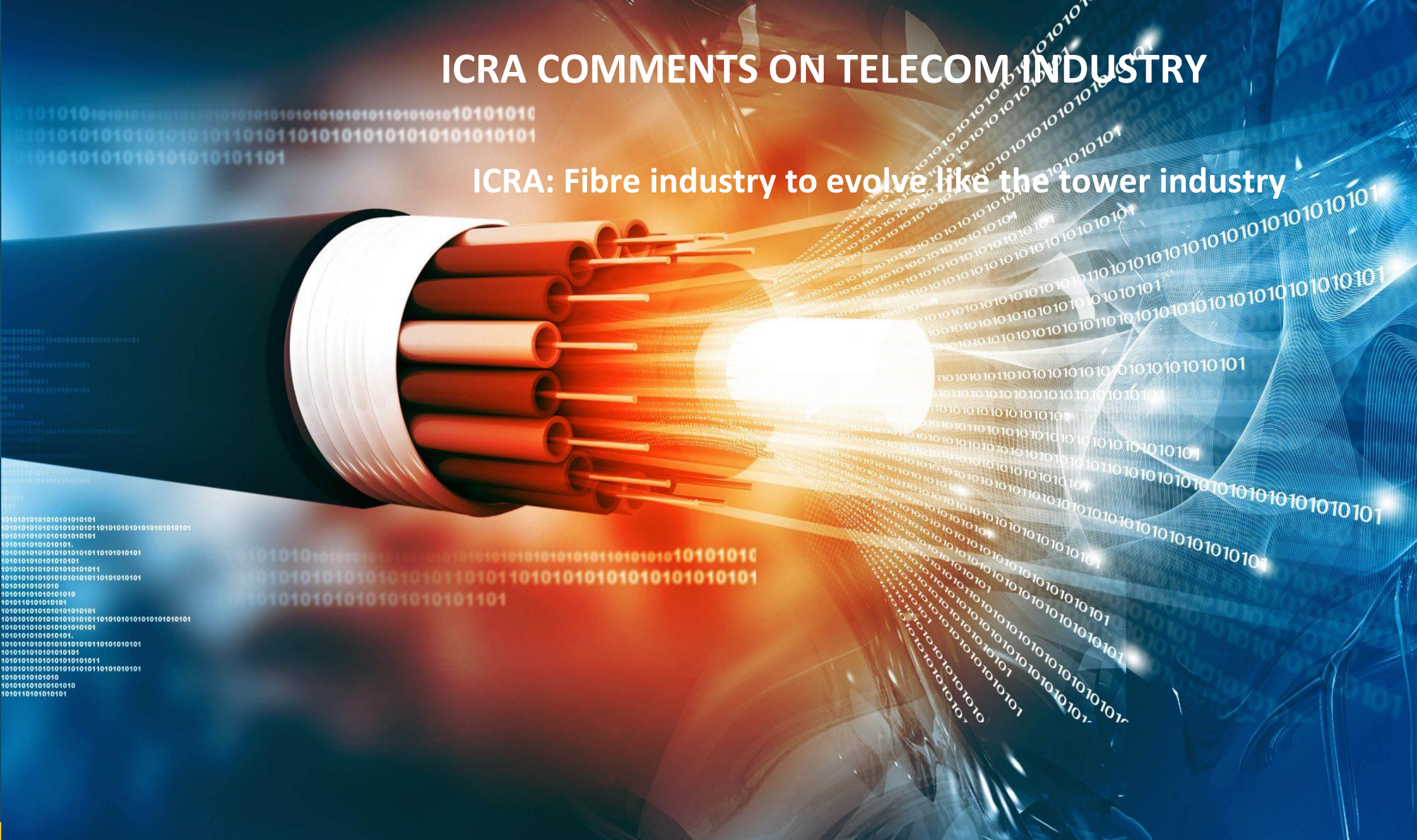


ICRA COMMENTS ON TELECOM INDUSTRY

ICRA: Fibre industry to evolve like the tower industry



Sabyasachi Majumdar
+91 124 4545304
sabyasachi@icraindia.com

Harsh Jagnani
+91 124 4545 394
harshj@icraindia.com

Ankit Jain
+91 124 4545865
ankit.jain@icraindia.com

Fiber assets of the Indian telecom industry

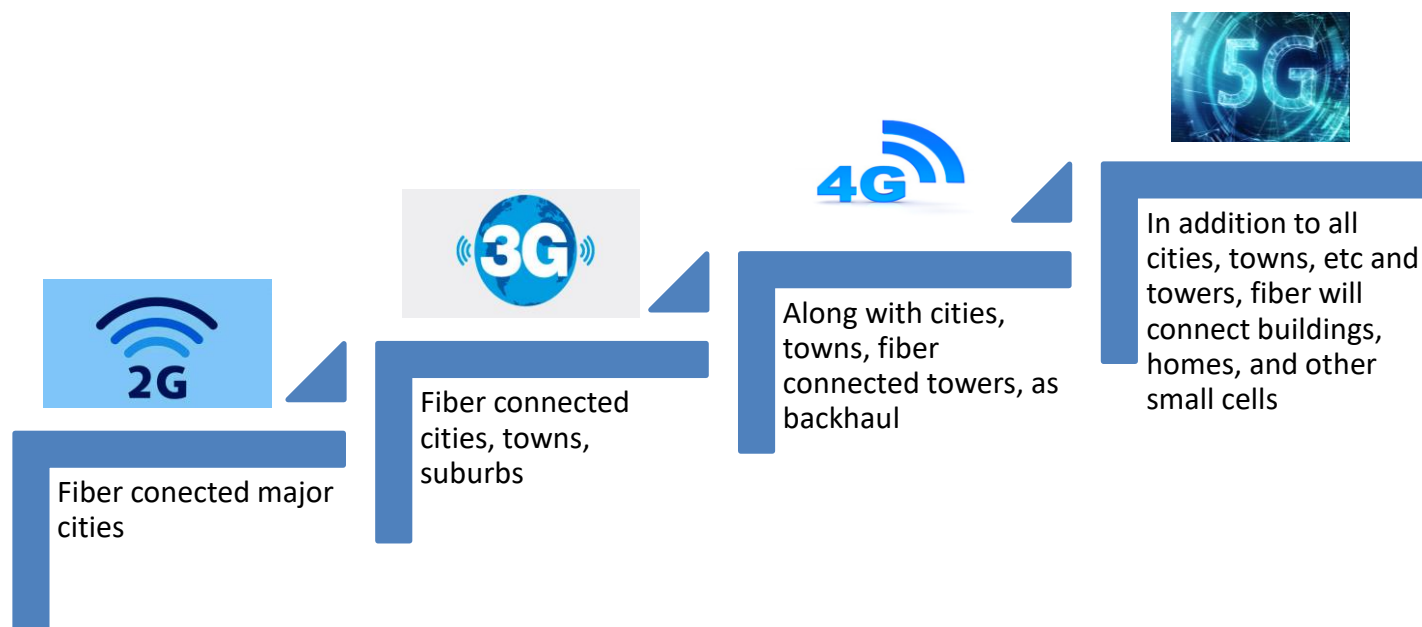
The last two years have seen an explosion of mobile data consumption. The average data usage in India has increased from 240 MB per user per month for quarter ended September 2016 to more than 8.3 GB per user per month for quarter ended September 2018, while the total wireless internet subscribers have grown from 233 million to 539 million over the same period. This translates into a daily consumption of 418,330 TB of data per day. This strong growth is driven by multiple factors such as proliferation of affordable smartphones, low data tariffs, increase in speeds of delivery and enhanced content. The data consumption in the country is expected to continue to grow over long term with increasing applications, improving technology (both delivery and device), and more content. To meet the requirements, the networks need to be robust and should have the capacity to carry large amounts of data and deliver it quickly. And thus, arises a need to migrate from the traditional copper-based network to a dense optic fiber cable network.

Need for fiber and what can fiber connect

A typical mobile network comprises base transceiver station (BTS) which connects the mobile phone to the network using microwaves. BTSs, which are placed on telecom towers communicate to each other over microwaves and are connected to the heart of the network (Mobile Switch Controller (MSC)) over copper or microwave. The existing wireless network which largely comprises the microwave backhaul, or the copper infrastructure is not built to withstand the increased level of demand. Thus, arises a need for next generation internet protocol (IP) based transportation over fiber. Thus, to carry huge amounts of data and that too at higher speeds, fiber connectivity is needed in the core network.

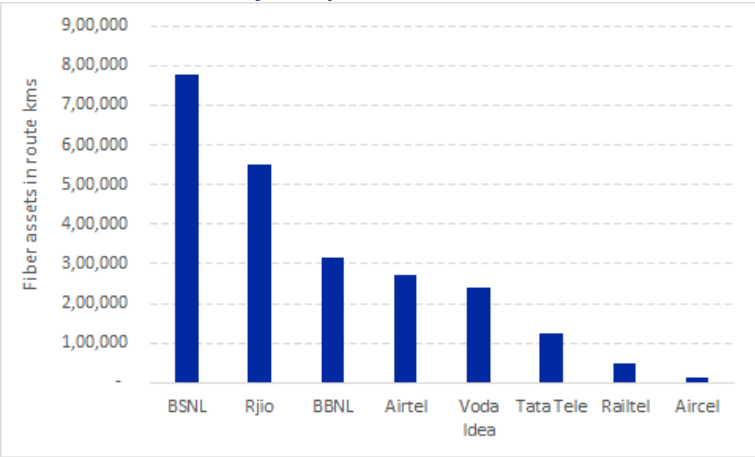
The towers which are connected through microwave need to be connected through fiber connectivity (fiberization of towers). Further, the last mile connectivity which is also on microwave needs to be upgraded to fiber (fiber to the home (FTTH), fiber to the premises (FTTP), etc). Connection between cities (connecting the MSCs), connection between towers (BTSs) and finally connection to the homes on fiber would result in higher reliability, speed and scalability. However, the main constraint is the cost and effort of rolling out such a network.

The need and evolution of fiber as network carrier has been driven by the constant upgradation in technologies – from 2G to 3G to 4G and now 5G. With each step on the technology ladder, the fiber requirement has been going up.



The estimated fiber network of some of the Indian telecom service providers (telcos) is tabulated below, which covers majority of the fiber assets of the country.

Exhibit 1: Fiber assets of the operators in India



Source: ICRA research

Table 2: International comparison on fiber assets

Parameter	India	China	US
Total fiber installed (million fiber kms)	110	1090	420
Fiber km per capital	0.09	0.87	1.30
Fiber km per sq km of area	37	126	43

Source: ICRA research

5G and its applications, which will expand in the times to come, translate into speeds in excess of 10Gbps as against the average speeds of 6Mbps achieved with 4G technologies in India (against global average of 17Mbps). Achieving such speeds makes fiber connectivity essential. India’s high population density also translates into deeper and more dense fiber network. As of now, India has around 500,000 towers of which only 22% are fiberized, as against 80% of fiberized towers in China. The pace of laying in India has been slower than other countries.

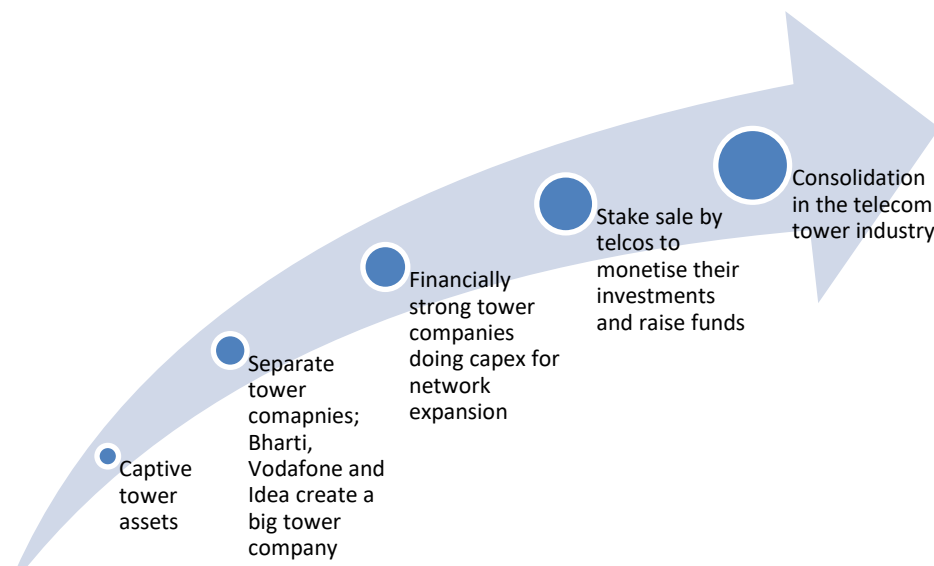
India’s fiber coverage in km-per-capita is 0.09, which is far behind 0.87 for China and more than 1.3 for US and Japan. Thus, as per the table above while India has only 110 million of fiber deployed, China is almost 10 times while US is around 4 times. Thus, there is a long road ahead and telcos in India need to increase their fiber rollout to increase their coverage and thus meet the growing demands of the customers.

Compared with some of the international examples, the fiber density will have to increase atleast four-folds if not more. This, along with other factors discussed below would mean that fiber would evolve as a separate industry in some time, similar to the trajectory seen for the telecom towers industry over the last two decades.

Drawing parallel with tower infrastructure industry

The dynamics of the fiber industry are evolving into those of the telecom tower industry some years back. Both form critical part of the telecom network, are capital intensive, and part of the telcos own balance sheets. In order to expand their network and reach, the telcos started with establishing and owning the towers as it was still a nascent industry. However just like fiber, tower is capital-intensive, meaning sizeable deployment of funds. Further, there was share-ability of the towers wherein multiple telcos could deploy their radio equipment on one tower, which came to be called *sharing*. Tower-sharing had the potential to significantly reduce the capex for the entire industry as it obviated the need for each telco to erect its own tower, the only challenge being that any telco would be reluctant to deploy its network on a competitor's tower. Thus, the telcos decided to hive off their tower assets in separate entities, eventually leading to emergence of independent tower companies. Sharing apart, the tower companies could also roll out new towers for the telecom industry with their own funding (also availing long term funding).

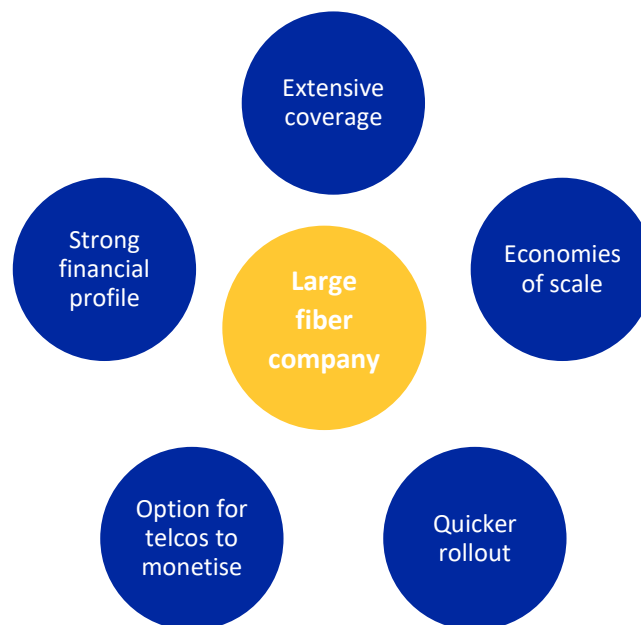
Bharti, erstwhile Vodafone and Idea decided to merge their tower portfolio and created an independent tower company – Indus Towers Limited. Moreover, Bharti also had a separate tower company called Bharti Infratel Limited and Reliance Communications Limited also owned a separate tower company – Reliance Infratel Limited. Creating separate entities presented the telecom operators with opportunity to monetize these investments and thus deleverage their balance sheets. Gradually, towers became a separate industry with return potential emanating from the extent of sharing. Moreover, roll out of new technologies meant more demand from the tower industry and aided their revenues. The industry has taken 7-8 years to mature and it is now on the last leg to become majorly independent.



Hiving off fiber assets and fiber sharing is the need of the hour

Right of way issues and longer time taken by city authorities to process the applications for laying of network leads to slower deployment of such networks. Moreover, extent of capex towards fresh fiber layout is sizeable, estimated to be in the range of Rs. 10-15 lakh per route km depending on the location, terrain and density of population. While the cost of cable itself is a significant portion of this, which may see some reduction over time, nevertheless the extent of fiber rollout over the next few years would mean capex of Rs. 2.5-3 lakh crore. Given the weak financial state of the telcos, which are already reeling under a pressure of burgeoning debt levels, low profit generation and intense competition, they would find it challenging to incur such capex.

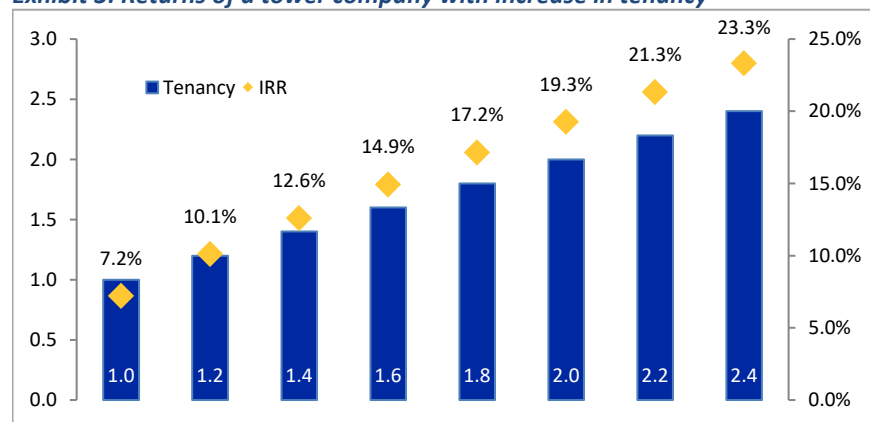
In fact, the telcos, in order to reduce costs and focus on their core operations, have already begun hiving off their fiber assets into separate companies. As an immediate benefit, this is expected to help the telcos raise funds and improve their capital structure. More importantly, the key argument for this spin-off is same as that for towers – potential for sharing. Telcos already own sizeable fiber assets (as discussed above), and this would be the starting point for the sharing.



Bharti Airtel has already transferred its fiber assets to a separate entity – Telesonic Networks Limited, while Vodafone Idea has transferred its fiber to Vodafone Towers Limited. Reliance Jio has also announced that it will hive off its fiber assets to a separate company and so has BSNL. There is a possibility of merger of some of these companies to strengthen the fiber presence and thus create synergies. Funds raised from the sale of partial stake in fiber assets would be used by the telcos in their core operations. As per ICRA estimates, the market value of the fiber assets owned by the major private telcos is around Rs. 120,000 crore and thus monetization of these assets can generate sufficient funds to deleverage the balance sheets to a sizeable extent.

Initially, tariff structures, revenue models, and service agreements would have to emerge. Data integrity can be a concern, but it is likely to be addressed. Largely the industry has the template of the tower industry to follow, which would hasten the evolution. Parallely, these fiber companies would roll out more fiber as per the needs of the telecom industry. The profitability is likely to be directly related to the extent of sharing and the amount of traffic carried, as it leads to significant addition to revenue at a relatively low incremental cost (a parallel with tower industry is shown in graph below, wherein the returns improve as tenancy improves). Thus, bigger fiber companies will be more profitable and thus can incur capex to consistently enhance their networks. We are likely to witness a completely new industry few years down the line.

Exhibit 3: Returns of a tower company with increase in tenancy



Source: ICRA research

Conclusion

Growing need for a strong and deep fiber network and the resultant quantum of funds required for the same, the fiber industry is following the way of towers industry. The process has been exacerbated by the prevailing limited financial flexibility of the telcos and their need for funds to expand the product offerings and improve service quality. Telcos have hived off/ looking to hive off their fiber assets to separate entities, with the sharing of these assets providing the potential for a reasonable return on capital. Separate fiber companies are expected to be financially stronger and thus can incur capex and raise funds of tenors which match their returns. The dynamics of the fiber industry are evolving in a manner similar to the telecom tower industry some years back.

Towers too form a critical part of the telecom network, are capital intensive, and initially were part of the balance sheets of the telcos. Increased prevalence of tower sharing reduced the capex for the industry. Telcos started monetising their stakes in the tower companies, to a stage now that the industry is on the cusp of becoming largely independent. Taking a cue from the divestment of tower assets and their eventual emergence as an independent industry, the fiber assets are also being hived off to separate entities. For the independent fiber assets, tariff structures, revenue models, and service agreements would have to emerge. The profitability is likely to be directly related to the extent of sharing and the amount of traffic carried, as it leads to significant addition to revenue at relatively low incremental cost. Thus, bigger fiber companies will be more profitable and thus can incur capex to consistently enhance their networks. Steady, reliable return generation would make them attractive for independent investors. And, telcos can monetize their investments in these separate fiber companies by selling their stake which can be used to deleverage their balance sheets which are reeling under consistently increasing debt levels.

ABOUT ICRA

ICRA Limited (formerly Investment Information and Credit Rating Agency of India Limited) was set up in 1991 by leading financial/investment institutions, commercial banks and financial services companies as an independent and professional investment Information and Credit Rating Agency.

Today, ICRA and its subsidiaries together form the ICRA Group of Companies (Group ICRA). ICRA is a Public Limited Company, with its shares listed on the Bombay Stock Exchange and the National Stock Exchange.

Alliance with Moody's Investors Service

The international Credit Rating Agency Moody's Investors Service is ICRA's largest shareholder. The participation of Moody's is supported by a Technical Services Agreement, which entails Moody's providing certain high-value technical services to ICRA. Specifically, the agreement is aimed at benefiting ICRA's in-house research capabilities, and providing it with access to Moody's global research base. The agreement also envisages Moody's conducting regular training and business seminars for ICRA analysts on various subjects to help them better understand and manage concepts and issues relating to the development of the capital markets in India. Besides this formal training programme, the agreement provides for Moody's advising ICRA on Rating-products strategy, and the Ratings business in general.

The ICRA Factor

Our services are designed to

- Provide information and guidance to institutional and individual investors/creditors;
- Enhance the ability of borrowers/issuers to access the money market and the capital market for tapping a larger volume of resources from a wider range of the investing public;
- Assist the regulators in promoting transparency in the financial markets;
- Provide intermediaries with a tool to improve efficiency in the funds raising process.

Business Contacts

Mr. L. Shivakumar
E-mail: shivakumar@icraindia.com
Tel: +91 22 6114 3406 / +91 98210 86490

Mr. Jayanta Chatterjee
E-mail: jayantac@icraindia.com
Tel: +91 80 4332 6401/ +91 98450 22459

Media and Public Relations

Ms. Naznin Prodhani
E-mail: communications@icraindia.com
Tel: +91 124 4545 860

Registered Office:

1105, Kailash Building, 11th Floor,
26, Kasturba Gandhi Marg,
New Delhi - 110 001
Tel: + 91 11 2335 7940-45

Corporate Office:

Building No.8, 2nd Floor,
Tower A, DLF Cyber City Phase II,
Gurgaon- 122 002
Tel: +91 124 4545300

Ahmedabad

1809-1811, Shapath V,
Opposite Karnavati Club
S.G. Highway, Ahmedabad - 380015
Tel: +91 79 4027 1500/01

Bengaluru 1

'The Millenia', Tower- B, Unit No. 1004,
10th Floor, 1 & 2 Murphy Road,
Bengaluru - 560 008
Tel: +91 80 4332 6400

Bengaluru 2

2nd Floor, Vayudooth Chamber,
15-16, Trinity Circle, M.G. Road,
Bengaluru - 560 001
Tel: +91 80 4922 5500

Chennai

5th Floor, Karumuttu Centre,
634, Anna Salai, Nandanam
Chennai - 600 035
Tel: +91 44 4596 4300

Hyderabad 1

No. 7-1-58, 301, 3rd Floor, 'CONCOURSE',
Above SBI-HPS Branch, Ameerpet,
Hyderabad - 500 016
Tel: +91 40 4920 0200

Hyderabad 2

4A, 4th Floor, SHOBHAN,
6-3-927, A&B Somajiguda,
Raj Bhavan Road,
Hyderabad – 500082
Tel: +91 40 40676500

Kolkata

A-10 & 11, 3rd Floor,
FMC Fortuna 234/3A,
A.J.C. Bose Road,
Kolkata -700 020
Tel: +91 33 7150 1100/01

Mumbai

3rd Floor, Electric Mansion
Appasaheb Marathe Marg,
Prabhadevi,
Mumbai - 400 025
Tel: +91 22 6169 3300

Pune

5A, 5th Floor, Symphony,
S. No. 210 CTS 3202 Range Hills Road,
Shivajinagar, Pune - 411 020
Tel: +91 20 2556 0194, 020 6606 9999

Email: info@icraindia.com

Helpdesk: 9354738909

Website: www.icra.in/ www.icraresearch.in