

# Modernisation of Railway Stations in India

## - *The Emergence of New Age Destinations*

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The latter part of the past decade has seen an economic shift the world-over from agriculture and manufacturing to service based industries. A number of issues have led to lower agricultural output and reduced use of human capital in manufacturing, climate change and advent of technology being the critical ones. A similar change has also been observed in the Indian economy resulting in emergence of several clusters (cities or towns) holding sizeable population. Many businesses providing services are located in such clusters, ensuring better access to skilled labour, key markets and suppliers as well as strong connectivity with other parts of the country. On the flip side, as a consequence, larger cities such as Mumbai, Delhi, Kolkata, to name a few, have experienced significant increase in population leading to augmented stress on their transportation infrastructure, including but not limited, to roads & highways, airports and railway stations. The perils of breakdown in and crumbling of our public infrastructure has been at the forefront of previous and current Governments and sustained efforts are being made to combat the same.

### **Railways: *The New Paradigm of Change***

The increased pressures of growing population have also contributed to a strong and sustained growth in movement of passenger & goods across various modes of transportation. However, Railways remains the primary and preferred mode of transport for a large part of the population, especially the lower strata. India's rail network is the 4<sup>th</sup> longest and the most heavily used system in the world, transporting over 8 billion passengers and nearly 1 billion tonnes of freight annually. A significant demand growth for rail transport services operating between and amongst metros and mini-metros has significantly exceeded the national average.

Even with the progression of air transport, rail transport in India has the potential to grow and increase substantially, and accommodating additional demand will be essential if sustainable, city-led economic development is to continue.

The Government of India (GoI) through the Ministry of Railways (MoR) has embarked on a drive where it intends to modernize core assets with a view to explore new revenue models, focusing on ancillary services like ICT, indigenous development & safety and mobilizing resources such as funding & human capital.

Key Focus Areas				
Core Assets	Tracks & Bridges	Signaling	Rolling Stock	Stations & Terminals
Revenue Models	PPPs	Land	Dedicated Freight Corridors	High Speed Trains
Projects	Review of Existing & Proposed Projects			
Enablers	ICT	Indigenous Development		Safety
Resources	Funding	Human Resources		Organisation

**Figure 1: Key focus areas of infrastructure development**

The earlier UPA Government developed a multi-pronged strategy focusing on 15 key areas, with an estimated budget of over ₹ 1 Lakh crores (over \$ 16 billion) over 5 years, one of which was the Modernization of Stations & Terminals around the country. A total of pre-identified 670 stations, 50 freight terminals and over 30 multi-modal logistics parks were proposed to be modernized over a decade.

The Ministry of Railways (MoR) set up the **Indian Railway Station Development Corporation (IRSDC)**, as a joint venture between IRCON International Limited (IRCON) and the Rail Land Development Authority (RLDA), another corporation set up by MoR for development of Land / Air Space for generation of non-tariff revenue and creation of assets for Indian Railways.

The key focus areas of the Corporation are,

- To meet with the aspirations of rail users and to facilitate them with better facilities
- To augment and improve passenger related amenities at stations to high standards
- To have modern stations that would be functional, customer-oriented and well equipped with proper circulation area and railway operation facilities
- Designed to provide well-designed concourses, high-quality waiting spaces, easy access to the platforms, congestion-free platforms, modern catering facilities, hotels and other facilities

After numerous deliberations and ponderings by several expert groups, committees and individuals, the current Government has set out with an equally ambitious plan with almost an equally sized budget of around ₹ 1 Lakh crores. More than 750 stations around the length and breadth of the country are proposed to be redeveloped and modernized in a three-phased manner. The redevelopment / modernization process will be bid out on a 2-stage Public-Private-Partnership (PPP) approach and bid out to successful entities on a 45-year lease. One of the salient features of the process are that the Government is permitting both 100% foreign Direct Investment (FDI) and firms bidding as individual or consortiums entities. The Government aims to promote the tendering through a transparent and objective selection process, where bidders need to incorporate with existing local development, environmental, and architectural norms and standards.

The salient features of the proposed redevelopment / modernization process shall be as follows,

- Iconic structure of building complex with Canopy Roofing
- Segregation of arrival and departure aimed at congestion free and non-conflicting passengers transit including entry & exit
- A concourse that will cater to all essential services and utilities / amenities
- Separate section for passenger lounges and &B outlets
- Escalators, superior flooring aimed at better comfort for passenger movement within the station premises
- Integration with other transport modes – public & private



Ultimately, the Government aims to position Railway Stations as “Nerve Centers of Cities” providing transport and transit for passengers and goods, promoting and enabling commerce and as icons and cornerstones of identity.

### **Railway Stations: *Standing Tall in an Enigma of Time***

The development of railways has had a major influence on the economy and society across the world and relatively improved communications and access, over road or water transport, which were considered as slow and dangerous. Though the influence of railways is much more evident in Europe, due to its originating and being constructed there, they have had quite a considerable impact in India too.

Railway developments have always had a major influence on the economy and society across the world. The advent of Railways improved communications, connected people, facilitated exchange of goods & services and considerably speeded the world up. This was done by doing largely away with the slow and often dangerous road or water transport, which was till then the preferred mode of transport. The impact of this influence is much more evident in Europe, due to railways originating and being constructed there following the Industrial Revolution in the late 18<sup>th</sup> and early 19<sup>th</sup> centuries. This in fact facilitated the commercial, economic and subsequent political rise of Europe, and specifically of the United Kingdom, which through this predominance was able to conquer the major part of the world, creating their colonial empires, which, in turn, led to the development of railways therein.

India too, owes the construction of its railway lines from the coastal areas of Bori Bunder to its heartlands to this desire for economic integration. The Great Indian Peninsula Railway in association with the East India Company, it commenced the construction and operation of an experimental line, 56 Kms long, to form part of a trunk line connecting Bombay with Khandesh and Berar and generally with the other presidencies of India<sup>1</sup>. India's 1st railway thus opened in 1853, the original 21-mile (33.8 km) section between Bombay (Mumbai) and Tannah (Thane). From this point onwards, the Railways spread through the rest of the country connecting the farthest corners to the hinterland.



**Figure 2: First passenger train from Bombay to Thane, 1855**

Modern railways originated in the United Kingdom, the influence of which was seen over other areas of Europe and later even in the US of A. Most equipment's used were British, operations, infrastructure and even the architectural designs were seen to have an influence from Britain's Railway network. While any station around the world had almost similar designs and layouts, were built from the same choice of materials and techniques and fulfilled the same functions, almost all of them, including earlier ones in India, had a significant influence of their British and European precedents.

In 1887, a new station was built at the location of Bori Bunder to commemorate the Golden Jubilee of Queen Victoria. The building was designed by a British architect, Frederick William Stevens with influences from Victorian Italianate Gothic Revival architecture and traditional Mughal buildings. The final design of the building bears some resemblance to the St. Pancras Railway Station in London and the Parliament Building in Berlin. In 1996, the station was renamed as the Victoria Terminus (*currently known as the Chhatrapati Shivaji Terminus or CST*), in honor of Queen Victoria. Originally intended only to house the main station and the administrative offices of the Great Indian Peninsula Railway, a number of ancillary buildings were added subsequently, harmonious with the main structure.



Figure 3: St. Pancras Railway Station Building

While railway operations focus mainly on commercial transport of passengers and freight, a railway station typically represents a point of transit for passengers to alight and board trains and for transfer of goods and freight. With ever-growing movement of passengers and goods traffic the need was for not just expansion of lines / tracks, but also station infrastructure. Over time, with changing scope and style in execution of operations and the technology involved therein there was a need for larger support structures, in and near stations. This saw an unprecedented growth in stations occupying large areas around them, while also having considerable impact on surrounding architecture and cityscape environments.

With time, the railways realized an inherent need to augment services offered by them and provide an accelerated transportation mode to the ever-growing populace and their merchandise. Augmentation of railways made it imperative to provide Stations, as a 'Point of Transit'<sup>1</sup>, where the required services could be provided and this, due to the ever-increasing volume of passengers and freight transported grew bigger and bigger.

The growing stature and impact of railway stations had a resulting impact on architecture, cityscape, and urban planning, and several components that made it up. These are often ascertained by the nature of operations and the support functions and services that are required to handle the transportation of passengers and freight.

### **Railway Architecture: *From Statement of Imperial Elegance to Modern Utilitarianism***

Railway stations are the one architectural objects, which are seen everywhere and with the greatest frequency. Tens of Thousands of people daily, transit through many stations, awaiting the departure of their trains. This in effect signified the architectural influence of railway stations on surrounding urban eco-spaces. Apart from Churches and some public buildings, stations seem best to illustrate the typical architecture of each

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<sup>1</sup> Point of Transit: An intermediate point in a journey where a change of vessel is made.

country. Around the globe, the exterior designs of the stations are usually better recognized as works of architects, rather than the constructions from an engineering standpoint only.

From an architectural standpoint, the St. Pancras terminus in London, is possibly one of the best-known station buildings in the World. Many stations around the world, including the Chhatrapati Shivaji Terminus in Mumbai, has been designed and styled on the St. Pancras station. Other examples of architectural influence can be seen at the Paris's Gare du Nord<sup>2</sup> railway station, where all the tracks are covered with a single span arch and Berlin's Friedrichstraße<sup>3</sup> station, which has 2 levels of platforms and the upper platforms are covered on top by large arches resting on steel trusses of different lengths.



Figure 4: Paris's Gare du Nord Railway Station

Architecture has inevitably undergone many changes during the last century—conforming to public needs, popular taste, and the opportunities presented by improved methods of construction. Its application to railway work has also changed with the times; the old Victorian buildings offer a striking contrast to the imposing structures, in steel and concrete, of the post-war period.

### **The Way Forward**

Railways Stations today are much more than railway infrastructure, as they have the potential to become multimodal, multifunctional enterprises generating considerable commercial development within and well beyond their boundaries. The origins and functions of a modern metropolitan centre are located on and immediately around major Railway Station sites. Arterial spines and clusters of railway-linked businesses radiate outward from Railway Stations.

With this in perspective, there is enough scope to develop some of the existing major stations and/or even new ones as 'Strategic Hubs', which would act as pull factors for larger investments & commercial earnings and better branding / image enhancers in addition to creating significant employment and business opportunities. In short, such planned development/s of Railway Stations may lead to creation of a small, well-planned, self-contained & self-sustainable developments centered on the nucleus of Stations, which we would like to term as "Railopolis". The concept of developing several such 'Railopolises' would provide that much needed impetus to economic progress through supplemented Industrial, Commercial, Residential and Social infrastructure.

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<sup>2</sup> Gare du Nord was built in 1846 and designed by French architect Jacques Ignace Hittorff

<sup>3</sup> Berlin's Friedrichstraße railway station, built in 1882, caters to regional as well as S-Bahn and U-Bahn railway networks

Station building complexes need to be redeveloped in such a manner, that it not only decongests and organizes the existing amenities and facilities, but also creates a landmark development model and a benchmark for other similar developments across the country. While it may not be possible to replicate the model in totality at all stations, it could set the parameters of development / redevelopment for other stations to follow. This would also ensure a sense of standardization and consistency in identity across the entire railway network.

A study undertaken sometime earlier, under the aegis of the Institute of Rail Transport (IRT) on ***“Modernisation of Railway Stations in India”*** dealt with the afore-mentioned issues in detail.

A summary of analysis of the report is detailed hereunder.

1. While the Government’s current proposal is/are in the right direction, the approach needs to be slightly altered, keeping in perspective the long-term sustainable redevelopments of such infrastructure. First and foremost, redevelopment of stations need to be undertaken in a phased manner and not implemented across the length and the breadth of the country. Focus should be on a few railway stations; preferably the large stations in the major metros and then in phases across other metros, mini-metros, towns and so on. Major terminal stations should be first redeveloped, as these stations tend to attract the maximum passenger flows. Decongesting and reducing the chaos at these stations would help in streamlining and controlling the operations across other stations in the same network. Also, standardization and a consistent identity could be developed for a zonal railway network. This would also aid in branding, positioning and marketing zonal railway networks and a source of revenue could be developed around such positioning’s.
2. While the key focus of the Indian Railway Station Development Corporation (ISRDC) is on developing new / redeveloping existing railway stations for enhancing customer experience, the current scheme seems to be focused primarily on a) excess and/or available railway lands across the length and breadth of the country and monetizing such lands for commercial gains and b) creating structural modifications to existing buildings. Based on international endeavors of Railway Organisations, such focus on exploiting real estate potentials and/or cosmetic architectural changes, will have little or even no effect / impact on enhancing customer experience or passenger comfort. Land Plan documents released for bidding purposes do not clearly indicate the complete picture for redevelopment for bidders. The MoR needs to relook into the aspect of developing new stations and redeveloping existing stations on a case to case basis and also dwell in detail on the aspects of development focusing on creating amenities, facilities and utilities for passenger ease, access and comfort on a long-term and futuristic basis, rather than creating architectural face-lifts.
3. Redevelopment of railway stations should not be restricted or limited to Station complexes only, but rather should focus on a larger area surrounding the stations. Most railway stations are located in city centers and hence the redevelopment strat-

egies need to be focused on areas extending beyond the building complexes including the approaching roads, streets & by-lanes, vehicular movement (type and scale), occupation and ownership of businesses and residents, commercial offices and other retail establishments including small and medium sized vendors. The pattern and intensity of vehicular movement by time of day and night is also equally essential to be examined and analyzed. Places of tourist interests, architectural and heritage complexes should also be incorporated into the area of study prior to implementing a development plan. Implementation of external and internal re-development strategies should be dealt with separately, but simultaneously once the action plans are finalized

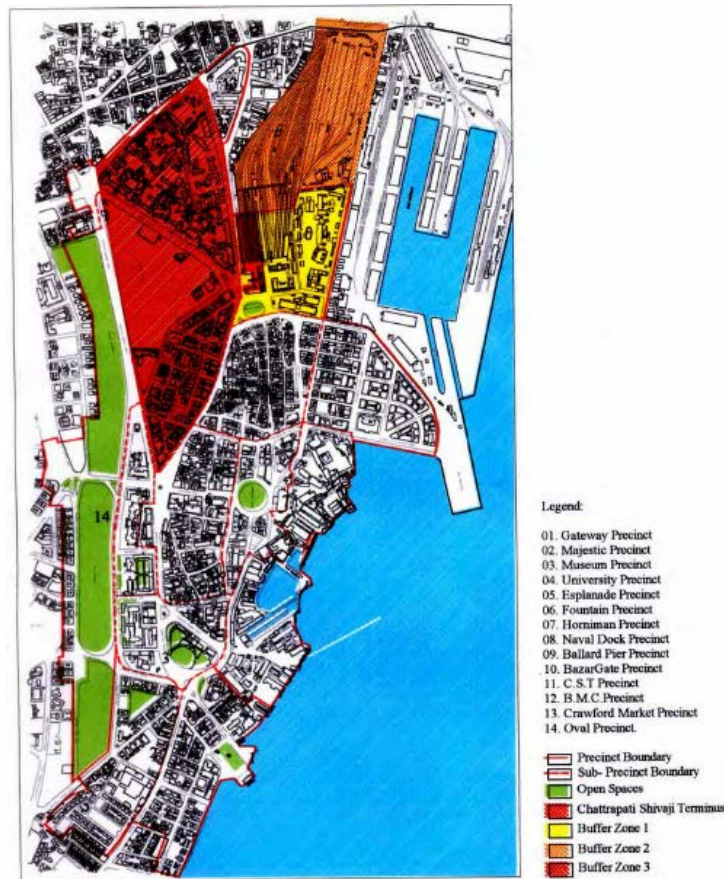
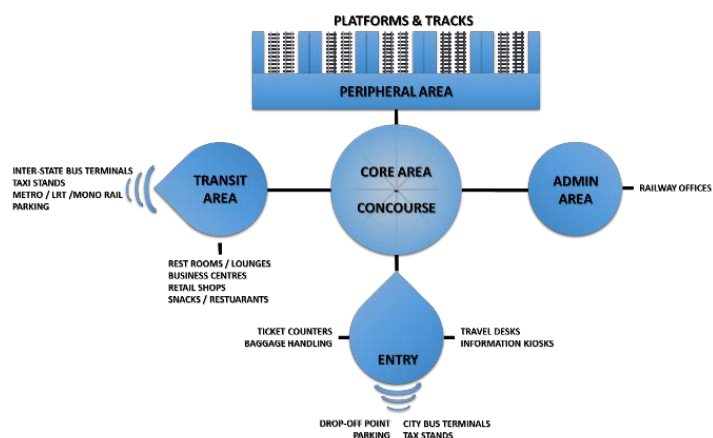


Figure 5: Proposed Buffer Zones around CST Station, Mumbai

4. Architectural grandeur of stations, especially those with historical significance should be maintained and any future developments should be in accordance with, and agreement to existing plans. The opulence of such architecture is a sight to witness and embodies the spirit of magnificence, history and landmark. On the contrary, if any, development of surrounding architectures should be styled similarly to ensure a feeling of continuity and stability. The development of CST and its surrounding areas is a case in point.
5. A stakeholder approach needs to be instituted prior to initiating the plan. From designers, developers and government agencies implementing the project (in this case being the Railways), other government agencies including Municipal Bodies, Environment, Public Works Departments (Centre & State), Power and Water Agencies, Police and others such Heritage / Historical Society's, Citizens Charters, Business Forums, et al should be consulted prior to initiating a plan. In depth discussions and meetings wherein each of the stakeholders should be heard prior to addressing them. Further, all the stakeholders should be kept duly informed of the status of the project at every stage of design, development and implementation of action plans. This would result in forming a healthy and sustainable development without delays in time and cost overruns.

6. A Model Railway Station – either on a Greenfield or Brownfield basis needs to be implemented, which can set as a precedent for other stations around the country. This is very essential, as such a development would provide the Railways with insights into various nuances of design and development, communication, marketing and even financing. Stations can support a given level of passenger throughput before they become overcrowded or, ultimately, reach an absolute constraint. Providing station capacity that supports future demand can therefore have a direct impact on the level of residential and employment growth that a city can sustain. A development of this nature can put in place a sustainable model, which incorporating and testing several innovative methods could be later replicated in other stations.
  
7. Redevelopment of Railways Stations is a novel concept internationally and it is only recently that several countries in the Western World such as UK, USA and Japan are looking at this concept. This is primarily because of a huge shift in traffic from more expensive solutions such as air back into the railways. Till a couple of years back, air travel was touted as the preferred means of transport around the world. With low-cost carriers, the suggestion did make some effect on the ground. However, with increasing ATF costs, growing impact of Aviation sector on climate change (*Including Engine Emissions, Noise and Fuels, the sector accounts for 4-9% of total climate change on human activity*), risks involved and perception of unaffordability for many, the focus has once again shifted to the Rail sector. Also with innovative and new-age technologies being infused in the rail sector and hi-speed trains, there is renewed focus on redeveloping railway stations catering to such technologies. It is thus imperative that a team from Railways should personally visit and study these mechanisms in greater detail for effective implementation of similar structure in India.
  
8. Overall, redevelopment of railway stations not only enhance the revenue streams of railways through monetization of existing assets, utilities, facilities and services, but also result in creating additional jobs required for handling such utilities, facilities and services. In addition, redevelopment of surrounding and adjacent areas creates more opportunities for businesses to flourish. Given sufficient connectivity, capacity & interlinkages with other modes of transport, stations can support sustainable economic growth by helping to accommodate increasing travel demand and constrain private transport use. They can be particularly effective in supporting high density development in the station vicinity, but can also enable a town or city as a whole to grow in a sustainable way over the long term. Stations are a key point of arrival and departure for many travelers and other visitors, and the quality of the station environment forms part of peoples' overall

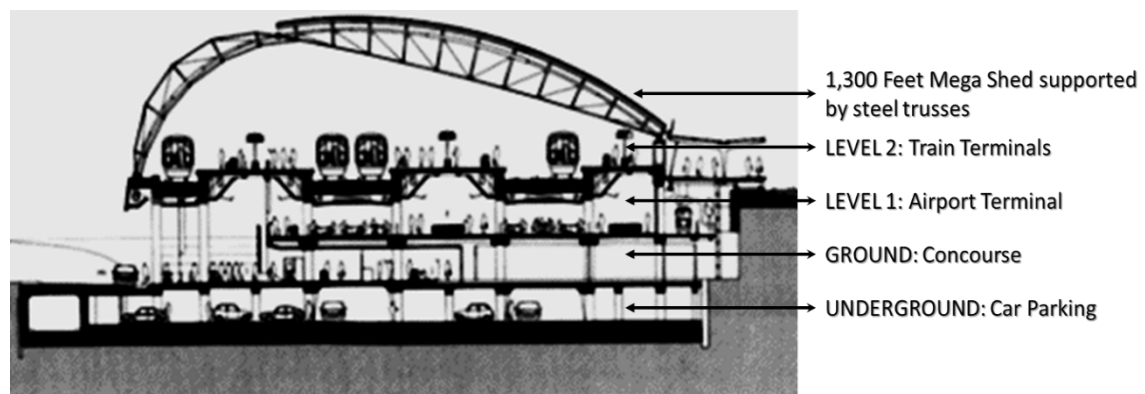


**Figure 6: Flow diagram of functional elements within Railway stations**



perception of a town or city. A high quality, well designed station can improve the image of the location it serves, making it more attractive as a place to live, work and invest.

9. **Trans-modal connectivity:** While the key purpose of stations is to provide access to the connectivity offered by the rail network, it is also dependent on other modes of connectivity such as bus, taxis, cars, metros and/or light rail. The extent of availability of these services and the throughput at the point of intersection with the station will determine the flow of traffic on the railways. Access to stations through other modes of travel is as important as range and frequency of services offered by railways. The presence of a trans-modal connectivity will also augment a positive perception of stations and the location they are located in.



**Figure 7: Schematic diagram Waterloo International Terminal Source: Railway Stations: Planning, Design and Management, 2000**

10. While redeveloping and refurbishing railway stations by way of providing better infrastructure, utilities, facilities and services can result in better revenues due to increased footfalls and throughput, monetizing several assets currently owned by the railways, which would result in additional incomes. 2 areas that could be considered are land adjacent to stations and air space over the stations. However, care needs to be taken that such assets are not converted into random real estate developments, but should be related to core operations and functions of railways, which may result in raising more funds. Monetizing railways assets has been one of the core areas focused in the recently concluded Railway Budget presented by the Hon'ble Minister of Railways. However, Railways need to address the dual issues of finding funds as well as providing a clear plan to private investors of from where the revenue will come from. A detailed PPP policy needs to be put in place highlighting in detail the areas where investments are invited, the structure and time frames of these investments, model concession and development agreements and a revenue model for each of them.

## **In Conclusion**

Indian Railways need a paradigm shift in their approach, functioning and change their overall perception as the 'Poor Man's' transport, which seems to be a reality. Low fares coupled with less than acceptable customer service deliveries, low efficiency and response, persistent risks in safety and security and low infusion of technology compared

to the rest of modern economies in the world, has minimized the overall impact of railways.

The focus now needs to be on provision of a better overall passenger travel experience and reduce the inconsistencies that prevail in the largest public organization in the world. The Hon'ble Minister of Railways, during his presentation of the last stand-alone Railway Budget of India had rightly identified the core issues impeding the growth of railways and has also suggested the right steps to mitigate the same. As mentioned earlier, the Government has allotted in excess of ₹ 100,000 Crores for the redevelopment of Stations and Logistics Parks. What needs to be seen, in the coming months and years, is the effect of follow-up and implementation and this can only be achieved, by addressing the critical issues, preparing definitive action plan and most of all implementing them within the time frames estimated.

There is hardly any doubt that Indian railways need transformation...that transformation needs to be done now.