



Champawat

# Study of Challenges Faced by Six Towns of Uttarakhand

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

Report

**CHAMPAWAT TOWN**

September, 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 - Champawat 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 25<sup>th</sup> April 2024, meeting on 15<sup>th</sup> May 2024 and post study workshop on 30<sup>th</sup> August 2024, the valuable suggestions made have been duly incorporated.

**13<sup>th</sup> September 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	Pey Jal Nigam Uttarakhand
PPH	Persons 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

# Chapter 1

## Introduction

## Chapter 1. Introduction

This Final Report is for Champawat Town as required in the Terms of Reference (ToR). It contains details related to each of the three sectors 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*)

# Chapter 2

## Objectives of Research Project

## Chapter 2. Objectives of the 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 counter measures to mitigate challenges.
3. To assess the urban challenges.
4. To carry out consultations stakeholders and suggest solutions.

Figure 1: Objectives of the Research Project



# Chapter 3

## Scope of Work

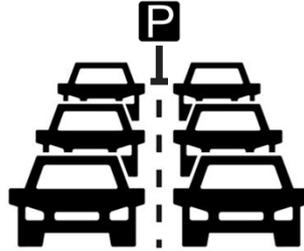
### Chapter 3. Scope of Work

This report relates to the following sectors;

- 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 sectors in Champawat Town are identified in this report. Along with this a Stakeholder Consultation Meeting was also conducted on 26<sup>th</sup> April, 2024. Further, a Post Study Workshop has also been conducted on 30<sup>th</sup> August 2024. After the brainstorming sessions in the Stakeholder Consultation Meeting appropriate possible solutions and suggestions for improvement have been prepared and recommended in this report based on the feedback provided by the officials for Champawat Town.

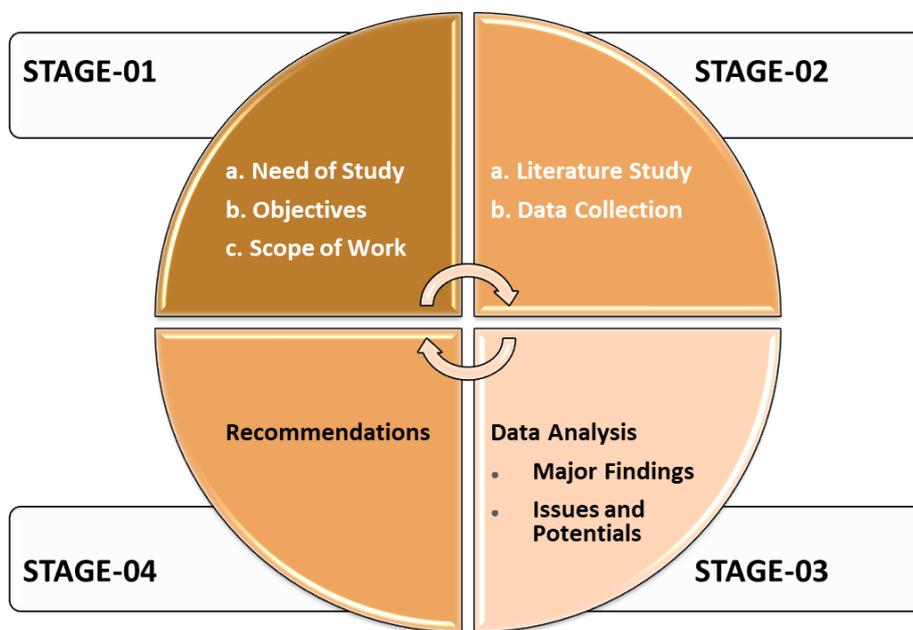
# Chapter 4

## Methodology

## Chapter 4. Methodology

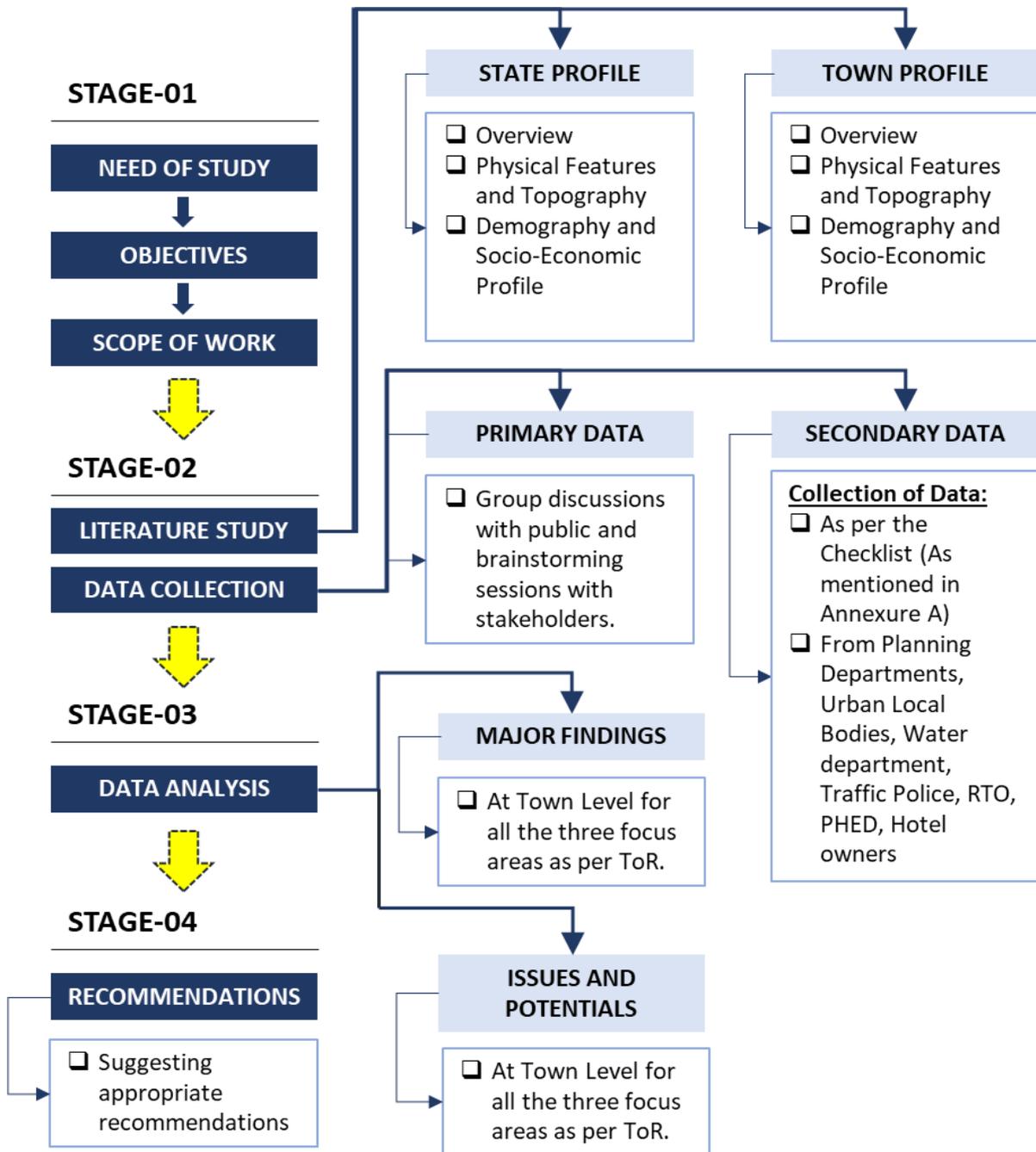
The Research Project Methodology is divided into four stages namely Stage-01, Stage-02, Stage-03 and Stage-04, as shown in Figure 2. Stage-01 consists of: the Need of Study, the Objectives defined and the Scope of Work as mentioned in the ToR. Stage-02 consists of Literature Study and Data Collection 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 the stakeholder consultation meeting, held on 26<sup>th</sup> April 2024 for Champawat Town as well as the Post Study Workshop held on 30<sup>th</sup> August 2024.

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 potentials

##### 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.

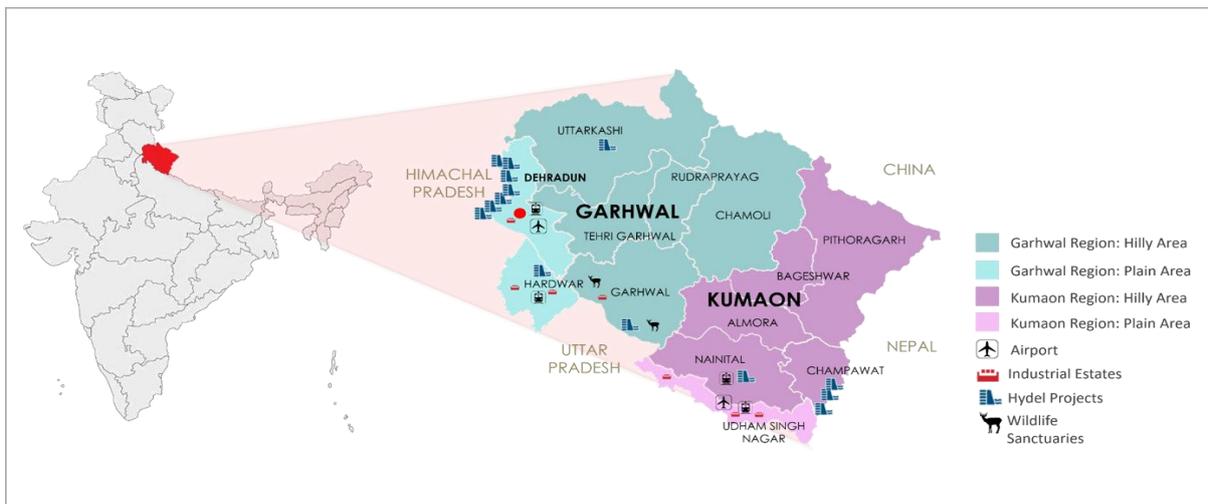
Image 1: Uttarakhand State Flower, Bird, Animal and Tree Image



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.

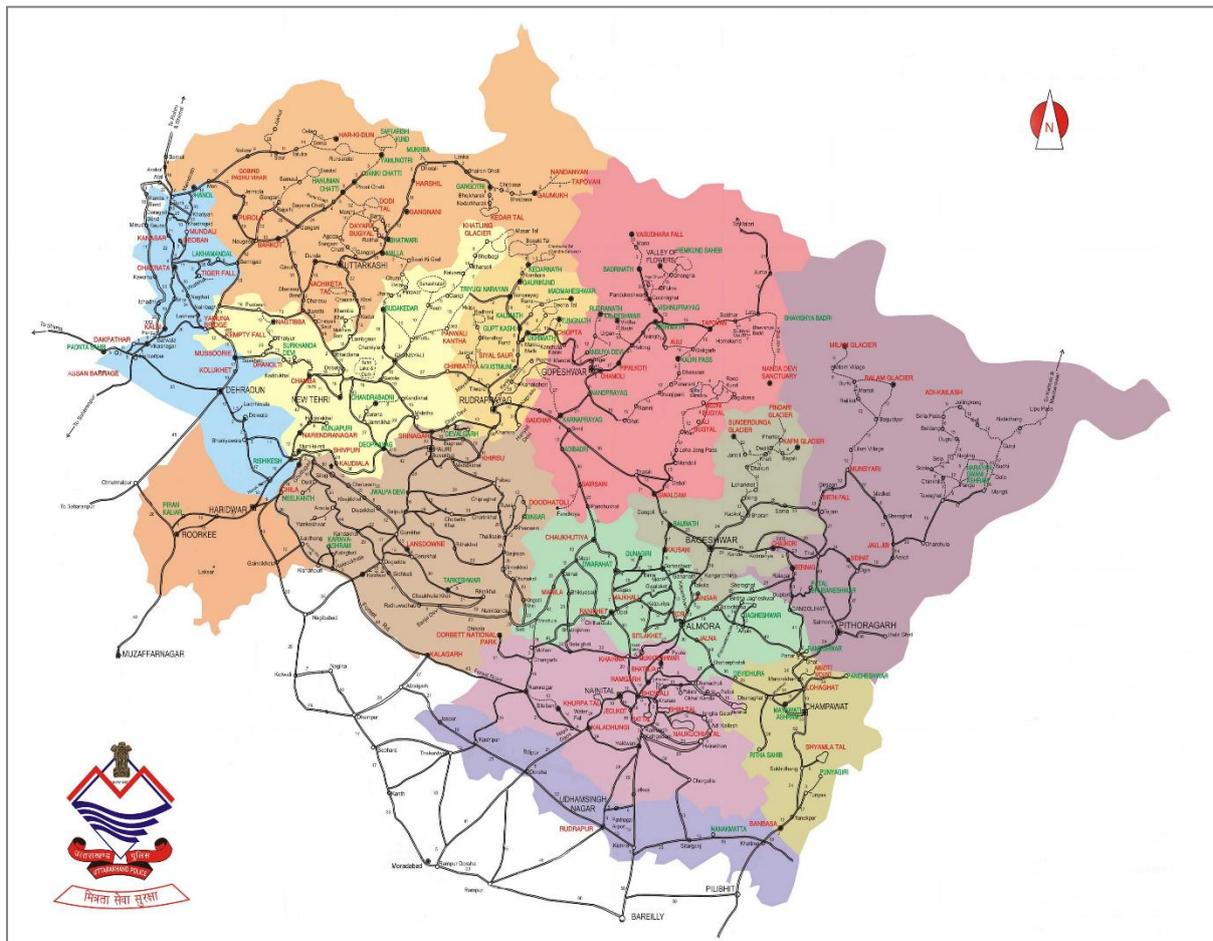
Map 3: Thematic Map of the State of Uttarakhand's Administrative Division



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

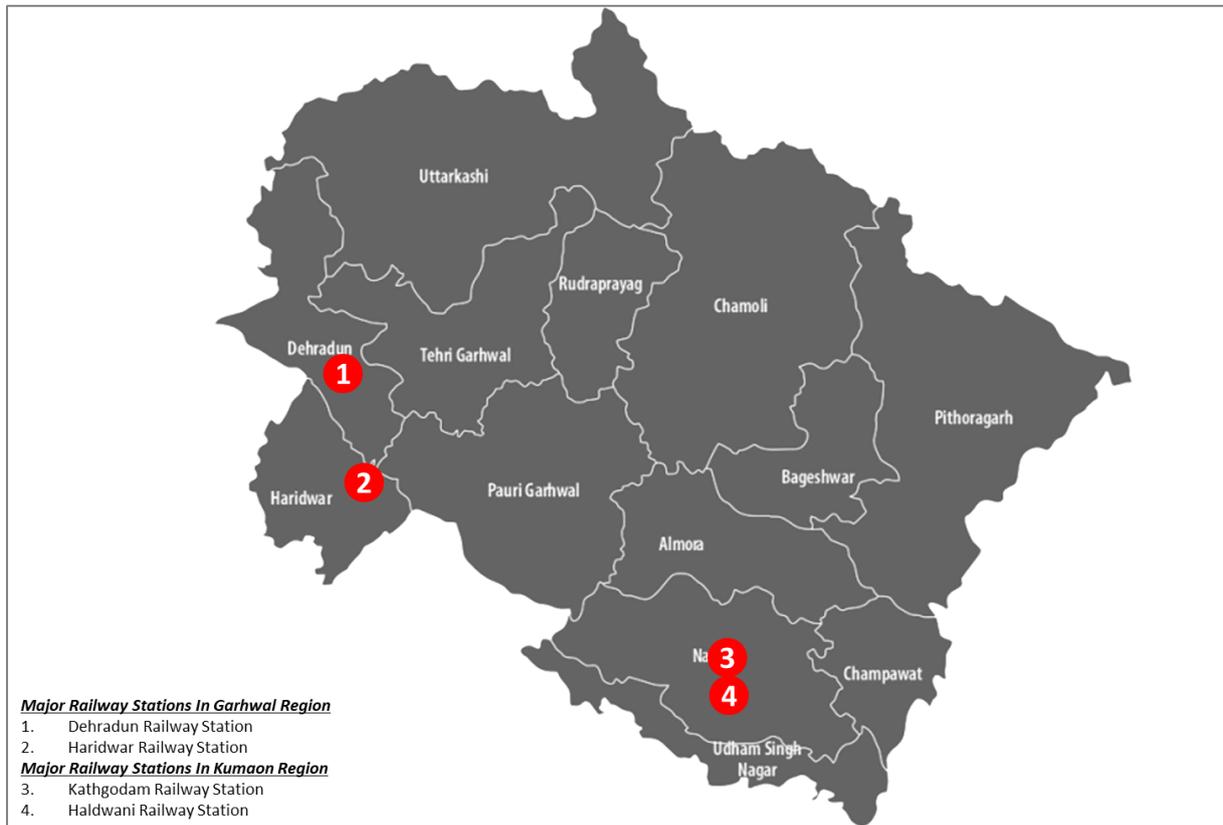


Source: (Traffic Directorate Uttarakhand Police, 2024)

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.

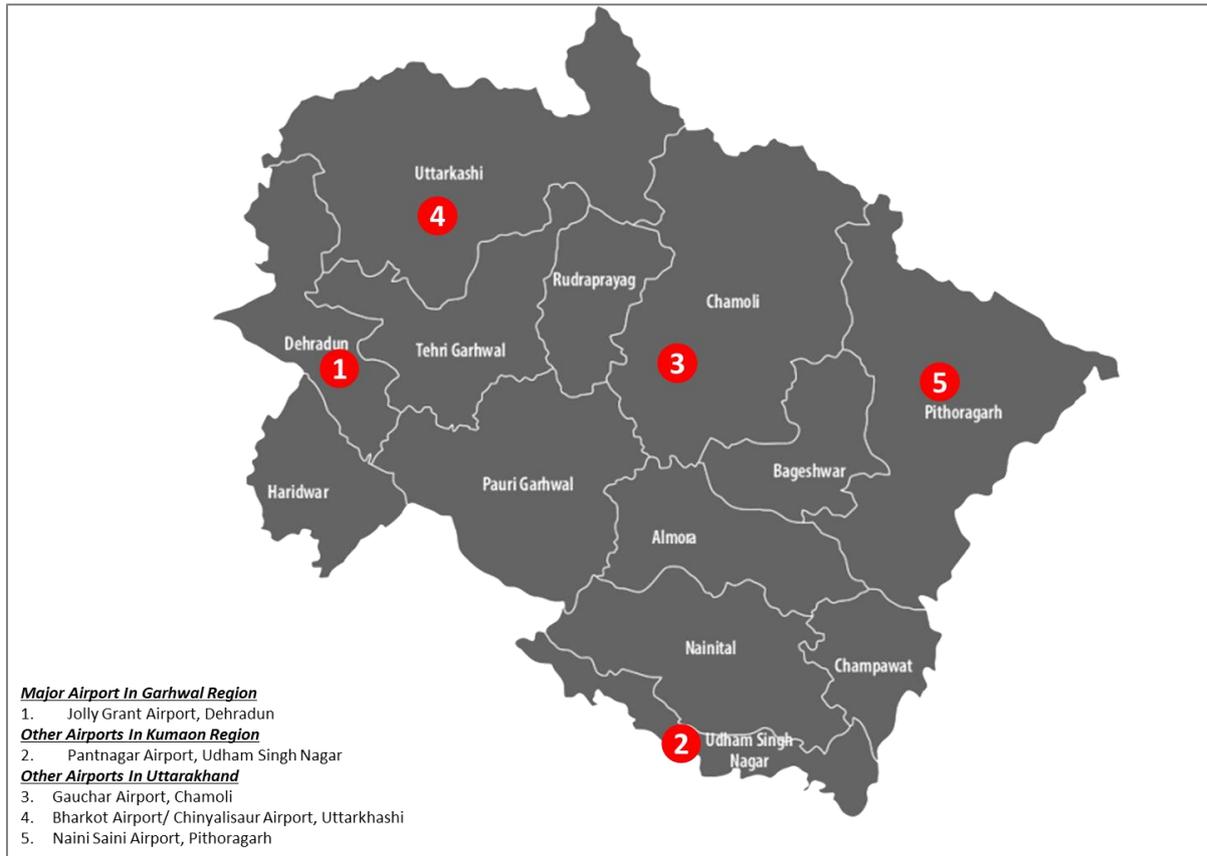
Map 5: Major Railway Stations in the Garhwal and Kumaon Region of Uttarakhand



Source: Basemap: (Google Images, 2024)

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)

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

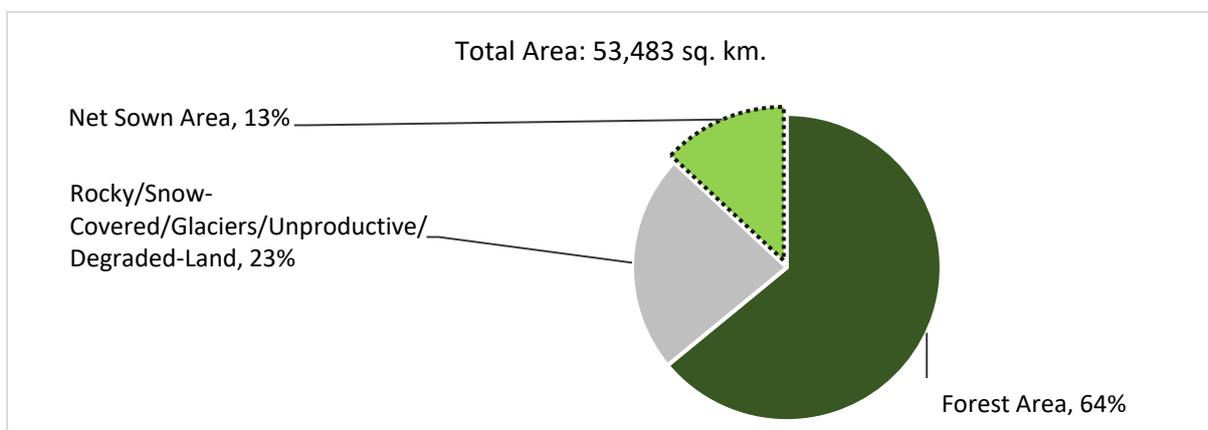
<b>ADMINISTRATIVE SET UP</b>	
Number of Divisions	2 Garhwal Division Kumaon Division
Number of Districts	13
Number of Tehsils	110
Number of Sub-Tehsils	18
Number of Development Blocks	95
Number of Nyaya Panchayats	662
Number of Gram Panchayats	7796
Number of Census Villages	16,793
Number of Nagar Nigam	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.

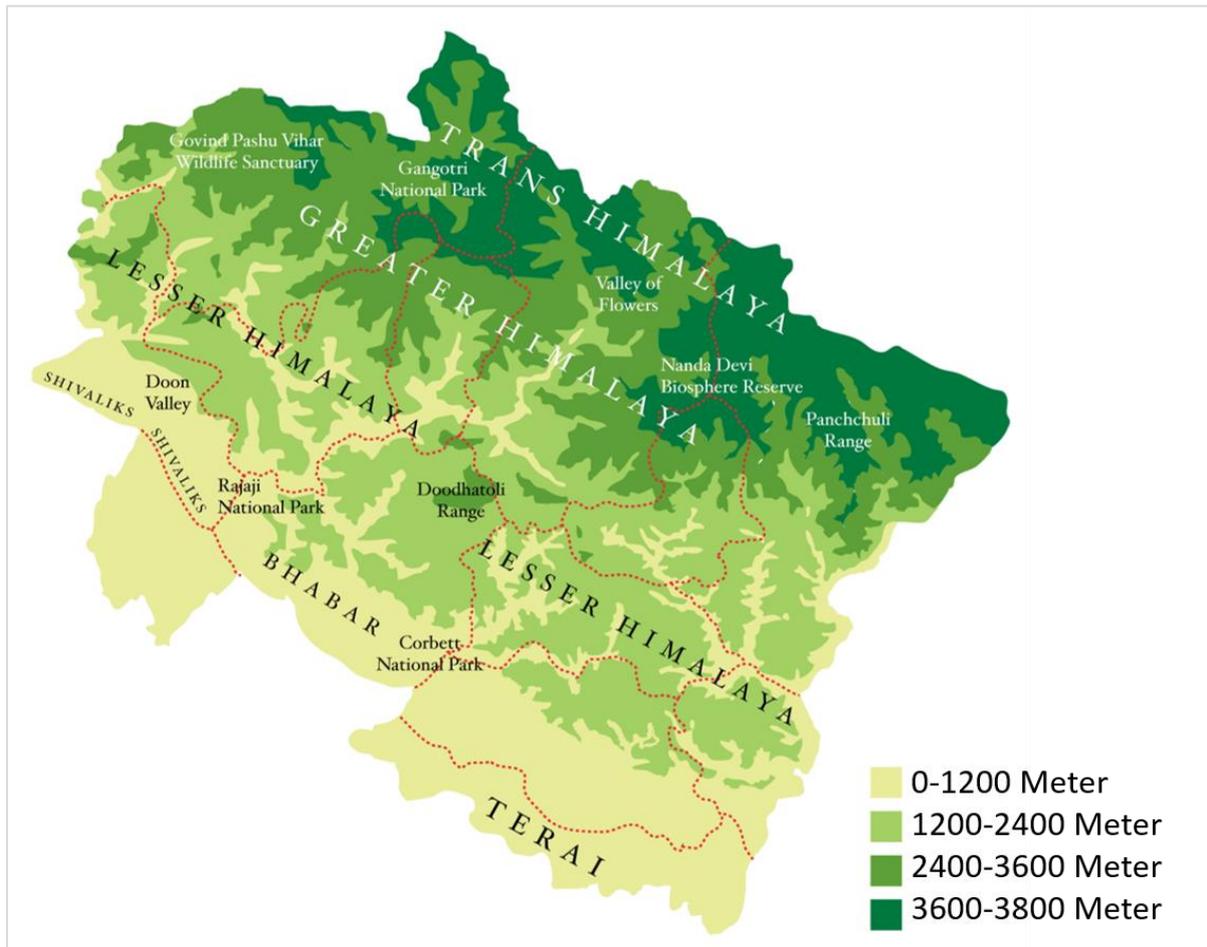
Figure 4: Percentage of Area Distribution of Uttarakhand (Census 2011)



Source: (District Census Handbook, 2011)

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.

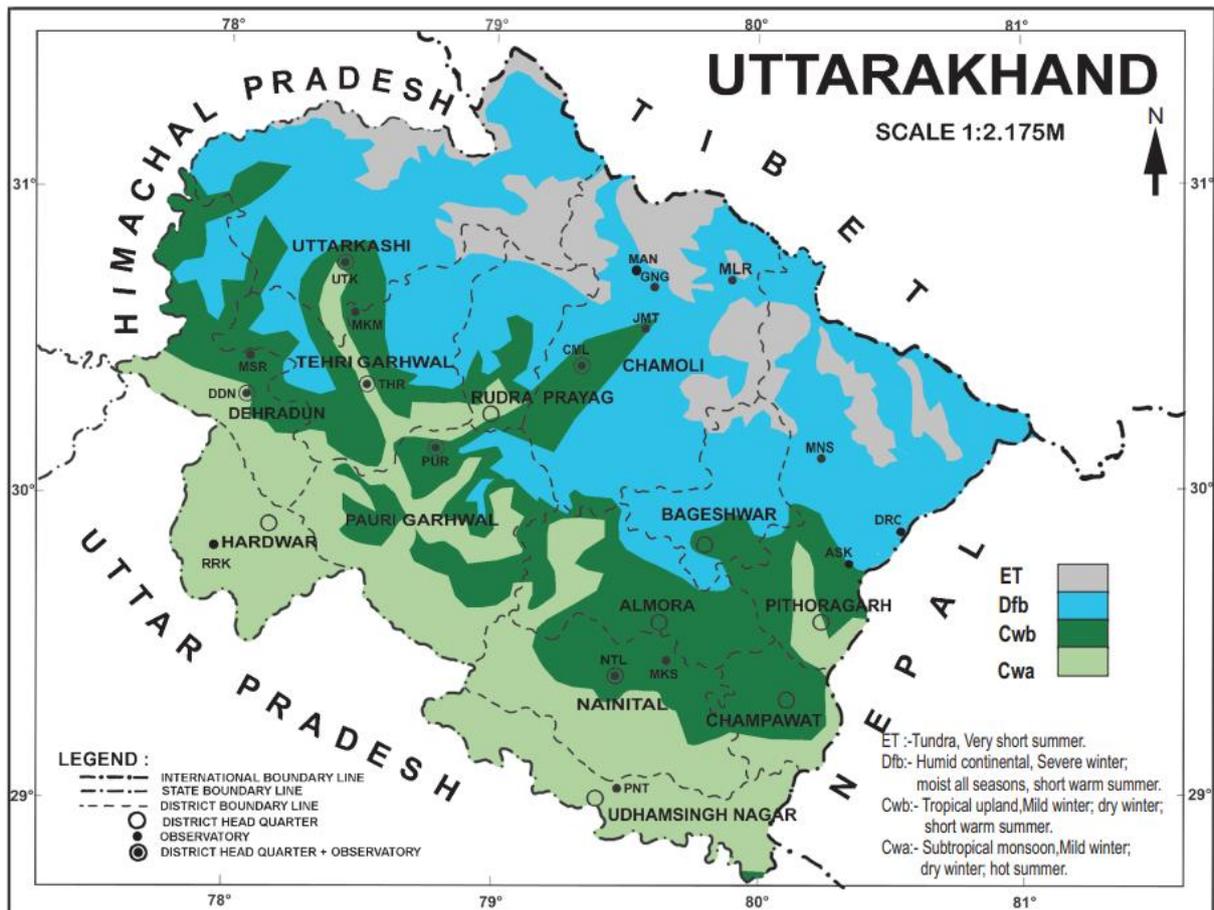
Map 7: Terrain Map of Uttarakhand



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.

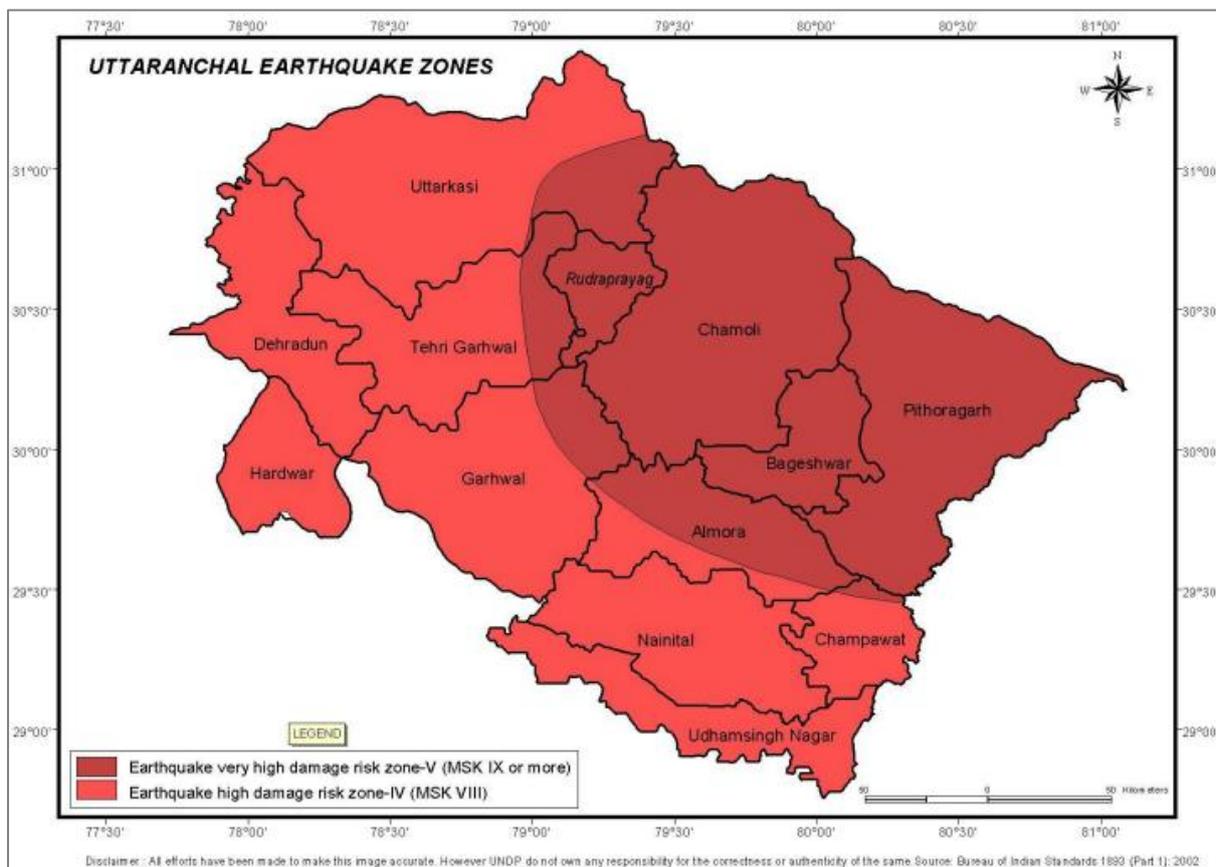
Map 8: Climate Classification of Uttarakhand



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.

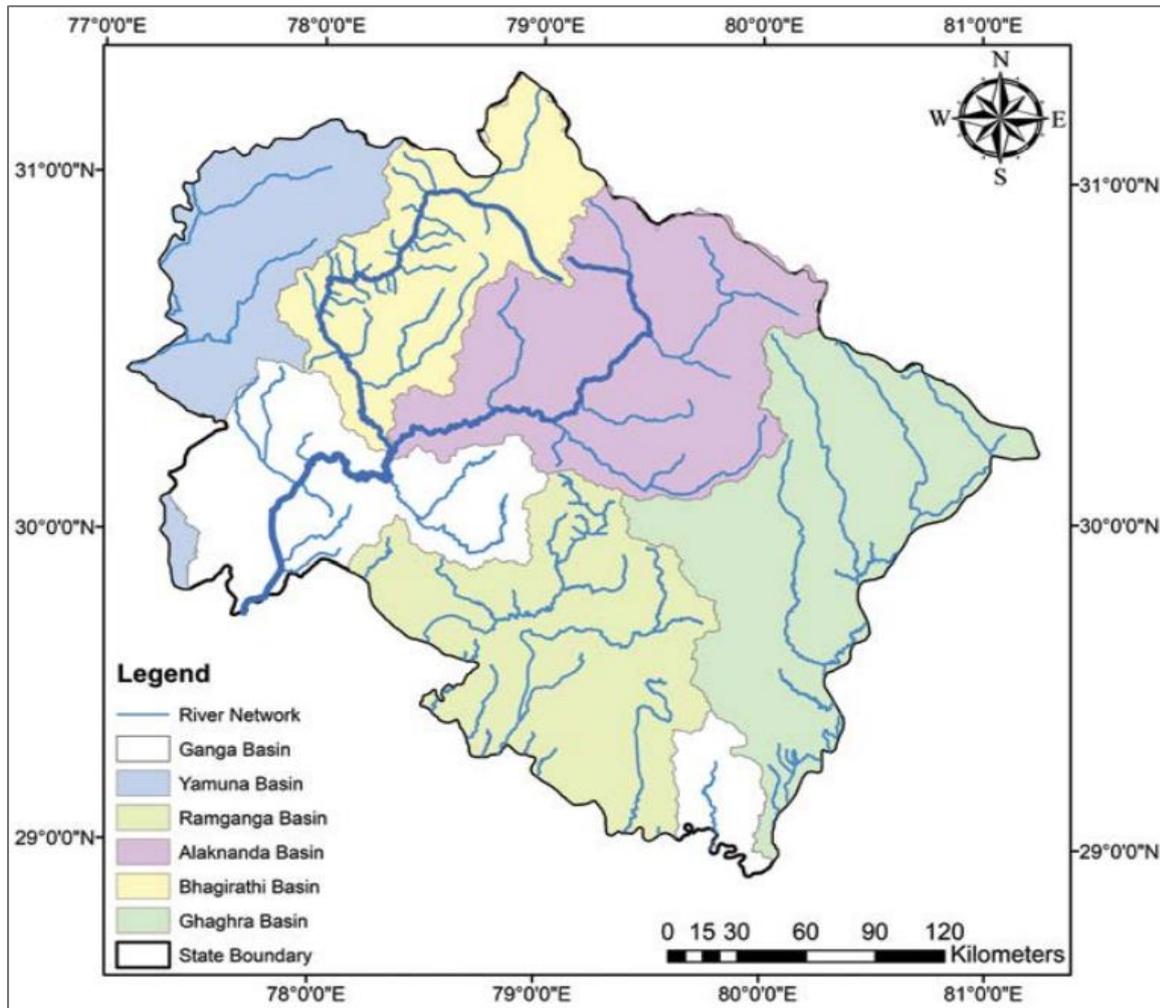
Map 9: Earthquake Zonation Map for the State of Uttarakhand



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



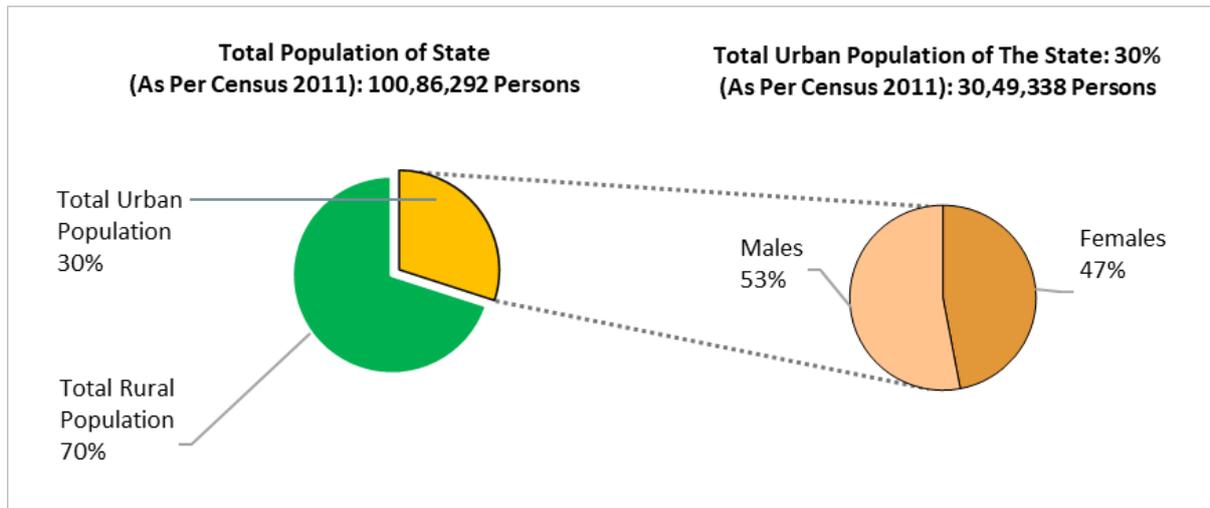
Source: (*Uttarakhand River Atlas, National Mission for Clean Ganga, Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation, Government of India, 2021*)

### 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.

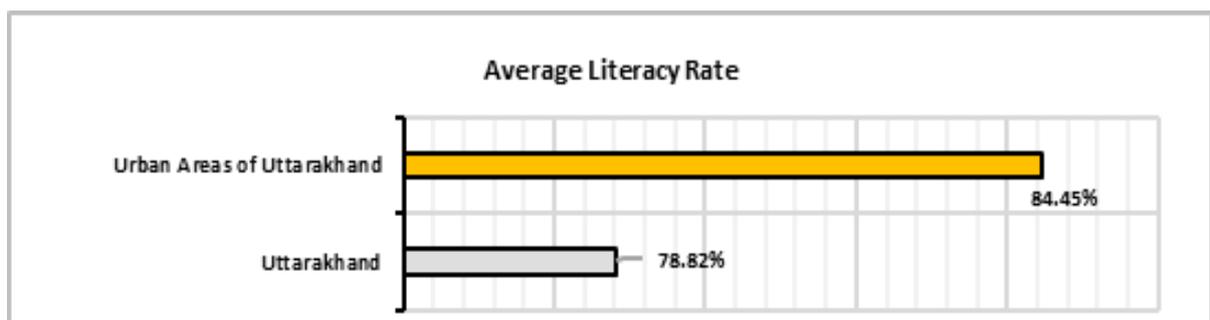
Figure 5: Population-Split of Uttarakhand (Census 2011)



Source: (Census India, 2011)

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%.

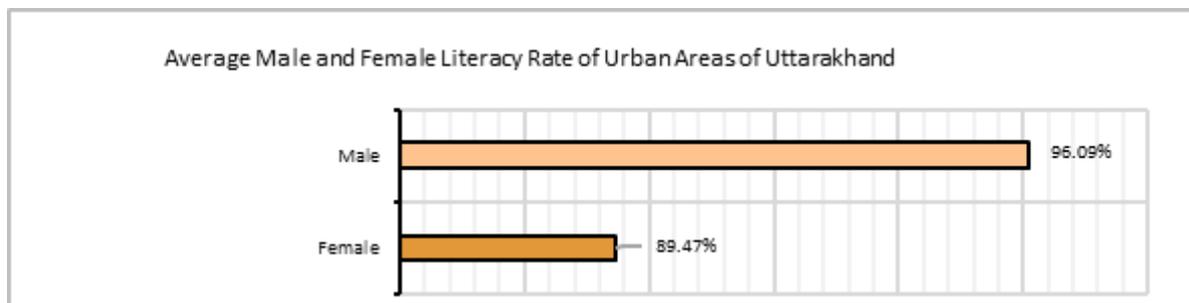
Figure 6: Comparative Analysis of the Average Literacy Rate of Uttarakhand and the Urban Areas of Uttarakhand (Census 2011)



Source: (Census India, 2011)

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%).

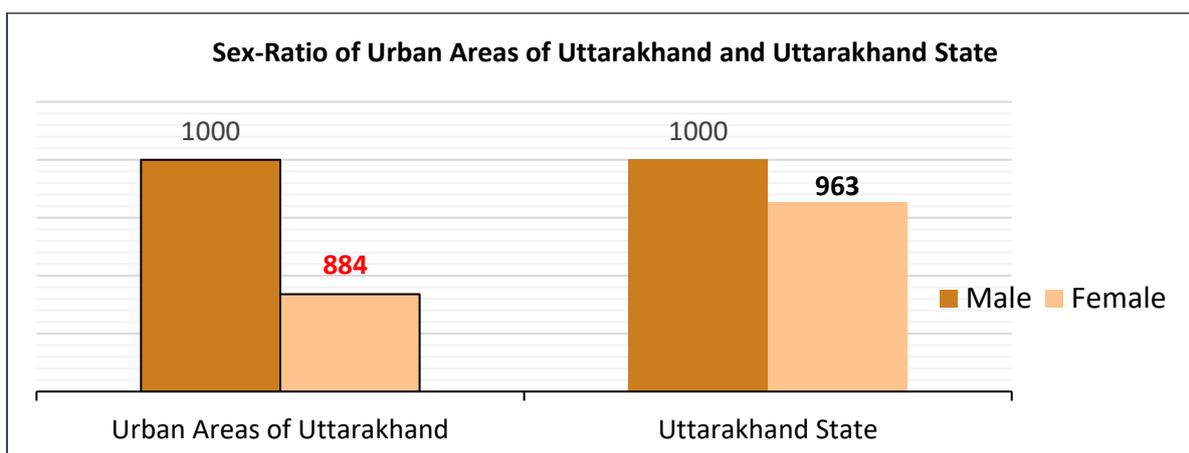
Figure 7: Comparative Analysis of the Average Male and Female Literacy-Rate of Urban Areas of Uttarakhand (Census 2011)



Source: (Census India, 2011)

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)

### 5.3.2. Social and Cultural Aspects

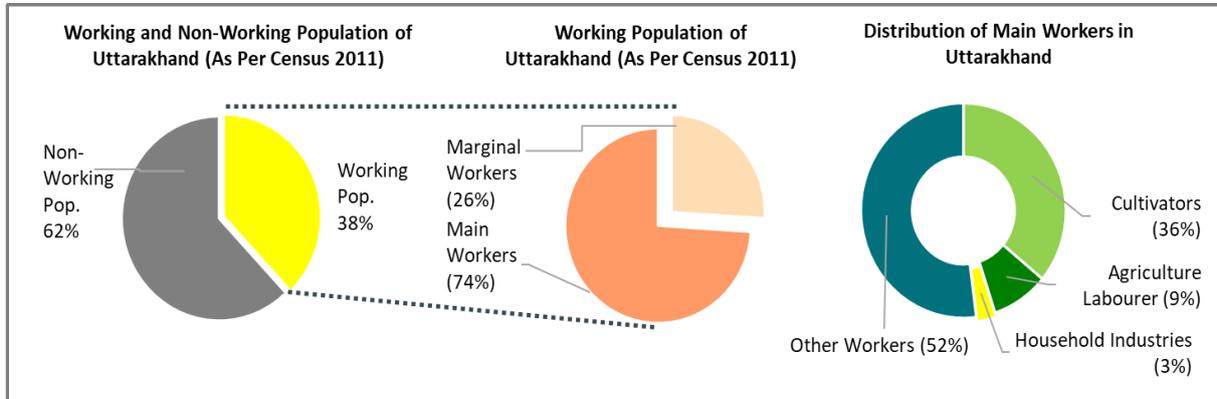
As per the (Census India, 2011), Uttarakhand has a Hindu majority with 82.97% of Hindu population followed by 13.95% of Muslim population, 2.34 % Sikh population, 0.37% of Christian population, 0.15% of Buddhist population, 0.09% of Jain population, 0.01% of Other Religions population and 0.12% of population 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)

# Chapter 6

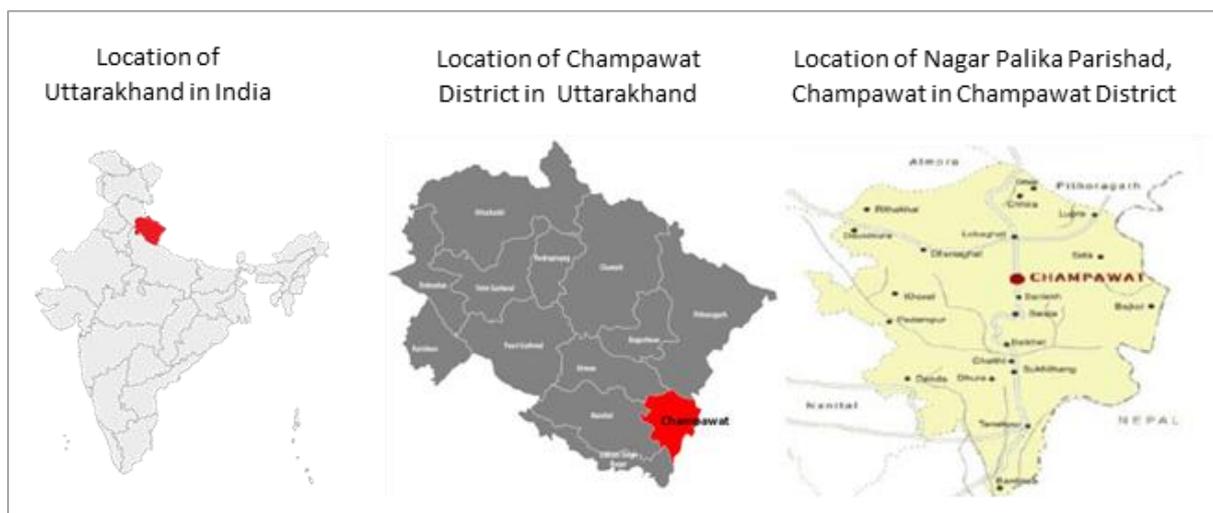
## Champawat Town

## Chapter 6. Champawat Town

### 6.1. Overview

As shown in Map 11, Champawat Town is Located in the Kumaon Division of Uttarakhand, India. It falls in the Champawat Tehsil of the Champawat District in the State of Uttarakhand India. The hilly Town of Champawat is famous for its natural beauty and breath-taking views of the surrounding hills. Historically, it holds a very significant cultural importance as Champawat was the Capital of the Rulers of the Chand Dynasty and is named after its ancient rulers. At present Champawat Town accommodates many well-known temples of high artistic value including the Baleshwar Temple, Nagnath Temple and Golu Devta Temple. The town also has a Botanical Tea Garden within 6 km range.

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



Source: (Google Images, 2024), (Draft Master Plan of Champawat 2041)

The following Table 3, shows a comprehensive overview of Champawat Town as per the Census 2011.

Table 3: Overview of Champawat Town (Census 2011)

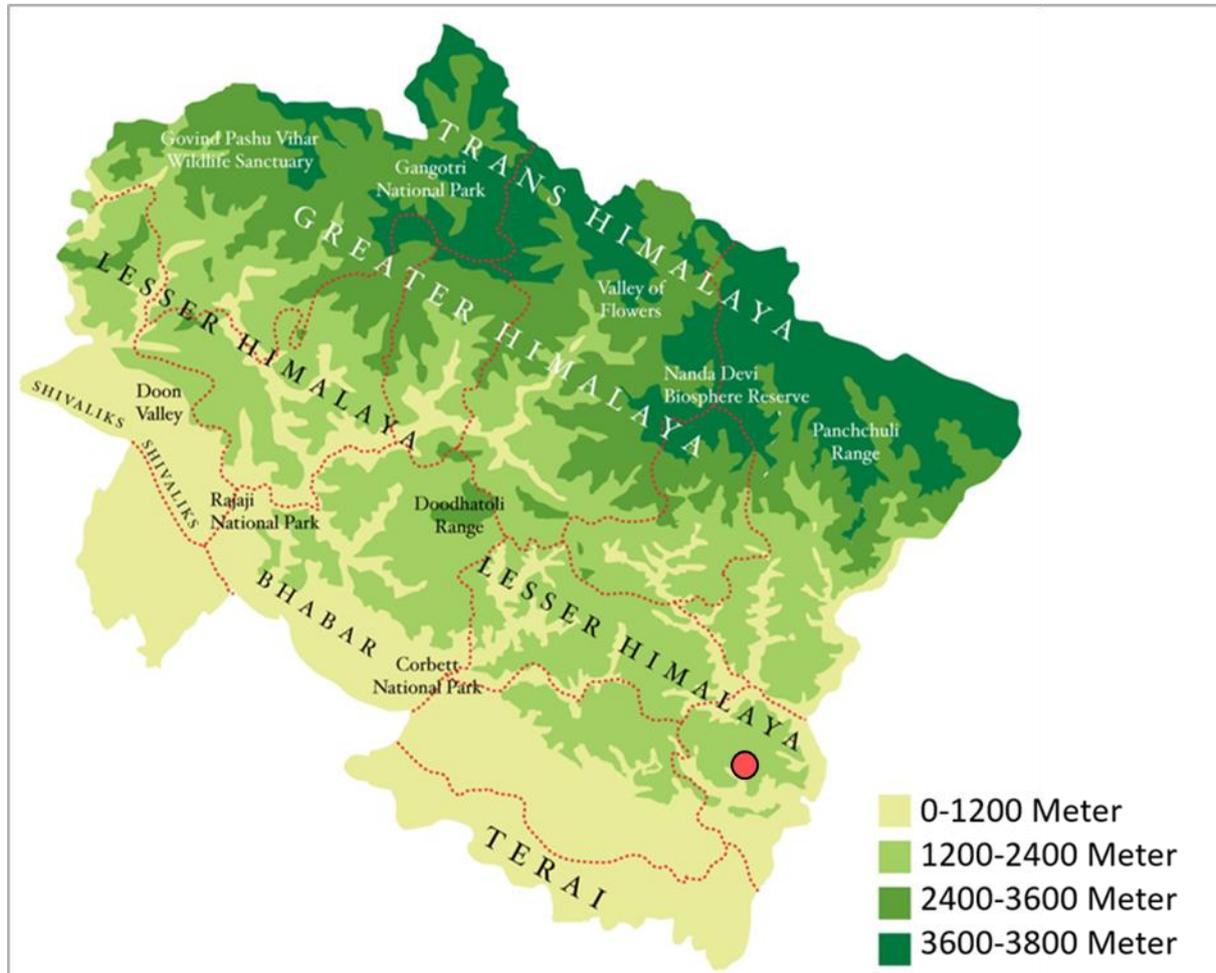
<b>GEOGRAPHICAL LOCATION</b>	
District	Champawat
Tehsil	Champawat
Town	Champawat
Latitude	29° 19' 48" N
Longitude	80° 6' 0" E
Geographical area of the Town	5 sq. km.
Average elevation of district headquarters (ASL)	1615 m
<b>POPULATION DATA (CENSUS 2011)</b>	
Total population	4,801
Male population	2,543
Female population	2,258
Population density (persons per sq. km.)	960
Population growth rate (%) 2001-2011	7.42
Average literacy rate (%)	91.69
Male literacy (%)	95.91
Female literacy (%)	87.04
Sex-Ratio (female per thousand male)	888
<b>ULB</b>	
Nagar Panchayat Champawat	4 Wards

Source: (Gol, District Census Handbook, Champawat, 2011), (Census India, 2011)

**6.2. Physical Features and Topography**

As shown in Map 12, as per the (District Census Handbook, 2011), Champawat Town geographically falls in the Lesser Himalayas region (1200-2400m) Terrain of Uttarakhand. Topographically it represents a sloping and uneven topographical land consisting of dense forests and has the sub-micro region of the Siwalik Ranges and is situated on the banks of river Kali.

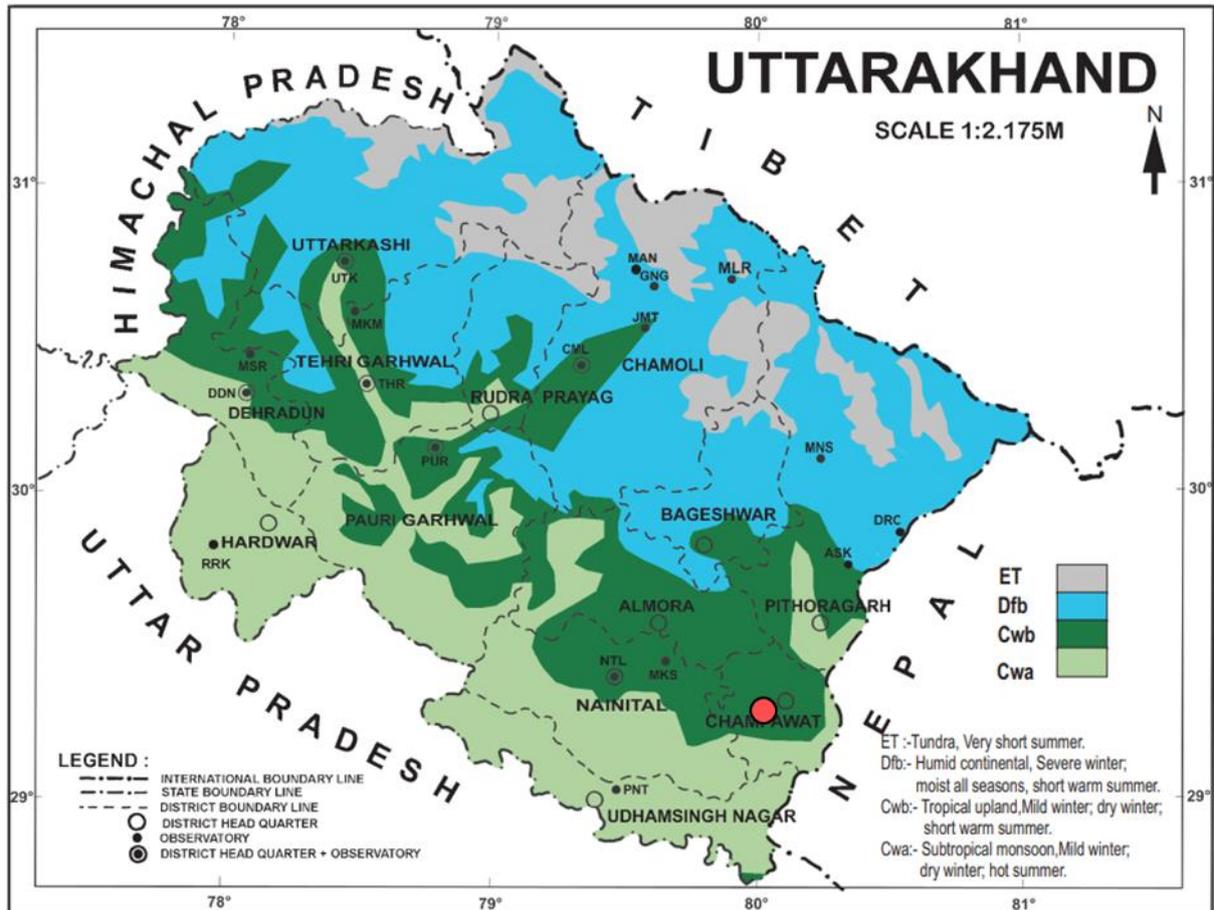
Map 12: Geographical Location of Champawat Town in Uttarakhand



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

As shown in Map 13, the climate in Champawat Town depends on the elevation and exposure to Sun and Wind. However, the temperature in the Shivalik and lesser Himalayan region generally remains pleasant throughout the year. The temperature in Champawat Town ranges from 30.3°C to 1.7°C. Some of the high mountainous areas even receive precipitation in the form of snowfall.

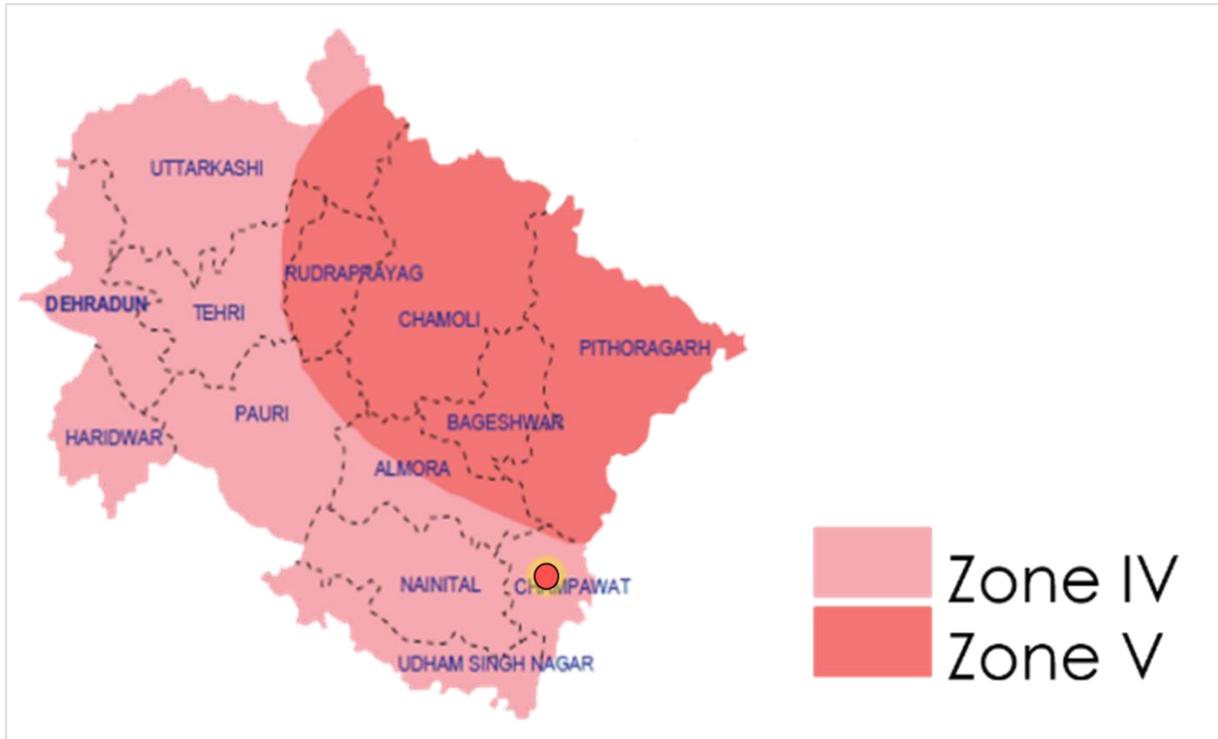
Map 13: Climatic Classification Map of Uttarakhand Highlighting the Climatic Conditions of Champawat Town



Source: Basemap: (Gol, Climate of Uttarakhand)

As shown in Map 14, Champawat 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 Champawat Town in Earthquake Zonation Map of Uttarakhand



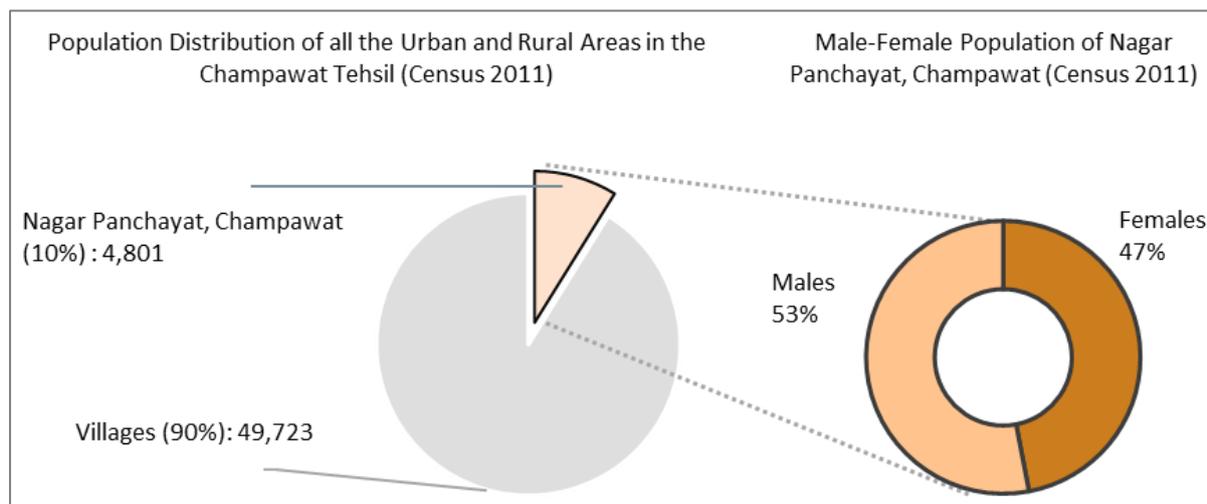
Source: (Thematic Map Library, Uttarakhand.org, 2024)

### 6.3. Demography and Socio-Economic Profile

#### 6.3.1. Demography

As shown in Figure 10, as per the (Census India, 2011), Champawat Tehsil has 10% (4,801 persons) of its total population in the urban areas i.e. Nagar Panchayat, Champawat. The Nagar Panchayat, Champawat further has 53% (2,543 persons) of male population and 47% (2,258 persons) of female population in the Town.

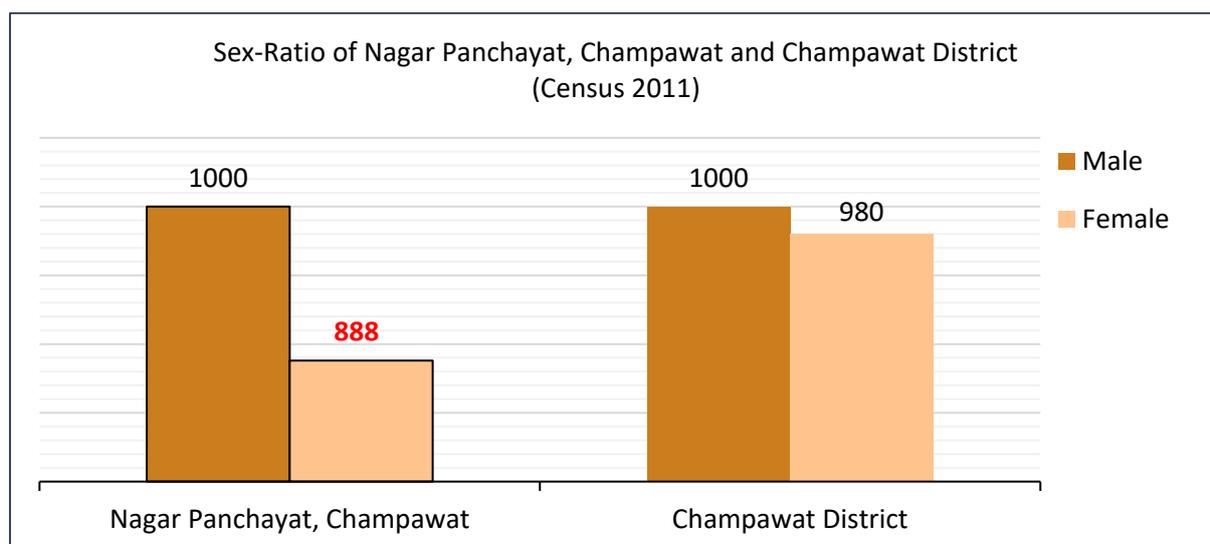
Figure 10: Population Distribution of the Urban and Rural Areas in the Champawat Tehsil and Male-Female Population of the Nagar Panchayat, Champawat (Census 2011)



Source: (Census India, 2011)

As shown in Figure 11, Champawat Town has 888 females per 1000 males. Thus, making the sex-ratio of Champawat Town to be lower than the sex-ratio of Champawat District i.e. 980 females per 1000 males.

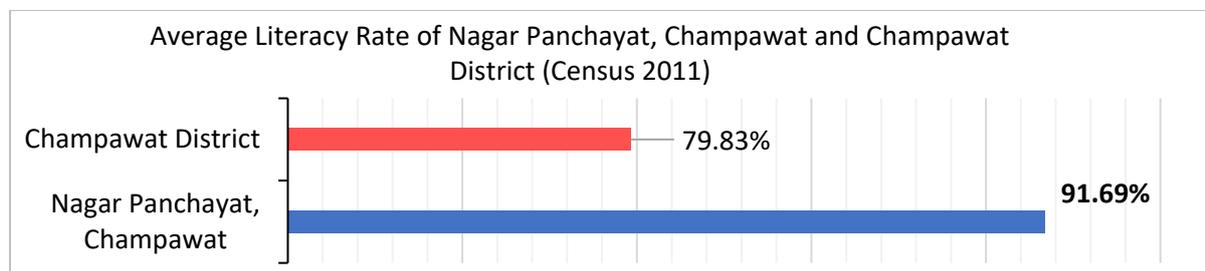
Figure 11: Comparative Analysis of Sex-Ratio of Nagar Panchayat, Champawat and Champawat District (Census 2011)



Source: (Census India, 2011)

As shown in Figure 12, the average literacy rate of Champawat Town (91.69%) is higher than the average literacy rate of Champawat District (79.83%).

Figure 12: Comparative Analysis of Average Literacy Rate of Nagar Panchayat, Champawat and Champawat District (Census 2011)



Source: (Census India, 2011)

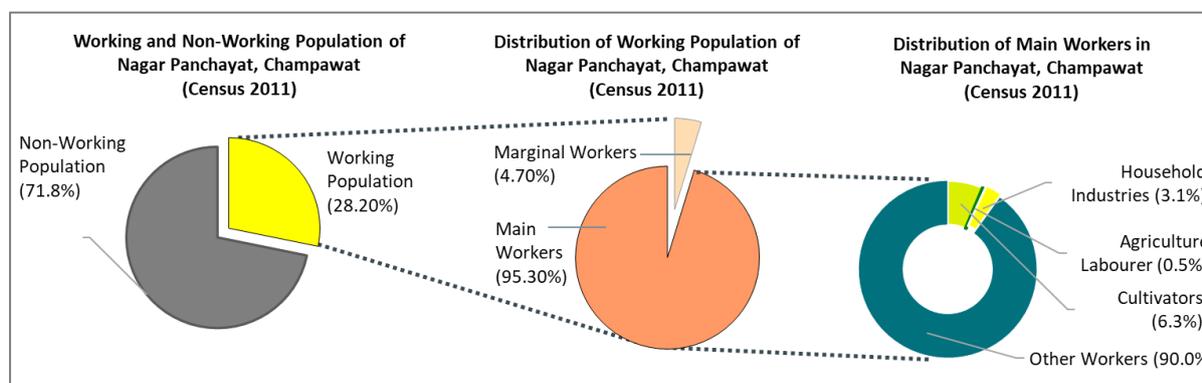
### 6.3.2. Social and Cultural Aspect

As per (Census India, 2011), in Nagar Panchayat, Champawat out of the total population (4,801 persons) of the town 19% (893) of population is Schedule Caste (SC) and 1% (45) of population is Schedule Tribe (ST).

As per the (Census India, 2011), Nagar Panchayat, Champawat has a Hindu majority with 94.90% of Hindu population followed by 4.56% of Muslim population, 0.35% of Christian population, 0.06 % Sikh population, 0.00% of Buddhist population, 0.00% of Jain population, 0.00% of Other Religions population and 0.12% of population with No Religion Stated.

### 6.3.3. Economic Profile

Figure 13: Demography of Working Population of Nagar Panchayat, Champawat (Census 2011)



Source: (Census India, 2011)

As shown in Figure 13, according to the (Census India, 2011) around 28.2% of the total population of Nagar Panchayat, Champawat is the engaged in working activities. Thus, making the total working population to be 1,356 persons. Out of this total working population, 95.3% of the population are Main Workers (employed or earning more than 6 months) i.e. 1,292 persons (82% males and 18% females) and the remaining 4.7% of the total working population are Marginal Workers (working for less than 6 months) i.e. 64 persons (70% males and 30% females). Out of the total Main Workers, 6.3% are Cultivators, 0.5% are Agriculture Labourer, 3.1% works in the Household Industries and 90.0% are engaged as Other Workers. While the remaining 71.8% of the total population of the Nagar Panchayat, Champawat is the Non-Working Population i.e. 3,445 persons.

#### 6.4. Discussions during the Stakeholder Consultation Meeting held on 26<sup>th</sup> April 2024 in NPP, Champawat

As shown in Image 2 below, a Stakeholder Consultation Meeting was held on 26<sup>th</sup> April 2024 in NPP, Champawat. This meeting was attended by 15 stakeholders/participants as mentioned in the list attached in Annexure C.

Image 2: Images of Stakeholder Consultation Meeting Held on 26th April 2024 in NPP, Champawat



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) Wate Availability and Supply in Champawat Town.

6.1. Post study workshop held on 30<sup>th</sup> August, 2024





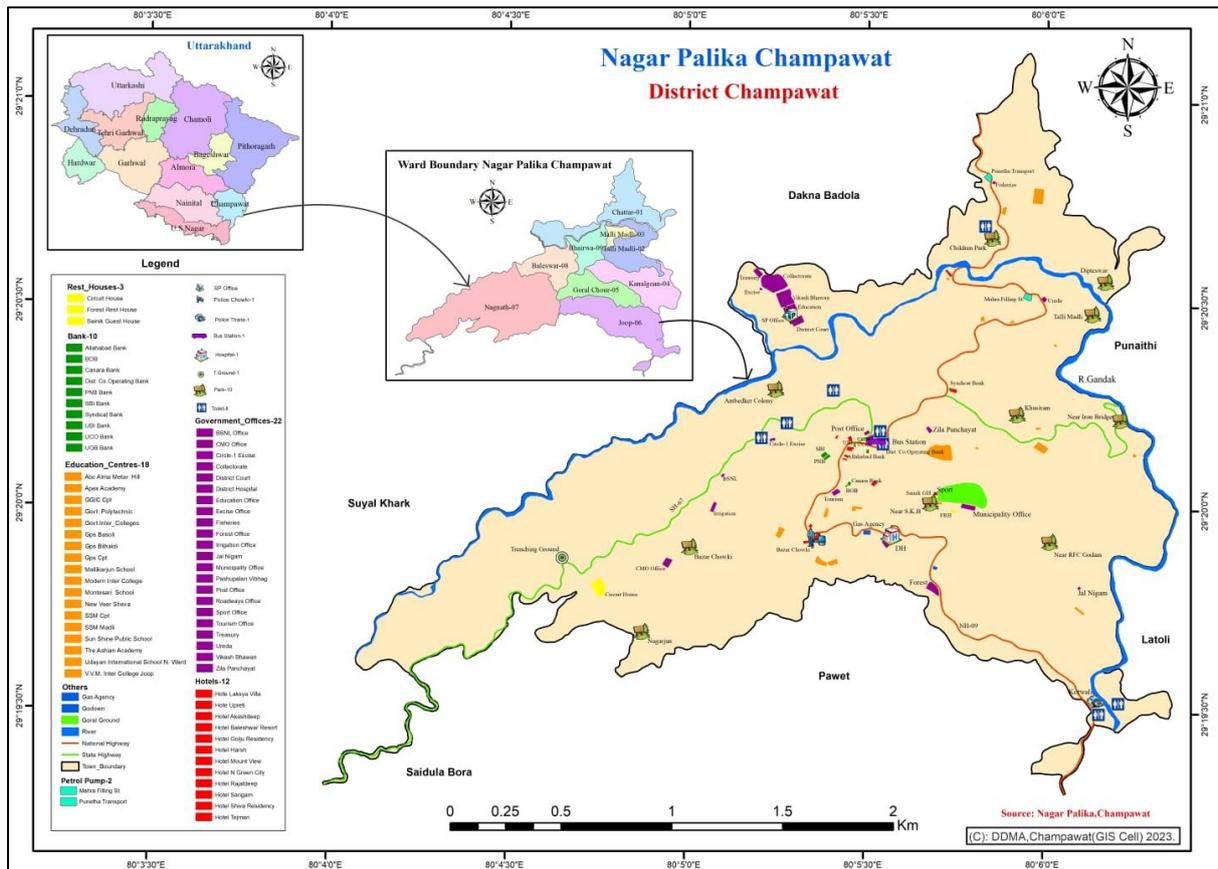


Source: (Post Study Workshop, 2024)

**6.5. 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, Champawat and the data collected as attached in Annexure A, at present the total area of the town has increased from 5 sq. km. (Census India, 2011) to 10 sq. km. The Nagar Palika Parishad, Champawat has increased the number of wards from 4 (Census India, 2011) to 9 with a total population growth from 4,801 persons to 1,27,556 persons. Map 15 below shows the present boundary map of Nagar Palika Parishad, Champawat.

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



Source: (Nagar Palika Parishad, Champawat, 2024)

At present, the Nagar Palika Parishad, Champawat has a total of 2,586 households (HHs) with an average household (HH) size of 5.

As shown in Table 4, the 9 wards (population of ward) of Nagar Palika Parishad, Champawat are named as Chhataar (1,300 persons), Talli Madli (900 persons), Malli Madli (901 persons), Kanalgau (1,453 persons), Goral Chour (1,900 persons), Joop (1,560 persons), Nagnath (1,970 persons), Baleswar (1,850 persons) and Bhairwa (922 persons).

Table 4: Present Overview of Champawat 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 Champawat Town (2024)</b>	
<b>Area of Champawat Town (2024) (in sq. km.)</b>	<b>10</b>
<b>Total number of wards in Champawat Town (2024)</b>	<b>9</b>
Ward 01	Chhataar
Ward 02	Talli Madli
Ward 03	Malli Madli
Ward 04	Kanalgaon
Ward 05	Goral Chour
Ward 06	Joop
Ward 07	Nagnath
Ward 08	Baleswar
Ward 09	Bhairwa
<b>Total population in Champawat Town (2024)</b>	<b>12,756</b>
<b>Population in each ward of Champawat Town (2024):</b>	
Ward 01: Chhataar	1,300
Ward 02: Talli Madli	900
Ward 03: Malli Madli	901
Ward 04: Kanalgaon	1,453
Ward 05: Goral Chour	1,900
Ward 06: Joop	1,560
Ward 07: Nagnath	1,970
Ward 08: Baleswar	1,850
Ward 09: Bhairwa	922
<b>Floating Population of Champawat Town (2024) (per day)</b>	<b>1,500-2,000</b>
<b>Total number of Households (HHs) in Champawat Town</b>	<b>2,586</b>
<b>Households (HHs) in each ward of Champawat Town:</b>	
Ward 01: Chhataar	385
Ward 02: Talli Madli	204
Ward 03: Malli Madli	108
Ward 04: Kanalgaon	225
Ward 05: Goral Chour	370
Ward 06: Joop	451
Ward 07: Nagnath	260
Ward 08: Baleswar	391
Ward 09: Bhairwa	192
<b>Average HH size in Champawat Town</b>	<b>5</b>
Name of department responsible for Solid Waste Management in Champawat Town	Nagar Palika Parishad, Champawat
Name of department responsible for Water Supply in Champawat Town	Uttarakhand Jal Sansthan (UJS), Champawat
Name of department responsible for Construction and Maintenance of Water Distribution Network Pipeline	Pey Jal Nigam Uttarakhand (PJNU), Champawat
Name of department responsible for Construction and Maintenance of Road Network in Champawat Town	Public Works Department (PWD), Champawat

Source: (Nagar Palika Parishad, Champawat, 2024), (Uttarakhand Jal Sansthan, Champawat, 2024), (PWD, Champawat, 2024), (Uttarakhand Tourism Development Board, Champawat, 2024), (RTO, Tanakpur, 2024)

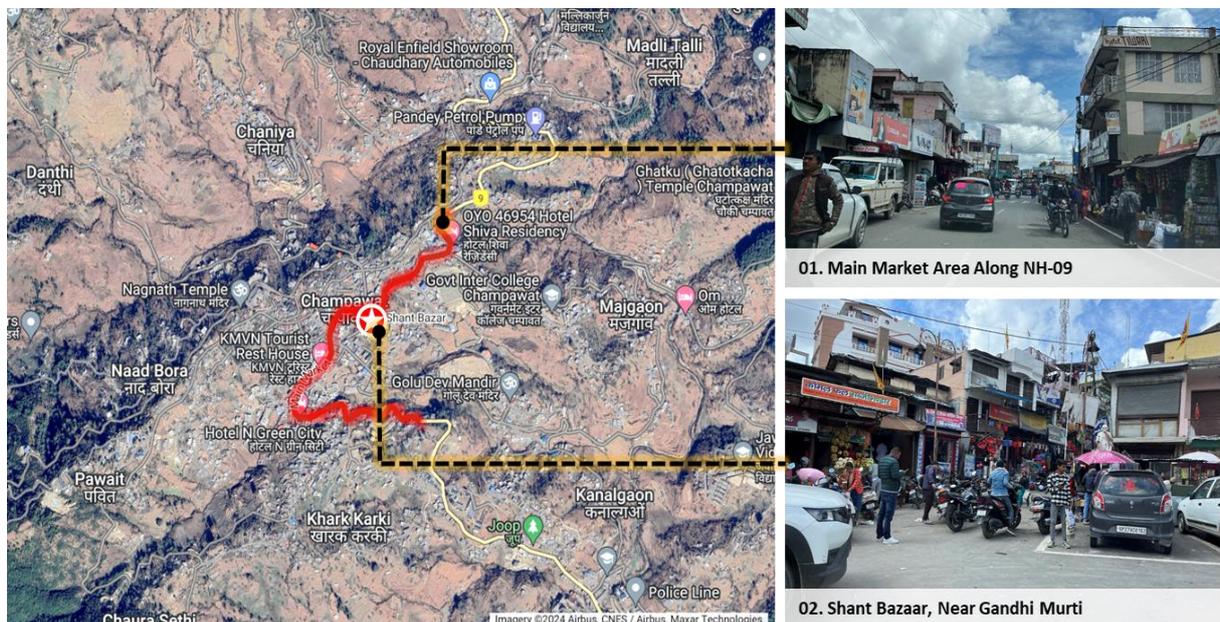
As mentioned in Table 5 the Main Market areas of Champawat Town is located along the NH 9 and the Shant Bazaar is located near the Gandhi Murti. These markets run-along and are located-on both of the sides of the road of the hilly terrain.

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

Major Market Areas in Champawat Town and their Location		
S. No.	Market Areas	Location
1	Main Market	Along NH 9
2	Shant Bazaar	Near Gandhi Murti

Source: (Nagar Palika Parishad, Champawat, 2024)

Image 3: Location of and Images of Main Market Areas in Champawat Town



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

### 6.6. Comparative Analysis of Nagar Panchayat, Champawat (as per Census 2011) and Nagar Palika Parishad, Champawat (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, Champawat (as per Census 2011) and Nagar Palika Parishad, Champawat (at present, 2024) as per the discussions and the data provided by the officials met during field visit in the month of March, 2024 and Stakeholder Consultation Meeting on 26<sup>th</sup> April 2024. Along with the inferences for the same.

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

<b>Present Scenario 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, Champawat As Per Census (2011)</b>	<b>Nagar Palika Parishad, Champawat (2024)</b>	<b>Inferences</b>
<b>Area of NPP, Champawat</b>	5 sq. km.	10 sq. km.	<ul style="list-style-type: none"> <li>At present i.e. 2024 the area of Town has increased 2 times its area since 2011.</li> </ul>
<b>No. of Wards in NPP, Champawat</b>	4	9	<ul style="list-style-type: none"> <li>Subsequently, the number of wards has increased from 4 to 9.</li> </ul>
<b>Total Population of NPP, Champawat</b>	4,801 Persons	12,756 Persons	<ul style="list-style-type: none"> <li>The total population of Town has also increased approx. 1.66 Times from the total population in 2011.</li> </ul>
<b>Total Number of Households (HHs)</b>	1,172	2,586	<ul style="list-style-type: none"> <li>The total number of Households (HHs) at present (2024) has increased 1.21 times since 2011.</li> </ul>
<b>Average HH Size</b>	4	5	<ul style="list-style-type: none"> <li>The Average HH size has increased from 4 to 5.</li> </ul>
<b>Population Density of NPP, Champawat</b>	9.6 PPH	12.75 PPH	<ul style="list-style-type: none"> <li>There has been approx. 33% of increase in the population density i.e. from 9.6 person/hectare to 12.75 person/hectare.</li> </ul>
<b>Floating Population of NPP, Champawat</b>	-	1500-2000 Persons Per Day	<ul style="list-style-type: none"> <li>The overtourism in Nainital Town has resulted in the diversion and spread of tourists towards other areas surrounding it.</li> <li>This has resulted in slight Tourist influx in Champawat Town since 2022 i.e. 1,500 to 2,000 persons per day during the months of April, May, June, July, December and January.</li> <li>This number may even escalate up-to 3,000 persons during the peak tourism season i.e. the month of June.</li> </ul>

Source: (Census India, 2011), (Nagar Palika Parishad, Champawat, 2024), (Stakeholder Consultation Meeting, 2024),

# **Chapter 7**

## **Champawat Town:**

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

## Chapter 7. Champawat Town: Solid Waste Management

### 7.1. System Infrastructure

The Solid Waste Management (SWM) in Champawat Town is the responsibility of the ULB: Nagar Palika Parishad, Champawat. 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, Champawat.

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

<b>System Infrastructure Provided By NPP, Champawat</b>	
<b>Community Bins</b>	
Total Number of Dustbins	<b>35</b>
Total Number of Large Dustbins	<b>11</b>
Ward Wise Number of Large Dustbins (on an average)	1 to 2
Total Number of Small Dustbins	<b>24</b>
Ward Wise Number of Small Dustbins (on an average)	2 to 3
<b>Staff Appointed by NPP, Champawat for Cleaning of Roads</b>	
<b>Total Number of Sanitation Workers Appointed for Cleaning of Roads and Streets</b>	<b>45</b>
Wards Wise Number of Sanitation Workers Appointed for Cleaning of Roads and Streets (on an average)	5
<b>Frequency of Cleaning of Roads and Streets for Commercial Areas by the staff appointed by NPP, Champawat:</b>	
During Summers	Two times a day <ul style="list-style-type: none"> <li>• Morning: 06:00 am to 09:00 am</li> <li>• Evening: 06:00 pm to 08:00 pm</li> </ul>
During Winters	Two times a day <ul style="list-style-type: none"> <li>• Morning: 07:00 am to 10:00 am</li> <li>• Evening: 06:00 pm to 08:00 pm</li> </ul>
<b>Frequency of Cleaning of Roads and Streets for Residential Areas by the staff appointed by NPP, Champawat:</b>	
During Summers	Morning: 06:00 am to 09:00 am
During Winters	Morning: 07:00 am to 10:00 am
<b>Garbage Pick-Up Vehicles Provided by the NPP, Champawat to the Private Agency for Solid Waste Collection and Transportation</b>	
Garbage Pick-up Trucks (Dumper Trucks) (with 7 m <sup>3</sup> capacity each)	6 numbers =6X7 =42 m <sup>3</sup> capacity
Partitioned Auto-Tippers (with 3 m <sup>3</sup> capacity each)	2 numbers =2X3 =6 m <sup>3</sup> capacity
<b>Staff Appointed by Private Agency</b>	
<b>Total Number of Workers (Door-To-Door Collection)</b>	<b>25</b>

Source: (Nagar Palika Parishad, Champawat, 2024)

As shown in Table 7, there are total 35 dustbins in NPP, Champawat. Out of these 11 are large dustbins with an average of 1 to 2 large dustbins in each ward of the Town. While the remaining 24 are small dustbins with an average of 2 to 3 small dustbins in each ward of the Town. Majority of these are open bins and don't have any covers or lids over them. Image 4 shows the existing conditions of the garbage bins in Champawat Town.

Image 4: Existing Condition of the Garbage Bins in Champawat Town



Source: (SPA, New Delhi, 2024) primary survey

For the cleaning and sweeping of roads the NPP, Champawat has appointed a total number of 45 sanitation workers with an average number of 5 sanitation workers per ward. These sanitation workers clean/sweeps the streets and roads of the commercial and residential areas in the Town. The frequency of cleaning/sweeping of streets and roads in the commercial and residential areas is twice

a day and once a day on a regular basis. In commercial areas during summer and winter season the streets and roads are cleaned in morning from 06:00 am to 09:00 am and 07:00 am to 10:00 am respectively while 06:00 pm to 08:00 pm in the evening. They also clean/sweep the streets and roads of residential areas once every morning during summer season from 06:00 am to 09:00 am and during winter season from 07:00 am to 10:00 am.

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, Champawat 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, segregation, transportation, storing of segregated dry waste, hiring of sanitation workers for the solid waste management, providing salary, equipment, safety masks, uniforms, ID cards, Insurance to the sanitation workers, providing up to ₹5,000/- for fuel and vehicle repairs and collecting the user charge for Solid Waste Management in NPP, Champawat. While the NPP, Champawat is responsible for composting of segregated wet waste, selling the fertilizer produced after composting, taking care that the solid waste is not burned in the open in Town, providing buckets, plastic bags, vehicles, small dustbins, big dustbins etc. for collection of solid waste to the Private Agency and deposition of the user charge collected by the Private Agency for solid waste management in Town.

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

S. No.	Activity	Done By/ Given To	
		NPP, Champawat	Private Agency
1	<b>Door-To-Door Collection</b> of Solid Waste from all the 09 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>	-	Yes
5	<b>Composting</b> of organic waste	Yes	-
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
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 up to Rs 5000</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>	-	-

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

**7.1.1. Present Situation of Garbage Dumping in NPP, Champawat**

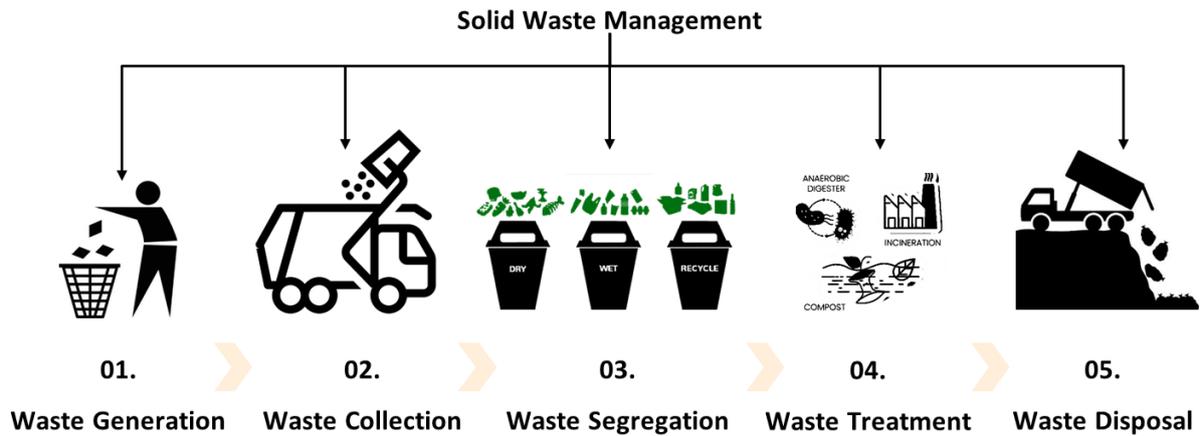
As shown in Image 5, in NPP, Champawat the garbage generated is being dumped in the following six areas i.e. common garbage bins provided by the Nagar Palika Parishad Champawat, waste collection vehicles provided by the NPP, Champawat to the Private Agency for the collection of solid waste, openly littered in the drains, vacant land parcels, along the road-side and in the under-construction Solid Waste Management (SWM) Plant at Lалуwapani Road Champawat. This will result in developing a potential towards future health hazard in the town.

Image 5: Areas being used for Dumping Garbage by the Residents of NPP, Champawat at Present



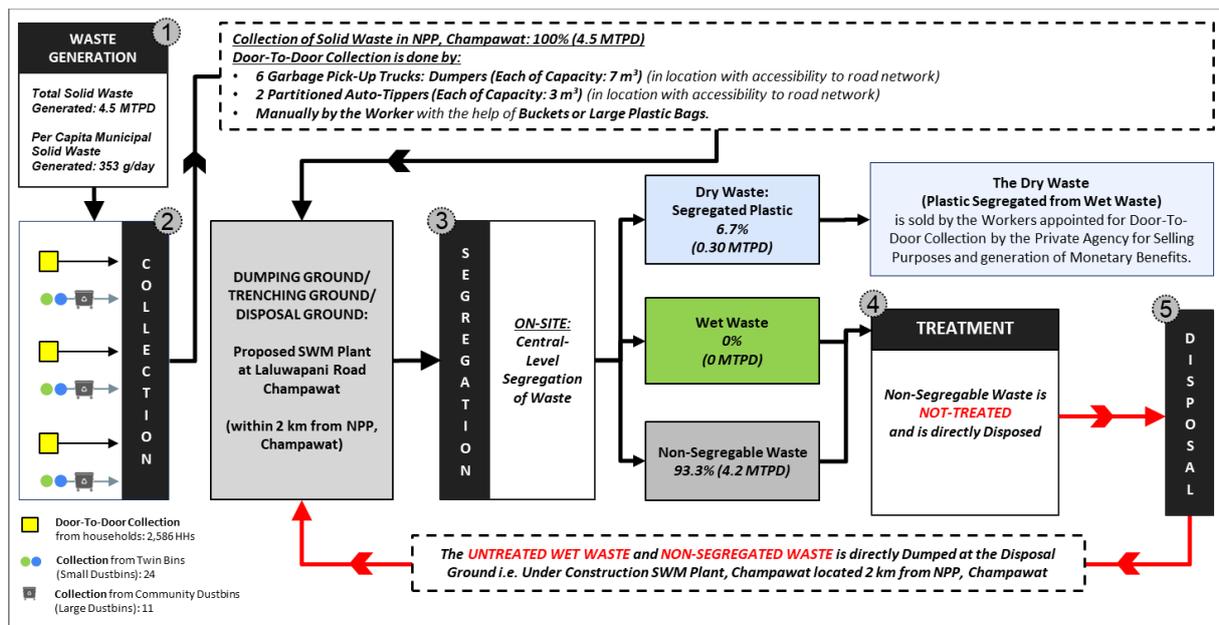
Source: (SPA, New Delhi, 2024) primary survey

**7.1.2. Process of Solid Waste Management in Champawat Town**



As per the discussions with the officials met (as mentioned in Annexure C) the Figure 14 below represents the flowchart for Solid Waste Management (SWM) in Champawat Town.

Figure 14: Flowchart of Solid Waste Management (SWM) In Nagar Palika Parishad, Champawat



Source: (SPA, New Delhi, 2024) based on data provided by (Nagar Palika Parishad, Champawat, 2024)

As mentioned in the flowchart the SWM in NPP, Champawat 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 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 volume of solid waste collected from Champawat Town by the Nagar Palika Parishad is 4.5 Tonnes per Day. Out of which about 1.5 Tonne per Day i.e. 33% of the total solid waste generated is collected from the major market areas of Champawat Town. No seasonal variations or change in the

pattern of solid waste generation is yet experienced by the NPP, Champawat due to tourism or any other factors in the Town.

Table 9: Overview of Solid Waste Generated in NPP, Champawat

<b>Solid Waste Generated in Nagar Palika Parishad (NPP), Champawat</b>		
<b>Solid Waste Generation</b>	<b>As per the Discussion with the Officials Of NPP, Champawat (2024)</b>	<b>Inferences</b>
<b>Main Source of Solid Waste Generation</b>	<ul style="list-style-type: none"> <li>Residential Areas</li> <li>Commercial Areas</li> </ul>	<ul style="list-style-type: none"> <li>Main Source of Solid Waste Generation in NPP, Champawat are the Major Market Areas and Residential Areas of the Town.</li> </ul>
<b>Solid Waste Generated (MTPD)</b>	<p><b><u>Total Waste Generated:</u></b> 4.5 Metric Tonnes Per Day (MTPD)</p> <p><b><u>Waste Generated from Commercial Areas:</u></b> 1.5 Metric Tonnes Per Day (MTPD)</p> <p><b><u>Seasonal Variations in Solid Waste Generated:</u></b> None</p>	<ul style="list-style-type: none"> <li>At present the Total Solid Waste Generated is 4.5 MTPD.</li> <li>Out of the Total Solid Waste Generated 33% i.e. 1.5 MTPD is generated from the Major Market Area.</li> <li>No seasonal variations or change in the pattern of solid waste generated is experienced by the NPP, Champawat.</li> </ul>
<b>Per Capita MSW Generation (g/day)</b>	<p><b>353 g/day</b> (Solid Waste Generated Per Capita Per Day = Total Solid Waste Generated Everyday (in g) / Total Population =45,00,000/ 12,756 =353 g/day)</p>	<ul style="list-style-type: none"> <li>The solid waste generated per day in NPP, Champawat is 353 g per capita per day.</li> </ul>

Source: (Nagar Palika Parishad, Champawat, 2024)

## b) Step-02: Waste Collection

As per the discussions with the officials met (as mentioned in Annexure C), the NPP, Champawat has appointed a Private Agency on contract basis (annually renewed on performance basis) for collection, transportation, segregation and disposal of solid waste generated in the Town. This private agency has further appointed a total number of 25 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, Champawat

S.No.	Sanitation Worker Appointed	Duties/Job Responsibility
01.	<b>Supervisors</b>	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, Champawat, 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, Champawat.

Source: (Nagar Palika Parishad, Champawat, 2024)

The sanitation workers (supervisor, drivers and helpers) collect 100% of the solid waste generated in the town i.e. 4.5 Metric Tonnes Per Day (MTPD) every-day in the morning in between 06:00 am to 08:00 am on a regular basis. Door-to-door collection is done from all the households (2,586 HHs), the commercial areas and 35 community dustbins (11 large dustbins and 24 small dustbins/twin bins) in the Town either by the help of vehicles (from areas with road network accessibility) provided by the NPP, Champawat or manually (from areas with limited or zero road network accessibility) by the help of buckets or large plastic bags provided by the NPP, Champawat.

As shown in Table 11, the NPP, Champawat has provided a total of 8 number of garbage pick-up vehicles to the Private Agency with 6 dumper trucks of 7m<sup>3</sup> capacity each (6X7=42m<sup>3</sup>) and 2 Partitioned Auto-Tippers of 3m<sup>3</sup> capacity each (2X3=6m<sup>3</sup>).

Table 11: Details of Vehicles Provided by the Nagar Palika Parishad, Champawat 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, Champawat (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)
Dumper Trucks	6	7	42
Partitioned Auto-Tippers	2	3	6
<b>Total</b>	<b>8</b>		<b>48</b>

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

NPP, Champawat 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 6 below shows the garbage pickup vehicles provided by the NPP, Champawat to the Private Agency for the collection and transportation of the solid waste generated in the town.

Image 6: Images of Vehicles used for Transportation of Solid Waste in Champawat Town



Source: (Primary Survey, 2024)

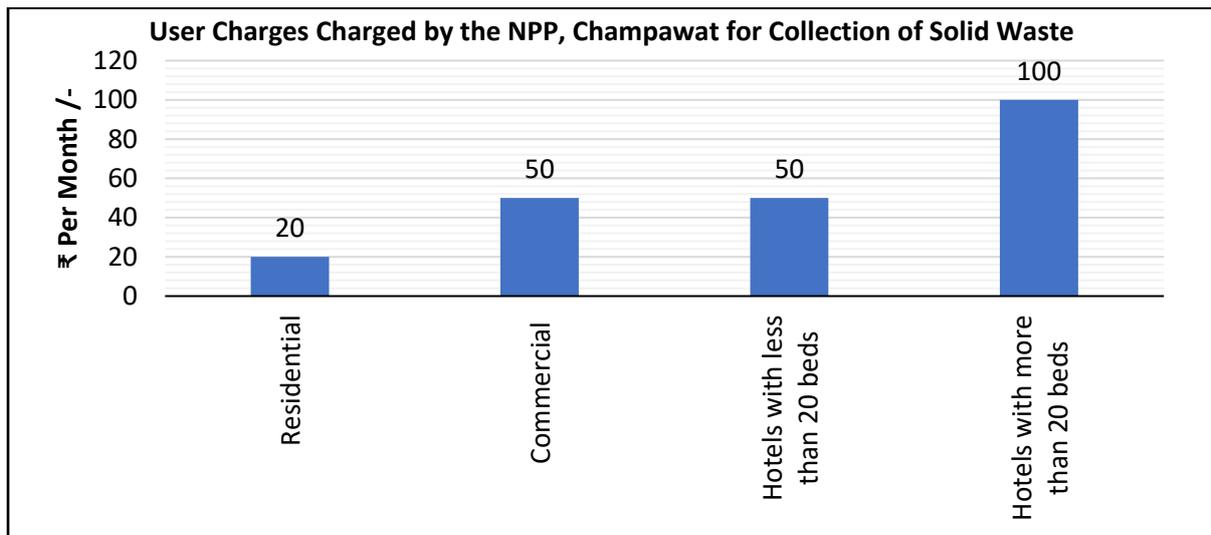
As shown in Table 12, NPP, Champawat charges ₹ 20/- per month for door-to-door collection of solid waste from the residential areas, ₹ 50/- per month from commercial areas and hotels with less than 20 beds and ₹100/- per month from hotels with more than 20 beds. This user charge is collected by the Private Agency and then deposited to the NPP, Champawat by the end of the month.

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

Fees Charged by the Nagar Palika Parishad for Door-To-Door Solid Waste Collection	
Area	Charges (in INR)
Residential	₹20/- Per Month
Commercial	₹50/- Per Month
Hotels with less than 20 beds	₹50/- Per Month
Hotels with more than 20 beds	₹100/- Per Month

Source: (Nagar Palika Parishad, Champawat, 2024)

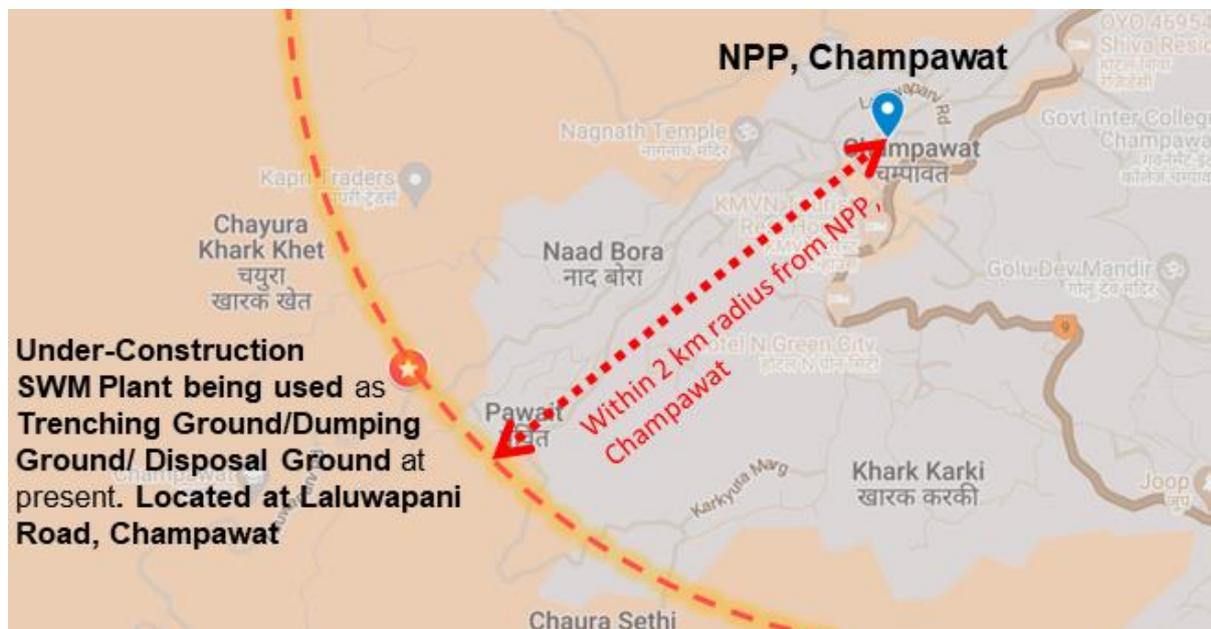
Figure 15: User Charges Charged by the NPP, Champawat for Collection of Solid Waste



Source: (Nagar Palika Parishad, Champawat, 2024)

After total solid waste is collected from the hilly town of Champawat it is transported to the Dumping Ground/Trenching Ground/Disposal Ground i.e. the under-construction Solid Waste Management (SWM) Plant located in Laluwapani Road, 2 km within the NPP, Champawat for Step-03 i.e. Waste Segregation.

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



Source: (Google My Maps, 2024)

**c) Step-03: Waste Segregation**

As shown in Table 13, at present there is no household level segregation of wet and dry waste in Champawat Town. Only central level segregation is in practice. The sanitation workers appointed by the Private Agency manually segregate the dry waste i.e. plastic bags, cardboard and plastic bottles

(for selling purposes) from the total solid waste collected on the dumping ground/trenching ground/disposal ground i.e. under construction Solid Waste Management Plant, located on the Lалуwapani Road in Champawat. The remaining waste is further segregated into wet waste and mixed-waste.

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

Overview of Solid Waste Segregation in NPP, Champawat		
<b>Segregation at Source Level</b>	0%	<ul style="list-style-type: none"> <li>No Segregation at source level</li> </ul>
<b>Central Level Segregation:</b>  <b>Segregation of Solid Waste after collection at the Dumping Ground/ Trenching Ground/ Disposal Ground i.e. Under-construction SWM Plant in Champawat</b>	<p><b>NPP, Champawat has appointed a private agency on contract basis</b> to collect, segregate and transport the solid waste collected in NPP, Champawat.</p> <p><b>Total Waste Collected: 4.5 MTPD</b></p> <ul style="list-style-type: none"> <li>Segregated Dry Waste: 0.30 MTPD (6.7%)</li> <li>Segregated Wet Waste: 0 MTPD (0%)</li> <li>Mixed-Waste (Non-Segregable Waste): 4.2 MTPD (93.3%)</li> </ul>	<ul style="list-style-type: none"> <li>Segregation of the plastic from the total waste collected is done on the Site i.e. under construction SWM Plant, Champawat.</li> <li>From the total waste collected 6.7% is dry waste, 0% is wet waste while the remaining 93.3% is mixed-waste (non-segregable waste).</li> <li>The Segregated Dry Waste (Plastic, Cardboard, etc.) is sold by the Sanitation Workers appointed for Door-To-Door Collection by the Private Agency for Monetary Benefits.</li> </ul>

Source: (Nagar Palika Parishad, Champawat, 2024)

As per the discussions with the officials met (as mentioned in Annexure C) the amount of dry waste generated is approximately 0.30 MTPD i.e. 6.7% of the total solid waste generated. The amount of wet waste generated is 0 MTPD i.e. 0% of the total solid waste generated and the remaining amount of mixed-waste (non-segregable waste) is 4.2 MTPD i.e. 93.3% of the total solid waste generated.

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

The segregated dry waste is further sold by the sanitation workers appointed by the Private Agency for door-to-door collection for some generation of monetary benefits. While the remaining wet waste and mixed-waste (non-segregable waste) are not provided with any further treatment before the final Step-05 i.e. Disposal.

As per the discussions with the officials met (as mentioned in Annexure C), 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 Champawat. The NPP, Champawat has proposed relocation of the Compost Pits (location is not available) in the revised DPR for SWM in Champawat 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 i.e. the under construction Solid Waste Management Plant within 2km range of the NPP, Champawat at the Luluwapani Road, Champawat.

As shown in Image 7, 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 4,000 Metric Tonnes of Legacy Waste has built-up on the under-construction SWM Plant at Luluwapani Road, Champawat and is adding-up to the daily solid waste disposed on the site.

Image 7: Legacy Waste Building-Up over the Under-Construction SWM Plant located at Luluwapani Road, Champawat i.e. the Present Dumping and Trenching Ground for all the Garbage Collected from NPP, Champawat



Source: (SPA, New Delhi, 2024) primary survey

### 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, Champawat.

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 of 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 Champawat

Solid Waste Management Rule 2016 and Swachh Bharat Mission are the only policies implemented in NPP, Champawat 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, Champawat.

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

S.No.	Issues/Challenges	Inferences
01.		<p><b>Geographical Constraints</b></p> <ul style="list-style-type: none"> <li>The hilly terrain of Champawat 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>
02.		<p><b>Rapid Urbanization</b></p> <ul style="list-style-type: none"> <li>Rapid urbanization has led to a significant increase in solid waste currently at 4.5 tons per day</li> <li>The existing waste management systems may struggle to cope with this rising volume, exacerbating issues related to waste collection, transportation, and disposal.</li> </ul>
03.		<p><b>Tourism Influx</b></p> <ul style="list-style-type: none"> <li>Overtourism in Nainital has led the tourist diversion to Champawat since 2022.</li> <li>This will lead to an increase in the generation of solid waste, straining existing waste management infrastructure.</li> </ul>
04.		<p><b>Lack of Segregation Practices</b></p> <ul style="list-style-type: none"> <li>There is no household-level segregation of waste; segregation is only done at a central level. Approximately 93.3% of the waste is mixed and non-segregable.</li> <li>Inadequate awareness and enforcement of waste segregation practices among people result in mixed waste. Without proper segregation at the source, recycling and composting efforts become challenging, leading to higher waste disposal rates.</li> </ul>
05.		<p><b>Limited Recycling Facilities</b></p> <ul style="list-style-type: none"> <li>The absence of recycling facilities is resulting in just selling of the segregated dry waste by the sanitation workers appointed by the Private Agency for monetary benefits.</li> <li>Lack of treatment facilities/options have resulted in the direct disposal of the remaining mixed-waste (non-segregable waste) on the under-construction SWM Plant itself. Thus, leading to adding up on the existing legacy waste of the Town.</li> </ul>

			<ul style="list-style-type: none"> <li>This absence of recycling facilities and composting sites is resulting in the landfilling of recyclable materials and organic waste. Thus, reducing the overall efficiency of waste management efforts.</li> </ul>
06.		<b>Limited Solid Waste Treatment Facilities in the Town</b>	<ul style="list-style-type: none"> <li>Champawat lacks infrastructure for effective SWM in the Town. At present there is only 1 Under-Construction SWM Plant in NPP, Champawat and this site is being used as Dumping Ground/Trenching Ground and Disposal Ground.</li> <li>Approx. 4,000 MT of legacy waste have accumulated at the under-construction SWM Plant, Adding to daily waste disposal issues.</li> <li>Only dry waste is segregated for resale, while the remaining mixed waste is directly dumped without further treatment</li> </ul>
07.		<b>Illegal Dumping and Littering</b>	<ul style="list-style-type: none"> <li>Littering of waste in the open areas and around the garbage bins is a common practice due to lack of behavioral sensitization among people.</li> </ul>
		<b>Stray Animal Interference</b>	<ul style="list-style-type: none"> <li>Stray animals, particularly dogs and cattle, often dig through community dustbins bins and scatter garbage across streets. This can lead to health hazards and sanitation issues.</li> </ul>
08.		<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>
		<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>Building legacy waste and improper solid waste management practices contribute to environmental pollution, soil and water contamination. It also degrades the natural beauty of the hills and the impacts the environment.</li> <li><b>Excessive use of plastic in NPP</b> is a significant environmental concern due to its impact on ecosystems and human health. Plastics, particularly single-use.</li> </ul>

10.		<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 Champawat.</li></ul>
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#### 7.4. Possible Solutions/Suggested Projects for SWM in NPP, Champawat

A Stakeholder Consultation Meeting was held on 26<sup>th</sup> April 2024 in NPP, Champawat. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Champawat Town in Table 15 below.

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

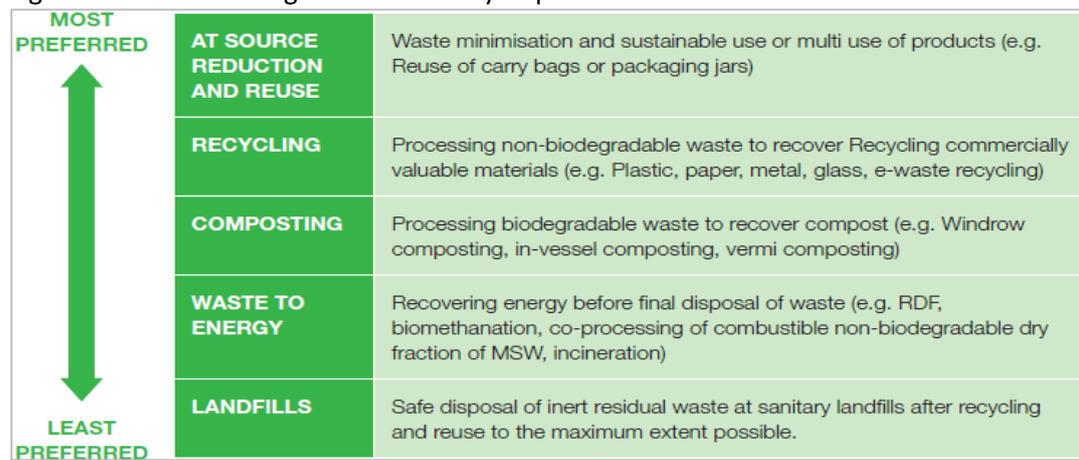
S.No.	Possible Solutions/Suggested Projects
<b>01.</b>	<b>Geographical Constraints</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Champawat should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Along with the manual collection by the sanitation workers the NPP, Champawat should establish small, community-based collection points</b> where residents living in the difficult to access hilly terrains can bring their waste for better coverage.</li> <li>ii. <b>Organize regular collection</b> from these points by local waste management teams.</li> <li>iii. <b>Engage local communities</b> in waste collection and management activities, particularly in remote areas to ensure coverage.</li> </ol>
<b>02.</b>	<b>Rapid Urbanization</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The State Government of Uttarakhand should implement strict zoning regulations</b> in the Master Plan along with an emphasis on sustainable use of urban resources.</p> <p>b) <b>NPP, Champawat should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Upgrade</b> to modern collection equipment suited to increasing waste volumes in the hilly terrain.</li> <li>ii. <b>Install Smart Bins</b> that signal when they are full for enhanced optimization of collection schedules and routes.</li> <li>iii. <b>Conduct educational campaigns</b> to inform residents about the importance of waste segregation, recycling, and proper disposal practices.</li> <li>iv. <b>Organize workshops and training sessions</b> for community members on sustainable waste management practices.</li> <li>v. <b>Establish volunteer programs</b> where residents can participate in waste management initiatives.</li> <li>vi. <b>Conduct a comprehensive assessment</b> of current waste management practices, infrastructure, and community needs.</li> <li>vii. <b>Develop a detailed plan</b> incorporating the above solutions, tailored to the specific challenges of rapid urbanization in Champawat.</li> <li>viii. <b>Introduce scalable pilot projects</b> to be implemented for improvement of waste management practices to adapt to changing urban dynamics and waste volumes in the Town.</li> </ol>

<b>03. Tourism Influx</b>
<p><b>It is proposed that:</b></p> <p>a) <b>The State Government of Uttarakhand should impose Solid Waste Management Cess</b> on all the tourists visiting/entering Champawat Town. Especially while the diversions faced in traffic due to the overtourism in Nainital Town.</p> <p>b) <b>The NPP, Champawat should undertake the following:</b></p> <p>i. <b>Implement SWM Bye Laws</b> for the hilly town of Champawat. As the over tourism in Nainital has led to the diversion of tourists towards Champawat and other surrounding areas. Apart from this Champawat is a tourist halt spot for further movements towards the upper areas of Kumaon region of the State.</p> <ul style="list-style-type: none"> <li>✓ These SWM Bye Laws should incorporate proper regulation and monitoring of solid waste management by the NPP Champawat to prevent future straining of the solid waste management infrastructure of the Town.</li> </ul> <p>ii. <b>Maintain and regularly submit the digital records to the State Government of Uttarakhand</b> for the amount of the Solid Waste Management Cess collected and the number of Tourists entering Champawat Town.</p>

<b>04. Lack of Segregation Practices</b>
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<p><b>It is proposed that:</b></p> <p>a) <b>The NPP, Champawat on PPP model should collaborate with local NGOs, SHGs, Government Institutes, the Private Agency</b> hired for SWM (on contract basis) and <b>other willing volunteers to:</b></p> <p>i. <b>Distribute Garbage Bags to each HH in the Town at door-to-door level</b> on a monthly basis. This initiative will help to <b>induce behavioral sensitization</b> among the residents of the Town for dry and wet waste <b>segregation at source level</b>.</p> <p>ii. <b>Build and Implement Awareness Campaigns and Workshops at Community Level.</b></p> <p><u>These Campaigns and Workshops should be conducted at door-to-door level to:</u></p> <ul style="list-style-type: none"> <li>✓ <b>Promote Waste Minimization.</b></li> <li>✓ <b>Educate people about the importance of segregation of dry and wet waste.</b></li> <li>✓ <b>Educate people about the waste management hierarchy as shown in the figure below.</b></li> </ul>
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Figure 16: Waste Management Hierarchy as per the Swachh Bharat Mission-Urban



Source: (CPHEEO, MoHUA, 2018)

	<p>b) <b>The NPP, Champawat</b> should monitor the door-to-door implementation of these workshops by the Local NGOs and the Private Agency at HH level. <b>If people are not segregating the Solid waste at HH level after educating them then after one month of awareness Campaign Charge high Fine.</b></p>
<p><b>05. Limited Recycling Facilities</b></p>	<p><b>It is proposed that:</b></p> <p>a) <b>The NPP, Champawat on PPP model</b> should collaborate with local NGOs, SHGs, Government Institutes, the Private Agency hired for SWM (on contract basis) and other willing volunteers to Build and implement Awareness Campaigns and Workshops at Community Level.</p> <p><i><u>The Campaigns and Workshops should be conducted at community level to promote the 3R Approach:</u></i></p> <ul style="list-style-type: none"> <li>✓ <b>“Reduce”:</b> Methods available to help <b>reduce the total waste generated in the Town by reducing the waste generated at HH Level.</b></li> <li>✓ <b>“Reuse”:</b> Options available for <b>re-purposing or reuse</b> of items for more than once at HH level.</li> <li>✓ <b>“Recycle”:</b> Information about <b>recycling options available at HH level.</b></li> </ul> <p><i>This initiative will help to responsibly manage the waste generated by the residents at HH level.</i></p> <p>b) <b>The NPP, Champawat</b> should <b>identify suitable potential sites for Compost.</b> These compost pits should be built, operate and maintained by the NPP, Champawat to produce fertilizers for generation of monetary gains.</p>
<p><b>06. Limited Solid Waste Treatment Facilities in the Town</b></p>	<p><b>It is proposed that:</b></p> <p>a) <b>The NPP, Champawat</b> should undertake the following:</p> <ul style="list-style-type: none"> <li>i. <b>As according to the SWM rule 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”. Thus, to limit the building up of the existing legacy waste on an urgent basis the completion of the construction of SWM Plant in NPP, Champawat should be given utmost priority by the authorities to treat the building up legacy waste on the existing under-construction SWM Plant in the Town.</li> <li>ii. <b>Install fully automatic Organic Waste Convertor (OWC) Machines especially the in-vessel and compact model for mechanical composting</b> as shown in the image below, to promote <b>“Waste to Compost”</b> facilities for SWM.</li> </ul>

Image 8: Image of different models of fully Automatic OWC Machine within-vessel



Source: (Google Images, 2024)

**The fully automatic in-vessel Organic Waste Convertor (OWC) Machines:**

- ✓ Have an in-vessel system (i.e. composting occurs in an enclosed environment) and treats all the waste in its treatment chamber.
- ✓ Provides better control over temperature, moisture and aeration.
- ✓ Do not require any associated equipment such as curing racks. Thus, making it compact and feasible.
- ✓ Produces compost that can be mixed with soil and used for various purposes like landscaping and organic farming.
- ✓ Do not require any skilled labour and can be easily operated by unskilled labour with minimal training as well.
- ✓ Have ergonomic design and built-in safety features.
- ✓ Are suitable for both medium and large-scale composting.

- i. **Suggest appropriate number** of Mechanical Composting Machines, Waste Transfer Stations and MRF Centre required in the Town for MSWM.
- ii. **Identify and propose suitable locations/sites in the Town** for Mechanical Composting Machines, Waste Transfer Station and MRF Centre.
- iii. **Collaborate with local NGOs, SHGs, Government Institutes, the Private Agency** hired for SWM (on contract basis) and other **willing Volunteers** on PPP model to **build and implement Awareness Campaigns and Workshops at Community Level.**

**These Campaigns and Workshops should be conducted at door-to-door level to undertake the following:**

- ✓ Provide information about the **“Waste to Compost systems”** as per the, **Swachh Bharat Mission-Urban: Advisory on On-Site and Decentralized Composting of Municipal Organic Waste, by CPHEEO, MoHUA, 2018, for:**
  - **Individual HHs, Small Communities, Apartments up to 10HHs,**
  - **Medium Sized Communities, Apartments, RWAs for 11-300 HHs, Medium Sized Offices, medium Hotels, Resorts, medium Schools, Canteens, Marriage Halls, etc.**

<b>07.</b>	<b>Illegal Dumping and Littering and Stray Animal Interference</b>
	<b><u>It is proposed that:</u></b>
	a) <b>The NPP, Champawat on PPP model</b> should collaborate with local NGOs, SHGs,

	<p>Government Institutes, the Private Agency hired for SWM (on contract basis) and other willing volunteers along with the Police Department to:</p> <ul style="list-style-type: none"> <li>i. <b>Increase monitoring</b> during tourist season to stop illegal dumping/littering of waste in the Town. Especially in the major market areas.</li> <li>ii. <b>Impose high penalties and fines</b> on the people (tourists or residents) identified by the monitoring teams on-ground.</li> </ul> <p>b) <b>The NPP, Champawat should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Increase monitoring</b> have to <b>identify spots of illegal dumping</b> and Littering and Increased monitoring through <b>cameras and speakers</b> for the <b>amusement</b> at the Identified spots and strong enforcement measures help in combating illegal littering by the tourists and residents.</li> <li>ii. <b>Monitor</b> the regular cleaning of roads and collection of garbage from the community dustbins and other collection areas.</li> <li>iii. <b>Maintain Digital Records</b> of the penalties/fines collected for illegal dumping/littering of garbage by the respective teams, on a regular basis.</li> <li>iv. <b>Implementing proactive animal control measures</b>, such as increased sterilization programs and provision of shelters should be done by the ULB.</li> </ul>
<b>08.</b>	<b>Waste Contamination and Public Health Concerns</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Champawat should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Implement pest control measures</b> to alleviate public health concerns arising from pests such as rodents and insects attracted by the littering of waste.</li> <li>ii. <b>Install animal-proof community dustbin</b> to prevent stray animals from scattering waste.</li> <li>iii. <b>Organize community clean-up drivers</b> to keep public area clean and reduce the attraction for stray animals.</li> </ul>
<b>09.</b>	<b>Environmental Impacts</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The State Government of Uttarakhand should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. Construct “Thaila ATM” in the neighborhood level for bags is an innovative designated to combat plastic waste by providing reusable cloth bags in exchange for old or plastic bags. This will offer residents a convenient way to exchange their plastic bags for eco-friendly alternatives.</li> </ul> <p>b) <b>The NPP, Champawat should collaborate with restaurants and cafes</b> to run “garbage cafes” that <b>offers either meal or incentive money</b> to people <b>in exchange for a certain amount of plastic waste</b>. For example, individuals can get <b>a full meal or money by giving 1 kg of plastic waste</b> or a <b>substantial snack by contributing 500 grams</b>. This will help to tackle plastic waste and providing Food security.</p> <p>c) <b>The NPP, Champawat on PPP Model should collaborate with local NGOs, SHGs, Government Institutes, the Private Agency</b> hired for SWM (on contract basis) and</p>

	<p><b>other willing volunteers to:</b></p> <p>d) <b>Promote sustainable waste management practices</b> to mitigate environmental impacts.</p> <p>e) <b>Build and implement environmental awareness campaigns/workshops</b> like Clean-Up Drives in public spaces, market areas, near the Naini Lake and other tourist spots to maintain cleanliness and to spread awareness among the people for better SWM practices to reduce its impact on the environment.</p> <p>f) <b>Develop Green Infrastructure like</b> rain gardens, permeable pavements, bioswales, etc. to manage stormwater runoff and reduce pollution.</p>
<b>10.</b>	<b>Policy and Governance Issues</b>
	<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>Implement Extended Producer Responsibility (EPR) Schemes</b> to hold producers responsible for the end-of-life management of their products, encouraging them to design sustainable products.</li> <li>iii. <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>iv. <b>Conduct surprise visits and inspections</b> to evaluate the on-ground progress of the projects by the ULBs on a regular basis.</li> </ol> <p>g) <b>The NPP, Champawat should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Monitor and regulate the City Solid Waste Management Action Plan</b> on an annual basis.</li> <li>ii. <b>Strengthen Awareness Programmes</b> by <b>Building and implementing respective Programmes/campaigns/workshops</b> required for effective SWM in Champawat 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, Champawat.</li> </ol> <p><i><u>The Nodal Officer appointed should:</u></i></p> <ul style="list-style-type: none"> <li>✓ <b>Strictly Monitor</b> the Implementation of the work assigned to their respective teams.</li> <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> </ul> <ol style="list-style-type: none"> <li>i. <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>iii. <b>Encourage School students to participate in Awareness Programmes/workshops/campaigns by organizing special-activities in schools</b></li> </ol>

	<p>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. School can integrate engaging, hands-on activities into their curriculum, such as <b>organizing interactive workshops, classroom discussions, and projects focused on waste segregation, recycling and composting.</b> Students can participate in <b>practical exercises like best out of waste and once a month all students will clean the town and school will provide refreshment and prizes to the students for cleaning the town.</b></p>
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# **Chapter 8.**

## **Champawat Town:**

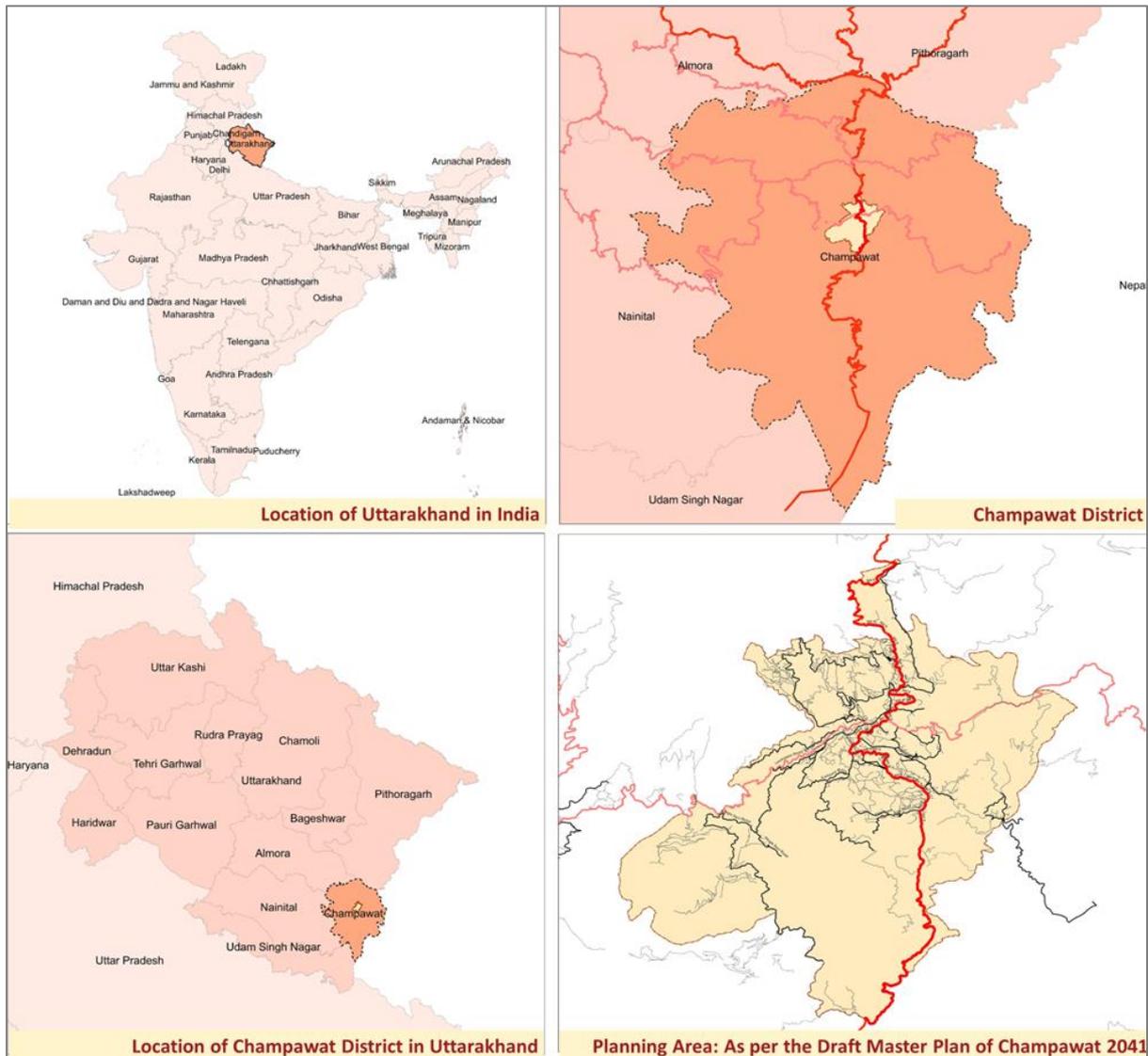
### **Urban Transport and Parking**

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

### 8.1. System Infrastructure

As shown in Map 17, at present the hilly town of Champawat is situated along one major arterial road i.e. NH-9. As per the (Draft Master Plan of Champawat 2041) this arterial road connects Champawat Town to Tanakpur, approximately 73 km to the south and Lohaghat at 12 km to the north. State Highway 64 connects Champawat to Nainital and Almora from the west and other small villages in the east. It is the only major road network present in the town and enables the accessibility and connectivity to the major market areas throughout the Town.

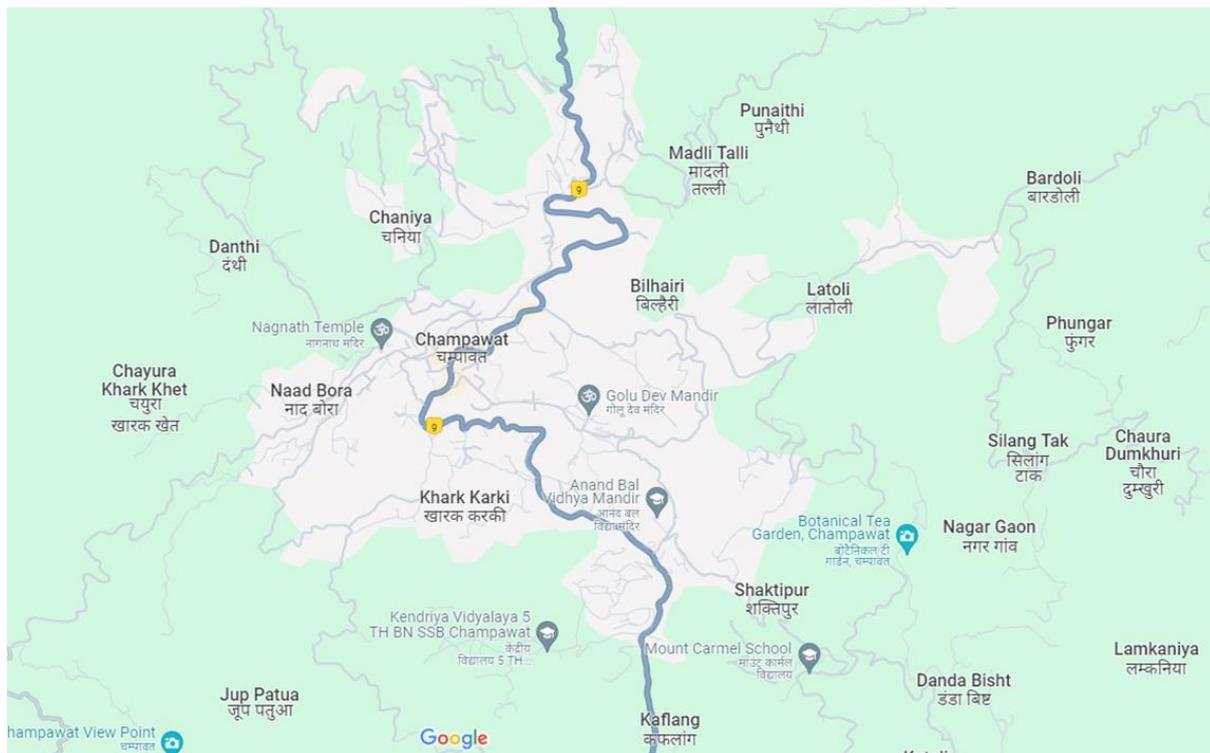
Map 17: Champawat and its Regional Setting, 2023 as per the Draft Master Plan of Champawat 2041 by SPA New Delhi



Source: (Draft Master Plan of Champawat 2041)

As shown in Map 18, apart from this there is a very limited road hierarchy network present for connectivity and accessibility to the remote locations of the Town. Thus, this results in limiting the economic growth of the Town and efficient movement of traffic throughout the Town.

Map 18: Existing Road Network Map of NPP, Champawat



Source: (Google Maps, 2024)

As shown in Table 16, as per the (Draft Master Plan of Champawat 2041), the final planning area of the Draft Master Plan Champawat 2024, has a total of 178.99 km length of road network. This road network includes 7.91 km length of Arterial (National Highways), 6.4 km length of Sub-Arterial (State Highways), 52.23 km length of Collector (Major Roads) and 112.45 km length of Local (Minor Roads).

Table 16: List of Road Hierarchy Network in Champawat as per Draft Master Plan of Champawat 2041 by SPA, New Delhi

Road Hierarchy Network in Champawat as per the Draft Master Plan of Champawat 2041			
S. No	Road Type	Length in Kilometres	Percentage Share (%)
1	Arterial (National Highways)	7.91	4
2	Sub-Arterial (State Highways)	6.4	4
3	Collector (Major Roads)	52.23	29
4	Local (Minor Roads/ Other Roads)	112.45	63
<b>Total</b>		<b>178.99</b>	<b>100</b>

Source: (Draft Master Plan of Champawat 2041)

### 8.1.1. Present Connectivity

To travel towards the major cities of India from Champawat Town, road network is the most convenient and easy to access medium and buses, shared taxies, local cabs, personal vehicles, railways and airways are the possible modes of transportation. This road network consists of narrow roads, non-continuous road connectivity and road congestion on them.

As shown in Table 17, as per the discussions with the officials (as mentioned in Annexure C), the town has one bus station known as the Champawat Bus Station. It is located at the Station Road in *SIUD, Dr. R.S. Tolia Uttarakhand Academy of Administration, Nainital*

Champawat on NH 9, within 1 km radius of the Town. The nearest railway station for Champawat Town is Tanakpur Railway Station which is situated at a distance of approximately 74 km from Champawat Town. While Pantnagar Airport located at a distance of 169 km from the Town is the only domestic airport in function for the entire Kumaon Division of Uttarakhand State.

Table 17: Overview of Present Connectivity of NPP, Champawat

Road Network	Railways	Airways
<ul style="list-style-type: none"> <li>Champawat has 1 Bus Station located at Station Road, Champawat, on NH 9.</li> </ul>	<ul style="list-style-type: none"> <li>The nearest railway station for Champawat Town is Tanakpur Railway Station, Tanakpur.</li> </ul>	<ul style="list-style-type: none"> <li>The only Airport for the entire Kumaon Regions is the Pantnagar Airport in Pantnagar.</li> </ul>
<ul style="list-style-type: none"> <li>It is located within 1 km range of the Town.</li> </ul>	<ul style="list-style-type: none"> <li>Tanakpur Railway Station is approx. 74 km away from Champawat Town and it takes approx. 1 hour 45 minutes to reach NPP, Champawat from Tanakpur Railway station.</li> </ul>	<ul style="list-style-type: none"> <li>Pantnagar Airport is approx. 169 km away from Champawat Town and it takes approx. 3 hours 43 minutes to reach NPP, Champawat from Pantnagar Airport.</li> </ul>
<p>Image 9: Champawat Bus Station, Station Road, Champawat, NH 9</p>  <p>Source: (Primary Survey, 2024)</p>	<p>Image 10: Tanakpur Railway Station, Tanakpur, approx. 74 km from NPP, Champawat</p>  <p>Source: (Google Images, 2024)</p>	<p>Image 11: Nearest Airport: Pant Nagar Airport Approx. 169 km away from NPP, Champawat</p>  <p>Source: (Google Images, 2024)</p>

Source: (Nagar Palika Parishad, Champawat, 2024), (PWD, Champawat, 2024), (RTO, Tanakpur, 2024), (Primary Survey, 2024)

As shown in Table 18, there is a total number of 817 registered taxis and 40 number of registered school buses in Champawat Town. The total number of registered city buses, registered autos and registered vehicles is not available. These registered taxis travel inter-state and intra-state and cannot be used to calculate the total number of vehicles entering/travelling across only in Champawat Town.

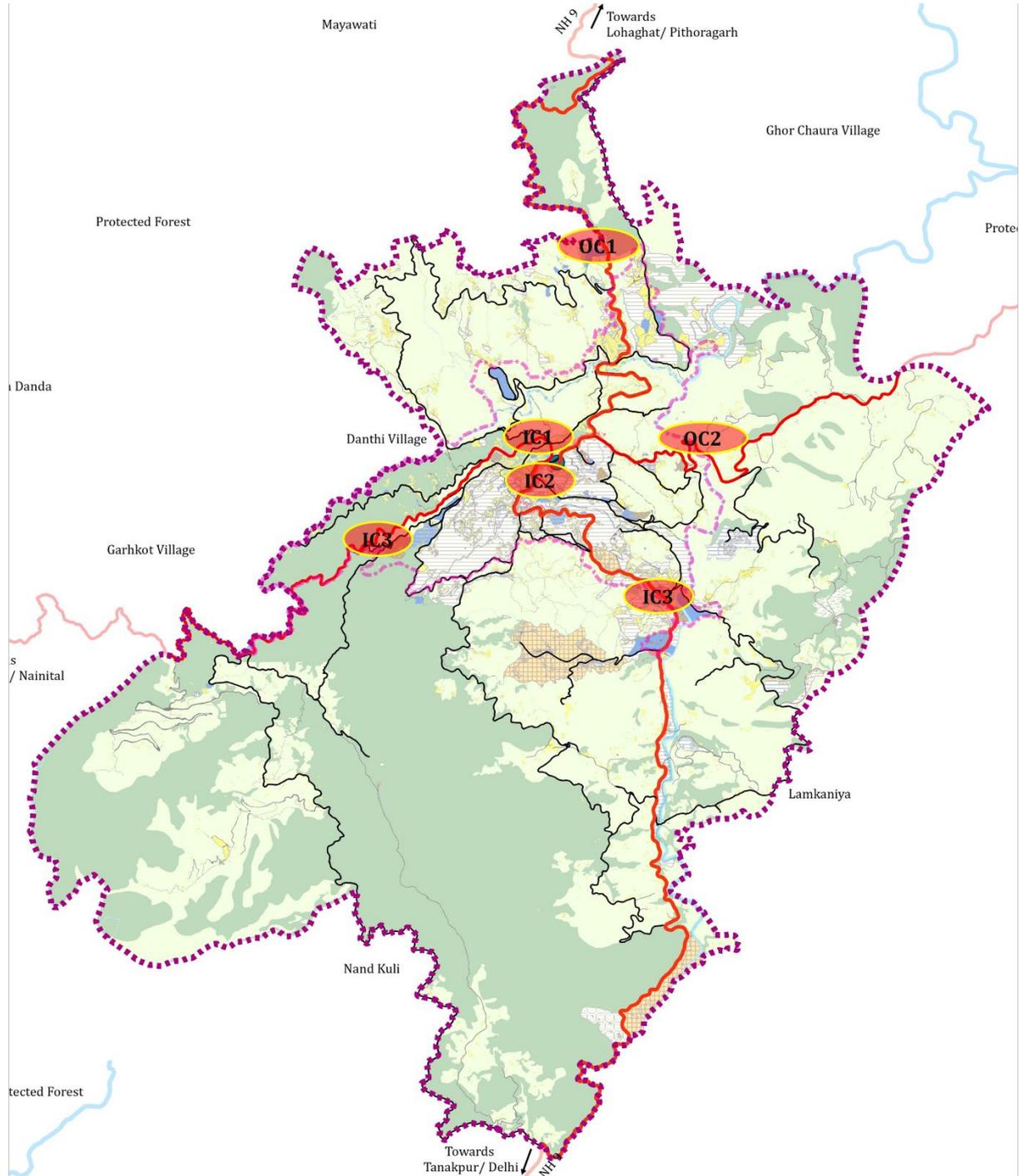
Table 18: Number of Registered Vehicles in Champawat

Vehicles Registered	Number of Vehicles
Number of Registered City Buses	-
Number of Registered Taxis	817
Number of Registered School Buses	40
Number of Reregistered Auto	-
Number of Registered Vehicles	NA

Source: (RTO, Tanakpur, 2024)

To understand the traffic-flow a traffic volume count survey was conducted by the SPA New Delhi Team working on the Draft Master Plan of Champawat 2041. This survey was conducted in the year 2023. The Map 19 below shows the cordon points selected for the traffic volume survey.

Map 19: Classified Cordon Points of Traffic Volume Count Survey



Source: (Draft Master Plan of Champawat 2041)

The Table 19 below shows the detailed list of the six cordon points selected for the traffic volume survey i.e. OC1, OC2, OC3, IC1, IC2 and IC3. The duration of this survey was for 7.5 hours from 10:30 am to 5:30 pm.

Table 19: Classified Traffic Volume Count Survey as per the Draft Master Plan of Champawat 2041 by SPA New Delhi

Classified Traffic Volume Count Survey					
S.No.	Name of the Cordon	Survey Locations	Directions	Survey duration (in hours)	Time duration
1	OC1	NH9	Towards Champawat	7.5	10:00 am-5:30 pm
			Towards Champawat Main Market		
2	OC2	SH64 (GIC Road)	Towards Champawat Main Market	7.5	10:00 am-5:30 pm
			Towards Jawahar Navodaya Vidyalaya Champawat		
3	OC3	NH9	Towards Champawat Main Market	7.5	10:00 am-5:30 pm
			Towards Tanakpur		
4	IC1	SH 64 (Laluwapani Road)	Towards Champawat Main Market	7.5	10:00 am-5:30 pm
			Towards Himalaya View Point		
5	IC2	NH9	Towards Champawat Bus stand	7.5	10:00 am-5:30 pm
			Towards Tanakpur		
6	IC3	SH 64 (Laluwapani Road)	Towards Champawat	7.5	10:00 am-5:30 pm
			Towards Government Primary School Lauapani, Champawat		

Source: (Draft Master Plan of Champawat 2041)

Table 20 shows the existing and estimated PCUs per day on an average in Champawat planning area (as finalized in the Draft Master Plan of Champawat 2041 by SPA, New Delhi).

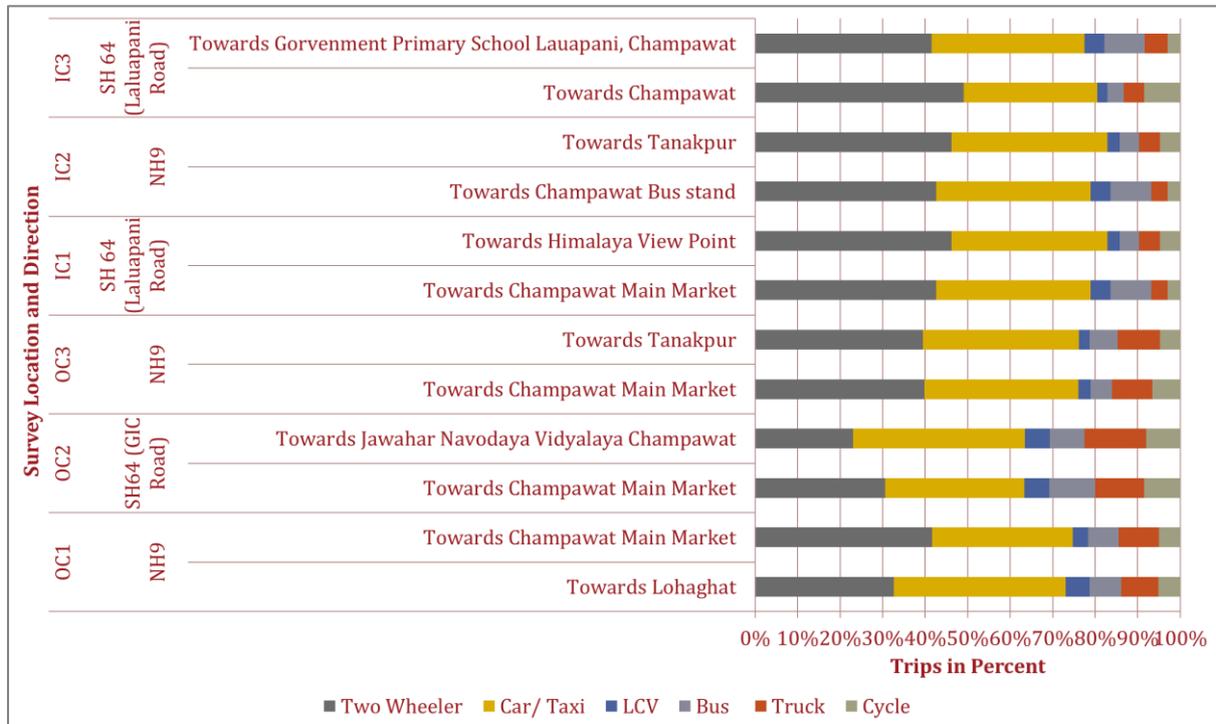
Table 20: Average Daily Traffic Volume Count in Champawat Planning Area, 2023 as per Draft Master Plan of Champawat 2041 by SPA New Delhi

PCUs per Day					
Name of the Cordon	Survey Locations	Directions	Average PCU per Day		
			Survey	Estimated	
			2023	2031	2041
OC1	NH9	Towards Lohaghat	2,015	2,518	3,148
		Towards Champawat Main Market	2,428	3,035	3,794
OC2	SH64 (GIC Road)	Towards Champawat Main Market	1,547	1,934	2,417
		Towards Jawahar Navodaya Vidyalaya Champawat	2,109	2,636	3,295
OC3	NH9	Towards Champawat Main Market	2,549	3,186	3,982
		Towards Tanakpur	2,548	3,185	3,982
<b>Total</b>			<b>13,196</b>	<b>16,494</b>	<b>20,618</b>
IC1	SH 64 (Laluwapani Road)	Towards Champawat Main Market	2,865	3,582	4,477
		Towards Himalaya View Point	2,438	3,048	3,809
IC2	NH9	Towards Champawat Bus stand	3,263	4,078	5,098
		Towards Tanakpur	1,973	2,466	3,083
IC3	SH 64 (Laluwapani Road)	Towards Champawat	1,196	1,495	1,869
		Towards Government Primary School Lauapani, Champawat	972	1,215	1,519

Source: (Draft Master Plan of Champawat 2041)

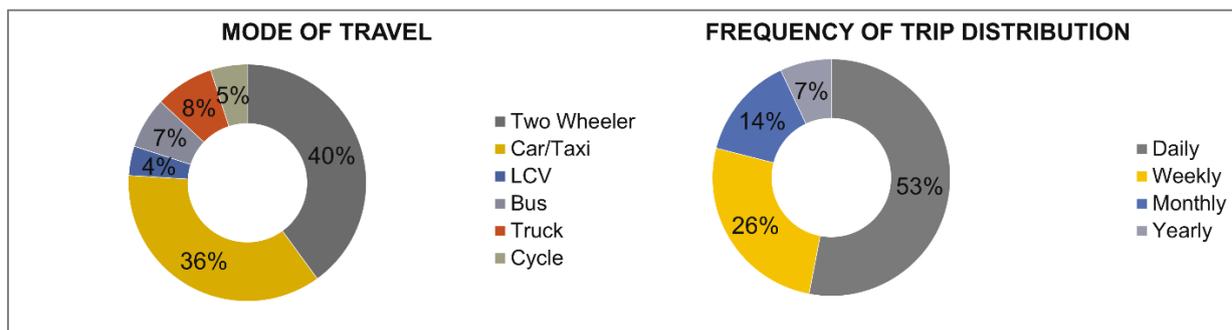
As shown in Figure 17, as per the (Draft Master Plan of Champawat 2041), two wheelers and cars/taxis dominate the vehicular composition across all surveyed cordons and directions. Light Commercial Vehicles (LCV) show a consistent representation across the surveyed locations, signifying their usage for commercial activities within the urban area.

Figure 17: Traffic Composition Within Champawat Planning Area, 2023 as per the Draft Master Plan of Champawat 2041 by SPA New Delhi



Source: (Draft Master Plan of Champawat 2041)

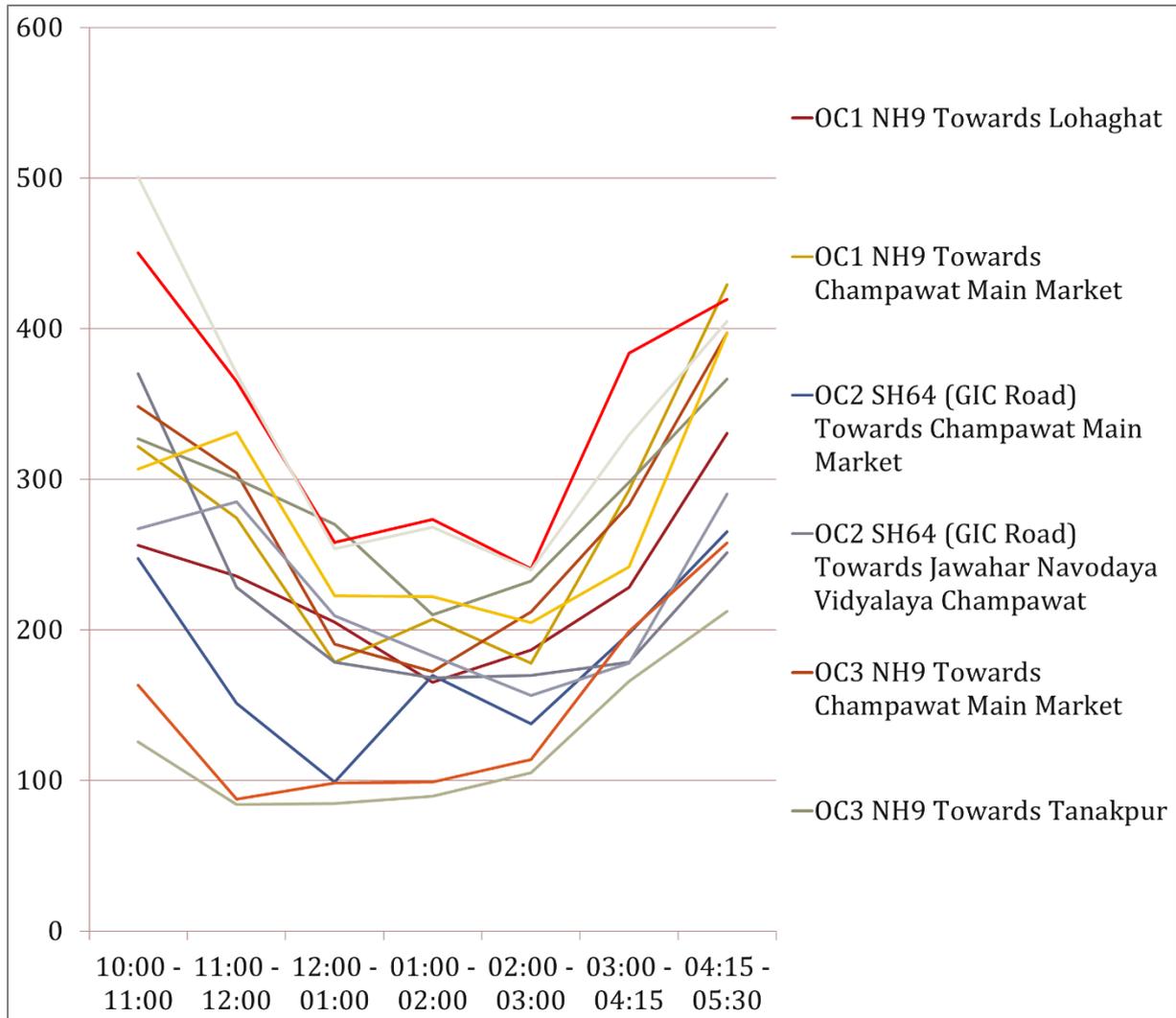
Figure 18: Mode of Travel and Frequency of Trip Distribution in Champawat Town as per the Draft Master Plan of Champawat 2041 by SPA New Delhi



Source: (Draft Master Plan of Champawat 2041)

As shown in Figure 19, as per the (Draft Master Plan of Champawat 2041), the peak traffic hours are observed during 10:00 - 11:00 and 04:15 – 05:30 across most cordons, denoting heightened traffic volumes during this period i.e. in the morning and evening. Cordon IC1 and IC2, experiences major traffic flow, indicating the need for targeted infrastructure enhancements to manage peak traffic demands effectively.

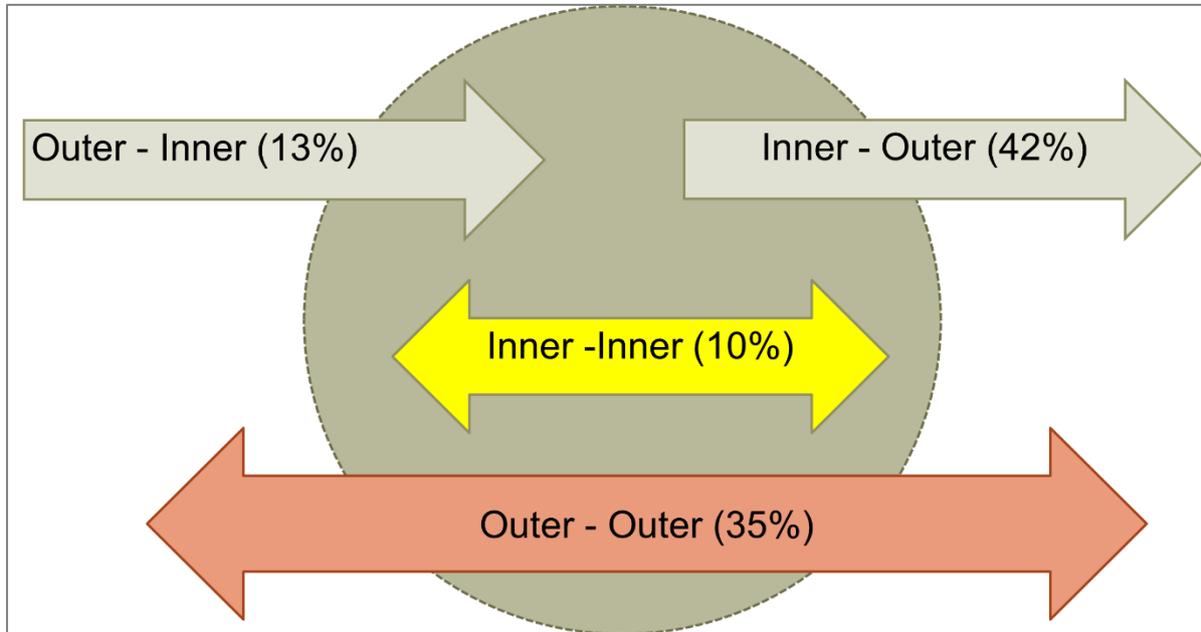
Figure 19: Hourly Variation of Traffic Within Champawat Planning Area, 2023 as per the Draft Master Plan of Champawat 2041 by SPA New Delhi



Source: (Draft Master Plan of Champawat 2041)

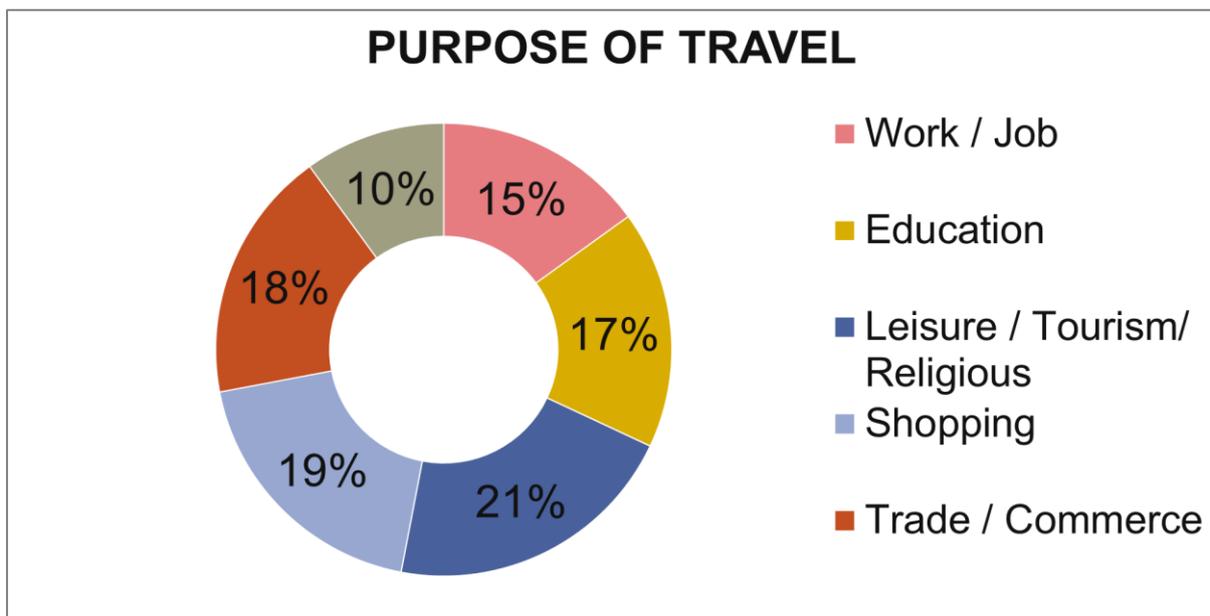
As shown in Figure 20, Champawat Town has more of inner to outer movement of traffic. Mainly for leisure or shopping purposes. The movement is basically to Lohaghat for shopping and leisure purposes or Tanakpur for work and trade purposes.

Figure 20: Traffic Movement in and from Champawat Town



Source: (Draft Master Plan of Champawat 2041)

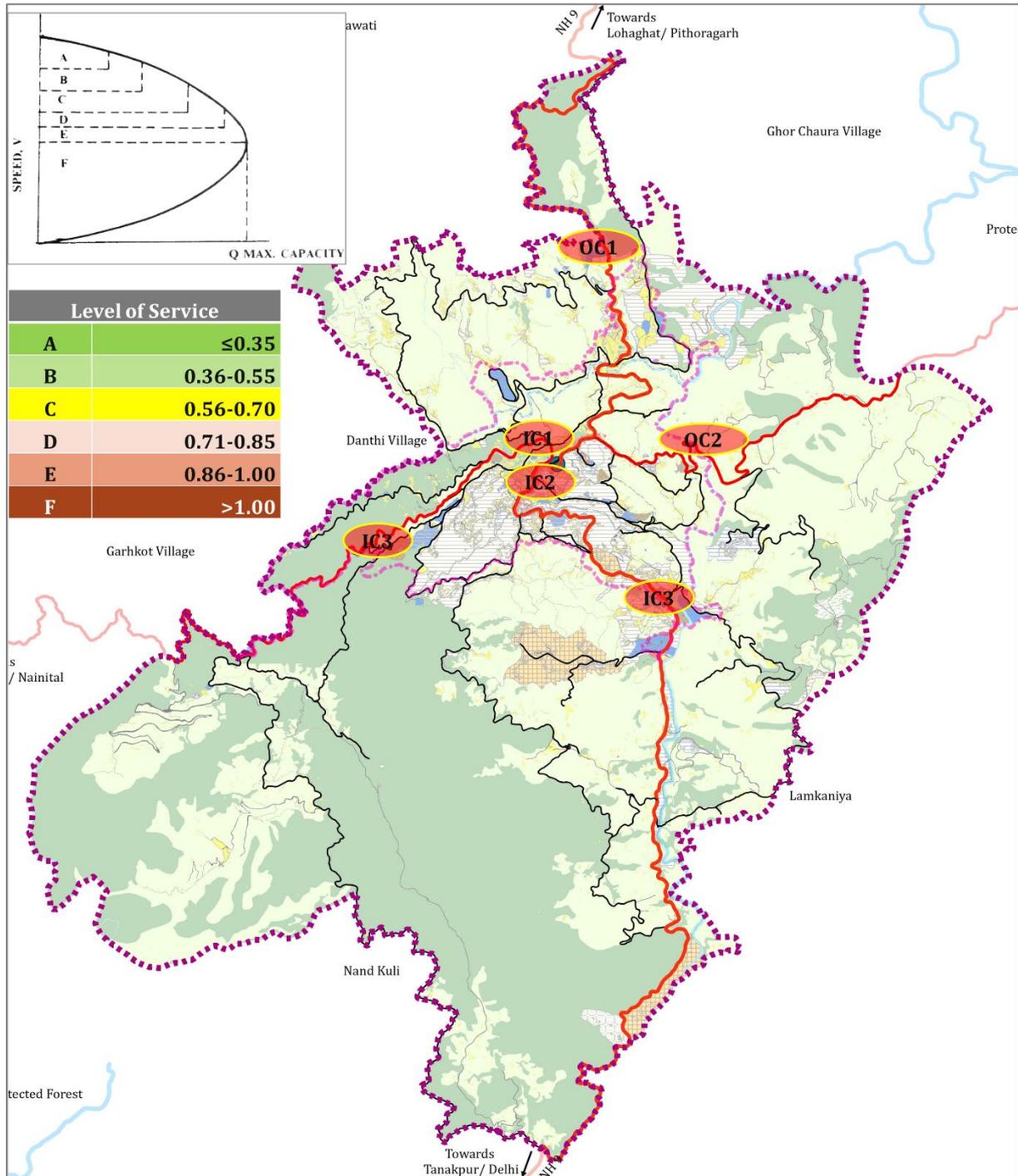
Figure 21: Purpose of Travel in Champawat as per the Draft Master Plan of Champawat 2041 by SPA New Delhi



Source: (Draft Master Plan of Champawat 2041)

The Map 20, shows the level of services of roads provided as per the Draft Master Plan of Champawat for 2041 is graded into six grades/categories (with volume/capacity ratio) i.e. A (less than or equal to 0.35), B (from 0.36 to 0.55), C (from 0.56 to 0.70), D (from 0.71 to 0.85), E (0.86 to 1.00) and F (more than 1.00) respectively.

Map 20: Level of Services of Roads in Champawat as per the Primary Survey Conducted for Draft Master Plan of Champawat 2041 by SPA New Delhi Team in 2023



Source: (Draft Master Plan of Champawat 2041)

As shown in Table 21, the cordon point IC3 has the best level of service at present i.e. 0.26 for road towards Champawat and 0.19 on road towards Government Primary School Laluwapani, Champawat. As per the table below if the existing trend remains the same the level of road services is estimated to degrade for the year 2041 as per the (Draft Master Plan of Champawat 2041).

Table 21: Level of Services of Roads in Champawat as per the Primary Survey Conducted for Draft Master Plan of Champawat 2041 by SPA New Delhi Team in 2023

Cordon Location	Road Name	Direction	Survey		Estimated	
			2023		2041	
			Volume/ Capacity Ratio	Level of Service	Volume/ Capacity Ratio	Level of Service
OC1	NH9	Towards Lohaghat	0.44	B	0.70	C
		Towards Champawat Main Market	0.53	B	0.84	D
OC2	SH64 (GIC Road)	Towards Champawat Main Market	0.34	A	0.43	B
		Towards Jawahar Navodaya Vidyalaya Champawat	0.46	B	0.59	C
OC3	NH9	Towards Champawat Main Market	0.56	C	0.71	D
		Towards Tanakpur	0.54	B	0.57	C
IC1	SH 64 (Laluwapani Road)	Towards Champawat Main Market	0.63	C	0.80	D
		Towards Himalaya View Point	0.54	B	0.68	C
IC2	NH9	Towards Champawat Bus stand	0.71	D	0.91	E
		Towards Tanakpur	0.44	B	0.55	B
IC3	SH 64 (Laluwapani Road)	Towards Champawat	0.26	A	0.42	B
		Towards Government Primary School Lauapani, Champawat	0.19	A	0.34	A

Source: (Draft Master Plan of Champawat 2041)

As shown in Table 22, as per the (Draft Master Plan of Champawat 2041), speed range between 18.5 kmph to 12 kmph is observed during the peak hour. Since most of the traffic is along NH9 and SH64 road, so approximately 5-minute delay can be observed during the peak hour.

Table 22: Speed and delay profile in Champawat Planning Area, as per the Primary Survey conducted by SPA New Delhi Team in 2023 for the Preparation of Draft Master Plan of Champawat 2041

S.No.	Name of Major Roads	Length of road (In km)	Journey Speed (In kmph)		Delay (in minutes)	Average Speed (In kmph)
			Typical	Peak Hour		
1	NH9	7.91	23.7	18.2	5.5	22.8
2	SH64 (Laluwapani Road)	4.95	22.1	17.4	4.7	24
	SH64 (GIC Road)	1.45	17.4	12.5	4.9	20.6
3	District Hospital Road	1.3	16.0	16.0	0	15.2
4	Golu Dev Mandir Marg	1.1	13.2	13.2	0	12.4

Source: (Draft Master Plan of Champawat 2041)

### 8.1.2. Present Parking Situation in Champawat

As shown in Table 23, as per the discussions with the officials met (as mentioned in Annexure C), there are total 4 major parking areas in NPP, Champawat. Out of these 4 major parking areas 3 are permanent parking while the remaining 1 is temporary parking area. The three permanent parking includes one surface parking located in-front of the Post Office with a vehicle capacity of 10 vehicles while the other two remaining are multi-level parking. The multi-level parking-01 is situated on the Chanai Road with a vehicle capacity of 60 vehicles and the multi-level parking-02 also known as TRC Parking is located on NH-9, near Golu Devta Mandir with a vehicle capacity of 120 vehicles. The multi-level parking-02 is under construction and will be in function soon in the near future. Along with this there is one temporary parking provision available in the Town along the major market areas with a vehicle capacity of 30 vehicles. In this temporary parking area, the parking is allowed only for 10-15 minutes for pickup, drop and loading purposes.

No shortage of parking is observed due to tourism in Town by the ULBs.

Table 23: Parking Situation of NPP, Champawat

Parking Situation in NPP, Champawat			
S.No.	Surface Parking/ Multi-level Parking	Location	Capacity (No. of Vehicles)
<b>Permanent Parking:</b>			
1	Surface Parking	In front of Post Office	10
2	Multi-Level Parking	Multi-Level Parking-01: On Chanai Road	Up-to 60
3		Multi-Level Parking-02 (under-construction): TRC Parking On NH-9, Near Golu Devta Mandir Marg	120
<b>Total (a)</b>			<b>190</b>
<b>Temporary Parking:</b>			
4	Surface Parking	On Road Along Major Markets (Allowed for only 10-15 mins)	Up-to 30
<b>Total (b)</b>			<b>30</b>
<b>Grand Total (c=a+b)</b>			<b>220</b>

Source: (RTO, Tanakpur, 2024), (PWD, Champawat, 2024), (Police Department Champawat, 2024), (Traffic Police Champawat, 2024), (Nagar Palika Parishad, Champawat, 2024)

The Image 12 below shows the present situation of parking available in NPP, Champawat

Image 12: Images of Parking in NPP, Champawat



Source: (SPA, New Delhi, 2024) primary survey

The Map 21 below shows the location of present parking areas available in NPP, Champawat.

Map 21: Location of Parking Areas in NPP, Champawat



Source: (RTO, Tanakpur, 2024), (PWD, Champawat, 2024), (Nagar Palika Parishad, Champawat, 2024), (Google My Maps, 2024), (Google Maps, 2024)

As shown in Table 24, the local residents of NPP, Champawat prefers to parks their personal vehicles along the roads or in their residential premises. The working population form surrounding areas of the Town prefers to park in the Multi-Level Parking-01 or in-front of their office premises (as per the availability of parking). The tourists visiting NPP, Champawat with their personal vehicles prefers to park in the hotels (as per the availability of parking) they have booked in or along the roads.

Table 24: Parking Areas Preferences of the Residents, the Working Population and the Tourists in NPP, Champawat

Residents/ Working Population from Surrounding Areas/ Tourists	Parking Areas Preferences
Residents of NPP, Champawat	<ul style="list-style-type: none"> <li>• Along the roads</li> <li>• In their residential premises</li> </ul>
Working population from surrounding areas	<ul style="list-style-type: none"> <li>• Multi-Level Parking in Champawat</li> <li>• In-front of their office premises.</li> <li>• Bus Station, Champawat (Un-Authorized Parking)</li> </ul>

<p><b>Tourists</b> with their personal vehicles</p>	<ul style="list-style-type: none"> <li>• Hotel Parking (If Available)</li> <li>• Along the roads</li> <li>• Bus Station, Champawat (Un-Authorized Parking)</li> </ul>
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Source: (RTO, Tanakpur, 2024), (Traffic Police Champawat, 2024), (Police Department Champawat, 2024) and (SPA, New Delhi, 2024) primary survey

As shown in Image 13, apart from the existing parking areas available some of the working population and tourists in the Town parks their vehicles in the Bus Station Parking. This parking is dedicated for public transit only and regular police patrolling and interventions are being done to control the present un-authorized parking situation created by the floating population in the Town.

Image 13: Present Situation of Un-Authorized Parking in the Town: Bus Station Parking



Source: (SPA, New Delhi, 2024) primary survey

**8.2. Present Government Policies for Urban Transportation and Parking in Champawat Town**

At present in NPP, Champawat for Urban Transport and Parking no specific policy at State Level is being implemented.

### 8.3. Issues/Challenges

The Table 25 below highlights the issues/challenges identified along with the inferences for urban transport and parking in NPP, Champawat.

Table 25: Issues/Challenges Identified for Urban Transport and Parking in NPP, Champawat

S.No.	Issues/Challenges	Inferences
01.	 <b>Improvement of Road Infrastructure</b>	<ul style="list-style-type: none"> <li>• Champawat Town is situated along the only Arterial Road present i.e. NH-9. This Arterial Road contributes to 4% of the existing road network.</li> <li>• The only Sub-Arterial Road i.e. State Highway-64 contributes 4% of the existing road network.</li> <li>• Apart from the arterial and sub-arterial road network the Town also consists of Other Major Roads (29% of existing road network) and Minor roads (63% of existing road network).</li> <li>• This exiting road network in Champawat Town is very limited in terms of accessibility and consists of narrow roads, non-continuous road connectivity and road congestion due to traffic on them.</li> </ul>
02.	 <b>Infrastructure Maintenance</b>	<ul style="list-style-type: none"> <li>• Maintaining the existing road infrastructure in hilly terrain like Champawat is challenging and costly.</li> <li>• 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>
03.	 <b>Lack of Public Transport Options</b>	<ul style="list-style-type: none"> <li>• The town lacks a reliable and efficient public transportation system.</li> <li>• While buses and taxis are available, they are limited and add on the traffic issues.</li> <li>• This reliance on private vehicles exacerbates congestion and will create parking issues in the near future of the town.</li> </ul>
04.	 <b>Tourism Management Measures</b>	<ul style="list-style-type: none"> <li>• The rise in tourism since 2022 especially due to over tourism in Nainital has the potential to create traffic congestions if a comprehensive tourism management plan is not developed to handle the influx of tourists for the future during peak seasons.</li> </ul>

			<ul style="list-style-type: none"> <li>Moreover, the dependency of the town on the only arterial road i.e. NH-9, at present will also add up to the traffic congestion in the near future due to tourism.</li> </ul>
05.		<b>Traffic Congestion and Management Measures</b>	<ul style="list-style-type: none"> <li>There is no control over traffic jams in absence of the above said infrastructure especially in the market areas along the road on NH-9 in Champawat due to lack of infrastructure.</li> <li>If not catered immediately the congestion will only increase and create Nainital like situation for the residents of Champawat.</li> </ul>
06.		<b>Parking Shortage</b>	<ul style="list-style-type: none"> <li>At present No parking issue is observed by the UBL in Champawat but to avoid future parking congestion or parking shortage due to the town gradually increasing floating population from the nearby area and In Nainital, excessive tourist has the potential to exacerbate traffic jams.</li> </ul>
07.		<b>Registered vehicles</b>	<ul style="list-style-type: none"> <li>The registered vehicles and taxis are travelling across Inter-State and Intra-State.</li> <li>Thus, making it difficult to calculate the number of vehicles travelling only in or from Champawat Town.</li> </ul>
08.		<b>Regulatory Issues</b>	<ul style="list-style-type: none"> <li>The infrastructure of multilevel parking in Champawat is not being utilized to its optimum usage.</li> <li>Thus, regulations and implantation on strict policy norms like on multilevel parking needs to be implemented in the town with proper monitoring and regular inspections.</li> </ul>
09.		<b>Environmental Concerns</b>	<ul style="list-style-type: none"> <li>The increasing number of vehicles in Champawat 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>

**8.4. Possible Solutions/Suggested Projects for Urban Transport and Parking in NPP, Champawat**

A Stakeholder Consultation Meeting was held on 26<sup>th</sup> April 2024 in NPP, Champawat. Based on the feedback provided by the official’s possible solutions and suggested projects for improvement are proposed for Champawat Town in Table 26 below.

Table 26: Possible Solutions/Suggested Projects for Urban Transport and Parking in NPP, Champawat

S.No.	Possible Solutions/Suggested Projects
01.	<b>Improvement of Road Infrastructure</b>
	<p><b>It is proposed that:</b></p> <p><b>a) The NPP, Champawat should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Investment</b> in expanding and upgrading road networks.</li> <li>ii. <b>Re-design</b> the complete road geometry of Champawat Town and <b>install</b> appropriate number of proper signages, 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.</li> <li>iii. <b>Construct protective structures</b> like rock fall barriers, catch fences, and slope stabilization nets to protect the road from falling rocks and debris.</li> </ul> <p>Image 14: Image of an example of rock fall barriers</p>  <p style="text-align: right;"><i>Source: (Google Images, 2024)</i></p> <ul style="list-style-type: none"> <li>iv. <b>Ensure proper surface and subsurface drainage</b> to prevent water from accumulating and Triggering landslides.</li> <li>v. <b>Provide adequate cross-drainage structures</b> like culverts and bridges to maintain natural drainage patterns. Use lined side drains and safety convey water away from the road.</li> </ul>

<b>02.</b>	<b>Infrastructure Maintenance</b>
	<p><b>It is proposed that:</b></p> <p>a) The NPP, Champawat should undertake the following for long term Infrastructure Resilience:</p> <ul style="list-style-type: none"> <li>i. <b>Prepare a Risk Assessment and Planning Report based on:</b> <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 create firebreaks along roads near forest areas.</li> </ul> </li> <li>ii. <b>Install Integrate Seismic Sensor</b> to detect soil movement and signs of potential landslides and provide early warning signs of earthquakes.</li> <li>iii. <b>Install infrared cameras and satellite monitoring</b> for early detection of forest fires. <ul style="list-style-type: none"> <li>i. <b>Regular inspections and repairs</b> of vulnerable road sections prone to landslides and erosion needs to be implemented by the local authorities.</li> <li>ii. <b>Use innovative slope stabilization techniques.</b></li> <li>iii. <b>Invest in resilient road construction materials</b> for widening and construction of roads.</li> <li>iv. <b>Establish emergency response protocols</b> to swiftly address disruptions and ensure uninterrupted travel for residents and tourists can support long-term infrastructure resilience.</li> <li>v. <b>Develop and implement emergency response plans</b> for quick restoration of roads affected by natural Calamities.</li> <li>vi. <b>Enhance drainage systems along roads</b> to prevent waterlogging and reduce road erosion.</li> </ul> </li> </ul> <p>b) The NPP, Champawat in collaboration with the Police Department, Champawat and the Traffic Police Department, Champawat <b>should regularly inspect and maintain these road structures.</b></p>
<b>03.</b>	<b>Lack of Public Transport Options</b>
	<p><b>It is proposed that:</b></p> <p>a) The NPP, Champawat should undertake the following:</p> <ul style="list-style-type: none"> <li>i. <b>Developing efficient Intermediate Public Transport (IPT) Solutions</b> like mini-buses with fixed routes covering key areas.</li> <li>ii. <b>Developing Multi-Modal Integration:</b> Integrate different modes of transport (e.g., buses, shuttles, taxis) to offer seamless travel experiences.</li> <li>iii. <b>Standardizing and regulating taxi fare:</b> Establish a standardized fare structure for taxis, including base fares and per-km charges and <b>install a digital fare</b></li> </ul>

	<p>meter system in all the registered taxi and develop a mobile app for fare payment and complaints to ensure transparent and consistent fare.</p> <p>iv. <b>Forming a regulatory body in collaboration with the Traffic Police Department, Champawat</b> to supervise fare regulation, monitor compliance and address disputes.</p> <p>v. Encouraged <b>the use public transport</b> rather than private vehicles among the residents and the floating population by introducing <b>Subsidized Passes</b> on monthly or weekly basis for frequent travelers including residents and the daily floating population.</p> <p>vi. <b>Introduce electric buses</b> to create a sustainable public transportation system.</p> <p><b>b) The NPP, Champawat</b> should launch Public Awareness Campaigns to inform residents and tourists about the New Regulations and Digital System.</p> <p><b>c) The NPP, Champawat</b> should work with local businesses and tourist attractions to offer discounts and incentives for pass holders to encourage public transport in the Town.</p>
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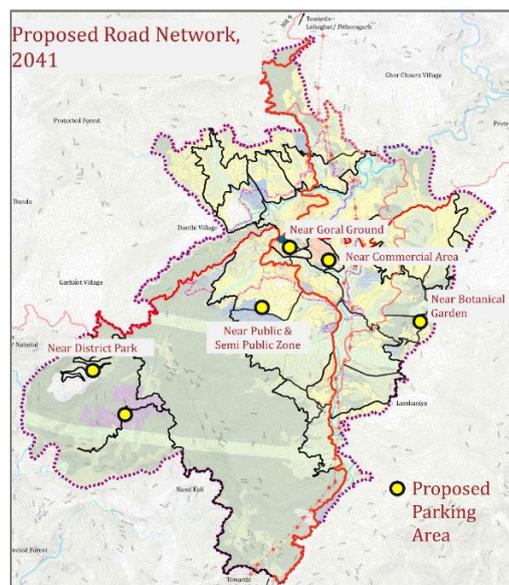
**04. Tourism Management Measures**

**As per the Draft Master Plan of Champawat 2041, by SPA, New Delhi, the following have been stated:**

- a) To overcome the traffic congestion, under the Draft Master Plan of Champawat 2041 by SPA New Delhi six parking has been proposed in the following areas: 2 Near District Park, 1-Near Public and Semi-Public Zones, 1-Near Botanical Garden, 1-Near Commercial Areas and 1-Near Goral Ground.

The Map below shows the location of the proposed parking areas in Champawat Town.

Map 22: Proposed Parking Areas as per the Draft Master Plan of Champawat 2041 by SPA New Delhi.



Source: (Draft Master Plan of Champawat 2041)

**The above may be implemented. Further alongwith this it is proposed that:**

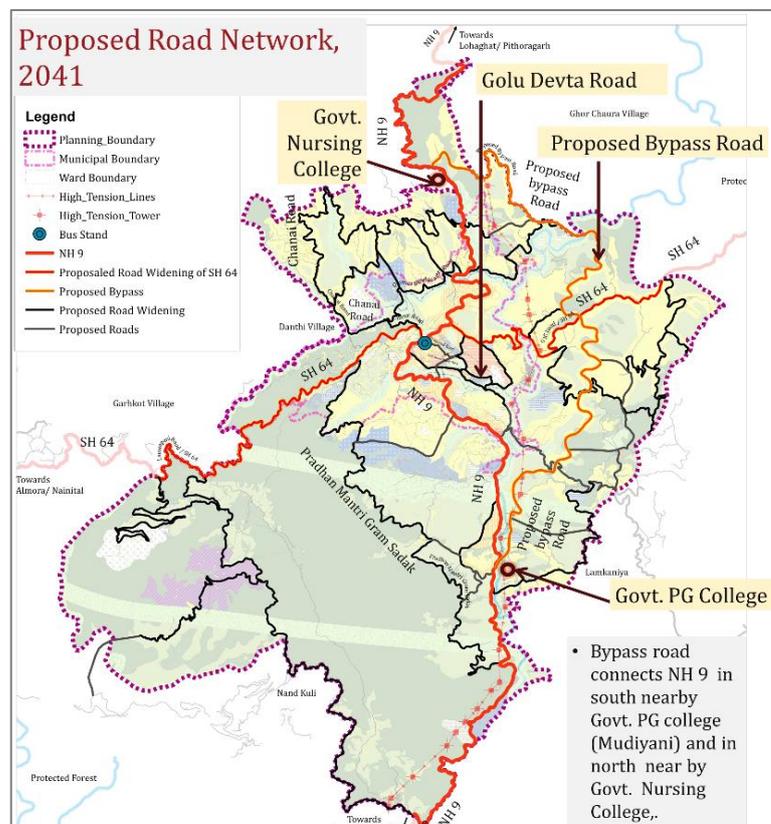
- a) **The NPP, Champawat should undertake the following:**
- b) Conduct a **comprehensive carrying assessment** to determine the maximum number of tourist that Champawat can accommodate without causing environmental degradation.
- c) **Surge pricing should be implemented for parking management** and other disincentives to discourage private vehicle use, especially during peak tourist seasons.
- d) Implementation of heavy fine over on-street parking on the major market areas.
- e) **Prepare and publish** a government tourist brochure highlighting the local traffic rules to be followed.
- f) **Conduct** mandatory awareness campaigns and workshops for tourists.

**05. Traffic Congestion and Management Measures**

**As per the Draft Master Plan of Champawat 2041, by SPA, New Delhi, the following have been stated:**

- i. Construction of bypasses to reduce traffic congestion in the main city. To achieve this A By-Pass Road is proposed in the Draft Master Plan of Champawat 2041 by SPA New Delhi, connecting NH 9 in south nearby Govt. PG College (Mudiyani) and in north nearby Govt. Nursing College

Map 23: Proposed By-Pass in Champawat Town to improve Traffic Congestion under the Draft Master Plan of Champawat 2041 by SPA New Delhi



Source: (Draft Master Plan of Champawat 2041)

	<p><b>The above may be implemented. Further alongwith this it is proposed that:</b></p> <p><b>a) The NPP, Champawat should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. An <b>online camera system</b> or any such advanced digital system should be installed on locations prone to traffic congestion so as to correctly capture the number of incoming and outgoing vehicles so as to enable better management.</li> <li>ii. <b>Promote</b> the use of carpooling and ride-sharing services to decrease the number of vehicles on the road.</li> <li>iii. <b>Deploy</b> more traffic police and impose stricter penalties on traffic violations.</li> <li>iv. <b>Install</b> appropriate number of traffic signals, signage, and road markings to ensure a smooth traffic flow and enhance safety and improvement of the road geometry is required.</li> <li>v. <b>Establish</b> a traffic accident reporting and analysis system to identify and address accident hotspots.</li> <li>vi. <b>Integrate urban planning and transportation planning</b> to ensure that new developments support sustainable travel modes.</li> </ul>
<p><b>06. Parking Shortage</b></p>	<p><b>It is proposed that:</b></p> <p><b>a) The NPP, Champawat in collaboration with the Police Department and Traffic Police Department should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Install single stack automated car parking wherever required in parking areas which are flat.</b> This can also be done on the parking areas provided by the authorities during tourist season in future.</li> </ul>
	<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>b) <b>Establish a hotline or app-based reporting system</b> for residents to report illegal parking, enhancing enforcement efficiency.</p> <p>c) <b>Surge pricing</b> should be introduced for parking by the NPP, Champawat.</p>
<b>07.</b>	<b>Registered vehicles</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Champawat should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. Only registered vehicles should be permitted to enter the main city area.</li> <li>ii. All registered public and private vehicles should comply with the emission regulations.</li> </ul>
<b>08.</b>	<b>Regulatory Issues</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Champawat should undertake the following:</b></p> <p><b><u>To Identify Problem Areas and Tailor Solutions to Effectively Address the Transport and Parking Challenges the Following Solutions can Help:</u></b></p> <ul style="list-style-type: none"> <li>i. Increasing patrolling and deployment of traffic police,</li> <li>ii. Imposing stricter penalties for violations,</li> <li>iii. Enhancing public awareness campaigns on parking regulations and road safety,</li> <li>iv. Collaborating with local stakeholders to designate and maintain proper parking zones,</li> <li>v. Leveraging technology such as smart parking systems to efficiently manage parking spaces and alleviate congestion on the streets.</li> </ul>
<b>09.</b>	<b>Environmental Concerns</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Champawat should undertake the following:</b></p> <p><b><u>To mitigate environmental risks the following shall be taken into consideration:</u></b></p> <ul style="list-style-type: none"> <li>i. Measures aimed at reducing vehicle emissions</li> <li>ii. Promoting the use of eco-friendly transportation options such as bicycles or suitable public transport options.</li> <li>iii. Improving public transportation infrastructure to limit individual vehicle usage.</li> <li>iv. Implementing vehicle emission standards and regular vehicle inspections.</li> <li>v. Raising public awareness about the importance of sustainable transportation practices for preserving the environment and improving public health.</li> </ul>

# **Chapter 9**

## **Champawat Town:**

### **Water Availability and Supply**

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

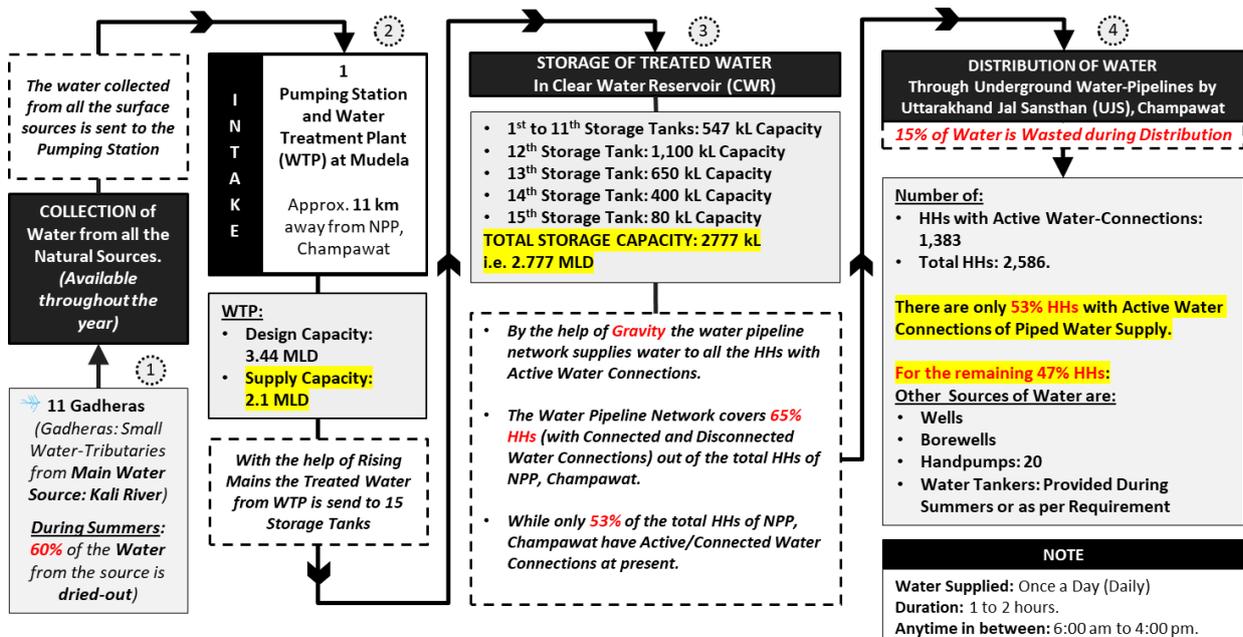
### 9.1. System Infrastructure

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

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

Figure 22 below depicts the flowchart of the process of water supply in Champawat 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 22: Flowchart of Process of Water Supply System in NPP, Champawat



Source: (SPA, New Delhi, 2024) based on data provided by (Uttarakhand Jal Sansthan, Champawat, 2024), (Pey Jal Nigam Uttarakhand, 2024), (Stakeholder Consultation Meeting, 2024), Author

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

The main source of water in the town is river Kali i.e. surface water. This main river is further channelized into 11 small natural river tributaries, locally known as Gadhera. Water from all these Gadheras is available throughout the year. During summers the collection of water from these sources is affected as almost 60% of the water from these natural sources is dried-out. The water collected is then further sent for intake and treatment.

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

The water collected is sent to the Pumping Station and Water Treatment Plant (WTP) at Mudela, situated at a distance of approximately 11 km from the NPP, Champawat. The design capacity of this plant is 3.44 million Liters per Day (MLD) and it has a supply capacity of 2.1 MLD. From this plant further with the help of rising mains the treated water is transported for storage.

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

As shown in Table 27, by the help of rising-mains, the treated water is transported to 15 storage tanks i.e. Clear Water Reservoir (CWR). Earlier there were only 11 CWRs with a total of 547 kL storage capacity that was being used to supply water in the entire Town. This was resulting in covering only 40% of the water demand of the Town and ultimately resulted in a huge gap of approximately 60% between the water supply and demand. To overcome this gap under the Adarsh Champawat scheme, Koirala Water Supply Scheme was introduced by the UJS, Champawat. Under this Scheme four CWR have been constructed i.e. 12<sup>th</sup> storage tank, 13<sup>th</sup> storage tank, 14<sup>th</sup> storage tank and 15<sup>th</sup> storage tank with a water storing capacity of 1,100 kL, 650 kL, 400 kL and 80 kL respectively. Thus, increasing the total water storage capacity to from 547 kL to 2,777 kL. This resulted in surplus storage of water and meeting the existing and future needs of the Town.

Table 27: List of Number of Existing and Added Water Storage Tanks i.e. Clear Water Reservoir (CWR) and their Storage Capacity

Existing/Added	Storage Tanks Number	Capacity (kL)
Existing/Old Infrastructure	1 <sup>st</sup> to 11 <sup>th</sup> Storage Tank	547
Added Infrastructure (New-Construction)	12 <sup>th</sup> Storage Tank	1,100
	13 <sup>th</sup> Storage Tank	650
	14 <sup>th</sup> Storage Tank	400
	15 <sup>th</sup> Storage Tank	80
	<b>Total (kL)</b>	<b>2,777</b>
	<b>Total (MLD)</b>	<b>2.777</b>

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

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



Source: (SPA, New Delhi, 2024) primary survey

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

The water stored in the 15 CWRs is distributed in the Town by the help of underground water pipeline network laid by the PJNU, Champawat. The water is distributed by the UJS, Champawat through gravity and no energy is consumed in this process. During distribution about 15% of the water is wasted.

As shown in Table 28, the water from these storage tanks is distributed to households with active water connections i.e. 1,383 HHs out of the total HHs in the Town i.e. 2,586. Thus, only 53% of the HHs are with active water connections of piped water supply and are metered water connections. The remaining 47% of the HHs meet their water needs wither by wells, borewells, handpumps or water tankers provided by the UJS during summers or as per the requirement.

Table 28: List of Wards with Households and Number of Current Connections

Ward Number	Ward Name	Total Number of HHs	Total Number of HHs with Active Water Connections (Continued)	Total Number of HHs with Discontinued Water Connections (Discontinued Due to Any Reason)	Total Number of HHs with Water Piped Connections (Continued + Discontinued)	Total Number of HHs Without Water Connections
		(A)	(B)	(C)	(D=B+C)	(E=A-B)
1	Chhataar	385	264	81	345	121
2	Talli Madli	204	134	32	166	70
3	Malli Madli	108	67	10	77	41
4	Kanalgaon	225	115	29	144	110
5	Goral Chour	370	199	46	245	171
6	Joop	451	124	49	173	327
7	Nagnath	260	176	22	198	84
8	Baleswar	391	211	22	233	180
9	Bhairwa	192	93	11	104	99
<b>Total</b>	<b>12,756</b>	<b>2,586</b>	<b>1,383</b>	<b>302</b>	<b>1,685</b>	<b>1,203</b>

Source: (Uttarakhand Jal Sansthan, Champawat, 2024)

Table 29: Water Supply Component

Water Supply Component		
Water Supply Component	Number	Inferences
Hand pumps (in NPP, Champawat)	<b>5 Solar Hand Pumps</b>	<ul style="list-style-type: none"> <li>• <b>Total Beneficiary Population</b> (including HHs, Institutes, Offices and Commercial Areas): <b>15,246</b></li> <li>• <b>Total Residing Population</b> of NPP, Champawat: <b>12,756</b></li> <li>• <b>Out of the Total Residing Population only 53% of the Population uses Piped water connections</b> the Remaining are opting for Wells, Borewells, Hand Pumps and Water Tankers.</li> <li>• There is total <b>5 Solar Hand Pumps and 1 Community Tap</b> in NPP, Champawat.</li> <li>• <b>UJS, Champawat owns 1 Water Tanker with 3.5 kL Capacity and hires Water Tankers as per requirement</b> varying from a range of <b>2 kL to 8 kL during summers when 60% of the Natural Water Source dries out.</b></li> </ul>
Community Taps (in NPP, Champawat)	<b>1</b>	
Water Tankers	<b>Owned: 1</b> <b>Capacity: 3.5 kL</b> <b>Hired: As per requirement</b> <b>Capacity: 2 to 8 kL</b>	
Length of pipeline in NPP, Champawat	-	

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

Image 17: Image of Existing Hand Pumps and Community Taps in NPP, Champawat



Source: (SPA, New Delhi, 2024) primary survey

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

As shown in Table 30, at present UJS, Champawat is supplying 2.36 MLD of water supply for 2.36 MLD of water demand for the beneficiary population of Champawat Town. Thus, there are no existing water demand-supply gap in the Town at present after the Koirala Water Supply Scheme. Approximately 65% of the town has pipeline coverage i.e. 35% lesser than the benchmark set by CPHEEO and has 53% of HHs with Active Water Connections i.e. 47% lesser than the benchmark set by CPHEEO. The water is supplied for 1 to 2 hours every day anytime in between from 6:00 am to 4:00 pm.

Table 30: Comparative Analysis of Benchmark (as per CPHEEO) and Existing Situation of Water Availability and Supply (as per ULBs) in NPP, Champawat

<b>NPP, Champawat: Water Supply: Existing Situation (As per the Discussions with the Officials Met)</b>			
<b>Indicator</b>	<b>Benchmark (as per CPHEEO)</b>	<b>Existing (as per UJS, Champawat and PJNU, Champawat)</b>	<b>Inferences (based on discussions with the Officials met and the Data Provided by them)</b>
<b>Per Capita Water Supply</b>	135 LPCD	No Existing Gaps	<b><u>After the implementation of Koirala Champawat Reorgantion Scheme:</u></b>
<b>Gap in Water Supply</b>	0 LPCD	0 LPCD	<ul style="list-style-type: none"> <li>Water Supplied: 2.36 MLD</li> <li>Water Demand: 2.36 MLD</li> <li>Thus, No Existing Gaps</li> </ul>
<b>Water Pipeline Coverage (HHs Covered)</b>	100 %	65 %	<ul style="list-style-type: none"> <li>UJS, Champawat covers 65% of the total HHs with pipeline connections (including Connected and Disconnected Water Connections).</li> </ul>
<b>Water Supply Coverage (HHs Covered)</b>	100 %	53 %	<ul style="list-style-type: none"> <li>UJS, Champawat covers 53% of the total HHs with active water connections at present.</li> <li>Residents are discontinuing the piped water connections and are opting for other options like Wells, Borewells, Handpumps or Water Tankers.</li> </ul>
<b>Continuity of Water Supply</b>	24/7 Hours/Day	1 to 2 Hours/Day	<ul style="list-style-type: none"> <li>Water is supplied Once a Day (Daily) for 1 to 2 hours anytime in between 6:00 am to 4:00 pm in different wards of NPP, Champawat.</li> </ul>
<b>Extent of metering of Water Connection</b>	100 %	-	
<b>Extent of Non-Revenue Water</b>	20 %	-	

Source: (Handbook of Service Level Benchmarking), (Uttarakhand Jal Sansthan, Champawat, 2024), (Pey Jal Nigam Uttarakhand, 2024), (Stakeholder Consultation Meeting, 2024)

**9.1.3. 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 31, 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, Champawat i.e. ULB of the Town.

Table 31: 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, Champawat

<b>Minimum Charge (Water Price) ₹ Per Month as per the Annual Assessment of Building for Water Supply in Urban Residential Area</b>				
<b>S.No.</b>	<b>Annual Assessment of Building</b>	<b>Effective Rates as on Date 01-04-2023</b>		
		<b>Gravity</b>	<b>Low Head</b>	<b>High Head</b>
01.	Up-to ₹360	176.40	186.20	199.92
02.	₹361 to ₹2,0000	186.20	199.92	215.60
03.	₹2,0001 to ₹3,500	219.52	235.20	264.60
04.	₹3,501 to ₹6,000	327.00	357.52	407.66
05.	₹6,0001 to ₹8,000	390.22	407.66	488.32
06.	₹8,0001 to ₹10,000	455.62	488.32	521.02
07.	₹10,001 to ₹12,000	488.32	521.02	566.80
08.	₹12,001 to ₹14,000	521.02	566.80	599.50
09.	More than ₹14,001	708.50	763.00	817.50

*Source: (Uttarakhand Jal Sansthan, Champawat, 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.

As shown in Table 32 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 Liters 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). 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 32: Water Price Rates for Metered Domestic Water Connections (in ₹ per Kilo Liter Per Month) by UJS, Champawat

<b>Water Price Rates (Domestic Metered Connections) in ₹ Per Kilo Liter Per Month</b>				
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, Champawat, 2024)

As shown in Table 33, 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 Liters 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 33: Water Price Rates (Non-Domestic Metered Connections) ₹ Per Kilo Liter by the Uttarakhand Jal Sansthan, Champawat

<b>Water Price Rates (Non-Domestic Metered Connections) ₹ Per Kilo Liter</b>				
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, Champawat, 2024)

#### 9.1.4. Tourism and water supply:

The hotels and guest house in Champawat Town meets the additional water demand by the help of water tankers provided on request by the UJS, Champawat. UJS, Champawat owns 1 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 1500-2000 persons per day during the Tourist Season (i.e. April, May, June, July, December and January) since 2022 in Champawat due to the Over-Tourism in Nainital. As per the discussions with the Officials met, after the implementation of Koirala Champawat Reorgantion Scheme, NPP, Champawat has No Water Supply Issues due to the Tourist Influx since 2022.

#### 9.2. Present Government Policies for Water Supply in Champawat 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.
- Under the Shehri Vikas Yojana, UUSDA has targeted to provide 24X7 water supply to the urban areas of Champawat District. This Policy aims to increase the existing WTP and storage tanks in the Town to achieve the target of supplying 24X7 water supply. This policy also aims to rejuvenate the natural gravity source of water.

#### 9.3. Issues/Challenges

The Table 34 below, highlights the issues/challenges identified along with the inferences for water availability and supply in NPP, Champawat.

Table 34: Issues/Challenges Identified for Water Availability and Supply in NPP, Champawat

S.No.	Issues/Challenges	Inferences
01.	 <p><b>Dependency on Natural Sources</b></p>	<ul style="list-style-type: none"> <li>• NPP, Champawat heavily relies on the natural water sources such as river tributaries (known as Gadheras) from the main water source i.e. river Kali 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>Pollution of Gadheras in NPP, Champawat</b></p>	<ul style="list-style-type: none"> <li>• 11 Gadheras (small river tributaries) are the major water source in the town. The Residents of NPP, Champawat directly dump the untreated household waste water into these fresh water resources.</li> <li>• This direct discharge of untreated waste water into the Gadheras is leading to the pollution of the natural water sources.</li> <li>• Apart from this, silt deposition due to heavy</li> </ul>

			rains also adds up the pollution of the Natural water resources.
03.		<b>Population Growth and Urbanization</b>	<ul style="list-style-type: none"> <li>The increasing population and tourist influx in NPP, Champawat might lead to potential ground water shortage and service interruptions in the near future.</li> </ul>
04.		<b>Infrastructure Limitations</b>	<ul style="list-style-type: none"> <li>Out of the 100% HHs UJS, Champawat has provided 65% HHs with piped water connections.</li> <li>Despite of this, out of the 100% HHs only 53% of HHs has retained the active connections with piped water supply while the remaining 12% of HHs have discontinued this piped water connections.</li> <li>The total reaming 47% of the HHs are either using the water supplied to the HHs with active piped water connections or are extracting water directly from borewells, wells, community taps, handpumps or are requesting water tankers provided by the UJS, Champawat.</li> <li>This discontinuation of the piped water supply by the residents of NPP, Champawat needs to have an urgent intervention by the present ULBs.</li> <li>Moreover, the water lines laid across town are underground and are not mapped. Thus, making it even more difficult in the hilly Town of Champawat to trace or identify any water leakages or fault in water pipeline network.</li> <li>This ultimately leads to increase in the contamination of water supplied and low water pressure and increases the inefficiency.</li> </ul>
05.		<b>Trained Professionals</b>	<ul style="list-style-type: none"> <li>Lack of trained professionals to treat the leakage and contamination of water supplied (if any) through underground water pipeline network.</li> </ul>
06.		<b>Climate Change Impacts</b>	<ul style="list-style-type: none"> <li>Climate change is likely to worsen existing water challenges in Champawat 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>

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

A Stakeholder Consultation Meeting was held on 26<sup>th</sup> April 2024 in NPP, Champawat. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Champawat Town in Table 35 below.

Table 35: Possible Solutions/Suggested Projects for Water Availability and Supply in NPP, Champawat

S.No.	Possible Solutions/Suggested Projects
01.	<b>Dependency on Natural Sources</b>
	<p><b>It is proposed that:</b></p> <p>a) <b>The UJS, Champawat, PJNU, Champawat and NPP, Champawat in collaboration should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Conduct a detailed assessment report</b> of the Gadheras (river tributaries) in terms of capacity and quality on a periodic basis to understand their water quality, quantity and vulnerability to pollution and environment degradation. So that the withdrawal and replenishment is done in a balanced manner so as to maintain sustainability.</li> <li>ii. <b>Develop a Comprehensive Water Management Plan</b> that includes efficient distribution systems, real time monitoring of water levels, and predictive modelling for water demand.</li> <li>iii. <b>Implement and Encourage</b> water conservation practices such as identification of suitable sites and the construction of farm ponds on them, Rainwater Harvesting in residential, commercial, public buildings, etc. to store water during the monsoon season for irrigation and domestic use.</li> <li>iv. <b>Providing financial and technical assistance to farmer and households</b> for setting up rainwater harvesting systems.</li> <li>v. <b>Rejuvenation of dense forest areas</b> as buffer should be proposed to prevent encroachment of natural water resources by the Local Authorities.</li> <li>vi. <b>Promote the reuse of treated wastewater</b> for non-potable purposes, such as irrigation and industrial application, to reduce the pressure on freshwater resources.</li> </ol>
02.	<b>Pollution of Gadheras in NPP, Champawat</b>
	<p><b>It is proposed that:</b></p> <p>a) <b>The UJS, Champawat and PJNU, Champawat in collaboration should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Identifying and implementing strict rules and high penalties</b> on the defaulters dumping untreated waste directly into the Gadheras.</li> <li>ii. Regular patrolling in collaboration with local NGOs by the UJS and PJNU collectively to prevent direct discharge of untreated wastewater by the local residents.</li> <li>iii. Construct silt traps and sedimentation basins to reduce silt deposition in Gadheras, particularly during heavy rains.</li> <li>iv. Regular Cleaning of the Gadheras should be implemented by the UJS and PJNU</li> </ol>

	<p>along collaboration with the local NGOs, Government Institutions and other Volunteers to prevent pollution of natural resources of water.</p> <p>v. Implementation of strict fines and penalties in collaboration with the Police Department on finding guilty for polluting the natural water resources.</p> <p>vi. Implementation of Door-to-door Awareness Programmes to prevent pollution of natural resources.</p>
03.	<b>Population Growth and Urbanization</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The UJS, Champawat and PJNU, Champawat in collaboration should undertake the following:</b></p> <p>i. A proper assessment to be done to understand the people's unwillingness to utilize piped water supply.</p> <p>ii. Metering should be done by UJS, Champawat to trace the water consumption and distribution in the Town.</p>
04.	<b>Infrastructure Limitations</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The UJS, Champawat and PJNU, Champawat in collaboration on an urgent basis should</b> document the mapping of the existing water pipelines to easily trace and tackle any issue related to water leakages and prevent water contamination for the future.</p>
05.	<b>Trained Professionals</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The UJS, Champawat and PJNU, Champawat in collaboration should undertake the following:</b></p> <p>i. More capacity development programs should be developed and implemented the local government.</p> <p>ii. Establishment of think tanks by the State Government for technical assistance.</p> <p>iii. Knowledge dissemination programmes should be encouraged among the local government employees and residents.</p>
06.	<b>Climate Change Impacts</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The UJS, Champawat and PJNU, Champawat in collaboration should undertake the following:</b></p> <p>i. Awareness Campaigns and Environmental Education Programs and should be implemented by the local authorities.</p> <p>ii. Knowledge dissemination among the residents through community initiatives should be implemented by the local bodies.</p>

# Annexure A

**Annexure A****Details of documents collected from various departments in Champawat Town**

Figure 23: Champawat Town Wards Name and Households List

का परिषद चम्पावत क्षेत्रान्तर्गत वार्ड वार आवासो की संख्या		
	वार्ड का नाम	आवासो की संख्या
1	छतार	385
2	तल्ली मादली	204
3	मल्ली मादली	108
4	कनलगॉव	225
5	गौरलचौड़	370
6	जूप	451
7	नागनाथ	260
8	बालेश्वर	391
9	भैरवा	192
	कुल योग	2586

Source: (Nagar Palika Parishad, Champawat, 2024)

Figure 24: Number of schools, buildings, offices and shops under Nagar Palika Parishad, Champawat

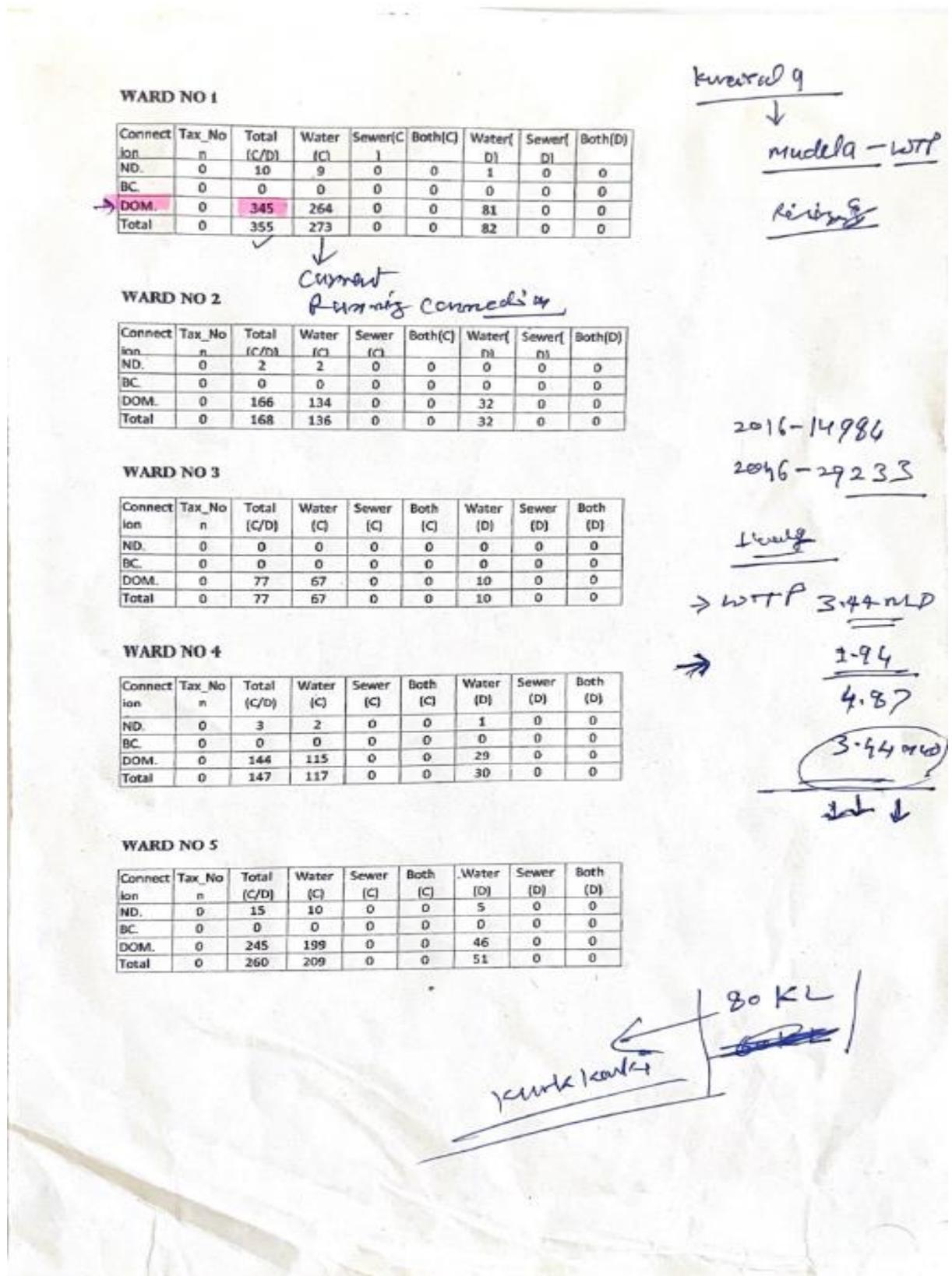
62 : Drains on Hills! after 1880.

Drain Map: Immigration Department  
Area of Nainital 10.52.91 Khe. luv

नगर निकाय चम्पावत अन्तर्गत विद्यालय, भवन, कार्यालय व दुकानों की सूची				
क्र०सं०	विद्यालय की संख्या	भवनों की संख्या	कार्यालय की संख्या	दुकानों की संख्या
01	18	2560	68	755

Source: (Nagar Palika Parishad, Champawat, 2024)

Figure 25: Champawat Town Ward Wise Water Supply List - 01



Source: (Uttarakhand Jal Sansthan, Champawat, 2024)

Figure 26: Champawat Town Ward Wise Water Supply List - 02

WARD NO 6								
Connect ion	Tax_No n	Total (C/D)	Water (C)	Sewer (C)	Both (C)	Water (D)	Sewer (D)	Both (D)
ND.	0	3	3	0	0	0	0	0
BC.	0	0	0	0	0	0	0	0
DOM.	0	173	124	0	0	49	0	0
Total	0	176	127	0	0	49	0	0

WARD NO 7								
Connect ion	Tax_No n	Total (C/D)	Water (C)	Sewer (C)	Both (C)	Water (D)	Sewer (D)	Both (D)
ND.	0	1	1	0	0	0	0	0
BC.	0	0	0	0	0	0	0	0
DOM.	0	198	176	0	0	22	0	0
Total	0	199	177	0	0	22	0	0

WARD NO 8								
Connect ion	Tax_No n	Total (C/D)	Water (C)	Sewer (C)	Both (C)	Water (D)	Sewer (D)	Both (D)
ND.	0	13	5	0	0	8	0	0
BC.	0	0	0	0	0	0	0	0
DOM.	0	233	211	0	0	22	0	0
Total	0	246	216	0	0	30	0	0

WARD NO 9								
Connect ion	Tax_No n	Total (C/D)	Water (C)	Sewer (C)	Both (C)	Water (D)	Sewer (D)	Both (D)
ND.	0	4	3	0	0	1	0	0
BC.	0	0	0	0	0	0	0	0
DOM.	0	104	93	0	0	11	0	0
Total	0	108	96	0	0	12	0	0

Total	0	1736	1418	0	0	318	0	0
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Source: (Uttarakhand Jal Sansthan, Champawat, 2024)

Figure 27: Details of urban drinking water schemes under Champawat District

**उत्तराखण्ड जल संस्थान, चम्पावत**  
जनपद चम्पावत अन्तर्गत नगरीय पेयजल योजनाओं का विवरण

क्र०स०	शाखा का नाम	विकास खण्ड का नाम	योजना का नाम	श्रोत का नाम/नलकूप का स्थान	श्रोत का प्रकार	लगावित जनसंख्या	वर्तमान माँग (MLD) @ 135LPCD	वर्तमान में की जा रही आपूर्ति (MLD)	मण्डारण क्षमता (K.L में)
1	चम्पावत	चम्पावत	चम्पावत नगरीय	1. छीड़ापानी 2. ललुवापानी 3. चौखेत 4. च्यूखर्क 5. चौडदेव 6. डियारखोला 7. सोडखोला 8. थुम 9. शेण 10. दुग्धारी 11. सिमाल	गधेरा	15246	2.360	2.36	10 400 650 11 No 80 547 KL 1100 KL
2	चम्पावत	लोहाघाट	लोहाघाट नगरीय	1. बन्तवाड 2. फोर्ती 3. बलई 4. लोहावती रिवर (चौडी पम्पिंग) 5. सिखेश्वर मन्दिर मिनी नलकूप	गधेरा / नदी / मिनीनलकूप	13328	2.070	0.720	4 No 720 KL
3	चम्पावत	चम्पावत	टनकपुर नगरीय	1. खच्चरपडाव 2. नगरपालिका 3. मेलाग्राउण्ड 4. निकट लहरील परिसर 5. निकट गैसगोदाम 6. वर्मा लार्डन	नलकूप	31656	4.910	2.940	2 No 450+125
4	चम्पावत	चम्पावत	बनवसा नगर	1. मीनाबाजार 2. चन्दनी	नलकूप	10669	1.650	0.520	1 NO 125 KL
<b>योग :-</b>							<b>70899</b>	<b>10.990</b>	<b>6.54</b>
विकास खण्डवार ग्रामीण पेयजल योजनाओं का विवरण									
क्र०स०	शाखा का नाम	विकास खण्ड का नाम	योजनाओं की संख्या	श्रोतों की संख्या	श्रोत का प्रकार	लगावित जनसंख्या	वर्तमान माँग (MLD) @ 55LPCD	वर्तमान में की जा रही आपूर्ति (MLD)	
1	चम्पावत	चम्पावत	82	90	गधेरा / नदी / मिनीनलकूप / रिपिंग	47521	2.614	1.597	
2	चम्पावत	लोहाघाट	64	78		25402	1.397	0.844	
3	चम्पावत	बाराकोट	39	41		19571	1.076	0.642	
4	चम्पावत	पाटी	53	63		32544	1.790	1.076	
<b>योग :-</b>			<b>238</b>	<b>272</b>		<b>125038</b>	<b>6.877</b>	<b>4.159</b>	

Source: (Uttarakhand Jal Sansthan, Champawat, 2024)

Figure 28: Road Details of Nagar Palika Parishad, Champawat- 01

नगर पालिका परिषद चम्पावत सड़कों (NH-9,SH64,LOCAL,ETC) की दूरियाँ						
Road_Name	Road_hiera	Road_ID	Code	Sub_Class	Length_km	Rd_Name
	Local		01-10	Minor Road	0.0971	
	Local		01-10	Minor Road	0.1231	
	Local		01-10	Minor Road	0.0301	
Gyalisaran Road	Collector		01-09	Major Road	0.3531	
National Highway-9	Arterial		01_01	National Highway	5.9054	NH-9
	Local		01-10	Minor Road	0.0404	
	Local		01-10	Minor Road	0.0634	
	Collector		01-09	Major Road	0.5073	
	Local		01-10	Minor Road	0.0876	
GIIC Road/ State Highway 64	Sub-Arterial		01_09	State Highway	1.4561	SH 64
	Local		01-10	Minor Road	0.0393	
Khark Karki Road	Collector		01-09	Major Road	0.1393	
	Local		01-10	Minor Road	0.2639	
	Collector		01-09	Major Road	0.2060	
	Local		01-10	Minor Road	0.0951	
	Local		01-10	Minor Road	0.1037	
	Local		01-10	Minor Road	0.0793	
Karkyura Marg	Collector		01-09	Major Road	0.7900	
	Local		01-10	Minor Road	0.0407	
	Local		01-10	Minor Road	0.0411	
	Local		01-10	Minor Road	0.0848	
	Local		01-10	Minor Road	0.0469	
	Local		01-10	Minor Road	0.0149	
	Local		01-10	Minor Road	0.0104	
	Local		01-10	Minor Road	0.1546	
	Local		01-10	Minor Road	0.0962	
	Local		01-10	Minor Road	0.0297	
	Local		01-10	Minor Road	0.1548	
GGIC Road	Collector		01-09	Major Road	0.2423	
	Local		01-10	Minor Road	0.1105	
	Local		01-10	Minor Road	0.1316	
	Local		01-10	Minor Road	0.0917	
	Local		01-10	Minor Road	0.0045	
	Local		01-10	Minor Road	0.0187	
	Local		01-10	Minor Road	0.2443	
	Sub-Arterial		01_09	Major Road	2.1917	
	Local		01-10	Minor Road	0.0903	
District Headquarter Road	Sub-Arterial		01_09	Major Road	2.1446	
	Local		01-10	Minor Road	0.0097	
	Local		01-10	Minor Road	0.0161	
	Local		01-10	Minor Road	0.0600	
	Local		01-10	Minor Road	0.1293	
	Local		01-10	Minor Road	0.7829	
	Local		01-10	Minor Road	0.0665	
	Local		01-10	Minor Road	0.1491	
	Local		01-10	Minor Road	0.0569	
District Hospital Road	Collector		01-09	Major Road	1.3752	
	Local		01-10	Minor Road	0.0493	
	Local		01-10	Minor Road	0.0284	
	Local		01-10	Minor Road	0.0352	
	Local		01-10	Minor Road	0.0108	
	Local		01-10	Minor Road	0.0178	
Tehsil Road	Local		01-10	Minor Road	0.2135	
	Local		01-10	Minor Road	0.0388	
	Local		01-10	Minor Road	0.0360	
	Local		01-10	Minor Road	0.0161	
	Local		01-10	Minor Road	0.0333	
	Local		01-10	Minor Road	0.0087	
	Local		01-10	Minor Road	0.0965	
	Local		01-10	Minor Road	0.0310	
	Local		01-10	Minor Road	0.1412	
	Local		01-10	Minor Road	0.0383	
	Local		01-10	Minor Road	0.0275	
	Local		01-10	Minor Road	0.1137	

Chanal Road	Collector	01-09	Major Road	1.2320	
	Local	01-10	Minor Road	0.0217	
	Local	01-10	Minor Road	0.1186	
	Local	01-10	Minor Road	0.0165	
	Local	01-10	Minor Road	0.0927	
	Local	01-10	Minor Road	0.0576	
	Local	01-10	Minor Road	0.0545	
	Local	01-10	Minor Road	0.1199	
	Local	01-10	Minor Road	0.0948	
	Local	01-10	Minor Road	0.1099	
	Local	01-10	Minor Road	0.0361	
	Local	01-10	Minor Road	0.0564	
	Local	01-10	Minor Road	0.0206	
	Local	01-10	Minor Road	0.1593	
	Local	01-10	Minor Road	0.0142	
	Local	01-10	Minor Road	0.1000	

	Local	01-10	Minor Road	0.0177
	Local	01-10	Minor Road	0.0653
	Local	01-10	Minor Road	0.1862
	Local	01-10	Minor Road	0.1471
	Local	01-10	Minor Road	0.0105
	Local	01-10	Minor Road	0.0059
	Local	01-10	Minor Road	0.0280
	Local	01-10	Minor Road	0.1039
	Local	01-10	Minor Road	0.1529
	Local	01-10	Minor Road	0.0511
	Collector	01-09	Major Road	0.7077
	Local	01-10	Minor Road	0.1237
	Local	01-10	Minor Road	0.1142
	Local	01-10	Minor Road	0.0266
	Local	01-10	Minor Road	0.0439
	Local	01-10	Minor Road	0.2085
	Local	01-10	Minor Road	0.0080
	Local	01-10	Minor Road	0.3607
	Local	01-10	Minor Road	0.0648
	Local	01-10	Minor Road	0.0241
	Local	01-10	Minor Road	0.0556
	Local	01-10	Minor Road	0.0951
	Local	01-10	Minor Road	0.0457
	Local	01-10	Minor Road	0.0214
	Local	01-10	Minor Road	0.0409
	Local	01-10	Minor Road	0.0393
	Local	01-10	Minor Road	0.1573
	Local	01-10	Minor Road	0.0585
	Local	01-10	Minor Road	0.0777
	Local	01-10	Minor Road	0.0683
	Local	01-10	Minor Road	0.0900
	Local	01-10	Minor Road	0.0469
	Local	01-10	Minor Road	0.2514
	Local	01-10	Minor Road	0.0404
	Local	01-10	Minor Road	0.0560
	Local	01-10	Minor Road	0.2511
	Local	01-10	Minor Road	0.1503
	Local	01-10	Minor Road	0.0759
	Local	01-10	Minor Road	0.2524
	Local	01-10	Minor Road	0.0501
	Local	01-10	Minor Road	0.0488
	Local	01-10	Minor Road	0.0832
	Local	01-10	Minor Road	0.1793
	Local	01-10	Minor Road	0.1628
	Local	01-10	Minor Road	0.0759
	Local	01-10	Minor Road	0.1097
	Local	01-10	Minor Road	0.0549
	Local	01-10	Minor Road	0.4993
	Local	01-10	Minor Road	0.0759
	Local	01-10	Minor Road	0.0744
	Local	01-10	Minor Road	0.0571
	Local	01-10	Minor Road	0.0414
	Local	01-10	Minor Road	0.0923
	Local	01-10	Minor Road	0.1612
	Local	01-10	Minor Road	0.2140
	Local	01-10	Minor Road	0.0479
	Local	01-10	Minor Road	0.0046
	Local	01-10	Minor Road	0.0797
	Local	01-10	Minor Road	0.0107
	Collector	01-09	Major Road	0.8712
	Local	01-10	Minor Road	0.1085
	Local	01-10	Minor Road	0.0283
Pradhan Mantri Gram Sadak	Collector	01-09	Major Road	1.3558
	Local	01-10	Minor Road	0.1321
	Local	01-10	Minor Road	0.1055
	Local	01-10	Minor Road	0.0249
	Local	01-10	Minor Road	0.2349

	Local		01-10	Minor Road	0.0866
	Local		01-10	Minor Road	0.0923
	Local		01-10	Minor Road	0.0074
	Local		01-10	Minor Road	0.0607
	Local		01-10	Minor Road	0.0050
	Local		01-10	Minor Road	0.0064
	Local		01-10	Minor Road	0.0771
	Local		01-10	Minor Road	0.1741
	Local		01-10	Minor Road	0.0854
	Local		01-10	Minor Road	0.0091
	Collector		01-09	Major Road	0.1515
	Local		01-10	Minor Road	0.0942
	Local		01-10	Minor Road	0.0059
	Local		01-10	Minor Road	0.0486
	Local		01-10	Minor Road	0.0383
	Local		01-10	Minor Road	0.0165
	Collector		01-09	Major Road	0.3668
	Local		01-10	Minor Road	0.0085
	Local		01-10	Minor Road	0.0563
	Local		01-10	Minor Road	0.0973
	Local		01-10	Minor Road	0.1176
	Local		01-10	Minor Road	0.0783
	Local		01-10	Minor Road	0.1102
	Local		01-10	Minor Road	0.0306
	Local		01-10	Minor Road	0.0341
	Collector		01-09	Major Road	0.5333
District Hospital Road	Collector		01-09	Major Road	0.1798
	Local		01-10	Minor Road	0.1277
	Local		01-10	Minor Road	0.1111
	Local		01-10	Minor Road	0.1090
	Local		01-10	Minor Road	0.0274
	Local		01-10	Minor Road	0.1382
	Local		01-10	Minor Road	0.0303
	Local		01-10	Minor Road	0.0723
	Local		01-10	Minor Road	0.3370
	Local		01-10	Minor Road	0.0267
	Local		01-10	Minor Road	0.0150
	Local		01-10	Minor Road	0.0379
	Local		01-10	Minor Road	0.0746
	Local		01-10	Minor Road	0.0623
	Collector		01-09	Major Road	0.5583
	Local		01-10	Minor Road	0.1254
	Local		01-10	Minor Road	0.0030
	Local		01-10	Minor Road	0.0946
	Local		01-10	Minor Road	0.0828
	Local		01-10	Minor Road	0.0073
	Local		01-10	Minor Road	0.0197
	Local		01-10	Minor Road	0.1489
	Local		01-10	Minor Road	0.0094
	Local		01-10	Minor Road	0.1313
	Local		01-10	Minor Road	0.1025
	Local		01-10	Minor Road	0.2611
	Local		01-10	Minor Road	0.2522
	Local		01-10	Minor Road	0.0239
	Local		01-10	Minor Road	0.0212
	Local		01-10	Minor Road	0.0474
	Local		01-10	Minor Road	0.1782
	Local		01-10	Minor Road	0.0732
	Local		01-10	Minor Road	0.1598
	Local		01-10	Minor Road	0.3717
	Local		01-10	Minor Road	0.0204
	Local		01-10	Minor Road	0.0562
	Local		01-10	Minor Road	0.1620
	Local		01-10	Minor Road	0.0168
	Local		01-10	Minor Road	0.3082
	Local		01-10	Minor Road	0.0421
	Local		01-10	Minor Road	0.0584

	Local	01-10	Minor Road	0.2096	
	Local	01-10	Minor Road	0.0437	
	Local	01-10	Minor Road	0.0265	
	Local	01-10	Minor Road	0.0654	
	Local	01-10	Minor Road	0.0993	
	Local	01-10	Minor Road	0.3679	
	Local	01-10	Minor Road	0.0856	
	Collector	01-09	Major Road	0.2107	
	Local	01-10	Minor Road	0.1688	
	Local	01-10	Minor Road	0.1303	
	Local	01-10	Minor Road	0.0563	
	Local	01-10	Minor Road	0.0494	
	Local	01-10	Minor Road	0.0312	
	Local	01-10	Minor Road	0.3648	
	Local	01-10	Minor Road	0.0541	
Lauwapani Road/ State Highway 64	Sub-Arterial	01-09	State Highway	4.4967	SH 64
	Local	01-10	Minor Road	0.1042	
	Local	01-10	Minor Road	0.1071	
	Local	01-10	Minor Road	0.2000	
	Local	01-10	Minor Road	0.0233	
	Local	01-10	Minor Road	0.0258	
	Local	01-10	Minor Road	0.0918	
	Local	01-10	Minor Road	0.0346	
	Local	01-10	Minor Road	0.0107	
	Local	01-10	Minor Road	0.0592	
	Local	01-10	Minor Road	0.0163	
	Local	01-10	Minor Road	0.0477	
	Local	01-10	Minor Road	0.2121	
	Local	01-10	Minor Road	0.2685	
	Local	01-10	Minor Road	0.0538	
	Local	01-10	Minor Road	0.1350	
	Local	01-10	Minor Road	0.0205	
	Local	01-10	Minor Road	0.1012	
	Local	01-10	Minor Road	0.0462	
	Local	01-10	Minor Road	0.0749	
	Local	01-10	Minor Road	0.0037	
	Local	01-10	Minor Road	0.0171	
	Local	01-10	Minor Road	0.0757	
	Local	01-10	Minor Road	0.0986	
	Local	01-10	Minor Road	0.0050	
	Local	01-10	Minor Road	0.0248	
	Local	01-10	Minor Road	0.0458	
	Local	01-10	Minor Road	0.1069	
	Local	01-10	Minor Road	0.0123	
	Local	01-10	Minor Road	0.0649	
	Local	01-10	Minor Road	0.0835	
	Local	01-10	Minor Road	0.3161	
	Local	01-10	Minor Road	0.0701	
	Local	01-10	Minor Road	0.0662	
	Local	01-10	Minor Road	0.0778	
	Local	01-10	Minor Road	0.0086	
	Local	01-10	Minor Road	0.0659	
	Local	01-10	Minor Road	0.0000	
State Highway-10	Local	01-10	Minor Road	0.8724	
	Sub-Arterial	01-09	Major Road	0.6899	
Khark Karki Road	Collector	01-09	Major Road	0.8570	
Golu Devta Mandir Marg	Collector	01-09	Major Road	0.1648	
Police Line	Collector	01-09	Major Road	0.2358	
				0.0664	
State Highway 64			State Highway	0.0243	SH 64
				0.1529	
				0.3770	
				0.0847	
				0.0555	
				0.1100	
				0.0608	
				0.0669	

					0.0129
					0.0126
					0.0207
					0.0127
					0.0103
					0.0095
					0.0003
					0.0164
					0.2686
					0.0608
					0.0064
					0.0115
					0.0016
					0.0021
					0.0182
					0.0015
					0.0044
	Local				0.0217
	Local				0.3319
	Local				0.0616
	Total Road length:				52.4782

Source: (Police Department Champawat, 2024)

Figure 29: Tariff for water Supply in Champawat:

## उत्तराखण्ड जल संस्थान

दिनांक 01-04-2023 से प्रभावी दरें

1- न्यूनतम प्रभार (जलमूल्य) ₹ प्रतिमाह घरेलू नगरीय क्षेत्र की जलापूर्ति हेतु भवन के वार्षिक मूल्यांकन पर :

क्र० सं०	भवन का वार्षिक मूल्यांकन	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 96/118 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड
1	₹ 360.00 तक	90.00	95.00	102.00	86.40	91.20	97.92	176.40	186.20	199.92
2	₹ 361.00 से 2000.00 तक	95.00	102.00	110.00	91.20	97.92	105.60	186.20	199.92	215.60
3	₹ 2001.00 से 3500.00 तक	112.00	120.00	135.00	107.52	115.20	129.60	219.52	235.20	264.60
4	₹ 3501.00 से 6000.00 तक	150.00	164.00	187.00	177.00	193.52	220.66	327.00	357.52	407.66
5	₹ 6001.00 से 8000.00 तक	179.00	187.00	224.00	211.22	220.66	264.32	390.22	407.66	488.32
6	₹ 8001.00 से 10000.00 तक	209.00	224.00	239.00	246.62	264.32	282.02	455.62	488.32	521.02
7	₹ 10001.00 से 12000.00 तक	224.00	239.00	260.00	264.32	282.02	306.80	488.32	521.02	566.80
8	₹ 12001.00 से 14000.00 तक	239.00	260.00	275.00	282.02	306.80	324.50	521.02	566.80	599.50
9	₹ 14001.00 से अधिक	325.00	350.00	375.00	383.50	413.00	442.50	708.50	763.00	817.50

2- जलमूल्य (घरेलू न्यूनतम प्रभार) (₹ प्रतिमाह) नगरीय एवं ग्रामीण, :-

क्र० सं०	मीटर साईज (एम.एम.)	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 150 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड
1	20	380.00	450.00	520.00	570.00	675.00	780.00	950.00	1125.00	1300.00
2	25	600.00	750.00	900.00	900.00	1125.00	1350.00	1500.00	1875.00	2250.00

3- जलमूल्य न्यूनतम प्रभार (₹ प्रतिमाह) जहां भवन का वार्षिक मूल्यांकन नहीं है तथा ग्रामीण क्षेत्र की घरेलू जलापूर्ति :

क्र० सं०	विवरण	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 96/118 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड
1	एक टॉटीयुक्त जल संयोजन	55.00	60.00	67.00	52.80	57.60	64.32	107.80	117.60	131.32
2	दो टॉटीयुक्त जल संयोजन	67.00	75.00	90.00	64.32	72.00	86.40	131.32	147.00	176.40
3	तीन टॉटीयुक्त जल संयोजन	90.00	112.00	135.00	106.20	132.16	159.30	196.20	244.16	294.30
4	चार टॉटीयुक्त या उससे अधिक	112.00	135.00	150.00	132.16	159.30	177.00	244.16	294.30	327.00

## 4- जलमूल्य दरें (अघरेलू मीटरयुक्त संयोजन) ₹ प्रति किलोलीटर :

क्र० सं०	विवरण	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 150 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड
1	नगरपालिका परिषद क्षेत्र									
क	विशेष श्रेणी एवं औद्योगिक	12.50	15.60	18.75	18.75	23.40	28.13	31.25	39.00	46.88
ख	अन्य व्यवसायिक प्रतिष्ठान	11.00	12.50	16.50	16.50	18.75	24.75	27.50	31.25	41.25
ग	अन्य सरकारी, अर्द्ध सरकारी एवं संस्थागत प्रतिष्ठान / छावनी परिषद	10.50	12.00	16.50	15.75	18.00	24.75	26.25	30.00	41.25
2	नगर पंचायत क्षेत्र/म्यूनियो बहुउद्देशीय	10.50	10.50	16.50	15.75	15.75	24.75	26.25	26.25	41.25
3	ग्रामीण क्षेत्र	10.50	10.50	16.50	15.75	15.75	24.75	26.25	26.25	41.25

## 5- जलमूल्य न्यूनतम प्रभार ₹ प्रतिमाह (15 एम.एम. मीटर अघरेलू जलापूर्ति हेतु) :

क्र० सं०	विवरण	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 150 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड
1	नगरपालिका परिषद क्षेत्र									
क	विशेष श्रेणी एवं औद्योगिक	415.00	550.00	700.00	622.50	825.00	1050.00	1037.50	1375.00	1750.00
ख	अन्य व्यवसायिक प्रतिष्ठान	380.00	450.00	520.00	570.00	675.00	780.00	950.00	1125.00	1300.00
ग	अन्य सरकारी, अर्द्ध सरकारी एवं संस्थागत प्रतिष्ठान / छावनी परिषद	375.00	425.00	485.00	562.50	637.50	727.50	937.50	1062.50	1212.50
2	नगर पंचायत क्षेत्र/म्यूनियो बहुउद्देशीय	235.00	315.00	350.00	352.50	472.50	525.00	587.50	787.50	875.00
3	ग्रामीण क्षेत्र	175.00	195.00	235.00	262.50	292.50	352.50	437.50	487.50	587.50

## 6- जलमूल्य मीटरयुक्त घरेलू जल संयोजन हेतु (₹ प्रति किलोलीटर प्रतिमाह) :-

क्र० सं०	परिक्षेत्र	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 150 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड
1	नगर क्षेत्र	4.00	5.50	6.25	6.00	8.25	9.38	10.00	13.75	15.63
2	ग्रामीण क्षेत्र	3.10	4.70	6.25	4.65	7.05	9.38	7.75	11.75	15.63

## 7(अ) घरेलू श्रेणी के सीवर संयोजनों वाले भवनों के लिये निर्धारित सीवर संयोजन शुल्क (चार्ज) प्रतिमाह प्रतिसंयोजन :-

क्र० सं०	भवन का निर्धारित वार्षिक मूल्यांकन	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)	मूल दरों का 96/150 प्रतिशत	01-04-23 से प्रभावी दरें
1-	₹ 360.00 तक	12.00	11.52	23.52
2-	₹ 361.00 से 2000.00 तक	18.00	17.28	35.28
3-	₹ 2001.00 से 3500.00 तक	27.00	25.92	52.92
4-	₹ 3501.00 से 6000.00 तक	30.00	45.00	75.00
5-	₹ 6001.00 से 8000.00 तक	35.00	52.50	87.50
6-	₹ 8001.00 से 10000.00 तक	40.00	60.00	100.00
7-	₹ 10001.00 से 12000.00 तक	45.00	67.50	112.50
8-	₹ 12001.00 से 14000.00 तक	50.00	75.00	125.00
9-	₹ 14001.00 से ऊपर	60.00	90.00	150.00

## 7(ब) सीवरशीट शुल्क (अघरेलू श्रेणी) प्रति शीट प्रतिमाह :-

क्र० सं०	विवरण	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)	मूल दरों का 150 प्रतिशत	01-04-23 से प्रभावी दरें
1-	सीवर शीट शुल्क	27.00	40.50	67.50

8- विकास शुल्क

परिक्षेत्र	गुरुत्व						लोहैड						हाईहैड					
	दिनांक 01-04-13 को प्रभावी दरें (मूल दरें)		मूल दरों का 150 प्रतिशत		01-04-23 से प्रभावी दरें		दिनांक 01-04-13 को प्रभावी दरें (मूल दरें)		मूल दरों का 150 प्रतिशत		01-04-23 से प्रभावी दरें		दिनांक 01-04-13 को प्रभावी दरें (मूल दरें)		मूल दरों का 150 प्रतिशत		01-04-23 से प्रभावी दरें	
	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार
नगरीय	11.00	1100.00	16.50	1650.00	27.50	2750.00	15.00	1500.00	22.50	2250.00	37.50	3750.00	22.00	2200.00	33.00	3300.00	55.00	5500.00
ग्रामीण	4.00	400.00	6.00	600.00	10.00	1000.00	7.25	725.00	10.88	1087.50	18.13	1812.50	11.00	1100.00	16.50	1650.00	27.50	2750.00
विकास शुल्क (सौवर व्यवस्था)																		
नगरीय	11.00	1100.00	16.50	1650.00	27.50	2750.00	15.00	1500.00	22.50	2250.00	37.50	3750.00	22.00	2200.00	33.00	3300.00	55.00	5500.00
ग्रामीण	4.00	400.00	6.00	600.00	10.00	1000.00	7.25	725.00	10.88	1087.50	18.13	1812.50	11.00	1100.00	16.50	1650.00	27.50	2750.00

9- मीटर किराये की दरें प्रतिमाह ( ₹ में )

क्रमांक	मीटर साईज (एम.एम.)	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)	मूल दरों का 150 प्रतिशत	01-04-23 से प्रभावी दरें
1	15	7.50	11.25	18.75
2	20	9.00	13.50	22.50
3	25	12.00	18.00	30.00
4	32	13.00	19.50	32.50
5	40	15.00	22.50	37.50
6	50	22.00	33.00	55.00
7	80	30.00	45.00	75.00
8	100	45.00	67.50	112.50
9	150 और उससे अधिक	60.00	90.00	150.00

10- औद्योगिक, व्यावसायिक, भवन निर्माण आदि हेतु जलमूल्य की न्यूनतम दरें :

न्यूनतम प्रभार (अधरेलू) (₹ प्रतिमाह) :

क्र० सं०	मीटर साईज (एम.एम.)	दरें	विशेष श्रेणी एवं औद्योगिक			अन्य व्यावसायिक प्रतिष्ठान			अन्य शरकरारी, अर्द्धशरकरारी एवं संस्थागत प्रतिष्ठान			म्युनिसिपल बहुउद्देशीय			छावनी परिषद		
			गुरुत्व	लोहैड	हाई हैड	गुरुत्व	लोहैड	हाई हैड	गुरुत्व	लोहैड	हाई हैड	गुरुत्व	लोहैड	हाई हैड	गुरुत्व	लोहैड	हाई हैड
1	20	दिनांक 01-04-13 को प्रभावी दरें	1047	1196	1346	1047	1196	1346	523	598	673	523	598	673	523	598	673
		मूल दरों का 150 प्रतिशत	1571	1794	2019	1571	1794	2019	785	897	1010	785	897	1010	785	897	1010
		01-04-23 से प्रभावी दरें	2618	2990	3365	2618	2990	3365	1308	1495	1683	1308	1495	1683	1308	1495	1683
2	25	दिनांक 01-04-13 को प्रभावी दरें	2243	2542	2691	2243	2542	2691	1121	1271	1346	1121	1271	1346	1121	1271	1346
		मूल दरों का 150 प्रतिशत	3365	3813	4037	3365	3813	4037	1682	1907	2019	1682	1907	2019	1682	1907	2019
		01-04-23 से प्रभावी दरें	5608	6355	6728	5608	6355	6728	2803	3178	3365	2803	3178	3365	2803	3178	3365
3	50	दिनांक 01-04-13 को प्रभावी दरें	4037	4485	4934	4037	4485	4934	4037	4485	4934	4037	4485	4934	4037	4485	4934
		मूल दरों का 150 प्रतिशत	6056	6728	7401	6056	6728	7401	6056	6728	7401	6056	6728	7401	6056	6728	7401
		01-04-23 से प्रभावी दरें	10093	11213	12335	10093	11213	12335	10093	11213	12335	10093	11213	12335	10093	11213	12335
4	80	दिनांक 01-04-13 को प्रभावी दरें	4934	5980	7027	4934	5980	7027	4934	5980	7027	4934	5980	7027	4934	5980	7027
		मूल दरों का 150 प्रतिशत	7401	8970	10541	7401	8970	10541	7401	8970	10541	7401	8970	10541	7401	8970	10541
		01-04-23 से प्रभावी दरें	12335	14950	17568	12335	14950	17568	12335	14950	17568	12335	14950	17568	12335	14950	17568
5	100	दिनांक 01-04-13 को प्रभावी दरें	6429	8522	10764	6429	8522	10764	6429	8522	10764	6429	8522	10764	6429	8522	10764
		मूल दरों का 150 प्रतिशत	9644	12783	16146	9644	12783	16146	9644	12783	16146	9644	12783	16146	9644	12783	16146
		01-04-23 से प्रभावी दरें	16073	21305	26910	16073	21305	26910	16073	21305	26910	16073	21305	26910	16073	21305	26910
6	150	दिनांक 01-04-13 को प्रभावी दरें	9419	11213	13010	9419	11213	13010	9419	11213	13010	9419	11213	13010	9419	11213	13010
		मूल दरों का 150 प्रतिशत	14129	16820	19515	14129	16820	19515	14129	16820	19515	14129	16820	19515	14129	16820	19515
		01-04-23 से प्रभावी दरें	23548	28033	32525	23548	28033	32525	23548	28033	32525	23548	28033	32525	23548	28033	32525

11- जल स्तम्भ शुल्क :-

क्र० सं०	विवरण	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)	मूल दरों का 102 प्रतिशत	01-04-23 से प्रभावी दरें
1-	जल स्तम्भ शुल्क	10.00	10.20	20.20

Source: (Uttarakhand Jal Sansthan, Champawat, 2024)

## **Annexure B**

**Annexure B****Questionnaire for Data Collection on Solid Waste Management of Champawat 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 Champawat 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><b>1. What is the length of road network in the town?</b></p>	
<p><b>2. What is the coverage of road network in the town? (% Area covered)</b></p>	
<p><b>3. How many bus stops are there in the town and what is their location? Please specify.</b></p>	
<p><b>4. What is the location of railway station? How many stations are there for connectivity of the town?</b></p>	
<p><b>5. How many city buses are registered for public transport?</b></p>	

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

<b>List of Officials Met in Champawat Town in the Month of March for Data Collection</b>				
<b>S.No.</b>	<b>Name</b>	<b>Designation</b>	<b>Department</b>	<b>Contact Details (Mobile No., Email ID)</b>
1	Mr. Ashok Kumar Verma	Executive Officer (EO)	Nagar Palika Parishad, Champawat	9917782388 <a href="mailto:eo2014champawat@gmail.com">eo2014champawat@gmail.com</a>
2	Mr. Pramod Singh	District Mission Manager, AMRUT, Shehri Vikas		9756638706
3	Mr. Bilal Yunus	Executive Engineer	Uttarakhand Jal Sansthan, Champawat	7088114750 <a href="mailto:bilalyonus@gmail.com">bilalyonus@gmail.com</a>
4	Mr. Pawan Singh Bisht	Assistant Engineer		7088114828 <a href="mailto:eecl-ujs-uk@gmail.com">eecl-ujs-uk@gmail.com</a>
5	Mr. Arvind Gaur	District Tourism Development Officer	Uttarakhand Tourism Development Board, Champawat	9012353111 <a href="mailto:dtdo-chm-ua@nic.in">dtdo-chm-ua@nic.in</a>
6	Mr. Manoj Bisht	Assistant Engineer	PWD, Champawat	8755278765
7	Mr. Surendra Kumar	ARTO	RTO, Tanakpur	9411112156

**List of Stakeholders/Participants attended the Stakeholder Consultation Meeting held on 26<sup>th</sup> April, 2024 in NPP, Champawat:**

<b>List of Stakeholders/Participants attended the Stakeholder Consultation Meeting held on 26th April, 2024 in NPP, Champawat</b>				
<b>S.No.</b>	<b>Name</b>	<b>Designation</b>	<b>Department</b>	<b>Contact Details (Mobile No., Email ID)</b>
1	Prof. Dr. P. S. N. Rao	Research Project Co-ordinator	SPA, New Delhi	+91-7042227021 <a href="mailto:drpsnrao@hotmail.com">drpsnrao@hotmail.com</a> <a href="mailto:psnrao.dr@gmail.com">psnrao.dr@gmail.com</a>
2	Shri Manoj Pande	Urban Development Cell, In-Charge	Dr. R. S. Tolia Uttarakhand Academy of Administration	+91-9897510978 urbandevp.uaoa@gmail.com manojpande64@gmail.com
3	Shri Ashok Kumar Verma	Executive Officer	NPP, Champawat	+91-9917782388 <a href="mailto:eo2014champawat@gmail.com">eo2014champawat@gmail.com</a>
4	Shri Pramod Singh	District Mission Manager (AMRUT, Shehri Vikas)		+91-9756638706 <a href="mailto:dmmchampawat@gmail.com">dmmchampawat@gmail.com</a>
5	Shri Mukesh Singh Bohra	Junior Assistant		+91-8126679476
6	Jagdish Lall Shah	Assistant Accountant		-
7	Saehiv Singh Kumar			-
8	Kamal Patwa		-	
9	Shri Bilal Yunus	Executive Engineer	Uttarakhand Jal Sansthan	+91-7088114750 <a href="mailto:bilalyonus@gmail.com">bilalyonus@gmail.com</a>
10	Shri Pawan Singh Bisht	Assistant Engineer		<a href="mailto:eecl-ujs-uk@gmail.com">eecl-ujs-uk@gmail.com</a>
11	Anil Kumar	A.A.E	Pey Jal Nigam	+91-9557186766 <a href="mailto:executivechamapwat@gmail.com">executivechamapwat@gmail.com</a>
12	Shri Yogesh Upadhyay	SHO	Kotwali, Champawat	+91-9690641588 +91-6396368026 +91-9411112918 <a href="mailto:yogeshupadhyayuk21@gmail.com">yogeshupadhyayuk21@gmail.com</a>
13	Shri Surendra Kumar	ARTO	RTO, Tanakpur	+91-9411112156 <a href="mailto:artochp-trans-uk@nic.in">artochp-trans-uk@nic.in</a>
14	Shri Anupam Rai	Assistant Engineer	PWD, Champawat	+91-9412044730 <a href="mailto:urvirai17@gmail.com">urvirai17@gmail.com</a>
15	Anjul Bhatt	Research Associate	SPA, New Delhi	+91-9560235150 <a href="mailto:anjulbhatt.ab@gmail.com">anjulbhatt.ab@gmail.com</a>

**Annexure D**Poster of Stakeholder Consultation Meeting Held on 26<sup>th</sup> April 2024 in NPP, Champawat

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

## INVITATION TO STAKEHOLDER CONSULTATION

**26<sup>th</sup> APRIL 2024, FRIDAY  
03:30 PM to 05:30 PM**

Venue:  
**CHAMPAWAT**  
Nagar Palika Parishad, Champawat

**Chair:**  
**Shri Ashok Kumar Verma,**  
Executive Officer (EO),  
Nagar Palika Parishad, Champawat

**Moderator:**  
**Prof. Dr. P. S. N. Rao,**  
Research Project Coordinator,  
SPA, New Delhi

S.NO.	DEPARTMENTS/ORGANIZATIONS INVITED
01	Dr. Raghunandan Singh Tolia Uttarakhand Academy of Administration (ATI)
02	District Administration, Champawat
03	Nagar Palika Parishad, Champawat
04	Uttarakhand Jal Sansthan/Pay Jal Nigam, Champawat
05	Uttarakhand Tourism Development Board, Champawat
06	PWD, Champawat
07	Kotwali, Champawat
08	RTO, Tanakpur

### TOPICS TO BE COVERED

Solid Waste management

Urban Transport and Parking

Water Supply

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