

Demand for Grants 2022-23 Analysis

Telecommunications

The Department of Telecommunications under the Ministry of Communications is responsible for policy, licensing, monitoring, regulation, research, and international co-operation in the field of telecommunications. The Department administers several Public Sector Undertakings involved in providing telecommunication services, consultancy, and equipment manufacturing. This note presents the allocation to the Department in 2022-23 and trends in expenditure over the last few years, and discusses some of the issues in the sector.

Overview of Finances

Expenditure^{1,2}

In 2022-23, the Department has been allocated Rs 84,587 crore, an increase of 138% over revised estimates of 2021-22. This significant increase is mainly on account of capital infusion in BSNL.

Table 1: Allocation to the Department of Telecommunications (in Rs crore)

| | 2020 -21 | 2021 -22 BE | 2021 -22 RE | 2022 -23 BE | % change (21-22 RE to 22-23 BE) |
|----------------|---------------|----------------|----------------|----------------|--|
| Revenue | 37,954 | 32,803 | 30,080 | 30,436 | 1% |
| Capital | 4,356 | 25,934 | 5,470 | 54,150 | 890% |
| Total | 42,310 | 58,737 | 35,550 | 84,587 | 138% |

Note: RE: Revised Estimates; BE: Budget Estimates.
Sources: Expenditure Budget; Union Budget 2022-23; PRS.

In October 2019, Union Cabinet had approved a revival plan for BSNL and MTNL.³ The revival plan provides for: (i) capital infusion for allotment of 4G spectrum and (ii) costs to be incurred towards voluntary retirement scheme (VRS). The estimated outlay for the revival plan was Rs 40,983 crore. In addition, the cost for pension, gratuity, and commutation of employees opting for VRS was to be borne by the central government. The capital component of the revival plan comprises Rs 20,410 crore for administrative allotment of 4G spectrum. No allocation towards capital component was made in 2020-21. In 2021-22, the budgeted allocation towards this has been revised down to zero. This explains the decrease in capital expenditure of the department in 2021-22 from the budget stage to the revised stage. In 2022-23, capital infusion in BSNL is estimated to be Rs 44,720 crore, significantly higher than the initially approved amount (Table 2). As per the note to the demands of the Department, provision has been made for 4G spectrum, technology upgradation, and restructuring in BSNL. No allocation has been made towards MTNL.

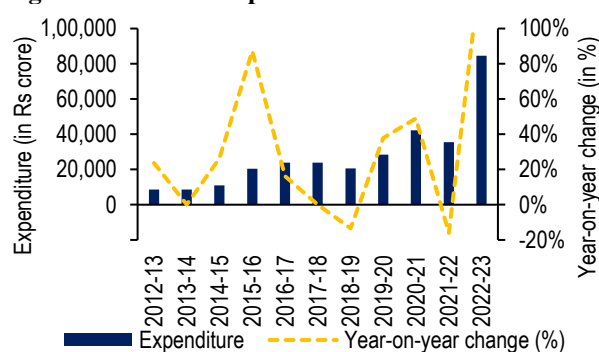
Table 2: Allocation towards Revival Plan for BSNL and MTNL (Rs crore)

| Particular | 2020-21 | 2021-22 | | 2022-23 BE |
|---|---------------|---------------|--------------|---------------|
| | | BE | RE | |
| Capital infusion-BSNL | 0 | 14,115 | 0 | 44,720 |
| Capital infusion for 4G spectrum-MTNL | 0 | 6,295 | 0 | 0 |
| Implementation of VRS (BSNL/MTNL) | 3,028 | 3,000 | 3,530 | 3,300 |
| Ex-gratia payment to voluntarily retiring employees (BSNL/MTNL) | 11,162 | 0 | 0 | 0 |
| Grants for payment of GST-BSNL | 0 | 2,541 | 0 | 3,550 |
| Grants for payment of GST-MTNL | 0 | 1,133 | 0 | 0 |
| Total | 14,190 | 27,084 | 3,530 | 51,570 |

Note: RE: Revised Estimates; BE: Budget Estimates.
Sources: Union Budget of various years; PRS.

Between 2012-13 and 2022-23, the expenditure of the Department is estimated to increase at a CAGR of 14% (excluding allocation towards revival plan). A higher increase in expenditure since 2015-16 as compared to previous years is due to allocation towards Bharatnet (a scheme to connect all gram panchayats through optical fibre) and Optical Fibre Network for Defence Services schemes. A notable increase in 2020-21 and 2022-23 is due to expenditure towards revival plan for BSNL/MTNL.

Figure 1: Trend in expenditure



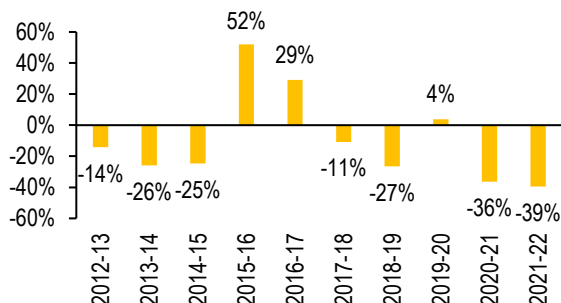
Note: Revised Estimates used for 2021-22. Budget Estimates used for 2022-23.

Sources: Union Budget documents of various years; PRS.

Over the last 10 years, the actual expenditure by the Department has varied significantly as compared to the budget estimates (Figure 2 on next page). In 2015-16 and 2016-17, actual expenditure exceeded budget estimates by 52% and 29% respectively. In 2019-20, actual expenditure was 4% higher than the budgeted expenditure. In 2020-21 and 2021-22, the actual expenditure by the department is estimated to

be significantly lower than the budget estimates. This is mainly due to the carryover of allocation towards the revival plan for BSNL/MTNL from one year to another. High variability in budget estimates and actual expenditure may be indicative of issues with budget forecasting as well as scheme implementation.

Figure 2: Underspending – Department of Telecommunications (2012-22)



Note: Revised Estimates used for 2021-22.

Sources: Union Budget documents of various years; PRS.

Major Expenditure Heads

In 2022-23, Rs 52,154 crore has been allocated towards support for PSUs, which is 62% of the total allocation for the department. Of this, Rs 51,570 crore (99%) has been allocated towards the revival of BSNL and MTNL (details in Table 2).

Table 3: Major expenditure heads in 2022-23 (in Rs crore)

| Expenditure Head | 2020-21 Actuals | 2021-22 RE | 2022-23 BE | % change (21-22 RE to 22-23 BE) |
|-------------------------------|-----------------|---------------|---------------|---------------------------------|
| Support to PSUs | 14,765 | 3,994 | 52,154 | 1,206% |
| Pension | 14,928 | 16,374 | 19,000 | 16% |
| Bharatnet | 5,920 | 7,000 | 7,000 | 0% |
| Compensation to TSPs | 1,280 | 1,300 | 2,000 | 54% |
| Network for defence services | 4,000 | 5,200 | 1,961 | -62% |
| PLI Scheme for Telecom Sector | 0 | 0 | 528 | - |
| Others | 1,417 | 1,682 | 2,472 | 47% |
| Total | 42,310 | 35,550 | 84,587 | 138% |

Note: BE – Budget Estimate; RE – Revised Estimate; TSP: Telecom Service Providers; PLI: Production-linked Incentive Scheme.

Sources: Expenditure Budget; Union Budget 2022-23; PRS.

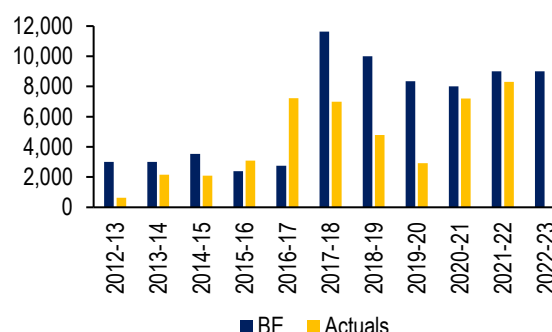
The next highest allocation is towards pension (22%), followed by Bharatnet (8%), and compensation to Telecom Service Providers (TSPs) for augmentation of infrastructure in rural and remote areas, and maintenance of village public telephones. The pension provision is for pensionary benefits of the employees of the Department including employees absorbed in BSNL, and employees of MTNL with effect from April 2014.² In 2022-23, allocation towards Network for Defence Services is estimated to be 62% lower than the revised estimate for 2021-22. This may be due to the scheme nearing completion. The scheme provides for optical fibre cable based network for defence services. In February 2021, a Production-Linked Incentive Scheme was notified to

promote telecom and network products manufacturing in India.⁴ The scheme provides incentives to companies on the incremental sale of products manufactured in India. This scheme has been allocated Rs 528 crore in 2022-23.

Expenditure from USOF

The Universal Service Obligation Fund (USOF) has been established to provide widespread, non-discriminatory, and affordable access to quality Information and Communication Technology services to people in rural and remote areas. The resources for the fund are raised through a Universal Access Levy (UAL) which is 5% of the Adjusted Gross Revenue (AGR) earned by all the operators under various licenses currently.⁵ Adjusted Gross Revenue is the value of gross revenue after deduction of taxes and roaming/PSTN charges from Gross Revenue. UAL is first credited to the Consolidated Fund of India and then disbursed to the USOF as per the budgetary proposal of the Department of Telecommunications. The schemes being funded through USOF include: (i) Bharatnet, (ii) setting up of towers in left-wing extremism affected areas, and (iii) comprehensive telecom development plan for the northeast region. A total expenditure of Rs 9,000 crore from this fund has been planned in 2022-23, an increase of 8% over the revised estimates of 2021-22 (Rs 8,300 crore). This includes Rs 7,000 crore for the Bharatnet scheme and Rs 2,000 crore for compensation to TSPs.

Figure 3: Expenditure from USOF (in Rs crore)



Note: Revised Estimates used for 2021-22.

Sources: Union Budget documents of various years; PRS.

Between 2017-18 and 2021-22, in each year, actual expenditure from USOF has been significantly less than the budget estimate. In 2020-21 and 2021-22, actual expenditure is estimated to be 10% and 8% less than the budget estimate, respectively. Corresponding figure for 2017-18, 2018-19, and 2019-20 was 40%, 52%, and 65%.

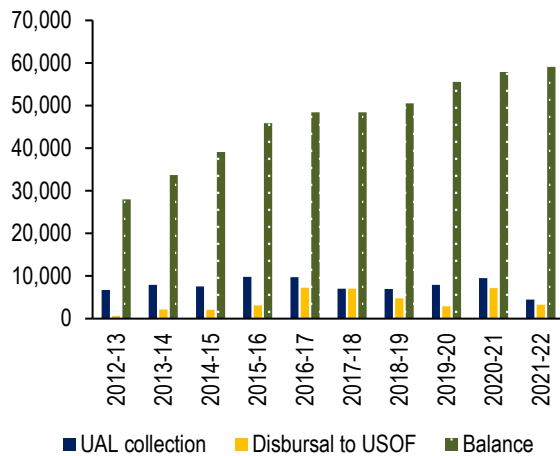
Balance of Funds under USOF

In its audit report of the Ministry of Communications for the FY 2017-18, the Comptroller and Auditor General of India (CAG) observed that a large amount earned as UAL is yet to be transferred to the USOF.⁶ As of November 2021, a total of Rs 59,082 crore is yet to be transferred to the USOF by the central government.⁷ A total of Rs 1,21,569 crore has been earned as UAL between 2002-03 and 2021-22 (as of November 2021), out of which only Rs 62,487 crore

has been disbursed (51%).⁷ The gap between UAL collected and disbursal has been high over the years, which has led to a rise in balance (Figure 4).

In January 2015, the Telecom Regulatory Authority of India (TRAI) had observed that the Department has not been able to devise enough schemes to utilise the earnings of UAL.⁸ It also recommended reducing UAL from 5% to 3%.⁸ The Standing Committee on Information Technology (2018) noted that with increasing outlay on schemes including Bharatnet, Mobile Towers in Left Wing Extremism Affected Areas Phase-II and Comprehensive Telecom Development Plan for the North-East, the utilisation of USOF funds will improve.⁵

Figure 4: Balance under USOF as of November 2021 (in Rs crore)



Note: UAL: Universal Access Levy; Balance: Balance at the end of that Financial Year.

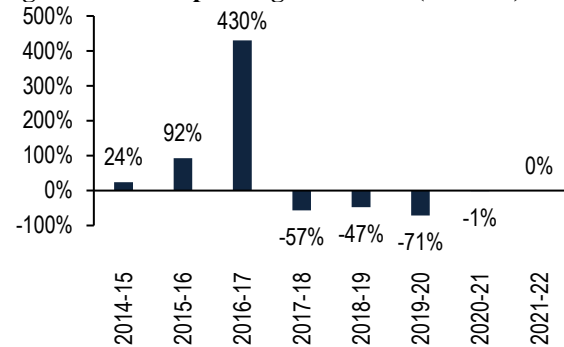
Sources: USOF Website as accessed on February 13, 2022; PRS.

Bharatnet

Bharatnet aims to create a network to connect all the Gram Panchayats (about 2.5 lakh) by broadband by laying around 6.5 lakh km of optical fibre. It seeks to provide all telecom service providers with non-discriminatory access to the network. These service providers include mobile operators, Internet Service Providers (ISPs), Cable TV operators, content providers. Bharat Broadband Network Limited (BBNL) is a special purpose vehicle to create, operate, maintain, and manage the Bharatnet infrastructure. The project is financed through the USOF. The estimated total cost of the project is Rs 42,068 crore.⁵ Bharatnet is divided into three phases. Phase-I to connect about 1.2 lakh GPs was completed in December 2017. Phase-II to connect the remaining gram panchayats is underway. Phase-III is earmarked for future purposes. The scheme also aims to provide last-mile connectivity through Wi-Fi by creating five access points per gram panchayat (12.5 lakh hotspots).⁹ In 2022-23, Rs 7,000 crore has been allocated towards Bharatnet, same as the revised estimates for 2021-22. Between 2017-18 and 2019-20, the actual expenditure under the scheme was much lower as compared to the budget estimates. In

2021-22, expenditure is estimated to be same as the budget estimate (Figure 5).

Figure 5: Underspending-Bharatnet (2014-22)



Note: Revised Estimates used for 2021-22.

Sources: Union Budget Documents of various years; PRS.

Delay in Completion

The Standing Committee on Information Technology (2018) noted that although approved in 2011, the initial target of Bharatnet had to be revised in 2014 due to inadequate planning and design, and unpreparedness to address the issues.¹⁰ Under the revised deadline, the phase-I was due by March 2017 but could be completed by December 2017.¹⁰ Phase-II which was to be initially completed by March 2019, the target was then revised to March 2020.^{10, 11} The Standing Committee on Information Technology (2020) noted that the project is estimated to be completed by August 2021.¹² As of February 2022, the project is far from completion. Thus, the delay in the completion of phase-II is about 2 years and 11 months so far. Table 4 shows the status of Bharatnet as of December 2021.^{13, 14} Under phase-II, as of December 2021, optical fibre cable (OFC) has been laid in 57,078 gram panchayats out of targeted 1.42 lakh gram panchayats (40%). Out of these, 45,340 gram panchayats have been made service-ready. Note that the National Digital Communications Policy 2018 aims to provide: (i) provide universal broadband connectivity at 50 Mbps to every citizen by 2022, and (ii) provide one Gbps connectivity to all gram panchayats by 2020, and 10 Gbps by 2022.

Table 4: Status of Bharatnet (as of December 2021)

| Parameter | Target | Achievement | Achievement in % |
|---|-------------|--------------|------------------|
| Length of OFC laid* | 6.5 lakh km | 5.58 lakh km | 86% |
| Number of panchayats where OFC laid* | 2.5 lakh | 1.81 lakh | 72% |
| Number of panchayats which are service-ready* | 2.5 lakh | 1.71 lakh | 68% |
| Number of panchayats where Wi-Fi installed# | 2.5 lakh | 1.04 lakh | 42% |
| Number of panchayats where Wi-Fi operational# | 2.5 lakh | 0.53 lakh | 22% |

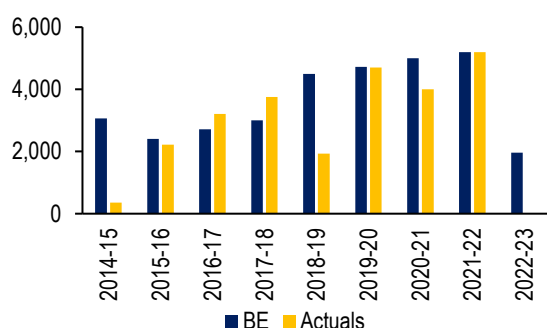
Note: *as of December 6, 2021, #as of December 10, 2021.

Sources: BBNL website as accessed on February 13, 2022; PRS.

Network for Defence Services

The Network for Defence Services project aims to provide a dedicated pan-India optical fibre cable-based network for use by defence services. The original total sanctioned cost of the project was Rs 13,334 crore.⁵ In May 2018, the central government announced that the budget of the project has been increased to Rs 24,664 crore.¹⁵ BSNL is the implementing agency for the project. A total of 60,000 km of the optical fibre network is to be laid under this project. In 2022-23, Rs 1,900 crore has been allocated towards this project, a decrease of 62% over revised estimates of 2021-22. Under this scheme, in 2018-19, only 43% of the allotted fund was utilised. In 2020-21, the actual expenditure was 20% less than the budget estimates (Figure 6).

Figure 6: Allocation towards Network for Defence Services (in Rs crore)



Note: Revised Estimates used for 2021-22.

Sources: Union Budget Documents of various years; PRS.

Delay in completion

The network for defence services project was to be completed by July 2015.⁵ The revised deadline for completion was set for May 2020, however, the target was subsequently revised to December 2020.¹⁵ As of February 2022, the project is still ongoing. The Standing Committee on Information Technology (2018) had observed that the delay has resulted in a massive cost overrun from the initial estimation of Rs 8,098 crore in 2009 to Rs.24,664 crore in 2018 (205% increase).⁵

Non-Tax Revenue from communication services¹⁶

Communication services are one of the major sources of non-tax revenue of the central government. In 2022-23, non-tax revenue from communication services is estimated to be Rs 52,806 crore, about 20% of the total non-tax revenue of the central government. This includes receipts from spectrum auctions, one-time fees from new operators and recurring license fees and spectrum charges from telecom service providers which is a percentage share of the AGR of the operators. In 2022-23, non-tax revenue from communication services is estimated to register a decrease of 27% over revised estimates of 2021-22. This may be due to the rationalisation of certain levies in September 2021 (discussed later).

The Finance Minister in her budget speech in February 2022 noted that auction of 5G spectrum is

Table 5: Non-tax revenue-communication services (in Rs crore)

| Year | Budget | Actual | % change from Budget to Actual | % change Year-on-Year |
|---------|----------|--------|--------------------------------|-----------------------|
| 2016-17 | 98,995 | 70,241 | -29% | 24% |
| 2017-18 | 44,342 | 32,066 | -28% | -54% |
| 2018-19 | 48,661 | 40,816 | -16% | 27% |
| 2019-20 | 50,520 | 69,846 | 38% | 71% |
| 2020-21 | 1,33,027 | 45,501 | -66% | -35% |
| 2021-22 | 53,987 | 71,959 | 33% | 58% |
| 2022-23 | 52,806 | - | - | -27% |

Note: Revised estimate for 2021-22 shown as actuals.

Source: Union Budget Documents of various years; PRS.

expected to be conducted in 2022-23, however, as stated earlier, non-tax revenue in 2022-23 is estimated to be 27% lower than the revised estimates of 2021-22. In 2021-22, at the budget stage, non-tax revenue from communication services was projected to be Rs 53,987 crore. As per the revised estimates, this revenue is estimated to be Rs 71,959 crore, 33% higher than the budget estimate.

Support for the Telecom Sector

In November 2019, the Union Cabinet had approved deferred payment of spectrum auction instalments due for years 2020-21 and 2021-22 to provide relief to telecom service providers.¹⁷ In September 2021, the Union Cabinet approved several measures for the telecom sector.¹⁸ These will have implications for the level of non-tax revenue of the central government from the communications sector going forward.

- **Definition of AGR:** Non-telecom revenue will be excluded from the definition of Adjusted Gross Revenue (AGR) on a prospective basis. AGR is the value of gross revenue after deduction of certain taxes and certain charges such as roaming charges from gross revenue. Earlier, AGR also included revenue from any non-telecom operations such as income from investments and income from property rent.
- **Spectrum Usage Charges:** Earlier, the TSPs paid a percentage of their AGR to the central government in the form of license fees and spectrum usage charges. No spectrum usage charges will be levied for spectrum acquired in future auctions.
- **Charges for spectrum sharing:** Additional charges for spectrum sharing will be removed.
- **Interest and penalty on overdues:** The interest rate applicable on late payment of dues will be reduced from October 1, 2021 (2% less than earlier). No penalty and interest on penalty will be levied on such delayed payments.
- **Moratorium on outstanding dues:** A moratorium of up to four years will be allowed to the TSPs on payment of: (i) dues on account of license fees and spectrum usage charges for the years between 2003 and 2019 (as per a 2019

Supreme Court Judgement), and (ii) dues for spectrum purchased in past auctions (excluding 2021 auction).

- **Conversion of interest dues into equity:** TSPs may pay interest amounts arising due to deferment of payment by way of equity. The central government will have an option to get equity in place of the outstanding dues at the end of the moratorium period.

Issues for Consideration

Performance of BSNL and MTNL

Mounting losses

BSNL and MTNL are the public sector undertakings (PSUs) engaged in providing telecommunication services in the country. BSNL and MTNL have been incurring losses continuously since FY 2009-10.¹⁹ As per the Department of Public Enterprises guidelines, both these PSUs have been declared as 'Incipient Sick'.¹⁹ A PSU is considered 'Incipient Sick' if its net worth is less than 50% of its paid-up capital in any financial year, or if it had incurred losses for three consecutive years.²⁰ Between 2016-17 and 2021-22, BSNL is estimated to make a cumulative loss of Rs 59,833 crore (Table 6), whereas MTNL is estimated to make a cumulative loss of Rs 18,058 crore (Table 7). Losses reduced in 2020-21 due to a reduction in salary expenditure owing to the implementation of the voluntary retirement scheme. In 2021-22, BSNL and MTNL are projected to make a loss of Rs 9,201 crore and Rs 2,520 crore, respectively. In 2021-22, losses are projected to increase as compared to 2020-21.

Table 6: Financial Performance of BSNL (Amounts in Rs crore)

| Year | Income | Expenses | Profit (+)/Loss(-) |
|----------|--------|----------|--------------------|
| 2016-17 | 31,533 | 36,327 | -4,794 |
| 2017-18 | 25,071 | 33,809 | -7,993 |
| 2018-19 | 19,321 | 34,225 | -14,904 |
| 2019-20 | 18,907 | 34,406 | -15,500 |
| 2020-21 | 18,595 | 26,036 | -7,441 |
| 2021-22* | 20,885 | 30,086 | -9,201 |

Note: *Figures for 2021-22 are projections.

Source: Reports of the Standing Committee on Communication and Information Technology, Annual Reports of BSNL; PRS.

Table 7: Financial Performance of MTNL (Amounts in Rs crore)

| Year | Income | Expenses | Profit (+)/Loss(-) |
|----------|--------|----------|--------------------|
| 2016-17 | 3,552 | 6,494 | -2,942 |
| 2017-18 | 3,116 | 6,090 | -2,974 |
| 2018-19 | 2,606 | 5,997 | -3,391 |
| 2019-20 | 2,227 | 5,997 | -3,770 |
| 2020-21 | 1,788 | 4,250 | -2,462 |
| 2021-22* | 2,020 | 4,540 | -2,520 |

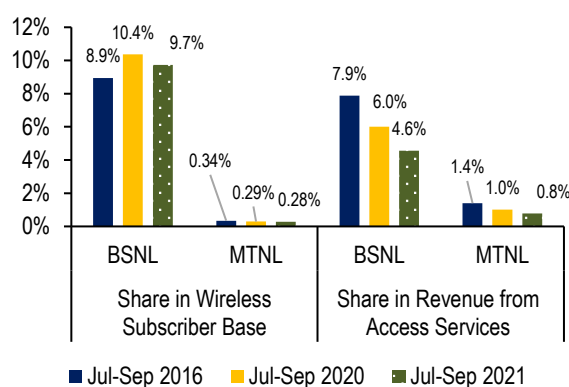
Note: *Figures for 2021-22 are projections.

Source: Reports of the Standing Committee on Communication and Information Technology, Annual Reports of MTNL; PRS.

Declining market share

The market share of both BSNL and MTNL has declined in terms of share in the revenue. During the second quarter of 2016, BSNL and MTNL had a share of about 9.3% in the adjusted gross revenue of the sector from access services, which declined to 5.4% during the third quarter of 2021. As of September 2021, BSNL had a 9.7% share among the wireless subscribers, up from 8.9% as of September 2016. However, between September 2020 and 2021, BSNL lost about 5% of its wireless subscribers. During the same period, MTNL saw a further decline in its already modest market share in terms of subscriber base.

Figure 7: Market Share of BSNL and MTNL



Source: TRAI; PRS.

Two years on, the revival plan for BSNL and MTNL yet to be fully implemented

The Standing Committee on Information Technology (2019) had noted that challenges for the PSU operators in earning revenue include: (i) absence of 4G services (except in a few places for BSNL) in data-centric telecom market, (ii) lack of cash flows hindering capital outlay and expansion, (iii) sharp decline in average revenue per user across all services due to competition in the sector, and (iv) rapid decline in landline business due to changing market needs. In October 2019, the Union Cabinet approved a revival plan for BSNL and MTNL. The plan also provided in-principle approval for the merger of both PSUs. However, the merger plan was called off in January 2021.²¹ Key features of the plan are as follows: (i) allotment of 4G spectrum with funding from the central government of Rs 23,814 crore, (ii) sovereign guarantee for raising long-term bonds of Rs 15,000 crore for restructuring debt and meeting expenditure requirements, and (iii) funding of Rs 17,169 crore for offering voluntary retirement scheme to employees aged 50 years and above, along with coverage of cost towards pension and gratuity. In addition, BSNL and MTNL were to monetise their assets to raise funds.

- **Capital infusion:** As discussed earlier, capital infusion in both BSNL and MTNL for allotment of 4G spectrum is yet to take place. In both 2020-21 and 2021-22, the allocation was made in this regard at the budget stage, however, no funds

were released. This expenditure is now estimated to be incurred in 2022-23 for BSNL. There is no allocation for MTNL on this account. The Standing Committee on Information Technology (2021) observed that while other parts of the revival plan such as VRS were successfully implemented, the revenue of BSNL and MTNL did not grow due to the non-commencement of 4G services.²²

- **Monetisation of assets:** Total value of land/building assets identified for monetisation in BSNL and MTNL is Rs 67,837 crore, and Rs 17,985 crore, respectively.²² Expected revenue from monetisation in 2021-22 is Rs 1,200 crore for BSNL, and Rs 300 crore for MTNL.²² BSNL is raising about Rs 1,000 crore per annum from renting its towers (13,000 out of a total 68,000 towers).²² BSNL also raised Rs 400 crore from monetising fibre.
- **Voluntary Retirement Scheme (VRS):** BSNL and MTNL spend a significant share of their income on staff salaries. As of June 2019, the employee cost for BSNL and MTNL was 75% and 87% of their total income respectively.²³ In comparison, the employee cost for private telecom service providers varied between 5%-7% of their total income. BSNL had 1,55,296 employees as of October 2019. Under the voluntary retirement scheme implemented as part of the revival plan, 78,569 employees of BSNL opted for VRS.²² This has helped reduce the salary expenditure in BSNL by about 50% (about Rs 600 crore per month).²² Also, 75% of the employees of MTNL opted for VRS.²²
- **Debt restructuring with sovereign guarantee bond:** As of March 2021, BSNL has raised Rs 8,500 crore with sovereign guarantee.²²

Government's stake in the telecom sector

Until the mid-1980s, telecommunications services were operated by the Department of Telecommunications (DoT) of the central government.²⁴ In 1986, MTNL was established to provide telecom services in Delhi and Mumbai. For other parts of the country, DoT continued to provide telecom services. National Telecom Policy, 1994 opened up the telecom sector for the private sector. In October 2000, a corporate entity BSNL was established to take over the services activities of DoT. Over the years, the telecom sector in India has evolved from a public-sector led industry to a private-sector led industry. While the government-owned BSNL and MTNL have remained in business, they are distant competitors to private operators in the sector. As discussed earlier, these two companies have been making losses for about a decade now. As of September 2021, public sector operators had about a 10% share in the overall subscriber base.

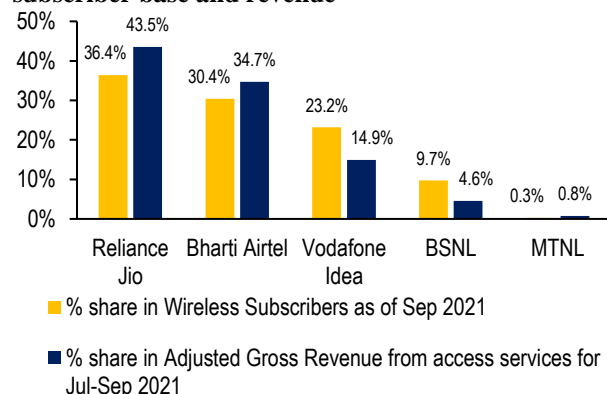
Government might become one of the largest shareholders in Vodafone Idea Limited

As discussed earlier, as part of reform measures for the telecom sector, the government has provided an option of paying interest dues by way of equity. The detailed guidelines about the modalities of such conversion are yet to be released.

In January 2022, the Board of Vodafone Idea Limited approved the exercise of the option to convert outstanding interest dues into equity.^{25,26} The Net present value of the outstanding interest dues is estimated to be Rs 16,000 crore. If the government were to approve the conversion of dues of Vodafone Idea into equity, it is estimated to own 35.8% stake in the company, while the promoters will jointly hold 46.3%. The equity shares will be offered to the government on a preferential basis. Note that the shares of Vodafone Idea Limited have fallen by 15.2% in past one month.²⁷ Two more companies Tata Teleservices and Tata Teleservices Maharashtra limited have also decided to offer pay interest dues by way of equity.²⁸ Their interest dues are estimated to be about Rs 4,139 crore and Rs 850 crore. Upon conversion into equity, the government is estimated to have 9.5% shares each in the two companies.

In January 2022, the Department of Telecommunications stated that: (i) these companies will continue to be managed as professionally-run private companies, (ii) conversion of liabilities will help companies regain the ability to invest and provide better services, and (iii) government can sell these shares at the appropriate time and thereby recover the due amount.²⁹ It noted that this measure will prevent a scenario where there are very few players in the market. Such a potential lack of competition might have led to higher prices and poor services. However, such conversion will make the government an important stakeholder in the third-largest company in the sector in terms of market share. It also owns the fourth and fifth largest companies in the sector. This raises the question whether the government's role in the telecom business is set to increase in future and if so, its implications for the competition in the sector.

Figure 8: Market share of key service providers by subscriber base and revenue



Source: TRAI; PRS.

India's preparedness for 5G

5G is the next technology frontier in the telecom sector. According to the High-Level Forum of the Department on 5G, 5G is predicted to create a cumulative economic impact of USD one trillion in India by 2035.³⁰ As of January 2021, 118 operators in 59 countries have deployed 5G network.³¹ Mostly, 5G has been launched partially in these countries. In India, the commercial rollout of 5G is yet to happen. The Standing Committee on Information Technology (2021) examined India's preparedness for 5G.³¹ The Committee noted that sufficient preparatory work has not been undertaken for the launch of 5G services in India. It highlighted: (i) inadequate availability of spectrum, (ii) high spectrum prices, (iii) poor development of use cases for 5G, (iv) low status of fiberisation, and (v) deficient backhaul capacity (links between the core network and sub-networks), as some of the key concerns.³¹ It noted that as of January 2021, 5G trials were not permitted by the department.³¹ In May 2021, the department permitted telecom service providers to start 5G trials in India.

Table 8: Deployment of telecom technology- India vis-a-vis World

| Technology | World | India |
|------------|-------|-------|
| 2G | 1991 | 1995 |
| 3G | 1998 | 2008 |
| 4G | 2008 | 2015 |
| 5G | 2019 | - |

Source: "21st Report: India's preparedness for 5G", February 2021, Standing Committee on Information Technology; PRS.

Allocation of 5G spectrum

Allocation of new bands of the spectrum is crucial for the rollout of 5G. However, the auction of the 5G spectrum is still pending. The Committee noted the concerns of the telecom companies that the reserve price set by TRAI (Rs 492 crore per MHz) for the 5G spectrum is exorbitantly high.³¹ It observed that considering the financial stress in the sector and that the 5G ecosystem is yet to be developed, high reserve price may have an adverse impact on the abilities of service providers to roll out 5G.³¹ The Committee further noted that based on the current availability of spectrum, approximately 50 MHz spectrum per operator can be ensured. This is substantially lower than the global average (about 100 MHz).³¹ It noted that in case of 4G too, the average spectrum per operator in India is around one-fourth of the global average.³¹ The Committee observed that there is an urgent need for an audit of all allocated spectrum for detecting under-utilisation and subsequently rationalising the allocation of spectrum.³¹ In November 2021, TRAI released a consultation paper inviting suggestions on various issues related to the auction of frequency bands identified for 5G including reserve prices, charges and fees.³²

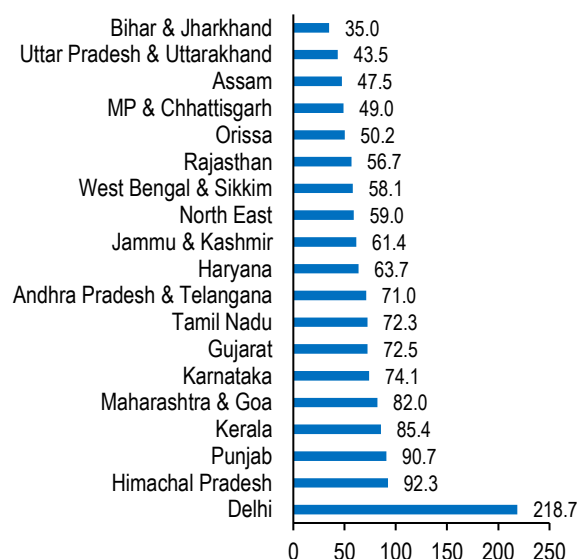
Digital Divide

COVID-19 has brought focus on access to communication services. During the nationwide lockdown, internet access became crucial for adults to

work from home and children to access education. However, notable gaps exist in India with regard to access to telecom services and the use of internet. International Telecommunications Union (ITU, 2019) notes that barriers are often related to age, gender, socioeconomic status, and geography.³³ The Department of Telecommunications (2020) had noted that India has become the global leader in monthly data consumption.³⁴ The Department also noted that the cost of data has reduced substantially thereby enabling affordable internet access.³⁴

Regional Divide: The number of internet subscribers per 100 inhabitants for the country on aggregate was 61.1 as of June 2021. This was lower than the global average for developing countries in 2020 as per ITU (65.1).³⁵ A substantial inter-state variation is seen on this parameter (Figure 9). Number of internet subscribers per 100 inhabitants in states such as Punjab, Himachal Pradesh, and Kerala circles were more than double of that in Bihar and Jharkhand, and Uttar Pradesh and Uttarakhand circles.

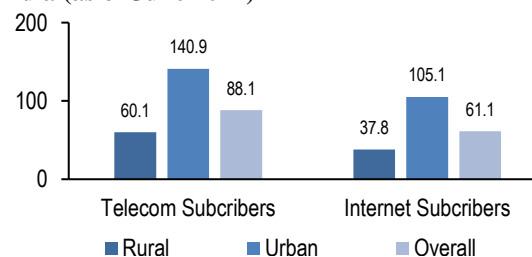
Figure 9: Service-area wise internet subscribers per 100 inhabitants (as of June 2021)



Note: Maharashtra & Goa includes Mumbai circle. Tamil Nadu includes Chennai circle. West Bengal & Sikkim includes Kolkata circle. Uttar Pradesh & Uttarakhand comprises UP East and UP West circles. North-East comprises Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. Service area also includes adjoining union territories.

Sources: Performance Indicator Reports-June 2021, TRAI; PRS.

Figure 10: Subscribers per 100 inhabitants in India (as of June 2021)



Source: Performance Indicator Reports-June 2021, TRAI; PRS.

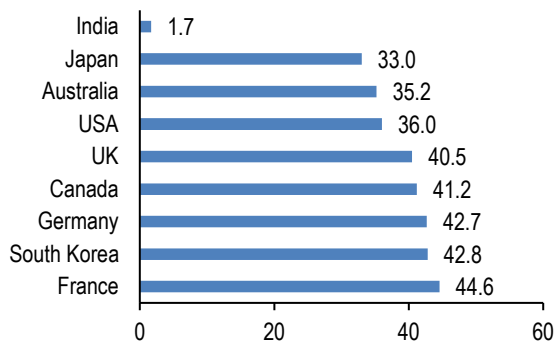
Rural-Urban Divide: As of June 2021, while the number of internet subscribers per 100 inhabitants in

urban areas was 105.1, the corresponding number for rural areas was 37.8, almost two-thirds less (Figure 10).

Access to broadband

Communication can be classified among broadband and narrowband based on the bandwidth required for communication. Broadband communication uses a higher bandwidth and provides better speed. Telecom Regulatory Authority of India (2020) had observed that in the post-COVID-19 pandemic era, there will be an increasing reliance on broadband connectivity and demand for these services is likely to grow much faster.³⁶ TRAI observed that India needs to improve in terms of access to fixed broadband as well as the speed of broadband. As of December 2020, only 9.1 out of 100 households had access to fixed broadband.^{36,37}

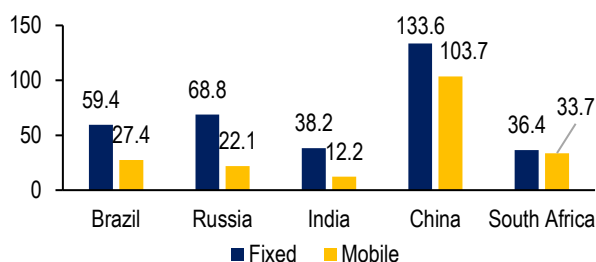
Figure 11: Fixed Broadband Penetration per 100 inhabitants as of June 2020



Source: TRAI; PRS.

TRAI noted that as per a March 2021 report by a private firm (Ookla), India experiences download speeds of 12.2 Mbps in case of mobile broadband and around 56.1 Mbps in case of fixed broadband.³⁶ The corresponding global average was 48.4 Mbps and 98.7 Mbps, respectively.³⁶ India ranked 131st among 140 nations in mobile broadband speed and 66th among 177 countries in fixed broadband speed according to the report by Ookla.³⁶ It observed that India's broadband speed is the lowest among the BRICS countries (Figure 12).³⁶ Note that the National Digital Communications Policy 2018 seeks to provide broadband connectivity at 50 Mbps to every citizen by 2022.³⁶

Figure 12: Broadband speed in BRICS countries (as of June 2020)



Source: TRAI; PRS.

In India, as of December 2020, 94% of internet subscribers in India use a broadband connection.³⁶

However, a broadband connection in India is defined to have a minimum download speed of 512 kbps (kilo bits per second) to an individual subscriber. In other countries, this threshold is defined at a higher level. In USA, UK, and China, it is defined to be 25 Mbps (mega bits per second), 24 Mbps, and 20 Mbps, respectively.³⁶ In August 2021, TRAI recommended re-defining broadband in India as: (i) basic broadband (download speed between two Mbps and 50 Mbps), (ii) fast broadband (download speed between 50 Mbps and 300 Mbps), and (iii) super-fast broadband (download speed of more than 300 Mbps).³⁶ It also recommended a direct benefit transfer scheme in those rural areas where adequate fixed-broadband capacity is available but there is a lack of demand.

It recommended overhauling right of way provisions and formulating a centrally sponsored scheme for incentivising states to undertake right of way related reforms. It recommended encouraging provisioning of common ducts by land-owning agencies for laying of telegraph wires. These will help in a quicker laying of optical fibres for broadband purposes.

Promotion of domestic manufacturing of telecom equipment

The Standing Committee on Information Technology (2019) had observed that India is highly dependent on the import of telecom equipment.³⁸ During 2017-18 and 2018-19, India imported telecom equipment worth Rs 1.4 lakh crore and 1.2 lakh crore, respectively.³⁸ The Committee observed that this indicates a lack of requisite ecosystem for the promotion of domestic manufacturing.³⁸ Some of the reasons for the dependence on import are: (i) import of telecom equipment at zero duty as per existing tariff obligations under international treaties, (ii) low investment in research and development and creation of intellectual property rights, and (iii) lack of market access for indigenous manufacturers.³⁸ The Committee noted that imports are likely to increase substantially with the introduction of newer technology such as 5G.³⁸

The Standing Committee on Information Technology (2021) also stressed on the importance of enhancing domestic manufacturing capabilities in view of the adoption of 5G. It observed that the ecosystem should be developed for complete manufacturing rather than just assembly, as manufacturing gives higher value addition. The Committee also highlighted the importance of the promotion of research and development for the success of telecom manufacturing.³¹ The Committee noted that in 2018, TRAI had proposed the creation of a Telecom Research and Development Fund with an initial corpus of Rs 1,000 crore for promoting research, innovation, and manufacturing of indigenous telecommunications equipment. It recommended that this fund should be created at the earliest.³¹ In February 2021, the government notified a production-linked incentive scheme to promote manufacturing of telecom and network products in India.⁴

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