



SUPREME AUDIT INSTITUTION OF INDIA

लोकहितार्थं सत्यनिष्ठा

Dedicated to Truth in Public Interest

**Report of the
Comptroller and Auditor General of India
on
Performance Audit on BharatNet**

**Union Government
Ministry of Communications
Department of Telecommunications
Report No. 19 of 2026
(Performance Audit - Civil)**

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Preface

This Report for the year ended March 2024 has been prepared for submission to the President under Article 151 of the Constitution of India.

The Report contains significant results of the Performance Audit on BharatNet, Department of Telecommunications for the period from 2017-18 to 2022-23 focussing on Phase-II of the project.

The instances mentioned in this Report are those which came to notice during test audit conducted from October 2023 to August 2024. The status of the project has been updated up to November 2025 wherever considered relevant.

The audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

Executive Summary

Executive Summary

Rural broadband connectivity serves as a critical catalyst for socio-economic development and the BharatNet project stands as one of the world's largest telecommunications initiatives aimed at addressing this need. The project, implemented in phases, seeks to provide broadband access to approximately 2.5 lakh Gram Panchayats (GPs) across India. The selection of this project for a Performance Audit acknowledges its immense potential to transform rural communities through digital inclusion. **(Para 1.1)**

The BharatNet project was conceived in October 2011 and has been executed through a Special Purpose Vehicle, Bharat Broadband Network Limited (BBNL) incorporated in 2012. BBNL steered the project in Phase-I and Phase-II. The project is funded by the Universal Service Obligation Fund (USOF) now called Digital Bharat Nidhi (DBN). As of November 2025, an expenditure of ₹39,888 crore has been incurred against an approved budget of ₹42,068 crore (₹11,148 crore in Phase-I and ₹30,920 crore¹ in Phase-II). As of November 2025, BharatNet had achieved service ready status in 2.19 lakh GPs (96.70 *per cent*) against the revised scope of 2.26 lakh GPs. **(Para 1.1, 1.5, 3.3.2)**

The audit mainly focusses on Phase-II of the project and aims to seek an assurance on two aspects of the project: the capability of the project to deliver effective last mile connectivity with optimal utilisation and the robustness of its governance structure in identifying and overcoming implementation challenges. We audited Bharat Broadband Network Limited and Bharat Sanchar Nigam Limited (BSNL) Corporate offices, USOF, Department of Telecommunications and field units across eight selected States and one Union Territory. **(Para 2.1, 2.2, 2.3)**

We found deficiencies in the project's planning and implementation. Though Phase-II was planned in 20 states (21 Circles) through three implementation models – Central Public Sector Undertaking (CPSU) led model, State-led model and Private led model, it could be implemented in 13 States (14 Circles) only. Detailed Project Report (DPR) preparation, the starting point of project commencement, was carried out on the basis of desktop surveys although physical surveys were mandated. BBNL implemented projects in Punjab and Bihar without preparing DPRs under Private-led model. In the satellite component meant to provide connectivity in remote areas, BBNL did not install Wi-Fi Access Points even in service-ready GPs, thereby preventing end-users from accessing the intended broadband services. Further, as on November 2025, only six States (seven Circles) achieved 100 *per cent* service-ready status with delays ranging from two to six years across all the Implementation models. The delayed roll-out deferred the availability of broadband connectivity in rural areas envisaged to enable access to services such as education, healthcare, business, entertainment, e-governance to the rural population thereby undermining the objective of early socio-economic transformation. **(Para 3.1, 3.2)**

¹ Comprising CAPEX - ₹18,792 crore (Phase-II), OPEX - ₹6,046 crore, Last Mile connectivity through viability Gap funding- ₹4,066 crore & Replacement of poor-quality BSNL fibre- ₹2,016 crore.

The network infrastructure has been largely deployed—covering over 96.70 *per cent*² (November 2025) of targeted GPs, however the same could not be translated into efficient operation, utilisation and revenue generation. Operational performance remained significantly low with persistent downtime, low availability and poor fault-resolution record. As of November 2025, only 33.20 *per cent*³ of service-ready GPs were operational. The main cause of downtime was fibre faults or cuts, accounting for approximately 48 *per cent* of non-operational cases. Moreover, the Mean Time to Restore (MTTR) fibre faults stood at an average of 17 days, reflecting delayed maintenance response. Additionally, the inability to integrate fibre fault localisation systems hampered maintenance. The operational status of BharatNet remains a challenge across States except in Gujarat and Punjab where the operational GPs were above 90 *per cent*. **(Para 1.5, 3.2.5, 4.2)**

We noted that only 17.91 *per cent* of the available bandwidth was utilised. Further, key stakeholders, including major telecom service providers, withdrew due to service quality concerns. Despite demand, dark fibre was not leased in many cases due to absence of policy or delayed decisions at State Implementing Agency level. Low utilisation has curtailed BharatNet's potential to drive grassroots transformation. **(Para 4.3)**

The project was conceived to be self-sustaining but high maintenance costs vis a vis paltry revenue, have cut short that expectation. Financial oversight emerged as a concern. The milestone -based payment model was weakest under the CPSU-led model contributing to lower service delivery, while the private-led model demonstrated stronger financial discipline and better service delivery. We also noted that BSNL under the CPSU-led model diverted funds of ₹2,001.43 crore from the project for other purposes which has since been recouped and submission of Utilisation Certificates is now required under Amended BharatNet Program (ABP). **(Para 3.3, 4.4)**

Overall, Audit concludes that while BharatNet has achieved substantial infrastructural success, it has fallen short of its broader objective of bridging the digital divide. The decision to merge BBNL with BSNL and implement BharatNet under a single-agency model (BSNL) through ABP reflects an acknowledgement of the governance and execution deficiencies noted in the project. To transform BharatNet into a successful digital connectivity initiative, several reforms as suggested in recommendations may be considered during implementation. These gain greater significance given that ABP approved by the Cabinet in August 2023 aims to expand the scope of the project from 2.5 lakh GPs in the earlier phases to 6.4 lakh villages/GPs across India.

² 99.97 *per cent* and 92.79 *per cent* of the targeted GPs of Phase-I and Phase-II respectively are service ready as on November 2025.

³ Of the GPs declared service-ready, 31.97 *per cent* in Phase-I and 34.79 *per cent* in Phase-II were operational.

Recommendations

1. Streamline Planning, its approval and System Integration

- i. *Detailed Project Reports should be based on comprehensive ground surveys, ensuring accurate cost projections and reducing revisions.*
- ii. *Department of Telecommunications and Digital Communication Commission establish a fast-track approval mechanism with strategies that factor location - specific challenges.*
- iii. *Better coordination is needed between the Department of Telecommunications (DoT), BSNL and State governments to address bottlenecks.*
- iv. *Fast-track GIS mapping completion for all Gram Panchayats (GPs) to streamline maintenance and network upgrades.*
- v. *Ensure effective rollout of Fibre Fault Localisation System (FFLS)/Remote Fibre Monitoring Systems (RFMS) and integrate these systems with a centralized Network Operations Centre (NOC).*
- vi. *Ensure integration of GIS, FFLS/RFMS and Network Management System (NMS) for automated fault localization and route optimization.*
- vii. *Ensure that Wi-Fi Access Points are operational and properly maintained to enhance utilisation.*

2. Improve Financial Oversight

- i. *Implement a performance-linked disbursement model similar to the private-led approach, ensuring payments are strictly tied to project milestones and service availability.*

3. Accelerate Network Completion and utilisation

- i. *Ensure integration of state and central NOCs by implementing consolidated monitoring frameworks.*
- ii. *Prioritize completion of acceptance testing across all GPs before declaring project milestones as achieved.*
- iii. *Consider launching a targeted awareness and marketing campaigns to promote BharatNet services to rural users, MSMEs, public agencies, and local businesses.*
- iv. *Consider introducing targeted incentives to promote anchor tenancy by key government departments such as health, education and agriculture. Additionally, tiered pricing models for first-time users, with subsidized rates for priority sectors like agriculture and education may be considered to encourage utilisation and enhance financial sustainability.*
- v. *Ensure that all GPs are operational and properly maintained to enhance utilisation.*

4. Enhance Service Quality

- i. Deploy dedicated maintenance teams in each State with strict Service Level Agreements (SLAs) to ensure high uptime.*
- ii. Implement predictive maintenance and AI-based fault detection systems to reduce downtime and optimize network operation.*
- iii. Deploy real-time dashboards to monitor data usage, uptime and service quality at the GP level and link partner incentives to key performance metrics such as uptime (above 95 per cent), bandwidth utilisation, and customer satisfaction.*

5. Strengthen Long-Term Sustainability

- i. Develop a self-sustaining revenue model, including monetization of dark fibre and leasing of excess network capacity to telecom providers.*
- ii. Explore BOOT (Build-Own-Operate-Transfer) or DBOM (Design-Build-Operate-Maintain) model for ABP to ensure long-term sustainability and attract private sector participation and Viability Gap Funding (VGF) linked to clearly defined service-level milestones.*

6. Align Implementation Strategy with Digital Inclusion Goals

- i. ABP should move beyond mere infrastructure deployment and focus equally on community awareness, and Service delivery at the last mile by engaging non-telecom partners (NGOs, SHGs, CSCs), thereby addressing the persistent issue of underutilisation and ensuring that the socio-economic benefits envisioned under BharatNet are fully realized.*

7. Strengthen Governance and Institutional Design for ABP

- i. The executing agency (BSNL) for ABP should be supported by a specialized division with independent leadership, separate financials, adequate institutional capacity and clearly defined performance KPIs to ensure focused implementation and operational efficiency. Governance should be strengthened through the oversight by independent directors.*
- ii. The legacy concerns raised by Telecom Regulatory Authority of India (TRAI), such as conflict of interest, lack of competitive neutrality and distraction from BSNL's core telecom mandate need to be proactively addressed by legally separating BharatNet's infrastructure and service provision functions within BSNL.*
- iii. Ensure PPP based training programs in collaboration with Gram Panchayats and local bodies, supported by certification modules covering fibre maintenance, RFMS operation, and fault localization. Encourage trained local youth and entrepreneurs to take up O&M roles under the BharatNet Udyami Model through performance-linked contracts, fostering employment, accountability and high-quality service delivery.*

Chapter I

Introduction

CHAPTER I

Introduction

1.1 Background

In October 2011, the Government of India launched the National Optical Fibre Network (NOFN) project, aimed to provide broadband connectivity to about 2.5 lakh Gram Panchayats (GPs) across the country, funded by the Universal Services Obligation Fund (now Digital Bharat Nidhi⁴). The objective of the project was to ensure non-discriminatory access to all telecom service providers and to facilitate delivery of essential services such as education, healthcare, business, entertainment, and e-governance to the rural population. The project progressed in two phases: Phase-I for one lakh GPs commenced in 2012 and Phase-II covering the balance 1.5 lakh GPs in 2017.



For execution and management of the project, a Special Purpose Vehicle, Bharat Broadband Network Limited (BBNL) was incorporated on 25 February 2012 under the Department of Telecommunications. In April 2016, the project was rebranded as "BharatNet". The Union Cabinet approved (July 2022) the merger of BBNL with BSNL. Subsequently, Union Cabinet approved Amended BharatNet Program (ABP) in August 2023 and designated BSNL as Project Management Agency (PMA) for implementation of the program.

1.2 The network architecture

The architecture of BharatNet (**Chart-1.1**) comprises three layers: Core Layer, Aggregation Layer and Access Layer. Core Layer represents optical fibre network already available up to Block Headquarters. While the Aggregation Layer connects the Blocks to Gram Panchayats, the Access layer⁵ connects users to the Gram Panchayats. The project was conceptualised as a "middle mile" network connecting the Gram Panchayats with Blocks and did not include the last-mile i.e., provision of service to citizens and Government institutions till 2017⁶. Last-mile utilisation was introduced in Phase-II and operationalised through an agreement/MoU with BSNL (October 2017), Government of Rajasthan (February 2018) and CSC⁷ (July 2019) for provision of Wi-Fi Access Points at the GP and Fibre To The Home (FTTH) to end user. In

⁴ USOF was renamed as DBN in December 2023 by the Telecommunication Act, 2023.

⁵ Wi-Fi Access Points/Fibre To The Home (FTTH) to the users.

⁶ Funding for Last mile was included in 2017 by Cabinet.

⁷ Common Service Centre e-governance services India Ltd. (CSC), a -Special Purpose Vehicle (SPV) under the Ministry of Electronics and Information Technology (MeitY).

August 2023, the Union Cabinet approved the BharatNet Udyamis model. The approach was to engage local entrepreneurs to provide FTTH connections to the individual households on revenue sharing basis with BSNL.

Chart-1.1: Architecture of BharatNet

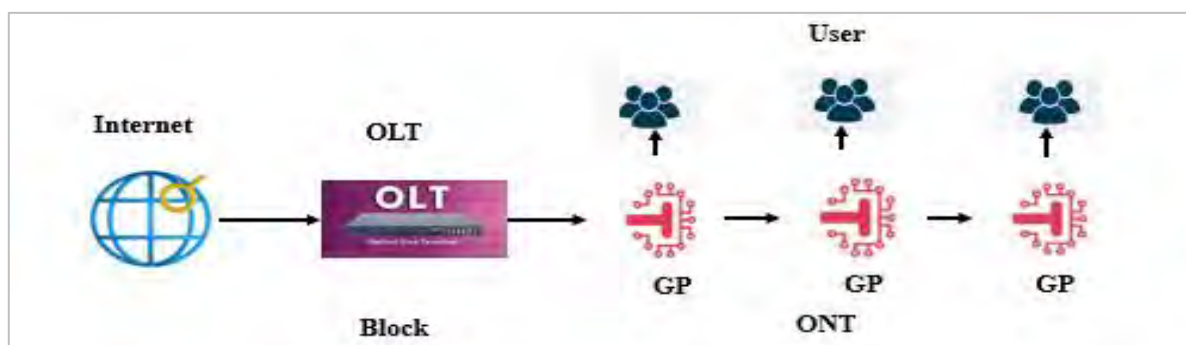


1.3 Evolving technology

Phase-I adopted linear topology connecting Block Headquarter (BHQ) to Gram Panchayat through Optical Fibre Cable (OFC) using Gigabit Capable Passive Optical Networks (GPON) technology. GPON provides a mix of services (voice, data and video) to subscribers with a capability to provide higher bandwidth, better quality of service and enhanced scalability.

GPON network mainly consists of two transmission units viz. Optical Line Terminal (OLT) installed at the Block Headquarter (BHQ) level and the Optical Network Terminal (ONT) installed at Gram Panchayat level to transmit and receive optical signals. At the Gram Panchayat, the ONT unit is backed by solar energy unit in addition to regular supply of electricity. Architecture of linear topology is depicted below in **Chart-1.2**.

Chart-1.2: Architecture of linear topology

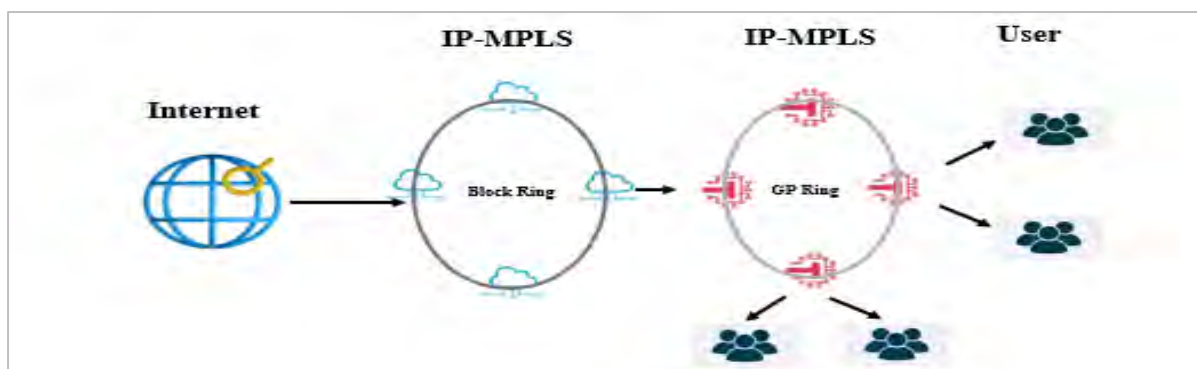


Phase-II introduced⁸ ring topology (**Chart-1.3**) using Internet Protocol Multi-Protocol Label Switching (IP MPLS)⁹ technology. In linear topology, fibre cut at any one place would cause all connected GPs along the line to become non-operational. But in ring topology, the operation can be routed through alternate channels in the ring, thus providing uninterrupted services.

⁸ Under Phase-II, ring topology was introduced in four States (Andhra Pradesh, Chhattisgarh, Maharashtra and Telangana), while linear topology continued in the remaining States.

⁹ The Multiprotocol Label Switching (MPLS) protocol on an IP network, allows efficient routing and management of data traffic between different nodes within the BharatNet infrastructure.

Chart-1.3: Architecture of Ring topology



1.4 Multiple Partnerships in BharatNet: Participating entities



Department of Telecommunications (DoT): Under Ministry of Communications, the Department is responsible for telecommunications policy and regulation in India. DoT played a crucial role in the planning and approval stages of BharatNet.



Telecom Commission/Digital Communication Commission: Telecom Commission renamed as Digital Communication Commission (DCC) w.e.f. 22 October 2018 is the Apex decision making body for policy matters on BharatNet. The Telecom Commission also approves the Detailed Project Reports. Secretary, DoT is the Chairman of the Telecom Commission and in this role participates in the approval of the Projects.



Universal Service Obligation Fund (USOF), now Digital Bharat Nidhi (DBN): It was established retrospectively with effect from 1 April 2002 by an Act of Parliament passed in December 2003 and is headed by the Administrator. DBN funds BharatNet. The resources for DBN are raised by way of a Universal Service Levy (USL), levied on the License Fee collected¹⁰ from the Telecom Service Providers (TSPs).



Bharat Broadband Network Limited (BBNL): A Special Purpose Vehicle (SPV) wholly owned by the Central Government established for the planning, execution, monitoring, and utilisation of BharatNet. It is headed by Chairman Cum Managing Director (CMD) supported by Director (Planning), Director (Operations) and Director (Finance) at Delhi. Union Cabinet accorded in principle approval (July 2022) for merger of BBNL with BSNL.

¹⁰ Rate of license fee being collected from TSPs is 8 per cent of Adjusted Gross Revenue (AGR) of the TSPs which includes 5 per cent as USL.

	Bharat Sanchar Nigam Limited (BSNL): A wholly owned Public Sector Undertaking under DoT for providing Telecom Services. BSNL was involved in execution of Phase-I and Phase-II and in the operation and maintenance (O&M) of the BharatNet network.
	Centre for Development of Telematics (C-DoT): A Union Government-owned telecom technology development Centre. C-DoT was tasked with developing the Network Management System (NMS) and Fault Management system for BharatNet.
	National Informatics Centre (NIC): NIC developed the Geographic Information System (GIS) platform for BharatNet.
	State Implementing Agencies (SIAs): State Government-designated entities that implemented Phase-II of BharatNet under the State led model.
	Telecom Service Providers (TSPs): Private telecom companies like Airtel, Vodafone, Idea, and RJIO utilise the BharatNet infrastructure to provide broadband services to their customers.
	Power Grid Corporation of India (PGCIL): A State-owned electricity utility company responsible for power transmission. PGCIL was an Implementing Agency in BharatNet.

1.5 Phased roll out

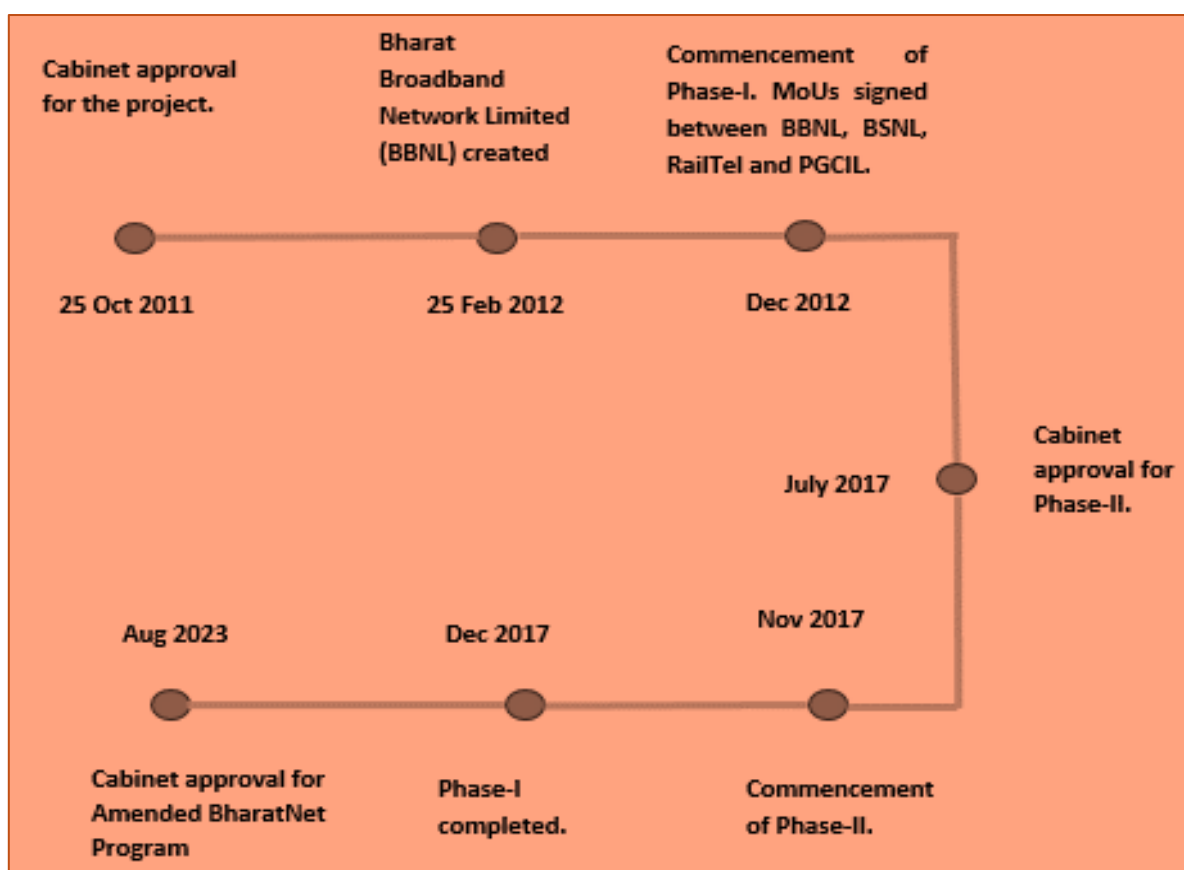
The BharatNet project adopted a phased implementation approach. In Phase-I, BBNL awarded (December 2012) the work on nomination basis to three Central Public Sector Undertakings (CPSUs) viz. Bharat Sanchar Nigam Limited (BSNL) in 15 States¹¹ and three UTs, Railtel in seven States¹² and three UTs and Power Grid Corporation of India Limited (PGCIL) in five States¹³. BBNL was to procure optical fibre cable and equipment by aggregating volumes to obtain lower prices. Phase-I connected one lakh Gram Panchayats by December 2017 through optical fibre network.

¹¹ Assam, Bihar, Chhattisgarh, Haryana, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand, West Bengal, Sikkim, Chandigarh (UT), Andaman & Nicobar (UT) and Lakshadweep (UT).

¹² Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Gujarat, Daman & Diu (UT), Dadra & Nagar Haveli (UT) and Puducherry (UT).

¹³ Andhra Pradesh, Telangana, Odisha, Jharkhand and Himachal Pradesh.

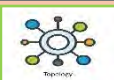
Chart-1.4: Milestones in BharatNet



Following a comprehensive review of the Phase-I (January 2015), Department of Telecommunications identified the challenges in technology, topology and implementation strategy. These challenges prompted a fundamental restructuring of the Project. The Union Cabinet approved (July 2017) a modified implementation strategy for BharatNet Phase-II, targeting the connection of 1.5 lakh Gram Panchayats through a multi-technology approach by incorporating, in addition to optical fibre, satellite and radio connectivity with a budget of ₹42,068 crore¹⁴ (exclusive of GST, octroi and local taxes). The project was to be completed by March 2019 but the deadline was extended to 2025. As of November 2025, BharatNet had achieved service ready status in 2.19 lakh GPs (96.70 *per cent*) against the revised scope of 2.26 lakh GPs. The changes in Phase-II vis-a-vis Phase-I are elaborated in **Chart-1.5**.

¹⁴ This includes ₹11,148 crore for Phase-I.

Chart-1.5: Flow Design Architecture of BharatNet

 Phase-I		 Phase-II	
GPON	 Technology	IP-MPLS/GPON	
Linear	 Topology	Ring/Linear	
Underground OFC	 Media	Underground OFC, Aerial OFC and Satellite	
Upto GPs	 Reach	Upto GPs and Household/users	
1 lakh GPs	 Initial Target	1.5 lakh GPs	
CPSU Model	 Model	CPSU-led Model, State-led Model and Pvt.-led Model	
Three CPSUs (BSNL, RailTel, PGCIL)	 Implementing Agencies	BBNL, States and State Agencies, CPSUs and Private Sector	
CAPEX- ₹11,148 crore	 Funding	CAPEX - ₹18,792 crore OPEX - ₹6,046 crore Last Mile connectivity through viability Gap funding- ₹4,066 crore Replacement of poor-quality BSNL fibre- ₹2,016 crore	

The possibility of Public Private Partnership (PPP) Model was explored in June 2021 to enhance the scope of BharatNet beyond Gram Panchayat to cover 3.61 lakh inhabited villages/GPs in the country. Government also offered Viability Gap Funding (VGF) up to ₹19,041 crore¹⁵ as an incentive. However, the Request for Proposal (RFP) in July 2021, could not attract private sector bids, highlighting challenges in attracting private participation.

The Union Cabinet has approved the Amended BharatNet Program in August 2023 with a target to connect households in 6.4 lakh villages/GPs¹⁶ across the country, to be completed within 36 months from the signing of the Master Service Agreement. As of November 2025, out of 16 packages¹⁷, BSNL had signed (February 2025 – June 2025) agreement with Project Implementing Agencies (PIAs) for 12 packages and for the remaining 4 packages, tender was under technical evaluation.

1.6 Governance structure

1.6.1 Steering Committee

A Steering Committee headed by Administrator, USOF (now DBN) was constituted to monitor and iron out inter-agency issues in implementation.

1.6.2 Committees for implementing models

Following Monitoring Committees were constituted:

State-led model

- (i) Empowered Committee chaired by Secretary (Telecom) for monthly stock taking of project progress and policy decisions.
- (ii) State level Implementation Committee chaired by Chief Secretary of the State with DoT/USOF/BBNL designated officials and CGM (BSNL) of the State/Circle as members to resolve inter-agency matters.
- (iii) Project Steering Committee chaired by Administrator, USOF, DoT with heads of State Implementing Agencies as its members for weekly monitoring and ironing out the operational issues.

CPSU-led model

- (i) Empowered Committee chaired by Secretary (Telecom) for monthly stock taking of project progress and policy decisions.

¹⁵ The VGF is calculated on the gap between the expected investment by the private sector partners and the revenue it can earn to recover the investment.

¹⁶ This includes upgradation of existing network of BharatNet Phase-I and Phase-II, build the network in uncovered GPs. Further, BharatNet was extended beyond Gram Panchayat to cover villages.

¹⁷ For the purpose of implementing the Amended BharatNet Programme, the States and Union Territories were grouped into 16 implementation packages.

- (ii) State level Implementation Committee- chaired by CGM BSNL of the State/Circle with DoT/USOF/BBNL designated officials as its members to resolve inter-agency matters.
- (iii) Project Steering Committee chaired by Administrator, USOF, DoT with heads of State/CPSU Implementing Agencies as its members for fortnightly monitoring and ironing out the operational issues.

Chapter II

Audit objectives, Scope and Methodology

CHAPTER II

Audit objectives, Scope and Methodology

2.1 Audit objectives

The objectives of the Performance Audit on BharatNet Phase-II were to examine whether:

- i) The project could deliver last mile connectivity and utilisation.
- ii) The Governance structure was robust and adequate to identify and address the challenges in implementation.

2.2 Scope of Audit

We conducted the Performance Audit covering the period from 2017-18 to 2022-23 during October 2023 to August 2024 at BBNL and BSNL Corporate offices, USOF, DoT and field units in eight sampled States/Circles and one UT¹⁸. Detailed audit analysis of BharatNet Phase-II has been carried out up to July 2024, while status of project has been updated upto November 2025. Wherever relevant, issues noticed from the implementation of Phase-I have also been suitably incorporated in the scope of this Report along with the response of the Ministry.

2.3 Methodology and Sampling

The performance audit commenced with an Entry conference held at DoT Headquarters in October 2023, attended by the Administrator, USOF along with representatives from BBNL and BSNL Corporate offices. During this conference, the audit objectives, scope and methodology were discussed. Subsequently, between October 2023 and December 2023, selected Branch Audit Offices conducted entry conferences with respective BSNL/BBNL authorities and State Implementing Agencies. We examined records and analysed data from the Network Management System. Additionally, we conducted physical verification in 131 GPs across eight States/Circle and one UT, selected through purposive sampling.

A mid-term workshop with stakeholders¹⁹ was conducted in July 2024 and the audit was concluded with an Exit Conference in December 2024.

2.4 Audit criteria and evidence

The sources of audit criteria were:

- a. Cabinet and DCC approvals from time to time.

¹⁸ Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Sikkim, Tamil Nadu, Uttar Pradesh (West) and Lakshadweep. UP state consists of two Circles – UP(East) and UP(West).

¹⁹ Representative from DBN erstwhile USoF (DoT), BSNL and State Implementing Agency Tamil Nadu (TANFINET).

- b. MoU and agreements with USOF, C-DoT, State Governments and other partnering organizations, including CPSUs.
- c. Decision of Steering and Monitoring Committees.
- d. Conditions of tenders and purchase order issued to vendors.
- e. CVC guidelines, GFRs and manuals and guidelines of USOF, BBNL and other CPSUs relating to procurement and works.
- f. Budget documents, financial statements, MIS reports
- g. USOF files relating to conditions of grant.

2.5 Structure of the Report

The Report is organized in five Chapters:

Chapter I introduces the Project and its Key Implementation aspects.

Chapter II covers the Audit objectives, scope and methodology.

Chapter III is on Project Planning and Implementation.

Chapter IV covers Operation & Maintenance and Utilisation of the BharatNet Infrastructure.

Chapter V summarises the Governance.

2.6 Acknowledgment

We wish to acknowledge the cooperation extended by Department of Telecommunications (Universal Service Obligation Fund), Bharat Broadband Network Limited, all the other auditee units including Public Sector Enterprises, Bharat Sanchar Nigam Limited and State Implementing Agencies of Gujarat, Andhra Pradesh and Tamil Nadu during Audit.

Chapter III

Project Planning and Implementation

CHAPTER III

Project Planning and Implementation

3.1 Planning

Evolving strategies and project design

The BharatNet was an ambitious project that aimed at its launch in October 2011, to reach 2.5 lakh GPs within three years. Phase-I was to cover one lakh gram panchayats spread over 2,727 Blocks but was beset with delays at all stages. To begin with, the Telecom Commission took 23 months to approve (September 2013) the implementation strategy and the budget. Physical work commenced 10 months later (Mid 2014).

Initially, Phase-I envisaged connectivity to 1,00,000 GPs (across 2,727 Blocks) by 31 March 2014; however, work could not be commenced in 350 Blocks and 20,971 GPs, primarily due to inadequate bidder participation, high quoted rates, difficult terrain etc. The scope was revised in April 2016 to 1,25,000 GPs by inclusion of an additional 25,000 GPs. The target date for completion was also revised multiple times from 31 March 2014 to 31 March 2015 and subsequently to 31 March 2017. Although Phase-I was declared completed in December 2017 (connectivity to approximately 1,00,000 GPs), about 23,261 GPs²⁰ under Phase-I remained to be connected and work in these GPs were in the final stages of completion as of November 2025. Delays in completion and high incidence of non-operational networks impaired the BharatNet Phase-I. BBNL and the Ministry attributed the delays to the BharatNet's unprecedented scale, delays in finalizing the technology and to limitations in the domestic supplier base, given the application of preferential market access (PMA) norms²¹.

Phase-II commenced in November 2017 with the aim to cover all the remaining GPs. The issues faced in Phase-I and the steps taken by the Ministry in Phase-II are summarised below in **Table-3.1**.

Table-3.1: Challenges faced in Phase-I and status of steps taken by the Ministry in Phase-II

Issues	Challenges in Phase-I	Steps taken in Phase-II and outcome
	Reliance on a single source for supplies due to centralized procurement by BBNL	Decentralized procurement eased the delays in supplies.

²⁰ Revised scope of BharatNet Phase-I was 1,23,261 GPs (as of November 2025).

²¹ PMA norms prescribe the domestic component in each item of procurement by government agencies.



Gaps in planning: Inadequate assessment of required quantities of essential low-cost equipment such as joint closures and fibre termination boxes

Detailed Project Reports (DPR) submitted by Implementing Agencies underwent revisions with changes in scope/technology /quantity with consequent delays.

(Para 3.1.1 and 3.1.2)



Delays in permission for Right of Way (RoW) by government agencies

Data²² show that this issue could not be resolved. Average time taken by agencies in clearance of RoW is still high against the criteria of sixty days²³ as shown below:

- Reserve forest authority - 4 to 9 months
- NHAI and NH- state - 6 months to one year
- Wildlife authorities - 5 months to one year

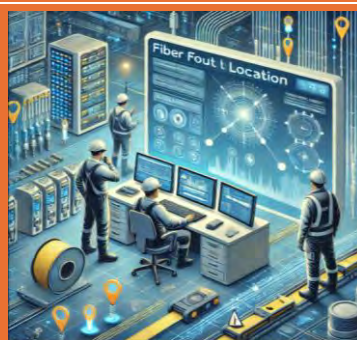
Continuous follow-up was stated to have been made with the concerned authority to obtain RoW permission. In Andhra Pradesh, the project was completed by adopting an alternate route owing to delays in obtaining RoW permission.



Damage to cables after laying

Interruptions continued to be a major problem in Phase-II as well with Fibre cut accounting for 48 per cent of downtime.

(Para 4.2.2)



Delays in locating faults because the Fibre Fault Localisation System, although planned, could not be implemented.

Fibre Fault Localisation System was not implemented even in Phase-II.

(Para 3.2.5)

²² from Licensed Service Areas (LSA) offices (DoT).

²³ In terms of Rule 6 of the Indian Telegraph Right to Way Rule 2016.

	Non-completion of GIS mapping of OFC routes	As of November 2025, GIS mapping work remained incomplete for 1.84 <i>per cent</i> of Gram Panchayats (GPs) and 11.46 <i>per cent</i> of Optical Fibre Cable (OFC). (Para 3.2.1)
	Frequent disruption in network	Network disruption continued to persist. (Para 4.2)
	Gram Panchayat buildings were not ready for installation of equipment.	No such instance was noticed.

Our analysis showed that while procurement issues were ironed out in Phase-II, significant implementation challenges continued, affecting the achievement of project objectives. These are discussed in detail later in the Audit Report. Another area that posed a significant challenge during the implementation of Phase-I was coordination with State Governments and their agencies. Recognizing this, the design of Phase-II incorporated three distinct models for planning and implementation, making a structured transition aimed at improving co-ordination and execution:

- i. The State-led model where the State Governments were invited to take over the project. This was the preferred model wherever the State governments came forward (eight States²⁴).
- ii. CPSU-led Model: In eight States (nine Circles)²⁵ BSNL was the implementing agency and in two States²⁶ PGCIL was given this charge.

²⁴ Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Maharashtra, Odisha, Tamil Nadu and Telangana.

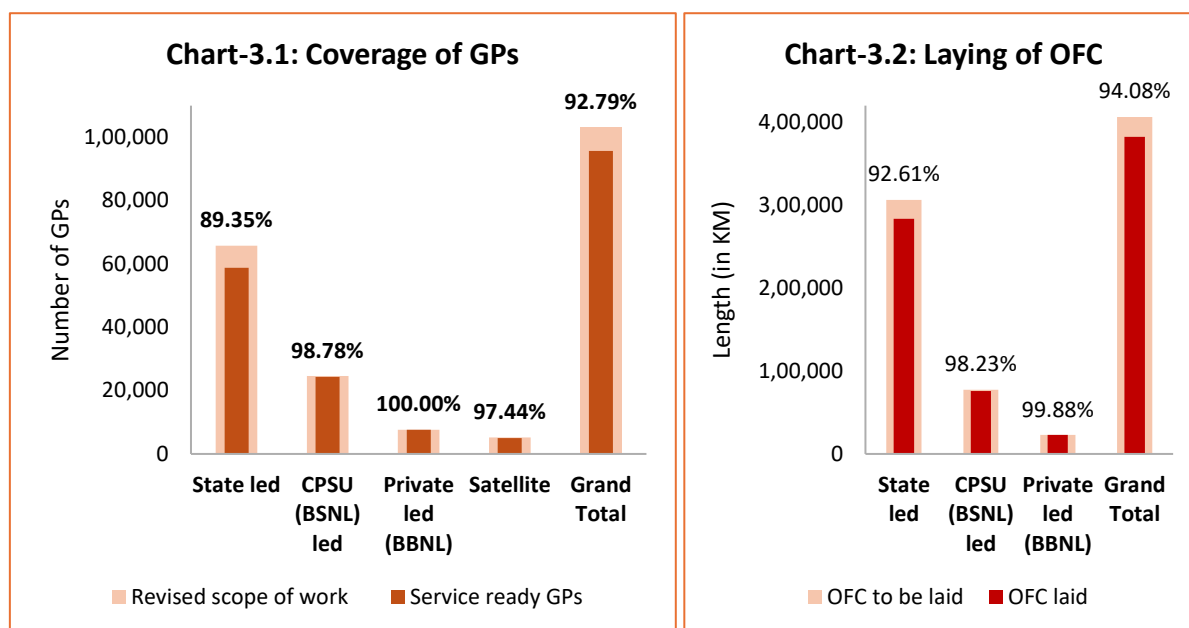
²⁵ Assam, Haryana, Jammu and Kashmir, Madhya Pradesh, Rajasthan, Sikkim, Uttar Pradesh {(UP(E) and UP(W))} and West Bengal.

²⁶ Himachal Pradesh and Uttarakhand.

iii. Private-led Model: In two States²⁷, BBNL itself planned and implemented the project through the engagement of private sector entities.

In addition to above, connectivity to GPs the remote and hilly areas of North East and other regions was provided through satellite media. BSNL and BBNL were the implementing agencies.

The target date for completion of Phase-II was March 2019, which was extended upto 2025. The status of implementation of Phase-II project is depicted at **Chart-3.1** and **3.2**. As of November 2025, 92.79 *per cent* of the GPs were covered and 94.08 *per cent* of cabling work was completed indicating shortfall even after an extension of over six years.



The Ministry in its reply stated (November 2025) that the delays in achieving BharatNet targets were due to the project's vast scale, difficult rural terrains, wide geographical spread, and challenges like Right of Way (RoW) clearances and coordination with multiple agencies. The Amended BharatNet Program (ABP) addresses these issues through the Design–Build–Operate–Maintain (DBOM) model, where a single PMA handles both implementation and maintenance for 10 years.

The reply of the Ministry indicates that the design of Phase-II did not adequately address the challenges encountered during Phase-I. Further, the effectiveness of the measures envisaged/taken in ABP to address the challenges can be ascertained in subsequent audit.

3.1.1 Detailed Project Reports

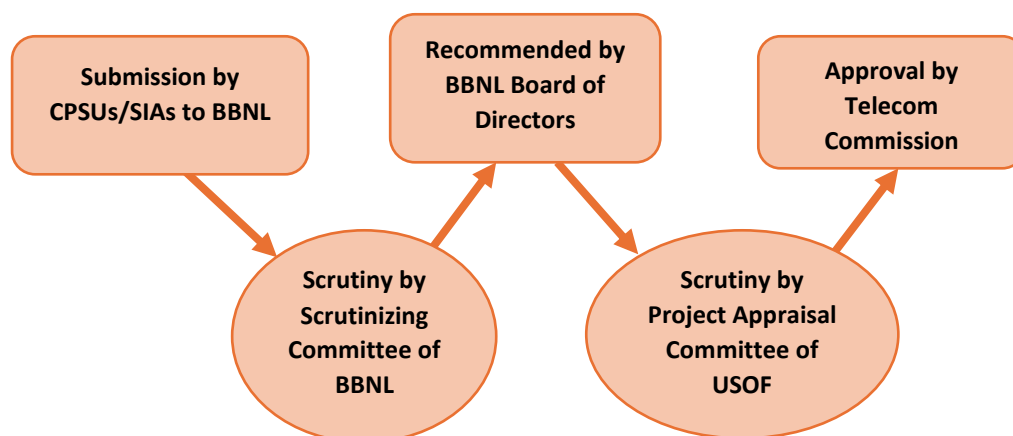
The first stage of planning is the preparation of Detailed Project Reports (DPR). A well prepared DPR is expected to comprehensively assess technical and financial feasibility duly factoring ground-level issues, the unique challenges of each region and an accurate cost analysis.

²⁷ Bihar and Punjab.

The DPRs had to take into account the technological upgrades of Phase-II over Phase-I. Under Phase-I, GPs were connected from the Block through a 24-fibre Optical Fibre Cable (OFC) providing bandwidth of 100 Mbps. In Phase-II, GPs were to be connected using 48-fibre OFC enabling a bandwidth capacity of up to one Gbps and to ensure 6 dark fibres from Block to GP.

The process flow for preparation and approval of DPRs is at **Chart-3.3**.

Chart-3.3: DPR Approval Process



We found the following deficiencies in DPRs, which contributed to delays in project implementation.

DPR not backed by a survey

In terms of Manual for Procurement of Works, proper field surveys and investigations of ground conditions are critical in preparation of a reliable DPR. Although the DPRs were meant to be prepared through a survey at ground level, they were prepared on the basis of a desktop assessment. We also observed that USOF while communicating (December 2017) the responsibilities and instructions to the State/State Implementing Agencies for implementation of BharatNet Phase-II project under the State-led model had specifically advised them to adopt Desktop survey for preparing the DPR and floating of tender. This decision was inconsistent with the provisions of Manual of Procurement of works *ibid*. Project Appraisal Committee of USOF acknowledged this deficiency in April 2018.

The Ministry in its reply stated (November 2025) that the DPR preparation based on desktop survey is a common practice which is done for optimizing time and resources. However, the actual implementation of work is undertaken after physical survey within the overall approved cost for the project.

We however noted that the preparation of DPRs based on desktop assessments instead of comprehensive field surveys, coupled with delays in their submission, led to deficiencies in project execution as discussed in the subsequent paras. (Para 3.1.2 and case study 3.1)

Delays in submission and approval of DPRs

In terms of Manual for Procurement of Works, no works shall be commenced or liability incurred in connection with it until a proper Detailed Project Report (DPR) has been prepared and Administrative approval has been obtained from the appropriate authority in each case and Expenditure Sanction to incur expenditure has been obtained from the competent authority.

In Phase-II, in respect of State-led model, each State prepared DPR. Similarly, BSNL prepared DPRs for seven states (eight Circles²⁸) and PGCIL prepared DPRs for two States (Himachal Pradesh and Uttarakhand) under the CPSU-led model. We found that BBNL implemented the project without preparing a DPR in two states (Bihar and Punjab).

As per the original timelines prescribed (July 2017) by the DBN, DPRs were to be received by 30 August 2017, to be approved by 10 September 2017 thus facilitating the commencement of tendering by 15 September 2017. The schedule was expected to meet the target for completion by March 2019.

In the State-led model in all the eight states, the DPRs were received on time. In the CPSU-led Model, BSNL submitted DPRs with delays ranging from six to 21 months, whereas PGCIL delayed submission by four to 15 months. Under the State-led model, DPRs for seven States were approved by the Telecom Commission in September 2017, while Odisha's DPR was approved in December 2017. Under the CPSU-led model, BSNL's seven DPRs (excluding Jammu & Kashmir) and PGCIL's Himachal Pradesh DPR were approved in May 2018, two to four months after receipt. BSNL submitted (May 2019) the DPR for Jammu & Kashmir under the EPC model and PGCIL submitted (December 2018) the DPR for Uttarakhand. Meanwhile, DBN informed (July 2019) BBNL that no further action was to be taken on, or approval granted for, the remaining Phase-II projects (BSNL – EPC model States; PGCIL – Himachal Pradesh and Uttarakhand), as these States/projects were to be covered under the proposed PPP Model.

Revision in DPRs

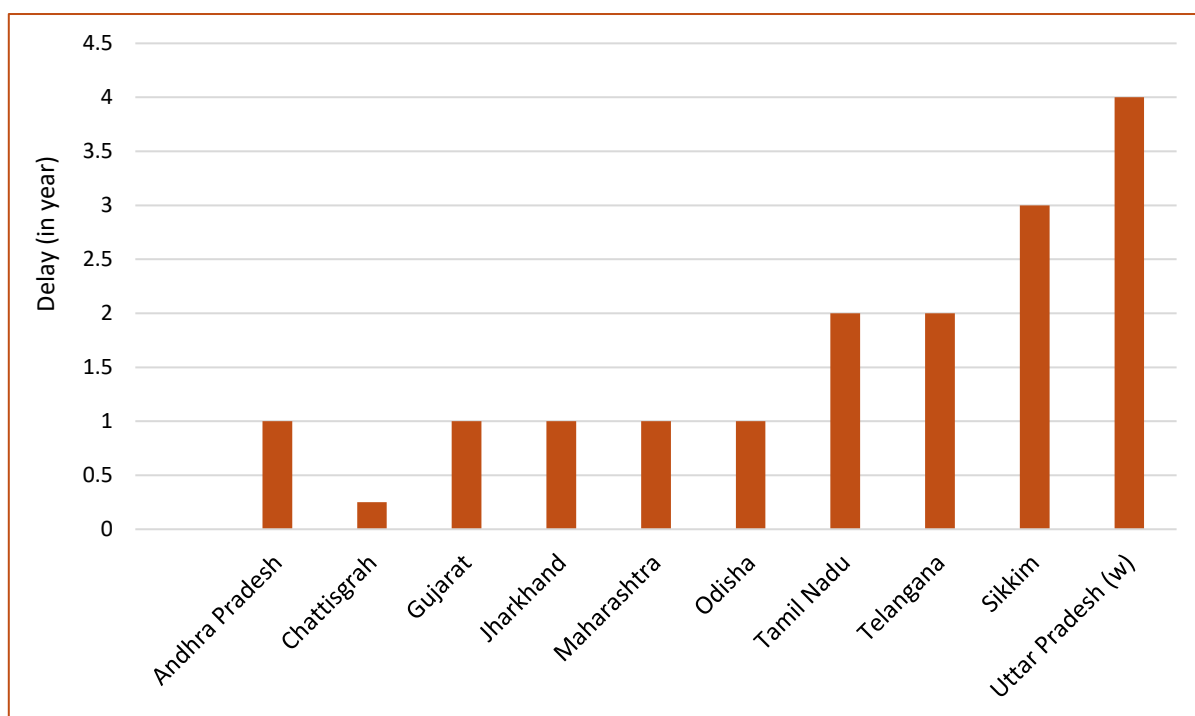
The DPRs submitted by all eight States under the State-led Model and two States/Circles UP (West) and Sikkim (under the CPSU-led Model), underwent changes after approval of Telecom Commission. The revisions (**Table 3.2**) included change in scope of work (number of GPs/OFC length), change in technology and in cost, which necessitated resubmission of DPRs and obtaining fresh approvals with consequent delays in commencement of work in the range of three months to more than four years (**Chart 3.4**). These deficiencies occurred as the DPRs were prepared without ground surveys, necessitating revisions and contributing to delays.

²⁸ Excluding Haryana as BSNL did not submit DPR for Haryana.

Table 3.2: State wise deviation in no. of GPs, OFC Length and CAPEX due to revision in DPR

Name of the State/Circle	Initial DPR			Revised DPR			Increase		
	No. of GPs	OFC Length	Total CAPEX approved by TC	No. of GPs	OFC Length	Total CAPEX approved by TC	No. of GPs	OFC Length	Total CAPEX approved by TC
		(in Km)	(₹ in crore)		(in Km)	(₹ in crore)		(in Km)	(₹ in crore)
Andhra Pradesh	11,254	51,449	847.98	11,254	55,000	998.74	0	3,551	150.76
Chhattisgarh	5,987	32,466	1,491.89	5,987	32,466	1,449.82	0	0	-42.07
Gujarat	6,916	35,000	1,477.05	7,692	35,500	2,176.18	776	500	699.13
Jharkhand	1,684	8,848	363.60	1,684	12,073	549.18	0	3,225	185.58
Maharashtra	13,561	50,313	2,058.83	13,561	55,218	2,980.65	0	4,905	921.82
Odisha	2,564	13,511	307.54	2,945	15,491	453.92	381	1,980	146.38
Tamil Nadu	12,524	41,500	1,067.56	12,524	49,500	1,608.16	0	8,000	540.60
Telangana	6,657	27,493	1,122.78	10,787	31,881	1,844.36	4,130	4,388	721.58
Sikkim	124	774	66.93	124	1,034	96.28	0	260	29.35
Uttar Pradesh (W)	2,169	6,097	266.29	2,175	6,527	314.51	6	430	48.22

The wide variation in per kilometre cost can be attributed to disparity in the type of soil and methodology of laying of cable (aerial and underground).

Chart-3.4: Delay in commencement of work due to revision

3.1.2 Causes for revision in DPRs

The DPRs necessitated revisions on account of various reasons, some of these specific to the implementation model are discussed as below:

CPSU-led model: imprudent cost-cuts (BSNL)

In March 2018, BSNL submitted DPRs for six States (seven Circles), excluding Haryana and Jammu & Kashmir²⁹, separately identifying GPs which would be implemented through EPC³⁰ or Non-EPC mode. In case of Assam and West Bengal the work was to be implemented through EPC mode exclusively whereas in case of Madhya Pradesh, Rajasthan, Sikkim, UP(East) and UP(West), the work was to be implemented through both the modes. The DPRs were evaluated in BBNL by its Scrutinizing Committee headed by CGM (BharatNet). The Board of Directors of BBNL and the Project Appraisal Committee of USOF endorsed the recommendations of the Scrutinizing Committee.

We found that while evaluating and recommending the DPRs of BSNL, BBNL excluded several crucial elements such as those meant for protection of OFC³¹, aerial OFC accessories necessary for installing aerial OFC, required quantity of redundant line cards planned by BSNL etc. As a result, the Telecom Commission (TC) approved (May 2018) costs which were substantially less than what BSNL had proposed in their DPRs, with deductions ranging from 11.58 *per cent* to 71.42 *per cent*. BSNL floated tenders for EPC and Non-EPC mode in December 2017 prior to TC approval. Thus, the tendered costs was based on the submitted DPRs rather than the TC approved costs. In all EPC mode across seven Circles (six States), the tendered costs exceeded TC approved cost by 25.72 *per cent* to 75.88 *per cent*. In non-EPC mode, the tendered costs were higher in Sikkim and UP(West) out of five³² Circles by 22.48 *per cent* to 24.36 *per cent*. Details are at **Annexure-3.1**. BSNL was consequently forced to approach (October 2018) BBNL again for additional funding which was not granted in Sikkim and UP(West) for Non-EPC mode and in all six States (seven Circles) for EPC mode. As a result, 16,271 GPs (39 *per cent*) to be covered in these states through EPC mode were excluded from the project.

Later, BSNL submitted revised Non-EPC mode DPRs for Sikkim and Uttar Pradesh (West), which were approved by the Ministry.

BBNL in its reply stated (March 2025) that the work assigned to BSNL under non-EPC mode in Madhya Pradesh was complete, while in UP (East) and UP (West), work was in progress.

The reply did not address audit findings regarding the underlying cause for exclusions, namely deficiencies in the DPR approval process.

²⁹ BSNL submitted DPR of J&K in May 2019 and did not submit DPR for Haryana.

³⁰ EPC (Engineering, Procurement, and Construction) is a contract model used in infrastructure projects where the contractor is responsible for designing, procuring materials and equipment, constructing the project and delivering a completed facility to the client, ready for operation.

³¹ Such as Double Wall Corrugated (DWC) pipes, Galvanized Iron (GI) pipes, cement concrete (CC) construction of joint chambers, marking of OFC routes, and installation of Fibre Distribution Management Systems (FDMS) at both Block and Gram Panchayat (GP) levels.

³² In respect of three states, the tendered costs were lower than the TC approved cost.

The Ministry accepted (December 2024) that the work in these States could not be executed due to higher quoted rates. The Ministry in its reply (November 2025) stated that the GPs which were not completed under BharatNet Phase-I and Phase-II have been suitably planned under ABP.

Thus, improper assessment of requirements and resultant cost-cuts led to work being abandoned in 16,271 GPs in six States (seven Circles) while the implementation was hampered in Sikkim.

State-led model

In the State-led Model, revisions in DPRs occurred mainly due to factors such as changes in scope of work, particularly the number of GPs and length of OFC (as detailed in Table 3.2).

We noted that in case of Telangana revision occurred due to increase in number of GPs, inclusion of ribbon type OFC instead of loose type, higher rate of trenching and laying, etc. Further, the DPRs did not adequately account for region-specific challenges. For example, the DPR for Chhattisgarh did not account for the impact of dense forests and Left-Wing Extremism (LWE) affected areas. These factors led to frequent changes in the cable laying methods and the size of the cable etc., leading to increased costs.

The revision arising from such deficiencies led to delay in commencement of work in all eight States under the State-led model.

3.1.3 Execution of work without preparation of DPR in Private-led model

The Manual for Procurement of Works stipulate that no work shall be commenced, nor any liability incurred, unless a proper Detailed Project Report (DPR) has been prepared by a competent agency. Further, USOF prescribed (July 2017) a clear timeline stipulating 30 August 2017 as the last date for receipt of DPRs and 10 September 2017 as the last date for their approval.

Audit scrutiny revealed that BBNL planned and executed the project in Bihar and Punjab without preparing and obtaining approval of DPRs, in contravention of above prescribed norms. The BBNL board approved a Capex of ₹399.22 crore for Bihar and ₹482.09 crore for Punjab, which was revised upwards in March 2018 to ₹400.87 crore and ₹561.38 crore respectively, primarily due to changes in the type of OFC for Punjab and the substitution of Fibre Termination Boxes with Fibre Distribution Management Systems in both States. Tenders for these States were floated in December 2017 on the basis of which work orders were issued.

In August 2019, BBNL submitted a fund requirement of ₹675.51 crore for Bihar and ₹713.55 crore for Punjab to the USOF, significantly exceeding the revised Capex approved in March 2018. The increase was attributed to additional infrastructure charges, including space and power charges, Fibre-to-the-Home (FTTH) connections and Data Centre Network (DCN) charges. In January 2020, Administrator, USOF, asked for a comprehensive justification note

from BBNL. BBNL did not provide the justification and yet, USOF continued to release the fund. As of May 2024, post-facto approval of these revised costs was pending.

The Ministry in its reply stated (November 2025) that BBNL was assigned responsibility for States not covered under the State-led model, including those under the Private-led model. Following its Board approval of cost estimates, BBNL floated tenders, discovered market rates through open competition and successfully executed the project under the Private-led model, achieving a high percentage of operational Gram Panchayats (GPs).

The reply may be viewed in the light of the fact that submission and approval of DPRs was a mandatory precondition for execution of the project. However, BBNL did not obtain Telecom Commission approval in this case.

3.1.4 Shifting from EPC to PPP mode (CPSU-led model - PGCIL)

PGCIL prepared DPRs for two States Himachal Pradesh and Uttarakhand under the CPSU-led model (EPC Mode) and submitted them in January 2018 and December 2018 respectively. The Telecom Commission approved the DPR for Himachal Pradesh in May 2018. However, USOF informed (July 2019) BBNL that no further action was to be taken on, or approval granted for, the remaining Phase-II projects (including Himachal Pradesh and Uttarakhand), as these were to be covered under the proposed PPP Model. As a result, 8700 GPs in these two states were excluded from the project.

The Ministry in its reply (November 2025) stated that the GPs which were not completed under BharatNet Phase-I and Phase-II have been suitably planned under ABP.

3.2 Implementation

3.2.1 Status of Key deliverables

BBNL monitors performance and progress of the project through weekly progress reports on the number of GPs covered, cable laid and GPs made Service Ready³³ across different phases and models. The operational status of these GPs is regularly updated at BBNL's Central Network Operating Centre (NOC) in Delhi.

Phase-II achieved 92.79 *per cent* Service Ready GPs and 94.08 *per cent* laying of OFC (November 2025). Expenditure as of November 2025 was ₹18,590 crore, within the Cabinet-approved cost of ₹22,174.56 crore for Phase-II Capex (inclusive of taxes). It may, however, be noted that the Cabinet approval was for 1.5 lakh GPs, whereas the scope of the project was reduced to 1.03 lakh GPs (November 2025).

Physical Coverage

Physical Performance of the BharatNet Phase-II Project in 13 States as on November 2025 is given in **Table-3.3**.

³³ Service Ready GPs: Any GP which has been End to End tested OK, GP equipment installed, powered on Configuration completed, connected with Block and status is live at Network Operating Centre.

Table-3.3: BharatNet Phase-II status (November 2025)

Start date	Target date	Revised Scope (No. of GPs)	Revised Scope- OFC to be laid (in Km)	Service Ready GPs	OFC laid (in Km)
Nov-17	Mar-19 (Extended up to 2025)	1,03,112	4,06,468	95,681 (92.79 per cent)	3,82,422 (94.08 per cent)

Phase-II was to be initially implemented in 20 states. Subsequently, the scope was revised (July 2019) to cover 13 States (14 Circles). Seven States/Circles³⁴ achieved 100 per cent service ready status as of November 2025 with delays ranging from two years to six years. In six States/Circles, 75.14 per cent to 99.94 per cent GPs are service ready and in Sikkim no GP is service ready (**Annexure-3.2**).

GIS Mapping

This is essential for mapping the route as well as in operation and maintenance of the cables. It also serves as an asset register at the time of handover. GIS mapping was included in the MoU (2012) signed by BBNL with the CPSUs in Phase-I. In July 2019, a tripartite agreement among USOF, BBNL, and CSC aimed to capture GIS data on a "best-effort" basis but that too did not yield satisfactory results. By 2020, efforts intensified to accelerate mapping, with specific regions assigned to different methods. However, 90.96 per cent GPs and 82.42 per cent of OFC of Phase-I and II were mapped as of July 2024.

Table - 3.4: GIS Mapping status (July 2024)

Work done as per Report		Mapped in GIS	
Service ready GP	OFC Laid	GP	OFC
2,17,589	6,89,242	1,97,926 (90.96 per cent)	5,68,122 (82.42 per cent)

The Ministry stated (March 2025) that GIS mapping for Phase-I and II has been almost completed (99 per cent). Under ABP, GIS mapping has been mandated while constructing the network.

We however noted from GIS report that as of November 2025, GIS mapping was completed for 98.16 per cent of GPs and 88.54 per cent of OFC. However, the effectiveness of the corrective measures envisaged under the ABP can be assessed in subsequent audit.

3.2.2 State specific aspects of implementation

CPSU-Led Model

BSNL was the implementing agency for BharatNet Phase-II in eight States. As of November 2025, in Madhya Pradesh and UP(W), all the GPs were made service ready; 99.03 per cent GPs were made service ready in UP(E) and none of the GPs were made service ready in Sikkim.

³⁴ Gujarat, Andhra Pradesh, Odisha, Bihar, Punjab, UP(W) and Madhya Pradesh.

We noted that as per Cabinet approval (July 2017), only the Telecom Commission (TC) was empowered to decide on any issue or modification in BharatNet relating to technology, scope and implementation strategy. Further, Phase-II provided technological advantages over Phase-I. While under Phase-I, GPs were connected from the Block through a 24-fibre Optical Fibre Cable (OFC) providing bandwidth of 100 Mbps, under Phase-II, there was a technological upgradation with 48-fibre OFC, bandwidth capacity of up to 1 Gbps and 6 dark fibres from Block to GP.

We observed that in Haryana and Rajasthan, 63 and 535 GPs respectively were shifted from Phase-II to Phase-I during 2018 without approval of TC thereby denying these GPs the benefits of technological upgradation envisaged under Phase-II, as detailed below:

(i) In Rajasthan, BSNL submitted (March 2018) the DPR covering 1,671 GPs (535 in non-EPC mode and 1,136 in EPC mode) to BBNL for TC approval. However, BBNL approved (April 2018) the transfer of 535 GPs from Phase-II to Phase-I without any intimation to or approval from USOF/TC. Subsequently, USOF conveyed TC approval (May 2018) for the same 1,671 GPs under Phase-II, out of which 535 GPs were already shifted to Phase-I.

(ii) Similarly, in Haryana, BSNL reported (December 2018) to BBNL that 24F OFC had been laid in 63 Phase-II GPs in place of 48F OFC and sought administrative and financial approval for the executed work. BBNL thereafter approved (February 2019) transfer of these 63 GPs from Phase-II to Phase-I.

BBNL in its reply stated (February 2024) that the action was in accordance with DoT instructions (December 2017) permitting adoption of Phase-I methodology in Blocks where Phase-I work was completed or ongoing.

Reply of the management may be viewed in the light of the fact that in terms of DoT's instructions of December 2017, only newly created GPs in the Blocks where work of BharatNet is already completed or being executed in Phase-I may be executed as per Phase-I methodology. However, these GPs were not newly created and were already covered under Phase-II. Further, transfer of these GPs from Phase-II to Phase-I violated the Cabinet approval and deprived them the benefits of technological upgradation.

As reported in para 3.1.4 (CPSU-led Model – PGCIL), BharatNet Phase-II was not implemented in Himachal Pradesh and Uttarakhand due to problems in planning stage and its 8,700 GPs were taken to ABP.

Case Study 3.1: Implementation of BharatNet in Sikkim

The TC approved BSNL's DPRs for Sikkim in May 2018, followed by a Memorandum of Understanding between BBNL and BSNL in August 2018. As pointed out in para 3.1.2, the tendered costs were 22.48 *per cent* higher than the TC approved costs in Sikkim. BSNL submitted (Oct 2018) for approval of funds, Ministry did not approve the revised claim for funds. The denial for funds led to work stoppage in February 2019. At the time of

suspension of work, Sikkim had achieved 82 *per cent* duct laying and 67 *per cent* OFC laying³⁵.

BSNL submitted revised DPRs in 2019, attributing cost escalations to previously omitted items, expanded scope, and increased trenching rates. BSNL also raised concerns about the deterioration of already-laid infrastructure, warning that the investment would be wasted if left unattended. This prompted USOF to approve (February 2020) inspections by a committee on the already completed work.

The Committee reported substandard work quality and significant gaps in project monitoring. Further, DPR was revised and approved in May 2021.

In March 2023, BSNL submitted an additional proposal for Sikkim covering 419 villages/GPs, citing infrastructure damage from landslides and construction activities. The proposal included plans to co-lay OFC with the Sikkim Power Department and requested a substantial write-off of ₹89.42 crore for both Phase-I and II.

We noted that as of November 2025, no GP was service ready in Sikkim.

While accepting the audit contention, the Ministry in its reply (November 2025) stated that the corrective measures are being undertaken in Sikkim.

State-Led Model

In the State-led Model, out of eight States, all (100 *per cent*) GPs were made service ready in three States (Gujarat, Andhra Pradesh and Odisha) and in Jharkhand 99.94 *per cent* GPs were made service ready. In remaining four States, the service ready GPs ranged from 75 *per cent* to 94 *per cent*. Further, in Andhra Pradesh, Maharashtra and Chhattisgarh, zero operational GPs were reported despite higher level of service readiness (November 2025), indicating non-utilisation of created infrastructure (**Annexure 3.2**).

The States of Andhra Pradesh, Gujarat and Tamil Nadu fall in our audit sample.

(i) **In Andhra Pradesh**, after signing of MoU (November 2017) the State Implementing Agency (SIA) viz. Andhra Pradesh State Fibrenet Limited (APSFL) issued (January 2019) work orders with target for completion by October 2019. However, by the deadline (October 2019), only 20 *per cent* of the work was completed. In March 2020, APSFL asked the vendors to stop the aerial OFC laying work in order to replace the aerial fibre network with an underground one and the State government requested additional funds of ₹1,429.35 crore³⁶. After several rounds of discussions³⁷, the State Government decided (November 2021) to continue with the aerial methodology. The indecision contributed to prolonged delays, with all GPs made service ready five years later in March 2024.

³⁵ Work commenced in Sikkim in February 2018.

³⁶ initially the cost was ₹3,155.91 crore, which was increased to ₹4,585.26 crore.

³⁷ Between USOF, BBNL, Govt. of AP and APSFL.

(ii) **In Gujarat**, after signing of MoU (December 2017) among USOF, BBNL, Government of Gujarat and Gujarat Fibre Grid Network Limited (GFGNL), purchase orders were issued in October 2018 and all the GPs were made service ready in January 2025 against the deadline of March 2019. Although the execution was delayed, we noted high level of operational GPs in Gujarat.

The Ministry stated (March 2025) that penalty in the form of Liquidated Damages (LD) for delay would be suitably levied and till date ₹48.63 crore has been recovered from GFGNL in this regard.

(iii) **In Tamil Nadu**, after signing of MoU (December 2017), purchase orders were issued³⁸ after a delay of more than three years. The delay was mainly attributable to change in the State implementing Agency. The DPR of Tamil Nadu through its designated SIA Tamil Nadu Arasu Cable T.V Corporation Ltd. (TACTV) was approved to connect 12,524 GPs using GPON technology in linear topology. Later, the State government changed (September 2019) the SIA from TACTV to Tamil Nadu FibreNet Corporation Limited (TANFINET) and submitted revised DPR including mix of linear and ring topology which was approved (September 2019) by Telecom Commission. The change led to delay of more than five years, with 86.77 *per cent* GPs made service ready by November 2025.

BBNL Management while accepting the audit contention stated (March 2024) that the delays were attributable to retendering and that liquidity damages were to be imposed by SIA.

However, substantial delays in completion of Phase-II of the project spanning more than five years in eight states (**Annexure-3.2**), raises questions about the effectiveness of planning and execution of the projects. This needs to be addressed to prevent further delays. In summary, poor planning, changes in technology and inability to take timely actions delayed project completion in the state-led model.

The Ministry, while accepting the audit contention stated (November 2025) that liquidated damages (LD) for delays were to be imposed by the State Implementing Agencies (SIAs) and any LD penalties would be recovered from the final milestone payments. Further, ABP model minimizes the risks of cost overruns, delays and oversight gaps observed in earlier phases.

The effectiveness of the measures envisaged under the ABP can be assessed in subsequent audit.

Private-Led model

Under Private-led model³⁹, private sector entities were engaged by BBNL for implementing the BharatNet and undertaking the responsibility for Operations & Maintenance (O&M) and facilitating service provisioning of the established network on turnkey basis. BBNL floated tender for Phase-II during December 2017 for Bihar and Punjab and Purchase Orders were issued during August 2018 and July 2018 respectively. The project was completed in these

³⁸ Oct 2021, March 2022 and May 2022.

³⁹ Cabinet Note 2017.

two States with delays of two years and 4.75 years respectively. We found that Punjab and Bihar ranked first and third respectively in terms of operational GPs (as of November 2025, Annexure 3.2) which was, in our opinion, a consequence of close linkage of payment terms with service delivery (as brought out in Para 3.3.1) and other institutional measures (as brought out in Case Study 4.2).

3.2.3 Wi-Fi Deployment and Functionality

The agreement (July 2019) among USOF, BBNL and CSC and MoU (February 2018) between BBNL and Government of Rajasthan envisaged provision of Wi-Fi connections in 1,15,358 GPs against which Wi-Fi connections in 1,04,675 GPs (March 2024) were provided. As of March 2024, mere 6.01 *per cent* of installed Wi-Fi connections remained active (6,293 out of 1,04,675), with Rajasthan accounting for 82.8 *per cent* of functional connections.

During the physical verification conducted in 131 GPs across eight States/Circle and one UT, we found that no Wi-Fi Access Points were installed in Assam, Bihar, Haryana, Sikkim, Uttar Pradesh (West). In Andhra Pradesh, one Wi-Fi Access Point was found installed in each of the five GPs visited, however, all of them were found to be non-functional.

The Ministry stated (March 2025) that the DBN (USOF) is taking action to address the issues with the installed Wi-Fi Access Points according to the agreements.

We noticed that, as of March 2025⁴⁰, only 766 Wi-Fi connections (0.7 *per cent*) were functional across all the States. Of these, 658 were in Kerala, 52 in Jammu & Kashmir, 21 in Arunachal Pradesh, 13 in Leh (UT), five in Karnataka, and four each in Madhya Pradesh and Rajasthan, while Haryana, Meghalaya, Odisha, Uttar Pradesh (East) and Chhattisgarh reported two or fewer functional connections.

3.2.4 Satellite component of BharatNet to connect GPs

Telecom Commission approved the project in January 2018 to connect 5,298 Gram Panchayats (GPs) in the remote and hilly areas of Northeast and other regions through satellite media, along with installation of Wi-Fi Access Points (AP) at each GP to provide last mile connectivity. BSNL and BBNL were tasked for different sets of GPs. BBNL issued purchase orders on turnkey basis in December 2018 with the target completion date by September 2019. However, as of July 2024, against the revised scope of 5,166⁴¹ GPs, 4,984⁴² GPs were service-ready⁴³. Although BSNL has installed Wi-Fi APs in their GPs but all GPs under BBNL, remained without these APs, thereby depriving these GPs of last-mile connectivity and affecting service delivery. The project involved capital expenditure of ₹111.58 crore, operational expenditure of ₹5.16 crore and transponder charges of ₹484.70 crore paid to

⁴⁰ The situation remained unchanged in June 2025 and the November 2025 weekly reports did not disclose information on Wi-Fi status.

⁴¹ BSNL – 1,408 GPs and BBNL – 3,758 GPs.

⁴² BSNL – 1,393 GPs and BBNL – 3,591 GPs.

⁴³ For satellite based GPs “Service ready” indicates readiness of satellite components (including modem) and power systems; however, Wi-Fi APs are required for last-mile connectivity to users.

ISRO for satellite connectivity. In all, ₹601.44 crore was spent but the Satellite component of Phase-II could not be delivered as envisaged.

BBNL management stated (May 2024) that tender for provisioning of Wi-Fi for all GPs executed by BBNL was under process.

The Ministry stated (November 2025) that out of 5,166 planned GPs, 5,121 GPs have been connected through satellite media and as of 23 September 2025, Wi-Fi Access Points (APs) have been installed in 710 satellite GPs, while installation work for the remaining GPs is in progress.

This reply endorses the audit observations and confirms that last-mile utilisation remained inadequate with Wi-Fi APs commissioned in only 710 GPs, while installation in the remaining GPs was pending (September 2025), thereby limiting service delivery.

3.2.5 Non-deployment of Fibre Fault Localisation system

Fibre Fault Localisation System (FFLS) planned to be installed as far back as in April 2014⁴⁴ in Phase-I, was not put in place as of July 2024. In 2021, the Ministry acknowledged the lack of implementation, attributing it to C-DOT's inability to demonstrate a reliable solution, leading BBNL to initiate an open tender. As of June 2024, FFLS remains un-deployed.

BBNL admitted (June 2024) that FFLS was not deployed as yet and informed us that it stands included in the RFP issued for ABP.

The Ministry stated (March 2025) that in Phase-I and II of BharatNet, GPON technology was used, where deploying a FFLS was considered too expensive and beyond the project's approved cost, leading to its exclusion. Further, under ABP, a Remote Fibre Monitoring System (RFMS) has been introduced to address fault detection and resolution in a more cost-effective and efficient manner, ensuring improved network reliability and faster fault restoration.

In the absence of FFLS, fault reporting continued to rely on manual interventions, resulting in higher downtime and delayed restoration of services, which contributed to sub-optimal network availability. Further, the effectiveness of the measures envisaged under the ABP can be assessed in subsequent audit.

3.2.6 Quality Assurance

We found that as of November 2025, the project has been completed in seven States/Circles under CPSU/State/Private-led model [viz. Gujarat, Andhra Pradesh, Odisha, MP, Bihar, Punjab and UP(W)]; however, only in Andhra Pradesh and Punjab, the closure process (viz. Acceptance testing) was completed.

⁴⁴ An agreement between BBNL and C-DoT signed in April 2014 covering network management and fault detection (FFLS).

Case study 3.2: The unfinished task: Acceptance Testing deficiencies

Acceptance Testing (AT) under Phase-II was found substantially incomplete as of July 2024. The State-led Model showed substantial pendency rates of up to 88.66 *per cent* across all components. In CPSU-led Model (BSNL), pendency was up to 100 *per cent*. The Private-led Model showed better performance (almost 100 *per cent*) in acceptance testing.

BBNL attributed (September 2024) the delays to multiple factors such as fibre damage necessitating repairs by maintenance agencies (BSNL/CSC) creating discrepancies in OFC verification. Further local issues led to delays in completion of acceptance testing.

The Ministry stated (March 2025) that there was some gap between OFC laid and OFC AT. However, at the time of final adjustment of advance/asset capitalization, AT would be considered. It was further stated that for Phase-II, 84.91 *per cent* AT has been completed with the remaining AT in progress.

While we note the replies of BBNL and Ministry, the remaining ATs may be expedited to ensure quality assurance and facilitate effective project implementation.

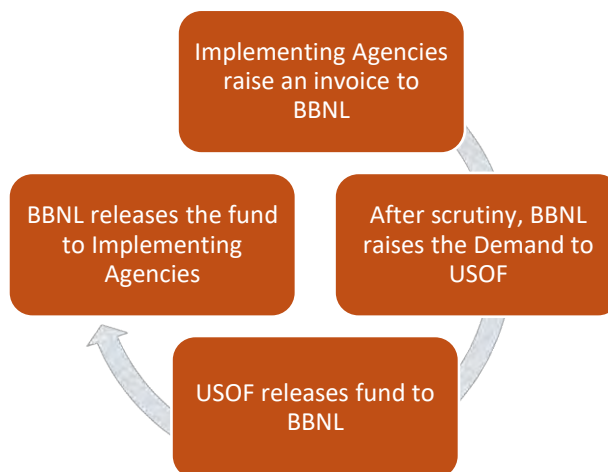
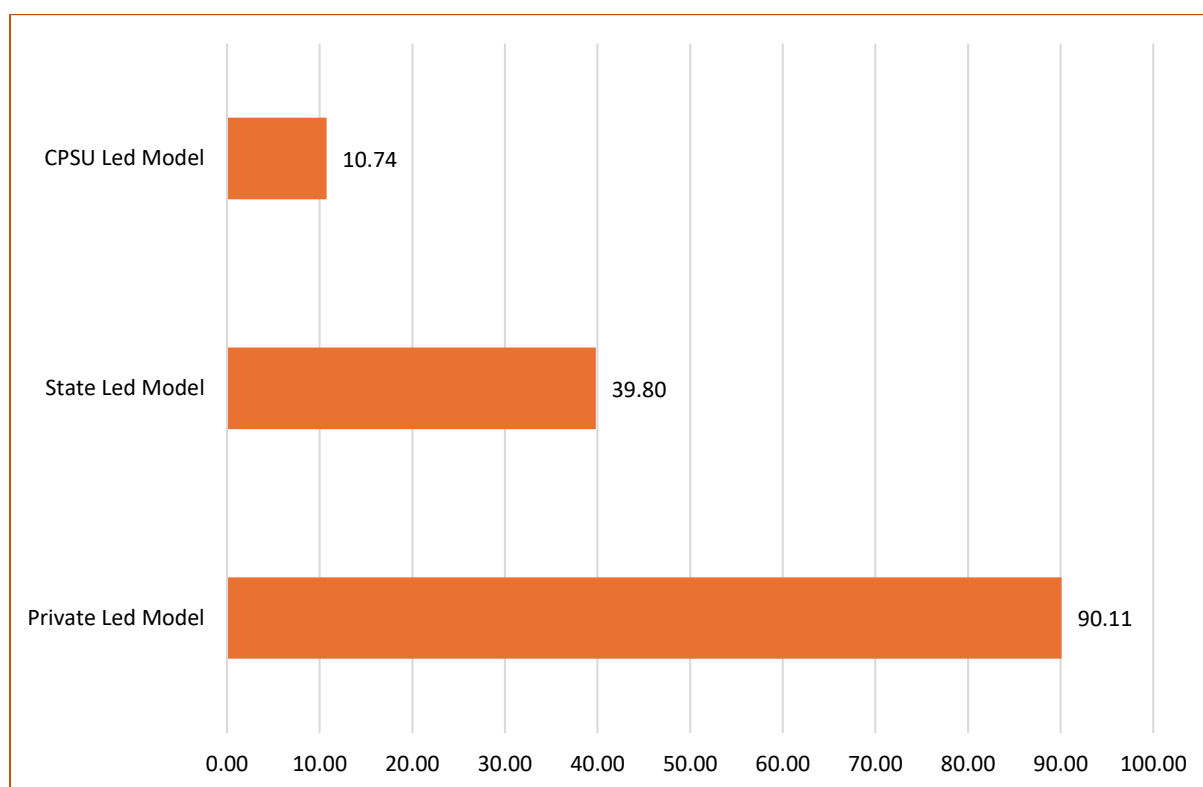
3.3 Financial Management**3.3.1 Release of funds****Chart-3.5: Release of Funds**

Chart-3.5 illustrates the process for release of funds. There were variations in the payment terms across all the three Models. In case of CPSU-led Model, the terms envisaged payment of 100 *per cent* of the value of material on placing purchase order; and for works component 70 *per cent* on placing purchase order, 25 *per cent* payment on Acceptance Testing and Commissioning of network in each block and five *per cent* payment after one year of commissioning. In the State-led model, payments were linked to deliverables. An initial payment of 10 *per cent* was made when the MoU was signed, with further payments linked

to the completion of specific work stages. The final payment of 10 *per cent* was to be made after one year of completion, i.e. on successful operations and running of services.

In the Private-led Model, payment terms were more tightly linked to deliverables. 50 *per cent* of the material cost was payable on delivery of material. The remaining payments of 50 *per cent* of material and 100 *per cent* of service component were linked to achievement of GP connectivity in eight stages from 30 *per cent* to 100 *per cent*. For the first two stages (30 *per cent* and 40 *per cent*), 10 *per cent* of the service cost was payable. For the next six stages (50 *per cent* to 100 *per cent*), five *per cent* of the remaining material cost and 10 *per cent* of the service cost was payable at each stage. After the network goes live and performs for one year as per SLAs, the final payment of 20 *per cent* of material and 20 *per cent* of service are released. We noticed that the Private-led model where payment terms were more strictly linked to deliverables contributed to better performance in terms of uninterrupted internet connectivity (viz. higher operational GPs) than CPSU-led Model and the State-led model (**Chart 3.6**).

Chart-3.6: Operational GPs (in *per cent*) as of November 2025



3.3.2 Financial Status

Financial status of BharatNet Phase-II as of November 2025 is at **Table 3.6**. As of November 2025, BBNL spent ₹18,590 crore on BharatNet Phase-II (Capex), which was within the budget approved.

Table 3.6: Details of Expenditure incurred against BharatNet Project (till Nov-2025) (₹ in crore)

Sl. No.	Component of the Project	Amount Approved by the Cabinet (Without Taxes)	Amount (Including Taxes)	Expenditure (Inclusive of Taxes)
1	Phase-I (Capex)	11,148	12,708.72	12,663
2	Phase-II (Capex)	18,792	22,174.56	18,590
3	Opex	6,046	7,134.28	7,843
4	Last Mile Connectivity	4,066	4,066.00	425
5	Replacement of Lossy Fiber	2,016	2,378.88	367
Total		42,068	48,462.44	39,888

3.3.3 Inadequate safeguards in Fund Management

We noticed instances of inadequate safeguards in fund management, wherein procedures for utilisation and monitoring of project funds were either absent or not complied with, as detailed below:

(i) The Agreement executed (May 2013) between BBNL and CPSUs in Phase-I, linked release of funds to submission of Utilisation Certificates (UCs) supported by certified bills.

This requirement was done away with in Phase-II. However, while removing this control, no alternate mechanism was put in place to monitor utilisation of funds, including adjustment of penalties from vendors or deposit of unutilised funds etc.

One instance illustrates the need for such monitoring. BBNL approved (2016) funds for survey and GIS mapping of electrical poles for BharatNet Phase-II in five States (Himachal Pradesh, Jharkhand, Odisha, Uttarakhand and West Bengal), with 50 *per cent* of the sanctioned amount paid in advance. Out of total cost of ₹21.09 crore, though ₹10.55 crore⁴⁵ was paid in advance, there was no record of its utilisation for the purpose it was sanctioned.

While accepting the audit contention, Ministry assured (December 2024) that a robust system to streamline the process would be adopted. Ministry further stated (March 2025) that BBNL has been pursuing for refund of unutilised amounts and submission of supporting documents from States.

(ii) As per USOF sanction conditions, funds were to be utilised for the purpose for which it was allocated. We found that this condition could not be fulfilled as detailed below:

MoUs signed (November 2017-January 2018) by USOF with BBNL, State Governments and State Implementing Agencies (SIAs) provided that all funds released for the project shall be placed in a separate Project Bank Account. The Account was to be used only for project payments and administrative expenses. Surplus funds in this account were to be kept in a fixed deposit with a public sector bank, with interest credited to the project corpus.

We noted that the above control was not included in the MoU signed (August 2018) between BBNL and BSNL. BBNL released an advance of ₹2,302 crore to BSNL by March 2018 and released an additional advance of ₹863 crore to BSNL in September 2018, aggregating the

⁴⁵ Odisha- ₹2.39 crore, West Bengal- ₹2.10 crore, Jharkhand- ₹2.11 crore, Himachal Pradesh- ₹1.30 crore and Uttarakhand- ₹2.65 crore.

total advance to ₹3,165 crore. However, as per the terms governing fund release, the admissible amount (based on purchase order/work order submitted by BSNL) was ₹2,516 crore. Accordingly, the total release exceeded the admissible amount by ₹649 crore. Out of ₹3,165 crore released to BSNL, it utilised only ₹1,163.57 on Phase-II and diverted ₹2,001.43 crore for other purposes.

An Enquiry Committee constituted (May 2019) by USOF found (September 2019) that BSNL had utilised ₹2,001.43 crore for meeting establishment costs and other ongoing projects even as liabilities of ₹683.41 crore towards vendor supplies under Phase-II were pending. Based on the recommendation of the Enquiry Committee, BSNL opened (February 2020) a separate project account, but did not recoup the diverted funds (as on March 2024).

The Ministry stated (March 2025) that although the MoU of August 2018 did not contain a clause for submission of utilisation certificates, BSNL submitted justification to BBNL, at the time of demand of funds. It was further stated that BSNL was releasing funds to the vendors regularly from its own sources to recoup the diverted funds.

The Ministry subsequently informed (November 2025) that BSNL had since recouped entire amount of ₹2,001.43 crore.

(iii) Under State-led model, MoU signed (December 2017) among USOF, BBNL, Government of Tamil Nadu and SIA (TANFINET⁴⁶) did not provide a clause for Liquidated Damages (LD). The SIA (TANFINET) recovered ₹3.21 crore from vendors out of total recoverable LD of ₹54.81 crore. However, due to the absence of LD clause in the MoU, the recovered amount of LD was not transferred to BBNL.

The Ministry stated (November 2025) that as per the Quadripartite Agreement between USOF, BBNL, the State SPV and the State Government, only the actual project cost is to be disbursed by BBNL/USOF. Accordingly, any liquidated damages (LD) imposed by the SIA on the PIA are adjusted by BBNL while making the final milestone payment.

The adjustment of liquidated damages against final milestone payments may be verified in subsequent audit.

(iv) We observed instances of deviation from MoU provisions under State-led model as well as CPSU-led model as below:

(a) Under State-led model, the MoU signed (December 2017) among USOF, BBNL, the Government of Maharashtra and SIA (Maharashtra Information Technology Corporation Limited) stipulated that all releases be placed in a separate Project Bank Account and unutilised funds be placed in fixed deposits with a public sector bank, with the accrued interest added to the account. However, out of ₹541.94 crore released (December 2017 and November 2018) as advance to SIA, ₹65.50 crore remained unutilised and was parked in savings account instead of fixed deposits, leading to interest loss of ₹12.48 crore.

⁴⁶ Tamil Nadu FiberNet Corporation Limited.

While accepting the audit contention, the Ministry stated (March 2025) that adjustment would be done as per provision of MoU when the next instalment of fund is transferred to SIA of Maharashtra.

(b) Under CPSU-led model, MoU signed (August 2018) between BBNL and BSNL provided that in case of non-execution of the project for whatever reason, action with regard to the advances paid to BSNL shall be taken in accordance with the decision of USOF. We observed that BSNL started issuing Advance Purchase Orders (APOs) for EPC mode packages from April 2018 to October 2018 pending approval. While no work order was issued by BSNL, BBNL released⁴⁷ ₹420 crore as an advance to BSNL. In Jul 2019 USOF communicated that no further action to be taken on EPC mode projects. It was also informed that advance of ₹420 crore released for EPC mode projects was to be adjusted from non-EPC mode projects. However, BSNL justified the non-adjustment on the ground that Advance Purchase Orders were already issued and it had already incurred costs for manpower and resources which would require to be compensated. Besides, approximately ₹64 crore was paid as GST.

Ministry stated (November 2025) that as per Department of Expenditure OM (March 2022) on the revised procedure for fund flow under Central Sector Schemes, funds are disbursed from DBN to BSNL through the Central Nodal Agency (CNA) Model-1. Under this model, BSNL has to make payments directly to the PIA, enabling fund tracking to the ultimate beneficiary in PFMS. Under ABP, BSNL is required to submit Utilisation Certificates before the release of subsequent assignments.

Though the audit appreciates the corrective measures taken by the Ministry, however, the implementation of these measures in ABP can be assessed in subsequent audit.

3.3.4 Capitalization of BharatNet assets

Capitalization is essential for accurately recording the investments in infrastructure projects. It ensures that expenditure incurred for creation of assets are properly accounted for in financial records.

We noticed that although nearly 100 *per cent* of work was reported as completed in four States of Andhra Pradesh, Chhattisgarh, Gujarat and Odisha, no GPs (assets created in GPs) was capitalized till March 2024. Also, In UP(W) and Sikkim also, no GPs was capitalized. In Madhya Pradesh, Bihar and UP (East), 96 *per cent*, 68 *per cent* and 62 *per cent* of GPs were capitalized respectively. Only in case of Punjab 100 *per cent* of the GPs were capitalized.

While accepting the audit contention, the Ministry stated (March 2025) that the capitalization of the assets could not be undertaken due to variations in the State-led model and a team of consultants would be hired to finalize the modalities. The Ministry further stated (November 2025) that the process had not yet commenced and would be taken up with BBNL.

⁴⁷ ₹232 crore in December 2017 and ₹188 crore in March 2018.

We are of the view that delays in capitalisation despite completed works indicate weak financial closure and asset accounting.

3.4 Conclusion

BharatNet Phase-II was marked by planning and execution deficiencies that impacted its implementation. The project, which aimed at providing broadband connectivity to Gram Panchayats, faced delays of over six years beyond its original deadline (March 2019). Phase-II achieved 92.79 *per cent* service ready GPs as of November 2025 but the operational GPs were significantly lower indicating underutilisation of infrastructure. Further, acceptance testing and quality assurance remained substantially incomplete.

The Detailed Project Reports (State-led and CPSU-led) were prepared without ground surveys leading to revisions and delays while the Private-led model was implemented without DPRs. The fibre fault localisation system remained unimplemented and GIS mapping progressed with delays. The implementation models - State-led, CPSU-led and Private-led showed varying degrees of success, with the Private-led model demonstrated better performance in terms of operational connectivity.

There were concerns regarding financial management. The relaxation of controls in Phase-II, particularly the removal of utilisation certificate requirements, absence of separate Project Accounts and MoU oversights led to instances of fund diversion, interest losses and non-transfer of liquidated damages. Capitalisation of assets was delayed or incomplete, reflecting inadequate financial closure and asset accounting.

3.5 Recommendations

3.5.1 Streamline Planning, its approval and System Integration

- i. Detailed Project Reports should be based on comprehensive ground surveys, ensuring accurate cost projections and reducing revisions.*
- ii. Department of Telecommunications and Digital Communication Commission should establish a fast-track approval mechanism with strategies that factor location - specific challenges.*
- iii. Better coordination is needed between the Department of Telecommunications (DoT), BSNL and State governments to address bottlenecks.*
- iv. Fast-track GIS mapping completion for all Gram Panchayats (GPs) to streamline maintenance and network upgrades.*
- v. Ensure effective rollout of Fibre Fault Localisation System (FFLS)/Remote Fibre Monitoring Systems (RFMS) and integrate these systems with a centralized NOC.*
- vi. Ensure integration of GIS, FFLS/RFMS and Network Management System (NMS) for automated fault localization and route optimization.*

- vii. *Ensure that Wi-Fi Access Points are operational and properly maintained to enhance utilisation.*

3.5.2 Improve Financial Oversight

- i. *Implement a performance-linked disbursement model similar to the Private-led approach, ensuring payments are strictly tied to project milestones (e.g., GIS mapping, Acceptance Testing, uptime targets) and service availability.*

Chapter IV

Operation & Maintenance and Utilisation of BharatNet Infrastructure

CHAPTER IV

Operation & Maintenance and Utilisation of BharatNet Infrastructure

4.1 Operation and Maintenance arrangement

We noted that Operation and maintenance (O&M) arrangements for BharatNet underwent multiple transitions. In pursuant to the Cabinet approval (July 2017) for dedicated funds for O&M, BBNL entered into an agreement with BSNL for O&M arrangements for Phase-I in October 2017. The agreement provided for O&M and revenue sharing without any defined Service Level Agreements (SLAs); this remained in force until June 2019. However, no formal agreement was put in place for projects implemented by the other CPSU that participated in Phase-I (namely RailTel and PGCIL) although BBNL paid ₹26.04 crore to RailTel for this purpose. Thus, the non-provision of funds and absence of formal O&M agreements resulted in inadequate maintenance affecting network availability.

DCC recognized (June 2019) BSNL's limitations in handling BharatNet O&M responsibility, due to its limited village-level presence which affected speedy fault response and network reliability. Accordingly, the Commission decided to transfer responsibility of O&M to CSC. This arrangement came into effect from July 2019 through a tripartite agreement among USOF, BBNL and CSC. This agreement prescribed network availability of 95 *per cent* and remained valid up to June 2022. Data showed relative improvement in network availability during this period, although it still fell short of SLA targets (Para 4.2.2). CSC could not fully deliver on its commitment of O&M satisfactorily and the agreement was terminated in 2022.

Thereafter, an agreement (August 2022) between USOF and BSNL restored (from July 2022) O&M responsibility to BSNL for Phase-I and Phase-II (CPSU-led model), with stricter network availability requirements of 98 *per cent* at GP level and 99 *per cent* at block level, with penal provisions for non-compliance. USOF was to forfeit the O&M payment in a month if the network availability fell below 70 *per cent*. For Phase-II implemented under State-led and Private-led models, O&M responsibility remained with respective Implementing Agency with a lower SLA threshold of 95 *per cent*.

We noted that subsequent to the termination of agreement with CSC, the operational performance deteriorated, which is discussed later in the Chapter (Para 4.2.2).

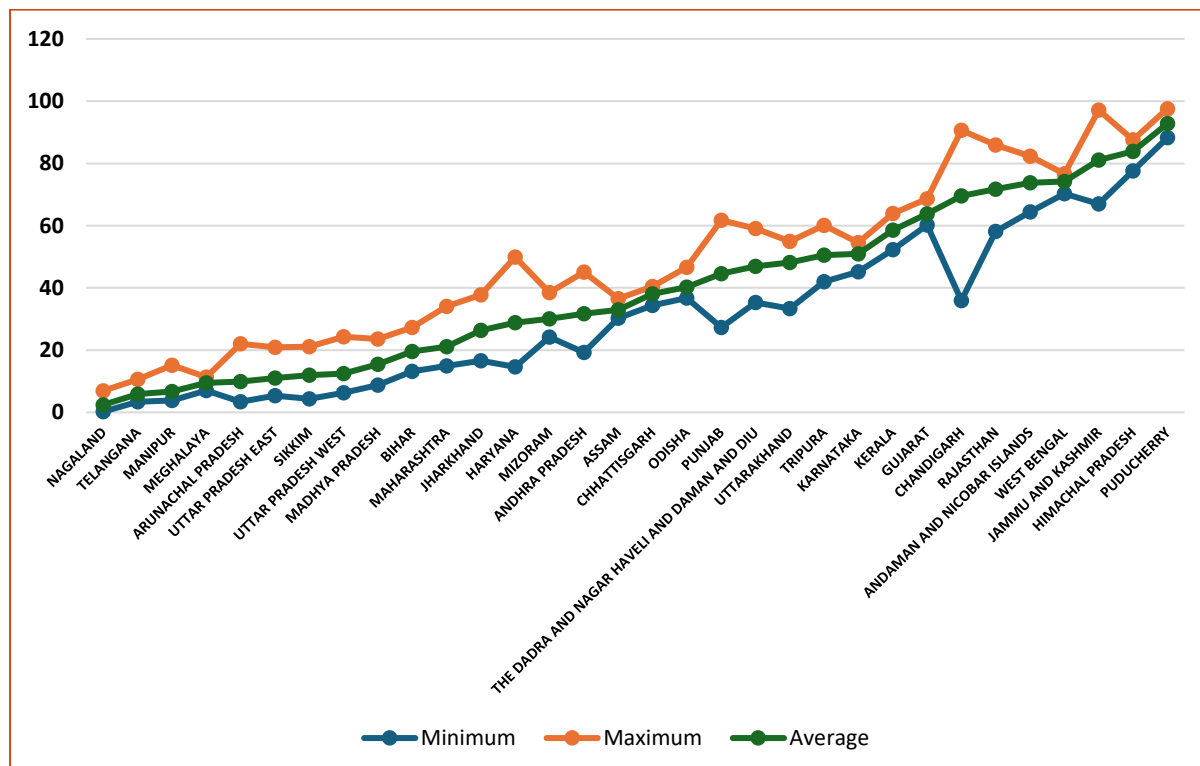
4.2 Operational performance

Audit evaluated the operational performance of BharatNet on two parameters: (i) State-wise monthly network availability; and (ii) Operational GPs (in *per cent* of service-ready GPs). These are discussed below:

4.2.1 State-wise monthly network availability

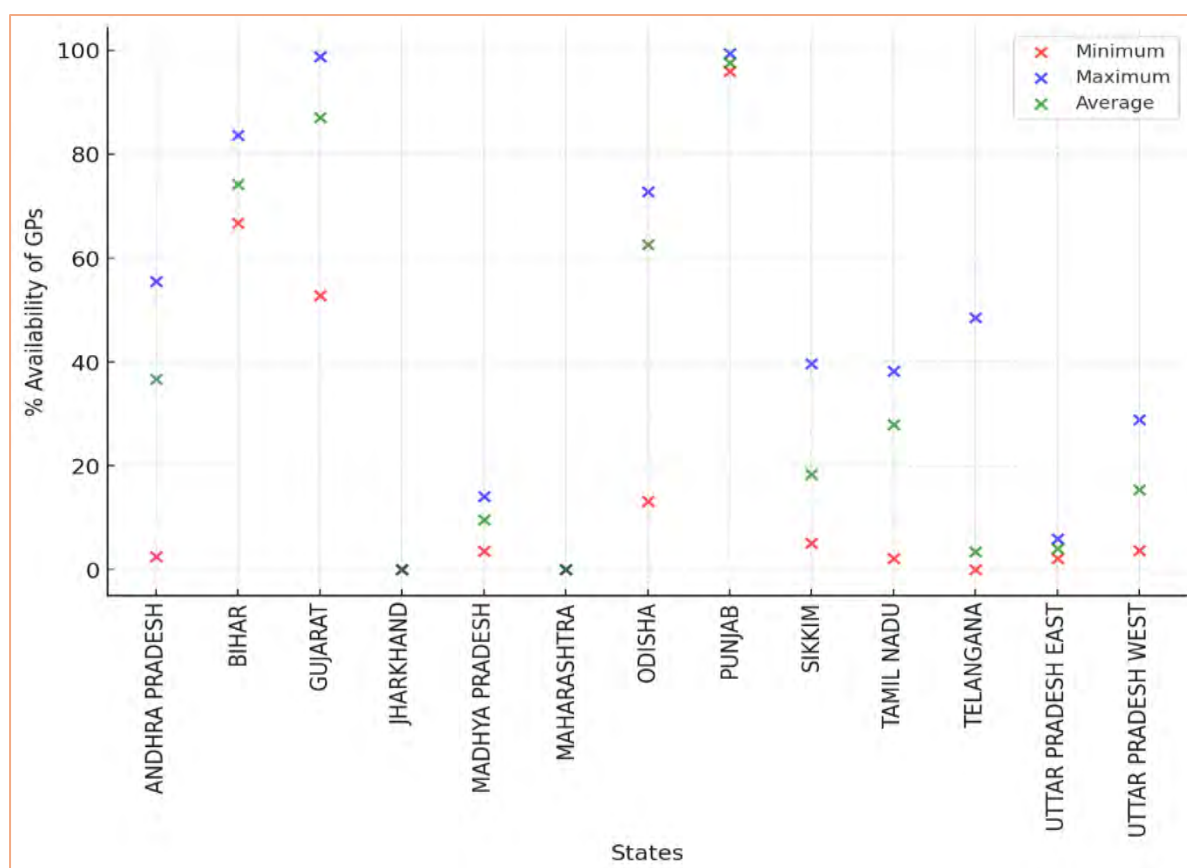
We analysed the GP Monthly Availability Report [showing network availability in Optical Network Terminal (ONT) at GP] for Phase-I from March 2023 to July 2024 and found that BSNL did not meet the prescribed availability target in any state/circle (detailed in **Annexure 4.1**). In 25 states/circles, availability fell below 70 *per cent* and in the remaining seven states/circles⁴⁸, availability ranged from 35.9 *per cent* to 97.58 *per cent* necessitating penalty deductions.

Chart-4.1: BharatNet Phase-I Monthly GP Availability (in *per cent*) for Mar 2023-Jul 2024



We analysed the GP Monthly Availability Report of all three models of Phase-II from June 2023 to July 2024. In the CPSU-led Model [Madhya Pradesh, Uttar Pradesh (East), Uttar Pradesh (West), and Sikkim], performance was dismal, with an average monthly GP ONT availability of only 11.84 *per cent*, with the lowest availability recorded in Uttar Pradesh (East) at 4.03 *per cent*. The State-led Model performed relatively better, though it remained below the prescribed threshold. Gujarat was a notable exception by achieving GP availability ranging from 52.79 *per cent* to 98.71 *per cent*. Under the Private-led model, Punjab met the performance benchmark, recording monthly availability between 95.95 *per cent* and 99.33 *per cent*, while Bihar's availability ranged from 66.75 *per cent* to 83.62 *per cent*, falling short of the 95 *per cent* target. Thus, only Gujarat and Punjab could achieve the benchmark of 95 *per cent*. Although Bihar did not achieve the prescribed performance benchmark, it ranked third in terms of GP ONT availability among the States covered under Phase-II (the performance of Gujarat, Punjab and Bihar is discussed in Case Studies 4.1 and 4.2).

⁴⁸ These states are not included in the 25 Circles where availability is less than 70 *per cent*.

Chart-4.2: BharatNet Phase-II Monthly GP Availability (in per cent)- June 2023-July 2024

Our further analysis of Block Monthly Availability Report [showing network availability by Optical Line Terminal (OLT) at Block] for Phase-II of BharatNet project in different models for the period April 2024 to July 2024, revealed that the network availability remained below the benchmarks at the block-level. In the CPSU-led Model, none of the three states/four circles under BSNL achieved even 70 per cent availability. In the State-led Model, the monthly availability report of OLTs was not accessible in the BBNL central NOC due to incomplete integration with State NOCs. Under the Private-led Model, only Punjab exceeded 70 per cent for all OLTs.

The Ministry stated (March 2025) that as per agreement, SLAs and penalties are calculated GP wise/ Block wise on monthly basis not on overall GP monthly availability of a Circle/State. It was also stated that penalty of ₹34.77 crore has been deducted from BSNL claims. The Ministry attributed the reasons for lower uptime to several factors, such as OFC damage due to other development activities, the linear network design of the connectivity causing isolation of equipment when the OFC is damaged and the lack of electricity connections in many GPs etc. It also stated that under the ABP the PMA is now responsible for operating and maintaining the network while adhering to strict SLAs to ensure higher reliability.

While we acknowledge the constraints, we are of the view that the monthly availability reported at Circle/State level represents the average of the availability of individual GPs in that Circle/State and reflects the aggregated performance of GPs within that Circle/State. We

noted that in five Circles {Haryana, Himachal Pradesh, Jharkhand, NE-I (Meghalaya, Tripura and Mizoram) and NE-II (Manipur)} no penalty was recovered, even though the monthly network availability in these States was lower than the threshold levels (70 *per cent* or 90 *per cent*) during March 2023 to July 2024 as detailed below (**Table 4.1**) which indicates inadequate enforcement of the penalty provisions:

Table 4.1

State Name	Monthly availability range (in <i>per cent</i>)
Haryana	14.58 to 49.92
Himachal Pradesh ⁴⁹	77.6 to 87.55
Jharkhand	16.54 to 37.74
Manipur	3.79 to 15.09
Meghalaya	6.97 to 11.31
Mizoram	24.22 to 38.5
Tripura	42.03 to 60.13

The Ministry subsequently stated (November 2025) that the downtime penalty is being deducted by BSNL as per Terms and Conditions of the respective Agreement/RFP. It was further stated that the State Network Operation Centres (S-NOCs) in five States i.e. Gujarat, Odisha, Jharkhand, Telangana and Tamil Nadu has been integrated with Central NOC and is operational.

However, no details of recovery were furnished for the five circles where availability fell below the prescribed thresholds. Further, integration of the remaining three State NOCs with the Central NOC is yet to be completed, which limits monitoring of network performance.

Case Study 4.1 - Gujarat: Good practice in service delivery

Gujarat attributed its improved operational performance to several institutional measures. Firstly, OLTs at the Blocks were relocated from BSNL exchanges to telco-grade shelters equipped with independent electricity connections, air conditioning and battery backups. Secondly, installation of State Electricity Board (SEB) meters ensured stable power supply at GP level. Thirdly, awareness initiatives with village heads (Sarpanch) helped to discourage avoidable power disconnections. Fourthly, the State promoted the use of "Call Before You Dig" app among field teams, which facilitated coordination among public agencies and reduced incidents of fibre cuts. In addition, regular fibre route monitoring by Project Implementing Agency (PIA) and First Response Time (FRT) teams at the block level was undertaken to strengthen network maintenance.

⁴⁹ Under CPSU-led model, BSNL was required to maintain 98 *per cent* network availability. In the case of Himachal Pradesh, monthly availability ranged between 77.6 *per cent* and 87.55 *per cent*, attracting penalty ranging from 45 to 55 *per cent*.

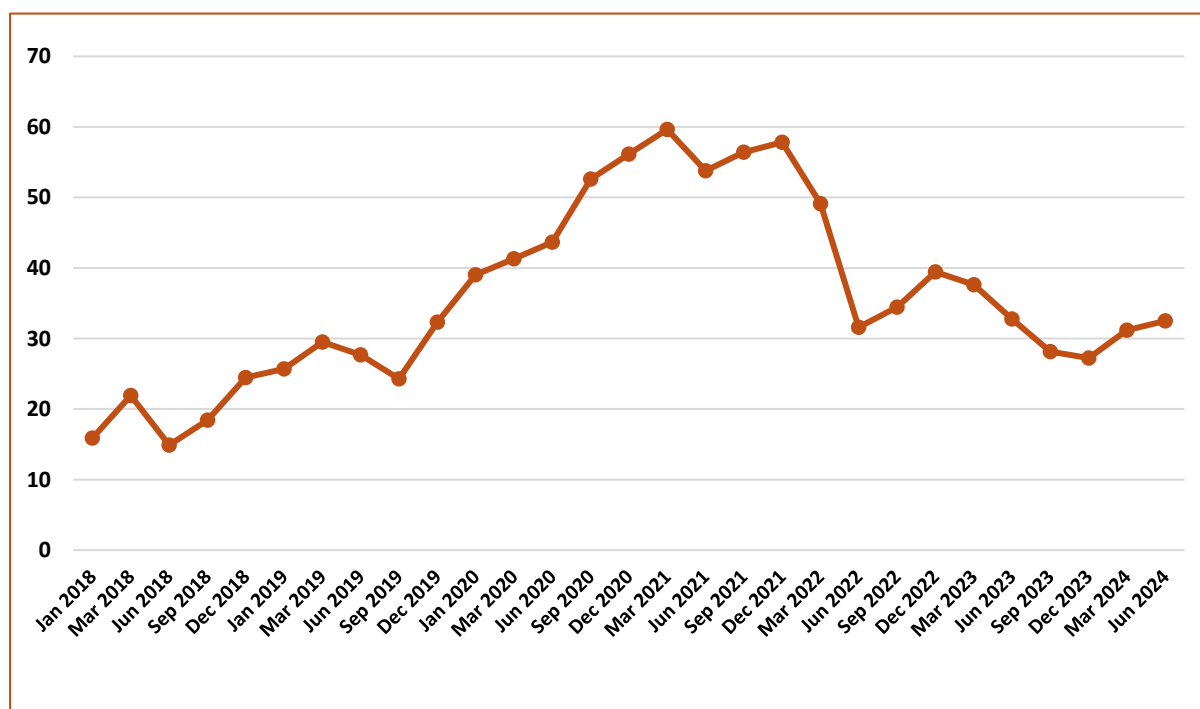
Case Study 4.2 - Punjab and Bihar: Good practice

In Punjab and Bihar, the work was awarded on turnkey basis to Project Implementing Agencies (PIAs) for implementation along with O&M for seven years (one year warranty plus six year O&M). Further, comprehensive documentation including GIS mapping and As Build Diagram with geo-coordinates was maintained which facilitated in effective O&M and adequate power supply/back up at GPs. After commissioning the network at GP, the O&M was immediately taken over by the respective PIAs contributing to improved network availability.

4.2.2 Operational Gram Panchayats

One of the key indicators is Operational GPs i.e. the percentage of service-ready Gram Panchayats that provided uninterrupted internet services. We found that the operational GPs showed an increasing trend from January 2018 to March 2021, reaching a peak at 59.63 *per cent*⁵⁰ as a percentage of GPs that were made service ready. Our analysis of the data showed that performance thereafter was uneven (**Chart 4.3**). Although more than 50 *per cent* of service-ready GPs remained operational between September 2020 and December 2021, the percentage fell sharply from 57.84 *per cent* in December 2021 to 27.22 *per cent* in December 2023. Further, as of November 2025, only 33.20 *per cent* of the GPs connected under the project were operational indicating a significant and sustained deterioration in service delivery.

Chart-4.3: Operational GPs (in *per cent* of Service Ready GPs)



⁵⁰ Highest percentage of Operational GPs achieved between January 2018 to July 2024.

We conducted physical verification (December 2023 to February 2024) in 131 GPs⁵¹ across nine states/circles/UT. Out of a total of 131 GPs, 65 GPs were found non-operational due to fibre cuts, power disruptions etc. In Lakshadweep, although 10 GPs were planned to be connected through VSAT under Satellite mode, none was commissioned.

The Ministry attributed (December 2024) the poor network availability to factors such as simultaneous implementation of various projects by other Government of India Departments (e.g. Jal Jeevan Mission) resulting in frequent cable cuts and dependence on State power infrastructure. The Ministry further elaborated (March 2025) that the low percentage of operational GPs was due to multiple factors including low availability of power in rural areas resulting in deep discharge of batteries, linear network design, access issues to GP offices and use of BSNL existing fibre with expired life. It also stated that these challenges have been addressed under ABP.

Ministry's reply may be viewed in the light of the fact that the cited constraints were known at the planning stage but were not adequately addressed underscoring persistent deficiencies in network availability. Further, physical verification confirmed significant non-operational GPs.

Further analysis of Network Management System (NMS) data for the period January 2024 to July 2024 revealed that the primary contributors to low operational performance, measured in terms of downtime, were fibre cable faults or cuts, which accounted for approximately 48 *per cent* of the total downtime, followed by equipment and power-related faults, contributing about 26 *per cent*.

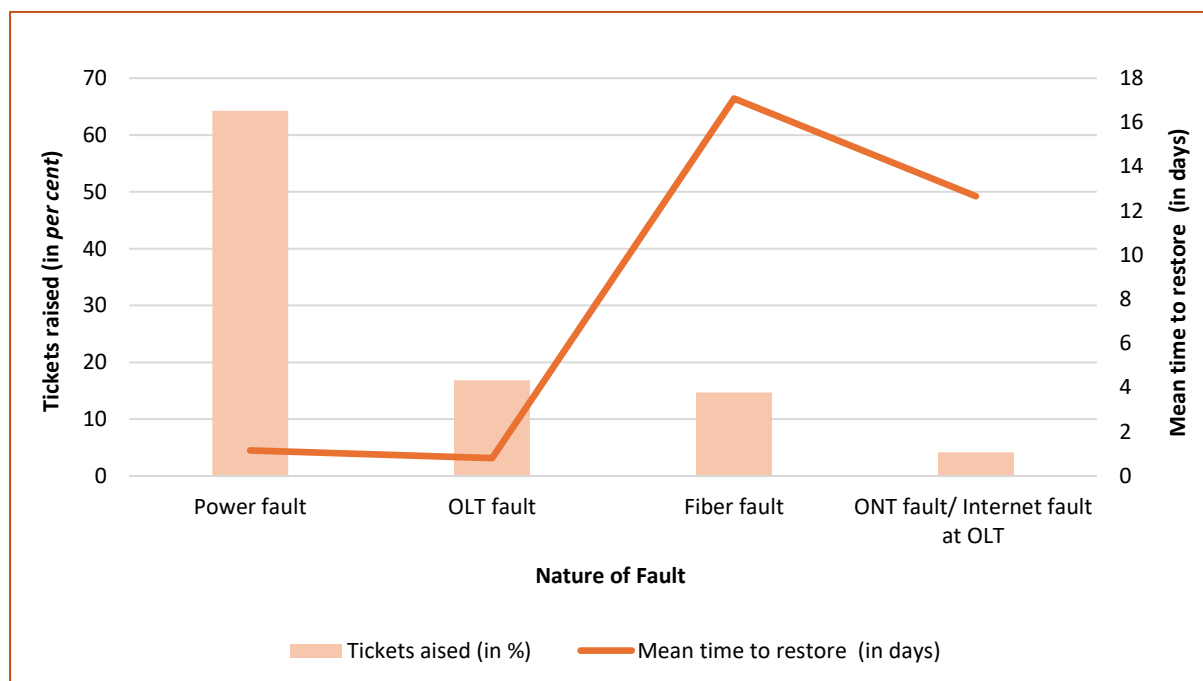
We also reviewed Trouble Ticket (TT) data for the period August 2023 to July 2024 to assess delays in fault resolution. During the 12 months under review, a total of 41.77 lakh TTs were closed, while 1.82 lakh TTs remained unresolved as of 31 July 2024. Although 87.28 *per cent* of faults were rectified within 24 hours, this was below the prescribed benchmark of more than 90 *per cent*. Further, 94.46 *per cent* of faults were resolved within three working days, against the requirement of at least 99 *per cent*.

Further, the power faults constituted the largest share of reported faults (64.29 *per cent*), followed by equipment faults (OLT/ONT) (21 *per cent*) and fibre-related faults (14.71 *per cent*). However, despite their relatively lower share in the total number of faults, fibre-related faults accounted for a higher share of downtime, owing to significantly higher Mean Time to Restore (MTTR). MTTR for fibre faults was 17 days, compared to 13 days for ONT faults and one day for OLT/power-related faults. We further noted an overall increase in MTTR from 2.62 days in August 2023-September 2023 to 5.64 days in April 2024-May 2024 (**Chart-4.4**). There were significant geographical variations, with Jammu & Kashmir maintaining MTTR within 24 hours while in Chandigarh MTTR was approximately 22 days.

⁵¹ We physically inspected 131 GPs spread over nine States/UTs of Assam, Andhra Pradesh, Bihar, Gujarat, Haryana, Lakshadweep, Sikkim, Uttar Pradesh (W) and Tamil Nadu.

Failure to restore faults in a timely manner has led to increased downtime, customer dissatisfaction and higher O&M costs affecting utilisation and revenue generation.

Chart-4.4: Mean time to Restore



The Ministry stated (November 2025) that the ABP introduces ring-based IP-MPLS technology, digital monitoring of OFC laying, Remote Fiber Management Systems, smart racks, dedicated power connections at GPs and third-party validation to address utilisation, O&M and reliability gaps observed in earlier phases, with the objective of improving network uptime and operational GPs.

The corrective action envisaged under ABP can be validated in subsequent audit.

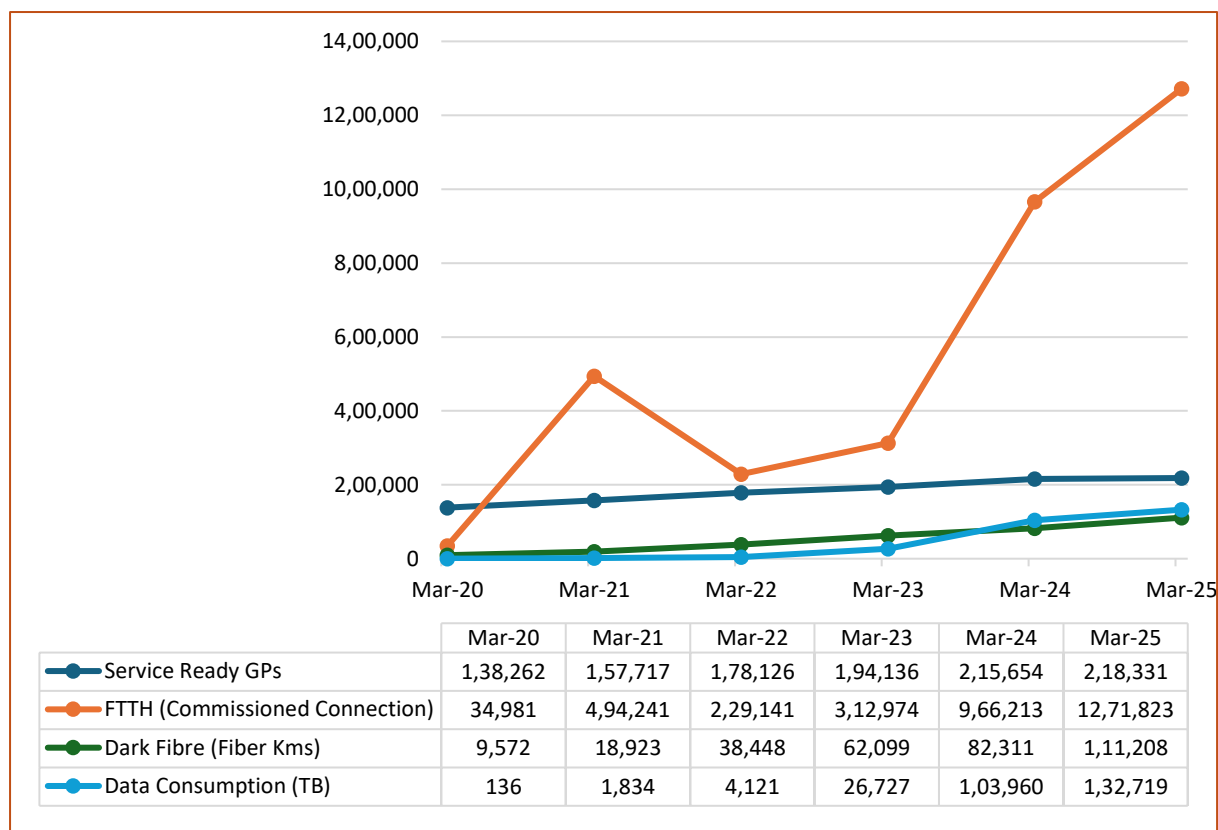
4.3 Utilisation

BharatNet was conceived as a self-sustaining project, where operation and maintenance expenses were to be met from the revenue generated through its services. To broad base its revenue streams, customer satisfaction was critical. Regular maintenance and speedy resolution of service disruptions, therefore, become central to BharatNet to achieve its objective of providing non-discriminatory access to all broadband service providers. This para examines the extent to which BharatNet's objective of becoming self-sustaining has been realised and highlights deficiencies that undermine the project's sustainability.

4.3.1 Utilisation: Performance against metrics

We measured the performance of BharatNet on utilisation of infrastructure against the benchmarks: (i) Fibre-to-the-home connections (FTTH) (ii) Bandwidth utilisation and (iii) Leasing of dark fibre. **Chart 4.5** depicts the network utilisation trends.

Chart-4.5: Network Utilisation Trends



4.3.1.1 FTTH connections

In accordance with the DCC approval (June and December 2019), minimum five FTTH connections⁵² were to be provided in every Gram Panchayat (in 77,115 GPs). Against the minimum target of 3.85 lakh FTTH connections, 4.94 lakh FTTH connections (March 2021) were provided. During the one-year period (2021) when the Government, in order to encourage use of BharatNet Infrastructure permitted free internet to Government agencies, the number of connections increased from 34,981 (March 2020) to 4,94,241 (March 2021). A significant number (61.7 per cent) of users of FTTH were government agencies. However, after the offer was withdrawn the connections dropped to 2,29,144 (March 2022).

The Union Cabinet approved the BharatNet Udyami Model (BNU) in August 2023, envisaging the involvement of local entrepreneurs for providing last-mile connectivity (FTTH connections to households) on a revenue-sharing basis with BSNL. BharatNet has provided 9.66 lakh FTTH connections (March 2024) attributed to BharatNet Udyami Model (BNU). We conducted physical verification in 131 GPs⁵³ across nine States and found that no FTTH connections were provided in these GPs⁵⁴.

⁵² Connections were to be provided to Government Institutions (Police Stations, Public Health and Wellness centers, Schools, Anganwadi etc.); additional FTTH connections to individual homes on demand.

⁵³ We physically inspected 131 GPs, spread over nine States/UTs of Assam, Andhra Pradesh, Bihar, Gujarat, Haryana, Lakshadweep, Sikkim, Uttar Pradesh (W) and Tamil Nadu.

⁵⁴ Connections were not provided in these GPs through ONT.

The Ministry stated (November 2025) that as of 03 November 2025, BSNL had commissioned 12,18,778 FTTH connections with increase of over 26 *per cent* between March 2024 and November 2025. Regarding physical verification conducted by audit in 131 GPs, it was stated that under the Utilisation Agreement (April 2025), 1.5 crore FTTH connections are to be provided nationwide.

The Ministry's reply does not address that the growth in 2020-21 was mainly driven by incentives and declined sharply once the free-internet offer ended. Further, referring to future Utilisation Agreement targets does not explain the utilisation gaps during the period examined.

4.3.1.2 Bandwidth utilisation

In Phase-I, each GP was to be provided with 100 Mbps bandwidth; this was scalable to one Gbps in Phase-II. Since all customers at GPs may not be using internet services simultaneously, the internet leased line bandwidth at the Block level is provisioned with a contention ratio of 1:10 - i.e., one-tenth of the total bandwidth subscribed by all customers. For a conservative estimate, audit considered 100 Mbps per GP to compute the total installed capacity and one-tenth of this total was taken as the available capacity. Our analysis revealed (**Table 4.2**) that, as of November 2025, only 17.91 *per cent* of the available bandwidth was actually utilised in the service-ready GPs.

Table 4.2

Sl. No.	Bandwidth utilisation of BharatNet Infrastructure capacity (November 2025)	
1	Total Service Ready GPs	2,18,910
2	Aims to provide capacity at every GP	100 Mbps
3	Total Bandwidth capacity (1*2)	2,18,91,000 Mbps
4	Available Bandwidth capacity (after contention ratio i.e. 1/10th)	21,89,100 Mbps
5	Bandwidth usage	3,92,141 Mbps
6	Percentage Bandwidth usage $\{(5*100)/4\}$	17.91 <i>per cent</i>

Source: BBNL weekly report -November 2025 and Telecom Commission note December 2016

The low level of utilisation indicates that BBNL did not effectively promote BharatNet through marketing initiatives such as media advertisements, roadshows, and display boards, despite the explicit requirements outlined in the MoU (February 2014) between USOF and BBNL. The poor utilisation may also be attributable to deficient operational performance (Para 4.1 and Para 4.2).

4.3.1.3 Leasing of dark fibre

Leasing of dark fibres⁵⁵ denotes leasing of BharatNet Optical Fibre Cable (OFC) to individual users without internet services. Being a key revenue stream, it is crucial to the project's self-sustainability.

To utilise BharatNet Infrastructure and provide broadband services in rural areas, BBNL organised (November 2017) a seminar in New Delhi with participation from Telecom Service Providers (TSPs) and Internet Service Providers (ISPs). Four major TSPs, Reliance Jio Infocom Ltd (RJIO), Bharti Airtel Ltd (Airtel), Vodafone India Ltd (Vodafone) and Idea Cellular Ltd (Idea) expressed (November 2017) willingness to utilise the network and paid advances aggregating ₹19.38 crore for utilisation of dark fibre/bandwidth services to BBNL. Audit observed that out of total advance amount of ₹19.38 crore, RJIO, which had deposited the highest advance of ₹14.22 crore, did not utilise BharatNet services due to BBNL's inability to commit network availability at 99.5 *per cent*. Consequently, the entire advance was refunded (July 2021). Airtel, Vodafone and Idea utilised BharatNet services.

The Ministry acknowledged the audit's contention and stated (March 2025) that the Cabinet approval (October 2011) did not provide funds for O&M activities. Dedicated O&M funding was approved only in July 2017. It further noted that the 2014 Agreement between USOF and BBNL prescribed 95 *per cent* network availability per node, and therefore SLA levels above 99 *per cent* for TSPs were not feasible in a linear topology. The said challenge has been addressed under ABP, which envisages SLA-based O&M for 10 years.

Measures proposed under the ABP are prospective in nature and therefore do not address the shortfalls identified during the audit period.

We found instances where dark fibre availability was not leased out despite requests. For instance, in Andhra Pradesh, seven Internet Service Providers requested for 2,792 kilometres of dark fibre but the State Implementing Agency, APSFL, did not meet the requests. We noted that BBNL State Unit also requested APSFL in August 2022 to facilitate the leasing process; yet no action was taken, nor were valid reasons provided to us as of March 2025.

Similarly, in Gujarat, multiple requests for dark fibre leasing were received between May and November 2020. But the Gujarat SIA, Gujarat Fibre Grid Network Limited (GFGNL), was unable to proceed in the absence of an approved fibre leasing policy. GFGNL clarified in February 2024 that its leasing policy was finalized in November 2021 and feasible routes were delivered, but we noted no progress.

The Ministry stated (November 2025) that as per BBNL Utilisation report, as on 15 September 2025, 2,665 fibre km has been leased out in Andhra Pradesh and 3,180 fibre km has been leased out in Gujarat. Further, leasing of dark fibre is done as per demand of dark fibre.

⁵⁵ Dark fibres, also known as unlit fibres, are already laid fibres but remain unused for leasing out to TSPs.

While Audit notes the progress made in leasing of 2,665 km and 3,180 km dark fibre in Andhra Pradesh and Gujarat respectively, timely action could have enabled better utilisation of BharatNet infrastructure.

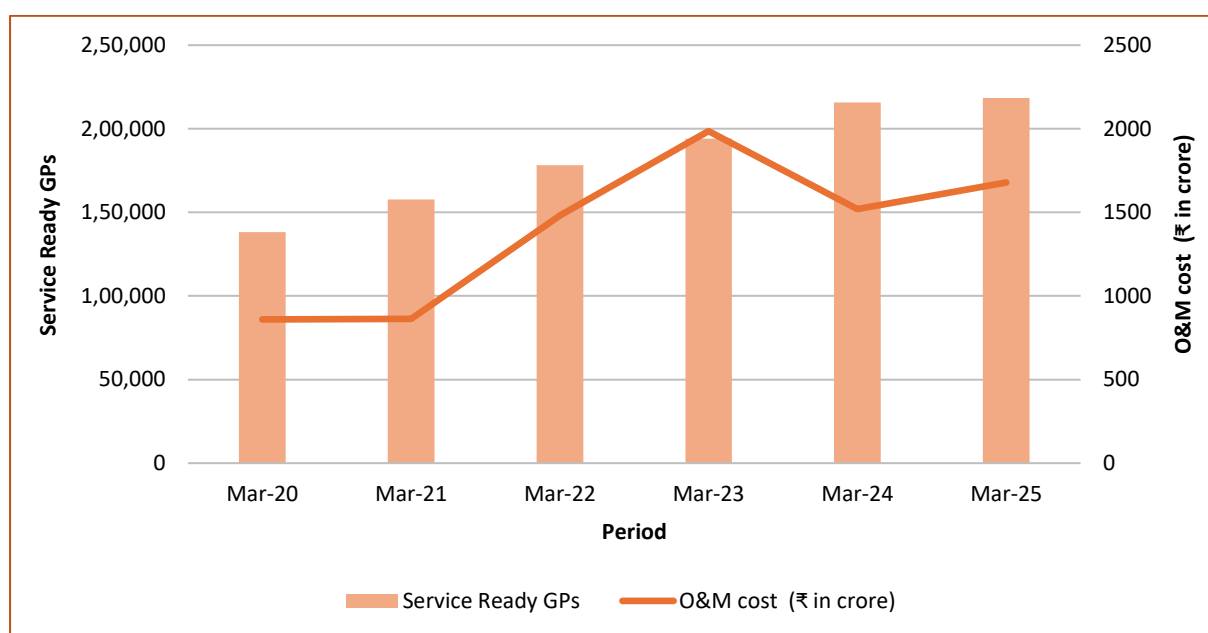
4.4 Impact of poor utilisation on self-sustainability

At the time of approval of Phase-II, the Cabinet envisaged (2017) that BharatNet would attain operational self-sufficiency within five years of its inception. The project was expected to become OPEX-neutral, meaning that its recurring O&M ⁵⁶ costs would be met entirely from the revenue generated by the project. We, however, observed that the anticipated revenue generation remained significantly below the projections resulting in non-achievement of the objective of operational self-sufficiency.

Rising O&M costs

As the number of service ready GPs increased, the O&M costs of the BharatNet infrastructure rose from ₹859.70 crore (**Chart-4.6**) in FY 2019-20 to ₹1,679 crore in FY 2024-25.

Chart-4.6: Operation & Maintenance Cost



While revenue increased from ₹0.32 crore in 2016-17 to ₹40.75 crore in 2021-22, it declined sharply to ₹8.45 crore in 2022-23 before partially recovering to ₹20.30 crore in 2024-25. During the period 2016-17 to 2023-24, BharatNet revenue covered only 0.11 per cent to 2.75 per cent of its O&M expenses, far below the intended self-sustaining model (**Table-4.3**). This persistent financial underperformance is a matter of concern. We noted that the MoU between BBNL and USOF had a provision for marketing, but no such activity was taken up by BBNL. The absence of a structured marketing strategy, coupled with inadequate service delivery, contributed significantly to the project's inability to generate sufficient revenue.

⁵⁶ O&M cost includes maintenance (AMC) cost, fibre leases charges, space and infra charges etc.

Table-4.3

Financial Year	Revenue Forecast (₹ in crore)	Revenue generated (₹ in crore)	O& M Expenses (₹ in crore)	Revenue as per cent of Forecast	Revenue as per cent of O&M
2016-17	0.42	0.32	61.57	76.19	0.52
2017-18	44.66	0.35	247.30	0.78	0.14
2018-19	155.19	0.57	519.96	0.37	0.11
2019-20	368.78	22.14	859.70	6.00	2.58
2020-21	742.11	23.46	862.16	3.16	2.72
2021-22	1,252.30	40.75	1,482.19	3.25	2.75
2022-23	1,865.37	8.45	1,985.90	0.45	0.43
2023-24	NA	20.92	1,518.87	-	1.38
2024-25	NA	20.30	1,679.00	-	1.21

The Ministry stated (November 2025) that in FY 2024–25, BBNL earned ₹23.10 crore from network utilisation, while BSNL realized about ₹400 crore in revenue from the FTTH services. Additionally, around 1.4 lakh FTTH connections were provided under the State-led model. With timely implementation and adherence to SLAs, BharatNet’s annual revenue potential is expected to grow manifold.

We noticed that as per BBNL Annual Report 2024-25, revenue receipt during FY 2024-25 was only ₹20.30 crore. Further, the revenues cited by the Ministry (₹400 crore) accrued to BSNL and not to BBNL and therefore did not contribute to its operational self-sufficiency. Consequently, the objective of achieving operational self-sustainability within five years, as envisaged in the Cabinet approval (July 2017), remained unachieved.

4.5 Conclusion

BharatNet has succeeded in creating a large-scale rural digital infrastructure; however, the utilisation and operational performance of the network has not kept pace with its physical expansion. Partnerships with Telecom Service Providers did not mature, as the network could not meet service availability requirements.

Utilisation indicators—FTTH connections, bandwidth consumption and dark fibre leasing remained below expectations and the percentage of operational GPs declined to one-third of service-ready GPs. Low uptime, frequent fibre cuts, power disruptions and slow fault resolution contributed to poor customer experience.

Rising O&M costs and low revenue realisation prevented the project from attaining operational self-sustainability, with revenue covering only a small fraction of operating expenses.

At the same time, examples from Gujarat, Punjab and Bihar demonstrated that coordinated power provisioning, proper documentation, turnkey O&M accountability and regular fibre route monitoring can yield better operational outcomes.

The Government has acknowledged these constraints and attempted to address the issues under the ABP, with SLA-based O&M, ring topology, greater FTTH penetration and unified responsibility for implementation and maintenance. The impact of these corrective measures can be assessed once the ABP is executed.

4.6 Recommendations

4.6.1 Accelerate Network Completion and utilisation

- i. Ensure integration of state and central NOCs by implementing consolidated monitoring frameworks.*
- ii. Prioritize completion of acceptance testing across all GPs before declaring project milestones as achieved.*
- iii. Consider launching a targeted awareness and marketing campaigns to promote BharatNet services to rural users, MSMEs, public agencies, and local businesses.*
- iv. Consider introducing targeted incentives to promote anchor tenancy by key government departments such as health, education, and agriculture. Additionally, tiered pricing models for first-time users, with subsidized rates for priority sectors like agriculture, and education may be considered to encourage utilisation and enhance financial sustainability.*
- v. Ensure that all GPs are operational and properly maintained to enhance utilisation.*

4.6.2 Enhance Service Quality

- i. Deploy dedicated maintenance teams in each State with strict Service Level Agreements (SLAs) to ensure high uptime.*
- ii. Implement predictive maintenance and AI-based fault detection systems to reduce downtime and optimize network operation.*
- iii. Deploy real-time dashboards to monitor data usage, uptime and service quality at the Gram Panchayat (GP) level and link partner incentives to key performance metrics such as uptime (above 95 per cent), bandwidth utilisation, and customer satisfaction.*

4.6.3 Strengthen Long-Term Sustainability

- i. Develop a self-sustaining revenue model, including monetization of dark fibre and leasing of excess network capacity to telecom providers.*

- ii. *Explore BOOT (Build-Own-Operate-Transfer) or DBOM (Design-Build-Operate-Maintain) model for ABP to ensure long-term sustainability and attract private sector participation and Viability Gap Funding (VGF) linked to clearly defined service-level milestones.*

4.6.4 Align Implementation Strategy with Digital Inclusion Goals

- i. *ABP should move beyond mere infrastructure deployment and focus equally on community awareness, and Service delivery at the last mile by engaging non-telecom partners (NGOs, SHGs, CSCs), thereby addressing the persistent issue of underutilisation and ensuring that the socio-economic benefits envisioned under BharatNet are fully realized.*

Chapter V

Governance

CHAPTER V

Governance

BharatNet is India's flagship rural broadband project, aiming to connect about 2.5 lakh Gram Panchayats. To execute this unprecedented project, the Government in 2012 created Bharat Broadband Network Limited (BBNL) as a Special Purpose Vehicle (SPV). However, BBNL's governance model struggled. BharatNet suffered extensive delays and underutilisation, prompting the government to merge BBNL into the state-run telecom BSNL in 2022. The major governance deficiencies within BBNL that contributed to these outcomes are detailed below:

5.1 Structural Weaknesses

Organizational Capacity

BBNL was ill-equipped from the start to handle a project of BharatNet's scale. The company had a minimal permanent workforce (only 15 staff) and relied heavily on employees on deputation from other telecom PSUs. BBNL suffered from acute leadership gaps during the period from 2019-20 to 2023-24, as key senior executive posts at Level-I⁵⁷ remained vacant in the range of 24 percent to 100 percent and posts at Level-II⁵⁸ remained vacant in the range of 85 percent to 89 percent. Thus, lack of qualified Human Resources at Key managerial and technical positions adversely affected the functioning of BBNL as SPV. This skeletal staffing made it difficult to plan and monitor a nationwide infrastructure rollout. Moreover, key leadership positions were left unfilled or allowed to run on additional charge. For most of its existence, BBNL had no regular full-time Chairman and Managing Director (except for a brief period between February 2019 and October 2022), and Board-level positions like Director (Planning), Director (Operations), and Director (Finance) were never permanently staffed and were operated through additional charge arrangements. Such leadership vacuum and high vacancy rates (up to 100 per cent in some senior technical positions) undermined BBNL's capacity for strategic planning and oversight which are essential for managing a project of BharatNet's magnitude.

Board Independence and Strategic Guidance

As a Government-owned SPV, BBNL's board was expected to guide the project. In practice, it lacked independent oversight – no independent directors were appointed to BBNL's board as required under Companies (Appointment and Qualification of Directors) Rules, 2014. Required committees like the Nomination and Remuneration Committee responsible for identification of Board members/senior management, determining their qualifications and

⁵⁷ Principal General Manager/Sr. General Manager/General Manager.

⁵⁸ Managers.

remuneration was also not constituted. Additionally, BBNL did not formulate a business risk management policy, despite frequent changes in project scope, implementation models and technology choices. The absence of a risk framework meant that emerging issues relating to technology, operational challenges etc. were not proactively addressed.

Coordination Challenges with Multiple Agencies

BharatNet's implementation involved many stakeholders – Central Public Sector units and various State government agencies under a "State-led model." BBNL, as the central coordinating body, struggled to harmonize efforts across these diverse implementers.

The Ministry stated (March 2025) that Cabinet has approved (July 2022) the merger of BBNL and BSNL into single entity. Hence, the posts of CMD and Independent Directors for BBNL are available. Attempts to fill Level-I posts through deputations were unsuccessful, leaving positions vacant. Previous recruitment in 2015 and 2017 brought in 22 and 6 officers respectively, but only 14 remain. No new recruitment has taken place after merger and the current workforce deemed sufficient to meet objectives.

We are of the view that in a multi-agency implementation environment such as BharatNet, the continued manpower shortages and absence of a dedicated leadership and governance structure restricted effective coordination and monitoring.

5.2 Planning and Execution challenges

Focus on Infrastructure Over Services and Operation and Maintenance arrangement

BharatNet's execution initially emphasised the creation of assets, with service delivery mechanism evolving subsequently. BSNL was tasked (October 2017) with O&M, but DCC later observed (June 2019) that BSNL lacked manpower and field presence at the GP level, resulting in inadequate maintenance. Consequently, the maintenance was handed over to the CSC to involve local village level entrepreneurs. However, by 2022 the government reversed this decision and returned O&M to BSNL, citing coordination difficulties with multiple agencies. The service delivery remained unsatisfactory – network uptime at the Gram Panchayat level was dismal, with an average of only 27.22 *per cent* to 59.63 *per cent* of the connected GPs online at any given time during January 2018 to July 2024. Thus, cables were laid, equipment were commissioned but a majority remained non-functional due to maintenance and operational deficiencies, undermining the project's core purpose of providing broadband services.

Missed Deadlines

The Government of India launched the National Optical Fibre Network (later renamed BharatNet) project in October 2011 to provide broadband connectivity to about 2.5 lakh Gram Panchayats (GPs). The project was implemented in two phases—Phase-I for one lakh GPs and

Phase-II for the remaining 1.5 lakh GPs. In April 2016, the scope of Phase-I was revised to 1.25 lakh GPs. The completion timeline for Phase-I was deferred multiple times from March 2014 to March 2015 and then to March 2017. Even by December 2017, when Phase-I was declared “complete”, over 23,000 of the intended GPs were still not connected. As of November 2025, Phase-I was completed. Phase-II, originally scheduled for completion by March 2019, was extended up to 2025. Even after this extension, 92.79 *per cent* of GPs were covered as of November 2025, indicating a persistent shortfall. Some States saw complete breakdowns in execution: for example, Himachal Pradesh and Uttarakhand never progressed in Phase-II due to planning deficiency, forcing 8,700 GPs to be rolled into ABP. Overall, the project’s five-year timeline has stretched into a decade-plus, with goals still unfulfilled.

5.3 Self-Sustaining Model

MoU between USOF and BBNL envisaged that, BBNL will strive to become self-sustaining after five years of its effective date (February 2012), with revenues expected to cover operating costs. This never materialized. The SPV’s operational revenue was minuscule compared to expenses till 2024-25. Thus, it could not become self-sufficient within five years of inception. The reasons were twofold: poor service uptime (if networks are down, they cannot generate revenue) and lack of marketing and commercialization. Notably, although the agreement with USOF included provisions for promoting the network to attract users, BBNL undertook no significant marketing effort.

5.4 Project Monitoring and Quality Control

Instances of, sub-par work quality and lax monitoring were found. For example, in Sikkim significant shortcomings in work quality and project supervision were found, work commenced without requisite approvals and was later halted. Subsequent inspection revealed that quality of work executed was unsatisfactory with substantial gaps in planning, monitoring and acceptance testing.

5.5 TRAI concerns on BSNL’s Role in ABP

The Telecom Regulatory Authority of India (TRAI) had cautioned (2011) that assigning BSNL the role of executing agency could give rise to conflict of interest, distort competition and undermine a level playing field for other service providers, besides diverting BSNL’s focus from its core responsibility of providing telecom service particularly in view of its financial stress.

With the implementation of ABP (2023), BSNL has been designated as the Project Management Agency (PMA) for the programme. In this context, the concerns highlighted by TRAI assume renewed relevance.

No response was received from the Ministry in this regard, as of November 2025.

5.6 Conclusion: Lessons from BharatNet's Underperformance

The underperformance of BharatNet's SPV governance model offers important lessons. A high-stakes, multi-agency project needs a strong central management with adequate authority and resources. In BharatNet's case, BBNL's weak organizational set-up and lack of empowered leadership meant it could not effectively plan or respond to on-ground challenges. Structural inadequacies led to deficiencies in planning and delays in execution, while the focus remained on infrastructure creation rather than delivering quality service. Consequently, a substantial portion of the network remained underutilised or non-operational and the revenue from operations remained negligible in relation to O&M cost.

In 2022, the government recognised these underperformances and decided to merge BBNL into BSNL and dissolve the SPV indicating a tacit admission that the existing governance model needed a reset. Going forward, with ABP placed under a single agency (BSNL), the government has signalled a strategic shift towards more centralised execution.

The Ministry stated (November 2025) that in ABP, a single PMA will manage network creation with milestone-based payments, SLA-linked O&M for 10 years, penalties for delays, and fund flow through CNA accounts to ensure transparency, ring topology with dedicated power backup, Remote Fibre Monitoring Systems and real-time monitoring via Central Network Operations Centre supported by Independent Engineers. BharatNet Udyamis will strengthen last-mile delivery. It was also informed that primary goal of BharatNet is digital inclusion rather than profit generation.

The reply given by the Ministry does not address the deficiencies pointed out by audit. Further, the effectiveness of the measures envisaged in ABP can be assessed in subsequent audit. Moreover, while digital inclusion is a core objective, the Cabinet approval envisaged operational self-sustainability, which remains unrealised.

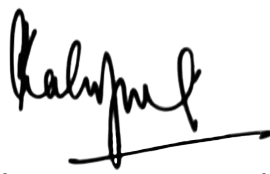
5.7 Recommendations

Strengthen Governance and Institutional Design for ABP

- i. ***The executing agency (BSNL) for ABP should be supported by a specialized division with independent leadership, separate financials, adequate institutional capacity and clearly defined performance KPIs to ensure focused implementation and operational efficiency. Governance should be strengthened through the oversight by independent directors.***
- ii. ***The legacy concerns raised by TRAI, such as conflict of interest, lack of competitive neutrality and distraction from BSNL's core telecom mandate need to be proactively addressed by legally separating BharatNet's infrastructure and service provision functions within BSNL.***

- iii. *Ensure PPP based training programs in collaboration with Gram Panchayats and local bodies, supported by certification modules covering fibre maintenance, RFMS operation, and fault localization. Encourage trained local youth and entrepreneurs to take up O&M roles under the BharatNet Udyami Model through performance-linked contracts, fostering employment, accountability and high quality service delivery.*

New Delhi
Dated: 20 July 2026



(KHALID BIN JAMAL)
Director General of Audit
Finance and Communication

Countersigned

New Delhi
Dated: 29 July 2026



(K. SANJAY MURTHY)
Comptroller and Auditor General of India

Annexures

Annexure-3.1
(Refer Para 3.1.2)
Cost cuts in CPSU Model

State/Circle	Assam	MP		Rajasthan		Sikkim		UP(E)		UP(W)		West Bengal
	EPC	EPC	Non-EPC	EPC	Non-EPC	EPC	Non-EPC	EPC	Non-EPC	EPC	Non-EPC	EPC
No of GPs	1,217	5,022	5,832	1,136	535	42	82	6,123	17,032	2,138	2,169	593
Total CAPEX as per BSNL DPR (in crore)	398.25	1,548.11	2,060.82	450.47	209.92	34.93	148.49	1,163.57	2,939.19	376.53	378.72	298.10
CAPEX recommended by SC/BBNL (in crore)	308.00	1,308.01	1,553.10	362.64	172.35	25.10	43.82	874.89	2,598.96	257.26	266.33	185.01
CAPEX recommended by PAC (in crore)	293.00*	1,285.75 [#]	1,553.10	362.64	172.36	24.49*	42.44*	860.58 [#]	2,598.96	257.23	266.29	182.40*
TC approved CAPEX (in crore)	293.00	1,285.75	1,553.10	362.64	172.36	24.49	42.44	860.58	2,598.96	257.23	266.29	182.40
Tender Discovered cost (in crore)	492.00	1,930.87	1,505.00	488.34	146.55	30.79	51.98	1,208.76	2,432.68	353.48	331.17	320.80
Variation from TC approved cost vis-vis Tender discover cost (in percentage)	67.92	50.17	-3.10	34.66	-14.97	25.72	22.48	40.46	-6.40	37.42	24.36	75.88
Deduction in approved funding by TC in comparison to BSNL DPR (in percentage)	26.43	16.95	24.64	19.50	17.89	29.89	71.42	26.04	11.58	31.68	29.69	38.81

*Underground Fibre laying cost including material cost reduced. [#]Administrative cost reduced from @14 per cent to @12 per cent

Annexure-3.2
(Refer Para 3.2.1 and 3.2.2)

Status of service ready GPs under Phase-II BharatNet (as of November 2025)

Model	Name of State	Completion Date/Status	Delay (as of November 2025) (due date March 2019)	Revised Scope (GPs i/c BHQs)	Service Ready GPs (November 2025)	Service Ready GPs (in per cent)	Operational GPs (November 2025)	Operational GP (in per cent)
State Led	Jharkhand	Under Progress	6 Years 08 Months	1,790	1,789	99.94	1,213	67.80
	Andhra Pradesh	March 2024	5 Years	11,254	11,254	100.00	0	0
	Odisha	March 2023	4 Years	3,065	3,065	100.00	1,951	63.65
	Maharashtra	Under Progress	6 Years 08 Months	12,513	9,403	75.14	0	0
	Telangana	Under Progress	6 Years 08 Months	10,787	8,887	82.38	5,442	61.24
	Chhattisgarh	Under Progress	6 Years 08 Months	5,964	5,631	94.41	0	0
	Gujarat	January 2025	5 Years 10 Months	7,847	7,847	100.00	7,224	92.06
	Tamil Nadu	Under Progress	6 Years 08 Months	12,525	10,869	86.77	7,552	69.48
CPSU led (BSNL)	Madhya Pradesh	December 2023	4 Years 09 Months	5,345	5,345	100.00	161	3.01
	UP(E)	Under Progress	6 Years 08 Months	16,933	16,770	99.03	1,899	11.32
	UP(W)	December 2024	5 Years 09 Months	2,175	2,175	100.00	548	25.20

Model	Name of State	Completion Date/Status	Delay (as of November 2025) (due date March 2019)	Revised Scope (GPs i/c BHQs)	Service Ready GPs (November 2025)	Service Ready GPs (in per cent)	Operational GPs (November 2025)	Operational GP (in per cent)
	Sikkim	Under Progress	6 Years 08 Months	136	0	0	0	0
Private led (BBNL)	Punjab	March 2021	2 Years	4,763	4,763	100.00	4,659	97.82
	Bihar	January 2024	4 Years 10 Months	2,849	2,849	100.00	2,200	77.22
Satellite		Under Progress	6 Years 08 Months	5,166	5,034	97.44	439	8.70
			Total	1,03,112	95,681	92.79	33,288	34.79

Annexure-4.1
(Refer Para 4.2.1)

Monthly GP Node Availability Report (Phase-I) (in per cent)

STATE NAME	03-2023	04-2023	05-2023	06-2023	07-2023	08-2023	09-2023	10-2023	11-2023	12-2023	01-2024	02-2024	03-2024	04-2024	05-2024	06-2024	07-2024
ANDAMAN AND NICOBAR ISLANDS	77.15	75.80	72.50	71.05	64.38	65.34	64.88	69.87	72.1	73.73	82.29	79.47	80.18	78.38	80.30	76.24	70.66
ANDHRA PRADESH	43.64	45.03	39.74	36.08	32.29	33.52	28.48	24.38	19.23	22.46	26.07	27.20	27.54	29.85	33.66	33.52	36.40
ARUNACHAL PRADESH	8.32	9.68	11.59	7.76	4.31	3.40	3.40	4.00	11.78	12.14	15.76	9.72	8.53	9.76	10.98	15.77	22.07
ASSAM	36.44	31.97	31.79	30.85	32.33	31.73	30.25	30.71	32.27	31.97	34.28	35.52	36.51	34.12	34.59	32.10	33.31
BIHAR	26.91	27.29	26.95	25.13	22.44	19.60	17.60	15.39	13.88	13.22	14.68	17.89	18.77	17.24	18.15	18.62	18.14
CHANDIGARH	79.06	85.21	90.66	85.53	82.64	67.38	61.36	47.25	35.90	43.47	54.27	66.68	72.91	68.27	78.07	81.38	81.87
CHHATTISGARH	38.65	37.63	37.53	38.11	37.29	37.05	35.96	37.16	39.04	38.64	38.94	40.30	38.95	40.02	40.43	36.91	34.42
GUJARAT	62.87	63.82	63.71	60.53	60.59	60.25	60.45	64.97	62.71	63.27	64.57	65.83	66.22	68.02	68.59	65.56	63.45
HARYANA	45.98	49.92	46.72	39.09	29.15	23.04	19.44	16.81	14.58	16.89	19.53	22.98	26.87	30.21	32.26	27.85	29.01
HIMACHAL PRADESH	80.82	83.26	82.71	82.28	82.05	77.60	80.98	81.15	84.51	84.94	86.42	84.52	87.06	87.55	85.88	86.84	86.62
JAMMU AND KASHMIR	67.03	69.60	70.53	74.05	77.75	79.75	78.64	74.35	71.03	70.48	83.91	88.65	90.75	92.88	95.90	96.67	97.17
JHARKHAND	25.78	27.70	25.44	22.99	20.41	17.24	16.92	16.54	18.19	22.78	27.29	29.94	31.84	33.27	35.96	37.58	37.74

STATE NAME	03- 2023	04- 2023	05- 2023	06- 2023	07- 2023	08- 2023	09- 2023	10- 2023	11- 2023	12- 2023	01- 2024	02- 2024	03- 2024	04- 2024	05- 2024	06- 2024	07- 2024
KARNATAKA	54.51	54.01	52.43	51.73	49.57	47.72	46.30	45.58	45.19	48.29	51.45	53.86	54.36	53.53	51.76	52.50	52.44
KERALA	62.09	52.26	54.94	58.41	61.14	59.69	59.90	58.21	58.49	58.03	59.54	60.86	60.61	56.91	55.39	55.84	63.87
MADHYA PRADESH	23.57	17.53	15.44	15.40	14.35	12.42	10.36	8.79	9.35	11.87	13.87	15.92	17.12	17.81	19.33	19.86	19.58
MAHARASHTRA	34.03	31.77	30.08	27.41	25.82	24.26	21.83	19.56	16.64	14.95	15.17	16.08	16.69	16.55	16.33	16.06	15.74
MANIPUR	15.09	13.55	11.27	7.27	6.38	4.88	5.15	5.25	5.11	5.69	5.55	5.30	4.30	3.99	3.79	4.24	6.80
MEGHALAYA	10.64	9.72	11.31	7.44	6.97	9.27	9.69	10.40	10.07	8.22	9.30	10.23	10.30	11.13	10.53	7.47	8.75
MIZORAM	38.50	31.95	30.66	33.02	31.55	24.22	29.05	27.04	33.91	26.59	31.66	26.66	26.03	25.55	36.01	26.25	32.39
NAGALAND	4.81	2.06	1.43	1.34	1.39	0.75	0.61	0.65	0.68	0.73	6.17	0.92	0.53	0.23	6.93	5.96	5.76
ODISHA	45.66	46.66	44.20	41.97	39.81	39.62	40.31	40.35	38.09	36.74	37.51	39.14	37.04	38.76	40.10	38.51	39.29
PUDUCHERRY	88.60	90.35	90.54	90.39	90.95	93.31	91.69	90.59	93.58	94.53	95.68	97.58	96.08	96.12	96.46	92.62	88.24
PUNJAB	60.57	61.74	56.40	49.19	41.21	38.16	33.33	30.03	27.33	29.30	32.13	40.78	46.98	50.64	52.76	52.60	53.67
RAJASTHAN	85.89	85.61	83.48	79.31	74.81	69.00	64.89	61.79	58.16	61.14	65.42	70.15	72.35	72.72	71.77	71.63	71.39
SIKKIM	11.76	6.59	6.36	7.32	7.05	5.74	15.81	21.09	17.27	15.78	15.82	14.37	14.87	12.48	18.4	8.79	4.33
TELANGANA	10.60	9.62	9.07	7.95	6.76	6.16	5.69	5.32	4.99	4.50	3.95	3.43	3.78	4.00	4.04	4.86	4.76
DADRA, NAGAR HAVELI & DAMAN - DIU	37.66	36.47	45.27	57.06	58.24	59.06	58.00	43.13	51.91	40.28	46.73	45.18	45.28	47.64	47.25	35.30	43.90

STATE NAME	03-2023	04-2023	05-2023	06-2023	07-2023	08-2023	09-2023	10-2023	11-2023	12-2023	01-2024	02-2024	03-2024	04-2024	05-2024	06-2024	07-2024
TRIPURA	42.33	42.03	46.04	43.95	49.04	47.09	46.44	46.65	47.34	51.32	53.95	55.32	59.16	57.15	55.96	55.14	60.13
UTTAR PRADESH EAST	20.85	19.54	17.44	15.19	13.66	10.66	8.48	6.47	5.34	5.46	6.70	8.16	9.10	8.74	10.92	10.90	9.92
UTTAR PRADESH WEST	24.31	22.13	17.31	16.01	15.60	12.26	9.97	9.05	8.04	7.41	6.26	7.72	8.97	10.05	11.24	12.80	12.48
UTTARAKHAND	52.35	52.70	52.12	50.95	45.40	44.84	47.87	43.51	33.32	41.02	46.94	49.78	46.97	50.75	54.95	54.68	50.87
WEST BENGAL	75.42	74.3	73.33	73.73	74.42	73.72	72.65	70.32	71.17	72.43	73.24	75.56	75.40	76.63	76.58	75.67	76.19

Glossary	
Acronyms	Description
APO	Advance Purchase Order
AT	Acceptance Testing
BBNL	Bharat Broadband Network Limited
BHQ	Block Headquarters
BSNL	Bharat Sanchar Nigam Limited
CAPEX	Capital Expenditure
CMD	Chairman and Managing Director
CPSU	Central Public Sector Undertaking
CVC	Central Vigilance Commission
DCC	Digital Communications Commission
DoT	Department of Telecommunications
DPR	Detailed Project Report
EPC	Engineering, Procurement, and Construction
FLM	First Level Maintenance
FMA	Field Maintenance Agency
GFR	General Financial Rules
GIS	Geographic Information System
GP	Gram Panchayat
GPON	Gigabit Passive Optical Network
GST	Goods and Services Tax
IP-MPLS	Internet Protocol - Multiprotocol Label Switching
ISP	Internet Service Provider
MIS	Management Information System
MoU	Memorandum of Understanding
MTTR	Mean Time To Repair

Acronyms	Description
NER	North East Region
NIT	Notice Inviting Tender
NOC	Network Operations Center
NOFN	National Optical Fibre Network (later renamed BharatNet)
O&M	Operations and Maintenance
OFC	Optical Fibre Cable
OLT	Optical Line Terminal
ONT	Optical Network Terminal
OPEX	Operating Expenditure
PIA	Project Implementing Agency
PMA	Project Management Agency
PMU	Project Management Unit
PPP	Public-Private Partnership
PSU	Public Sector Undertaking
SIA	State Implementing Agency
SLA	Service Level Agreement
TC	Telecom Commission (later renamed Digital Communication Commission)
TSP	Telecom Service Provider
TT	Trouble Tickets
USOF	Universal Service Obligation Fund (later renamed Digital Bharat Nidhi)
VSAT	Very Small Aperture Terminal

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