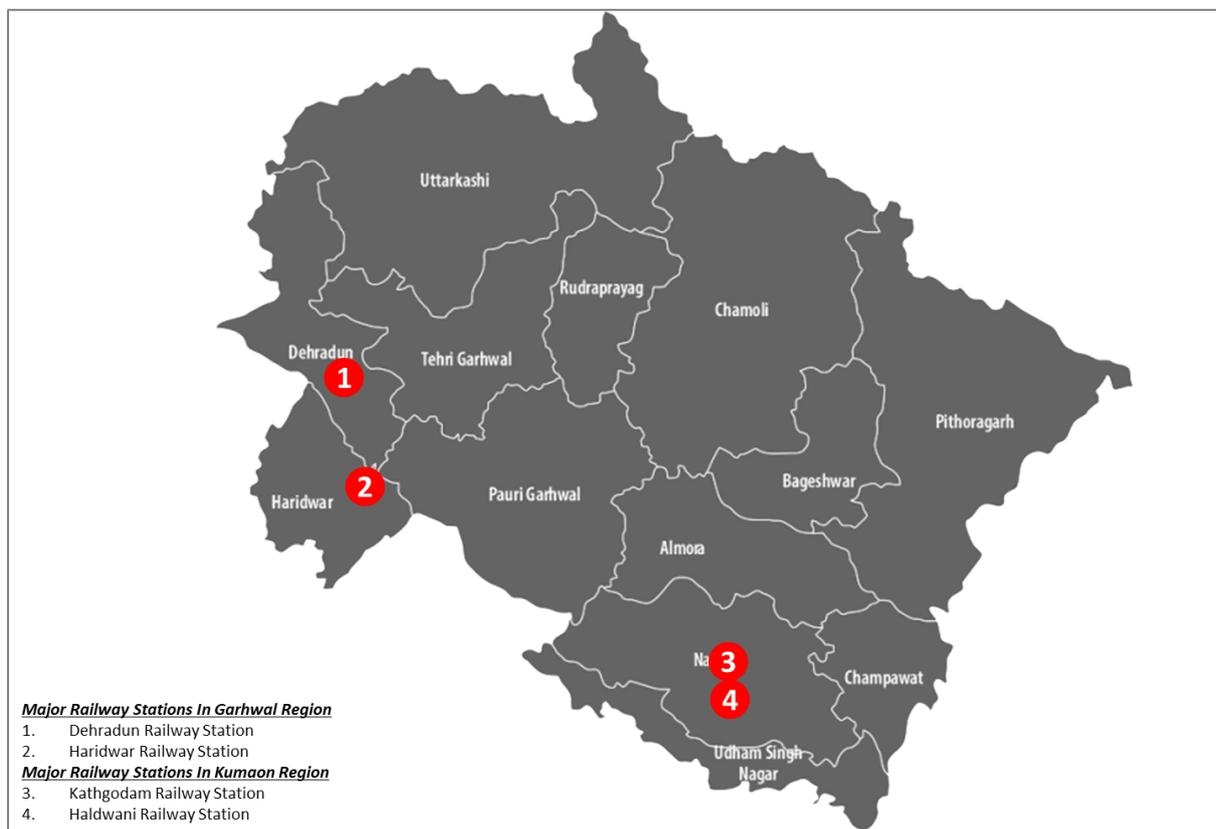


Source: (Traffic Directorate Uttarakhand Police, 2024)

As per (Traffic Directorate Uttarakhand Police, Government of Uttarakhand, 2024), approximately 86% of the geographical area of the State consists of hills due to this the State has a very limited railway network (345 km), largely confined to the plains.

As shown in Map 5, major railway station in the Garhwal Region is situated in Dehradun (one of the main heads of the Northern Railway region) and Haridwar. While major railway station in the Kumaon Region is at Kathgodam (the last terminus of the broad-gauge line of the North East Railways) and Tanakpur. Other railway junctions include Pantnagar, Lalkuan, Haldwani, Roorkee, Rishikesh, Kotdwar, Ramnagar and Rudrapur.

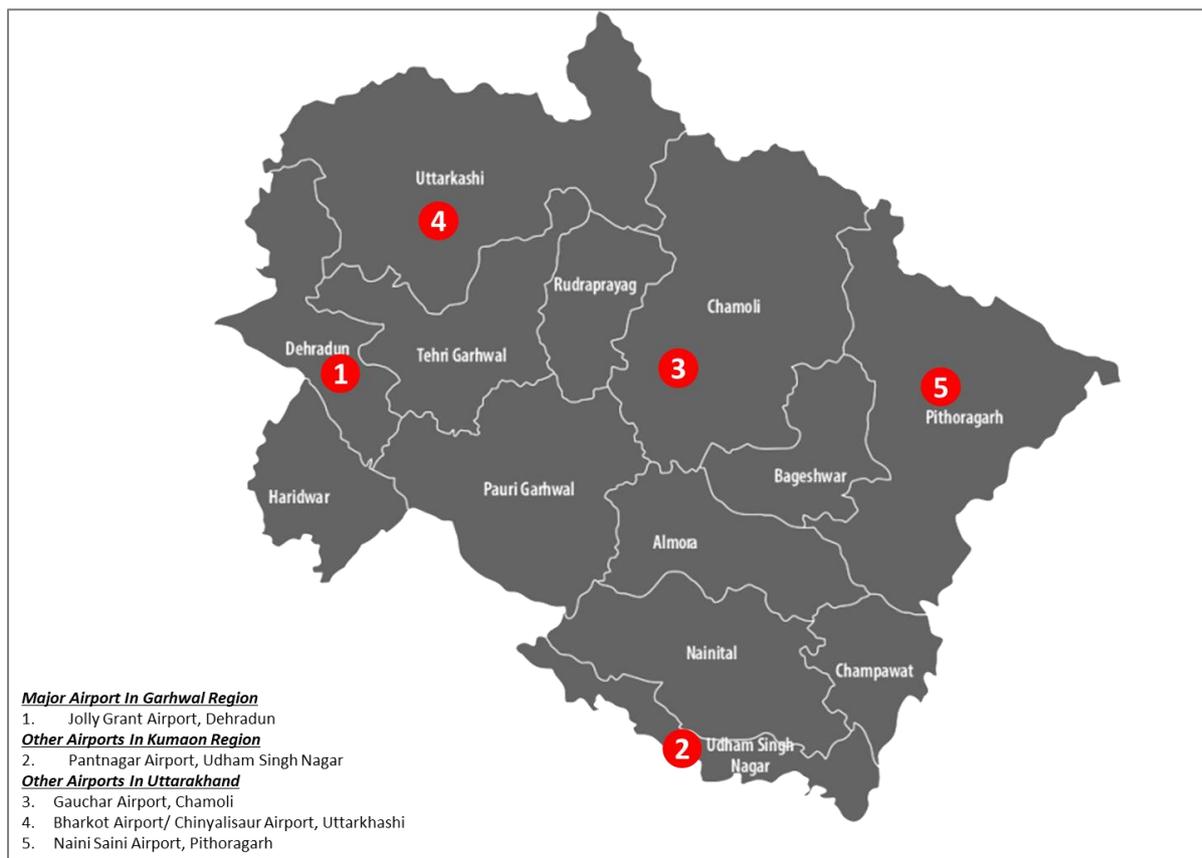
Map 5: Major Railway Stations in the Garhwal and Kumaon Region of Uttarakhand



Source: Basemap: (Google Images, 2024), Author

As per the (euttaranchal, 2011), the State has a total of five airports. Out of these five, two are major domestic airports, namely: Jolly Grant Airport (primary airport) in Dehradun District and Pant Nagar airport in Udham Singh Nagar District. The Gauchar Airport in Chamoli District is operated by the Indian Army and provides helicopter services for the Char Dham Yatra. The Bharkot Airport or the Chinyalisaur Airport in Uttarkashi District is presently used as an Advanced Landing Ground (ALG) by the Indian Airforce. The Naini Saini Airport in Pithoragarh District is used for authoritative utilize. The primary airport (Jolly Grant Airport) of the State is located at a distance of 35 km from Dehradun town. The Map 6 below shows the location of all the five airports in Uttarakhand.

Map 6: Major Airports in Uttarakhand



Source: Basemap: (Google Images, 2024), Author

The following Table 2, shows the detailed overview for the State of Uttarakhand.

Table 2: Overview of the State of Uttarakhand, India (Census 2011)

<b>GEOGRAPHICAL LOCATION</b>	
Country	India
Situated on	Northern part of India on the foothills of Himalayan Mountain Range
State	Uttarakhand
State Capital City	Dehradun
Latitude	28°43' – 31° 27' N
Longitude	77°34' – 81° 02' E
Geographical Area (Total)	53,483 sq. km.
Geographical Area (Urban)	
Geographical Area (Rural)	
Total Forest Area	38,000 sq. km.
Average elevation (ASL)	1,938 m
Surrounded by	North: China East: Nepal West: Himachal Pradesh South: Uttar Pradesh
<b>POPULATION DATA</b>	
Total Population	100, 86,292 (100%)
Total Urban Population	30, 49,338 (30%)
Total Rural Population	70, 36,954 (70%)
Male Population (Total)	51, 37,773 (100%)
Male Population (Urban)	16, 18,731 (32%)
Male Population (Rural)	35, 19,042 (68%)
Female Population (Total)	49, 48,519 (100%)
Female Population (Urban)	14, 30,607 (29%)
Female Population (Rural)	35, 17,912 (71%)
Population Density (Overall)	189 per sq. km.
Population Density (Urban)	
Population Density (Rural)	
Population Growth-Rate (2011) (%)	18.81
Average Literacy Rate (%) (Overall)	78.82
Average Literacy Rate (%) (Urban)	84.45
Average Literacy Rate (%) (Rural)	76.31
Male Literacy Rate (%) (Overall)	87.40
Male Literacy Rate (%) (Urban)	89.05
Male Literacy Rate (%) (Rural)	86.62
Female Literacy Rate (%) (Overall)	70.01
Female Literacy Rate (%) (Urban)	79.25
Female Literacy Rate (%) (Rural)	66.18
Sex-Ratio (female per thousand male) (Overall)	963
Sex-Ratio (female per thousand male) (Urban)	884
Sex-Ratio (female per thousand male) (Rural)	1,000

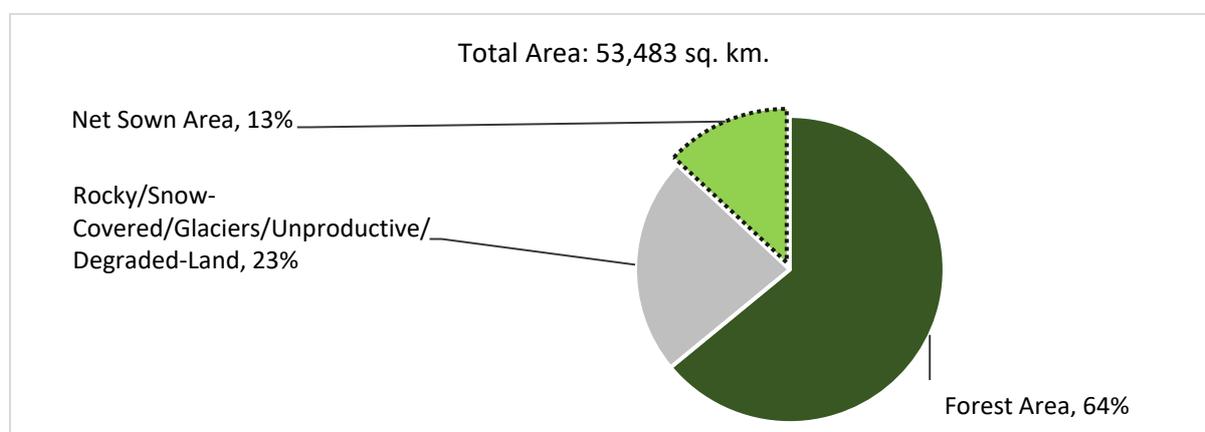
ADMINISTRATIVE SET UP	
Number of Divisions	2 Garhwal Division Kumaon Division
Number of Districts	13
Number of Tehsils	110
Number of Sub-Tehsils	18
Number of Development Blocks	95
Number of Nyaya Panchayats	662
Number of Gram Panchayats	7796
Number of Census Villages	16,793
Number of Nagar Nigam	9
Number of Nagar Palika Parishad	42
Number of Nagar Panchayats	52
Number of Cantonment Board	9
Number of Census Towns	41
Number of Industrial Townships	02
Number of Development Authority	14
Number of Lok Sabha Constituency	05
Number of Rajya Sabha Constituency	03
Number of Vidhan Sabha Constituency	70

Source: (Census India, 2011), (State Disaster Management Plan, Volume-1, 2020-21) and (Uttarakhand At A Glance , 2021-22)

## 5.2. Physical Features and Topography

The State is rich in natural resources like water and forests with many glaciers, rivers, dense forests land, snow-clad mountain peaks and 175 rare species of aromatic and medicinal plants. As shown in Figure 4, out of the total geographical area (53,483 sq.km.) of the State, almost 64% of the total geographical area of the state is under forests, 23% is under permanent snow cover, glaciers and steep slopes and only 13% area is available under the net sown area in the State.

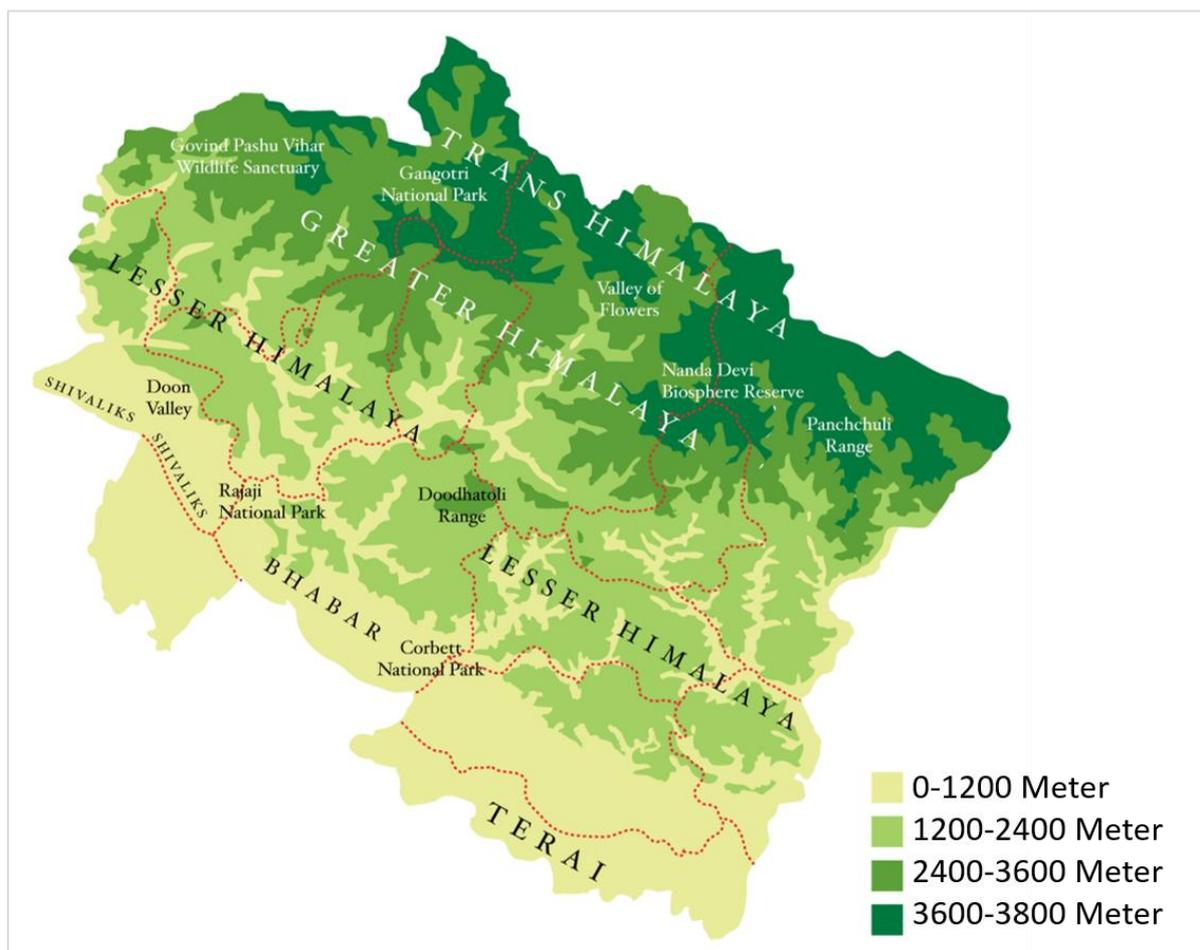
Figure 4: Percentage of Area Distribution of Uttarakhand (Census 2011)



Source: (District Census Handbook, 2011), Author

As shown in Map 7, being a part of the Western Himalayas, Uttarakhand’s terrain is categorised into four altitudes namely: 0-1200 meters (Terai, Bhabar and Shivalik), 1200-2400 meters (Lesser Himalaya), 2400-3600 meters (Greater Himalaya) and 3600-3800 meters (Trans Himalaya). There is a huge geographical range within the State which sometimes acts as a major constraint for the overall development of the state as around 86% of the State is hilly terrain. As per the (Government of Uttarakhand: State Profile), the State is rich in mineral deposits like limestone, marble, rock phosphate, dolomite, magnesite, copper, gypsum, etc.

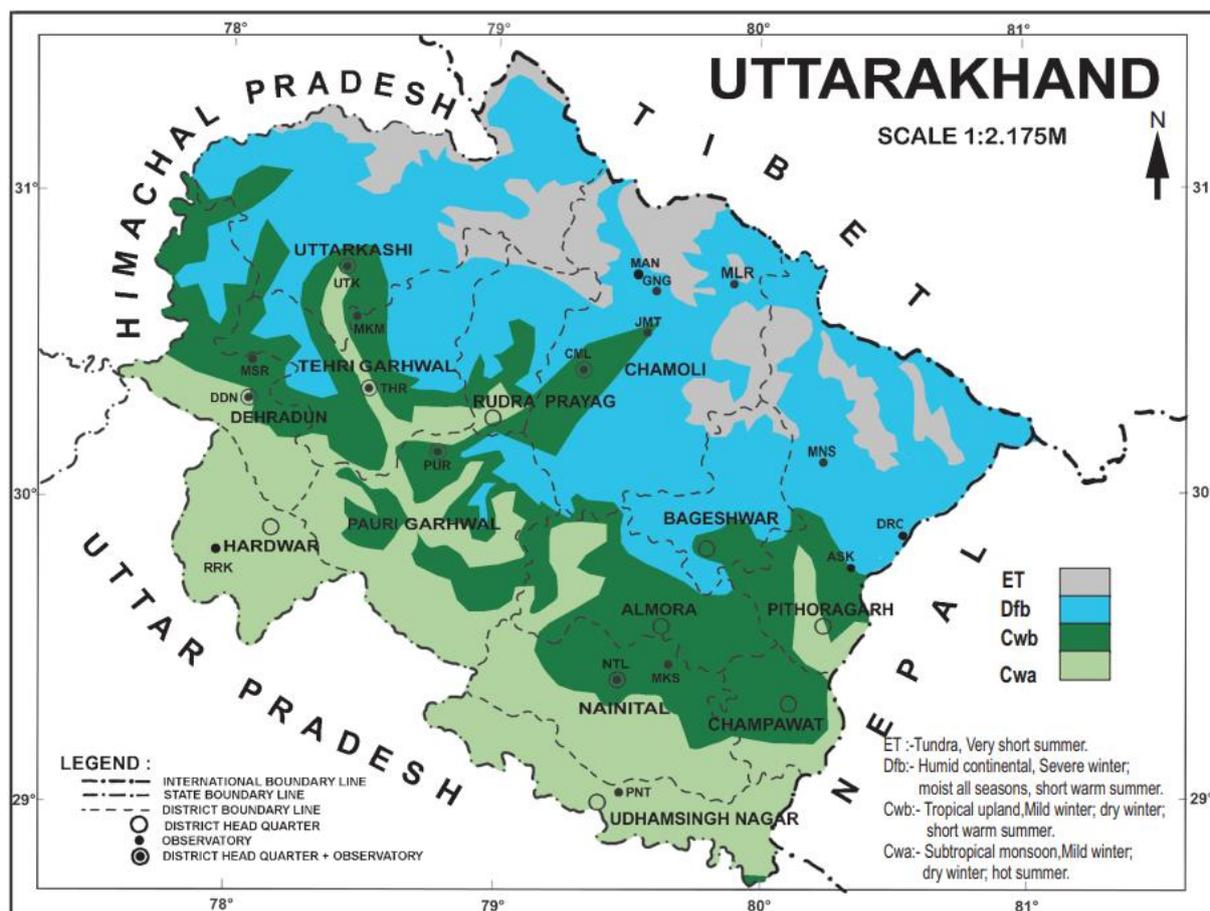
Map 7: Terrain Map of Uttarakhand



Source: (Thematic Map Library, Uttarakhand.org, 2024)

As shown in Map 8, the State has all the major climatic zones varying from hot and sub-tropical at the lower elevations to cold alpine climate (summers are cool and winters are harsh) at higher elevations. Warm and cool temperate climate persists over the areas in between. Due to this vivid range of climatic conditions the State has a variety of horticulture, floriculture and agriculture.

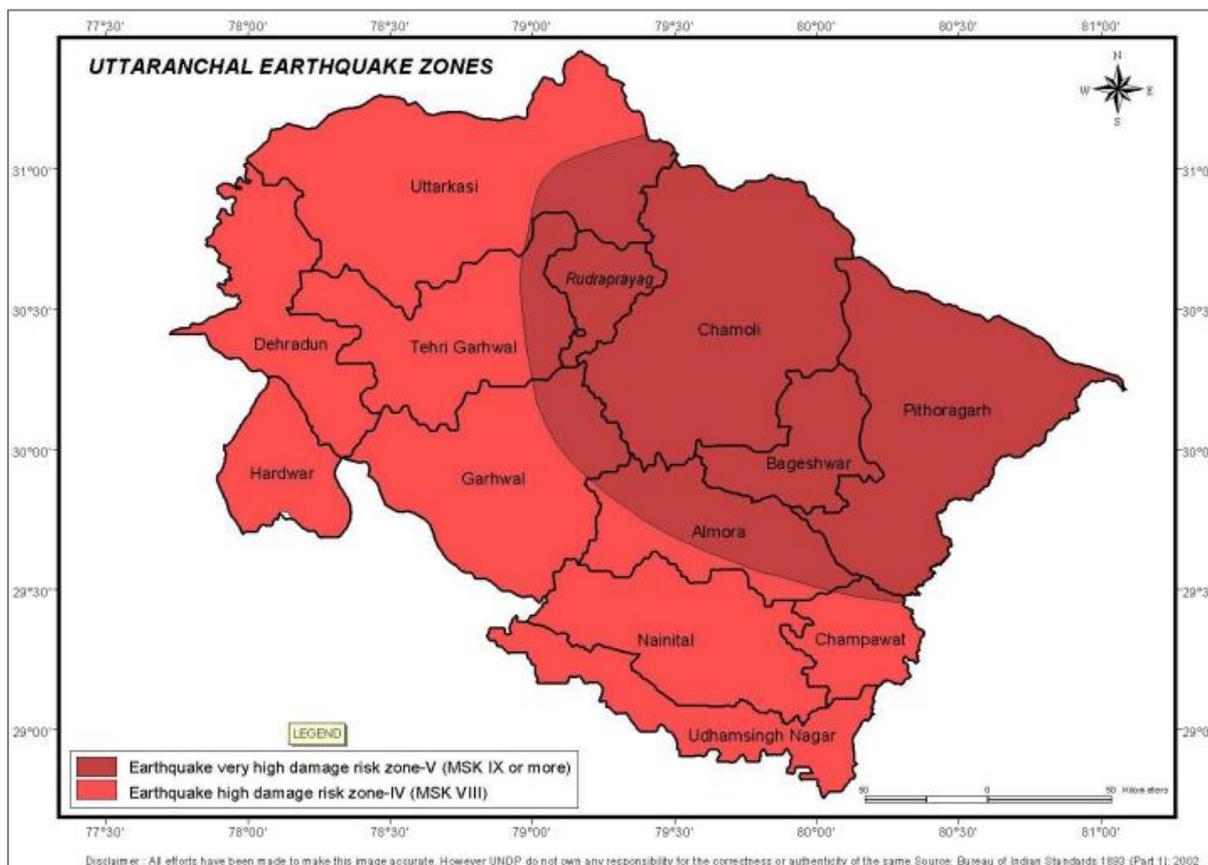
Map 8: Climate Classification of Uttarakhand



Source: (Climate of Uttarakhand, 2014)

As per (State Disaster Management Plan, Volume-1, 2020-21), as the State falls under the Zone IV and V of Earthquake Zonation Map, Uttarakhand is prone to natural disasters. It frequently faces natural disasters like earthquakes, landslides, cloudburst, flash floods, floods, avalanches, droughts, lightening, forest fires, cold waves and hailstorms. Apart from these man-made disasters like Industrial Disasters and weather hazards like Western Disturbances (during winters) also affects the State. Map 9 below, depicts the Earthquake Zonation Map for the State of Uttarakhand.

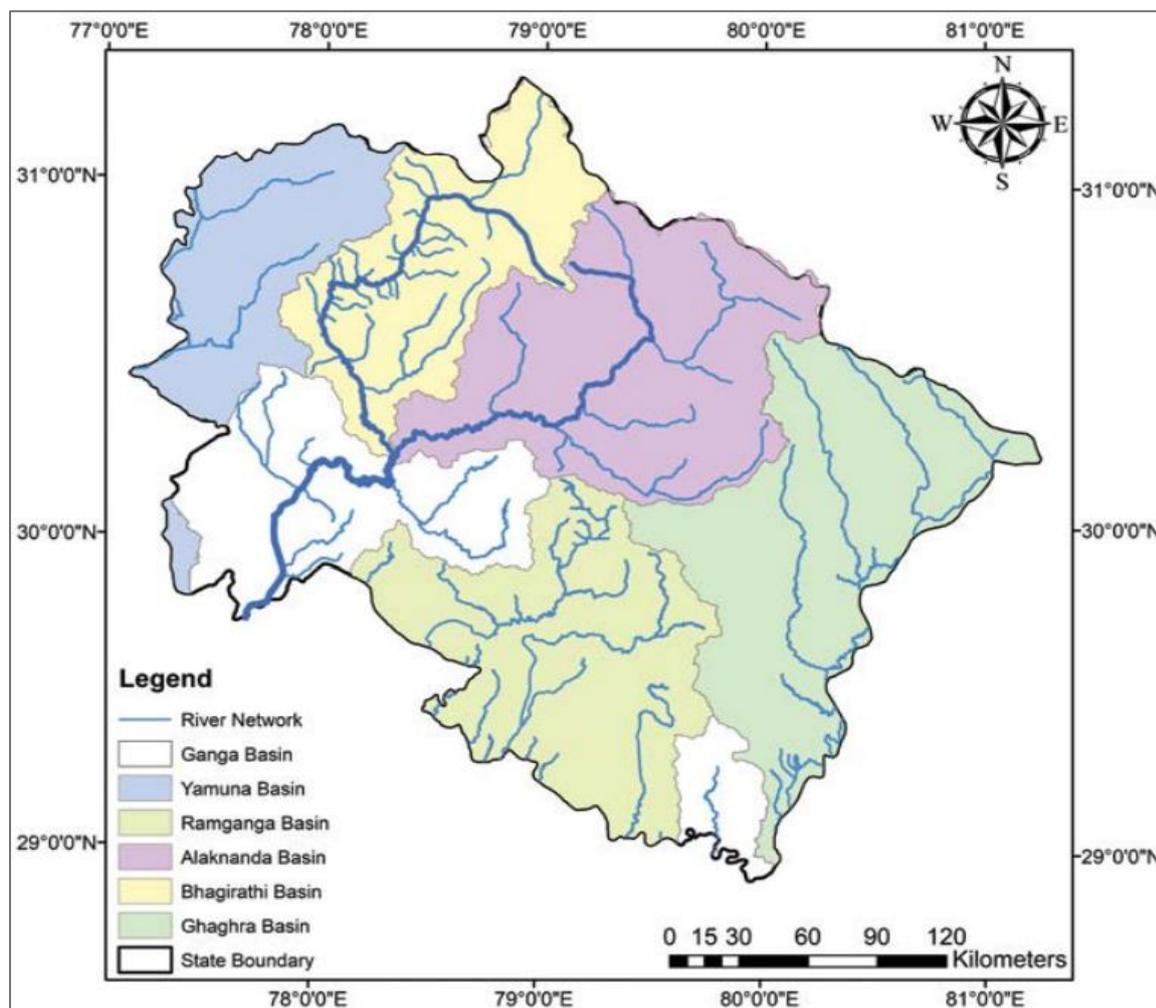
Map 9: Earthquake Zonation Map for the State of Uttarakhand



Source: (Disaster Mitigation & Management Centre, Uttarakhand Secretariat)

As shown in Map 10, the State has 6 major river basins namely: Alaknanda basin, Bhagirathi basin, Sharda basin, Ramganga basin, Ganga basin and Yamuna basin.

Map 10: Uttarakhand State: Major River Basins



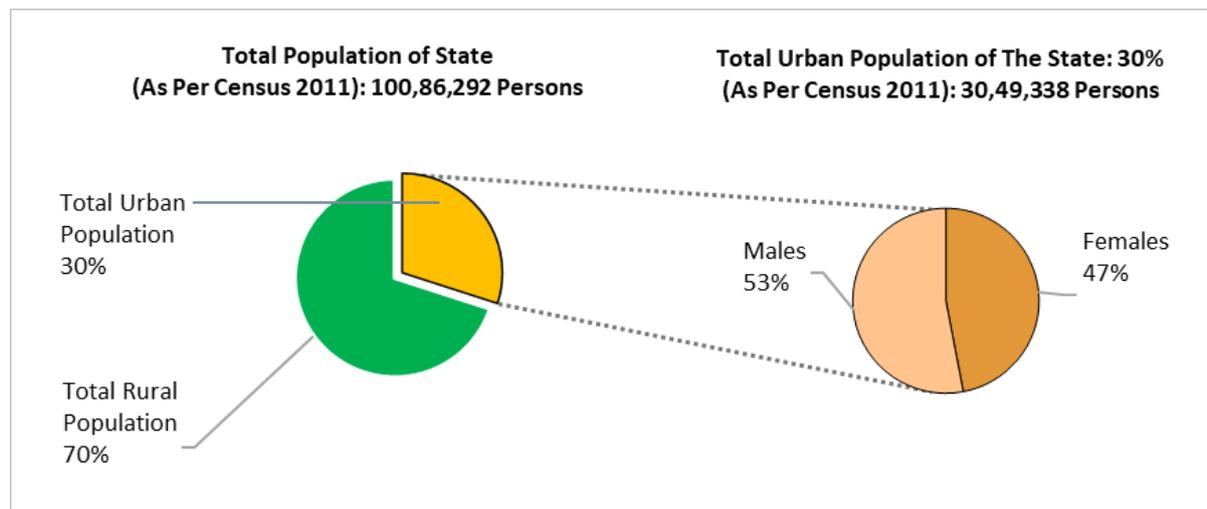
Source: (Uttarakhand River Atlas, National Mission for Clean Ganga, Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation, Government of India, 2021)

### 5.3. Demography and Socio-Economic Profile

#### 5.3.1. Demography

As shown in Figure 5, according to the (Census India, 2011) approx. 30% (30, 49,338) of the total population (100, 86,292) of the State resides in the urban area. Out of the total urban population (30, 49,338), 53% (16, 18,731) is the male population and 47% (14, 30,607) is the female population.

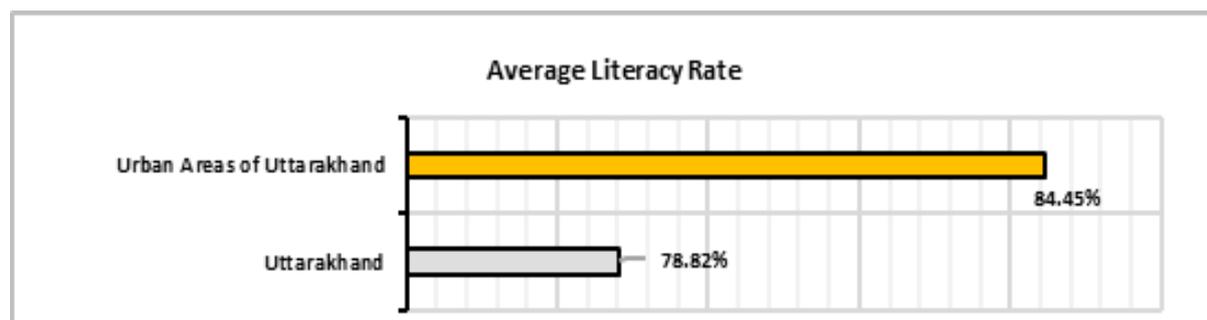
Figure 5: Population-Split of Uttarakhand (Census 2011)



Source: (Census India, 2011), Author

As shown in Figure 6, according to the (Census India, 2011), the Urban Area of Uttarakhand has an Average Literacy Rate of 84.45% which is higher than the Average Literacy Rate of the State i.e. 78.82%.

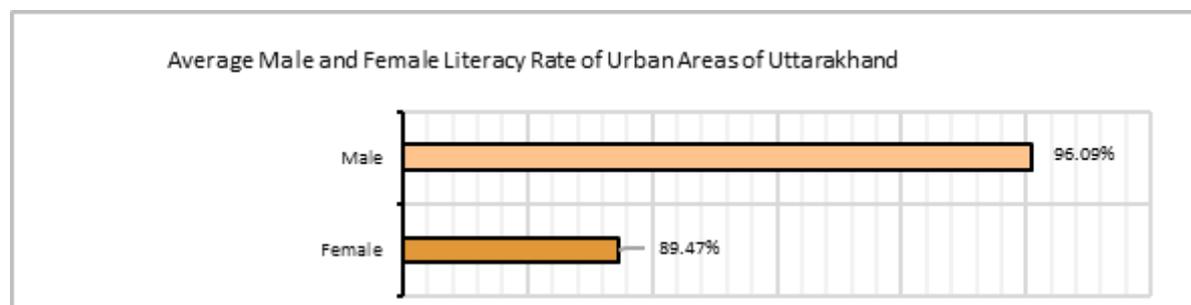
Figure 6: Comparative Analysis of the Average Literacy Rate of Uttarakhand and the Urban Areas of Uttarakhand (Census 2011)



Source: (Census India, 2011), Author

As shown in Figure 7, according to the (Census India, 2011), the Urban Areas of Uttarakhand has higher Average Male Literacy Rate (96.09%) than the Average Female Literacy Rate (89.47%).

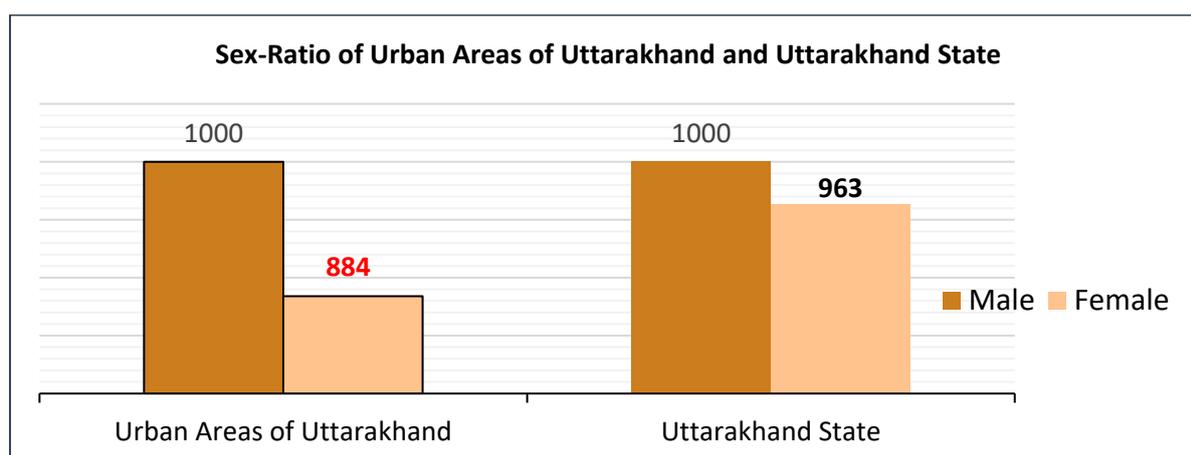
Figure 7: Comparative Analysis of the Average Male and Female Literacy-Rate of Urban Areas of Uttarakhand (Census 2011)



Source: (Census India, 2011), Author

As shown in Figure 8, the urban area has an average sex-ratio of 884 females over 1000 males which is lower than the average sex-ratio of the State i.e. 963 females per 1000 males.

Figure 8: Comparative Analysis of the Sex-Ratio of Urban Areas of Uttarakhand and the State of Uttarakhand (Census 2011)



Source: (Census India, 2011), Author

### 5.3.2. Social and Cultural Aspects

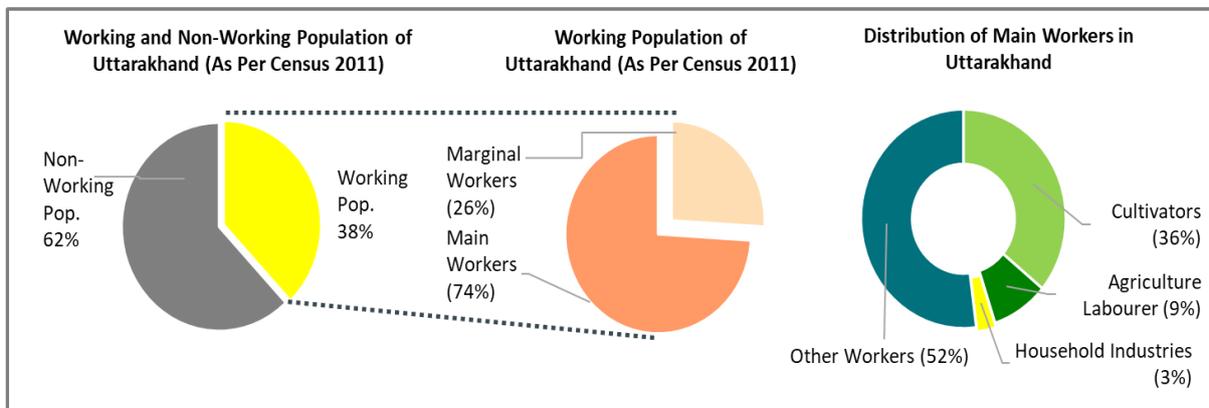
As per the (Census India, 2011), Uttarakhand has a Hindu majority with 82.97% of Hindu population followed by 13.95% of Muslim population, 2.34 % Sikh population, 0.37% of Christian population, 0.15% of Buddhist population, 0.09% of Jain population, 0.01% of Other Religions population and 0.12% of population with No Religion Stated. Major languages spoken in the State are Hindi and Sanskrit with Hindi being the official language of the State.

### 5.3.3. Economic Profile

As shown in Figure 9, according to the (Census India, 2011), around 38% (38, 72,275) of the total population of the State (i.e. 100, 86,292) is working population. Out of the total working population (38,72,275) around 74% (28,70,624) are Main Workers (of which 72% are males while only 28% are females) and 26% (10,01,651) are Marginal Workers. Out of the total Main Workers, 36% are Cultivators, 9% are Agriculture Labourer, 3% works in the Household Industries and 52% are engaged as Other Workers. While 62% (62, 14,017) of the total population of the State is the Non-Working

Population. As per the (State Horticulture Mission, Govt. of Uttarakhand , 2024), agriculture is a predominant sector in the state economy and it contributes around 23.4% in the State Domestic Product (GDP).

Figure 9: Working Population Split and Distribution of Main Workers in Uttarakhand (Census 2011)



Source: (Census India, 2011), Author

# Chapter 6

## Pauri Town

## Chapter 6. Pauri Town

### 6.1. Overview

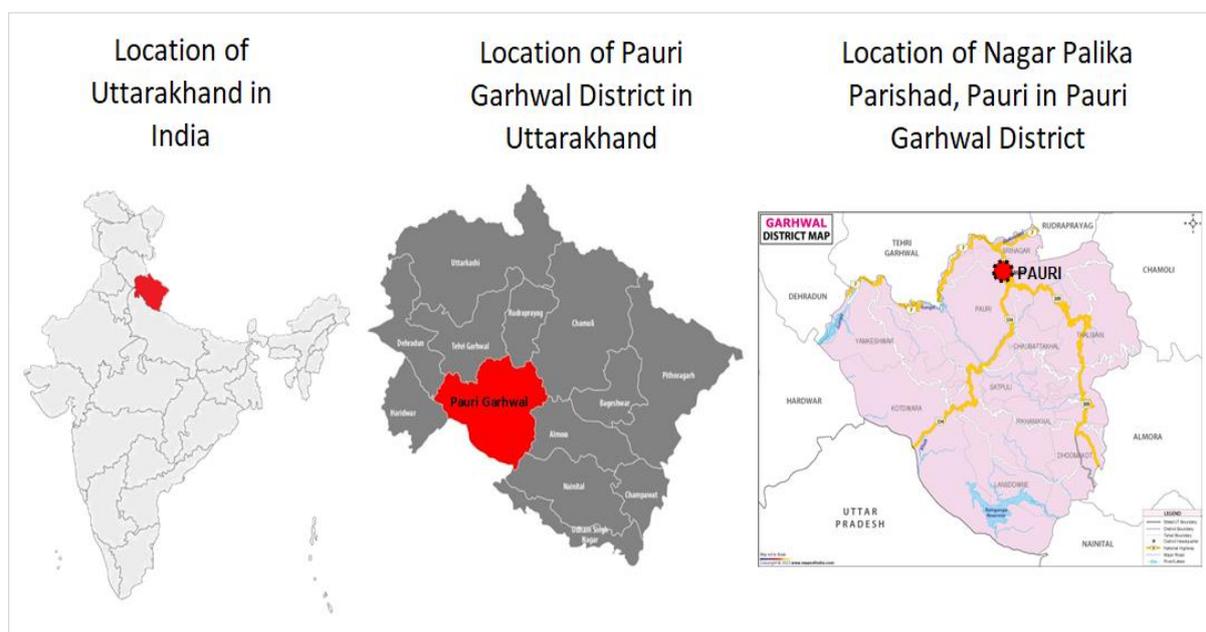
As shown in Map 11, Pauri, perched at an altitude of approximately 1,765 meters on the northern slope of Kandalia Hill along the Kotdwara–Srinagar road, is a serene and picturesque town in Uttarakhand. Serving as both the divisional and district headquarters of the Pauri Garhwal district, it offers a tranquil retreat amidst the majestic Garhwal Himalayas.

Steeped in history and surrounded by natural beauty, Pauri has evolved through the centuries under the influence of various dynasties. The Katyuri dynasty, one of its earliest rulers, left a rich legacy of art and architecture. Following their decline, the Parmar dynasty further shaped the cultural and structural heritage of the region.

The mid-15th century marked a significant chapter in Pauri's history when King Jagatpal established Chandpurgarh as a prominent principality. His successor, Ajaypal, unified numerous principalities to create the Garhwal Kingdom, which thrived for nearly three centuries, even withstanding invasions from external forces such as the Gorkhas in the early 19th century. There are 11 wards in the town that make it a municipality. The town is surrounded by dense forests of deodar, oak and rhododendron trees.

Today, Pauri stands as a harmonious blend of natural splendour and historical significance, offering insights into its glorious past while serving as a serene getaway from the rigors of urban life.

Map 11: Location Map of Nagar Palika Parishad, Pauri in Garhwal District, Uttarakhand, India



Source: (Google Images, 2024), (Maps of India, 2024), Author

Table 3: Overview of Pauri Town (Census 2011), shows a comprehensive overview of Pauri Town as per the Census 2011. The population growth rate for 2001-2011 stands at a modest 2.8%, significantly lower than other towns like Nainital, Mussoorie, Pauri, and Almora. The Lower Growth rate is attributed to Limited economic opportunities, leading to higher outmigration, particularly among the youth seeking employment and better living standards in urban centres outside Pauri like Dehradun, New Delhi etc.

Additionally, the rugged topography and constrained infrastructure development pose challenges to attracting investment and enhancing the quality of life, further discouraging population growth. Unlike Nainital and Mussoorie, which are prominent tourist destinations, Pauri experiences minimal tourist activity, reducing economic stimulation that could otherwise drive population growth.

Table 3: Overview of Pauri Town (Census 2011)

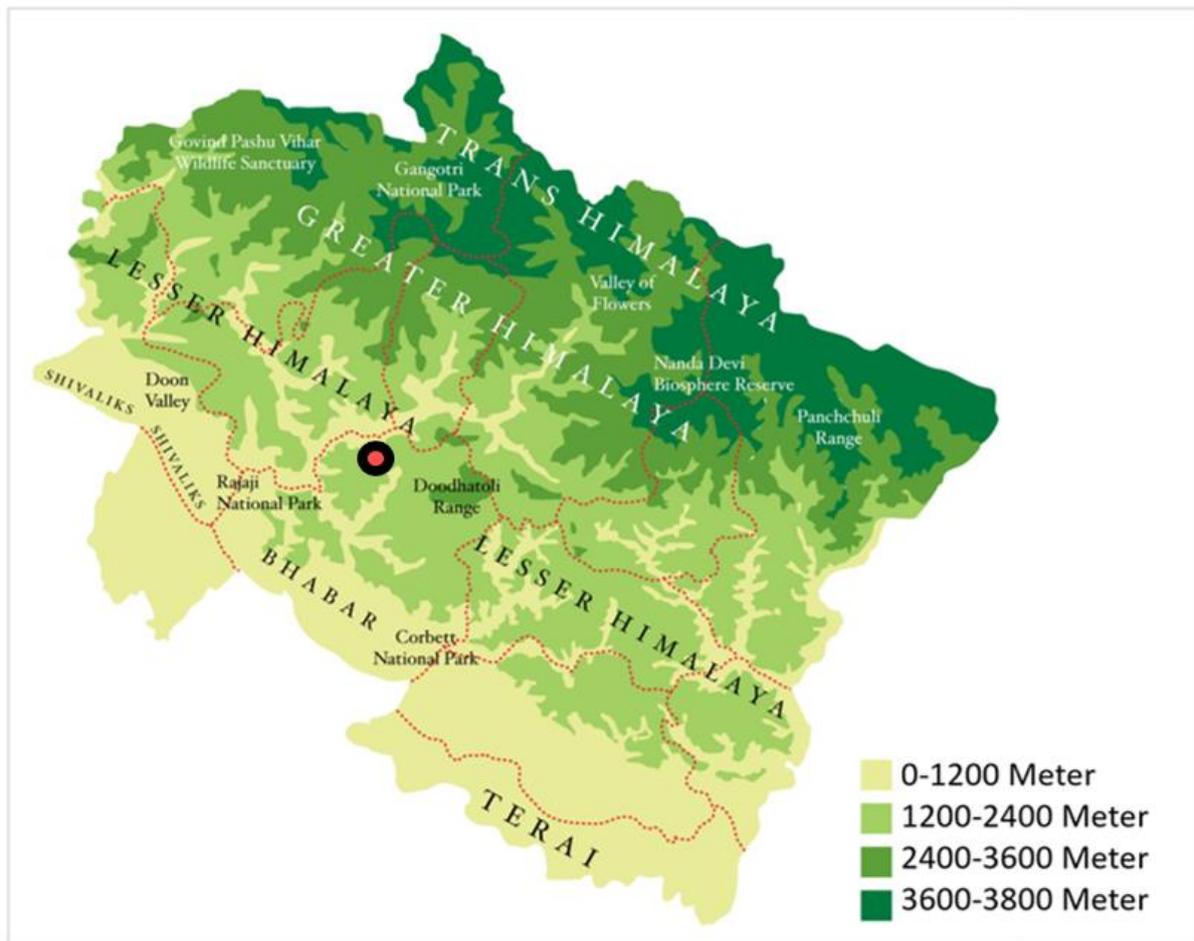
<b>GEOGRAPHICAL LOCATION</b>	
District	Garhwal
Tehsil	Pauri
Town	Pauri
Latitude	30° 8' 9" N
Longitude	78°9'8" E
Geographical area of the Town	42.00 sq. km.
Average elevation of district headquarters (ASL)	1,814 meters
<b>POPULATION DATA (CENSUS 2011)</b>	
Total population	<b>25,435</b>
Male population	13,085
Female population	12,350
Population density (persons per sq. km.)	<b>606</b>
Population growth rate (%) 2001-2011	<b>2.8%</b>
Average literacy rate (%)	92.20%
Male literacy (%)	95.74%
Female literacy (%)	88.44%
Sex-Ratio (female per thousand male)	943
<b>ULB</b>	
Nagar Palika Parishad Pauri	11 Wards

Source: (GoI, District Census Handbook, Pauri, 2011), (Census India, 2011)

## 6.2. Physical Features and Topography

As shown in Map 12, as per the (Department of Applied Geology, Dibrugarh University, Dibrugarh, 2020), Pauri Town geographically lies within the Lesser Himalayas region (1200-2400m) on the north and Outer Himalayan to the south of Uttarakhand. The terrain around Pauri is generally rugged and mountainous, with steep valleys interlocking spurs, and hanging valleys.

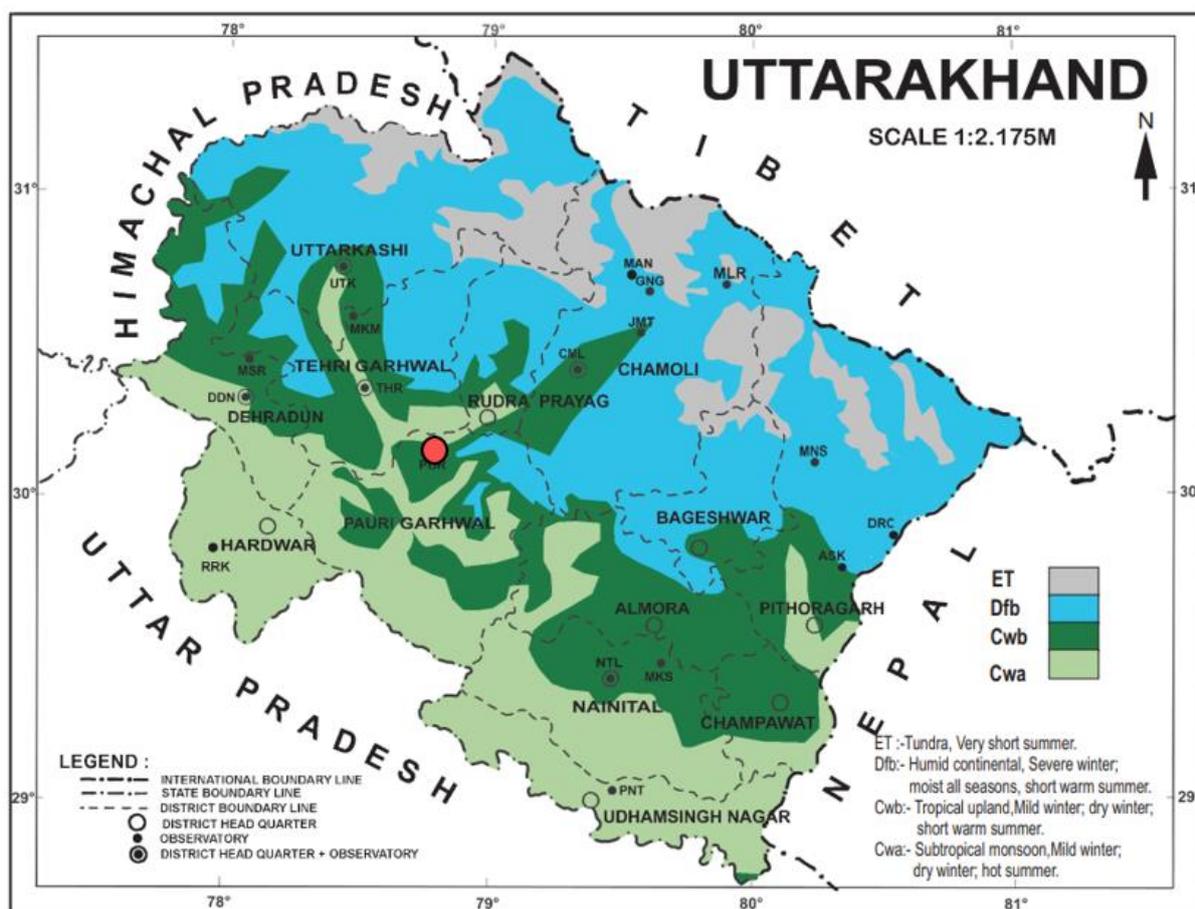
Map 12: Geographical Location of Pauri Town in Uttarakhand



Source: Basemap: (Thematic Map Library, Uttarakhand.org, 2024), Author

As shown in Map 13, Pauri experiences cool summers, chilly winters and moderate to heavy rainfall during the monsoon season. The temperature in Pauri town ranges from 25°C to 10°C. Some of the high mountainous areas even receive precipitation in the form of snowfall.

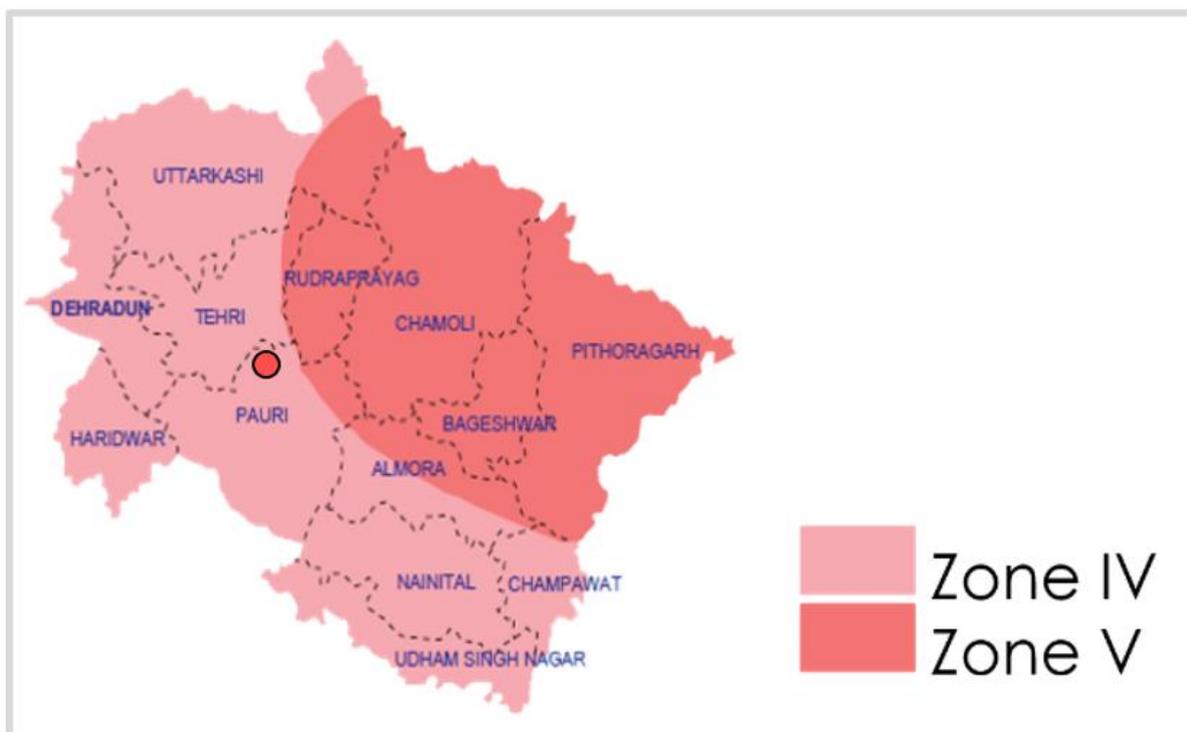
Map 13: Climatic Classification Map of Uttarakhand Highlighting the Climatic Conditions of Pauri Town



Source: Basemap: (Gol, Climate of Uttarakhand), Author

As shown in Map 14, Pauri Town falls in the Zone IV of the Earthquake prone zone i.e. the second most vulnerable zone prone to earthquakes and disasters.

Map 14: Location of Pauri Town in Earthquake Zonation Map of Uttarakhand



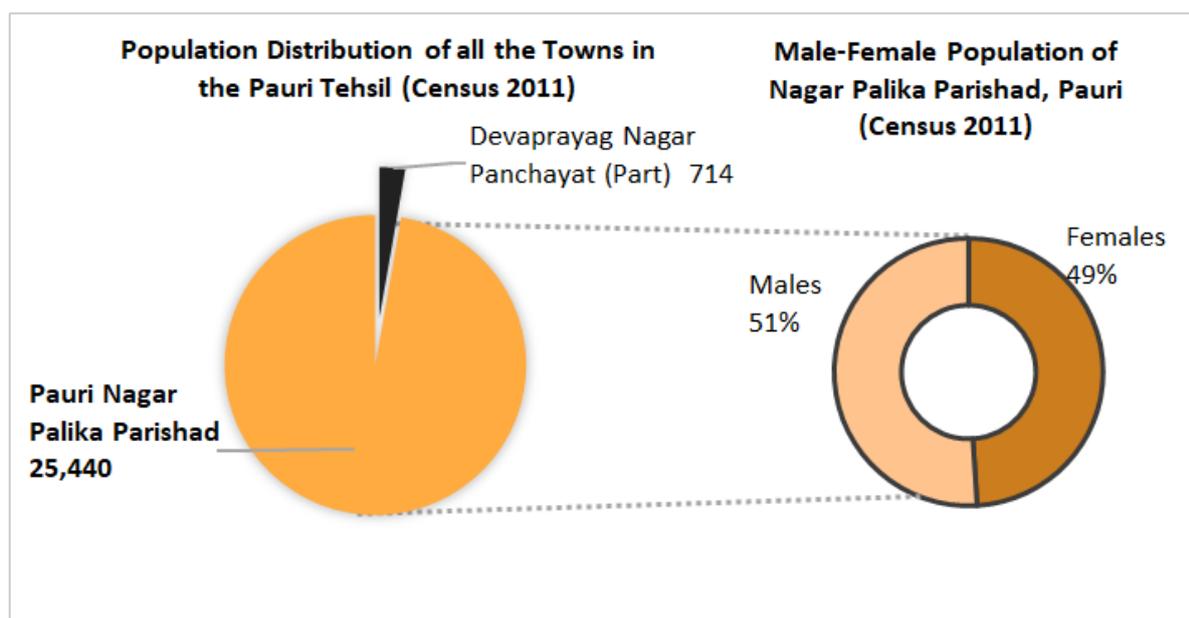
Source: (Thematic Map Library, Uttarakhand.org, 2024), Author

### 6.3. Demography and Socio-Economic Profile

#### 6.3.1. Demography

As shown in Figure 10, as per the (Census India, 2011), Pauri Tehsil has 81% (1, 09,562 persons) of its total population in the urban areas i.e. Devprayag Nagar Panchayat and Pauri Town. The Nagar Palika Parishad, Pauri has 51% (13,085 persons) of male population and 49% (12,350 persons) of female population in the Town.

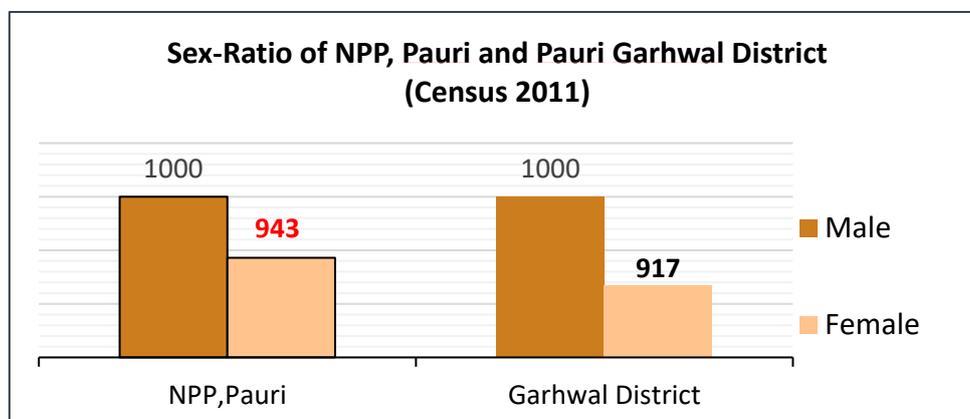
Figure 10: Population Distribution of the Urban and Rural Areas in the Pauri Tehsil and Male-Female Population of the Nagar Palika Parishad, Pauri (Census 2011)



Source: (Census India, 2011), Author

As shown in Figure 11, Pauri town has 943 females per 1000 males. Thus, making the sex-ratio of Pauri Town to be higher than the sex-ratio of Garhwal District i.e. 917 females per 1000 males.

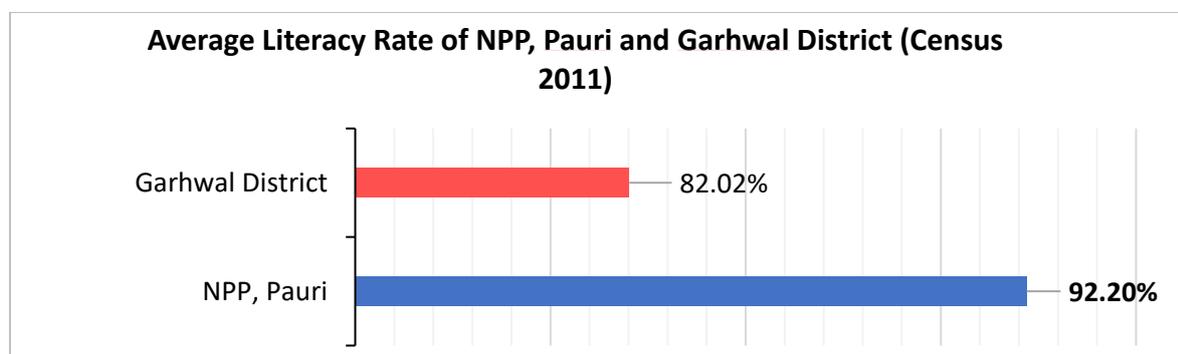
Figure 11: Comparative Analysis of Sex-Ratio of Nagar Palika Parishad, Pauri and Garhwal District (Census 2011)



Source: (Census India, 2011), Author

As shown in Figure 12, the average literacy rate of Pauri Town (92.20%) is higher than the average literacy rate of Garhwal District (82.02%).

Figure 12: Comparative Analysis of Average Literacy Rate of Nagar Palika Parishad, Pauri and Garhwal District (Census 2011)



Source: (Census India, 2011)

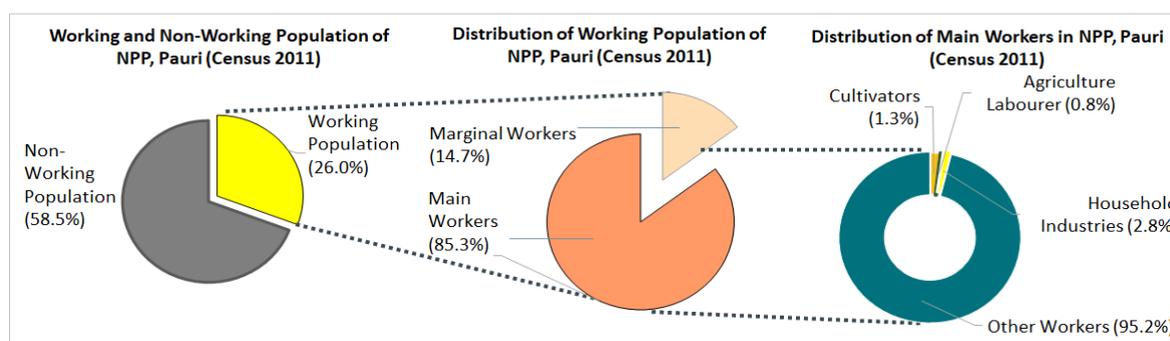
### 6.3.2. Social and Cultural Aspect

As per (Census India, 2011), in Nagar Palika Parishad, Pauri, out of the total population (25,440 persons) of the town 16.61% (4,226) of population is Schedule Caste (SC) and 0.45% (114) of population is Schedule Tribe (ST).

As per the (Census India, 2011), Nagar Palika Parishad, Pauri, has a Hindu majority with 91.08% of Hindu population followed by 6.64% of Muslim population, 2.01% of Christian population, 0.06% Sikh population, 0.07% of Jain population, and 0.13% of population with No Religion Stated.

### 6.3.3. Economic Profile

Figure 13: Demography of Working Population of Nagar Palika Parishad, Pauri (Census 2011)



Source: (Census India, 2011), Author

As shown in Figure 13, according to the (Census India, 2011) around 26.0% of the total population of Nagar Palika Parishad, Pauri is engaged in working activities. Thus, making the total working population to be 7,822 persons. Out of this total working population, 85.3% of the population are Main Workers (employed or earning from more than 6 months) i.e. 6,673 persons (79% males and 21% females) and the remaining 14.7% of the total working population are Marginal Workers (working for less than 6 months) i.e. 1,149 persons (67% males and 33% females). Out of the total Main Workers, 1.8% are Cultivators, 0.5% are Agriculture Labourer, 1.5% works in the Household

Industries and 96.1% are engaged as Other Workers. While the remaining 58.5% of the total population of the Nagar Palika Parishad, Pauri is the Non-Working Population i.e. 17,618 persons.

#### 6.4. Discussions during the Stakeholder Consultation Meeting held on 14<sup>th</sup> October 2024 in NPP, Pauri

As shown in Image 2 below, a Stakeholder Consultation Meeting was held on 14<sup>th</sup> October 2024 in NPP, Pauri. This meeting was attended by 14 stakeholders/participants as mentioned in the list attached in Annexure C.

Image 2: Images of Stakeholder Consultation Meeting Held on 14<sup>th</sup> October 2024 in NPP, Pauri



Source: (Stakeholder Consultation Meeting, 2024)

Based on the feedback provided by the Officials during the brain storming session of the Stakeholder Consultation Meeting, possible solutions and suggested projects are recommended in this final report for improvement of each parameter i.e. a) Solid Waste Management, b) Urban Transport and Parking and c) Water Availability and Supply in Pauri Town.

### 6.5. Post Study Workshop – 10 Dec. 2024

A post study workshop was held at the Dr. R. S. Tolia Academy of Administration Nainital on 10<sup>th</sup> December 2024. Representatives of all the three towns of Mussoorie, Almora and Pauri participated in the meeting and the findings of the research work were discussed. Some suggestions for further improvement of the draft Final Report were given. Some data gaps were also noticed. All these data gaps and suggestions have been incorporated. The list of participants is given in the Annexure C. Photographs of the workshop are shown below:

Image 3: Some images of the Post Study Workshop -10<sup>th</sup> Dec. 2024, Nainital













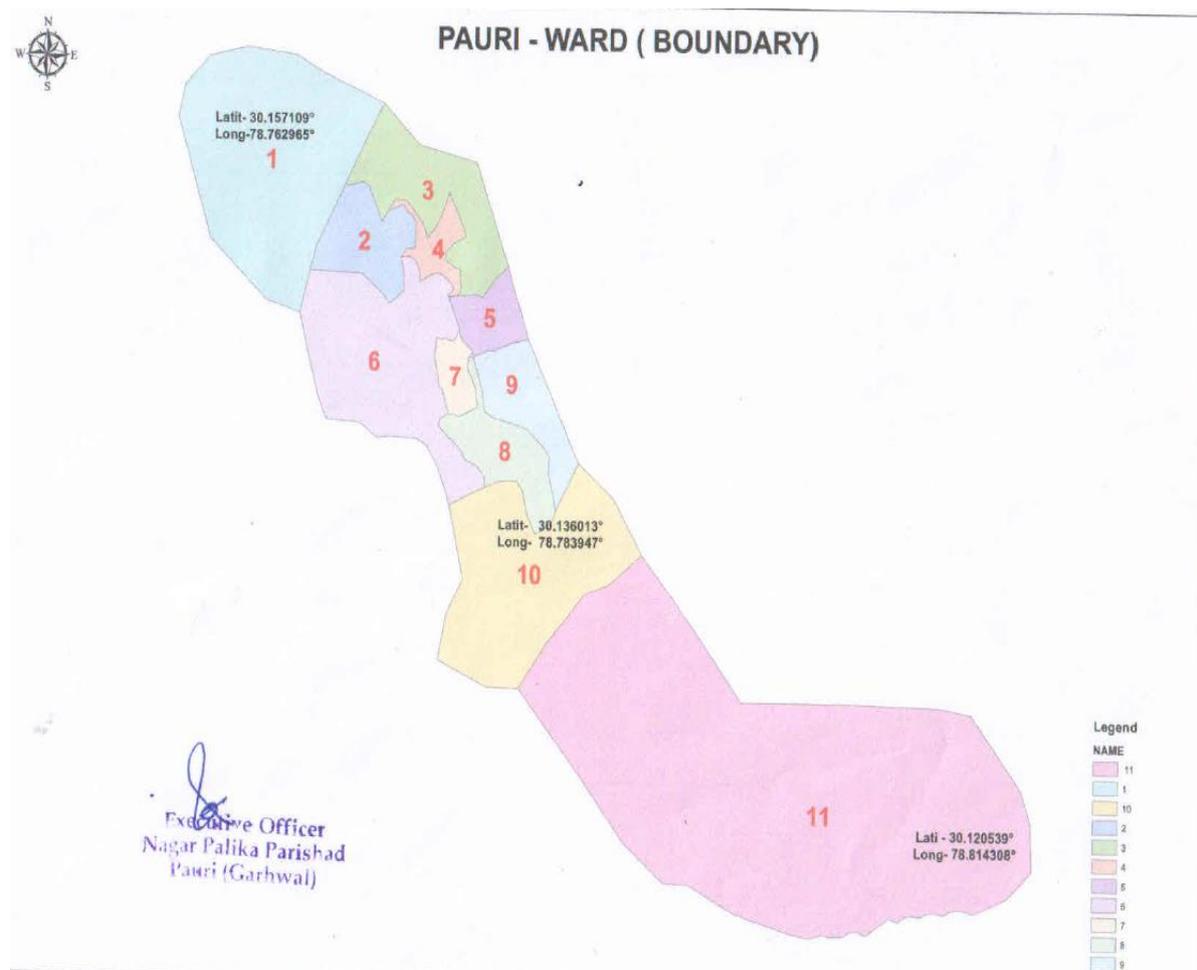


Source: (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

**6.6. Current Situation as per the Data Provided by the Officials Met During Field Visit**

As per the discussion with the officials of Nagar Palika Parishad, Pauri and the data collected as attached in Annexure A, at present the **area of NPP, Pauri**, remains unchanged at **42 sq. km.**, divided into **11 wards**, indicating no spatial expansion or alteration in governance divisions. The **total population** of NPP, Pauri, has increased significantly by **47.5%**, rising from **25,440 (Census 2011)** to a projected population of **35,900 in 2024**. Map 15 below shows the present boundary map of Nagar Palika Parishad, Pauri.

Map 15: Present Boundary Map of Nagar Palika Parishad, Pauri (2024)



Source: (Nagar Palika Parishad, Pauri, 2024)

At present, the Nagar Palika Parishad, Pauri has a total of 8,975 households (HHs) with an average household (HH) size of 5.

As shown in

Table 4, the 11 wards of Nagar Palika Parishad, Pauri are named as Baijwadi, Tehsil, Chavicha/Kaandee, Upper Bazaar, Lower Bazaar, Aspataal Muhalla, Vikas Marg, Laxminarayan Muhalla, Pauri Gaanv, Training Centre, and Raanee.

Table 4: Present Overview of Pauri Town as per the Discussions and the Data Provided by the Officials Met During Field Visit and Stakeholder Consultation Meeting (2024)

<b>Present Overview of Pauri Town (2024)</b>	
<b>Area of Pauri Town (2024) (in sq. km.)</b>	<b>42</b>
<b>Total number of wards in Pauri Town (2024)</b>	<b>11</b>
Ward 01	Baijwadi
Ward 02	Tehsil
Ward 03	Chavicha/Kaandee
Ward 04	Upper Bazaar
Ward 05	Lower Bazaar
Ward 06	Aspatal Muhalla
Ward 07	Vikas Marg
Ward 08	Laxminarayan Muhalla
Ward 09	Pauri Gaanv
Ward 10	Training Centre
Ward 11	Raanee
<b>Total population in Pauri Town (2024)</b>	<b>35,900</b>
<b>Floating Population of Pauri Town (2024) (per day)</b>	<b>80-100</b>
<b>Total number of Households (HHs) in Pauri Town</b>	<b>8,975</b>
<b>Average HH size in Pauri Town</b>	<b>5</b>
Name of department responsible for Solid Waste Management in Pauri Town	Nagar Palika Parishad, Pauri
Name of department responsible for Water Supply in Pauri Town	Uttarakhand Jal Sansthan (UJS), Pauri
Name of department responsible for Construction and Maintenance of Water Distribution Network Pipeline	Pey Jal Nigam Uttarakhand (PJNU), Pauri
Name of department responsible for Construction and Maintenance of Road Network in Pauri Town	Public Works Department (PWD), Pauri

Source: (Nagar Palika Parishad, Pauri, 2024), (Uttarakhand Jal Sansthan, Pauri, 2024), (PWD, Pauri, 2024), (Uttarakhand Tourism Development Board, Pauri, 2024), (RTO, Pauri, 2024), (SPA, New Delhi, 2024)

As mentioned in Table 5, the Upper Bazaar areas of Pauri Town is located along the Karnprayag - Haridwar Rd and Dhara Rd and the Lower Bazaar is located near the Gandhi Murti. These markets run-along and are located-on both of the sides of the road of the hilly terrain.

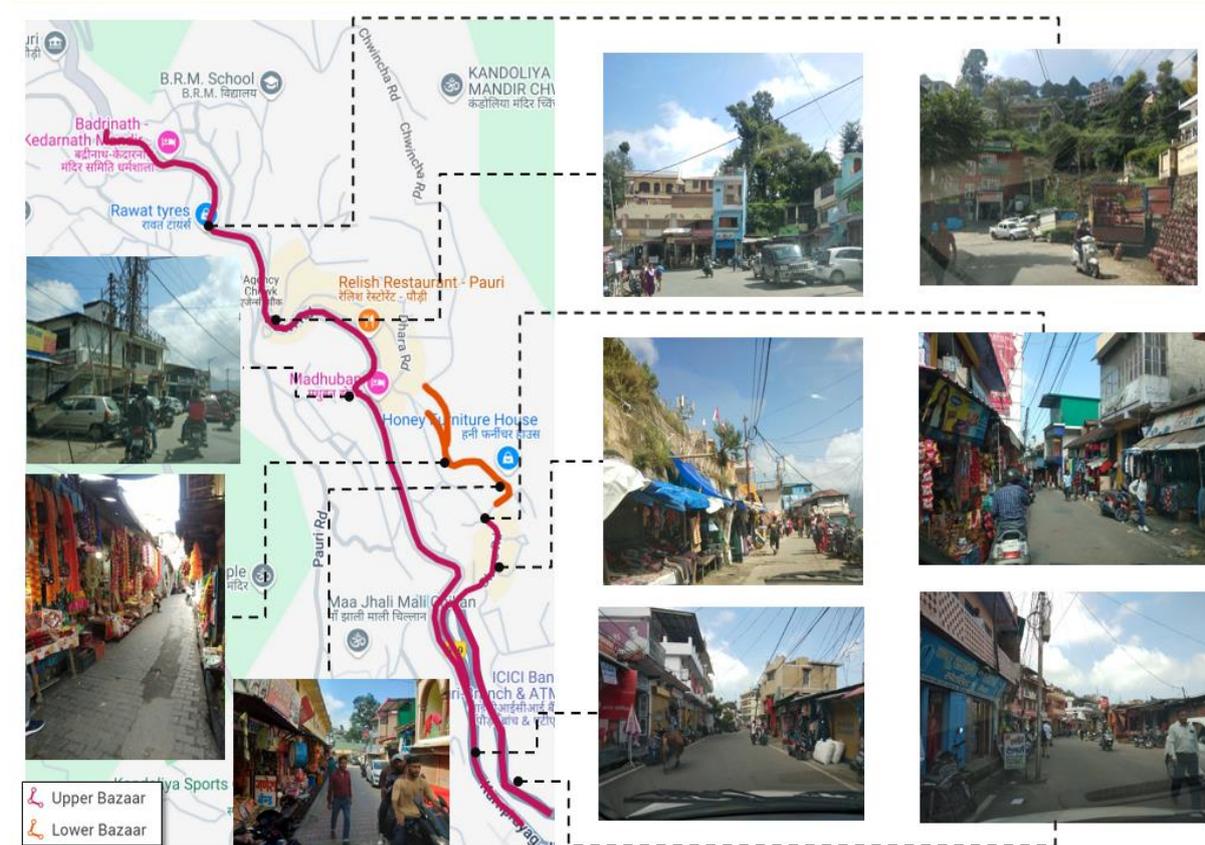
Table 5: List of Major Market Areas in Pauri Town and their Location

<b>Major Market Areas in Pauri Town and their Location</b>
------------------------------------------------------------

S. No.	Market Areas	Location
1	Upper Bazaar	Along Karnprayag - Haridwar Rd and Dhara Rd
2	Lower Bazaar	Along New Vikas colony Rd

Source: (Nagar Palika Parishad, Pauri, 2024), Primary survey by (SPA, New Delhi, 2024)

Image 4: Location of and Images of Main Market Areas in Pauri Town



Source: (Google My Maps, 2024), primary survey by (SPA, New Delhi, 2024),

### 6.7. Comparative Analysis of Nagar Palika Parishad, Pauri (as per Census 2011) and Nagar Palika Parishad, Pauri (at present, 2024), as per the Discussions and the Data provided by the Officials Met

The Table 6 below, shows the comparative analysis of the Nagar Panchayat, Pauri (as per Census 2011) and Nagar Palika Parishad, Pauri (at present, 2024) as per the discussions and the data provided by the officials met during field visit in the month of October, 2024 and Stakeholder Consultation Meeting on 14<sup>th</sup> October 2024, along with the inferences for the same.

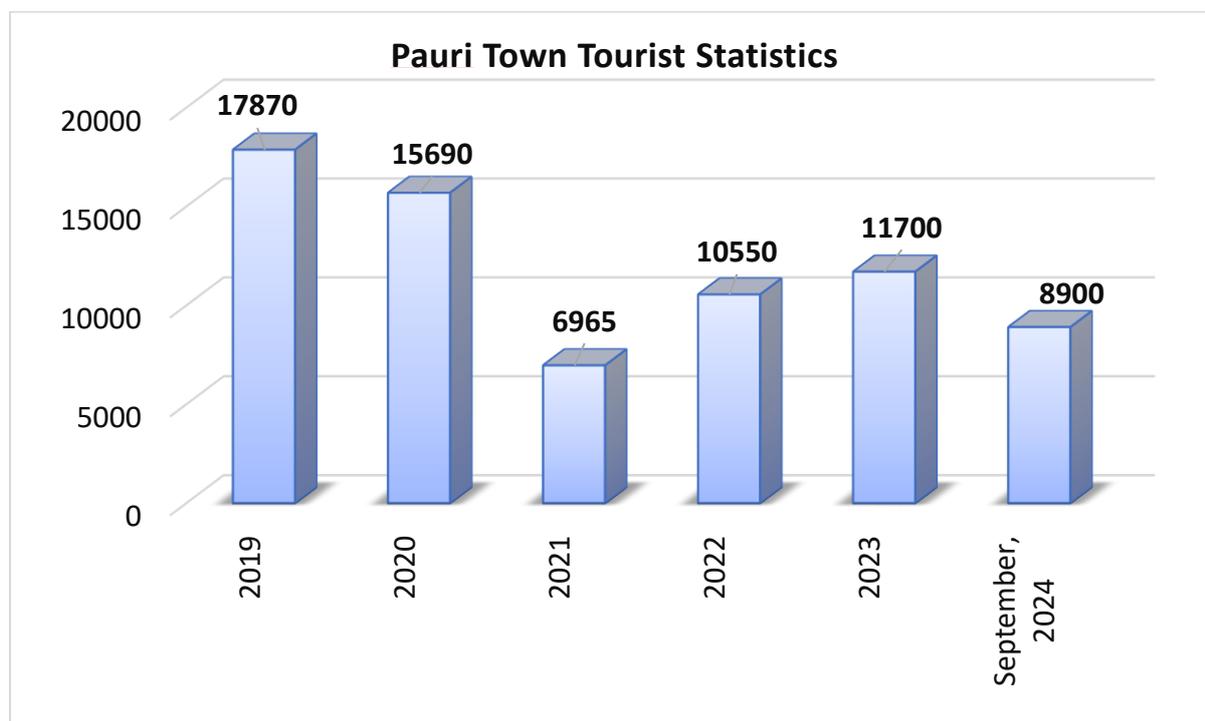
Table 6: Comparative Analysis of Nagar Panchayat, Pauri (as per Census 2011) and Nagar Palika Parishad, Pauri (at present, 2024), as per the Discussions and the Data provided by the Officials Met

<b>Comparative Analysis of Nagar Panchayat, Pauri (as per Census 2011) and Nagar Palika Parishad, Pauri (at present, 2024) as per the Discussion and the Data Provided by the Officials Met During Field Visit and Stakeholder Consultation Meeting</b>			
<b>Overview</b>	<b>Nagar Panchayat, Pauri As Per Census (2011)</b>	<b>Nagar Palika Parishad, Pauri (2024)</b>	<b>Inferences</b>
<b>Area of NPP, Pauri</b>	42.00 sq. km.	42.00 sq. km.	<ul style="list-style-type: none"> <li>There has been <b>no increase in the area of Town, and Number of Wards</b></li> </ul>
<b>No. of Wards in NPP, Pauri</b>	11	11	
<b>Total Population of NPP, Pauri</b>	25,435 Persons	<b>35,900</b> Persons (Census projected Population)	<ul style="list-style-type: none"> <li>The <b>existing total population</b> of the NPP, Pauri was <b>not available</b> (as per the discussions with the officials met).</li> <li>According to the data provided by the officials and projected census Population, the <b>calculated total population is 35,900 persons</b>.</li> <li>Therefore, there has been an <b>increase of 47.5% in the total population of NPP, Pauri</b>.</li> </ul>
<b>Total Number of Households (HHs)</b>	6,127	<b>8,975</b>	<ul style="list-style-type: none"> <li>There has been <b>31% of increase in the total number of Households (HHs)</b>.</li> </ul>
<b>Average HH Size</b>	4.5	5	<ul style="list-style-type: none"> <li>The <b>Average HH size has increased from 4.5 to 5</b>.</li> </ul>
<b>Population Density of NPP, Pauri</b>	6.06 PPH	8.55 PPH	<ul style="list-style-type: none"> <li>There has been <b>approx. 48% of increase in the population density</b> i.e. from 35.2 person/hectare to 52.05 person/hectare.</li> </ul>
<b>Floating Population of NPP, Pauri</b>	NA	<b>More than 11,700 per Annum</b> <ul style="list-style-type: none"> <li>Summer (April-June): 50-70 tourists/day</li> <li>Holidays (e.g., Diwali, New Year): 80-100 tourists/day</li> </ul>	<ul style="list-style-type: none"> <li>There is <b>minimal influx of tourist population</b> in NPP, Pauri.</li> </ul>

Source: (Census India, 2011), (Nagar Palika Parishad, Pauri, 2024), (Stakeholder Consultation Meeting, 2024), (SPA, New Delhi, 2024)

### 6.8. Tourist Statistics in Pauri Town

Figure 14: Details of Tourist influx in NPP, Pauri



Source: (Tourism Department, Pauri, 2024)

The tourist statistics for Pauri City demonstrate a fluctuating trend influenced by external factors such as the COVID-19 pandemic. In 2019, the city attracted 17,870 visitors, which slightly declined to 15,690 in 2020 due to initial pandemic impacts. Visitor numbers dropped significantly to 6,965 in 2021, reflecting global travel restrictions and health concerns. However, a steady recovery is evident, with 10,550 visitors in 2022, 11,700 in 2023, and 8,900 visitors by September 2024, indicating ongoing growth in tourism.

Compared to larger tourist hubs like Nainital and Mussoorie, Pauri City attracts fewer tourists annually, highlighting its status as a smaller destination. Despite this, the city experiences seasonal spikes in tourism during summer vacations due to the return of the migrated population for religious ceremonies and weddings. This trend underscores Pauri’s cultural and familial importance, contributing to its unique tourism profile while showcasing potential for growth with targeted promotion and improved infrastructure.

### 6.9. Final Population Calculation as of 2024

The final population of Pauri in the year 2024 has been worked out as follows:

Sr. No.	Categories	Population
01.	Population as per 2011 Census	25,435
02.	Population as per 2024 (Projected by Census)	35,900
03.	Tourist Population	100 per day (On Season)

		<b>70 per day (Off Season)</b>
<b>04.</b>	Schools/ Institutes (please see detailed Annexure)	<b>5,027</b>
<b>05.</b>	Hospitals	<b>320</b>
<b>06.</b>	Floating Population	<b>8,500</b>
<b>07.</b>	Tenants	<b>15,000</b>
	<b>Total Population</b>	<b>64,847 (On Season)</b>
		<b>64,817 (Off Season)</b>

Source: (Census India, 2011), (Nagar Palika Parishad, Pauri, 2024), (Stakeholder Consultation Meeting, 2024), (Primary Survey, 2024)

# **Chapter 7**

## **Pauri Town:**

### **Solid Waste Management (SWM)**

## Chapter 7. Pauri Town: Solid Waste Management

### 7.1. System Infrastructure

The Solid Waste Management (SWM) in Pauri Town is the responsibility of the ULB: Nagar Palika Parishad, Pauri. As per the discussions with the officials met (as mentioned in Annexure C) the Table 7 below, shows the existing system infrastructure for the SWM in NPP, Pauri.

Table 7: Overview of System Infrastructure for Solid Waste Management (SWM) in Pauri Town

System Infrastructure Provided By NPP, Pauri	
<b>Community Bins</b>	
Total Number of Dustbins	<b>2</b>
Total Number of Large Dustbins	<b>2</b>
Ward Wise Number of Large Dustbins (on an average)	NA
Total Number of Small Dustbins	<b>NA</b>
Ward Wise Number of Small Dustbins (on an average)	NA
<b>Staff Appointed by NPP, Pauri for Cleaning of Roads</b>	
<b>Total Number of Sanitation workers appointed by NPP</b>	<b>60</b>
Permanent sanitation workers in NPP	30
Daily basis sanitation workers in NPP	25
Contractual sanitation workers in NPP	05
I. Number of Supervisors	06
II. Number of Drivers	02
III. Number of Helpers	05
During Summer	Two times a day <ul style="list-style-type: none"> <li>Morning: 06:00 am to 11:00 am</li> <li>Evening: 02:00 pm to 05:00 pm</li> </ul>
During Winter	Two times a day <ul style="list-style-type: none"> <li>Morning: 06:00 am to 11:00 am</li> <li>Evening: 02:00 pm to 05:00 pm</li> </ul>
<b>Garbage Pick-Up Vehicles Provided by the NPP, Pauri to the Private Agency for Solid Waste Collection and Transportation</b>	
Garbage Pick-up Trucks (with 7 m <sup>3</sup> capacity each)	5 numbers =5X7 =35 m <sup>3</sup> capacity
Partitioned Auto-Tippers (with 3 m <sup>3</sup> capacity each)	1 numbers =1X3 =3 m <sup>3</sup> capacity
Garbage Dumper (with 30 m <sup>3</sup> capacity each)	1 numbers =1-30 = 30 m <sup>3</sup> capacity
<b>Staff Appointed by Private Agency</b>	
<b>Total Number of Workers (Door-To-Door Collection)</b>	<b>44</b>
1. Number of Workers (Door-To-Door Collection)	27
2. Number of Supervisors	04
3. Number of Drivers	06
4. Number of Helpers	07

Source: (Nagar Palika Parishad, Pauri, 2024), Author

As shown in Table 7, NPP, Pauri effort to make the town bin-free, only two community bins are currently provided, with no large or small ward-wise dustbins reported.

Image 5 shows the existing conditions of the garbage bins in Pauri Town.

Image 5: Existing Condition of the Garbage Bins in Pauri Town



Source: (SPA, New Delhi, 2024)

For solid waste collection and transportation, the responsibility has been outsourced to a private agency equipped with garbage pick-up vehicles. The private agency employs **44 workers**, including **27 for door-to-door garbage collection**, **4 supervisors**, **6 drivers**, and **7 helpers**. This setup ensures household waste collection and efficient transportation, although the limited number of vehicles and workers indicates scope for system expansion to meet increasing demands.

Despite the structured approach, the infrastructure and manpower currently deployed are insufficient for the growing population and urban density of NPP, Pauri. The garbage collection service relies on a limited workforce of **44 staff members**, including **27 collection workers**, who are tasked with covering the entire population of **8,975 households** in NPP, Pauri. According to the officials, the door-to-door waste collection is being done effectively. But as per the feedback from local residents, the garbage trucks make rounds for waste collection, residents are required to physically deposit their waste into the trucks themselves. For residents living farther from main roads, waste collection occurs only once every three or more days. This system effectively serves for those living along major roadsides, allowing them to dispose of waste daily. However, for those living in interior areas or away from main roads, access to the garbage trucks is infrequent—often only once every three or more days. This irregular service compels many to resort to improper disposal methods, such as discarding garbage in nearby vacant areas or burning it. These practices pose

significant environmental and public health risks, including air pollution, soil contamination, and increased health hazards.

As per the discussions with the officials met the following Table 8 below, consists of a brief description of the activities undertaken by the NPP, Pauri and the Private Agency as per the contract for the Solid Waste Management in between them. According to the contract, the Private Agency is responsible for the door-to-door collection, transportation, hiring of sanitation workers for the solid waste management, providing salary, equipment, safety masks, uniforms, ID cards, Insurance to the sanitation workers, and collecting the user charge for Solid Waste Management in NPP, Pauri. While the NPP, Pauri is responsible for composting of segregated wet waste, selling the fertilizer produced after composting, but due to absence of dedicated treatment plant and land for composting it is impossible for NPP, Pauri for composting of segregated wet waste. NPP Pauri is responsible for ensuring that solid waste is not burned openly in the town. It provides the private agency with necessary resources such as buckets, plastic bags, vehicles, small dustbins, and large dustbins for efficient solid waste collection. Additionally, it oversees the deposition of user charges collected by the private agency for solid waste management in the town.

Table 8: Activities/Duties Undertaken by the NPP, Pauri and the Private Agency as per the Solid Waste Management (SWM) Contract

S. No.	Activity	Done By/ Given To	
		NPP, Pauri	Private Agency
1	<b>Door-To-Door Collection</b> of Solid Waste from all the 11 wards (Every-day, Every Morning)	-	Yes
2	<b>Segregation at Source</b> of Solid Waste Collected from Door-to-Door	-	Yes
3	<b>Transportation</b> of Waste after Segregation	-	Yes
4	<b>Storing Segregated Dry Waste at one location in Plastic Bags on Site itself</b>	Done by Rag pickers	
5	<b>Composting</b> of organic waste	No by NPP	No by Private agency
6	<b>First Right on Waste Material and Fertilizer produced</b> after composting	Yes	-
7	<b>Selling Rights</b> of Compost generated for generation of money	Yes	-
8	<b>Taking care solid the solid waste is not burned in open</b>	Yes	
9	<b>Hiring of workers</b> and supervisors for collection and segregation of dry and wet waste	Yes	Yes
10	<b>Providing Salary</b> to the workers and supervisors hired for collection and segregation of dry and wet waste	-	Yes
11	<b>Providing Equipment, Safety Masks, Uniforms, ID Cards and Insurance</b> to the workers and supervisors hired for collection and segregation of dry and wet waste	Yes	-
12	<b>Providing Buckets and Plastic Bags</b> for manual door-to-door collection of solid waste	Yes	-
13	<b>Providing Vehicles, Small Dustbins, Big Dustbins etc. for Door-To-</b>	Yes	-

	<b>Door Collection</b>		
14	<b>Provision of fuel and vehicle repairs</b>	Yes	-
15	<b>User Charge collection for Solid Waste Collection</b>	-	Yes
16	<b>Deposition of User Charge Collected to</b>	Yes	-
17	<b>Public Awareness Programme for MSWM</b>	Yes	-

Source: (Nagar Palika Parishad, Pauri, 2024), (SPA, New Delhi, 2024)

### 7.1.1. Present Situation of Garbage Dumping in NPP, Pauri

As shown in Image 6, in NPP, Pauri the garbage generated is being dumped in the following six areas i.e. common garbage bins provided by the Nagar Palika Parishad Pauri, waste collection vehicles provided by the NPP, Pauri to the Private Agency for the collection of solid waste, openly littered in the drains, vacant land parcels, along the road-side and in the dumping yard at Lалуwapani Road Pauri. This will result in developing a potential towards future health hazard in the town.

Image 6: Areas being used for Dumping Garbage by the Residents of NPP, Pauri at Present

#### 1. Common Garbage Bins



#### 2. Waste Collection Vehicles



#### 3. Dumping Yard



#### 4. Vacant land Parcel



**5. Common Open Garbage Burning by Locals**



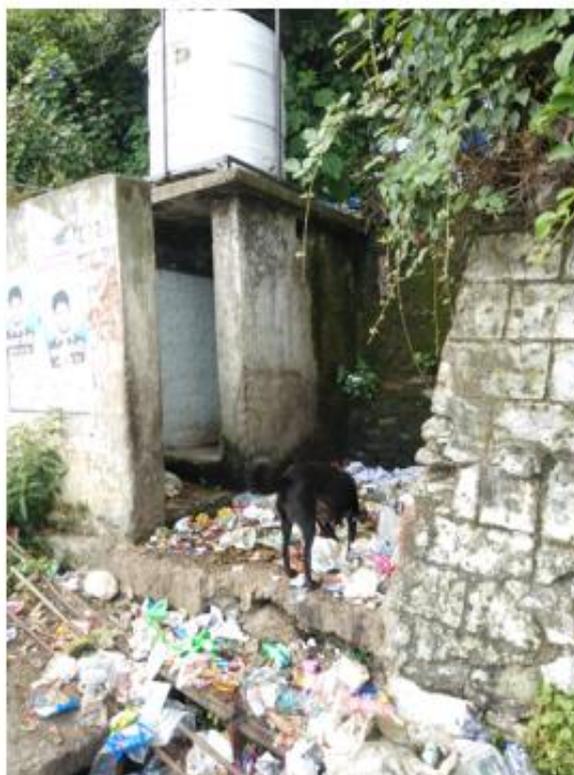
**6. Road Side drain**



### 7. Natural Drains

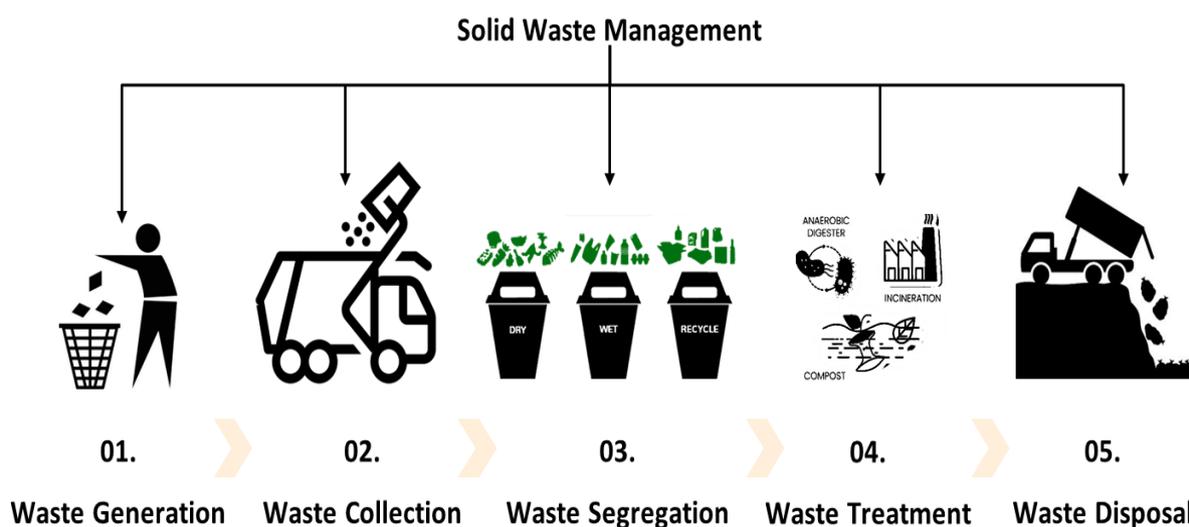


### 8. Open dumping around the Public Toilet



Source: Primary survey by (SPA, New Delhi, 2024)

#### 7.1.2. Process of Solid Waste Management in Pauri Town



As per the discussions with the officials met (as mentioned in Annexure C) the Figure 15 below represents the flowchart for Solid Waste Management (SWM) in Pauri Town.

Figure 15: Flowchart of Solid Waste Management (SWM) In Nagar Palika Parishad, Pauri

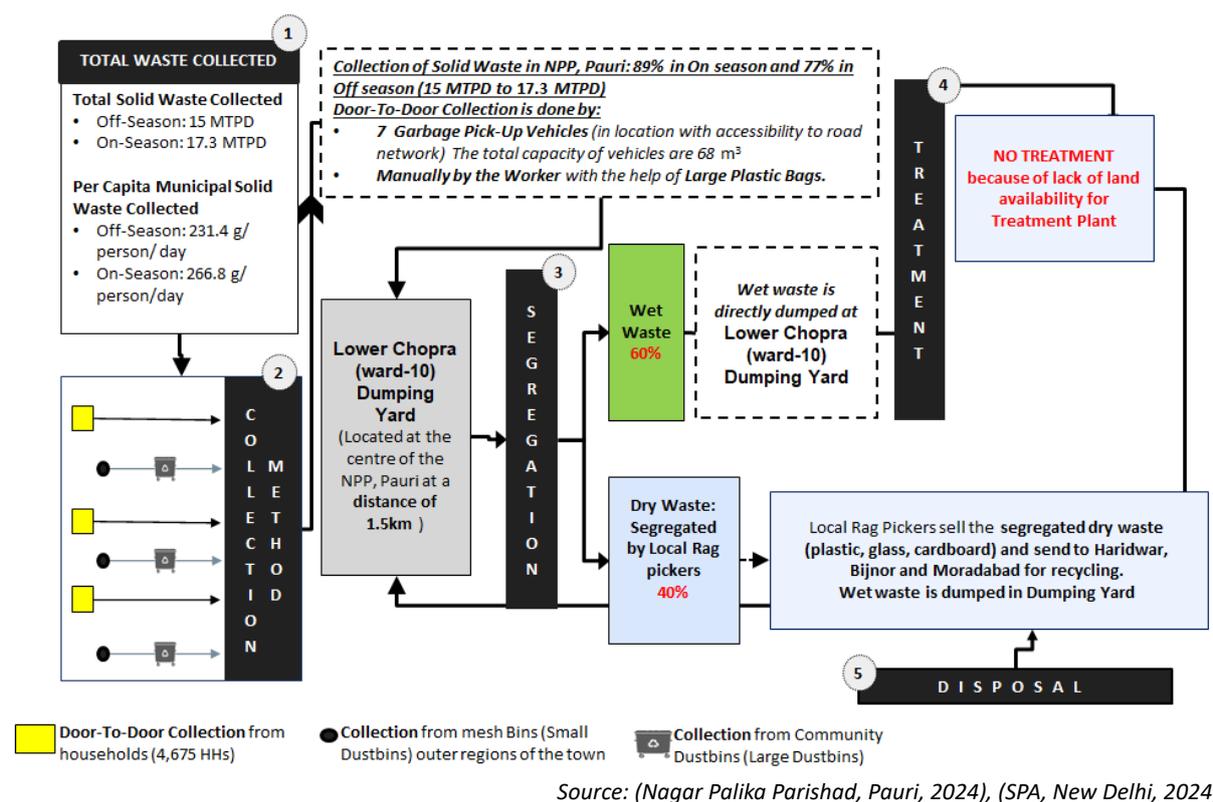


Figure 15 shows the flowchart of the SWM in NPP, Pauri that can be broadly divided into five steps namely: Step-01: Waste Generation, Step-02: Waste Collection, Step-03: Waste Segregation, Step-04: Waste Treatment and Step-05: Waste Disposal.

**a) Step-01: Waste Generation**

As shown in the Table 9, as per the discussions with the officials met (as mentioned in Annexure C), the major sources of solid waste generation in the town are the residential and commercial areas. The **total solid waste collection ranging from 15 MTPD (off-season) to 17.3 MTPD (on-season)**, the current infrastructure and practices struggle to manage this efficiently. *The NPP Pauri does not have waste generation data but has only waste collection data.* Therefore, waste generation has been worked out as follows:

Norm – as per URDPFI Guidelines Vol. – I, Section 8.3.6 on Solid Waste Management Table 8.44, the waste generation/ capita /day is 0.3 to 0.6 kg/ capita/ day. Therefore in Pauri, based on this norm, the total waste generation is estimated to be as follows:-

Table 9: Overview of Solid Waste Generated and Collected in NPP, Pauri

Solid Waste Generated and Collected in Nagar Palika Parishad (NPP), Pauri			
S.No.	S.W. Generation as per Norm (URDPFI Guidelines)	S.W. Collection as per NPP, Pauri (2024)	Inferences

1)	<b>On Season</b> <b>(Summer):-</b> <b>= 0.3 x 64,847</b> <b>= 19,454 kg/ day</b> <b>i.e. 300 g/</b> <b>person/day (as per</b> <b>the URDPFI</b> <b>Guideline)</b>	<b>On Season</b> <b>( Summer):-</b> <b>= 17.3 x 1000</b> <b>= 17,300 kg/day</b> <b>89 % collection</b> <b>efficiency</b>	<ul style="list-style-type: none"> <li>The gap between waste generation and collection is approximately <b>11%</b>, indicating that <b>2,154 kg/day</b> of waste remains uncollected during peak tourist seasons. This highlights a strain on the existing collection infrastructure due to the surge in visitors, leading to waste accumulation, littering, and environmental degradation.</li> </ul>
2)	<b>Off Season</b> <b>(Winter) :-</b> <b>= 0.3 x 64,817</b> <b>= 19,445 kg/ day</b> <b>i.e. 300 g/</b> <b>person/day (as per</b> <b>the URDPFI</b> <b>Guideline)</b>	<b>Off Season</b> <b>(Winter) :-</b> <b>= 15 x 1000</b> <b>= 15,000 kg/day</b> <b>77% collection</b> <b>efficiency</b>	<ul style="list-style-type: none"> <li>The gap increases to approximately <b>23%</b>, leaving <b>4,445 kg/day</b> of waste uncollected during the off-season. This significant shortfall suggests inefficiencies in the collection system, even when waste generation is comparatively lower. It points to possible underutilization of resources or lack of optimized collection efforts during the off-peak period.</li> </ul>

Source: (Nagar Palika Parishad, Pauri, 2024)

## b) Step-02: Waste Collection

As per the discussions with the officials met (as mentioned in Annexure C), the NPP, Pauri has appointed a Private Agency on contract basis (annually renewed on performance basis) for collection, transportation, and disposal of solid waste generated in the Town. This private agency has further appointed a total number of 44 sanitation workers for door-to-door solid waste collection. These workers include supervisor, drivers and helpers.

Table 10 below, shows the duties/responsibilities assigned to these sanitation workers for the collection and management of the solid waste generated throughout the town.

Table 10: Duties/Job Responsibilities of Sanitation Workers Appointed by the Private Agency for Solid Waste Management in NPP, Pauri

S.No.	Sanitation Worker Appointed	Duties/Job Responsibility
01.	Supervisors	To <b>manage</b> the entire process of door-to-door collection throughout the Town.

02.	<b>Drivers</b>	To <b>drive and collect</b> the solid waste generated throughout the Town in the garbage pick-up vehicles provide by the NPP, Pauri, from the areas with proper road network accessibility.
03.	<b>Helpers</b>	To <b>manually collect</b> the solid waste from the areas with limited or zero road network accessibility in the buckets or large plastic bags provided by the NPP, Pauri.

Source: (Nagar Palika Parishad, Pauri, 2024),

The sanitation workers (supervisor, drivers and helpers) collect approximately 80% of the solid waste generated in the town i.e. 15 Metric Tonnes per Day (MTPD) every-day in the morning in between Morning: 06:00 am to 11:00 am and in Evening: 02:00 pm to 05:00 pm on a regular basis. Door-to-door collection is done from the households (4,675 HHs), the commercial areas, 800 shops and 2 community dustbins in the Town either by the help of vehicles (from areas with road network accessibility) provided by the NPP, Pauri or manually (from areas with limited or zero road network accessibility) by the help of buckets or large plastic bags provided by the NPP, Pauri.

As shown in Table 11, the NPP, Pauri has provided a total of 7 number of garbage pick-up vehicles to the Private Agency with 5 garbage pick-up trucks of 7m<sup>3</sup> capacity each (5X7=35m<sup>3</sup>), Garbage Dumper of 30 m<sup>3</sup> capacity each (1x30 = 30 m<sup>3</sup> ) and 1 Partitioned Auto-Tippers of 3m<sup>3</sup> capacity each (1X3=3m<sup>3</sup>).

Table 11: Details of Vehicles Provided by the Nagar Palika Parishad, Pauri to the Private Agency for Collection and Transportation of Solid Waste Generated in the Town

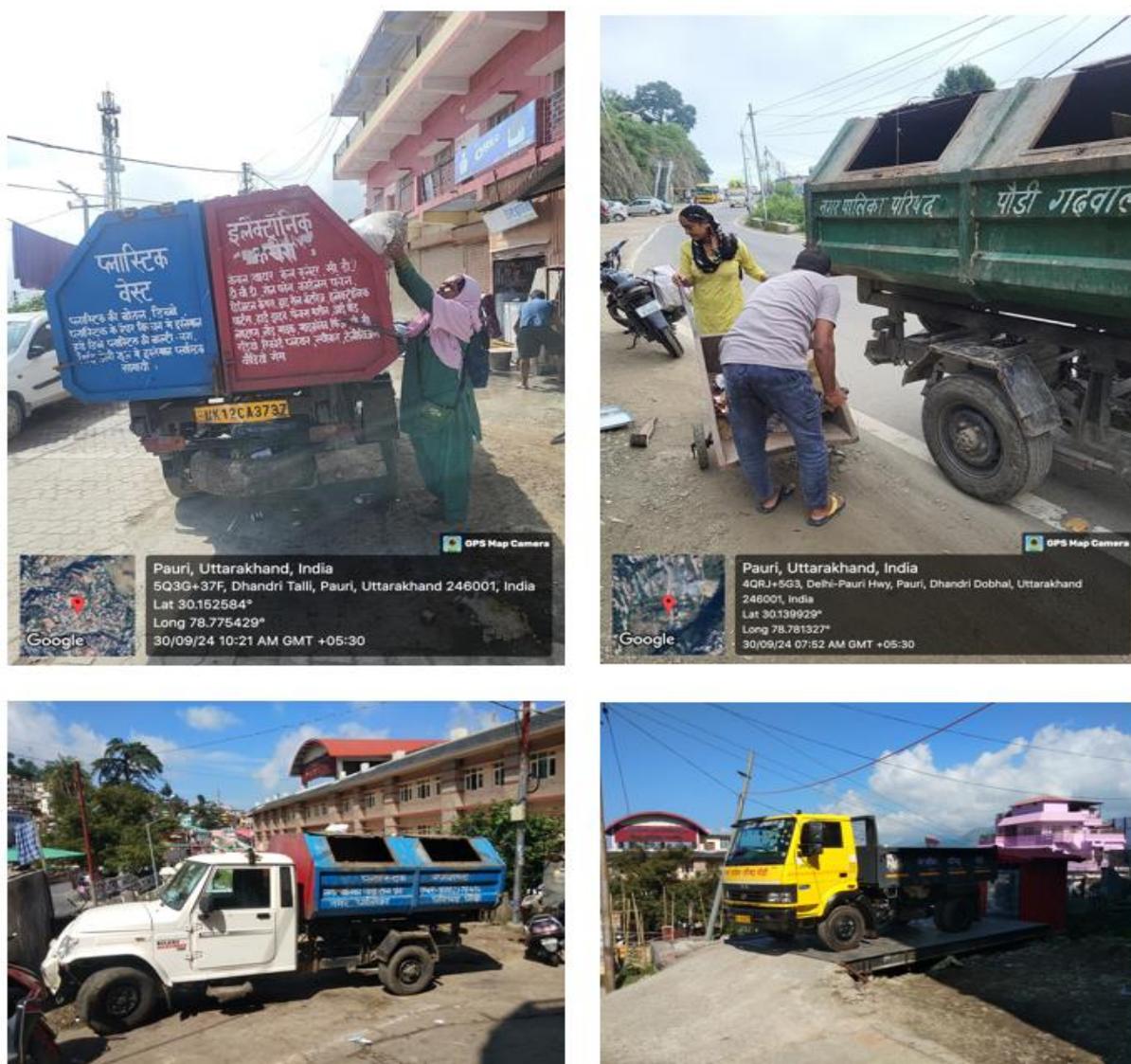
Type of Vehicles Provided for Transportation of Solid Waste to the Private Agency by the NPP, Pauri (Garbage Pick-Up Trucks)	Number of Vehicles Provided (B)	Capacity of Each Vehicle (m <sup>3</sup> ) (A)	Total Capacity (m <sup>3</sup> ) (C = AXB)
Garbage Pick-up Trucks	5	7	35
Garbage Dumper	1	30	30
Partitioned Auto-Tippers	1	3	3
<b>Total</b>	<b>7</b>		<b>68</b>

Source: (Nagar Palika Parishad, Pauri, 2024)

NPP, Pauri does not collect the medical waste separately. The medical waste generated is collected, treated and disposed-off or incinerated by the respective hospital authorities by themselves within the hospital premises or by the help of another private organizations on contractual-basis.

Image 7 below shows the garbage pickup vehicles provided by the NPP, Pauri to the Private Agency for the collection and transportation of the solid waste generated in the town.

Image 7: Images of Vehicles used for Transportation of Solid Waste in Pauri Town



Source: (Nagar Palika Parishad, Pauri, 2024), (SPA, New Delhi, 2024)

As shown in Table 12, The **Nagar Palika Parishad (NPP), Pauri**, has implemented a structured fee system for door-to-door solid waste collection, with charges varying based on waste segregation and user categories. Residential households, including those below the poverty line, are charged minimal rates ranging from ₹10 to ₹30 per month, depending on the segregation level and waste type. Commercial establishments, such as hotels, restaurants, and hospitals, are charged higher fees, ranging from ₹100 to ₹1,500 per month, reflecting their larger waste generation. Despite these nominal charges, resistance to payment among residents is widespread, leading to improper waste disposal practices, such as dumping garbage in open areas, drains, and valleys, which exacerbates environmental and public health issues.

Table 12: Fees Charged by the Nagar Palika Parishad, Pauri for Door-To-Door Solid Waste Collection

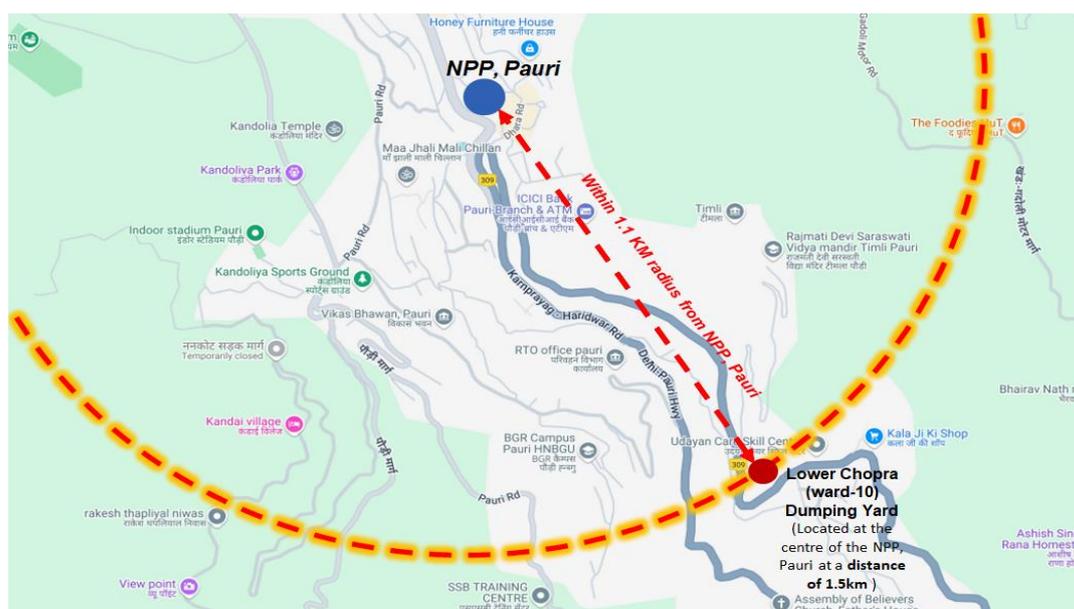
User Charges by the Nagar Palika Parishad For Solid Waste Collection					
Sr. No.	waste and waste Category/Type	Charges (in INR) per Month			
		On separating organic and non-organic manure and taking it to the road	Mixed garbage is delivered to the road	By giving separate organic and inorganic waste at home/source.	The person who gives mixed Garbage at home/source
1	Houses Below Poverty Line	00	05	10	15
2	LIG Houses	05	10	15	20
3	Houses in addition to the above	10	20	25	30
4	Hotel/Lodge/Guest house	100	200	200	250
5	Hospice (धर्मशाला)	10	25	40	50
6	Marriage Ceremony House (बारात घर)	500	1,000	750	800
7	Bakery	100	200	125	150
8	Office	50	100	50	75
9	Vegetable and fruit seller	100	200	100	125
10	Restaurant	250	500	200	250

11	School college and residential educational institutions	100	200	200	200
12	Hospital / Nursing home	200	400	200	250
13	Medical store	75	150	100	125
14	Shop	100	200	125	150
15	Workshop / scrap	750	1,500	250	300
16	Sugarcane juice and juice sellers	50	100	125	150

Source: (Nagar Palika Parishad, Pauri, 2024)

The responsibility for fee collection lies with a private agency, which deposits the collected amount with NPP, Pauri. However, the lack of enforcement of penalties under the **SWM Rules 2016**, particularly for non-segregation of waste, undermines the system's effectiveness. Strengthening enforcement mechanisms, raising awareness, and ensuring compliance with segregation and fee payment requirements are critical to improving waste management in Pauri Town.

Map 16: Location of Trenching Ground/Dumping Ground/Disposal Ground i.e. Under Construction SWM Plant in Pauri from NPP, Pauri



Source: (Google My Maps, 2024), Author

## c) Step-03: Waste Segregation

As shown in Table 13, at present Solid waste segregation in **Nagar Palika Parishad (NPP), Pauri**, remains a significant challenge, with minimal efforts at the source level and reliance on informal processes at the central level. In 2018, the NPP distributed green and blue dustbins to 1,000 households to promote source-level segregation of dry and wet waste. However, this initiative failed due to residents' resistance and lack of awareness, resulting in no source-level segregation across the town. Currently, segregation occurs informally at the **Lower Chopra Dumping Yard (Ward-10)**, where private agencies, local rag pickers, and NPP-appointed sweepers collaborate to separate plastic (dry waste) and wet waste.

Table 13: Overview of Solid Waste Segregation Practises in NPP, Pauri for SWM

SOLID WASTE SEGREGATION IN NAGAR PALIKA PARISHAD (NPP), Pauri		
SOLID WASTE SEGREGATION	As per the Discussion with the Officials of NPP, Pauri (2024)	INFERENCES
Segregation at Source Level	<ul style="list-style-type: none"> <li>Central level segregation and Zero source level segregation in NPP, Pauri.</li> <li>In 2018, two dustbins (Green and Blue) were distributed to 1,000 households by NPP, Pauri, to promote the segregation of dry and wet waste at the source level. However, the initiative was unsuccessful due to people's stubborn behavior and a lack of awareness.</li> </ul>	<ul style="list-style-type: none"> <li>NPP Pauri relies on centralized facilities for waste sorting this approach is less efficient and more resource-intensive. Reduces overall effectiveness of recycling and waste management</li> <li>Despite the distribution of two-dustbins in 1,000 HH by the NPP, Pauri for segregation of dry and wet waste at source level, initiative failed primarily due to behavioral resistance and insufficient public awareness</li> <li>At present <b>No segregation at source level</b> seen in the town by the people.</li> <li>This highlights the need for <b>more effective awareness campaigns and community engagement efforts</b> to foster <b>participation and understanding of the environmental benefits</b> of proper waste segregation.</li> </ul>
Segregation of Solid	<ul style="list-style-type: none"> <li>Nagar Palika Parishad, appointed private</li> </ul>	<ul style="list-style-type: none"> <li>The <b>workers</b> appointed by the private agency, NPP's Permanent sweepers</li> </ul>

<p><b>Waste after collection in the Dumping and Transfer Ground: Lower Chopra (ward-10) Dumping Yard</b></p>	<p><b>agency and Local Rag pickers work together to collect, segregate, transport and dispose the solid waste generated in NPP, Pauri.</b></p>	<p>and Local rag pickers <b>segregates the Plastic (dry waste) and wet waste</b> from the total solid waste collected in the Dumping Ground i.e. Lower Chopra (ward-10).</p> <ul style="list-style-type: none"> <li>• The main work of Private agency is to Clean road, cut shrubs, Door-to Door waste collection.</li> </ul>
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Source: (Nagar Palika Parishad, Pauri, 2024), Author

As per the discussions with the officials met (as mentioned in Annexure C) Approximately 60% of wet waste is directly dumped without treatment, while 40% of dry waste is segregated by local rag pickers. The current reliance on centralized segregation is less efficient, resource-intensive, and limits the potential for comprehensive recycling and waste management. This underscores the urgent need for targeted public awareness campaigns, behavioural change initiatives, and community engagement to ensure effective waste segregation at the source level and enhance the town's overall waste management system.

**d) Step-04: Waste Treatment**

The treatment of solid waste after segregation in NPP Pauri is limited and reflects significant gaps in infrastructure and processes. Segregation of waste occurs informally at the **Lower Chopra Dumping Yard (Ward-10)**, where workers from private agencies, local rag pickers, and NPP-appointed sweepers sort through collected waste. However, there is **no formal treatment facility** for solid waste in the town due to a lack of available land and inadequate investment in waste treatment infrastructure.

As per the discussions with the officials met (as mentioned in Annexure C), the wet waste (60%), including organic and biodegradable materials, is dumped untreated at the Lower Chopra Dumping Yard. This practice not only wastes the potential for converting organic waste into compost but also leads to environmental concerns, such as leachate contamination, foul odours, and an increase in greenhouse gas emissions due to anaerobic decomposition.

At present the existing compost pits are not in function and have been permanently closed-up for the construction purposes of the SWM Plant in Pauri. The NPP, Pauri has proposed relocation of the Compost Pits (location is not available) in the revised DPR for SWM in Pauri Town.

**e) Step-05: Waste Disposal**

As per the discussions with the officials met (as mentioned in Annexure C), the remaining mixed waste (non-Segregable waste) without any treatment is directly dumped on the dumping ground/trenching ground/disposal ground within 1km range of the NPP, Pauri at the Lower Chopra Dumping Yard (Ward-10).

As shown in Image 8, the dumping of untreated waste on the under construction SWM Plant has resulted in rising heaps of garbage on the mountain area and building up of untreated legacy waste. At present, approximately 7,636.07 Metric Tonnes of Legacy Waste has built-up on the **Lower Chopra (ward-10) Dumping Yard** and is adding-up to the daily solid waste disposed on the site.

Image 8: Legacy Waste Building-Up Lower Chopra Dumping Yard (Ward-10) i.e. the Present Dumping and Trenching Ground for all the Garbage Collected from NPP, Pauri



Source: Primary survey by (SPA, New Delhi, 2024)

### **7.1.3. Potential Health Hazards**

As per the discussions with the officials met (as mentioned in Annexure C), there have been no reported health hazards in the past due to the untreated solid waste in the Town and to further control the outbreak of vector borne diseases fogging is being done on a regular basis in the monsoon season by the Nagar Palika Parishad, Pauri.

The increasing population and untreated legacy waste along with the open littering of waste has the potential to develop environmental and public health hazard in the near future for the town. Thus, strong measures need to be implemented to control the situation by the ULB.

### **7.2. Present Government Policies for Solid Waste Management in Pauri**

Solid Waste Management Rule 2016 and Swachh Bharat Mission are the only policies implemented in NPP, Pauri for SWM in the Town.

### 7.3. Issues/Challenges

The Table 14 below highlights the issues/challenges identified along with the inferences for SWM in NPP, Pauri.

Table 14: Issues/Challenges Identified for SWM in NPP, Pauri

S.No.	Issues/Challenges	Inferences
01.	 <p><b>Illegal Dumping and Littering</b></p>	<ul style="list-style-type: none"> <li>Despite <b>imposition of fine (₹ 5000/-)</b> and the efforts to <b>provide waste collection services, illegal dumping and littering is common</b> in Pauri. Improper disposal of waste in public spaces and natural areas not only detracts from the town's aesthetic appeal but also poses environmental and health hazards.</li> </ul>
02.	 <p><b>No Source Level Segregation of Waste</b></p>	<ul style="list-style-type: none"> <li>Despite efforts by the <b>NPP to encourage waste segregation</b> through the <b>distribution of two dustbins to 1,000 households</b> for separating <b>dry and wet waste, this initiative failed</b>. The <b>failure of the initiative is due to public resistance, stubborn behavior, and a general lack of awareness</b> regarding the importance of waste segregation. Currently, <b>there is no segregation</b> at the source level within Pauri, highlighting a critical challenge for proper waste management.</li> </ul>
03.	 <p><b>Lack of Infrastructure Facilities</b></p>	<ul style="list-style-type: none"> <li>NPP, Pauri, <b>lacks a dedicated solid waste treatment plant</b> and faces difficulties in <b>finding land for such a facility</b>. As a result, all <b>solid waste is dumped into the valley</b> at Lower Chopra (Ward 10). This unmanaged dumping not only causes environmental harm but also contributes to air and water pollution.</li> </ul>
04.	 <p><b>Public Resistance to Paying User Charges</b></p>	<ul style="list-style-type: none"> <li>Although NPP, Pauri, has set <b>minimal user charges</b> for waste collection services (ranging from ₹10 to ₹25 per month for residential areas), there is significant <b>resistance from residents to pay these charges</b>. This <b>non-cooperation has led to widespread illegal dumping</b> of garbage in <b>streets, drains, and valleys</b>, further degrading</li> </ul>

			the town’s environment.
05.		<b>Stray Animal Interference</b>	<ul style="list-style-type: none"> <li>Stray animals, particularly dogs, monkeys and cattle, often dig through community dustbins bins and scatter garbage across streets. This can lead to health hazards and sanitation issues.</li> </ul>
		<b>Waste Contamination</b>	<ul style="list-style-type: none"> <li>Stray animals may consume or come into contact with harmful materials within the waste, leading to health risks for both humans and animals.</li> </ul>
08.		<b>Public Health Concerns</b>	<ul style="list-style-type: none"> <li>Littering attracts pests such as rodents and insects, which can spread diseases among people and pose health risks to residents, tourists, and wildlife.</li> </ul>
09.		<b>Environmental Impacts</b>	<ul style="list-style-type: none"> <li><b>Open burning of waste</b> in NPP, Pauri, is a <b>common practice, releasing harmful pollutants into the air, soil, and water.</b> This includes <b>toxic chemicals and particulate matter</b>, which pose serious <b>health risks</b>, especially <b>respiratory diseases.</b> The <b>smoke and emissions from burning waste also contribute to environmental degradation and harm wildlife.</b></li> </ul>
10.		<b>Geographical Constraints</b>	<ul style="list-style-type: none"> <li>The hilly terrain of Pauri poses logistical challenges for waste collection and transportation. Difficult terrain, and remote locations make it challenging and costly to implement efficient waste collection and disposal services.</li> </ul>
11.		<b>Limited Recycling Facilities</b>	<ul style="list-style-type: none"> <li>The lack of recycling facilities and composting sites has led to dispose of recyclable materials and organic waste in the landfills sites. Thus, reducing the overall efficiency of waste management efforts.</li> </ul>
12.		<b>Policy and Governance Issues</b>	<ul style="list-style-type: none"> <li>Weak enforcement of waste management regulations, limited funding and resources may hinder effective solid waste management in Pauri.</li> </ul>

#### 7.4. Possible Solutions/Suggested Projects for SWM in NPP, Pauri

A Stakeholder Consultation Meeting was held on 14<sup>th</sup> October 2024 in NPP, Pauri. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Pauri Town in Table 15 below.

Table 15: Possible Solutions/Suggested Projects for SWM in NPP, Pauri

S.No.	Possible Solutions/Suggested Projects
01.	<p><b>Illegal Dumping and Littering</b></p> <p><b>It is proposed that:</b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. The NPP Pauri must identify <b>illegal dumping and littering spots</b> and enhance monitoring through <b>cameras and speakers</b> at these locations. Additionally, implementing strong enforcement measures is essential to effectively address illegal littering by both tourists and residents.</li> <li>ii. The NPP, Pauri should <b>collaborate with the local institutes and NGOs</b> to build a group of volunteers to monitor the illegal dumping and open littering and prevent the same.</li> <li>iii. <b>Strict penalties and fines</b> should be implemented by the NPP, Pauri on the open littering of waste.</li> <li>iv. <b>Launch educational campaigns in schools, communities</b>, and social media to raise awareness about the harmful effects of illegal dumping and littering. Use local influencers or community leaders to drive behavior change.</li> </ol>
02.	<p><b>No Source Level Segregation of Waste</b></p> <p><b>It is proposed that:</b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Targeted Education and Incentives:</b> Launch focused educational programs to explain the importance of waste segregation and provide incentives, such as discounts on property taxes or utility bills, for households that comply with segregation rules.</li> <li>ii. <b>Door-to-Door Campaigns:</b> Implement door-to-door awareness programs with trained volunteers to engage with residents directly and address their concerns or misconceptions about waste segregation.</li> <li>iii. <b>Strict Enforcement and Fines:</b> Gradually introduce penalties for non-compliance with waste segregation rules after a grace period. Ensure proper communication and transparency regarding how and when fines will be imposed.</li> </ol>
03.	<p><b>Lack of Infrastructure facilities</b></p> <p><b>It is proposed that:</b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Develop Solid Waste Treatment Facility:</b> Allocate funds and identify appropriate land for a solid waste treatment plant. Collaborate with local landowners or look for</li> </ol>

	<p>public-private partnerships to secure land.</p> <ul style="list-style-type: none"> <li>ii. <b>Waste-to-Energy Solutions:</b> Explore waste-to-energy initiatives or composting facilities to manage organic waste sustainably. Collaborate with experts or private agencies specializing in this technology.</li> <li>iii. <b>Interim Waste Management Solutions:</b> In the absence of a waste treatment facility, designate temporary waste processing areas, where waste can be sorted and treated to reduce environmental harm.</li> <li>iv. Establish dedicated recycling and composting facilities to process segregated waste, reducing the burden on landfills and promoting sustainable waste management.</li> <li>v. <b>Install fully automatic Organic Waste Converter (OWC) Machines especially the in-vessel and compact model for mechanical composting</b> as shown in the image below, to promote “Waste to Compost” facilities for SWM.</li> </ul> <p>Image 9 Image of different models of fully Automatic OWC Machine within-vessel</p>  <ul style="list-style-type: none"> <li>vi. <b>As per the SWM Rules 2016</b> cities and towns located on hills shall have location-specific methods evolved for final disposal of solid waste by the local body with the approval of the concerned State Pollution Control Board or the Pollution Control Committee. The local body shall set up processing facilities for utilization of biodegradable organic waste. The non-biodegradable recyclable materials shall be stored and sent for recycling periodically. The inert and non-biodegradable waste shall be used for building roads or filling-up of appropriate areas on hills. In case of constrains in finding adequate land in hilly areas, waste not suitable for road-laying or filling up shall be disposed of in regional landfills in plain areas.</li> </ul>
<p>04.</p>	<p><b>Public Resistance to Paying User Charges</b></p>
	<p><b>It is proposed that:</b></p> <ul style="list-style-type: none"> <li>a) <b>The NPP, Pauri should undertake the following:</b> <ul style="list-style-type: none"> <li>i. <b>Transparent Communication:</b> Educate residents on how the collected user charges will be used for waste management services. Make the process transparent by sharing reports on the improvements made using these funds.</li> <li>ii. <b>Subsidies and Penalties:</b> Provide subsidies or discounts to low-income households to encourage compliance, while penalizing those who refuse to pay with fines or reduced services.</li> </ul> </li> </ul>
<p>05.</p>	<p><b>Stray Animal Interference</b></p>

	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Animal Control Programs:</b> Collaborate with animal welfare organizations to address the growing stray animal population. Implement sterilization and vaccination drives to control stray animal numbers</li> <li>ii. <b>.Secure Dustbins:</b> Provide animal-proof community dustbins with secure lids to prevent animals from scattering waste. Ensure these bins are easily accessible and regularly maintained.</li> <li>iii. <b>Community Engagement:</b> Encourage residents to adopt responsible waste disposal habits, such as securing household waste until it is collected, to avoid attracting stray animals.</li> </ol>
07.	<b>Waste Contamination</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. Implementing secure waste disposal methods and establishing animal-proof waste containers can serve as a potential solution to mitigate waste contamination caused by stray animals.</li> </ol>
08.	<b>Public Health Concerns</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Regular Pest Control:</b> Implement regular pest control measures in areas prone to littering and illegal dumping to mitigate health risks from pests like rodents and insects.</li> </ol>
09.	<b>Environmental Impacts</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Strict Ban on Waste Burning:</b> Enforce a strict ban on open waste burning with significant penalties for violators. Educate the public on the harmful effects of burning waste.</li> <li>ii. <b>Promote Alternative Disposal Methods:</b> Encourage residents to compost organic waste or use waste-to-energy facilities for non-recyclable waste instead of resorting to burning.</li> <li>iii. <b>Monitoring and Reporting:</b> Empower citizens to report incidents of waste burning to authorities and incentivize compliance with waste disposal regulations.</li> <li>iv. Promoting sustainable waste management practices along with environmental awareness campaigns/workshops can serve as a potential solution to mitigate environmental impacts.</li> </ol>
10.	<b>Geographical Constraints</b>

	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. Due to the logistical challenges in waste collection, other initiatives such as recycling, composting of organic waste at household level, needs to be emphasized to reduce the amount of waste generated.</li> <li>ii. Use adaptable waste collation methods, such as manual collection in inaccessible area and smaller vehicles for narrow roads</li> <li>iii. Engage local communities in waste collection and management activities, particularly in remote areas, to ensure coverage.</li> </ol>
11.	<p><b>Limited Recycling Facilities</b></p> <p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. Recycling at household level/community level should be encouraged through campaigns/workshops to reduce the amount of collected waste.</li> <li>ii. Potential sites for Compost Pits should be proposed by the NPP, Pauri. These compost pits should be built, operate and maintained by the NPP, Pauri to produce fertilizers for generation of monetary gains.</li> </ol>
12.	<p><b>Policy and Governance Issues</b></p> <p><b><u>It is proposed that:</u></b></p> <p>a) <b>The state Government of Uttarakhand should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Impose strict policy norms</b> for the use of plastic in the State. To reduce the plastic waste produced the State Government should completely ban the sales of plastic bottles of less than 1 liter in volume.</li> <li>ii. <b>Strengthen Regulatory Framework</b> by enhancing coordination among relevant stakeholders and allocating adequate resources essential for addressing the SWM challenges faced by the ULBs in the hilly State of Uttarakhand.</li> <li>iii. <b>Conduct surprise visits and inspections</b> to evaluate the on-ground progress of the ULBs on a regular basis.</li> </ol> <p>b) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Strengthen Awareness Programmes by Building and implementing respective Programmes/campaigns/workshops</b> required for effective SWM in Pauri Town. Respectively, teams should be formed under the suggested Programmes/campaigns/workshops and a Nodal Officer should be appointed to each team by the NPP, Pauri.</li> <li>ii. <b>NPP, should suitably increase the Vehicles and other infrastructure.</b></li> </ol> <p><u>The Nodal Officer appointed should:</u></p> <p>✓ <b>Strictly Monitor</b> the Implementation of the work assigned to their respective teams.</p>

	<ul style="list-style-type: none"><li>✓ <b>Maintain an Annual Progress Report</b>, comprising the details of the on-ground progress of the respective teams and submit them to the State Government of Uttarakhand.</li><li>iii. <b>Encourage volunteering participation</b> among the residents by awarding a “Participation Certificate” sanctioned by the State Government of Uttarakhand to all the individuals of the respective teams.</li><li>iv. <b>Encourage School students to participate in Awareness Programmes/workshops/campaigns by organizing special-activities in schools</b> every day for an hour. To promote this initiative and spread awareness among other student’s T-shirts should be printed and distributed to school students for the same.</li><li>v. <b>By implementing the above the collection efficiency can be improved.</b></li></ul>
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# **Chapter 8.**

## **Pauri Town:**

### **Urban Transport and Parking**

## Chapter 8. Pauri Town: Urban Transport and Parking

### 8.1. System Infrastructure

As shown in Table 16 below, Pauri Town accommodates 2 National Highway and 1 State Highway i.e. NH-309 and NH-309A and SH-534. Apart from this, it is also connected with other major road networks on district level from the North West and South East direction. These are the major road network present in the Town that provides inter-state and intra-state connectivity.

Table 16: Details of Major Road Network of Pauri Town

S.No.	Road Network	Connects Pauri Town with
01.	<b>NH-309</b> <b>(connecting from South, West, and North)</b> Pauri – Haridwar Road from South Pauri – Karnprayag Road from North Pauri – Srinagar road from West	<ul style="list-style-type: none"> <li>• <b>South:</b> Connects Pauri to Haridwar, facilitating access to this major pilgrimage city</li> <li>• <b>North:</b> Leads towards Karnprayag, Providing access to higher regions in Uttarakhand, including destinations like Badrinath and Kedarnath.</li> <li>• <b>West:</b> Connects to Srinagar, another significant town in Uttarakhand</li> </ul>
02.	<b>NH-534</b> <b>(connecting from South, and North)</b> Kotdwar - Pauri Road	<ul style="list-style-type: none"> <li>• <b>South:</b> Links Pauri with Kotdwar, which is a key railway hub and gateway to various other destinations like New Delhi, Dehradun Lucknow, and more.</li> <li>• <b>North:</b> Leads towards Karnprayag, Providing access to higher regions in Uttarakhand, including destinations like Badrinath and Kedarnath.</li> </ul>
03.	<b>SH- 79</b> <b>Devprayag – Pauri Road</b> <b>(connecting from East and West)</b>	<ul style="list-style-type: none"> <li>• <b>East:</b> Facilitates travel from Pauri to Devprayag.</li> <li>• <b>West:</b> Connect back into the interior roads leading towards other parts of the Uttarakhand.</li> </ul>

Source: (Nagar Palika Parishad, Pauri, 2024) (RTO, Pauri, 2024), Primary survey by (SPA, New Delhi, 2024), (Google Maps, 2024)

As shown in Map 17: Existing Road Network Map of NPP, Pauri, National Highway 309 (NH-309) links Kashipur in the south to Bubakhal in the north, passing through prominent regions in Uttarakhand. Situated just 4.5 kilometres from Pauri, NH-309 is a critical conduit for regional connectivity. Southwards, it connects Pauri with Haridwar, a major pilgrimage destination, ensuring the smooth movement of pilgrims, tourists, and essential goods. To the north, it leads to Karnprayag and higher Himalayan destinations such as Badrinath and Kedarnath, essential for religious tourism. Westward, it connects Pauri to Srinagar, a key educational and cultural centre, further enhancing its regional significance.

National Highway 534 (NH-534) spans approximately 151 kilometers from Najibabad in Uttar Pradesh to Bubakhal in Uttarakhand, located around 6.5 kilometers from Pauri. It serves as a critical link for inter-state and intra-state travel. To the south, NH-534 connects Pauri with Kotdwar, a vital railway

junction that serves as a gateway to cities such as New Delhi, Dehradun, and Lucknow. To the north, it extends toward Karnprayag, facilitating access to the Himalayan regions. This highway supports residents, businesses, and tourists by ensuring efficient transportation and seamless connectivity, playing a pivotal role in regional development and economic integration.

Map 17: Existing Road Network Map of NPP, Pauri



Source: (Google Maps, 2024)

State Highway 79 (SH-79), the Devprayag–Pauri Road, connects Pauri with Devprayag to the east and the interior regions of Uttarakhand to the west. Devprayag, one of the Panch Prayag where the Alaknanda and Bhagirathi rivers merge to form the holy Ganges, holds immense religious significance, attracting numerous pilgrims. The highway also supports local tourism by providing access to cultural, historical, and natural attractions. By improving connectivity for pilgrims, tourists, and local residents, SH-79 enhances both the region’s religious and economic importance.

Together, these highways form a robust transportation network, fostering trade, tourism, and cultural exchanges while supporting Pauri’s strategic development and integration with broader Uttarakhand.

Table 17 Road network under Nagar Palika Parishad and PWD in Pauri town

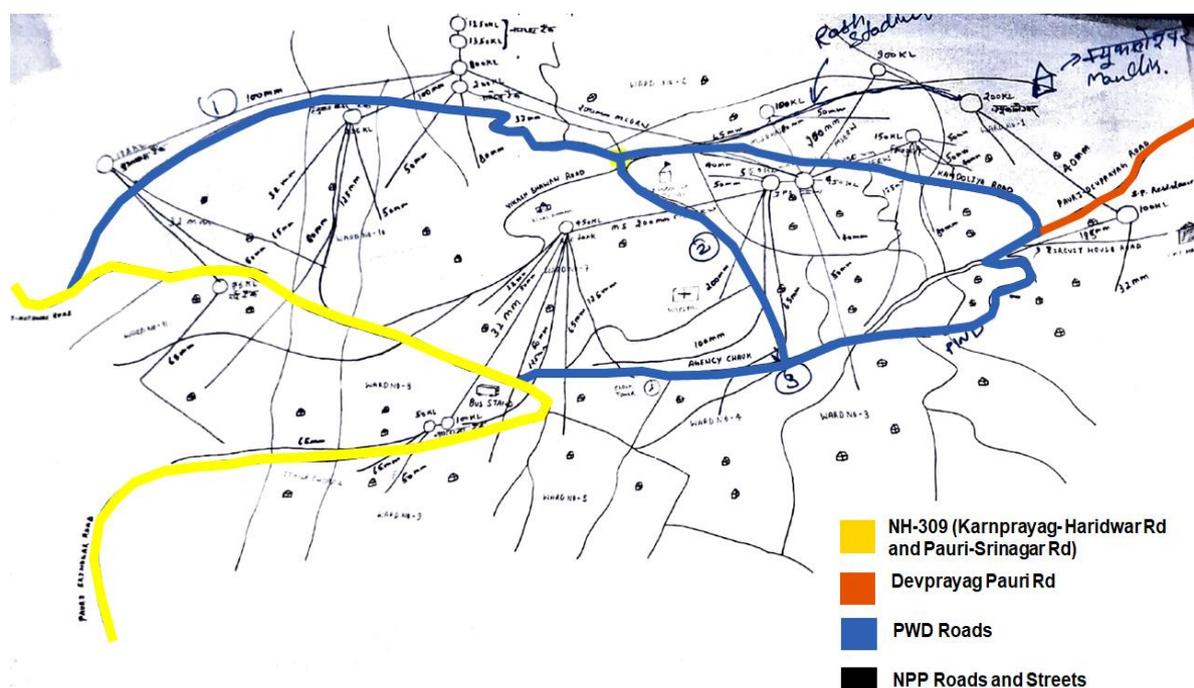
Roads under Nagar Palika Parishad, Pauri Department			
S.No.	Length of Roads (km.)		
	Motor ways	Paved Walkways	Total Route Length
01.	5.50 km.	74.85 km.	80.35 km
Roads under Public Works Department (PWD), Pauri			
S.No.	Name of the Road	Length of Roads (km.)	Length of Roads (km.)

01.	Pauri Devprayag Gajajal Marg	8.3 km.	<b>13.3 km</b>
02.	Pauri – Kandoliya Marg	1.5 km.	
03.	Pauri – Kholachauri Marg	3.50	

Source: (Nagar Palika Parishad, Pauri, 2024) (PWD, Pauri, 2024)

As shown in Table 17 Road network under Nagar Palika Parishad and PWD in Pauri town, the road network in Pauri town is managed by two key departments NPP, pauri and the PWD, Pauri. Under the jurisdiction of the Nagar Palika Parishad, the town encompasses a total route length of 80.35 kilometers, including 5.50 kilometers of motorways and 74.85 kilometers of paved walkways, ensuring accessibility within the urban limits. The Public Works Department manages significant arterial routes that connect Pauri to neighbouring regions. Key roads under PWD include the Pauri-Devprayag-Gajajal Marg, which spans a total of 13.3 kilometres, and plays a crucial role in linking Pauri with Devprayag, a major pilgrimage site. The Pauri-Kandoliya Marg extends for 1.5 kilometres, providing access to the Kandoliya region, while the Pauri-Kholachauri Marg, covering 3.5 kilometres, serves as an essential connector within the local road infrastructure. Map 18 Existing Major Road Network of Pauri Town shows the Internal Road Hierarchy of Pauri Town.

Map 18 Existing Major Road Network of Pauri Town



Source: (Nagar Palika Parishad, Pauri, 2024), (PWD, Pauri, 2024), (Pey Jal Nigam Uttarakhand, Pauri, 2024)

### 8.1.1. Present connectivity

To travel from the major cities of India to Pauri Town, road network is the most convenient and easy to access medium. Bus, shared taxis, local cabs, personal vehicles, railways and airways are the possible modes of transportation to reach Almora Town.

As shown in Table 18, the Town has one major bus station known as Pauri Bus Adda. It is located at the Upper Bazar near the NH-309, Pauri as well as State Highway 79 (SH-79), providing direct road links to significant urban centers in the region. Regular bus services operate from ISBT Kashmiri Gate

in Delhi to Pauri and Kotdwar, making travel convenient, although Volvo buses do not directly enter Pauri. For rail travel, the closest railway station is Kotdwar, located approximately 101 kilometres away from Pauri, and well-connected to major cities in India. Regular bus and taxi services are available to transport passengers between Kotdwar and Pauri. In terms of air travel, the nearest airport is Jolly Grant Airport in Dehradun, around 133 kilometres from Pauri. This airport is well-served by regular flights connecting to major cities like Delhi. Travellers can easily access Pauri from the airport via a taxi ride, passing through Rishikesh or Devprayag, which takes about 3.5 hours.

Table 18: Overview of Present Connectivity of NPP, Pauri

Road Network	Railways	Airways
<ul style="list-style-type: none"> <li>• Pauri is connected to significant destinations in Uttarakhand through NH 309, NH 534 and a state highways. (SH-79)</li> <li>• Regular bus services operate from ISBT Kashmiri gate in Delhi to Pauri and Kotdwar, as well as local transport options like taxis. No Volvo buses enter Pauri</li> </ul>	<ul style="list-style-type: none"> <li>• The closest railway station is <b>Kotdwar</b>, located about 101 km from Pauri. Kotdwar is well-connected by rail to several major cities in India, making it a convenient entry point for travellers. Regular taxi and bus services operate between Kotdwar and Pauri.</li> </ul>	<ul style="list-style-type: none"> <li>• The nearest Airport is Jolly Grant Airport (Dehradun), situated approx. 133 km from Pauri. This airport has regular flights connecting it to major cities, including Delhi. From the airport, taxis are readily available to reach Pauri via Rishikesh or Devprayag.</li> </ul>

<p>Image 10: Bus Stand in NPP, Pauri</p>   <p>Source: Primary survey by (SPA, New Delhi, 2024)</p>	<p>Image 11: Nearest Railway Station: Kotdwar, Kotdwar, 101 km away from NPP, Pauri (3 hour 11 minutes away)</p>  <p>Source: Primary survey by (SPA, New Delhi, 2024)</p>	<p>Image 12: Nearest Airport: Jolly Grant Airport Approx. 133 km away from NPP, Pauri (3 hours 43 min. away) via NH – 7 and Devprayag Pauri Rd (SH – 79)</p>  <p>Source: (Google Images, 2024)</p>
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Source: (Nagar Palika parishad, Pauri, 2024), (Primary Survey, 2024)

### 8.1.2. Present Parking Situation in NPP, Pauri

As shown in Table 19: Parking Situation of NPP Pauri, the **parking infrastructure within NPP, Pauri**, currently comprises six operational parking areas, with a total capacity of **235 vehicles**, distributed across strategic locations. The parking infrastructure within NPP, Pauri, currently comprises six operational parking areas, with a total capacity of 235 vehicles, distributed across strategic locations. The largest facility, the Bus Stand Car Parking, accommodates 100 vehicles, while the Bus Adda Taxi Stand provides space for 35 taxis. Smaller parking areas near the Hospital (Chandala Private Parking), Madhuban Hotel, Ramlila Ground, and Chharidhar offer capacities ranging from 10 to 50 vehicles. A notable issue is the high monthly charges for private parking near the hospital, ranging from ₹1,000 to ₹1,500, which may deter users.

Table 19: Parking Situation of NPP Pauri

PARKING IN MUNICIPAL LIMITS			
S.No.	Parking Name	Location	Vehicle Capacity
1	New Bus Adda	Bus Stand car Parking	100
2	New Bus Adda	Bus Adda Taxi Stand	35
3	Near Hospital	Chandala Private Parking	10 charging ₹1000-₹1500/- Per month
4	Near Madhuban Hotel	Madhuban Parking	25
5	Near Ramlila Ground	Car parking	15
6	Chharidhar	Car parking	50

	<b>Total Parking</b>		235
<b>PROPOSED PARKING IN MUNICIPAL LIMITS</b>			
<b>S.No.</b>	<b>Parking Name</b>	<b>Location</b>	<b>Vehicle Capacity</b>
1	<b>Multi-level Parking</b>	<b>Near Tourism office</b>	<b>60</b>
	<b>Total Parking</b>		60

Source: (Traffic Police, Pauri, 2024), (Nagar Palika parishad, Pauri, 2024), (Stakeholder Consultation Meeting, 2024)

Image 13: Existing Present Parking Scenario





Road side parking at Lower Market



Road side Parking near IDBI Bank



Road side Parking near UJS Office



Road Side Parking Near Tourism Office



**Road Side Parking on Kotdwar and Shirinagar Rd**



**Road side Parking near SSP Office**

Source: (Google Images, 2024), (Primary Survey, 2024)

Despite these facilities, the existing infrastructure is inadequate for the growing vehicular demand, particularly as Pauri serves as the district headquarters of Pauri Garhwal. The lack of adequate parking leads to a high prevalence of street parking, contributing to traffic congestion and jams, especially in busy areas. Additionally, the absence of house-level designated parking forces residents to rely on street parking.

To address these challenges, a proposed multi-level parking facility near the Tourism Office with a capacity for 60 vehicles is planned, which would slightly alleviate the burden but not sufficient. However, given the increasing vehicle influx, especially during peak hours, expanding and upgrading parking facilities remains a critical requirement for improving traffic management and urban mobility in Pauri.

Image 14 : Some images of Bus Adda taxi stand



Source: (Google Images, 2024), (Primary Survey, 2024)

a) **Congestion Points:**

As shown in Map 19: Location Map of highly Congested Points in NPP, Pauri the transportation infrastructure within Pauri town faces multiple challenges due to insufficient public transport and growing vehicular demand. Currently, only two buses operate for local transportation, forcing residents and visitors to rely heavily on maxi cabs, taxis, and personal vehicles for commuting. This overdependence on private vehicles contributes to traffic congestion and exacerbates parking challenges.

As the district headquarters and a central hub for surrounding villages, Pauri attracts significant daily inflows of people seeking educational, employment, and market opportunities. This influx puts additional strain on the town's limited transportation and parking facilities, leading to inefficient traffic management.

Furthermore, abandoned old and sick cattle roaming on the streets worsen the situation. These unclaimed animals often obstruct roads and cause traffic disruptions, particularly in crowded areas. This issue not only increases road congestion but also poses safety risks for pedestrians and motorists. Overall, Pauri's transportation system requires urgent intervention, including improvements in public transport, parking infrastructure, and cattle management, to address the growing pressures on its road network.

Map 19: Location Map of highly Congested Points in NPP, Pauri



Source: (Nagar Palika parishad, Pauri, 2024), (Tourism Department, Pauri, 2024), (Police Department, Pauri, 2024), (Pey Jal Nigam Uttarakhand, Pauri, 2024) (Google Maps, 2024), Primary Survey by (SPA, New Delhi, 2024)

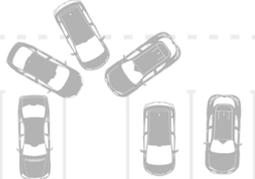
## 8.2. Present Government Policies for Urban Transportation and Parking in Pauri Town

At present for urban transport and parking there is no State Level or any other specific policy being implemented in NPP Pauri.

## 8.2. Issues/Challenges

The Table 20 below highlights the issues/challenges identified along with the inferences for urban transport and parking in NPP, Pauri.

Table 20: Issues/Challenges Identified for Urban Transport and Parking in NPP, Pauri

S.No.	Issues/Challenges	Inferences
01.		<p><b>Lack of Public Transport Options</b></p> <ul style="list-style-type: none"> <li>The town lacks a reliable and efficient public transportation system that <b>hampers mobility for residents and visitors alike</b>. With only <b>two buses operating for local transport</b>.</li> <li>The limited public transit infrastructure <b>fails to meet the need of a growing population</b>, particularly as Pauri serves as a <b>district headquarters</b> and a <b>hub for surrounding villages</b>.</li> <li>This inadequacy forces individuals to rely heavily on private vehicles, maxi cabs, and taxis for commuting, which not only increases traffic congestion but also exacerbates parking challenges throughout the town.</li> </ul>
02.		<p><b>Parking Shortage and On street Parking</b></p> <ul style="list-style-type: none"> <li>Town with only <b>six operational parking areas available with the capacity of 235</b>, the <b>existing infrastructure is inadequate to accommodate the daily influx of vehicles</b>, particularly given Pauri's role as a <b>district headquarters attracting visitors for various purposes</b>.</li> <li>This shortage leads to a high prevalence of street parking, where residents often leave their vehicles on the roads due to the lack of designated parking spaces in their residence, resulting in severe congestion and traffic jams.</li> </ul>
03		<p><b>Limited Road Infrastructure</b></p> <ul style="list-style-type: none"> <li>Pauri has <b>narrow and winding roads</b> due to its hilly terrain. This makes traffic congestion a</li> </ul>

			<p>common issue. The limited <b>road capacity exacerbates the problem, leading to traffic jams and delays.</b></p>
		<p><b>Infrastructure Maintenance</b></p>	<ul style="list-style-type: none"> <li>Maintaining the <b>existing road infrastructure</b> in hilly terrain like Pauri can be <b>challenging and costly</b>. Landslides, road erosion, and other natural factors frequently disrupt transportation routes, leading to temporary closures and detours, further complicating travel plans for locals and tourists alike.</li> </ul>
04.		<p><b>Abandoned Cattle</b></p>	<ul style="list-style-type: none"> <li>Issue of abandoned cattle in Pauri town is a growing concern that significantly <b>impacts public safety and traffic management</b>. Many residents, facing <b>economic hardships or the inability to care for aging or sick animals</b>, often <b>leave their cattle on the streets</b>, leading to <b>more unclaimed animals roaming</b> freely in vehicular busy areas.</li> <li>This situation creates <b>hazardous conditions for motorists and pedestrians as well as cattle also</b>, as these animals frequently <b>obstruct roadways</b>, contributing to frequent <b>traffic jams and disruptions in the flow of vehicles</b>.</li> </ul>
05.		<p><b>Environmental Concerns</b></p>	<ul style="list-style-type: none"> <li>The increasing number of vehicles in Pauri and the traffic congestion along the market areas are contributing to air and noise pollution.</li> <li>This will have detrimental effects on the local environment and public health.</li> </ul>

### 8.3. Possible Solutions/Suggested Projects for Urban Transport and Parking in NPP, Pauri

A Stakeholder Consultation Meeting was held on 14<sup>th</sup> October 2024 in NPP, Pauri. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Pauri Town in Table 21 below.

Table 21: Possible Solutions/Suggested Projects for Urban Transport and Parking in NPP, Pauri

S.No.	Possible Solutions/Suggested Projects
01.	<b>Lack of Public Transport Options</b>
	<p><b>It is proposed that:</b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Enhance Public Transport Services:</b> Increase the number of buses operating within Pauri and establish a reliable timetable to meet the demands of the growing population. Consider introducing min-buses or shuttle services to cover underserved areas.</li> <li>i. <b>Community – Based Transportations:</b> Explore partnerships with local taxi services or ride—sharing apps to provide more flexible transport options, especially for residents in rural areas surrounding Pauri.</li> <li>ii. <b>Incentives for Public Transport Use:</b> Implement awareness campaigns highlighting the benefits of using public transport, such as reduced traffic congestion and environmental benefits, to encourage residents to utilize available services.</li> </ul>
02.	<b>Insufficient Parking Facilities and On- street Parking Problems</b>
	<p><b>It is proposed that:</b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Develop Additional Parking Facilities:</b> Invest in the construction of multi-level parking garages or designated parking lots to accommodate the growing number of vehicles. Prioritize locations close to busy commercial and residential area.</li> <li>ii. <b>The Chief Engineer PWD residence opposite to the Hotel Town View Café has adequate flat land where MLCP can be built.</b></li> <li>iii. Make it mandatory for every house (new construction) to include a designated parking space as a requirement for its layout plan approval.</li> <li>iv. Conduct thorough inspections throughout the construction process</li> <li>v. Implement a rule allowing each household to own only one personal four-wheeler, with a designated parking space within their property. If a second vehicle is purchased, a registration fee of 15% of the vehicle's cost should be applied. This policy would encourage the use of public transportation, alleviate environmental strain, and help address parking issues</li> <li>vi. <b>Promote Carpooling:</b> Encourage carpooling initiatives to reduce the overall number of vehicles on the roads, thereby alleviating parking pressure.</li> </ul> <p>b) <b>The NPP, Pauri in collaboration with the Police Department and Traffic Police Department should undertake the following:</b></p>

	<p>i. <b>Install single stack automated car parking wherever required in parking areas which are flat.</b> It will help to increase the existing parking capacity and will add up as a quick solution to the existing on-street parking issue by encouraging residents to park in dedicated parking spaces.</p> <p>Image 15: Image of an example of Single Stack Automated Car Parking</p>  <p style="text-align: right;"><i>Source: (Google Images, 2024)</i></p> <p>ii. <b>Enforce parking restrictions in critical areas</b> like major Market areas.</p> <p>iii. <b>Identify and develop</b> suitable locations for constructing light structure models for additional parking infrastructure on the outskirts of the Town for peak tourist season with appropriate drinking water and toilet amenities.</p> <p>iv. <b>Implement Digital Parking/Smart Parking System</b> to provide real-time information on parking availability.</p> <p>v. All the hotel booking websites should be connected to a <b>digital/portal/electronic system</b> wherein along with the hotel room booking, the parking slots can also be booked and paid for this will enable better parking management.</p> <p>c) <b>The NPP, Pauri under PPP Module</b> should collaborate with private entities for funding and managing parking facilities.</p>
<p><b>03.</b></p>	<p><b>Limited Road Infrastructure and Infrastructure Maintenance</b></p>
	<p><b>It is proposed that:</b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <p>i. <b>Re-design</b> the complete road geometry of Pauri Town and <b>install appropriate number of</b> proper signage, traffic signals, street lights, guard rails, side protection barrier, road reflectors, road markings, turning radius, etc. For easy and safer flow of traffic and pedestrian movement.</p> <p>ii. <b>Develop and maintain</b> non-motorized transport pathways to encourage pedestrian movement.</p>

	<p>iii. <b>Prepare a Risk Assessment and Planning Report based on:</b></p> <ul style="list-style-type: none"> <li>✓ <b>Geological Survey:</b> to identify landslide-prone areas and assess soil stability and construct retaining walls, rock bolts and gabions to stabilize slopes.</li> <li>✓ <b>Seismic Hazard Mapping:</b> to evaluate seismic risks and identify vulnerable road sections and retrofit existing road structures to withstand earthquakes.</li> <li>✓ <b>Fire Risk Analysis:</b> to identify areas susceptible to forest fires, focusing on sensitive road segments and creates firebreaks along roads near forest areas.</li> </ul> <p>iv. <b>Install Integrate Seismic Sensor</b> to detect soil movement and signs of potential landslides and provide early warning signs of earthquakes.</p> <p>v. <b>Install infrared cameras and satellite monitoring</b> for early detection of forest fires.</p> <p>vi. <b>Implement advanced traffic management systems</b> (Real time Signal Adjustment, Traffic Monitoring cameras) that monitor and manage traffic flow, especially during peak tourist seasons.</p>
<p><b>04</b></p>	<p><b>Abandoned Cattle</b></p>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Pauri collaborate with animal welfare organization (AWO) and should undertake the following</b></p> <ul style="list-style-type: none"> <li>i. <b>NPP Pauri with AWO needs to establish temporary or permanent cattle shelters</b> where abandoned or sick cattle can be housed and cared for.</li> <li>ii. <b>Animal welfare Organization</b> Partner with the Nagar Palika to establish and run these shelters, providing proper medical care, food, and rehabilitation services for abandoned cattle. Raise awareness about the shelters among local residents so that they are informed about alternatives to abandoning their animals. These shelters can also serve as a place for animals that need medical attention or rehabilitation.</li> <li>iii. <b>Implement a cattle registration and identification system</b>, requiring owners to register their cattle with the municipal office. This can help trace the ownership of abandoned cattle and ensure accountability.</li> </ul> <p>b) <b>The NPP, Pauri collaborate with Local Police should undertake the following</b></p> <ul style="list-style-type: none"> <li>i. <b>Increase awareness of animal abandonment laws and penalties.</b> Set up a helpline or reporting system for the public to report abandoned animals.</li> <li>ii. <b>Local Police Assist in identifying and tracking the owners</b> of cattle that are abandoned, enabling the authorities to take action against irresponsible owners and encourage them to be more responsible with their animals.</li> </ul> <p>c) <b>The Local Police should undertake the following</b></p> <ul style="list-style-type: none"> <li>i. <b>Enforce stricter penalties for residents</b> who abandon cattle on streets, creating a deterrent to the practice. Conduct regular patrolling and monitoring of areas where abandoned cattle are frequently seen to ensure adherence to local laws and regulations regarding animal care and</li> </ul>

	abandonment.
<b>05.</b>	<b>Environmental Concerns</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Pauri should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Promote the use of eco-friendly transportation options</b> such as bicycles or suitable public transport options.</li> <li>ii. <b>Offer Subsidies or Tax Incentives</b> for the purchase and use of hybrid vehicles to the local residents.</li> <li>iii. <b>Develop policies and incentives for eco-friendly transportation options adoption</b>, including reduced parking fees and tax benefits.</li> <li>iv. <b>Set up emission testing centers</b> and create a compliance monitoring system.</li> <li>v. <b>Develop and enforce</b> policies for noise control, including fines for non-compliance.</li> <li>vi. <b>Provide incentives</b> for residents and tourists who participate in pollution reduction activities, such as using public transport.</li> </ol> <p>b) <b>NPP, Pauri in collaboration with local NGOs, SHGs, Government Institutes and other willing volunteers to undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. Conducting Campaigns to educate local residents about the benefits of switching to electric and low-emission vehicles and the impacts of air and noise pollution and to promote eco-friendly practices.</li> <li>ii. Engaging the community through programs that encourage carpooling, walking, and cycling.</li> </ol> <p><b>The following detailed surveys/ studies need to be initiated:</b></p> <ul style="list-style-type: none"> <li>✓ Volume count survey (inner and outer cordon)</li> <li>✓ Desire line mapping</li> <li>✓ Speed and delay survey</li> <li>✓ Road inventory survey</li> <li>✓ Origin Destination survey and preparation of OD matrix</li> <li>✓ Household survey</li> <li>✓ Goods survey</li> <li>✓ Land availability/ land suitability survey for parking Lots and MLCP.</li> </ul> <p><b>Based on the above, detailed recommendations could be worked out.</b></p>

# **Chapter 9**

## **Pauri Town:**

### **Water Availability and Supply**

## Chapter 9. Pauri Town: Water Availability and Supply

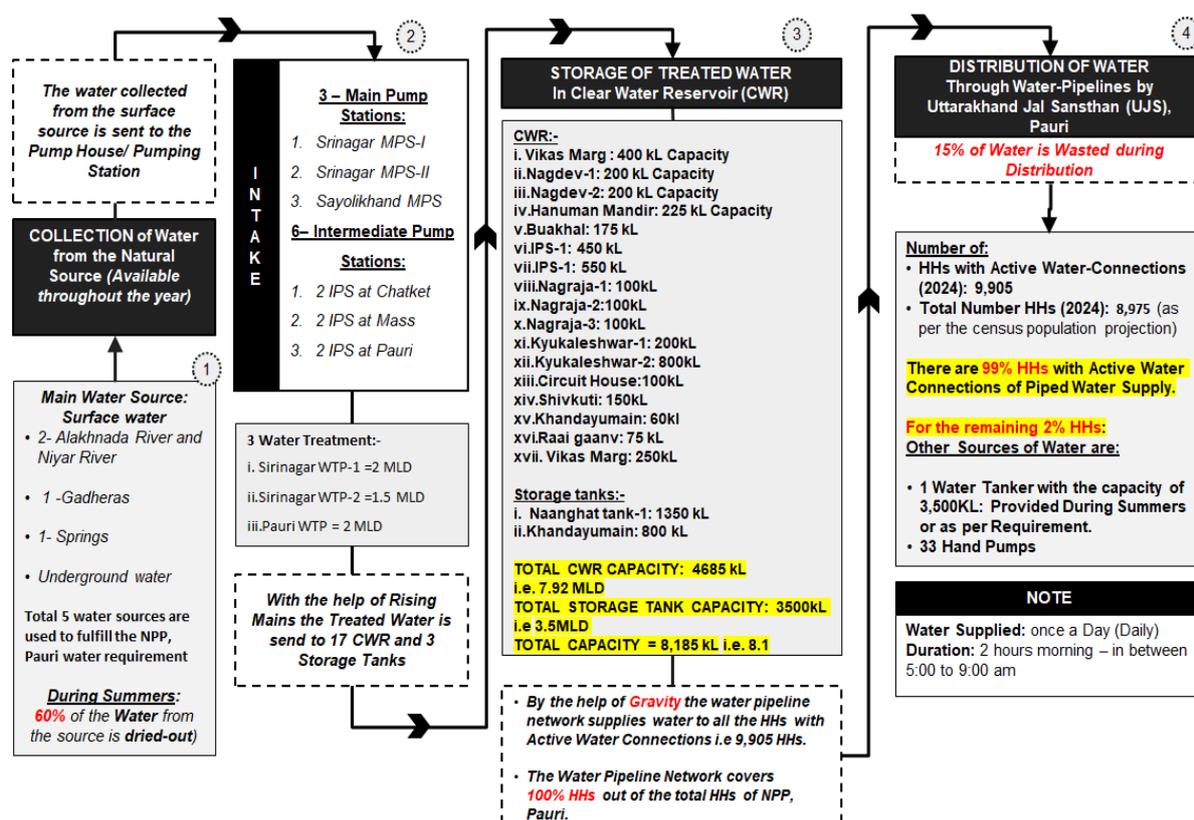
### 9.1. System Infrastructure

As Pauri Town is situated on the banks of Alaknanda River, the primary source of water for the residents of Pauri Town is the natural source of water i.e. Surface water and groundwater to meet their everyday water needs. Uttarakhand Jal Sansthan (UJS), Pauri and Pey Jal Nigam Uttarakhand (PJNU), Pauri collectively handle the water supply and construction of water distribution network as per the demand of water in NPP, Pauri. UJS, Pauri supplies the water in the Town while PJNU, Pauri is in-charge for the construction and maintenance of the water distribution network pipeline for NPP, Pauri.

#### 9.1.1. Process of Water Supply in Pauri Town

Figure 16 below depicts the flowchart of the process of water supply in Pauri Town. The process can broadly be divided into four steps namely step-01: collection of water, step-02: intake and treatment of water, step-03: storage of treated water and step-04: distribution of water.

Figure 16: Flowchart of Process of Water Supply System in NPP, Pauri



Source: (Uttarakhand Jal Sansthan, Pauri, 2024), (Pey Jal Nigam Uttarakhand, Pauri, 2024), (Stakeholder Consultation Meeting, 2024)

#### a) Step-01: Collection of Water

The main source of water in the town are Alaknanda and Nayar Rivers, Gadheras (tributaries), springs, and i.e. surface water underground water. These sources collectively aim to fulfil the water requirements of NPP, Pauri. However, during summers, 60% of these water sources dry up,

significantly impacting availability. Water from natural sources is collected year-round and transferred to pump houses or pumping stations for further processing.

#### b) Step-02: Intake and Treatment of Water

The intake system consists of three main pumping stations—Srinagar MPS-I, Srinagar MPS-II, and Sayolikhand MPS—supported by six intermediate pumping stations: two each at Chatkot, Masso, and Pauri. Once collected, water undergoes treatment at three water treatment plants: Srinagar WTP-1 (2 MLD), Srinagar WTP-2 (1.5 MLD), and Pauri WTP (2 MLD). The water treatment process primarily involves a simplified method using alum (aluminium sulphate) for coagulation and sodium hydroxide for pH adjustment. Initially, raw water collected from local sources is treated with alum, which acts as a coagulant. Post-treatment, the water is transported through rising mains to 17 Clear Water Reservoirs (CWRs) and three storage tanks, which serve as the backbone of the storage system.

#### c) Step-03: Storage of Treated Water

As shown in Table 22, by the help of rising-mains, the treated water is transported to 17 CWR and storage tanks. The total CWR capacity is 4135 kL (4.14 MLD), while the storage tanks add a capacity of 3,500 kL (3.5 MLD), resulting in a combined total of 7,635 kL (7.6 MLD).

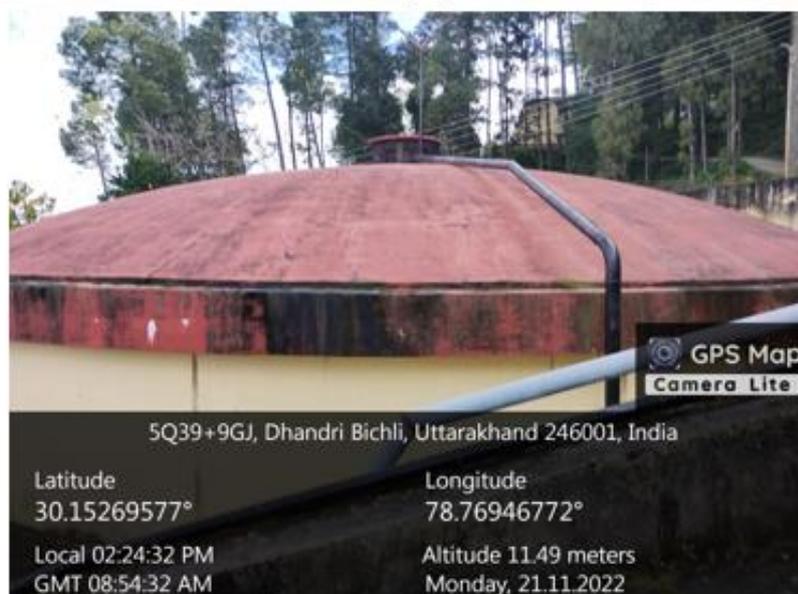
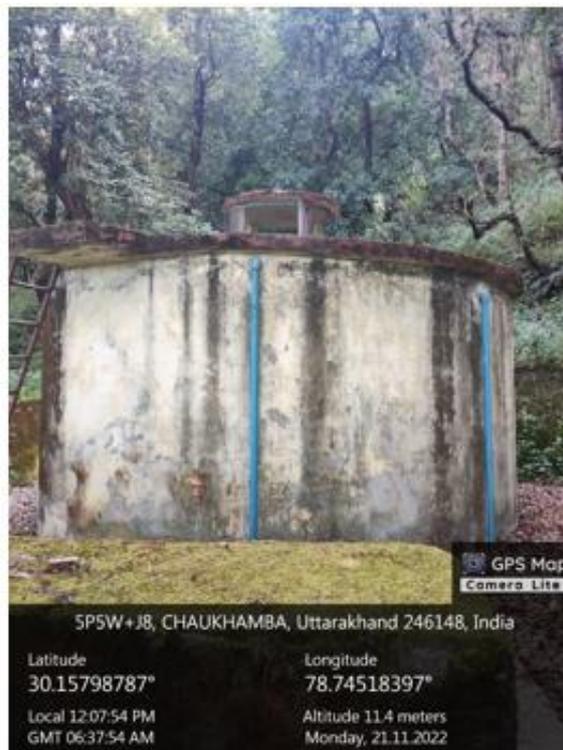
Table 22: List of Number of Existing and Added Water Storage Tanks i.e. Clear Water Reservoir (CWR) and their Storage Capacity

LIST OF CWR AND WATER STORAGE TANKS		
List of CWR		
Sr. No.	Name	Capacity (kL)
01	Vikas Marg	400
02	Nagdev-1	200
03	Nagdev-2	200
04	Hanuman Mandir	225
05	Buakhal	175
06	IPS-1	450
07	IPS-1	550
08	Nagraja-1	100
09	Nagraja-2	100
10	Nagraja-3	100
11	Kyukaleshwar-1	200
12	Kyukaleshwar-2	800
13	Circuit House	100
14	Shivkuti	150
15	Khandayumain	60
16	Raai gaanv	75
17	Vikas Marg	250
	<b>Total CWR's Capacity</b>	<b>4135</b>
List of Storage Tanks		
01	Naanghat Tank-1	1350

02	Naanghat Tank-2	1350
03	Khandayumain	800
	<b>Storage Tanks</b>	<b>3500 kL i.e. 3.5 MLD</b>
	<b>Total Capacity</b>	<b>7,635 kL i.e. 7.6 MLD</b>

Source: (Uttarakhand Jal Sansthan, Pauri, 2024), (Pey Jal Nigam Uttarakhand, Pauri, 2024)

Image 16: Image of Existing Surface Water Tanks: Clear Water Reservoirs (CWR) in NPP, Pauri

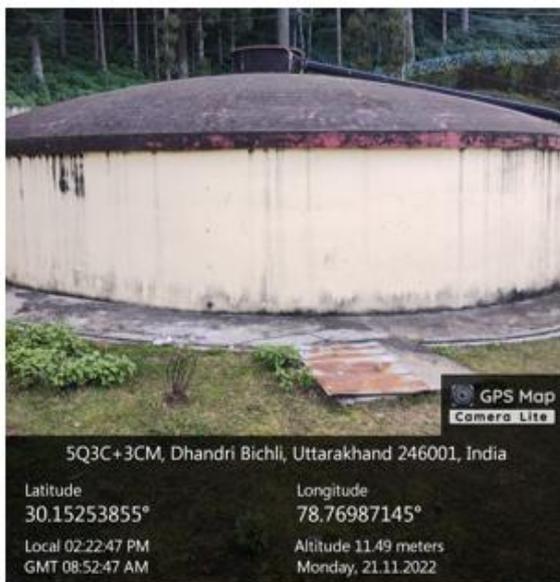




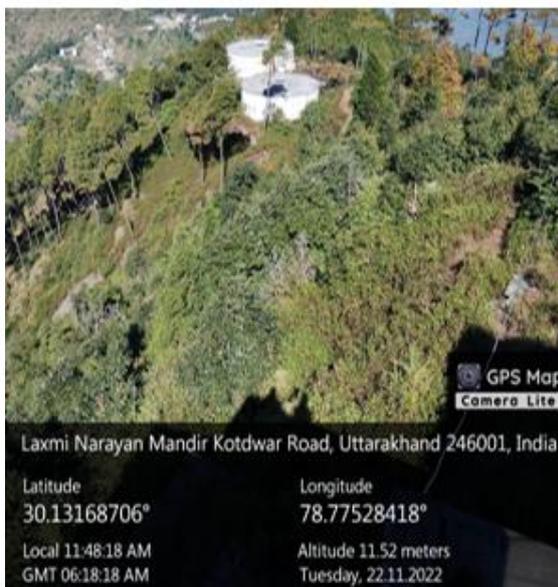
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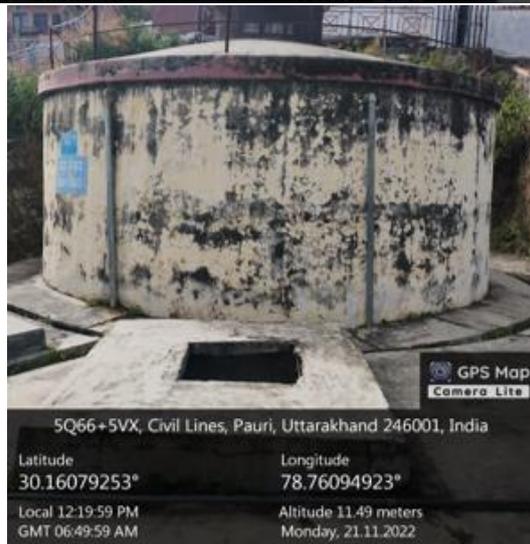
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GMT 06:49:59 AM Monday, 21.11.2022

Source: (Nagar Palika Parishad, Pauri, 2024)

#### d) Step-04: Distribution of Water

The stored treated water in the 17 CWRs as shown in Image 16 is distributed in the Town by the help of uncovered water pipeline network laid by the PJNU, Pauri. The water is distributed by the UJS, Pauri through gravity and no energy is consumed in this process.

The network currently serves 9,905 active connections, covering 99% of the town's households, as projected in 2024. For the remaining 2% of households, alternative sources such as a 3,500 kL water tanker and 33 hand pumps are utilized during summers or emergencies. Water is supplied once daily for two hours in the morning, between 5:00 and 9:00 AM. However, 15% of water is wasted during distribution due to inefficiencies. UJS, Pauri owns 2 Water Tanker with 3500 kL Capacity each and hires Water Tankers as per requirement during summers when water of the Natural Water Source dries out. These water tankers are provided by the authorities to the residents of the Town on request as per the demand to meet the water scarcity faced (if any), for the community functions, etc. in the Town.

Table 23: Water Supply Component

Water Supply Component		
Water Supply Component	Number	Inferences
Hand pumps (in NPP, Pauri)	33	<ul style="list-style-type: none"> <li>There are 33 hand pumps available in the town, likely serving as a backup source of water for resident in case of water shortage.</li> <li>UJS, Pauri owns 2 Water Tanker with 3500 kL Capacity each and hires Water Tankers as per requirement during summers when water of the Natural Water Source dries out.</li> <li>These water tankers are provided by the authorities to the residents of the Town on request as per the demand to meet the water scarcity faced (if any), for the community functions, etc. in the Town.</li> </ul>
Community Taps (in NPP, Pauri)	NA	
Water Tankers	No. Of Water Tankers - 2 Capacity: 3,500 kL each Hired: As per requirement	
Length of pipeline in NPP, Pauri	-	

Source: (Uttarakhand Jal Sansthan, Pauri, 2024), (Pey Jal Nigam Uttarakhand, Pauri, 2024)

#### 9.1.2. Existing water supply schemes in Pauri Town

The water supply system of Pauri Town is supported by three distinct schemes, each catering to the town's needs while facing unique challenges.

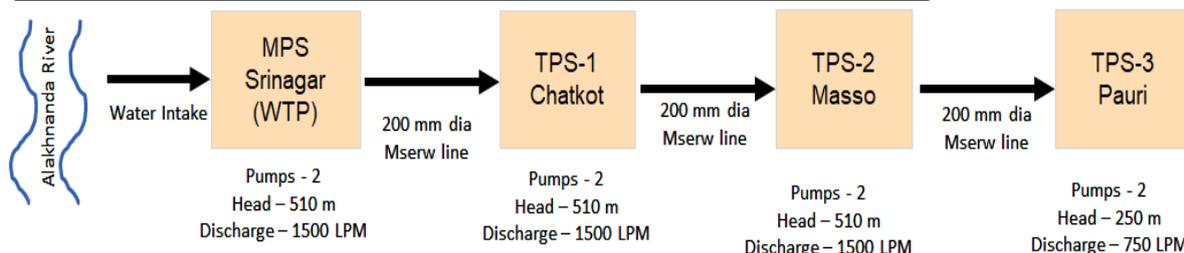
##### a. First water supply scheme of Pauri town

The **1.5 MLD Srinagar-Pauri Water Supply Scheme** (1978-79) sources water from the Alaknanda River, treating it at the Srinagar Water Treatment Plant (WTP). The system uses two pumps with a

head of 510 meters and a discharge of 1500 litres per minute (LPM) to transport water through 200 mm pipelines via Chatkot and Masso, eventually reaching Pauri with a reduced discharge of 750 LPM.

Figure 17: Details of first water supply scheme for Pauri town

**1.5 MLD Srinagar Pauri water supply Scheme (1978-79) located at 16km from Pauri Town**



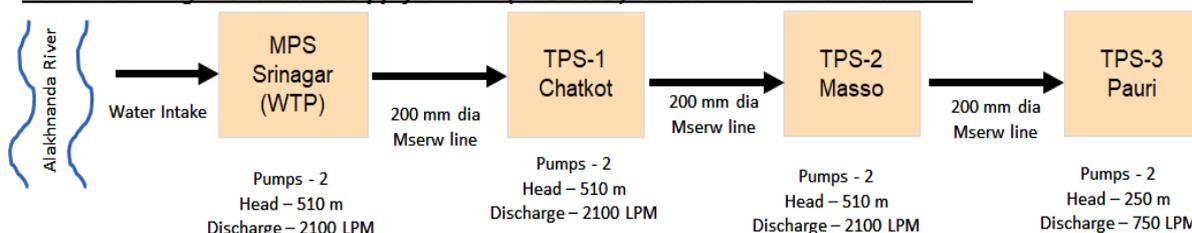
Source: (Uttarakhand Jal Sansthan, Pauri, 2024),

**b. Second water supply scheme of Pauri town**

The **2.00 MLD Srinagar-Pauri Water Supply Scheme** (1999-2000) also utilizes the Alakhnanda River and follows a similar route and structure but offers an enhanced discharge capacity of 2100 LPM from Srinagar.

Figure 18: Details of Second water supply scheme for Pauri town

**2.00 MLD Srinagar Pauri water supply Scheme (1999-2000) located at 16km from Pauri Town**



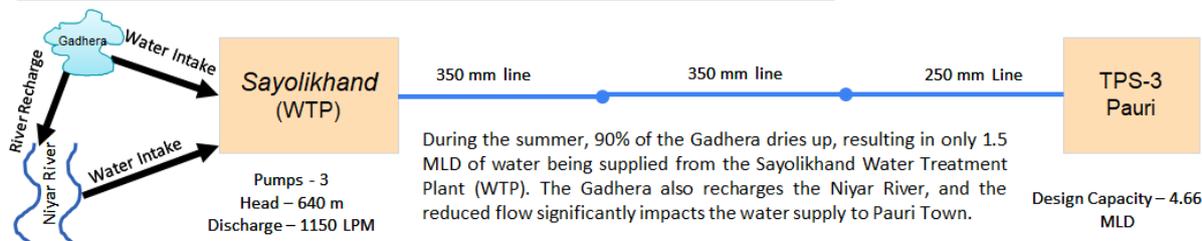
Source: (Uttarakhand Jal Sansthan, Pauri, 2024),

**c. Third water supply scheme of Pauri town**

Lastly, the **Naanghat Water Supply Scheme** (2005-2006) is located 71.8 km from Pauri and depends on Gadhera streams and the Niyar River for water intake. It operates with three pumps, achieving a head of 640 meters and a discharge of 1150 LPM, delivering water through a 350 mm pipeline.

Figure 19: Details of third water supply scheme for Pauri town

**Naanghat water supply Scheme (2005-2006) located at 71.8km from Pauri Town**



Source: (Uttarakhand Jal Sansthan, Pauri, 2024)

However, during summer, 90% of the Gadhera tributaries dry up, drastically reducing water availability to only 1.5 MLD. Despite a combined design capacity of 4.66 MLD, the seasonal drying of natural sources significantly impacts the town's water supply reliability.

Image 17: Some images of existing water pipeline network in Pauri town



Source: Primary survey by (SPA, New Delhi, 2024)

Map 20: Old water distribution Layout of Pauri town



Source: (Uttarakhand Jal Sansthan, Pauri, 2024), (Pey Jal Nigam Uttarakhand, Pauri, 2024)

**d. New Water supply Scheme (Reorganised) for Pauri town**

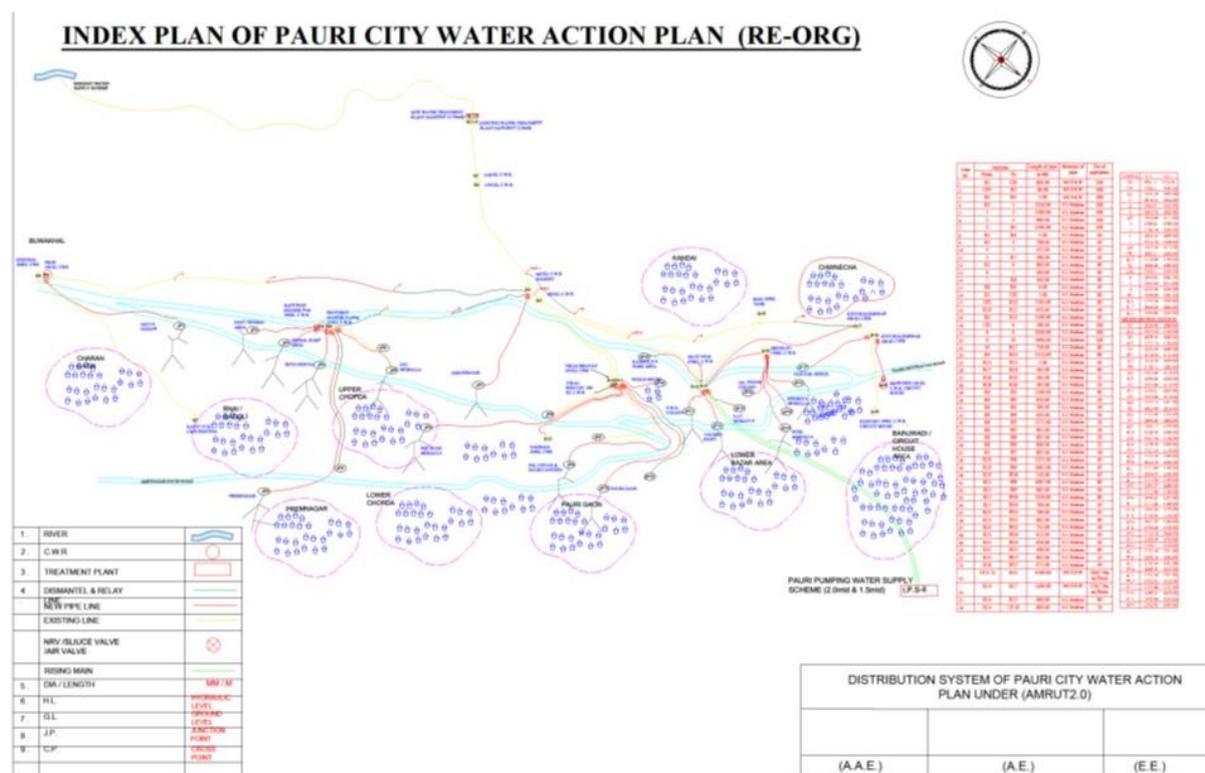
The new water supply scheme, set to **benefit 8,141 households**, includes the provision of **3,674 new tap connections**. The project is scheduled to start on March 6, 2024, with completion expected by March 5, 2025. The proposed work covers key infrastructure developments such as **treatment facilities with a capacity of 1.0 MLD**, **6,900 meters of rising main** (using 150 to 200 mm MSERW pipes), **3,916 meters of supply main** (with 32 mm to 100 mm GI pipes), and **15,969 meters of distribution main** (32 mm to 80 mm GI pipes). Additionally, **1,051 FHTC connections, including AMR meters**, will be installed. Currently, the rising main's 1.530 km laying is complete, with material purchasing and drawing work in progress. Cost of project is 12.65 crore.

Basic Information about New Water supply Scheme (Reorg.) for Pauri town	
Total Houses Benefited	8,141
New Tap Connections Proposed	3,674
Date of Start	06/ March/2024
Date of Completion	05/March/2025
<b>Proposed Work</b>	
1. Treatment Work	1No. (1.0 MLD)
2. Rising Main	6,900 m (150 to 200 mm MSERW Pipe)

3. Supply Main	3,916 m (32mm to 100 mm GI (M) Pipe)
4. Distribution Main	15,969 m (32mm to 80 mm GI (M) Pipe)
5. FHTC	1,051 No. ( including AMR Meters)
<b>Proposed Work</b>	
1. Treatment Work	Drawing Work in Progress
2. Rising Main	1.530 KM laying of Rising main complete
3. Supply Main and Distribution Main	Material Purchasing in Progress.

Source: (Uttarakhand Jal Sansthan, Pauri, 2024), (Pey Jal Nigam Uttarakhand, Pauri, 2024)

Map 21: New water distribution Layout of Pauri town



Source: (Uttarakhand Jal Sansthan, Pauri, 2024), (Pey Jal Nigam Uttarakhand, Pauri, 2024)

### 9.1.3. Demand and Supply of Water in Town

As shown in Table 24 given below, at present the water supply situation in NPP, Pauri highlights several challenges when assessed against CPHEEO benchmarks. While the per capita water supply standards is **135 LPCD**, the supply is significantly lower, with **92.6 LPCD during the off - season (winter)** and **61.7 LPCD during the on season**. The water supply is only **6 MLD in off season** and drops further to **4 MLD in the summer**, against a demand of **8.75 MLD**, respectively. This results in a

water supply gap of 2.75 MLD (31.4%) during the off season and 4.75 MLD (54.3%) during the on – season, reflecting an acute shortfall in meeting CPHEEO norms.

Table 24: Comparative Analysis of Benchmark (as per CPHEEO) and Existing Situation of Water Availability and Supply (as per ULBs) in NPP, Pauri

NPP, Pauri: Water Supply: Existing Situation (As per the Discussions with the Officials Met)			
Indicator	Benchmark (as per CPHEEO)	Existing (as per UJS, Pauri and PJNU, Pauri)	Inferences (based on discussions with the Officials met and the Data Provided by them)
Per Capita Water Supply	135 LPCD	a) Off-Season: <b>92.6 LPCD</b> b) On-Season: <b>61.7 LPCD</b>	<ul style="list-style-type: none"> <li><b>Water Supplied</b> <ul style="list-style-type: none"> <li>a) Off-Season: 6 MLD</li> <li>b) Summer Season: 4 MLD</li> </ul> </li> <li><b>Water Demand</b> (based on population and CPHEEO norms): <ul style="list-style-type: none"> <li>a) Off-Season (Winter):- = 135 x 64,817 = <b>8.750 MLD</b></li> <li>b) On Season (Summer):- = 135 x 64,847 = <b>8.754 MLD</b></li> </ul> </li> </ul>
Gap in Water Supply	Nil	a) Off-Season (Winter):- <b>=2.75 MLD (31.4% gap)</b> b) On-Season (Summer):- <b>=4.75 MLD (54.3% gap)</b>	<ul style="list-style-type: none"> <li>The water gap increases significantly during the <b>on-season (summer)</b> due to increased demand and reduced supply, leading to a 54.3% deficit.</li> <li>The <b>off-season gap (31.4%)</b>, while smaller, still highlights a consistent shortfall in meeting the CPHEEO benchmark.</li> </ul>
Water pipeline Coverage (Area Covered)	100 %	100 %	<ul style="list-style-type: none"> <li>PJNU, Pauri covers 100% of the total area with pipeline connections.</li> </ul>
Water Supply Coverage (Population Serviced)	100 %	100%	<ul style="list-style-type: none"> <li>UJS, Pauri covers 100% of the total area for both Domestic and Non-Domestic. UJS Water served to 9,505 HHs from them 6,127 HHs of NPP, Pauri and remaining HHs of nearby village villages</li> </ul>
Continuity of Water Supply	24/7 Hours/Day	2 Hours/Day	<ul style="list-style-type: none"> <li>In NPP, Pauri water is supplied once a Day (Daily) for 1-2 hours in morning i.e. 5:00 am to 8:00 am.</li> </ul>
Extent of metering of Water	100 %	-	<ul style="list-style-type: none"> <li>To understand the extent of metering of watering connection</li> </ul>

Connection			and non-revenue water in the Town it is important to do the metering of all the piped water connections in the Town.
Extent of Non-Revenue Water	15%	-	

Source: (Uttarakhand Jal Sansthan, Pauri, 2024), (Pey Jal Nigam Uttarakhand, Pauri, 2024), (Stakeholder Consultation Meeting, 2024)

Despite this seasonal gap, the **water pipeline network covers 100% of the area**, servicing both domestic and non-domestic populations. **Uttarakhand Jal Sansthan (UJS)** provides water to **9,505 households**, including **6,127 households in NPP, Pauri**, with the remaining serviced in nearby villages.

However, water supply continuity is limited to **1-2 hours daily** in the morning (5:00 am to 8:00 am), falling short of the CPHEEO benchmark of 24/7 supply. The extent of metering for water connections remains absent, which poses challenges in accurately monitoring non-revenue water, estimated at around **15%**, and assessing water wastage or illegal usage. To ensure a sustainable and efficient water supply, metering all piped connections is crucial. While the existing infrastructure meets the benchmark for area and population coverage, addressing the seasonal demand gap, limited supply hours, and non-revenue water issues remains a priority for improving water management in Pauri.

#### 9.1.4. Water Tariff

Throughout the State of Uttarakhand, the Uttarakhand Jal Sansthan charges fixed rates based on:

01. Annual Building Assessment used to assess building tax, or
02. As per the consumption of water supplied in buildings with water meter connections.

As shown in Table 25, the water tariff based on the annual assessment of residential building is divided into 9 slabs. Further, the amount for water consumption charged per month is according to the method of water distribution used i.e. through gravity, low head or high head. The lowest amount is charged for distribution through gravity while the highest is charged for distribution through high head due to the power consumed for distribution of water supply.

The annual assessment certificate is provided by the Nagar Palika Parishad, Pauri i.e. ULB of the Town.

Table 25: Minimum Charges (Water Price) ₹ per Month as per the Annual Assessment of Building for Water Supply in Urban Residential Area by the Uttarakhand Jal Sansthan, Pauri

Minimum Charge (Water Price) ₹ Per Month as per the Annual Assessment of Building for Water Supply in Urban Residential Area				
S.No.	Annual Assessment of Building	Effective Rates as on 2024-25		
		Gravity	Low Head	High Head
01.	Up-to ₹360	738.00	779.00	836.40
02.	₹361 to ₹2,0000	779.00	836.40	902.00
03.	₹2,0001 to ₹3,500	918.40	984.00	1107.00
04.	₹3,501 to ₹6,000	1374.00	1502.24	1712.92
05.	₹6,0001 to ₹8,000	1639.64	1712.92	2051.92
06.	₹8,0001 to ₹10,000	1914.44	2051.84	2189.24
07.	₹10,001 to ₹12,000	2051.84	2189.24	2381.60

08.	₹12,001 to ₹14,000	2189.24	2381.60	2519.00
09.	More than ₹14,001	32.06.00	3206.00	3435.00

Source: (Uttarakhand Jal Sansthan, Pauri, 2024)

To register for the Annual Assessment of Building the owner needs to declare the number of floors, area of their house and the HH size. Apart from this a mandatory one-time registration fees of ₹6,000/- is also charged by UJS. For people belonging to the BPL category this mandatory fees for one-time registration are reduced from an amount of ₹6,000/- to only ₹100/- by the UJS.

Table 26, the water tariff for the consumption of water supplied in residential buildings with meter connections, is charged per month based on the amount of water consumed per kilo Litres per month. The amount of water consumed by the beneficiary is based on readings recorded from the water meter installed by the UJS at the beneficiary's house. Further, the amount for water consumption charged per month is according to the method of water distribution used i.e. through gravity (₹10/- per kL per month), low head (₹13.75/- per kL per month) or high head (₹15.63/- per kL per month).

Table 26: Water Price Rates for Metered Domestic Water Connections (in ₹ per Kilo Litre per Month) by UJS, Pauri

Water Price Rates (Domestic Metered Connections) in ₹ Per Kilo Liter Per Month				
S.No.	Description	Effective Rates as on Date 01-04-2023		
		Gravity	Low Head	High Head
01.	Urban Area	10.00	13.75	15.63

Source: (Uttarakhand Jal Sansthan, Pauri, 2024)

As shown in Table 27, the water tariff for the consumption of water supplied in non-domestic buildings with meter connections, is charged per month based on the amount of water consumed per kilo Litres per month. The amount of water consumed by the beneficiary is based on readings recorded from the water meter installed by the UJS at the beneficiary's registered building with meter connection. Further, the amount for water consumption charged per month is according to the method of water distribution used i.e. through gravity, low head or high head. The lowest amount is charged for distribution through gravity while the highest is charged for distribution through high head due to the power consumed for distribution of water supply.

Table 27: Water Price Rates (Non-Domestic Metered Connections) ₹ per Kilo Litre by the Uttarakhand Jal Sansthan, Pauri

Water Price Rates (Non-Domestic Metered Connections) ₹ Per Kilo Liter				
S.No.	Description	Effective Rates as on Date 01-04-2023		
		Gravity	Low Head	High Head
01.	<b>Nagar Palika Parishad</b>			
A	Special Category and Industrial Area	31.25	39.00	46.88
B	Other Business Establishments	27.50	31.25	41.25
C	Other government and institutional Area/Cantonment Area	26.25	30.00	41.25
02.	<b>Nagar Panchayat</b>	26.25	26.25	41.25

Source: (Uttarakhand Jal Sansthan, Pauri, 2024)

### 9.1.5. Tourism and water supply:

The hotels and guest house in Pauri Town meets the additional water demand by the help of water tankers provided on request by the UJS, Pauri. UJS, Pauri owns 2 water tanker with a capacity of 3.5kL and hires water tankers over additional requirements. The hired water tankers range from 2 to 8 kL of capacity depending on the water demand.

There has been a slight Tourist influx of 80-100 persons per day during the Tourist Season (i.e. April, May, June, July, December and January), this shows no as such big burden in Pauri water consumption.

### 9.2. Present Government Policies for Water Supply in Pauri Town

- The mandatory fees for one-time registration for water connection through annual assessment of building is provided only in ₹100/- to the BPL beneficiaries by the UJS.

### 9.3. Issues/Challenges

The Table 28 below, highlights the issues/challenges identified along with the inferences for water availability and supply in NPP, Pauri.

Table 28: Issues/Challenges Identified for Water Availability and Supply in NPP, Pauri

S.No.	Issues/Challenges	Inferences
01.	 <p><b>Dependency on Natural Sources</b></p>	<ul style="list-style-type: none"> <li>NPP, Pauri heavily relies on the natural water sources such as river tributaries (known as Gadheras) from the main water source i.e. Alakhnada River, and Niyaar River for its water supply.</li> <li>However, these sources are vulnerable to pollution, over-extraction, and environmental degradation, affecting both water quality and quantity.</li> <li>Also, during summers 60% of these sources dries up!</li> </ul>
02.	 <p><b>Geographical constraints</b></p>	<ul style="list-style-type: none"> <li>The hilly terrain of Pauri creates challenges for infrastructure development, particularly for the installation of water pipelines. The rugged landscape makes it difficult and costly to lay pipelines, causing gaps in the distribution network and limiting access to water in certain areas of the town. This geographical barrier not only hinders the expansion of the water supply network but also complicates repairs and upgrades.</li> </ul>
03.	 <p><b>Contamination of water</b></p>	<ul style="list-style-type: none"> <li>Another major issue is the contamination of water due to poor infrastructure. Some water pipelines in</li> </ul>

			<p>Pauri run through permanent drainage channels, while others are exposed to solid waste and other environmental contaminants. This exposure significantly increases the risk of waterborne diseases, as pollutants can leach into the water supply. The lack of proper treatment and filtration systems exacerbates this problem.</p>
04.		<p><b>Shortage of Man power</b></p>	<ul style="list-style-type: none"> <li>• The Urban Jal Sansthan (UJS) Pauri, which manages water supply services, is currently facing a shortage of support staff. This shortage hampers the efficiency and maintenance of the water supply system.</li> <li>• The lack of skilled workers affects the timely repair and maintenance of pipelines, and the inadequate workforce leads to delays in addressing water supply issues, which compromises the overall quality of service.</li> </ul>
05.		<p><b>Climate Change Impacts</b></p>	<ul style="list-style-type: none"> <li>• Climate change is likely to worsen existing water challenges in Pauri Town.</li> <li>• Increased temperatures, changing precipitation patterns, and melting glaciers in the Himalayas can further stress water resources, leading to more frequent and severe water shortages.</li> </ul>
06		<p><b>Lack of water Governance</b></p>	<ul style="list-style-type: none"> <li>• It's important to do the metering of water connections in the Town and to generate the data on the extent of metering in the town to understand the existing situation of the extent of non-revenue of water connection in the town. This will help to manage the water theft (if-any) in the town by the residents or floating population of the town. Moreover, it will also be beneficial to implement sustainable solutions to manage the existing perishable water resource of the town.</li> </ul>

#### 9.4. Possible Solutions/Suggested Projects for Water Availability and Supply in NPP, Pauri

A Stakeholder Consultation Meeting was held on 14<sup>th</sup> October 2024 in NPP, Pauri. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Pauri Town in Table 29 below.

Table 29: Possible Solutions/Suggested Projects for Water Availability and Supply in NPP, Pauri

S.No.	Possible Solutions/Suggested Projects
01.	<b>Dependency on Natural Sources</b>
	<p><b><u>It is proposed that:</u></b></p> <p><b>a) The UJS, Pauri and PJSU, Pauri in collaboration should:</b></p> <ol style="list-style-type: none"> <li>I. Implementing extensive <b>rainwater harvesting systems</b> across <b>households, hotels, and public buildings</b> can reduce dependency on natural sources. During monsoon months, this harvested water can be stored and used during drier seasons.</li> <li>II. <b>Establishing treatment plants to recycle greywater for non-potable</b> uses such as gardening and flushing, can significantly reduce the demand on freshwater sources.</li> <li>III. <b>Implement watershed management programs to prevent soil erosion, Deforestation, and pollution.</b> Reforestation and controlling illegal dumping near springs and tributaries can enhance water quality and preserve water sources.</li> </ol>
02.	<b>Geographical constraints</b>
	<p><b><u>It is proposed that:</u></b></p> <p><b>a) The NPP, Pauri UJS, Pauri and PJSU, Pauri in collaboration should:</b></p> <ol style="list-style-type: none"> <li>I. <b>Use high-density polyethylene (HDPE)</b> or composite materials for pipelines, as they are lightweight, flexible, and better suited for challenging terrains, ensuring easier installation and maintenance.</li> <li>II. <b>Conduct a detailed GIS-based mapping</b> of the town's terrain to identify optimal routes for pipeline installation, considering elevation, accessibility, and vulnerability to landslides or erosion.</li> <li>III. <b>Use terrain-specific planning</b> to select pipeline routes that avoid steep gradients, landslide-prone areas, and other high-risk zones.</li> </ol>
03.	<b>Contamination of water</b>
	<p><b><u>It is proposed that:</u></b></p> <p><b>a) The UJS, Pauri and PJSU, Pauri in collaboration should:</b></p>

	<ol style="list-style-type: none"> <li>I. <b>Relocate water pipelines</b> that run through permanent drainage channels or areas exposed to solid waste to safer routes, away from contamination sources. This will prevent pollutants from leaching into the water supply.</li> <li>II. <b>Upgrade old</b>, leaky pipelines and replace them with more durable and sealed systems (e.g., HDPE or PVC pipes) to minimize contamination risks.</li> <li>III. For areas where pipelines must cross potentially contaminated zones, <b>use protective casings</b> or encapsulation to shield the pipes from external contaminants.</li> <li>IV. <b>Install anti-corrosive coatings</b> on pipelines to prevent degradation and leakage, which can contribute to contamination.</li> <li>V. Install <b>advanced filtration systems</b> at critical points in the water supply network, such as sand filters, carbon filters, and UV purifiers, to remove suspended solids and biological contaminants before reaching consumers.</li> <li>VI. Educate residents about proper waste disposal practices to reduce the exposure of water pipelines to solid waste and other contaminants.</li> <li>VII. Promote <b>awareness</b> about the risks of waterborne diseases and the importance of using clean, treated water for consumption.</li> </ol>
04.	<b>Lack of Trained Professionals</b>
	<p><b>It is proposed that:</b></p> <ol style="list-style-type: none"> <li>a) <b>The State Government of Uttarakhand</b> in collaboration with the ULBs should establish Think Tanks for on-ground technical assistance to the local authorities.</li> <li>b) <b>UJS, Pauri</b> and <b>PJNU, Pauri</b> should develop and implement: <ol style="list-style-type: none"> <li>✓ <b>Capacity Building and Training Programmes</b> among the local government employees.</li> <li>✓ <b>Knowledge Dissemination Programmes</b> among the local government employees and the local residents.</li> </ol> </li> </ol>
05.	<b>Climate Change Impacts</b>
	<p><b>It is proposed that:</b></p> <ol style="list-style-type: none"> <li>a) <b>UJS, Pauri</b> and <b>PJNU, Pauri</b> in collaboration should: <ol style="list-style-type: none"> <li>i. <b>Develop Climate-Resilient Water Supply Infrastructure</b> like Dual-Piping Systems to separate potable and non-potable water, allowing for efficient use of treated wastewater and harvested rainwater for non-drinking purposes.</li> <li>ii. <b>Conduct Water Usage Audits</b> for major water users to identify inefficiencies and recommend conservation measures.</li> <li>iii. <b>Implement Integrated Water Resource Management (IWRM)</b> by:</li> </ol> </li> </ol>

	<ul style="list-style-type: none"> <li>✓ <b>Developing and Implementing Plans</b> to protect and manage the catchment areas to enhance groundwater recharge.</li> <li>✓ <b>Preparing Hydrological Models</b> to predict and plan for future water availability and demand under various climate scenarios.</li> <li>✓ <b>Establishing Water Allocation Policies</b> for equitable and sustainable water allocation among different users, considering future climate impacts.</li> <li>✓ <b>Developing Early Warning Systems</b> for floods and water shortages using real-time data and forecasting tools.</li> </ul>
<p>06.</p>	<p><b>Lack of water Governance</b></p>
	<p><b>It is proposed that:</b></p> <p>a) <b>UJS, Pauri and PJNU, Pauri</b> in collaboration should:</p> <ol style="list-style-type: none"> <li>i. Implement <b>digital or smart water meters</b> for all active connections in both residential and commercial areas, enabling real-time monitoring of water usage and accurate billing. Smart meters can also help detect anomalies, flagging potential water theft or leakages for timely intervention.</li> <li>ii. Regularly <b>collect and analyze metering data</b> to assess consumption patterns, identify areas with high non-revenue water, and better understand seasonal water demand. This will help UJS Pauri to create a baseline and set benchmarks for sustainable usage.</li> <li>iii. Form a dedicated team <b>to conduct periodic audits</b> across the town to assess non-revenue water levels, water theft, and unmetered connections. This team would identify unauthorized tapping points and penalize illegal usage to reduce losses.</li> <li>iv. Develop a strict <b>regulatory framework that enforces penalties</b> for water theft and unregistered connections, ensuring compliance and deterring misuse. Provide incentives to households and businesses that report unauthorized connections or actively manage their water consumption.</li> <li>v. Organize public awareness campaigns to educate residents about the importance of metering and water conservation, focusing on how responsible water usage benefits the entire community.</li> </ol>

# Annexure A

Annexure A

Details of documents collected from various departments in Pauri Town

Figure 20: Pauri Town Wards Name and Households List

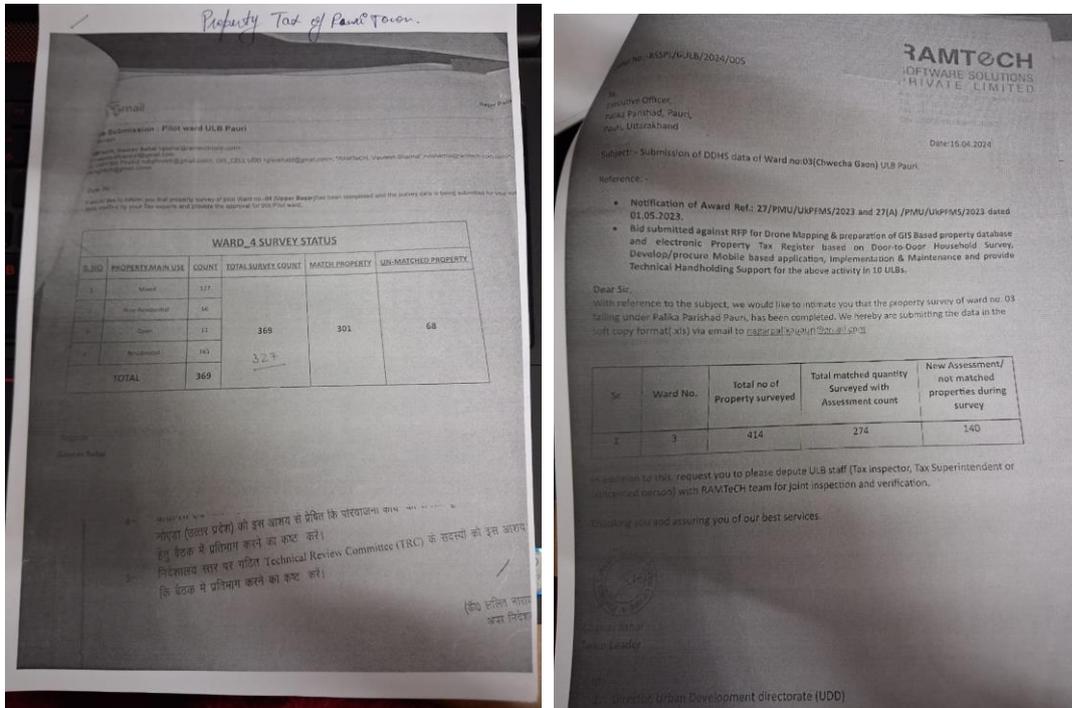
// कार्यालय नगर पालिका परिषद पौड़ी, पौड़ी-गढ़वाल //

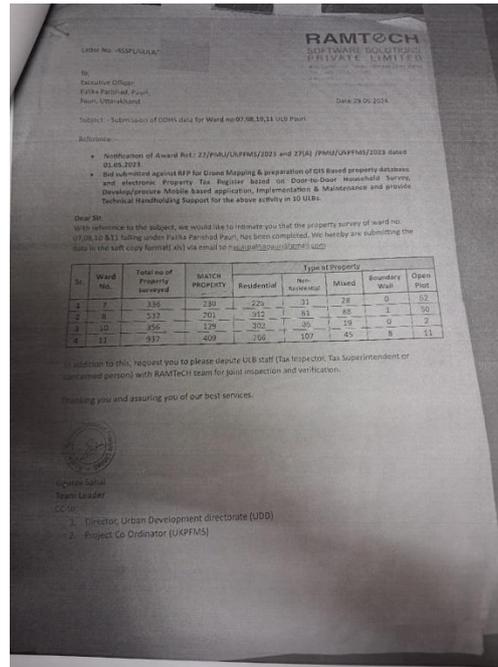
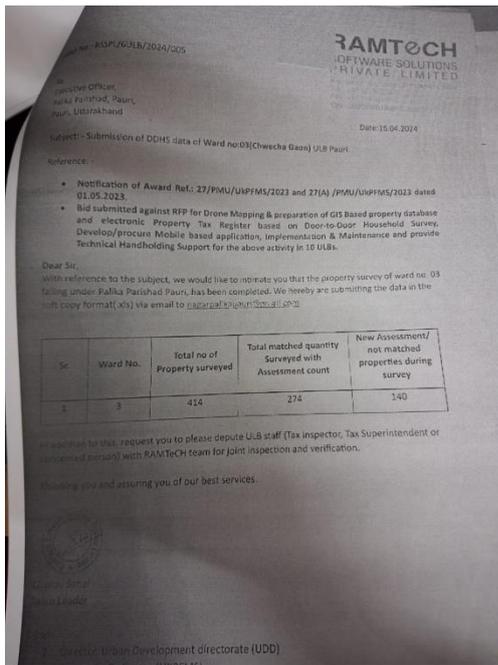
2011 की जनगणना के अनुसार वार्ड वार अनुजाति की जनसंख्या आरोही क्रम में

क्र.सं.	वार्ड संख्या	वार्ड का नाम	कुल वार्ड की जनसंख्या	सामान्य	जनसंख्या 2011 की अनुजाति
1	11	राई क्षेत्र	2807	1968	839
2	5	लोअर बाजार	2402	1805	597
3	3	चरीचा/काण्डई	2518	1825	693
4	1	बैजवाड़ी	3602	3197	405
5	4	अपर बाजार	2027	1729	298
6	2	तहसील	1994	1785	209
7	10	ट्रेनिंग सेंटर	1976	1631	345
8	6	अस्पताल मौहल्ला	1476	1259	217
9	9	पौड़ी गांव	2454	2205	249
10	7	विकास मार्ग	1708	1553	155
11	8	लक्ष्मीनारायण मौहल्ला	2471	2252	219
		कुल जनसंख्या:-	25435	21209	4226

Source: (Nagar Palika Parishad, Pauri, 2024)

Figure 21: Report of Property tax of NPP, Pauri and Latest count of numbers of Households





Source: (Nagar Palika Parishad, Pauri, 2024)

Figure 22: Details of Solid waste collection charges in NPP, Pauri

नगरपालिका गजट, 11 जून, 2016 ई० (ज्यूलै 11, 1938 शक सम्वत्) 153  
 नगरपालिका द्वारा अपशिष्ट संग्रहण हेतु दर निर्धारण हेतु:-

सं०	अपशिष्ट एवं अपशिष्ट उत्पादक की श्रेणी / प्रकार	प्रतिमाह सेवा शुल्क (User charges) की राशि र में			
		जैविक-अजैविक कूड़ा अलग-अलग कर सकने तक पहुँचाने पर	मिश्रित कूड़ा सहक तक पहुँचाने पर	जैविक-अजैविक कूड़ा घर/सोत पर ही अलग-अलग देने पर	जो व्यक्ति घर/सोत पर ही मिश्रित कूड़ा दे
	गरीबी रेखा से नीचे के घर	00	05	10	15
	कम आय वाले घर	05	10	15	20
	उपरोक्त के अतिरिक्त घर	10	20	25	30
	होटल / लॉजिंग / मस्ट हाउस	100	200	200	250
	धर्मशाला	10	25	40	50
	बरातघर	500	1,000	750	800
	बैकरी	100	200	125	150
	कार्यालय	50	100	50	75
	सब्जी एवं फल विक्रेता	100	200	100	125
	रेस्टोरेंट	250	500	200	250
	स्कूल, कॉलेज एवं आवासीय शिक्षण संस्थान	100	200	200	200
	हॉस्पिटल / नर्सिंग होम	200	400	200	250
	मेडिकल स्टोर	75	150	100	125
	दुकान	100	200	125	150
	वर्कशॉप / कबाड़ी	750	1,500	250	300
	गन्ने का रस/जूस विक्रेता	50	100	125	150

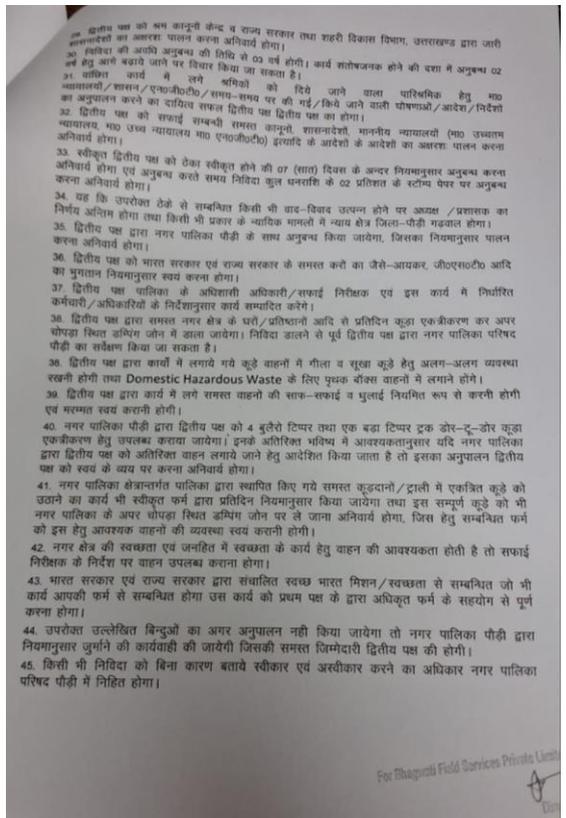
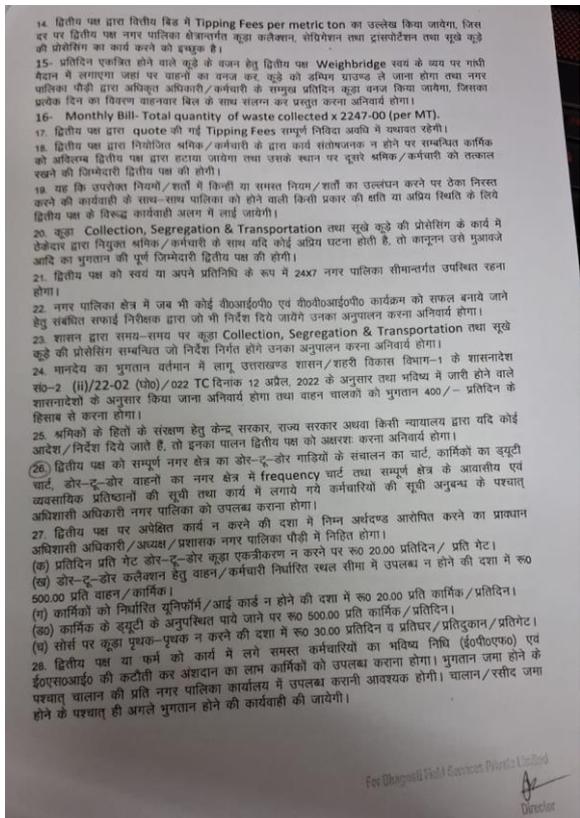
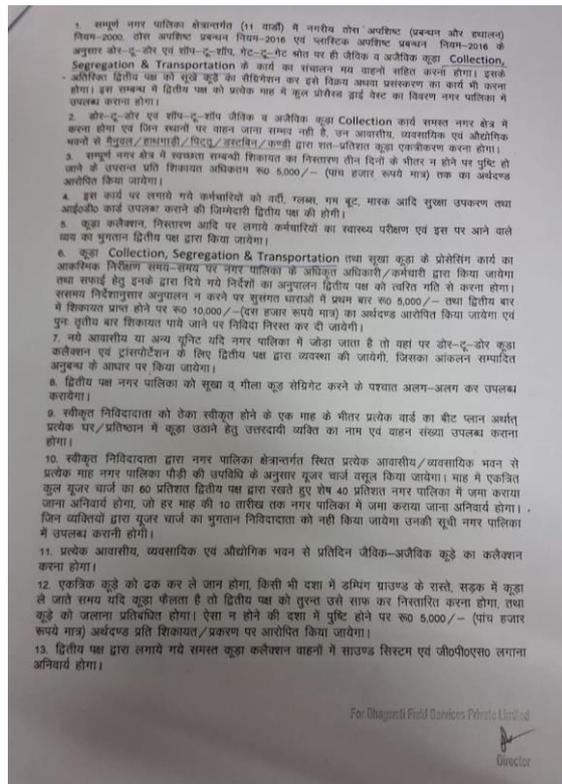
निति-उपरोक्त उपविधि के किसी माग का उल्लंघन करने पर पालिका अर्धदण्ड वसूल कर सकेगी, जो सेवा शुल्क की निर्धारित दरों का 10 गुना तक अधिकतम हो सकता है। उपविधि-3 के उल्लंघन पर र 200 प्रति घन मी० की दर से अर्धदण्ड वसूल किया जायेगा। निरन्तर उल्लंघन की दशा में र 500 प्रति घन मी० प्रतिदिन की दर से वसूल किया जायेगा।

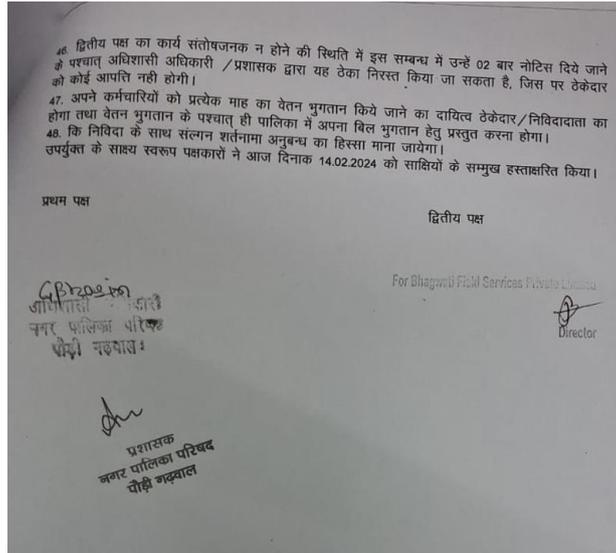
महेन्द्र यादव,  
 प्रशासी अधिकारी,  
 लिका परिषद्, पौड़ी।

यशपाल बेनाम,  
 अध्यक्ष,  
 नगरपालिका परिषद्, पौड़ी।

Source: (Nagar Palika Parishad, Pauri, 2024)

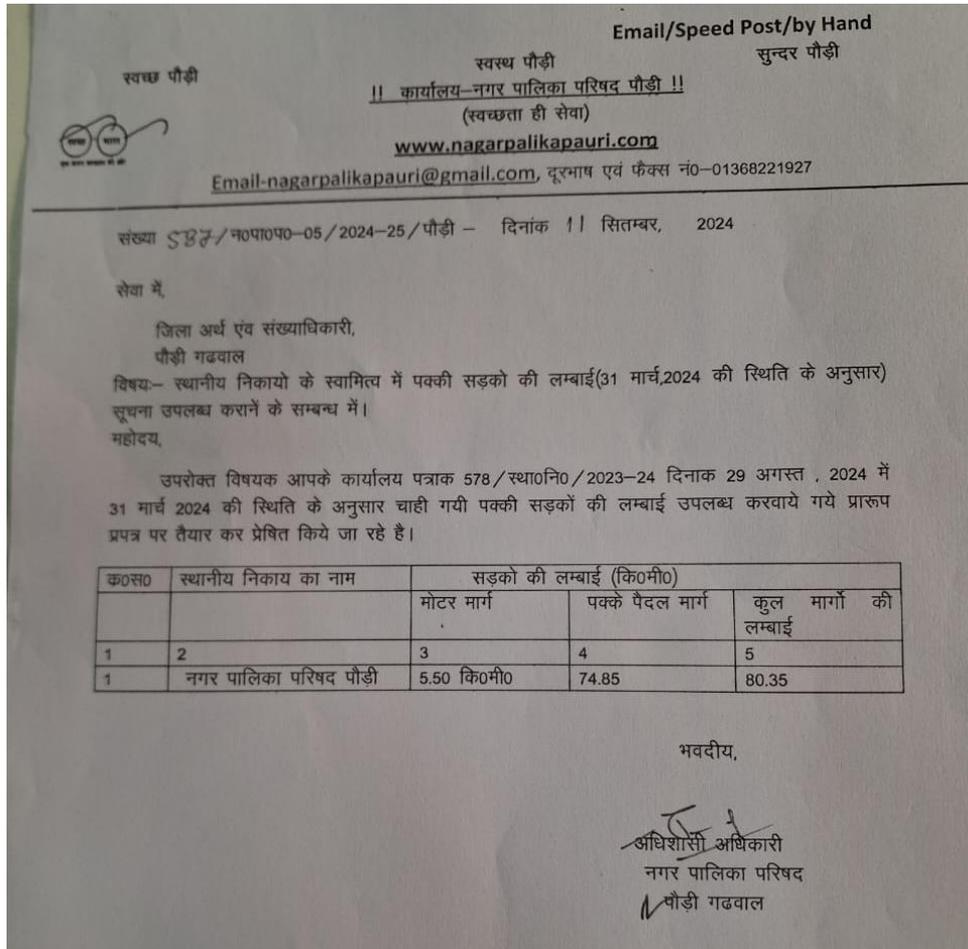
Figure 23: Contract document between NPP, Pauri and Private agency for the Management of Pauri town's Solid waste





Source: (Nagar Palika Parishad, Pauri, 2024)

Figure 24: Details of NPP, Pauri road network



Source: (Nagar Palika Parishad, Pauri, 2024)

Figure 25: Details of PWD roads within the NPP, Pauri

परिशिष्ट एफ (वर्ष 2023-2024)																								
क्र.सं.	विभाग का नाम	2021-22 के अंत तक पूर्ण मार्गों की लंबाई (कि०मी०)								2022-23 में निर्मित मार्गों की लंबाई (कि०मी०)				2022-23 के अंत तक पूर्ण मार्गों की लंबाई (कि०मी०)				2022-23 के अंत तक कुल लंबाई (कि०मी०)	टिप्पणी					
		कच्चे मार्ग	कंकड़ पत्थर की सतह	इस्टर कोट स्टेज अधवा	3.74 मी० तक	3.75 से 6.99 मी० तक	7.00 मी० से 9.99 मी० तक	10.00 मी० व अधिक	कच्चे मार्ग	कंकड़ पत्थर की सतह	इस्टर कोट स्टेज अधवा	3.74 मी० तक	3.75 से 6.99 मी० तक	7.00 मी० से 9.99 मी० तक	10.00 मी० व अधिक	कच्चे मार्ग	कंकड़ पत्थर की सतह			इस्टर कोट स्टेज अधवा	3.74 मी० तक	3.75 से 6.99 मी० तक	7.00 मी० से 9.99 मी० तक	10.00 मी० व अधिक
<b>प्रमुख जिला मार्ग</b>																								
1	मौजी	अदमानी - गार्डरिंग - सुपुर् - बहेरावाल - खाण्डा मोटर मार्ग	-	-	-	36.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	कि०मी० 13 से 28 पी०एच०डी०एस०वाई को हस्तांतरित।	
2	मौजी	मेलाद - चौबाल - भूखंडेवर - फल्जीवाल मोटर मार्ग।	-	-	-	39.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	कि०मी० 13 से 34 पी०एच०डी०एस०वाई को हस्तांतरित।	
3	मौजी	उकल्ला-खडुवाल मुक्तिमाली बराकोट जलामायाल चुकनीसी मोटर मार्ग।	-	-	3.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	निर्मित	
4	मौजी	मौजी देहलचौरी उकल्ला मोटर मार्ग	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	निर्मित	
		<b>योग</b>			<b>3.00</b>	<b>81.50</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		
<b>अन्य जिला मार्ग</b>																								
		मौजी देवकामा गुजा माजल संविधान				8.300																	सड़ मार्ग नगर पालिका क्षेत्र में चलाए है।	
		मौजी-कण्कोलिया				1.50																		सड़ मार्ग नगर पालिका क्षेत्र में चलाए है।
		मौजी-खोलाचौरी				3.50																		सड़ मार्ग नगर पालिका क्षेत्र में चलाए है।
		मौजी-प्याली-उमनाम-दिंडी-कातेखर				29.00																		कि०मी० 16 से 29 पी०एच०डी०एस०वाई को हस्तांतरित।
		मिचला-टिका मोटर मार्ग	3.00			26.50																		कि०मी० 1 से 18 पी०एच०डी०एस०वाई को हस्तांतरित।
		पुनारकावाल-मौजीदेहा पिन्डब्राड मोटर मार्ग				18.00																		कि०मी० 1 से 13.00 पी०एच०डी०एस०वाई को हस्तांतरित।
		<b>योग</b>	<b>3.00</b>	<b>0.00</b>	<b>86.80</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		

Source: (PWD, Pauri, 2024)

Figure 26 Details of Schools/ Institutes in Pauri

Sr. No.	Name of Schools/Institutes	Population
01.	St. Thomas Convent School, Pauri	1,000
02.	Kendriya Vidyalaya, Pauri	1,053
03.	Saint James School, Pauri	445
04.	Shri Ram Rai School, Pauri	319
05.	MeshMore inter college, Pauri	400
06.	DAV Inter College, Pauri	250
07.	GIC, Pauri	250
08.	GGIC, Pauri	200
09.	Hill International School, Pauri	150
10.	Harish Adharsh Bal Vidyalaya	100
11.	Govt. Primary School, Pauri	60
12.	Rajmati Devi Saraswati Vidya Mandir Timli Pauri	300
13.	Arth Academy, Pauri	150
14.	B.R. Mpdern School, Pauri	350
	<b>Total</b>	<b>5,027</b>

Source: (Google Images, 2024)

Figure 27: Details of Tourist population in NPP, Pauri

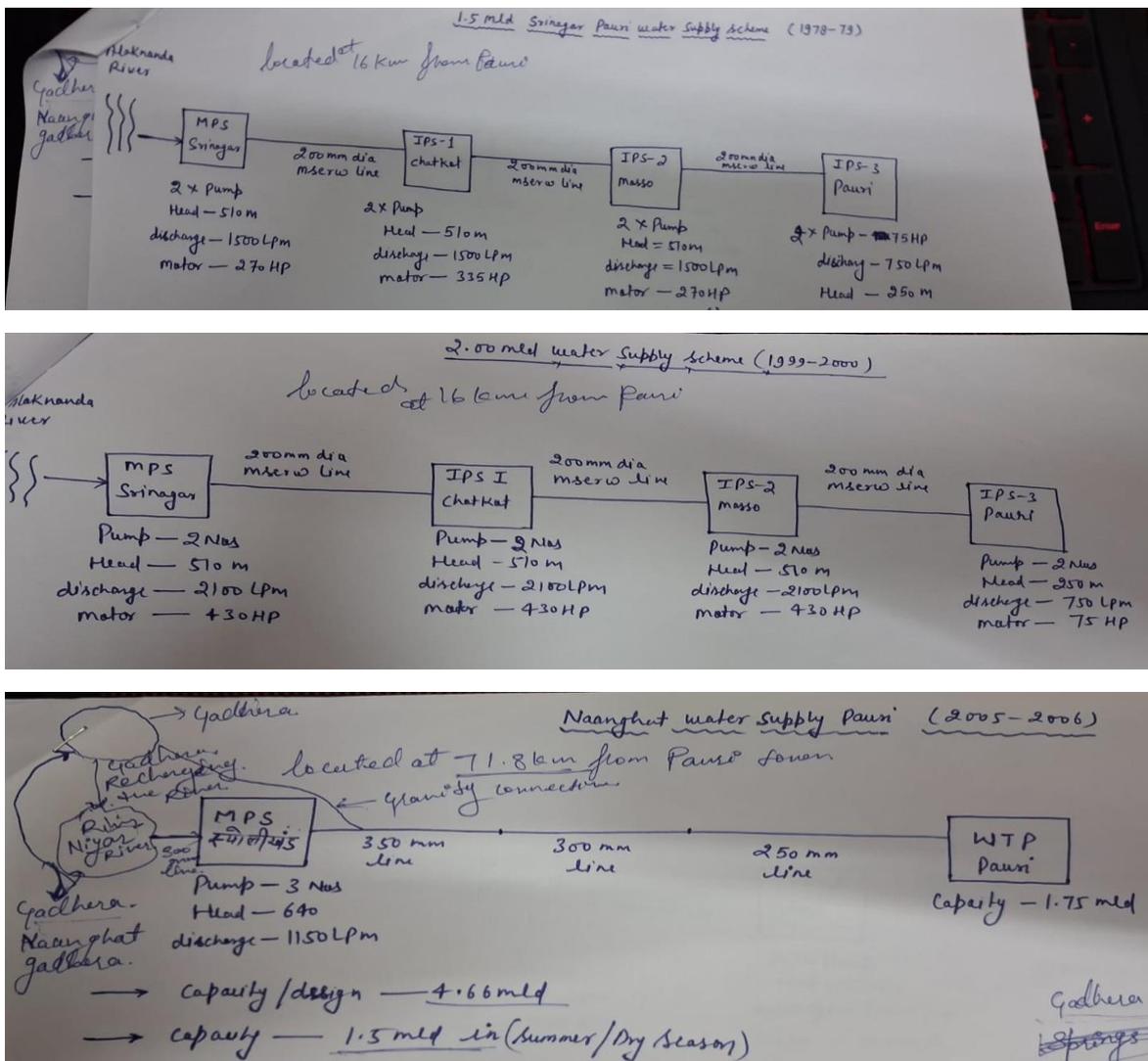
**Tourist Population in Pauri Town**

**Pauri City Tourist Statics**

Sl. No.	Place/ City	Year					
		2019	2020	2021	2022	2023	September, 2024
1	2	3	4	5	6	7	8
1	Pauri City	17870	15690	6965	10550	11700	8900

Source: (Tourism Department, Pauri, 2024)

Figure 28: Details of urban drinking water schemes in Pauri



Source: (Uttarakhand Jal Sansthan, Pauri, 2024)

Figure 29: Details of new water supply scheme in NPP, Pauri

Name of Scheme	:-	Pauri Water Supply Scheme (Reorg.)
Sanctioned Cost	:-	CAPEX (Rs. In Crore) - 11.00
		O&M Cost (Rs. In Crore) - 01.65
		TPC (Rs. In crore) - 12.65
Total House benefitted	:-	8141
New Tap Connection Proposed	:-	3674
Name of Firm/Contractor	:-	MS Mohd Anis New Fancy Boot House, Dhara Road, Pauri
Date of Start	:-	06-03-2024
Date of Completion	:-	05-03-2025
C.B. No-	:-	14/SE/2023-24
Contractr Amount	:-	Rs. 116817786.00

**Proposed Work.**

- 1- Treatment work - 1 No. (1.0 mld)
- 2- Rising Main - 6900.00 mtr. (Dia 150 to 200 mm MSERW Pipe)
- 3- Supply Main - 3916.00 mtr (Dia 32 mm to 100 mm dia GI (M) Pipe)
- 4- Distribution Main- 15969 mtr (Dia 25 mm to 80 mm GI (M) Pipe)
- 5- FHTC - 1051 No (Including AMR Meters)

**Present Progress of Scheme.**

- 1- Treatment Work - Drawing Work is in Progress.
- 2- Rising Main - 1.530 KM laying of Rising main work complete.
- 3- Supply Main & Distribution - Material Purchsing is in progress.

नोट- ट्रीटमेन्ट प्लान्ट हेतु चयनित भूमि वन विभाग के अन्तर्गत है, जिसके सापेक्ष पूर्व में इस विभाग द्वारा नालघाट पेयजल योजना के ट्रीटमेन्ट कार्यों हेतु 7.15 हेक्टेयर भूमि 30 वर्षों हेतु लीज पर ली गई थी, जिसके साथ एव अभिलेख प्राप्त करने में समय लगा। वर्तमान में ट्रीटमेन्ट प्लान्ट की ड्राइंग स्वीकृति हेतु अग्रसारित कर दी गई है।

Source: (Uttarakhand Jal Sansthan, Pauri, 2024), (Pey Jal Nigam Uttarakhand, Pauri, 2024)

Figure 30: List of CWRs and water storage take

List of Reservoir tanks. (CWR)  
Distribution capacity (CWR)

- ① विकास मण्डल — 400 KL
- ② नागदेव — 200 KL
- ③ नागदेव — 800 KL
- ④ हनुमान मन्दिर — 225 KL
- ⑤ बुआबाबा — 175 KL
- ⑥ IPS-1 — 450 KL
- ⑦ IPS-2 — 550 KL
- ⑧ नागराजा — 100 KL
- ⑨ नागराजा — 100 KL
- ⑩ नागराजा — 50 KL
- ⑪ केंद्रकालेडव — 200 KL
- ⑫ केंद्रकालेडव — 800 KL
- ⑬ सॉफ्ट टैंक — 100 KL
- ⑭ शिव कुटी — 150 KL
- ⑮ रजपुत्र मंथन — 60 KL
- ⑯ रवि गाँव — 75 KL
- ⑰ विकास मण्डल — 250 KL  
(under construction)

Storage tanks.

- ① एन.ए.ए. टैंक - 2 → 13.50 KL capacity
- ② केंद्रकालेडव टैंक → 800 KL capacity

Source: (Uttarakhand Jal Sansthan, Pauri, 2024)

Figure 31: Tariff for water Supply in Pauri:

उत्तराखण्ड जल संस्थान शाखा पौड़ी।  
पौड़ी नगरीय क्षेत्र के अन्तर्गत जलमूल्य देयकों में वार्षिक वृद्धि हेतु सारणी

क्र. सं.	उपभोक्ताओं का विवरण	न्यूनतम निर्धारित जल मूल्य की दरें वर्ष 2013-14			शासनद्वारा संख्या 118 दिनांक 29 जनवरी 2013 के द्वारा निर्धारित			शासनद्वारा संख्या 813 दिनांक 08 जुलाई 2018 के द्वारा निर्धारित			न्यूनतम निर्धारित जल मूल्य की दरें वर्ष 2022-23			न्यूनतम निर्धारित जल मूल्य की दरें वर्ष 2023-24			न्यूनतम निर्धारित जल मूल्य की दरें वर्ष 2024-25			न्यूनतम निर्धारित जल मूल्य की दरें वर्ष 2024-25		
		गुरुत्व	लोहेड	हाईडैड	गुरुत्व	लोहेड	हाईडैड	गुरुत्व	लोहेड	हाईडैड	गुरुत्व	लोहेड	हाईडैड	गुरुत्व	लोहेड	हाईडैड	गुरुत्व	लोहेड	हाईडैड	गुरुत्व	लोहेड	हाईडैड
जलमूल्य (नगरीय)		15 प्रतिशत वृद्धि			9 प्रतिशत वृद्धि			9 प्रतिशत वृद्धि			9 प्रतिशत वृद्धि			9 प्रतिशत वृद्धि			9 प्रतिशत वृद्धि			9 प्रतिशत वृद्धि		
1	360.00 तक	90.00	95.00	102.00	13.50	14.25	15.30	8.10	8.55	9.18	168.30	177.65	190.74	176.40	186.20	199.92	184.50	194.75	209.10	738.00	779.00	836.40
2	361.00 से 2000.00 तक	95.00	102.00	110.00	14.25	15.30	16.50	8.55	9.18	9.90	177.65	190.74	205.70	186.20	199.92	215.60	194.75	209.10	225.50	779.00	836.40	902.00
3	2001.00 से 3500.00 तक	112.00	120.00	135.00	16.80	18.00	20.25	10.08	10.80	12.15	209.44	224.40	252.45	219.52	235.20	264.60	229.60	246.00	276.75	918.40	984.00	1107.00
		15 प्रतिशत वृद्धि			11 प्रतिशत वृद्धि			11 प्रतिशत वृद्धि			11 प्रतिशत वृद्धि			11 प्रतिशत वृद्धि			11 प्रतिशत वृद्धि			11 प्रतिशत वृद्धि		
1	3501.00 से 6000.00 तक	150.00	164.00	187.00	22.50	24.60	28.05	16.50	18.04	20.57	310.50	339.48	387.09	327.00	357.52	407.66	343.50	375.56	428.23	1374.00	1502.24	1712.92
2	6001.00 से 8000.00 तक	179.00	187.00	224.00	26.85	28.05	33.60	19.69	20.57	24.64	370.53	387.09	463.68	390.22	407.66	488.32	409.91	428.23	512.96	1639.64	1712.92	2051.84
3	8001.00 से 10000.00 तक	209.00	224.00	239.00	31.35	33.60	35.85	22.99	24.64	26.29	432.63	463.68	494.73	455.62	488.32	521.02	478.61	512.96	547.31	1914.44	2051.84	2189.24
4	10001.00 से 12000.00 तक	224.00	239.00	260.00	33.60	35.85	39.00	24.64	26.29	28.60	463.68	494.73	538.20	488.32	521.02	566.80	512.96	547.31	595.40	2051.84	2189.24	2381.60
5	12001.00 से 14000.00 तक	239.00	260.00	275.00	35.85	39.00	41.25	26.29	28.60	30.25	494.73	538.20	569.25	521.02	566.80	599.50	547.31	595.40	629.75	2189.24	2381.60	2519.00
6	14001.00 से अधिक	325.00	350.00	375.00	48.75	52.50	56.25	35.75	38.50	41.25	672.75	724.50	776.25	708.50	763.00	817.50	744.25	801.50	858.75	2977.00	3206.00	3435.00
कुल योग																						

नोट-  
अधिरासी अभियन्ता

Source: (Uttarakhand Jal Sansthan, Pauri, 2024)

## Annexure B

## Annexure B

### Questionnaire for Data Collection on Solid Waste Management of Pauri Town

A. Solid Waste Management	
<b>General Information (Data Required):</b>	
Contact Person (Designation, Department)	
Name of Town	
Area of Town (Municipal Boundary)	
Total Number of Wards in the Town	
Total Population of Town	
Population of Each Ward	
Floating Population of Town	
Total Number of Households in the Town	
Total Number of Households in each Ward	
Average Household (HH) size in Town	
Name of Department responsible of Solid Waste Management in the Town	
<b>Current Solid Waste Management Situation:</b>	
<p><b>1.</b> What is the estimated daily/weekly/monthly volume of Solid Waste Generated in the Town?</p>	
<p><b>2.</b> What are the Major Sources of Solid Waste Generation in the Town?</p> <p>a) Residential</p> <p>b) Commercial</p> <p>c) Industrial</p> <p>d) Medical</p> <p>e) Any Other (Please Mention)</p>	
<p><b>3.</b> Are there any seasonal variations in the Solid Waste Generation patterns?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If YES, please specify in details.</b></p>	

<p>4. What is the Garbage Dumping Areas in the Town?</p> <ul style="list-style-type: none"><li>a) Garbage Bins</li><li>b) Road Side</li><li>c) Open Land</li><li>d) Waste Vans</li><li>e) Any Other (Please Mention)</li></ul>
<p>5. What is the frequency of Solid Waste Collection in the Town?</p> <ul style="list-style-type: none"><li>a) Once a Day</li><li>b) Every Alternative Day</li><li>c) Once a Week</li><li>d) Once a Month</li><li>e) Other (Please Mention)</li></ul>
<p>6. What are the current methods used for Solid Waste Collection in the Town?</p> <ul style="list-style-type: none"><li>a) Door to Door by Department</li><li>b) Door to Door by Private Organization</li><li>c) Individual</li><li>d) Any Other (Please Mention)</li></ul>
<p>7. Are there any separate Collection Systems for Recyclable and Non-Recyclable Waste?</p> <ul style="list-style-type: none"><li>a) Yes</li><li>b) No</li></ul> <p><b>If YES, please describe in details.</b></p>
<p>8. Is there any segregation of Waste at Household Level?</p> <ul style="list-style-type: none"><li>a) Yes</li><li>b) No</li></ul>
<p>9. Are there any Methods used for Waste Segregation at Source-Level in the Town?</p> <ul style="list-style-type: none"><li>a) Yes</li><li>b) No</li></ul> <p>If YES, what are the methods used? Please describe in details.</p>

<p><b>10.</b> Is the Medical Waste Collected Separately?</p> <p>a) Yes</p> <p>b) No</p> <p>If NOT, then how is the Medical Waste or Hazardous Waste separated from the Solid Waste Collected? Please describe in Details.</p>
<p><b>11.</b> Is the Medical Waste Incinerated?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If YES, please mention the location of the Incineration Site(s) in town?</b></p>
<p><b>12.</b> Which are the Major Markets in the Town? Kindly name them and mention their location(s).</p>
<p><b>13.</b> What is the amount of Waste Generated from these Major Markets?</p>
<p><b>14.</b> How is the Waste collected and transported from these Major Markets?</p>
<p><b>15.</b> How the Waste from these Major Markets treated? Kindly mention in details.</p>
<p><b>16.</b> Where is the Waste from these Major Markets disposed? Kindly mention in details.</p>
<p><b>17.</b> What is the Total Number of Sweepers in:</p> <p>a) Town</p> <p>b) Each Ward</p>
<p><b>18.</b> What is the Total Number of Garbage Bins in:</p> <p>a) Town</p> <p>b) Each Ward</p>

<p><b>19.</b> Are all the Garbage Bins in the Town covered?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If NOT, then kindly provide the number of Uncovered Garbage Bins in:</b></p> <p>a) Town</p> <p>b) Each Ward</p>
<p><b>20.</b> What are the Timings of Cleaning the Roads and Streets of the Town? (Please Specify the Time as Well)</p> <p>a) Early Morning At _____ a.m.</p> <p>b) Afternoon At _____ p.m.</p> <p>c) Evening At _____ p.m.</p> <p>d) Late At Night At _____ p.m.</p> <p>e) If NOT, Please Specify the Reason.</p>
<p><b>21.</b> What is the frequency of cleaning the roads and streets in the Town?</p> <p>a) Once Every Day</p> <p>b) Once Every Week</p> <p>c) Once Every Month</p> <p>d) Other (Please Mention in Details)</p>
<p><b>22.</b> What is the Total Volume of the Solid Waste Collected from the Town?</p>
<p><b>23.</b> How is the Solid Waste transported to the Disposal Site? Describe in details.</p>
<p><b>24.</b> How many waste-management vehicles are used for the transportation of Solid Waste to the Disposal Site?</p>
<p><b>25.</b> What are the types of waste-management Vehicles used for the collection and transportation of Solid Waste to the Disposal Site?</p> <p>a) Garbage Trucks</p> <p>b) Auto-Tippers</p> <p>c) Garbage Cycle Rickshaw</p> <p>d) Pushcart</p> <p>Any Other (Please Mention)</p>

<p><b>26.</b> What amount or percentage of Solid Waste collected from the Town is treated before its disposal?</p>
<p><b>27.</b> What are the Treatment Facilities Available and Proposed for Solid Waste Management of the Town? Kindly mention in details.</p>
<p><b>28.</b> Where is the Solid Waste Collected from the Town Disposed-Off? Kindly, mention the number of disposal site(s) and specify the location(s) for each site.</p>
<p><b>29.</b> What is the Current Capacity of Solid Waste Disposal Site(s)? (*Please provide details for each Site as well)</p>
<p><b>30.</b> Are there any methods/system adopted by the department for sorting and processing of waste before disposal?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If YES, please describe in details.</b></p>
<p><b>31.</b> Are there any designated recycling centers or facilities for composting of the Solid Waste?</p> <p>a) Yes</p> <p>b) No</p> <p>If YES, please specify its location.</p>
<p><b>32.</b> What is the current condition of the existing Solid Waste Management Infrastructure in the Town? Please describe in details.</p>
<p><b>33.</b> What are the potential health risks associated with exposure to waste, including open dumping sites or uncollected waste?</p>
<p><b>34.</b> Are there any reported cases of vector-borne diseases or other health issues linked to inadequate waste management?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If YES, please mention in details.</b></p>

<p><b>35.</b> Is fogging regularly done in the town?</p> <p>a) Yes</p> <p>b) No</p>
<p><b>36.</b> Are there any Government Policies for Solid Waste Management in the Town?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If YES, please describe them in details.</b></p>
<p><b>37.</b> What challenges are faced by the Department in managing Solid Waste effectively? Please describe in details.</p>
<p><b>38.</b> What challenges are faced by the Department to ensure public participation in Solid Waste Management? Please describe in details.</p>
<p><b>39.</b> What are the challenges faced by the Department for Solid Waste Management during the tourist season? Please describe in details.</p>
<p><b>40.</b> Is there any additional information or feedback you would like to provide regarding solid waste management in the Town?</p>
<p><b>MAPS AND PLANS REQUIRED:</b></p>
<p><b>City Development Plan</b></p>
<p><b>Municipal Boundary Map</b></p>
<p><b>Treatment facilities available &amp; proposed, their capacity &amp; location Map</b></p>
<p><b>Location and Network Maps of Drains and Nallahs in the Town</b></p>

**Questionnaire for Data Collection on Urban Transport and Parking of Pauri Town**

<b>B. Urban Transport and Parking</b>	
<b>Name of Town</b>	
<b>Area of Town (Municipal Boundary)</b>	
<b>Population of Town</b>	
<b>Floating Population of Town</b>	
<b>Number of Households</b>	
<b>Average Households Size</b>	
<b>Name of department responsible for Water Supply in the town</b>	
<p>1. What is the length of road network in the town?</p>	
<p>2. What is the coverage of road network in the town? (% Area covered)</p>	
<p>3. How many bus stops are there in the town and what is their location? Please specify.</p>	
<p>4. What is the location of railway station? How many stations are there for connectivity of the town?</p>	
<p>5. How many city buses are registered for public transport?</p>	

<p>6. How many registered school buses are there?</p>
<p>7. How many autos and taxis are registered for public transport?</p>
<p>8. How many parking lots are there in the town?</p>
<p>9. Where do the local people of the town do parking for their personal vehicle?</p>
<p>10. Where do tourist vehicles get parked? Is there any common parking available to tourists?</p>
<p>11. What is the tourist (number) influx in peak tourism months? Please specify month wise data.</p>
<p>12. What is the peak tourism season? And how many vehicles enter the town limits in that season?</p>

<p><b>13. What are the major markets? Kindly name the markets.</b></p>
<p><b>14. How many parking are available in above stated market areas?</b></p>
<p><b>15. What is the most congested area during the peak tourism season in the town?</b></p>
<p><b>16. What is the cause of congestion in that area?</b></p> <ul style="list-style-type: none"><li>a) Increase in Vehicle</li><li>b) Increase in pedestrians</li><li>c) Any other, please specify.</li></ul>
<p><b>17. Is there any committee formed to cater traffic needs during peak season of tourism? Please mention name.</b></p>
<p><b>18. Is the police force increased for the ease of traffic and mobility during peak tourism? If yes, by how many number of police officers?</b></p>

19. Are there any Government registered Car Rental/ Taxi Services/ Taxi Union offices in the town? If yes, please mention the office location.

**20. Please provide with Road Network Map of the town.**

**21. Please provide with Map of city, Municipal boundary.**

22. What are the challenges faced by the department of Transport in managing the traffic and parking effectively? Please describe in details.

## Questionnaire for Data Collection on Water Availability and Supply of Pauri Town

<b>C. WATER SUPPLY</b>	
<b>Name of Town</b>	
<b>Area of Town (Municipal Boundary)</b>	
<b>Population of Town</b>	
<b>Floating Population of Town</b>	
<b>Number of Households</b>	
<b>Average Households Size</b>	
<b>Name of department responsible for Water Supply in the town</b>	
<p><b>1. What is the source of water in the town?</b></p> <p>a) Ground water resources</p> <p>b) Surface Water Resources</p> <p>c) Other (please specify):</p>	
<p><b>2. Is the above source of water available all throughout the year? Please mention its location and distance.</b></p>	
<p><b>3. What is the demand and supply of water for the entire town as per the population? (In million litres/ day (MLD))?</b></p>	
<p><b>4. What is the coverage of Water Supply (% Area covered, %population serviced)</b></p>	
<p><b>5. How many Water Treatment plants are there for supplying water in town? (existing &amp; proposed)</b></p>	

<p><b>6. What is the capacity of Water Treatment Plant for daily water production? (MLD)</b></p>
<p><b>7. What amount of water gets wasted during daily distribution of water from Water Treatment Plant? (MLD)</b></p>
<p><b>8. What is the source of drinking water supply in the households?</b></p> <ul style="list-style-type: none"><li>a) Wells</li><li>b) Municipal connection</li><li>c) Hand pump</li><li>d) Tanker</li><li>e) Bore well</li><li>f) Others (please specify):</li></ul>
<p><b>9. What is the number of individual house tap connections in the town?</b></p>
<p><b>10. For how many hours water is supplied daily to tap connections?</b></p>
<p><b>11. What is the timing of water supply for household supply?</b></p> <ul style="list-style-type: none"><li>a) Morning: ___ am to ___ am</li><li>b) Evening: ___ pm to ___ pm</li><li>c) Other (please specify):</li></ul>

<p><b>12. What is the daily frequency of water supply for household supply?</b></p> <p>a) Once a day                  b) Twice a day                  c) There is no fixed supply schedule                  d) Other (please specify):</p>				
<p><b>13. How many households do not have access to tap water connections?</b></p>				
<p><b>14. What is the source of water supply for household with no water connection?</b></p>				
<p><b>15. How many community taps are there?</b></p>				
<p><b>16. Where are those community taps located in the town?</b></p>				
<p><b>17. How much are users in following land-use charged for water per month by municipal authority?</b></p>	<p><b>Residential</b></p>	<p><b>Commercial</b></p>	<p><b>Industrial</b></p>	<p><b>Irrigation</b></p>
<p><b>18. Is rainwater harvesting compulsory in residential land use?</b></p> <p>a) Yes                  b) No</p>				
<p><b>19. Is rainwater harvesting compulsory in industrial/commercial land use?</b></p> <p>a) Yes                  b) No</p>				

<p><b>20. How many slums are there in the town?</b></p>
<p><b>21. How is water supplied in the slums?</b></p>
<p><b>22. When tourism season is on peak, what is the additional water demand for the town?</b></p>
<p><b>23. How is the additional water demand fulfilled in peak tourism season in the town?</b></p>
<p><b>24. What is the emergency water arrangement? Like tankers for example, are there any other such arrangements?</b></p>
<p><b>25. Are there any water supply related Policies &amp; Programs at urban level? If yes, please describe in detail.</b></p>
<p><b>26. What is the status of implementation of the policies and programs at urban level? Please describe.</b></p>
<p><b>27. What are the challenges faced by the department of Water Supply in managing the supply in town the effectively? Please describe in details.</b></p>

**28. Suggestions for Improvement:**

- a) More reliable supply
- b) Better water quality
- c) Improved infrastructure (pipes, pumps, etc.)
- d) Enhanced water pressure
- e) Better conservation efforts
- f) Other (please specify):

**29. Do you have any additional comments or suggestions related to water supply within the municipality?**

**30. Maps and Plan Required: Water Supply Network Plan**

## Annexure C

## Annexure C

### Officials Met in Pauri Town:

Sr.No.	Name	Designation	Department
1	Mr. Gaurav Bhasin	Executive Officer	Nagar Palika Parishad, Pauri
2	Mr. Hemant	Sanitation Inspector	
3	Mr. Virander Parsad	Executive Engineer	Pey Jal Nigam, Pauri
4	Mr. Shiv Kumar	Executive Engineer	Uttarakhand Jal Sansthan, Pauri
5	Mr. Ravi Datta	AAE	
6	Mr. Dwarika Prasad	RTO Administration	RTO Division, Pauri
7	Mr. Tyagendra Rawat	Chief Assistant	
8	Mr. Muhamad Akaram	Senior Assistant	
9	Mr. Kanta Sundiryal	DTDO	District Tourism Development Office Pauri
10	Mr. Lokeshwar Singh	Sr. Superintendent of Police, Pauri	Department of Police, Pauri
11	Mr. Sandeep Bisht	SI_ PRO SP	
12	Mr. Bijal wada		PWD, Pauri

List of Stakeholders/Participants attended the Stakeholder Consultation Meeting held on 14<sup>th</sup> October, 2024 in NPP, Pauri:

**PAURI TOWN**

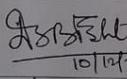
Attendance List of Stakeholders/ Participants Date: 14 Oct 2024

S. No	Name	Designation	Department	Contact Details Mobile No., Email ID	Signature
1)	Rakhi Shah	(Pauri) J.E	Jal sansthan	9639919076 Rakhi shah 519@gmail.com	Rakhi
2.	Prof ASN Rao	Dean	SPA New Delhi	9891137388 drasnrao@wtniif.com	Rao
3.	KIRAN BALA	Research Associate	SPA New Delhi	7807720656 KiranVashisht185@gmail.com	Kiran
4.	Ritesh Kumar	Senior Scientist	Tourism Department Pauri	9084727300	Ritesh
5.	mohd Akram	S.A.	Transport	9058605373	Akram
6.	UPDESH MANI KHOLA	CHIEF APM. officer	Transport Department	9412047369	Updesh
7	Shubham Bhatnagar		N.P.P Pauri	9389372681	Shubham
8	Hemant Kumar		NPP Pauri	8126912336	Hemant
9.	Hemant Kumar	SJ (NPP) Pauri	N.P.P Pauri	9893746677	Hemant
10	SHUBHAM BISHT	JE Pajjal Nigam Pauri	Pajjal Nigam Pauri	8171218258	Bisht
11.	SONAM	JE	Pajjal Nigam Pauri	7310990787	Sonam
13.	S.P. Joshi	E.O NPP Pauri	N.P.P Pauri	9627110086	S.P. Joshi
14	Jagdish Kumar	C.M.M Pauri	N.P.P Pauri	9097221152	Kumar

**List of Stakeholders/Participants attended the Post Study Workshop held at the Dr. R.S. Tolia Academy of Administration Nainital on 10<sup>th</sup> December, 2024:**

State Institute of Urban Development Dr. R. S. Tolia Uttarakhand Academy of Administration Nainital Date: 10th December, 2024 "Post Study Workshop" (Attendance Sheet)				
S.N.	Name	Designation	10.12.2024, Signature	Phone No.
1.	Heera Lal	Tourist Office Mussorie A.T.O.		805781165
2.	T. S. Pandey	Assistant Engineer Vik. Pw. Dept. Nigam Almora		9412119821
3.	Mukul Singh Marwal	T.T.O Transport (P.T.O) department		8476092315
4.	Ramesh Dutt Pitlark	Tax & Revenue Superintendent		7906653995
5.	Amir Kumar	Executive engineer (Incharge) Uttarakhand Jal Sansthan, Mussorie		7500005714
6.	T.S. Rawat	Assistant Engineer Uttarakhand Jal Sansthan Mussorie		9756202515
7.	Ajay Sah.	INSPECTOR Uttarakhand Police ALMORA.		9412935729

S.N.	Name	Designation	10.12.2024, Signature	Phone no.
8.	MARTUNJAY SHARMA	Assistant Engg. PWD-Pauri		
9.	<u>RAVI DATTA</u>	<u>AAE Jal Sansthan Pauri</u>		Ri datta 9760846307 7055032250
10.	SUBHAM BISHT	JE Pwaj Nigam Pauri		817218758
11.	VIVEK PANWAR	J.G Jal Sansthan Pauri		7351220833
12.	ASHOK RAWAT	J.E Pwaj Nigam Pauri		7906857475
13.	<u>Harsh Aggarwal</u>	<u>JMM, Nagar Nigam Almora.</u>		9557966138
14.	<u>Pawan Prasad Pandey</u>	<u>TR1 Nagar Nigam Almora</u>		8077849608
15.	Umang Sharma	JE Jal Sansthan Almora		7505282031
16.	Siddharth Purohit	A.E. Irrigation, Almora		9458305783

S.N.	Name	Designation	10.12.2024, Signature	Phone no.
17.	Birendra Singh Mahila	Assistant Engineer Uttarakhand PwD Society Almora		7895890200
18.	Dr. Devendra Singh Bhatt	Registrar Sardar Singh Techa University Almora		8449399063 10/12/24
19.	Kunshal Singh Negi	District Tourism Dev. Officer Pauri Garhwal		7300799201
20.	Rashmi Bhatt	ARTO (E) Almora		9027115122
21.	Syati Pal Umrigal	N.P.P. Pauri		9037327988
22.				
23.				
24.				

Source: (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

## Annexure D

## Annexure D

Poster of Stakeholder Consultation Meeting Held on 26<sup>th</sup> April 2024 in NPP, Pauri



**School of Planning and Architecture ( SPA), New Delhi**  
**August,2024**

**INVITATION TO**

**STAKEHOLDER CONSULTATION**

**14<sup>th</sup> October 2024, Monday**  
**11:00 AM to 02:00 PM**

**Venue:**  
**Pauri**  
**Nagar Palika Parishad**

S. No	DEPARTMENTS/ORGANIZATIONS INVITED
01	Nagar Palika Parishad, Pauri
02	Uttarakhand Jal Sansthan (UJS), Pauri
03	Pay Jal Nigam, Pauri
04	Department of Police, Pauri
05	RTO Division, Pauri
06	Tourism Department, Pauri
07	PWD, Pauri

Solid Waste Management

Urban Transportation and Parking

Water Supply

**Research Sponsored by**  
**Dr. R. S Tolia Academy of Administration, Mussoorie**

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