

Transportation Infrastructure Development for Regional areas: Implications for regions

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Abstract

Traditional urban development is perceived to be important for the expansion of major economies. While urban centres are the main source of economic activities, the regional areas also perform a significant role in aiding the nation's economy. Nonetheless, transportation infrastructure for regional areas is seemingly less important and thus is neglected. Globally, governments contend that their highest priorities are necessary for the ever expanding cities and their subsequent urban metropolis. However, more recently, governments have announced the development or upgrade of significant transportation infrastructure for regional areas. Not only would such a decision enhance the nation holistically, but ultimately it may also further benefit the surrounding regions. It has generally been implied that the benefits of such development outweigh the drawbacks; however, such a proposition is usually developed on a case-by-case basis. A key strategy of transportation infrastructure development in regional areas is the concept of nation building schemes or the like. As the basis of the Australian Nation building program, approximately eight billion Australian dollars will be committed to building an inland transportation infrastructure freight rail line from Melbourne to Brisbane. This inland rail project will instigate a new benchmark for long haul freight competencies, which will increase the efficiency and reliability of inland rail systems. Moreover, the proposed Melbourne and Brisbane rail project will service the export of agricultural and mineral resources from remote regions. This paper will adopt the case study methodology to investigate the Inland Rail Transportation system linking the Melbourne and Brisbane ports. In doing so, the implications for the regions adjoining this project will be explored.

Key in the subject of the topic (*Urban and regional policy*)

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Abstract

Traditional urban development is perceived to be the most important expansion of the major economies. While the urban centres are the main source of economic activities, the regional areas also perform a significant role in aiding the nation's economy. Nonetheless, transportation infrastructure for regional areas is seemingly less important and thus is neglected. Globally, governments contend that their highest priorities are necessary for the ever expanding cities and their subsequent urban metropolis. However, more recently, governments have announced the development or upgrade of significant transportation infrastructure for regional areas. Not only would such a decision enhance the nation holistically, but ultimately it may also further benefit the surrounding regions. It has generally been implied that the benefits of such development outweigh the drawbacks; however, such a proposition is usually developed on a case-by-case basis. A key strategy of transportation infrastructure development in regional areas is the concept of nation building schemes or the like. Furthermore, as the basis of the Australian Nation building program, approximately eight billion Australian dollars will be committed to building an inland transportation infrastructure freight rail line from Melbourne to Brisbane. This inland rail project will instigate a new benchmark for long haul freight competencies. Such high competence would increase the efficiency and reliability of inland rail systems. Moreover, the proposed Melbourne and Brisbane rail project services the export of agricultural and mineral resources from remote regions. As the basis of a case study, this paper will investigate the Inland Rail Transportation system linking the Melbourne and Brisbane ports. In doing so, the implications for the surrounding regions adjoining such a project will be explored.

Keywords: Regional; Transportation Infrastructure; Regional Development; Regional strategic alignment

1.0 Introduction

Transportation infrastructure and its subsequent network systems permit the provision of life necessities such as food and agriculture, together with facilitating social and economic increase. Governments at all levels devote considerable resources on the development of such services. For regional and rural areas, the expansion of transportation infrastructure is a fundamental component in the development of successful and thriving communities (Andres et al, 2016). Furthermore, the development of such transportation services and network systems is the integral aspect of improving the overall nation's regional connection. The proposed Melbourne and Brisbane rail project, which at times is referred to as the Inland Rail, is a Mega transportation project linking regional Australia to domestic and international markets (ANZIP , 2017).

This mega project will ultimately establish the national freight network between Melbourne and Brisbane via regional Victoria, New South Wales and Queensland. This project is the principal freight rail infrastructure project in Australia (Railpage, 2017). Currently \$8.4 billion has been allocated in the federal budget to this project with an estimated total project cost of \$10.7 billion. It will take up to seven years to complete the network (Barbour, 2017). The Inland Rail's vision is based around providing approximately 1,700km of high speed standard gauge trunk rail system linking the Melbourne and Brisbane ports. Various studies have shown that the Inland Rail is a short-term solution that is flatter and straighter than any other options available. There will be approximately 600km of new tracks linking existing infrastructure which will require upgrading to carry the new train capacity (ANZIP, 2017).

When constructed the Inland Rail project will provide a service at speeds up to 115 kilometres per hour transporting the a load comparable to 110 B-double truckloads

of freight (ANZIP, 2017). In addition, various studies have estimated that the Inland Rail will provide an A\$16 billion boost to the economies of Victoria, NSW, and Queensland over the next 60 years. The key points of the Inland Rail project can be summarized as:

- Long term planning and investing for a mega Freight transport rail link.
- Interconnecting remote areas of the Victoria, NSW and Queensland states.
- Ultimately connecting Melbourne to Brisbane via the intersection of the Perth-Sydney line.
- Allowing various businesses to transport freight from north to south in approximately 24 hours (ANZIP, 2017).

An overview of the proposed Melbourne and Brisbane rail project (Inland Rail) is represented in Figure 1.



Figure 1, Overview of Inland Rail project

As noted, the Inland Rail project covers the rural areas of the eastern states of Australia, including Victoria, NSW and Queensland. In addition, this project also includes the utilization of some existing rail tracks together with some construction of new pathways.

Any major infrastructure project should encompass the probable need and outlook of such infrastructure. Such a wider outlook supports this paper's discussion concerning the inland link project. As part of this methodology, special attention will be given to the actual long haul freight capacity of the freight rail line from Melbourne to Brisbane. Conceivably the most significant advantage of this rail project is its increased ability to transfer appropriate agriculture, resources and freight.

The research methodology takes the form of a case study to reviewing the key factors of an inland project for the purpose of reviewing strategies for Transportation Infrastructure development for regional areas. The inland link project was chosen as there is a lack of concrete understanding about Transportation Infrastructure development for regional areas and the implications for regions. While there are generalized practices for regional rail projects, there is still no adaptable understanding on their specifics. As a result the freight rail line from Melbourne to Brisbane provides a good opportunity as a case study to more closely investigate the implication for regions.

2.0 Transportation infrastructure development for regional areas

Broadly speaking, regional development can be defined as a wide-ranging endeavour to lessen rural areas inequalities (Gharehbaghi, 2014). Such an undertaking is usually achieved by supporting key economic activities, including effective transportation infrastructure (Gharehbaghi and Georgy, 2015). Effective infrastructure development for regional areas forms the basis of balanced rural development (Sladkowski and Pamula, 2015). Such development includes the provision of effective and modern transportation

infrastructure and secures the quality of life of rural communities, together with increasing regional business potential. The requirements and methods for rural and regional expansion are quite dissimilar to that of urban development. For Australia the rural and regional development predominantly aims to develop strategies to encompass a cheaper transportation of resources and supplies. Rural and urban development is dissimilar and needs to be dealt with differently.

Traditionally, the main focus of any transport infrastructure development is to connect the main business centres such as manufacturing and industrial areas (Gharehbaghi and Georgy, 2015). As cities are ever expanding, rural areas are beginning to merge creating more dynamic economic centres. By this it is important to note that such regional areas could serve as important economic centres (Ghosh and Lee, 2012).

On the other hand, factors such as the relative and affordable land, present opportunities for the further consolidation and growth of the regional transport industry (Thekdi and Lambert, 2012). The regional transport industry provides a significant foundation for the overall national transportation systems (Rainey and Tolk, 2015). However, there are additional factors which require careful consideration during regional transport infrastructure development. These include:

- Valuable transport infrastructure planning strategies, including various aspects of land use development and expansion deliberation. The aim of such strategies is to utilize sustainable development and take into account important issues such as preservation of the physical environment (Gharehbaghi and Raso, 2015).
- Important economic and fiscal considerations to develop a strong regional economy based in manufacturing, logistics, wholesale trades and so on.

- Social significance to underpin community requirements such as improved liveability, together with enhancing public resilience.

A key aspect of superior transportation infrastructure development for regional area is to carefully align this diverse range of factors. Such alignment is represented in Figure 2.

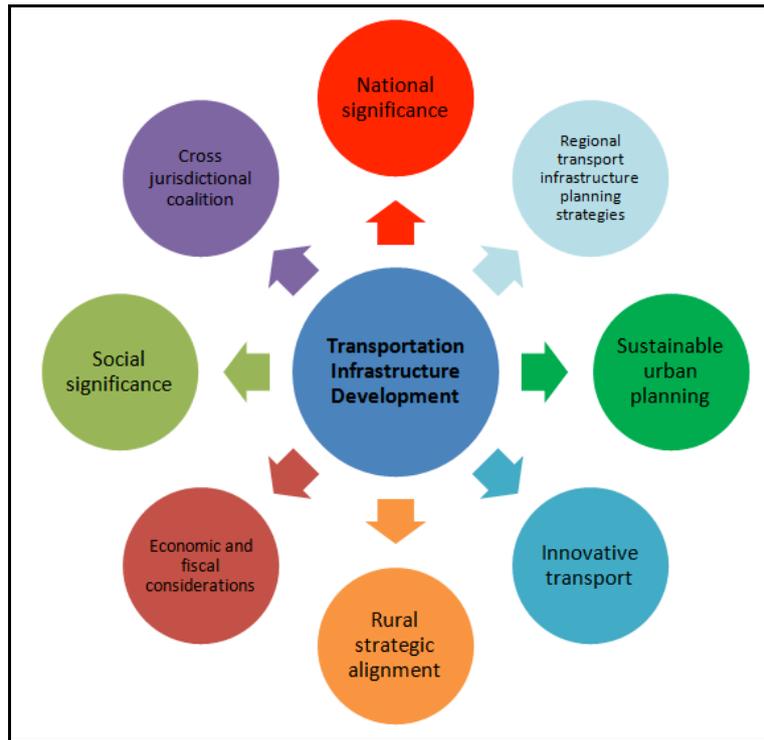


Figure 2, Multiple factors of transportation infrastructure development in regions

As can be noticed, transportation infrastructure development for regional area consists of the interconnectivity of different factors in regional development. Although, some of factors have a direct influence, others have an indirect effect. Moreover, transportation infrastructure development for regional areas is a complex process and thus should be scrutinized with a multi-dimensional approach.

Figure 2, categorises the multiple factors of transportation infrastructure development for regional areas into the following:

- Foremost, rural strategic alignment needs to be carefully considered in terms of the connectivity of land, air and water.
- Government collaboration at local, regional and national levels.
- Social significance considers labour productivity, impact on human development, improved employment and so on.
- The economic and fiscal considerations comprised of short and long term economic stimulus such as a strategic investment in infrastructure. The return on such investment needs to also be carefully measured. Also, the source of finance and costing of large and complex transportation infrastructure needs to be obtained and maintained, to demonstrate any financial benefits.
- Rural strategic alignment, includes the short and long term specific regulations and codes, and thus combines all the policies into one domain. Accordingly, the overall procedures and guidelines need to be consistent and inline with the existing transportation infrastructure planning and implementation requirements.
- National significance holistically covers the overall benefits of the transportation infrastructure development for the nation. Such considerations will cover the benefits for both the urban and regional areas together with multiple states and territories.
- Sustainable planning carefully takes into account the land use consideration such as environmental impacts, social implications together with the relevant acts and regulations. Such alignment is necessary to establish a set of goals that makes the cities greener and environmentally responsive. Such goals also need to reflect on the availability of natural resources that influence the regional development.

- Regional transport infrastructure planning strategies, to develop a national strategic rural transport network to connect the major nodes which focus on further investment and funding. Such strategies would focus on the rural transport planning from provision aspects. Moreover, such transport infrastructure planning strategies need to carefully align with any future state and federal framework such as Auslink to successfully meet any strong future demand.
- Innovative transport, not only includes pioneering methodologies such as Intelligent Transportation Systems (ITS), but also carefully considers how such techniques integrate with various urban plan factors, such as Melbourne 2030.

It is clear that the multiple factors of transportation infrastructure development for regions focus mainly around the planning stratagems. Various transport infrastructure planning strategies are thus fundamental as keys for thriving regional development. To further validate these factors the specifics of the regional development and its implications need to be considered.

3.0 Regional development and implications

In economic theory, Keynes proposed that an increase in public spending could keep economic activity at an acceptable level. The resultant increase in Equilibrium GDP of government expenditure has a resultant stimulus in the economy and aggregate expenditure (Jackson and McIver, 2001).

A standard approach to evaluating the magnitude of construction of major infrastructure is to identify direct spending by contractors; indirect spending to suppliers e.g. accommodation and food; and then induced spending. Blanquart and Koning (2017, p12) explain this multiplier thus:

“The impact of these various expenditures is a function of the propensity to consume wealth locally. The effects of the initial investment can vary by local economy depending on whether the construction workers live near the worksite or commute and thus spend only a small fraction of their wages in the region. The effect will also vary depending on whether the construction materials come from local subcontractors or are imported from other areas”.

Projects are often evaluated as to potential benefits. In doing so, it is important to understand if a study has approached, or displayed results, in a positive or normative statement. These views may be related but, some statements are made containing bias to induce, or try to influence, a preferred outcome. But in this we should be aware that policy decisions are often made as a choice between an ideal and a desired outcome. These trade-offs may be the cost to achieve an increase in efficiency; or spending in the short term for a longer term benefit (Gans et al., 2015).

Many of these Cost-Benefit analyses look at small sections of a project. The Bureau of Transport Economics conducted a case study into the proposed inland rail benefits in 1996. It centred on a small study of one section in New South Wales and utilised comparison with road infrastructure improvements with improved traffic flow and the resultant economic impact on bypassed towns. The reduction in traffic congestion meant that towns received an economic boost as they became more attractive to tourists (BTRE, 1996). This study indicated that similar expected economic benefits would flow to the East Coast Rail Corridor with a reduction in freight rail improving congestion in this network.

Conceptually, it is expected that spending on improving infrastructure will provide a further benefit to an area through improved performance. However, this has been disputed by some industry groups such as GrainCorp in relation to the Inland Rail

project (Heard, 2017). This is consistent with studies of the High Speed Rail system in Europe which provide a more causal link with city size, industry structures, resources and proximity to urban areas as more influential in the longer term than tourism and business relocation (Blanquartand Koning, 2017). Analysis of Canadian utilities infrastructure found that it was far more important for regulators to be concerned with economic efficiencies than with the scope of consultations. Restricting a regulator's scope to seeking efficiencies improved results for the public interest through increased productivity and enhancing the standard of living by improving the real worth of income (Church, 2017).

Similarly, studies of the legislation surrounding the Californian High Speed Rail project found that the limitation of subsidies meant private bodies were reluctant to commit without improved economic outlooks (Henríquez and Deakin, 2017). There is an intrinsic endogeneity issue in assessing infrastructure, particularly rail infrastructure, on an unbiased basis as the fixed location of the infrastructure must influence the outcome of the research (Iimi et al., 2017).

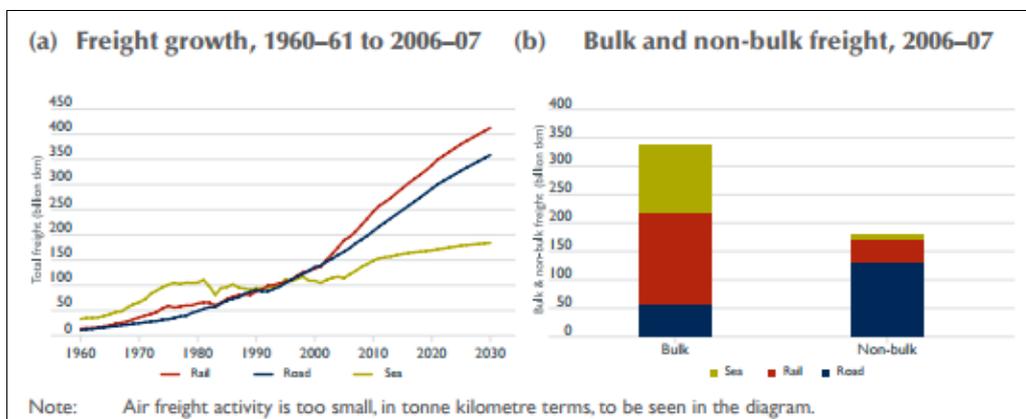
With an expected 10 year construction plan, the first trains to traverse the length of the Inland Rail project are due to run in 2024/25 financial year. Sections that link to existing infrastructure will obviously show some incremental implementation during the construction phase (ARTC, 2017). Private investors have already begun to expand adjoining and linking services in the expectation of greater utilisation as the project develops. SCT Logistics has constructed a new train freight terminal at Wodongato link New South Wales and Victorian produce to freight rail systems in these states and across to Western Australia with the expectation of adding Queensland as the rail system is constructed. The investment of \$18 million in a regional centre is to be integrated with a \$34 million facility constructed at Bromelton, Queensland, which will

provide their base for the northern end of the infrastructure corridor allowing for consolidation of loads prior to transfer to port facilities (Davies, 2016).

But even at this point with announcements of funding and a desired construction period, there is still conjecture over the proposed route and who will develop and/or manage the line. Australian Rail Track Corporation is a government owned body and most studies have been around their proposal. This includes a study by the Inland Rail Implementation Group which has predicted positive benefits from the project. However, a proposal by National Trunk Rail, which utilises a different path through northern Victoria and southern New South Wales, and claims an improved economic efficiency by linking extra rural fruit production, has not been compared by some of the government agencies. This is at odds with the recommendations by Church’s 2017 research. The construction of facilities by SCT Logistics would receive a greater benefit from the ARTC route as compared to NTR, but would still be a logistics hub under either proposal.

3.1 Long haul freight competencies

Currently in Australia, road transport dominates small freight cartage with rail and port dominant in the bulk goods sector. This is shown as at 2009 in Figures 3a and b.



Figures 3a and b, Goods delivery via transport (Mitchell and McAuley, 2009)

The proposed routes by both the semi-government Australian Rail Track Corporation (ARTC) and the private National Trunk Rail (NTR) are both very similar through the States of Queensland and New South Wales, although there are differing options for reaching the final port destination in Brisbane itself (Infrastructure Australia, 2017). The largest variant is in the preferred route through northern Victoria and southern New South Wales. The ARTC site, which appears to have the stronger government backing, traverses north-east from Seymour to AlburyWodonga. The NTR route shows a northern extension through the Goulburn Valley utilising Shepparton and Tocumwal before re-joining the northern route at Pine Hill, south of Parkes, in country New South Wales (NTR, 2015). In either case, it is agreed that rail freight on the east coast of Australia is expected to double over the next 20 years and triple by 2050 (Australian Railway Association, 2017).

Combined with the limited capacity of the East Coast Rail Corridor; potential savings in freight costs; congestion of city freight versus passenger lines; and over 1 billion tonnes of rail freight movement per annum, the federal government position has been well-established as strongly supporting an inland rail link and this was secured in the May 2017 budget committing \$8.4 billion over 10 years for the construction of the 13 stages to create the link (ARTC, 2017). The construction will link the Ports of Melbourne and Brisbane with a bulk freight line, with the Port of Melbourne handling approximately 36% of Australia's freight and Brisbane 16%, based upon twenty-foot equivalent units (Port of Melbourne, 2016). There have also been financial allocations by state governments which will link to the main project, with New South Wales committing \$1.3 million to replace older bridges near Narromine with compliant new structures (Ellicott, 2017).

The Queensland government has also dedicated the Environmental Impact Statements of the links through the south-eastern corner as State Significant Projects (DoSD, 2017). This has been supported by the 2015 Inland Rail Implementation Group study which estimated a 2.62 times economic multiplier for the project; an expected \$16 billion economic boost during construction; 16,000 construction jobs and an estimated 700 continuing jobs; reduced freight costs leading to a reduction in road freight with additional benefits of more reliable freight times through avoidance of congestion on the east coast link; a reduced transport time over the entire length of the route; and allowance for more passenger traffic on the East Coast Rail Corridor through the reduction of freight rail (ARTC, 2016).

The benefits of rail freight cost have been examined in numerous studies with varied benefits found. It was found that enabling more competition in rail freight in Kansas through protective legislation limiting the merger and acquisition process to provide more competitors in a marketplace did not equate into savings in rail freight charges, unless competition with other providers, such as road transport, offered competition to reduce, or limit costs (Schmitz and Fuller, 1995).

3.2 Implications to the surrounding properties

It is easily proven that an efficient transport route is beneficial in an economic sense. Nevertheless, ; what is harder to prove is, the link to which transport infrastructure would best address a situation, or the improvement in benefit if there is an existing infrastructure system e.g. the replacement of the road by rail, or vice versa. Australian transport underwent a significant shift in the post-World War II era when surplus trucks meant that a competitive advantage and flexibility of road meant that several freight lines became unviable in Australia's regions.

The constant dynamic has seen various shifts with Queensland Rail / Aurizon significantly reducing cattle freight trains in 2009 but then reinstating increased services again in 2017 (Bunyard, 2017). As was discussed previously, there have been predictions of 2.62 times economic multipliers for the Inland Rail Link project. This has been supported through state government and private infrastructure spending to indicate that the project has been positively received by some sectors and yet others such as GrainCorp indicate that they do not see a benefit to their business model. It may be that the benefit comes from a wider policy exchange with the shifting of freight from the East Coast Corridor freeing up greater utilisation of these resources for passenger services. If, as predicted, there is a reduction in road transport by greater utilisation of the Inland Rail Link then the expected environmental benefit of lower carbon emissions per tonne of freight moved are an esoteric benefit that cannot be measured purely in dollar terms. There is also a claim that reduced road transport will provide a benefit through fewer accidents (IRIG, 2015), but these claims are outside the scope of this paper to investigate.

4.0 Conclusion

Although a small portion of the Australian population live in regional areas, such areas are important in many aspects. In particular, agriculture and related services are based in such areas together with much of our natural resources. These are key aspects of the Australian economy with their combined total contribution to GDP of 9.1%, ranking behind Services (61.1%) and similar to Construction at 8.1% (Department of Industry, Innovation and Science, 2016). As the basis of the Australian Nation building program, approximately eight billion Australian dollars will be committed to building an inland transportation infrastructure freight rail line from Melbourne to Brisbane.

This inland rail project will service the export of agricultural and mineral resources from regional areas whilst also linking two of Australia's main port facilities. As the basis of a case study, this paper has investigated the Inland Rail transportation system linking the Melbourne and Brisbane ports. In doing so, the implications for the surrounding regions adjoining such a project have been explored. Aply, this research also highlighted the rudiments of rail transportation in the regional areas. Various factors of transportation infrastructure development for regional areas were also examined. The most intriguing aspect of such factors is their inclusive interconnectivity. This paper found that, typically various transport infrastructure planning strategies are the fundamental keys for a thriving regional development. A specific transportation approach for the regional areas was also highlighted. Finally, this paper evidenced the contribution that transportation development makes as a basis of successful regional development.

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