Tower Fiberisation

Why in news?

India is preparing to auction airwaves to rollout 5G services in the country but the infrastructure needed for such a rollout requires existing radio towers to be connected via optical-fibre cables.

What is fiberisation?

- The process of connecting radio towers with each other via optical fibre cables is called fiberisation.
- **Benefits**
  - Helps provide full utilisation of network capacity
  - Carry large amounts of data once 5G services are rolled out
  - Aid in providing additional bandwidth and stronger backhaul support
  - Represents the part of the network that connects the core of the network to the edge
  - Fibre-based media, commonly called optical media, provides almost infinite bandwidth and coverage, low latency and high insulation from interference

Where does India stand with respect to tower fiberisation?

- **Fibre**- To transition into 5G, India needs at least 16 times more fibre.
- In India, currently only 33% of the towers are fiberised, compared to the 65%-70% in South Korea and 80%-90% in the U.S., Japan and China, according to a 2021 report by India Infrastructure Research.
- **Fiber kilometer per capita**- Ideally, a country needs 1.3 km of fibre kilometer (fkm) per capita to ensure good fiberisation.
- India's fkm is just .09 which is lower than other key markets.
- **Fiber point of presence**- There is also a need to increase data capacity in the fiberised towers.
- These tower sites which are connected via fibre are called fibre point of presence (POP).

What are the challenges?

> *Prime Minister Narendra Modi, in his 2020 Independence Day speech, laid out the vision to connect every village in the country with optical fiber cable in 1000 days.*

- **Investment**- To reach the targeted level of fiberisation, India requires about Rs. 2.2

lakh crore of investment to help fiberise 70% towers.
- About Rs. 2.5 lakh crore will be needed to set up 15 lakh towers in the next four years.
- **Increasing demand-** Government programmes like BharatNet and Smart Cities will add to the demand of fibre deployment, necessitating a complete tower fiberisation.
- **Time**- To achieve the vision of Prime Minister, cables must be laid at a speed of around 3.6 times the current average speed.
- **Right of Way (RoW) rules**- The Indian Telegraph RoW Rules 2016 aim to incorporate nominal one-time compensation and uniform procedure for establishment of Overground Telegraph Line (OTL) anywhere in the country.
- The States/UTs are not in complete alignment with the rules and still require certain amendments to align.
- Several districts and local bodies have not agreed to the RoW policies as notified in those respective States.
- Central Ministries like Ministry of Road Transport and Highways, National Highway Authority of India, Ministry of Environment and Forests, Ministry of Railways, Ministry of Defence, etc. have not yet adopted these Rules, citing their own departmental rules.

Can satellite communication help in 5G deployment?

- Satellite communication can provide high-capacity backhaul connectivity to large numbers of edge servers over wide areas, thereby complementing the terrestrial network with cost-effective scalability.
- Satellite communication can facilitate 5G broadband connectivity to underserved areas where it is not feasible to deploy terrestrial infrastructure like remote villages, islands or mountainous regions.
- Satellite-based networks are the only means for delivering 5G broadband to users on board moving vessels, including cars, ships, airplanes and high-speed trains.
- Space-based broadcast capabilities support over-the-air software updates for connected cars anywhere in the world.
- Space-based backhaul will provide disaster relief services, support emergency response teams as well as deliver broadband connectivity for one-off entertainment or sports events anywhere in the world.
- The low-Earth Orbit (LEO) satellites will be well-suited to offer not only backhaul, but also direct connectivity.

References

1. https://www.thehindu.com/sci-tech/technology/fiberisation-for-5g-deployment/article65677914.ece?homepage=true

SHANKAR IAS PARLIAMENT
Information is Empowering