

5G, its security implications and the China angle

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By Brig Akhelesh Bhargava (Retd)

During the budget speech on 01 Feb 22, the Finance-Minister made an announcement about the revenue that would be generated from the auction of frequency bands for 5G. The nation had been waiting patiently for the auction of frequency bands required by the telecommunication (telecom) companies to commence the process of deploying infrastructure for 5G. Though the major telecom companies, notably [Bharti Airtel](#) and Reliance Jio, have been working at a feverish pitch on 5G technology sans the set-back due to CoronaVirus, this announcement certainly set the ball rolling on the 5G deployment in India.

The world telecom companies do not want to miss the roll out of the 5G network in India as it will provide billions of dollars in revenue. Initially the Government of India (GoI) had indicated that they would not allow Chinese telecom companies to take part in 5G deployment in India. As a consequence, China warned India if this were to happen, then there will be 'reverse sanctions' too. Later, on 30 Dec 2019, the then Telecom-Minister announced that the regulators would conduct trials for 5G rollout and asked for fresh bids from telecom companies within 10 days (by 10 January 2020). The Trials for 5G services that were scheduled to include the Chinese companies including Huawei and ZTE, were delayed on the back of modalities such as pricing and tenure.

Post the 'Doklam' incident followed by tension along the Chinese border, there has been no further statement or clarification regarding 5G by GoI till this announcement. It is to be understood that anything that uses communication frequency bands can be intercepted, imitated, manipulated and misused. When the communication is related to security (surveillance, intelligence, tracking, space related) and government functioning, etc; it becomes even more critical. If the frequencies are known, it can be used to mislead the adversary in the interpretation of data and create confusion. One way to reduce this is to Encrypt data, provided the routers, servers, and encrypting equipment are manufactured by the host country. Unfortunately, most of the above equipment is also manufactured by China and being imported from it. The ones being manufactured by Nokia, Samsung or others because of cost factors have been discarded (due to lowest bidder concept).

China is always on the lookout for opportunities arising out of infrastructure projects in countries world-wide, for which global tenders are issued. The Chinese government promotes its companies to participate and win orders. The aim is always related to primarily enhancing its footprint in other countries and to gain security related information as an indirect benefit. China was among the first to initiate and promote development of 5G related equipment and its companies, notably Huawei and ZTE became 5G ready – both in terms of hardware and software. The cost of their equipment was a fraction of that which was developed by Nokia or Samsung and thus very competitive. Apart from this, their equipment was also compatible with 4G and thus were multi-functional. Other countries including the US, which were late starters, could not match the cost of equipment being provided by Huawei. Besides, the Chinese were quick to apply for and take intellectual property rights (IPR) for niche technologies.

Artificial intelligence (AI), data analytics, big data mining and machine learning are fields which will benefit from 5G and China is well ahead in them. The Chinese are adept in data collation and intelligence gathering. As per rules, the Chinese companies are bound to inform the Chinese Government about, 'any information that may be of use for national security' or in other words carry out espionage. The involvement of Chinese workers may lead to compromise on information related to the following: –

- The frequency and quantum of bandwidth allocation for various zones.
- Reservations expressed by the armed forces on certain frequencies that are being used in certain equipment such as Surveillance and Tactical Air Defence Radars. The blockage of the above-mentioned frequencies would inevitably reveal the specific frequency / band of frequencies being used by Indian armed forces.
- Features and identification of the equipment being used by Indian companies.
- Prioritisation of urban, semi-urban, rural and border areas in rolling out of the 5G network.

Though they have improved over the last few years, in India, things have been moving at a slow pace and every infrastructure project has a long lag time. To be among the world leaders in 5G, farsightedness should have been there. When 4G came into being, China was smart enough to simultaneously start developing 5G technology. It ensured that wherever feasible, 5G compatible features were built into the 4G infrastructure. The cost automatically went down for per square km of 5G infrastructure deployment.

Indian companies had taken equipment from Huawei even for 2G, 3G and 4G and same have been deployed at mass scale. However, due to their operating frequency being at much lower band and [download](#) speed being much slower; the security issues were not so sensitive. In hindsight, allowing a country (considered an 'adversary') to participate in a core activity (such as telecom), has been like inviting the devil for a meal. We as a nation have taken the risk of first deploying the telecom infrastructure equipment that has been imported from our adversary China and then at places allowed their skilled workers (which include military personnel in garb of civilians) to help deploy it. Indeed, it has been a grave irretractable mistake. What has been done is done but not anymore and needs to be amended.

In May 2019, the US placed the Chinese electronics giant on a trade blacklist. They cited concerns regarding the national security of the country. The decision pushed almost all US companies to sever ties with Huawei. Beyond that, the US also asked its allies not to use the Huawei-made telecom equipment. The US claimed that China could exploit the telecom hardware and spy on the communications. According to past reports, the US has been trying to ensure that Huawei remains out of 5G infrastructure across the globe. Following this Huawei has suffered huge revenue losses amounting to over 30 percent in FY 2021 over FY 2020.

China is hugely dependent on the US for chips and is currently trying to offset this by in-house manufacture. To be one up now on China, the US has proactively started work on 6G. The same has been echoed by the present Telecom-Minister; a great step indeed.

The surprising aspect is that the Indian telecom companies are still having deals with Chinese telecom companies. Is it because that all along they have been buying equipment from them and compatible equipment is required or is it the cost factor? On 7 Feb 22, Bharti Airtel placed an order on Huawei for Rs 150 crores. Previous year, it had placed an order worth Rs 300 crores. The orders have been mostly for expanding its network. Similarly, Vodafone placed a small order on ZTE for about Rs 15 crores. The smartphone demand in India has been growing year on year; with 2021 seeing the highest growth. Surprisingly, the share of the Chinese companies has been phenomenal, [Xiaomi](#) (24percent), Vivo (15percent), Real (14percent) and Oppo (10percent) – adding up to 63 percent of mobile phones sold in India. These are low end phones and have their chips manufactured in China itself. There is still a question over these phones being easily hacked or snooped or having an embedded chip which can be activated at will if required.

It is good to land the most economical deal, but is there a need to hurry at the cost of compromising on national security. Knowing fully that the Chinese are well ahead in 5G and cannot be matched; India should continue to improve 4G coverage and concentrate with full zest on 6G technology. Government backing is required and it must not back out from funding research. The US, Japan, South Korea, Australia and others have not for naught decided to shun Huawei and ZTE. Whether we are going the right way or we are falling into a trap, this only time will tell. For now we can only pray for an informed way forward!