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The Annual Public Policy Reports Series initiated by the School of Public Policy and Governance (SPPG) is part of innovative student led research programmes. The student-led research programmes are an offshoot of the Policy Area Concentrations (PACs) offered by the SPPG. Depending on their research and policy interests, the students select one of the PACs - Regulation and Institutional Reform, Urbanisation, and Social Conflict & Public Policy. Within each PAC, the students choose one specific policy problem. With due support from the faculty, each student then designs a research and field-based experiential learning schedule for himself / herself in order to facilitate an in-depth understanding of the policy area he / she has chosen to study. As a collective under a particular PAC, each individual research contributes to the broader theme of the PAC, which in turn is structured to emerge as a policy research programme. The research findings of the programme are published in the SPPG Public Policy Report Series.

The objective of the Public Policy Report Series is to publish relevant policy research in order to engage with larger policy discourse on current policy and social concerns. It hopes to feed into the policy process and civil society initiatives with in-depth empirical findings, analytical research, and policy solutions.
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EXECUTIVE SUMMARY

Regulation of public infrastructure has been a theme of topical interest. The report engages with the theoretical foundations of infrastructural development and situates them in a series of case studies drawn from logistical multimodal infrastructure, railways, roadways, airports, waterways, and ports to suggest an institutional / regulatory regime that should govern the provisioning of public infrastructure.

The intervention of this report is to show that the dominant definitional understanding of infrastructure as a ‘production function’ presents us with very narrow boundaries. The report terms this dominant understanding as engineering approach to infrastructure. The engineering approach to infrastructure is concerned with merely logistical issues that expects an input A (for instance, creation of a specific infrastructure) will result in output B (for instance, economic growth). Thus, the ends are straightforward and unidimensional in nature. In contrast to engineering approach, we propose an encompassing approach that claims to be multidimensional in nature and proposes

- People acquire the central place in planning and sustaining infrastructural growth
- A convergence is brought about between institutions, sectors, geographical spaces and social groups;
- Creating new infrastructure remains the focus but it also promotes augmentation of existing infrastructure and addressing issues related to underutilisation of existing infrastructure.

Instead of economic growth producing the multiplier effect, the efforts of infrastructural development plan(s) should concentrate on creating a socio-economic condition that in turn should translate into economic growth. Drawn from these diverse case studies, the encompassing approach recommends a unified regulatory institution – that will bring about an inter-sectoral and inter-ministerial / departmental convergent action.
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INTRODUCTION

Infrastructure is considered as a sine qua non of progress of any nation. All throughout human history, the endeavour has been to create infrastructure towards human progress. Two critical concerns that inspire this effort are as follows:

a) Why existing public infrastructure fails to achieve the desired ends?

b) What are the parameters for ensuring success of infrastructural provisioning involving private collaborators?

The answers to the above questions are important in order to comprehend the success and sustainability of any infrastructure project. This, gravely depends on the entire process of project conceptualization, which includes components such as planning, financing, implementation, monitoring and measuring outcomes.

The endeavour to our intervention is to showcase that the dominant definitional understanding of infrastructure as a ‘production function’ presents itself with very narrow boundaries in order to comprehend the questions raised above. We term this dominant understanding as engineering approach to infrastructure. The engineering approach to infrastructure is concerned with merely logistical issues where it expects that an input A (for instance, creation of a specific infrastructure) will result in output B (for instance, economic growth). Thus, the ends are straightforward and unidimensional in nature. This engineering approach is also categorized by being primarily logistical in nature. When translated into practice, it acquires a unidimensional approach, that is, infrastructure will lead to economic growth, which

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1 Success here entails sustainability of the project, incentivising private players.

2 Elaborated in the next section.
in turn will unfold multiplier effects in aspects of employment, development, equity etc. The reasons for failure(s) of infrastructure provisioning are located in managerial inefficiency or lack of finance or poor implementation, among others. This narrowness of engineering approach does not allow a space to locate the cause in erroneous imagination of infrastructure project as well as complex matrix of reasons that actually contribute to deficits in infrastructure provisioning.

In contrast to engineering approach, we propose an encompassing approach that claims to be multidimensional in nature. Encompassing approach departs from engineering approach by proposing that - instead of economic growth producing the multiplier effect, the efforts of infrastructural development plan(s) should focus on creating a socio-economic compass which in turn translates into economic growth.

A compass is an instrument for discovering physical direction. Social Compass in infrastructure serves as our guide to provide a direction in infrastructural development where:

a) People acquire the central place in planning and sustaining infrastructural growth;

b) A convergence is brought about between institutions, sectors, geographical spaces, and social groups;

c) Creating new infrastructure remains the focus but it also promotes the augmentation of existing infrastructure as well as addresses issues concerning under-utilisation of the already available infrastructure.

d) Providing framework for understanding the effectiveness of investment, be it private or public.
ENGINEERING APPROACH

Infrastructure: Production Function & Economic Growth

In the engineering approach, infrastructure is conceptualised as serving the requirement of a production function. It is considered as a factor that stimulates the other factors of production, that is, infrastructure is perceived as a part and parcel towards achieving economic growth. In other words, infrastructure development amplifies the productivity of various production functions within the economic ecosystem. An emerging deduction, therefore, becomes that infrastructure tends to be a production function that has long life and long payback periods, they are capital intensive and diverse, they cannot be directly consumed, and they are immobile with relatively high government involvement. This deduction, on the other hand, would exclude itself from "social infrastructure" such as schools, universities, health care centres, and so on. This is because they're not always long-lasting and the service that they provide is generally more to labour input than to infrastructure input (Prud'homme, 2004).

Infrastructure while being understood as a production function is seen as a critical contributor to economic growth. It enables productive functioning of economic activities in other sectors (primary, secondary, and tertiary) as well. Well-established infrastructure enables economies of scale, reduces the costs of trade and facilitates efficient production as well as consumption of goods and services, thereby fostering the development process (Ghosh, 2011; Henckel & McKibbin, 2010; Ministry of Finance, 2015).

In fact, the literature of development economics reflects that there exists strong correlation between “level of infrastructure” and “economic development”.

3
According to a study carried out by Calderon, Moral-Benito and Serven, a 10% increase in infrastructure assets results in an increase of GDP per capita by 0.7% to 1% (Klaesi, 1994; Henckel & McKibbin, 2010). Further, studies undertaken by the World Bank claim that a unit increase in the stock of infrastructure investment results to a corresponding unit increase in the Gross Domestic Product of a country (World Bank, 1994).

In the engineering approach, the inability of the infrastructure to serve the need of production function will affect the economic growth and its multiplier effects. This is broadly understood as infrastructural deficit. In this approach, infrastructural deficit is associated with the following major causes:

**Issues related to Financing Infrastructure**

Financing Infrastructure is the upfront cost paid to build it. It was not so long ago that infrastructure investment was financed almost entirely by the public sector - from government budgetary allocations and internal sources of public sector infrastructure companies. This was undertaken through public financing where the government would source through taxation or public borrowings (Rajiv B. Lall and Ritu Anand, 2009).

However, in the recent years, there has been a shift in infrastructural investments where private sector is emerging as a significant player in building and operating infrastructural assets. This shift saw the emergence of private finance where the government borrows from private investors or contracts out infrastructure provisioning to private entities in order to fund and develop massive infrastructure projects. Public Private Partnerships, thus, came up through the Private Finance
Initiative and their participation is determined by the risks involved within the project.

It is often argued that private finance is not forthcoming as it involves high risks, capital intensive nature, high up-front and sunk costs, long gestation periods, no guaranteed rate of returns, and the requirement of long-term debt market. These attributes diminish the pool of incentives for private participation in building and constructing infrastructural projects. (Rajiv B. Lall and Ritu Anand, 2009).

Further, project planning involves risks which are commercial, operational, political, and financial in nature. Consequently, it is required that there exists forecast and risk mitigation strategies at the master plan stage of project development along with appropriate allocation of risks which are further embedded in the contractual arrangements. Infrastructural financing, therefore, remains a big bottleneck for projects that have large scale investments, long-term debt repayment, and lack of equity returns (Torsten Ehlers, 2014)

The main challenge, therefore, is not the lack of capital markets and financial sources but lack of attractive and transparent framework for creation and delivery of infrastructure project leading to the possibility of inadequate rate of returns. Coupled with this, the state has been experiencing challenges related to fiscal expenditure that in turn requires external sources of investment. However, it would be difficult for private sector to bring about the changes in the pattern of investment in infrastructure without state becoming an active agent in steering the required capital, legislative as well as administrative changes. These bottlenecks can be eliminated with well-planned and structured approach to infrastructural project development.
Issues related to Planning Infrastructure

Another aspect outlined by engineering approach to infrastructural deficit is the failure or inadequacy of planning. While planning a project, the approach has been to look how a current infrastructural gap can be addressed through target-oriented approach. For example, any infrastructural project would require, pre-feasibility study followed by a detailed project report. Once these reports reflect financial viability, the project is undertaken. The framework only captures the input and output without being mediated by host of other factors – cultural, social, political, commercial, administrative, and legal - that may affect the various stages of implementation of the project. These host of other factors form preconditions to any planning process relating to infrastructural development.

Issues related to Executing and Managing Infrastructure

In the normal course of engineering process, the primary requirement of managing and executing any infrastructural development project involves a) allocation of responsibilities to various actors / institutions, b) a schedule for release of funds corresponding to the work completed, c) the process of land acquisitions, d) obtaining environmental clearances, e) achieving financial closures, and f) to ensure if there exists a lack of appropriate raw material, technology and ‘skilled’ labour (Agarwal, 2015). Management, on the other hand, involves reviewing, monitoring, and supervision with respect to timely creation and delivery of the projects alongside upholding the required quality and adherence to estimated cost (Siddesh K Pai and J.Raj Bharath, 2011)

This straightjacket framework of executing and implementation does not take into account the shortcomings of planning delineated in the previous section. Delays and
lapses in execution are not merely a managerial but can be caused by extraneous socio-economic, legal, political, administrative and cultural factors. The challenge, therefore, is to embed these factors in the planning, executing, and management phases. As a result, successful project management and execution requires effective coordination, wide-ranging skills and capabilities, risk mitigation strategies, efficient bureaucratic working as well as constructive regulatory and institutional structures, thereby harnessing the potential to overcome managerial and executive infrastructural deficits.

*Measuring and Assessing Infrastructure*

The efficient supply of infrastructure is considered as one of the parameters of economic growth. It can be viewed as an input to production which in turn raises the productivity of other factors. Infrastructure, thus, provides services that enables economic growth by enhancing the productivity of labour and capital, thereby reducing the costs of production and raising profitability, income, and employment (Infrastructure Statistics Manual, 2012). So, the adage in infrastructural sector is that ‘the productivity is the spine on which the infrastructure itself is conceptualised and thereby measured.’ (Infrastructure Statistics Manual, 2012).

Infrastructural measurement is carried out to understand the existing capacity and the prerequisites to expansion. It is swathed in existing condition, current and future demands as well as comparison of infrastructural facilities, among others. As a sample of the measurement strategy adopted by the Ministry of Statistics and Programme Implementation (Govt. of India), as per the Manual of Infrastructure Statistics (2012), there are five key indicators that measure the infrastructural assets.
These include 1) Access Indicators, 2) Quality Indicators, 3) Fiscal Cost and Revenue Indicators, 4) Utilization Indicators, and 5) Affordability Indicators.

The central question, therefore, is to understand whether the economic growth can be created and sustained by infrastructural provisioning, as advocated by the engineering approach without taking into account the broader concerns like interest of the all stakeholders, appropriate institutional arrangements for multi-sector and geographical convergence etc.
THE ENCOMPASSING APPROACH

BEYOND A NARROW UNDERSTANDING

This engineering approach is categorized by being a primary logistic issue, which may lead to one-dimensional approach to economic growth wherein the ends are taken as fairly straightforward and the object of the exercise is to find the appropriate means to solve them. In contrast to this, we propose an encompassing approach which must address multi-dimensional issues. Therefore, critical concerns like social-inclusivity, regional development, and sectoral integration becomes the basis of economic growth, rather than being resultant attributes.

This is not to proclaim that engineering approach does not have any merit. The understanding arrived through engineering approach provide an insight into several of the technical and managerial issues. In other words, it is a necessary but not sufficient condition towards a comprehensive understanding of infrastructural growth and development. As opposed to engineering approach, we propose an encompassing approach that would include following elements:

i) An element of social inclusion - where members of the society impacted by infrastructure provisioning should have access to the benefits of infrastructure as well as effectively participate in the market economy, thereby furthering their socio-economic opportunities. This aspect of inclusion also creates institutional spaces for all stakeholders in infrastructure project at various levels in the policy process. This brings into light a need for incorporation of array of issues that lie beneath decision-making, policy problems, and implementation during the course of infrastructure development.
ii) An element of specific *policy vision* that mitigates the regional lopsidedness in infrastructure investment, growth, and development. This demand taking into account specificities of location and geographical underpinnings.

iii) An element of *convergence* that creates institutional spaces for coordination within and across various infrastructural provisioning, mitigates asymmetrical information, and corrects market failure. It bridges inefficiency gaps and addresses solutions as a whole rather than narrow silo efforts to problem solving.

iv) An element of plugging underutilisation that ensures *efficient usage of existing infrastructure capacities* together and further augmenting and creating infrastructural facilities

v) An element of *harnessing private capital and talent* to overcome deficit in investment and expertise.

In unfolding the above elements, we develop a conceptual framework which can map an all-encompassing approach towards understanding infrastructure provisioning.
For the purpose of analytical clarity, we divided the conceptual framework into five elements, however, they are interrelated to each other. As discussed earlier, these elements provide a comprehensive understanding of infrastructure and are central in mapping the encompassing approach. Therefore, we elaborate on the above delineated conceptual framework involving the five elements through sector-specific case studies.
A brief explanation of the case studies are as follows:

1) **Social Inclusion:** The case study on National Waterways in India (NW 3) attempts to understand the nature of inclusiveness that the Inland Water Transport sector undertakes while expanding its infrastructural development in the West Coast Canal. It primarily argues that providing or enabling socio-economic opportunities to people impacted by infrastructure provisioning is indispensable towards an encompassing approach of infrastructure.

2) **Policy Limitedness and Specific Policy Vision:** Airport infrastructure is one of the “keys” for the region to global recognition and economic prosperity. But the key has not been handed over properly, yet. To open up the potential the region holds, this study tries to look at the existing institutional framework of airport development in India and tries to situate the region in that framework. This study looks closely at the rationale of why the Northeastern region should become India’s air transport gateway to South East Asian countries.

3) **Convergence:** The case study on Multi-Modal Logistical Parks (MMLPs) draws attention to the need for inter-departmental and inter-ministerial coordination and policy convergence, in the backdrop for improving India's logistics efficiency. As a result, in this case study, we explore by what means multimodal transport- carriage of goods by at least two or more modes of transport - can aid in the efficiency of logistics sector and what institutional mechanisms would be required in order to bring convergence among various modes of transport to achieve the same.

4) **Underutilization:** Several challenges have been faced in augmenting existing facilities, mechanizing ports and changing the logistics and connectivity issues within port processes. Financial delays, rigid and inadequate regulations have
added to the hindrances in the port sector economy growth. These challenges have created a major break in the optimal efficiency level of the port functioning that is a resultant of underutilization of infrastructural capacity. The assessment to evaluate reduced efficiency levels due to underutilization of port infrastructure is thus carried out by a case study of Chennai Port, a Major Port of India.

5) *Private Capital and Talent*: The case study on harnessing private capital and talent situates the dynamics surrounding the provisioning of railway infrastructure in a setting where there exists state monopoly of the Indian Railways with relatively less presence of private players. In doing so, it develops a conceptual framework to evaluate the effective functioning of PPP in IR as well as to understand the need for encouraging and incentivising private capital.
CASE STUDIES
SOCIAL PARTICIPATION

A NECESSITY FOR SUSTAINING INFRASTRUCTURE AND CREATING GROWTH

Introduction

As opposed to the engineering approach where appropriate means are adopted to achieve a fairly straightforward end (in this case, the economic growth), an encompassing approach, as discussed earlier, demands a multi-dimensional perspective which takes into account socio-cultural, political, regional, and sectoral issues. In this context, the current case study highlights the significance of social inclusion and stakeholder participation which form the central elements in understanding the challenges involved in infrastructure provisioning.

As pointed out earlier, social inclusion implies that the members of the society who are impacted by infrastructure provisioning should have access to the benefits of infrastructure in order to further their socio-economic opportunities. This aspect of inclusion also creates institutional spaces for all stakeholders in infrastructure project at various levels in the policy process. In other words, infrastructure provisioning should not merely aim at accruing economic benefits, instead to achieve growth and development which are routed through social inclusivity and stakeholder participation.

In this context, the present case study deals with infrastructural development of National Waterway 3, situated in the state of Kerala.
Inland Waterways in India

India with its vast geography has an extensive inland waterway system which is fuel efficient, cheaper, and reliable and therefore, is the most sustainable mode of economic infrastructure for freight movement in India. The length of navigable waterways in India is about 14,500 km which comprises of rivers, canals, backwaters, creeks, etc. (Water Resource Information System, 2018). While National Waterways come under the purview of central government, others waterways fall under the jurisdiction of respective state governments. These National Waterways are developed, maintained, and regulated by the Inland Waterways Authority of India, as per the provisions of Inland Waterways Authority Act 1985 (IWAI, 2017).

![Figure 1: Geographical Map of National Waterways](source: IWAI website, 2017)
Among the five major National Waterways in India, this case study as mentioned earlier, shall deal with National Waterway 3 i.e. Kollam- Kottapuram stretch of West Coast Canal (168 km), Champakara (23 km) and Udyogamandal Canals (14 km).

Following the need for modernisation, the National Waterway 3 successfully installed the 24-hour navigational infrastructure facilities all through the navigational channel in the waterway. While Champakara and Udyogamandal canals have well established infrastructural facilities and well-functioning cargo handling infrastructure, this case study identifies that the Southern part of the West Coast Canal stretch is relatively less developed owing to socio-cultural conflicts in the area. In other words, the nature of infrastructural development has a toll on the members of the society whose livelihood is dependent on fishing (IWAI, 2017).

This case study attempts to understand the following:

a) The nature of inclusiveness that the Inland Water Transport sector undertakes while expanding its infrastructural development in the West Coast Canal.

b) The cost-benefit analysis of including the fishing communities in the larger development of the sector.

On field exploration of National Waterways 3 provide us with a unique and diverse understanding of the field realities concerning the project, which is enumerated further.

**The Current Social Conundrum**

The infrastructural development of NW3, particularly the southern part of West Coast Canal, has proved to be ineffective in enabling the fishermen to pursue their livelihood opportunities alongside the development of the canal. Since the beginning of 2012, the Fisheries department (on the claim that a new inland waterway is being
developed) has been issuing notices to various fishermen ordering the removal of nets that exist on the navigation channel. These nets were viewed as an obstruction for the operation of Vessel. During the period of 2012 - 2014, some net were removed with compensation paid to an extent.

Nevertheless, there exists two categories of fishermen who are impacted by infrastructure provisioning of the southern stretch of NW 3, which is essentially a narrow stretch. While a majority of the fishermen in the region mostly use ‘Chinese nets’, some use ‘flow nets’. It has been observed that the former i.e. those using ‘Chinese nets’ are the ones most affected. The table below provides a comparative analysis of vulnerabilities of the fishing community in various conflict zones across the waterway:

<table>
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<th>Valiyazheekkal (Southern part)</th>
<th>Cherai (Northern part)</th>
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<tr>
<td>Total nets</td>
<td>31 Chinese net</td>
<td>74 (removed) 43 Flownets</td>
<td>35 (Chinese nets and flow nets (again installed))</td>
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<tr>
<td>Workers</td>
<td>2 workers</td>
<td>3 workers</td>
<td>2-3 workers</td>
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<td>Caste</td>
<td>Araya/Ezhava(OBC)</td>
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<td>Gender</td>
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<tr>
<td>Compensation</td>
<td>2.45 lakh for 3 people</td>
<td></td>
<td>2.45 lakh per net</td>
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<td>Not allowed</td>
<td>Fishing in the channel</td>
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<td>15000-25000/month</td>
<td>20000/month</td>
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**TABLE 1: COMPARISON OF 3 FISHERING ZONES**

The above table indicates that while Thrikkunnapuzha and Cherai areas have Chinese nets below 40, Valiazheekkal area have a total of 75 nets out of which 74 were removed. In the case of Cherai and Valiazheekkal areas, compensation for removal of nets for both, licensed and non-licensed fishermen amount to about 2.45 lakh per net. However, it has been observed that 1/3rd of the payment is accrued to
the owner and the rest to the labourer. While some fishermen in Valiazheekal area have forgone fishing as their livelihood and are now engaged as daily wage labourers, other fishermen in areas of Cherai have reinstalled their nets despite continuous efforts by the Fisheries department to prohibit them from fishing.

Further, some fishermen have attempted to install their nets far away from the navigation channel. However, this act was confronted and threatened by the authorities of concerned departments. The removal of nets have resulted in huge financial loss to the fishermen as they have invested nearly 1-2 lakh for the purposes of maintenance and up-gradation. Some authorities have claimed that these fishermen were offered boats, however, in reality, this was not found to be true. Also, it has been observed that the compensation received was not adequate to find an alternative source of livelihood.

The above scenario reflects the inability of the development process concerning inland waterway to take into account the inclusion of various stakeholders who are impacted by the infrastructure project. The Inland Water Transport system has failed to effectively incorporate the concerned stakeholders (in this case, the fishermen) in the policy process, planning in particular. Besides, there has been no attempt either by the government or concerned infrastructure development authority to integrate these fishermen by providing economic opportunities in conjunction with the development of the sector.

In a nutshell, the provisioning of infrastructure-led development in the case of National Waterway 3, particularly the southern part of West Coast Canal is not inclusive of social participation, which in turn determines the extent to which economic efficiency is achieved.
Social Participation and Economic Efficiency

The below chart illustrates the extent to which economic efficiency is achieved in the case of Inland Waterway 3 with respect to well-functioning and effective cargo handling. It also depicts the total cargo share in NW3 during the year 2015-16. It can be observed that Udyogamandal canal contributed to about 67.4% of the total cargo share in NW3, followed by Champakara canal which contributed 32.2%. However, the West Coast Canal contributed an insignificant share i.e. about 0.32% of the total cargo share in NW3.

This negligible share of the WCC is precisely because of the socio-economic conflicts existing in the region. In other words, the conflict between the Inland Water Transport department and fishermen community in the southern stretch of the WCC can be understood as a causation for slow rate of infrastructure development which in turn resulted in inefficient operations and cargo handling.
Therefore, the less market reach of cargo operations was fuelled by the conflicts which further led to the delay in infrastructure development since the commissioning of NW3 in 1993. Further, an evidence of underutilization has been observed in the WWC canal of NW3. Inefficient cargo handling, slow rate of infrastructure development as well as underutilisation are explained by the inability of the Inland Waterway sector to assume the element of social inclusion and participation. This inclusionary aspect is absent both, in the policy outline of the Inland Waterway Transport sector as well as ground level implementation.

As mentioned earlier, although some fishermen have installed their nets in areas which do not obstruct the navigation channel, authorities of the concerned departments have forced them to remove it. This reflects that the process of infrastructure development has materialised in an exclusive way instead of a participatory manner. The infrastructural development of NW3 has perceived the role of fishermen as encroachers, rather than facilitators.

The development of inland waterway infrastructure is merely viewed as an economic outcome, thereby letting go of the inclusionary practices involved in achieving the same. But the means to achieve it was not at all socially or economically inclusive, In other words, instead of providing new socio-economic opportunities to the affected communities, it was eroding the already existing economic opportunities. Besides, there has been no consideration of best practices such as The Waterway User Board in the USA and other countries (World Bank, 2009).

Essentially, this case study argues that the cost of providing or enabling livelihood opportunities to the ones impacted by infrastructure provisioning is too less an amount for any massive infrastructure project. Therefore, the costs borne by any
infrastructure development project in providing socio-economic opportunities to the affected is negligible in comparison to the a) benefits obtained by the affected communities as well as b) benefits accrued by the providers of infrastructure, given the affected are perceived as facilitators to growth and development.

The Way Forward

Although infrastructure provisioning primarily aims to achieve a straightforward end i.e. economic growth, there exists an indispensable need to take into account the aspects of social inclusivity and stakeholder participation which in turn act as a means to achieve the desired end. Further, in the case of inland waterways, there exists a requisite for institutional restructuring which involves the elements of consistency, participation, and sustainability.

Consistent management and administration of inland waterway infrastructure development shall contribute to the economic aspirations of the sector by reimagining competitive edge in waterways in India. Stakeholder participation is an approach towards a multi-user-waterway model in India where livelihood opportunities for affected communities are integrated in conjunction with the overall development of this sector. The above two elements i.e. consistency and participation coupled with other factors will in turn result in the sustainability of Inland Waterways system. These elements, if taken into consideration during the course of infrastructure provisioning in the southern stretch of West Coast Canal, could have provided an absolute livelihood solution to the inland fishermen community.
Above all, providing or enabling socio-economic opportunities to people impacted by infrastructure provisioning is a sine qua non towards an encompassing approach of infrastructure.
POLICY LIMITEDNESS

A CASE STUDY OF AIRPORTS IN THE NORTH EAST INDIA

Introduction

The North-eastern part of India has held a very strategic location in many different ways. The region is seen to be backward and is witness to various cultural and political contestations with the Indian government. There has been attempts by the government to integrate the North-eastern region with main land India through various socio-economic policies. This case study will inform the readers that the same vision – integration with main land of India - gets reflected in the infrastructure and aviation policy for the region. This has restricted the growth of air traffic in the region - both commercial and passenger – since the region has the potential to become an airline hub in India for access to South East Asian nations. Therefore, we need to situate the expansion of the airport facilities and infrastructure in the context of international trade and travel that may further cater to the development of the Northeast region.

This case study starts with understanding the current policy structure of regional airports and then its contribution to the Northeast region. Evaluation is done by understanding the current potential for northeast region to become a hub for air transport for both domestic and international airports. This is followed by examples of Guwahati and Imphal Airports to understand their viability as airport hubs. The study then frames the findings in the Aviation Policy and ends with limitations in policy vision.
The Current Policy Structure of Regional Airports

The Indian aviation industry seeks to expand itself through Low-Cost Carriers (LCC), Foreign Direct Investments (FDI) in domestic airlines, modern airports, cutting-edge Information Technology (IT) interventions, and a growing emphasis on No-Frills Airports (NFA)\(^3\) (Director General of Civil Aviation (DGCA), 2016).

The National civil aviation policy 2016 includes regional connectivity as the prime agenda through the introduction of UDAN\(^4\) scheme, which is also known as regional connectivity scheme (RCS). This scheme aims to boost regional connectivity by price capping and viability funded travel. It also aims to re-operate all the unserved\(^5\) and underserved\(^6\) airports in 2/3 tier\(^7\) cities of India. Accessibility and connectivity is the principle that the policy aims to capture (Airports Authority of India, 2016).

\(^3\) No-frills airport are the airports where non-essential features have been removed to keep the price low.

\(^4\) UDAN (Ude Desh ka Aam Naagrik) or Regional Connectivity Scheme is a scheme introduced in National Civil Aviation Policy 2016, to provide air connectivity through price capping and regional airport development.

\(^5\) Under the RCS scheme an ‘unserved Airport’ is an airport which at the time of application by an airline operator for operating an RCS Flight, there have been no scheduled commercial flights during the last two flight schedules approved by the DGCA.

\(^6\) An ‘underserved Airport’ is an airport which at the time of application by an airline operator for operating an RCS Flight, there are no more than seven scheduled commercial flights per week as per the latest flight schedule approved by the DGCA.

\(^7\) 2 tier cities are cities with population ranging from 50,000 to 99,999 and 3 tier cities are cities with population ranging from 20,000 to 49,999.
The Northeast Region (NER)

The North-eastern Region of India comprises of 8 states namely, Assam, Manipur, Nagaland, Mizoram, Tripura, Sikkim, Arunachal Pradesh and Meghalaya. The total land area of the region is 262,000 square kilometres. The region is known for its ethnic, linguistic, cultural, religious, and physiographic diversities (Council, 2012). The Northeast regions attract a lot of sensitive funding from the Union Government of India due to its economic, social and geographical backwardness. Through various political movements, the region has also articulated a sense of alienation with the rest of the country due to cultural differences, which are further reinforced by the perception of policy led marginalisation by the Union Government. In order to address this concern, the successive Union Governments have favoured a policy regime, which integrates them with the rest of the country.

The Current Air Landscape

Airports are viable infrastructural assets due to the demand arising from passenger volume constituted by residents, tourists, and the need for transportation concerning industrial processes and related economic activities. The terrain of the Northeast region and very tenuous land link with the rest of the country makes air connectivity a sine qua non for trade and commerce, tourism, the realization of the potential for horticulture and floriculture in the region, promotion of higher and technical education and even for reducing the image deficit that the region suffers from.
There are in total 22 airports and civil enclaves in the NER. Amongst these, seven are fully operational AAI airports. In addition, there are four civil enclaves at IAF airports, which cater to scheduled civil flights (Working Group on Civil Aviation, 2011)

North East India has a significant urban base of 18 per cent with internal percentage difference ranging from 14 to 51 per cent (GOI, 2011). The region also witnesses a high inflow of tourist both, national and international who primarily use air travel. In 2016, 84 per cent of the tourist (7.4 million) used air as a medium of their travel to reach to the hub airport – Guwahati (Ministry of Tourism, 2017). In the region, Assam is the most industrialized state, which contributes to the existing traffic inflow. Besides this, the region has a thriving Fast Moving Consumer Goods market, which may invite external executives to travel to different parts of the region.

Domestic air traffic has shown a consistent growth of 20 -25% throughout 2015 and 2016, peaking in January 2017 at 25.13%. The region has contributed merely 1.5 per cent to the national growth rate (India, 2015/2016). This is largely because Guwahati is seen as a hub airport connecting with main land India. This attests our argument that aviation policy is conceptually a sub-set of numerous socio-economic policies that concentrate on an imagination that northeast region must be integrated with the main land India. This leads to overlooking of the fact that various airports

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8 An area allotted at an airport belonging to the armed forces, for the usage of civil aircraft and civil aviation related services.
9 Agartala, Barapani (Shillong), Dibrugarh, Dimapur, Guwahati, Imphal and Lilabari.
10 Jorhat, Bagdogra, Silchar and Tejpur.
in the region can be a hub for providing access to South East Asia, both for economic and passenger movement.

**Guwahati & Imphal Airports: A Brief Case**

As already noted that Guwahati and Imphal airports provide inter and intra-regional connectivity respectively, they, therefore, have the potential to be most viable airports. The Guwahati airport has shown continuous growth rates in passenger (36 per cent), freight (10 per cent) and airline movement (28 per cent). Imphal airport, during the same period with the above parameters saw a growth rate of 15 per cent, 10 per cent and 8 per cent respectively.

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<tr>
<th></th>
<th>Passenger Movement</th>
<th>Freight Movement</th>
<th>Airline Movement</th>
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<tbody>
<tr>
<td></td>
<td>2784315</td>
<td>3789656</td>
<td>2277863</td>
</tr>
<tr>
<td>Imphal</td>
<td>766877</td>
<td>886338</td>
<td>484935</td>
</tr>
</tbody>
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*Source: Airport Authority of India*

**FIGURE 2: GROWTH PARAMETERS FOR AIRPORTS**

A field study involving interaction with various officials and stakeholders of these two airports reveal the following:

1. The passenger movement in Guwahati and Imphal airports is beyond their existing capacity. The existing capacity of the Guwahati airport is 1500 in peak hour. The existing passenger movement is 10382 per day which at peak hour can lead to congestion. Similarly, Imphal airport passenger capacity at one time
is 500 at peak hour but the existing movement is 1328 per day, which can create congestion, if the trend continues.

2. All the airports in Northeast are “Loss Making Airports” except for Guwahati, which operates more than 57 flights per day. An airport becomes profitable only when it operates more than 40 flights per day. All the small airports function below 10 flights. Thus, Airport Authority of India (AAI) runs these airports as social commitment to provide regional connectivity.

3. Since airports and airlines are conceptualized as volume market, no private player is interested in the development of NER airports as it is a thinly populated region, which is only about 1.5% of the overall national air-traffic.

4. Creation and expansion of airports is also promoted by the growth of local economy. Since Guwahati has a presence of large business houses and trade, the airport has been utilized to its full potential, thus leading to the increase in demand for a new airport. Imphal, on the other hand, is highly reliant on tourism as the major source of revenue. However, the absence of local industries / commerce has affected the demand or withdrawal of services.

5. One of the major issues in both the airports has been lack of maintenance, repair, and overhaul facilities. When there is an issue of maintenance, the airlines travel to Calcutta, which becomes a costly affair.

Policy Landscape

Ministry of Civil Aviation’s (MoCA) priority has been to increase the existing air transport market to reach its potential and become the 3rd largest aviation market by 2020. Looking at the size of India’s population, there is potential as the disposable income of the 30-crore middle population increases along with an increase in the value of time. According to the Budget 2018, the MoCA plans to propose the
development of airports in selected 2nd tier cities, through PPP models. The National Civil Aviation policy plans to amend the Airport Authority of India Act, 1994 to enable effective monetization of land use. The ministry has allocated Rs.4086 Cr for up-gradation of facilities in various airports including the development of new facilities like hangars, ATC towers, terminal buildings, IT infrastructure, etc. This will considerably impact the capacity of airports which in turn will enable efficient handling of increased passengers and air traffic. Further, rupees 890 Crores have been added to the 2018 budget for the development of airports through the Regional Connectivity Scheme (RCS) which will revive 50 airports and airstrips to enhance the Udaan scheme (Department-Related Parliamentary Standing Committee, 2018)

The Union Government in 2018 budget allocated 124 Crores as a Viability Gap Funding (VGF) for the Northeastern region. In regard to the development of small airports in the NER, the AAI has already selected 26 under-served and unserved airports to be developed. Thus, the rise in investment can have various positive economic implications for the region through its multiplier effects. However, the central question remains whether the short-term economic growth caused as a result of spurt in investment in infrastructure can be sustained? This requires creation of forward linkages with market and economic hubs as well as markets within and without. The latter, we argue, is the major limitation of the aviation policy pertaining to North East.

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11 Airports Authority of India (AAI) plans of selling 5% of its land assets, in 2018 starting 1 April, to boost its non-aeronautical revenue.
Limitation

• The policy imagination of the national civil aviation has missed out on one important aspect, that is, India’s foreign influence through aviation development in the region. Northeast India is considered as the corridor to India's Act East policy, and to that end, these small airports will be the enhancing factor of India's regional power through economic activities like trade and an open sky policy. Countries like Myanmar, Thailand, Vietnam, Indonesia, Taiwan, Bangladesh and Malaysia will have better reach and accessibility to India. As of May 2015, India had only 394 direct flights each week to only four cities in Southeast Asia, compared with China’s 1,614 direct flights to 23 cities; India had direct connections to only four nations in the region (Singapore, Malaysia, Thailand, and Myanmar), while China had many direct flights to all ten ASEAN nations.

• Thus, the policy imagination should include the need to establish world-class airports, which can be accessed by International airlines. If this argument is considered, India can challenge China’s hegemony on becoming a world-class destination for airlines connecting East Asia and South East Asia. Thus, the development of world-class airport facilities in the NER, will not only integrate the region but will also lead to the rise global importance of the region.

• In this re-imagination of the policy having an international footprint, it should not be forgotten that the airline and airport could be made viable through increased inflow of traffic and cargo. As already noted that the region has a very low share in the growth of the aviation traffic. Therefore, it is unlikely that private players will be keen to invest in the region. Therefore, it becomes the primary responsibility of the state to integrate its Look East Policy with
infrastructural provisions in the region. In the process, it will also address the regional lop-sidedness of infrastructural development.
CONVERGENCE

A CASE FOR INSTITUTIONAL AND INFRASTRUCTURAL COORDINATION

Introduction

This case study on Multi-Modal Logistical Parks (MMLPs) draws attention to the need for inter-departmental and inter-ministerial coordination and policy convergence, in the backdrop for improving India's logistics efficiency. The logistics sector in India is still in its nascent stage and plagued by a number of inefficiencies that pits India's logistics cost to GDP at 13 to 14%, which is quite high in comparison to that of the developed world whose logistics cost to GDP is under 9 to 10% (McKinsey & Company, 2010) (GoI a, 2017).

This inefficiency plaguing the sector can be attributed to the skewed modal mix of India's transport infrastructure in transportation of goods. In the current system, freight movement happens from a point-to-point with no access to bypass. This, along with the absence of an adequate freight aggregation and distribution network adds to congestion, resulting in high costs and logistics inefficiency. Multimodal Logistic Parks, on the other hand, reduce overall freight cost by enabling convenient freight movement across the modal mix, along with the reduction in vehicular pollution and congestion.
While Multimodal Logistics Parks are necessary for logistics efficiency, they in themselves are not a sufficient condition to address the skewed modal mix, which in turn could address the high logistics cost to GDP. There is consensus among experts and within the logistics sector that in order to enhance logistics efficiency and address cost of logistics to GDP, there exists a need to examine India's skewed modal mix favouring the roadways. This would involve a shift towards rail and waterways, while air tends to be a more expensive mode of transport and continues to contribute to the express segment of logistics delivery.

Therefore, the real gains from the modal shift perspective in the Indian context would come from moving away from road to rail or waterways, especially for long haul movement of goods. The fruition of which shall be realised only with effective implementation and symbiotic convergence of three mega infrastructural projects in...
India. These are (i) the much overdue and delayed completion of the Dedicated Freight Corridor (Railways)\textsuperscript{12}, (ii) the successful implementation of the \textit{Sagarmala} project (Waterways)\textsuperscript{13}, and (iii) the realisation of the \textit{Bharatmala} project (Roadways)\textsuperscript{14}. In order to facilitate modal mix integration and reduce the logistics cost to GDP, these mega projects will have to be realised along with the development of Multimodal Logistic Parks. For that reason, in this case study, we explore by what means multimodal transport\textsuperscript{15} - carriage of goods by at least two or more modes of transport - can aid in the efficiency of logistics sector and what institutional mechanisms would be required in order to bring convergence among various modes of transport to achieve the same.

Here in, this case study, we began with an understanding of logistics efficiency, followed by how institutional fragmentation has affected it. By way of conclusion, the case study looks at the way forward to address institutional fragmentation and address the inefficiencies impacting the sector.

\textsuperscript{12} The dedicated freight corridor is a mega infrastructural project undertaken by the Dedicated Freight Corridor Corporation of India Ltd (DFCCIL), which is run by the Ministry of Railways. Its need was identified in the 11th five-year plan as to enhance the share of railways with respect to freight movement.

\textsuperscript{13} Sagarmala Project is an initiative of the Ministry of Shipping focused on port-based development to enhance logistics efficiency.

\textsuperscript{14} Bharatmala Pariyojana is an ambitious mega Government of India sponsored Road and highways project estimated to cost more than 5 lakh crore.

\textsuperscript{15} Multimodal or Modal Mix derives its definition from United Nations Economic Commission for Europe (UN/ECE), where it has been defined as carriage of goods by at least two or more modes of transport. For instance, goods may be carried for a major part by a particular mode of transport such as rail, then shifted to inland waterways or sea and making a final leg by road to its destination (UNCTAD, 2001) (UN/ECE, 2000) (GoI, 2000).
Logistics Efficiency – An Understanding

The modal transport infrastructure is skewed towards the roadways, while the other modes of transport is underutilised. India has the world's 2nd largest road network and the 4th largest railway network; besides 14,500 km of navigable waterways, 200 ports, and 125 airports (GoI b, 2017). Nevertheless, the modal share distribution in the logistics sector is extremely poor, with nearly 60% of the freight being carried by roads. Moreover, 2/3rd of long haul freight is carried by road, which adds 25 to 30% more to logistics cost in comparison with railways. Consequently, long haul freight movement would be economically and structurally better served if carried by railways and waterways. Furthermore, the share of railways in moving freight is only around 28% (GoI b, 2017).

India loses around US $ 45 billion due to poor logistics infrastructure, which is equivalent to 4.3% of India’s GDP. By 2020 it is expected to go up to 5%, which might amount to a wastage of US$ 140 billion (McKinsey & Company, 2010). Today, India is ranked 35 in the Logistics Performance Index (LPI) by the World Bank, mostly due to the inefficiencies that can be attributed to poor utilisation of the modal share for movement of goods (McKinsey & Company, 2010) (GoI a, 2017).
The reason for the skewed modal mix is resultant of various agencies and departments that are involved in the movement of goods acting in silos. For that reason, intervention is needed at the economic and institutional level to enhance India's logistics efficiency. At the economic level, infrastructural capacity needs to be enhanced, while at the institutional level, the coordination conundrum between

**FIGURE 4: LOGISTICS PERFORMANCE INDICATORS (LPI): INDIA’S RANKING**

*Source: Economic Survey of India* (Department of Economic Affairs, 2017-18)

**FIGURE 5: MODAL SHARE COMPARISON BETWEEN COUNTRIES**

*Source: India Integrated Transport and Logistics Summit – 2017*
various stakeholders of different modal mixes currently operating in silos ought to be addressed. These infrastructural lacunas should be addressed on priority basis in the form of the development of Multimodal Logistic Parks (MMLPs) and in the convergence of mega modal infrastructural projects.

**Explaining Logistical Inefficiency through Institutional Fragmentation**

The logistical conundrum explained above is sought to be addressed through Multi Modal Logistical Parks (MMLPs). The Government of India initially proposed 35 MMLPs which would enable a hub and spoke model of freight movement facilitating freight aggregation and disaggregation. The development of MMLPs has been spearheaded by the Ministry of Road Transport and Highways who are expected to provide trunk infrastructure (roads and highways), while the state government is expected to provide land for the development of these MMLPs. The modal rail connectivity is expected to be completed with participation of players such as Container Corporation of India Limited (CONCOR) who are market leaders with respect to carrying freight on the rail network. As a result, these diverse ministries, departments, and organisations are expected to converge in order to facilitate effective operation of MMLPs and in turn positively impact logistical efficiency.

In practice, however, there does not seem to be an institutional framework to address the coordination conundrum of convergence across different modes of transport. The creation of MMLPs face vertical and horizontal coordination challenges between ministries of the union government and several departments of state government(s), on one hand and less than optimal participation of logistical and modal
organizations, on the other. An example of the perpetuation of institutional fragmentation can be seen in the latest Draft Policy for the Development of MMLPs (GOI, 2017). The draft policy for the development of Multimodal Logistic Parks and its articulation mostly concerns itself with economic solutions for a very complex problem. It does not address a need for the development of a coordinating institutional mechanism among various modes of transport (railways, roadways, airways and waterways), the convergence of which is crucial to the success of MMLPs.

There appears to be confusing signals from the Union Government while they attempt to bring about an institutional convergence. Three crucial examples with regard to this are:

a) Earlier, the MMLPs were the mandate of Ministry of Road Transport and Highways (MoRTH). While MoRTH continues to be in charge of developing and executing the creation of MMLPs, the charge of coordinating between various modal ministry and departments for the development of MMLPs have been entrusted to Ministry of Commerce. Additionally, the role of Ministry of Housing and Urban affairs are expected to play some role because of the MMLPs physical proximity to urban locations but their roles and responsibilities remain vague and un-codified.

b) The Bharatmala Pariyojana project more recently has argued for a 70 to 80% share of freight traffic to be carried by the roadways. This is, however, counterintuitive to the arguments made by the very same Ministry for Road Transport and Highways in the Draft Policy for the Development of
Multimodal Logistic Parks and is also inconsistent with the argument for a more balanced modal representation for logistics efficiency.

c) The coordination conundrum is not subject to only which mode of transport would carry how much of the freight, but the fact that the Ministry of Railways develops Inland Container Depots (ICDs) / Container Freight Stations (CFSs), the Sagarmala project talks about strategically developing 6 to 7 ICDs, while the Bharatmala project and the Draft Policy for the Development of Multimodal Logistic Parks focuses on the need to develop 35 Multimodal Logistic Parks to facilitate modal shift and decongest the highways for freight movement. All three ministries are planning to develop similar infrastructure and are competing to enhance their modal share, rather than optimizing modal infrastructure capacity by complementing each other.

**Convergence – the Way Forward**

The findings of this case study reveal that the inherent problems are a result of (i) an organic and ad hoc development of the logistics sector; (ii) further compounded by various modal departments working in silos, resulting in a lack of modal integration; and (iii) a resultant absence of institutional mechanisms to address the coordination conundrum. Hitherto, the union government does not have a policy for modal integration and the logistics sector at large. For India to truly achieve its potential in logistics efficiency and reduce the logistics cost to GDP, it would be imperative for the convergence of at least three modes of transport for movement of goods. Though the development of Multimodal Logistics Parks could potentially facilitate convergence of the different modes of transport for goods, there ought to be robust coordination among the various ministries for example the Ministry of Railways, the Ministry of Shipping and the Ministry of Road Transport and Highways. However,
many of these proposed Logistic Parks are developed based on potential business and growth in economic activity. Moreover, these dry ports developed by the various stakeholders try to optimize their modal mix alone and compete with each other. This might result in non-cooperation and inefficient allocation of modal share among the various goods carriers. In order to plug this already highlighted inefficiency gap and address the coordination conundrum of various transport ministries and departments working in silos, India would require an institutional framework that brings convergence of various transport ministries and departments together. As a result, what is required is an inter-ministerial regulatory body that coordinates, provides symmetric information, and oversees infrastructural projects to optimize India's modal transport infrastructure.
UNDERUTILIZATION OF CAPACITY

A CASE STUDY OF CHENNAI PORT

Introduction

Provisioning of transport infrastructure and their relative efficiency is a fundamental factor in stimulating economic development. Particularly for ports, port activities\textsuperscript{16} have been found to be of key importance in determining transport costs and hence, international trade. (Dollar, David & Micco, Alejandro & Clark, Ximena., 2004). Within port activities, internal port infrastructure includes basic port asset such as docks, berths, yards, storage facilities, internal connections of railroad network, and terminals. Internal port infrastructure assets cater towards managing growing traffic, cargo handling, coordination among various modes of transport and these combined contribute to the overall productivity of the port. Inefficient management of any of the basic assets leads to loss to the regional and national economy. Our key concern shall therefore lie in understanding internal port infrastructure underutilization and its inefficiencies.

Underutilization of infrastructure assets and its capacity would mean inadequate berths and docks for the increased traffic, insufficient storage facilities and disjuncture between rail and road connectivity. These would dampen the overall production levels of the port and reduce its efficiency levels. Underutilization is

\textsuperscript{16} Infrastructure, Services provided through Infrastructure and Coordination between the activities of the port. (Lourdes Trujillo and Gustavo Nombela, 2000)
therefore understood as the incapability to optimally utilize its infrastructure capacity for efficient productivity.

The assessment to evaluate reduced efficiency levels due to underutilization of port infrastructure is thus carried out by a case study of Chennai Port, a Major Port of India.

This study begins with understanding the scenario of concerns of ports where infrastructure seems to be a catalyst to growth and development, and the brief understanding of capacity utilization in the port sector. It further dwells into understanding macro and micro concerns that have led to underutilization of infrastructural capacity in ports. This is followed by the case study of Chennai Port to trace underutilization through data measures of growth rate, commodity wise traffic inflow, changes in number of ships and cargo handled and neighboring port competition. It ends with measures to sustain efficient port productivity.

**Capacity Utilization**

Capacity utilization in economic terms is referred to the potential output derived from the given stock of capital and state of technology. Internal port infrastructures are capital stocks with fixed capacity, which serve as production input to the larger port economic process. In order for efficient port productivity, these assets must fully optimize their infrastructural capacity to meet the demands of growing traffic and removing hindrances that could reduce their efficient functioning. Observations of capacity utilization, one would notice that even though the inflow of traffic has increased, the infrastructure capacity has been the same that is the major bottleneck in the port industry. For e.g. capacity of cargo inflow at major ports grew to 1,065 Million Metric Tonnes (MMT) in 2017, implying a Compound Annual Growth Rate
of 7.75 per cent since 2007 but utilization rates of the port have been gradually coming down post the global economic meltdown in 2008. The following table gives a brief outline of this as an example to understand the growing gap between increased traffic at ports and the inadequate infrastructure to support it.

At the macro level, institutional reforms and regulatory regime have caused disturbances in the management and functioning of the ports. Two interrelated features contributive to the decreasing efficiency levels of major ports are privatization of port activities and operations, which in turn paved the way for stiff competition among major, minor and privately developed and run ports. In order to increase port productivity and to modernize port facilities, the port markets opened to private participation to attract investments and manage port sector economy. The

FIGURE 6: CAPACITY AND UTILIZATION AT MAJOR PORTS (MMT)

Source: India Brand Equity Foundation Report- Ports 2017
ports were divided into major and minor. Unlike the major ports, the minor ports were allowed to govern their tariffs, port operations and revenue share models as per the private participation agreement. This allowed the minor and privately operated ports to attract more traffic with reduced costs.

At the micro-level, one may notice drawbacks in three categories as described below:

- **Design**: Many ports were originally designed to handle very specific categories and hence, their operational infrastructural design is in accordance to the new changes of commodity and automation. This design redundancy has lead to the various types of commodity of cargo to decline in time while other types of cargoes and subsequently other commodities gained importance. The ports due to their specific infrastructural built have not been able to adjust to the categories of cargo that grew the most. There are thus several unwanted berths for traditional cargo, which are under utilised and redundant for operations, and only a few for new cargo, which are over utilized and exhausted faster.

- **Automation**: The publicly owned major ports have failed to make their cargo handling and documentation process automated and less time efficient which in turn increased the transaction cost of the shipping liners.

- **Human Resource**: Over staffing at Indian ports remains rampant while labor have been shunned away due to automation and productivity indicators with respect to cargo and equipment handling continues to be drastically declining.

- Combining all observations, one may conclude to say that the Indian port sector has not been comparable with other ports internationally in terms of efficiency levels, which reduces their attractiveness in the global market. In order to
reaffirm the stand that underutilization of internal port infrastructure does lead to reduced efficiency of the port economy, the brief analysis is conducted for the Chennai Port as follows:

**Chennai Port: Tracing Underutilization**

There have been many globally accepted port performance indicators that can provide a fairly good interpretation of the Port’s attractiveness and efficiency levels. In almost all cases, infrastructure was a common input that determined the capacity of the port and the further utilization of the infrastructural capacity to its optimal levels. The performance of the Chennai Port in its data over time has been continuously declining as shall be discussed here.

*Commodity Wise Traffic Handled*

The Madras Port Trust comes out with the revised name Chennai Port Trust (Slack 1989). The shipping started from July 2000 onwards. Over the years, many changes occurred in relation to operations, management, and type of commodity to be transported. One of the many notable changes was the drastic shift to its commodity market. As per the directive of the Madras High Court, Chennai port stopped handling coal and iron ore cargoes since 2012 after a reduction in their inflow since 2010.

The existing infrastructure was designed for a certain commodity of Coal and Iron Ore. Nevertheless, Iron ore export was banned in 2012, and coal moved out of the city to Ennore because of environmental concerns in 2013. As a result, the entire thermal Coal shifted to Ennore Port that has a market share of 43% of the south India coal traffic and it drastically affected the commodity wise traffic handled at Chennai Port. The existing infrastructure coupled with unskilled labor skilled was not
adequate to fully optimize the production levels of the port. As a result, the overall traffic volume in the port has declined. After shifting coal from the Chennai port in 2013, Ennore and VOC have captured the lion's share of Tamil Nadu’s overall growth due to the surge in demand for coal as a result of newly commissioned thermal power plants.

Growth Rate

Growth Rate of Chennai Port is the rate of number of number of ships berthing and the amount of cargo handled in proportion to the capacity of the port. The continuous dip in the commodity wise traffic, resulted in few ships calling on Chennai Port, further reducing the cargo handled and that led to an overall decrease in the growth of the Port. So much that from an increased state of 19.3% in 2004 it dipped down to a stark -9.4% in 2011. The following graph also depicts the predictable trend line.
Changes in growth rate and commodity wise traffic handled have further created changes in the capacity utilization of the Chennai Port. Shifting of Iron ore and Coal, fragmented automation processes, labor issues and congestion in traffic coordination have impacted the infrastructural capacity utilization from 85% to 61% over the years of 2009 to 2015 as can be illustrated below.

**FIGURE 8: GROWTH RATE OF CHENNAI PORT**

**Capacity Utilization**

Changes in growth rate and commodity wise traffic handled have further created changes in the capacity utilization of the Chennai Port. Shifting of Iron ore and Coal, fragmented automation processes, labor issues and congestion in traffic coordination have impacted the infrastructural capacity utilization from 85% to 61% over the years of 2009 to 2015 as can be illustrated below.

**FIGURE 9: CAPACITY UTILIZATION OF CHENNAI PORT**
Port performance in addition to the above changing attributes help in providing a holistic understanding of underutilization. Variable functions such as number of ships and cargo handled, over the years from 1988-2015 are further used to arrive at a meaningful evaluation of port’s performance with respect to the thriving ports developing near Chennai Port that are changing the landscape of commodity traffic due to competitive infrastructural facilities.

**Port Performance**

To increase port performances for the port development, market reforms were carried out in 2000 and the establishment of Tariff Authority for Major Ports to regulate tariffs was brought in. Therefore, it is necessary to compare the performance of port pre and post reforms and up to present 2017.

From 1256 ships in the first operational year of 1988 to 2181 ships in 2010 and then 1600 ships in 2017 does challenge us to focus and dwell further in understanding why the existing infrastructural utilization is sub-optimal and why the port chain supply has been unable to keep up to traffic, commodity and congestion points. The correlations thus made are between the number of ships and cargo handled. It can be observed that port productivity and efficiency parameters have increased in the immediate years of the post-reform period. However, these parameters have rapidly started declining by the year 2010-2011 up till now. These can be illustrated below:


- The total number of ships entered on an average was 1442.86 per annum pre-reform (before 2000) and 1814 ships per annum post reform (after 2000). As per the analysis, the number of ships entered into the port was more in the
post reform period than in the pre reform period. Likewise, the total cargo handled post reform (200-2009) went up by 57491 tons.

- The scenario changes after 2009 when the Madras High Court bans coal and iron ore. The number of ships that entered the port post 2009 has been steadily declining. From 2181 ships in 2010, only 1600 ships entered in 2016-2017 year. This has also resulted in a steady decline in the cargo handled. From 61460439 tonnes, cargo volume has declined to 50081498 tonnes.

**Competition**

Over the last two decades, new ports have emerged around the Chennai port. Minor and Privately operated ports have provided for more attractive business and shifted the cargo traffic towards them and have left Chennai Port to have major changes in its commodity handling and subsequent infrastructure underutilized. The major competing ports are-

i. Krishnapatnam;

ii. Katupalli;

iii. Ennore;

iv. Karaikal port in Puducherry;

v. VOC and Cochin are the two competitors from the secondary hinterland.

All these have low transportation costs, higher productivity in terms of providing less pre-berthing-time and berthing-time as well as smoother and faster customs and documentation process. In addition, they also have incredible and fast paced infrastructural development and plans which makes them more attractive than Chennai Port. Some broad examples of stiff competition are:
• **Ennore Port (30 Kms from Chennai Port)**

Due to environmental concerns, the union ministry had advised the oil handling companies to shift their POL product storage facilities from Tondiarpet near the Chennai port to locations near the Ennore port. As a result, all three oil-handling companies have either shifted or are in the process of shifting their storage facilities near the Ennore port. The vessel turnaround time for Ennore is 8.6 days, which is nearly two times the turnaround time at the Chennai port.

• **Karaikal Port (300 Kms from Chennai Port)**

It has three berths for general cargo and two berths for coal cargo, which provides for major financial gains as was taken away from Chennai Port. The most prominent reasons it surpasses and is a tough competition to Chennai Port is because of its rail infrastructure. Karaikal Port rail connects with power plants, Cement, Steel, Chemical and most manufacturing industries in the districts of Ariyalur, Trichy and Salem and has a plan to develop a heavy freight movement corridor around Mayladuturai.

• **Krishnapatnam Port (180 Kms from Chennai Port)**

It has been able to have drastic infrastructural growth and has made it have the fastest turn-around time for all types of vessels and minimum waiting time, which reduces costs for shipping companies. It also has single door end-to-end services and zero multiple interfaces for their documentation processes. It has both rail and road connectivity to all parts of India and a two way traffic for both on and off shore logistics leading to advantage of cost competitiveness.
The Way Forward

The Chennai Port requires an architectural redo in its infrastructure utilization and policy framework. The critical task therefore, involves recognizing the factors that have slowed down port performance and hindered smooth functioning of the port which in turn have affected the overall efficiency levels of Ports and that needs both a policy and strategic angle of evaluation. This involves methods of capacity expansion that caters to increased traffic coupled with innovative methods of modernization, convergence of rail and road network for efficient internal port connectivity and structural changes in the tariff regime which is flexible and attractive to investments.
TOWARDS A FRAMEWORK FOR ENCOURAGING AND HARNESSING PRIVATE CAPITAL

A CASE STUDY OF INDIAN RAILWAYS

The Call for Private Sector Participation

As outlined in the expansive definition, a holistic understanding of infrastructure should involve an element of harnessing private capital and talent, essentially so because of increasing fiscal deficits, lack of efficient fiscal consolidation, and declining ability of the state to invest in large-scale infrastructure projects. In other words, these limitations have steered the quest for seeking the involvement of private sector in infrastructure provisioning, either through partnerships with public sector or in its entirety (MoF, 2015).

In this context, this case study explores the role and functioning of Public Private Partnership (PPP) in Indian Railways (IR).

The documentation and analysis of provisioning of rail infrastructure through private participation, assumes the presence of an increasing need for alternative sources of funding in railways as well as the need to improve and augment existing infrastructures. However, the mere existence of alternative models for investments and timely creation of rail infrastructure is a necessary but not sufficient condition. A holistic approach towards long-term sustainability of effective private participation requires addressing the dynamics of collaboration between the private and public entities.
Private Participation in Indian Infrastructure

The period of mid 1990s - 2004 marked the entry of private sector in infrastructure development, with transport and power being the priority sectors. The adoption of Public Private Partnership (PPP) in particular has led to considerable progress in infrastructure provisioning across various sectors. In the case of transport sector, GoI has undertaken large scale infrastructure projects through PPP with respect to National Highway Development Programme, Railway Station Redevelopment, Sagarmala Project, and Regional Connectivity scheme (RCS) in the civil aviation sector, and so on (Ernst & Young, 2017; NITI Aayog, 2017).

Further, several institutional arrangements such as Public Private Partnership Appraisal Committee (PPPAC), National Infrastructure Investment Fund, and Cabinet Committee on infrastructure have been created to fasten the process of approvals and decision making. For instance, PPPAC has acquired approvals for about 65 projects with an estimated cost of nearly 828.15 $. These institutions reduce the transaction costs and disseminate required information in rolling out PPP projects (NITI Aayog, 2017).

Despite considerable efforts by the government to pursue private sector participation, there still exists a variety of issues that hampers effective private sector participation. These include inefficient risk sharing arrangements, lack of transparency, poor project appraisal, cost and time overruns, overlapping functions, ineffective regulatory and dispute resolution mechanism, supply-demand mismatch, among others (Ernst and Young, 2017). For instance, various projects in the road sector suffer severe time and cost overruns owing to delays in land acquisition.
Private participation in the power sector faces challenges concerning delays in acquiring power purchase agreements, age-old transmission networks, shortage of fuel supply, and so on (Lakshmanan, 2008).

Therefore, as stated by Reserve Bank of India, transparency, appropriate risk allocation and project appraisal, reduction in time and cost overruns, government guarantee schemes, regulatory independence, corporate governance coupled with the dire need to incentivise private entities form indispensable parameters towards ensuring effective private sector participation (Lakshmanan, 2008).

**Case Study: PPP in Indian Railways**

As discussed earlier, this case study situates the dynamics surrounding the provisioning of railway infrastructure in a setting where there exists state monopoly of the IR with relatively less presence of private players.

Although IR has experienced considerable participation by the private sector in the last few decades, effective private sector involvement in building rail connectivity was set off only since 2002. In 2015-16, an investment of about 15,000 Cr (US Dollar) rupees has been generated by IR through the mode of Public Private Partnership, which remains the highest until date (Railway Convention Committee, 2014; MoR, 2017). In the past few years, IR has experimented the above mode of outsourcing in various segments, some of which are discussed in Box A
Indian Railways has experienced private participation in areas of private container trains, port-connectivity projects, new railway lines, private freight terminals, rolling stock, Dedicated Freight Corridors (DFCs), High Speed Rail Corridors (HSR) and station redevelopment. Some of the schemes and projects that IR has engaged with regard to PPP mode include Liberalised Wagon Investment Scheme, 2008; Own Your Wagon Scheme (OYWS); Private Freight Terminals (PFT); Locomotive Manufacturing Units; R3i among others (Puri, 2003; IBEF, 2018; Ghosh, 2011; Ministry of Railways, 2015). These schemes were initiated to supplement government’s investment and enhance private capital flows in the provisioning of rail infrastructure.

FIGURE 10: PRIVATE PARTICIPATION IN VARIOUS SEGMENTS OF IR

The policy currently being pursued by the Ministry of Railways with regard to PPPs is ‘Participative models for rail connectivity and capacity augmentation projects, 2012’ (Ministry of Railways, 2012). At the outset, this policy primarily focuses on enhancing capital inflows via private investment, particularly in the form of partnerships, thereby augmenting the already existing infrastructure capacities. This reflects the promotional nature of the policy where the government aims to involve private partners in a fairly profitable (profitable, at the end of the private entity) business deal through issuance of contracts, licences or concession agreements. In the absence of the above, the latter i.e. the private sector companies would be reluctant to perform the same.

Further, it provides a platform for various stakeholders including private players, consultants, government agencies, rail corporations, and the central and state governments to actively engage in partnerships (Kumar, 2007). This enables large scale infrastructure financing and enhances efficiency at different levels during the execution of the contract. Such agreements builds up relationships between the
public and private sector entities, reduces the fiscal burden, and enhances efficiency as well as productivity through a competitive atmosphere.

An evaluation of private participation in IR revealed that the sector has experienced mixed results i.e. success in terms of clear delineation of responsibilities and failure in terms of delays, substandard contracts, inefficiencies, and so on. Considering success, IR has seen a rise in demand for railway containers as a result of increasing containerisation of cargo where private sector entities operate and own container trains. The rail sector has also witnessed increasing investments in segments such as Dedicated Freight Corridors which aid international trade and domestic cargo.

Despite considerable efforts by IR to engage with private sector, there exists limited success in terms of its effective functioning. Several studies have observed that there exists no established mechanism to incentivise the private player in order to bring in both, capital and expertise. Further, weak regulatory and institutional frameworks, delay in acquiring approvals and necessary clearances, inequitable risk sharing arrangements, ineffective dispute resolution mechanism, and lack of flexibility in Concession Agreements have resulted in minimal success concerning role and functioning of private participation in railways.

**Impediments towards Tapping Private Potential in IR**

One of the primary concerns affecting the effective functioning of PPP in IR is the multiplicity of roles that railways perform, that is, it assumes the role of an investor, concessionaire, operator, and regulator. This, creates a conflict of interest among the stakeholders which in turn impedes private sector participation. The case studies of several port-rail connectivity projects have revealed that issues concerning calculation of O&M charges, adherence to the provisions in Concession Agreement,
timely payment of monthly apportioning and other due revenue coupled with administrative hassles till date remain contentious, thereby creating a constant tussle between these SPVs and railways (Asian Institute of Transport Development, 2008).

Further, the decision making process is long and tardy owing to bureaucratic working coupled with multiple layers of approvals. It has been observed that public sector officials view SPVs or private entities more as clients rather than partners (MoF, 2015). It is further believed that the element of partnership is heavily loaded in favour of railways owing to its massive size and strength. Besides, non-compliance by way of withholding of due revenue, owing to contractual disputes is perceived to be an unjust practice. Considering risk allocation, studies have pointed out the need for an efficient allocation of risks as well as risk mitigation strategies through provision of traffic guarantee schemes (Asian Institute of Transport Development, 2008).

From the above discussion, it can be inferred that the element of private capital and talent, in itself is not a failure; rather, fragmented institutional set up and the inability of the public sector to incentivise private players and provide required regulatory and institutional framework acts as a primary reason for ineffective functioning of private sector participation.

Further, although several studies have identified a variety of concerns in relation to the functioning of PPP in Indian Railways, there has been no attempt to build a comprehensive overarching framework which takes into consideration all the diverse views. In view of that, the current paper attempts to develop a conceptual framework which can map the effective functioning of PPPs in general and IR in particular.
Understanding Impediments through a Conceptual Framework

To document the relative success or failure of PPP, it is important to evaluate its functioning through the lens of a conceptual framework which include the following analytical categories:

1. **Structural Concerns:**

   The reasons for negligible success of PPP projects in railways can be primarily attributed to certain structural setbacks. These primarily include a) the rigid organisational structure of the railways where decision making, control over resources, and use of power are predominantly in the hands of top level management (in this case, the Infrastructure Directorate of Railway Board), b) policy loopholes arising as a result of unclear and ambiguous policy provisions as well as detailing of the required specificities. In a nutshell, effective implementation of the project necessitates a clearly defined policy provisions, thereby leaving no room for varied or mis-interpretations.

   Therefore, evaluating structural and systematic challenges, embedded in the state and market institutional structures, becomes crucial in understanding the intricacies of sector specific policies.

2) **Efficiency:**

   Efficiency in the simplest terms is understood as the degree to which an activity obtains its objectives for the minimum resource usage. It could also be viewed as a relationship between ends and means as well as cost benefit analysis. However, this case study situates “efficiency” in terms of time bound creation and delivery of goods and services. Taking the Indian Railways case in point, it has been observed
that the aspect of delay has considerable influence on the efficiency of the life-cycle of a PPP project.

This phenomenon of delay in the life cycle of a railway infrastructure project involving private participation occurs at various stages, i.e. a) delay in approvals - which reflect administrative hassles (lack of state support agreements, necessary clearances) in the process of land acquisition, b) delay in apportioning monthly revenue and non-payment of due revenue, c) delay owing to substandard contracts - where contractors undertake contracts at rates which are financially unviable for the completion of the project, and d) delays post operationalization.

3) Managerial Efficacy:

One of the major administrative hassles that has been identified is railways lack of response to the needs and demands of private partners. Several private entities have also claimed that the railways lack clear work ethic and professionalism with regard to compliance of contractual terms and planning of huge infrastructure projects. There exists an attitudinal deficit in the functioning of railways and rail authorities towards SPVs and other stakeholders where in the latter are treated (looked down upon) more as a contractor than a partner.

Managerial efficacy, therefore remains crucial to the working of bureaucracy which in turn determines the quality and quantity of public services delivered.

4) Non-Compliance:

The authorities of rail sector, at times, display non-compliant behaviour with respect to contractual terms and overstating of Operation and Maintenance (O&M) charges. For instance, in the case of BDRCL, the cost per employee when employed by BRDCL amounts to Rs. 2.64 lakh per annum (at 2014-15 levels), however, IR’s
statistical computation of the same accounts for 6.89 lakh rupees. Further, several Special Purpose Vehicles (SPVs) have raised concerns over the practice of different approaches to charging SPVs for use of railway land.

However, it is important to note that non-adherence to specific provisions in the agreements by railways acts as a primary reason for IR to weaken its credibility among several private players.

5) Effective Regulatory Mechanism:

Instances of regulatory failure in IR grew in accordance with the increasing structural and administrative concerns, as outlined above. It has been observed that the existing dispute resolution mechanism fails to serve the rightful inclusion of certain stakeholders, especially the private players as majority of the cases favour MoR. Besides, modalities of undertaking specific works either in the mid-course or later stages of a project have not been accounted for in the Concession Agreement and disputes concerning the same are overlooked.

In this context, a regulatory mechanism to promote a healthy competition and protect the interest of all stakeholders is an essential prerequisite.

6) Stakeholder Inclusivity:

It has long been recognised that stakeholder engagement is of paramount importance for effective policy process. However, in the case of IR, the policy framework concerning PPP model reveals that issues concerning policy making, operations, and regulation are primarily controlled and influenced by MoR where involvement of other stakeholders is clearly absent. The overly centralised and hierarchical organisational structure of railways impedes definite decision making capacities at lower levels of the organisational rung.
Further, limited opportunities for stakeholder involvement primarily arises from asymmetric information and is further enhanced by bureaucratic working of IR. Therefore, turning a blind eye to stakeholders and their concerns severely undermines the success of PPP projects.

*In a nutshell, in order to encourage and incentivise private capital, one needs to evaluate the functioning of PPP through the above conceptual framework which in turn determines the relative success or failure of PPP projects.*

**The Way Forward**

The above framework enables us to see the dynamics involved in the effective functioning of PPP through the lens of Networked Governance. According to the discourse, appropriate spaces for interaction, negotiation, and conflict resolution should be created to strengthen the credibility of IR among market players. Further, there exists an indispensable need for decentralisation of power and autonomy to the extent that it facilitates effective institutional mechanism and lowers the transaction cost. This further accentuates the need for the establishment of an independent regulatory body in IR coupled with certain technocratic solutions which act as a panacea to existing inefficiencies.
TOWARDS A FRAMEWORK FOR POLICY ACTION

This study has highlighted inefficiency gaps and the coordination conundrum, among others that have besieged the development of infrastructure with respect to integrated transport network. These issues have been discussed in detail in the 5 case studies presented thus far. The set of case studies forcefully brought forth the point that any infrastructure project could only succeed, provided that they integrate the following concerns in their design.

- **Convergence** – a need for inter-sectoral, inter-state, inter-ministry / inter-department collaboration and coordination;
- **Regional specificity** – necessity for mitigating the regional lopsidedness in infrastructure investment, growth, and development;
- **Capacity Utilisation** - existing infrastructure must be optimally utilised for efficient returns;
- **Incentivising private capital** – a framework for encouraging and evaluating private sector participation, thereby overcoming deficit in investment and expertise;
- **Social participation** - creating stakes for affected communities in infrastructure development

As we understand, these are not stand-alone issues in specific infrastructure projects. Indeed, they affect the nature of planning, implementation, and outcomes in most infrastructure provisioning projects. In order to resolve these issues, there exists a need to bring about a diverse and myriad set of actors on board. They include, Union government, state governments, civic / civil organisations, private businesses, local
communities, and sectoral regulatory bodies which are often ineffective and fragmented.

Furthermore, in our understanding, economic growth cannot be achieved until these issues are comprehensively addressed. In other words, economic growth has to be the consequential to an all-encompassing approach. Thus, there emerges a need for a pro-active third-party regulatory institution which can take an ‘all-encompassing concerns’ on board. The nodal institution to facilitate such a cross-sectoral regulatory institution is Ministry of Commerce, Government of India.

**Rationale for an Independent Regulatory Institution**

- To bring diverse institutions and organisations on board (central ministries, state governments, and all other stakeholders).
- To differentiate between the regulator and the regulatee, that is, the regulatory functions of the state should essentially be separated from its policy making and implementation functions.
- To optimise allocation of various modes of transport for effective movement of commercial goods and passengers.
- To provide a platform to integrate policy concerns of relevant stakeholders and affected communities.
Institutional Framework of Integrated National Transport Authority
PREAMBLE

Integrated National Transport Authority, an independent - inter-ministerial and departmental regulator will primarily work towards the integration of four modes of transport (airways, waterways, railways, and roadways), across horizontal and vertical lines of administration. It, thus seeks to highlight the central values and principles of efficiency, accountability, and transparency to further enhance coordination and convergence of market systems that bind integral elements of social inclusion, stakeholder participation, and fair competition.

MANDATE

The mandate within which Integrated National Transport Authority, an independent regulatory body operates is as follows:

I. Enabling market creating and market expanding functions

a) Herein shall be made adequate provisions for fair and transparent policy scope promoting a level playing field for a fair and just competition involving all participating stakeholders;

b) Herein shall be made adequate provisions to permit adaptable change as and when needed, and allow smooth integration within the transport convergence process.

c) Herein shall be made adequate provisions to set efficiency indicators and performance standards.
II. **Ensuring institutional stability functions**

a) Herein shall be made adequate provisions to guarantee, safeguard and protect rights of every party that mutually consent to enter into a formal contract through *transparent process* mechanisms and information;

b) Herein shall be made adequate provisions to *govern and regulate* institutions related to modal transport, its distinct roles and grant it the authority to act, stating unambiguous roles and responsibilities for *accountable* actions;

c) Herein shall be made adequate provisions to sustain a stable policy environment and further avoid policy uncertainties as well as policy ambiguity that may arise from frequent policy changes;

III. **Establishing effective stakeholder participation**

a) Herein shall be made adequate provisions for the creation and promotion of economic processes that involve *social inclusion and stakeholder participation* through decentralized systems of governance;

b) Herein shall be made adequate provisions for ensuring all stakeholder collaboration in decision making processes.

**FUNCTIONS**

Functions of the Integrated National Transport Authority could be broadly classified under the following categories:

I. **Convergence**

a) The authority shall be responsible for the coordination among various modal departments and ministries
b) Shall coordinate modal mix for the development of Multimodal Logistics Park / Container Freight Stations / Inland Container Depots, among others

II. Transaction Cost

a) The authority would collect, analyse and disseminate information, statistics, and forecasts concerning the transport sector.

b) To make rules and regulations from time to time as to ensure ease of doing business.

c) To provide advice, consultancy and managerial services for modal infrastructure projects, both domestically and abroad.

d) To ensure and promote single window clearances for multimodal infrastructure projects.

III. Social Participation

a) To protect labour workforce from predatory and discriminatory practices in the concerned sectors.

b) To participate and promote skill development and universal standards for the sector.

IV. Compliance

a) To monitor and audit modal infrastructure projects with respect to time and cost overruns.

b) To monitor and evaluate legal and regulatory hurdles impacting the transport sector and provide remedies for the same.

c) To ensure compliance of various stakeholders, modal ministries, modal departments, and service providers; as within the mandate of the authority.
The regulatory authority shall comprise of a managing committee / board headed by a Chairperson, invited members from modal ministries\textsuperscript{17} along with 5 expert members from fields of Finance (2 members), Auditor (1 member), Law (1 member), Logistic and Transport (1 member) and Industry (1 member), as may be

\textsuperscript{17} Modal ministries such as a) Ministry of Civil Aviation, b) Ministry of Civil Aviation, c) Ministry of Railways, d) Ministry of Road Transport and Highways, e) Ministry of Shipping, f) Ministry of Housing and Urban Development, g) Ministry of Finance, h) Ministry of Commerce, i) Chief Secretaries of Concerned State Governments.
deemed fit. The Chairperson and expert committee members shall be appointed by the nodal agency, the Ministry of Commerce. The invited members shall be called to participate in the managing committee / board in order to represent functional and strategic needs for their respective ministries.

*Role of Chairperson*

The Chairperson shall have the final word in the affairs of the authority, preside over meetings, and act and discharge prescribed duties, as and when required. The regulatory authority is at the liberty to decide on its mode of operation, taking into cognizance the organisational decorum and scope of work.

**AUTONOMY OF INTA**

The regulatory authority should be a statutory establishment with an independent budget. The means through which funds are allocated for INTA is crucial in understanding its character and nature of regulation. Independent budgeting, as recommended above, indicates that there exists no influence of lobbying in decision making process. The Ministry of Commerce shall create a corpus of a consolidated fund called ‘Integrated National Transport Authority Fund’.

The Finance Ministry shall be mandated to allocate one time grant from the consolidated fund of India as start-up capital. The regulatory authority (INTA) may also contribute towards the fund by charging user fees for its role in infrastructural projects. Funds may be also raised to enable development of infrastructural projects both, domestically and internationally.
WORKS CITED


