

Resource Requirements for Planned Infrastructure Targets in India

Topic: Effects of Investments

Author: Priyam SENGUPTA

Co-Authors: Kakali MUKHOPADHYAY

Indian infrastructure sector is going through a significant transformation. Investment in infrastructure is envisaged to be doubled to US\$1 trillion during the Twelfth Five Year Plan and about half of this is targeted to be achieved through private sector investment. The share of infrastructure investment in GDP is planned to be increased to more than 10% by the end of the Twelfth Plan. This investment, if it materializes, can propel India's economic growth to a higher trajectory. While the overall investment in the infrastructure sector over the last five years has met the target, it has been lopsided, with the major share invested in the Telecom and the Oil & Gas sectors. The Indian Budget 2015-16 paid due emphasis on infrastructure sector and laid out plans to boost infrastructure, relying on public investment as private investment remains weak. Budget 2015-16 increased allocations to rail, road and other infrastructure projects by Rs.70,000 crore and proposed a Rs.20,000 crore National Investment and Infrastructure Fund (NIIF). With huge infrastructural investment in the pipeline, it is now necessary to measure the impact of growth in infrastructure on other parts of the economy. Since infrastructural growth entails a sizable structural change in the economy with sectoral interdependence, we need to understand the implication and feasibility of higher growth in the infrastructural sector at this point of time.

The current paper will address the economic and environmental impact of achieving time bound infrastructural targets as envisaged in 'Vision 2020' for the Indian economy. It also attempts number of simulation exercises to address the infrastructural development in the Indian context. We have looked into two most important infrastructure sectors viz. electricity and land transport in Indian context. The long term goals of these two infrastructural sectors- as envisaged in various 'Vision Documents'- have been testified and the study established the unquestionable importance of key resources. The study will also highlight the role of 'key resources' to achieve long term goals of infrastructure sectors.

To build the physical infrastructure of a country, few strategic inputs like coal, iron ore, bauxite etc plays the most crucial role. In this paper we refer these vital strategic inputs as 'key resources'. We have identified 21 such 'key resources' as per the 2007-8 Input-Output Transaction Table (IOTT) of India published by Central Statistical Organisation (CSO). In this paper we have developed a modified input-output (I-O) framework for analysing role of key resources to sustain long-term infrastructural goals. Achieving higher growth rate in output always entails higher energy consumption. Each stage of production of electricity and land transport requires adequate energy. As output of electricity and land transport increases, consumption of various inputs also increases. In this paper, we have calculated the additional energy demand that is accrued in the process of achieving long term infrastructural target.

The study also incorporates a measure of the change in labour requirement in this process. Higher output of electricity and land transport always require employment of additional human resource. In every stage of production more people would get employed. The electricity sector is a highly technical area where more skilled workers are required. On the other hand, land transport sector is highly dependent on unskilled or semi skilled labours. Hence the requirement of labour in electricity and land transport sectors are quite different. So the change in labour requirement in the process of achieving some pre-defined target in electricity and land transport is significant although the type of labour in two sectors are different.

The impact on environment in terms of emission of pollutants (both air and water pollution) is also a part of this study. Both electricity and land transport sector are highly polluting industries. So any

increase in output results in huge emission of pollutants. In this paper we have tried to calculate the additional pollution due to higher production level. Alarming, the inputs of these two sectors are also highly polluting. Hence higher production of inputs (like coal) due to higher output of electricity and land transport also add to the volume of pollutants. Lastly, we have measured the change in GDP in the process of achieving infrastructural goals as envisaged in our study. The result shows that other sectors have to grow significantly to match higher growth of infrastructure sector. The huge investment in infrastructure would definitely hike GDP growth rate (7.4% in 2015-16, as predicted by Budget 2015), but its detrimental impact on environment would always remain a matter of concern according to our study.