

# Transit-Oriented Development Compared: Sendai and Adelaide

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## Abstract

Transit-oriented development (TOD) is an important concept when it comes to encouraging sustainable mobility and increasingly sustainable urban development, especially for countries where automobile use overshadows public transport like Australia. Therefore, looking to countries like Japan with long histories of development centered around railway stations and high public transport use can be highly valuable. However, there is little research published in English examining Japanese TODs, especially in terms of policy comparisons. This paper has looked at Sendai, Japan, and Adelaide, Australia in order to compare their TOD planning approaches and policies, with the aim of using the TODs of Sendai as a basis for enhancing TOD development in Adelaide. Results indicate that increasing railway transit network development in Adelaide is essential to changing the way people travel. Also, Adelaide can learn lessons from Japan's experience by attracting higher private sector involvement and improve the ridership along with the increasing the revenue from other sources besides farebox.

**Keywords:** Transit-Oriented Development, Australia, Japan, Policy Comparisons

## 1. Introduction

The concept of transit-oriented development (TOD) was first put forward in the United States by Peter Calthorpe in 1993, aiming to address urban sprawl and car-dominated lifestyles and shift to a more sustainable form of urban development (Calthorpe, 1993). The fundamental goal of TOD is to establish a pedestrian-friendly and compact community with mixed-use applications in close proximity to railway stations, thereby increasing use of public transport, reducing reliance on private cars, fueling the development of surrounding areas, and providing a source of revenue for local government (Renaissance Planning Group, 2011; Ratner & Goetz, 2013). The concept of TOD has spread across many parts of the world and is considered a model for integrating land use and

transport as part of the smart-growth movement (Newman & Kenworthy, 1999; Renne and Wells, 2004). However, there is little research published in English examining Japanese TODs, especially in terms of policy comparisons. Japan has a long history of development centered around railway stations, known in Japanese as “Ensen Kaihatsu” (railway corridor development) (Guo et al., 2018). This approach began in Japan in the 1910s as a joint development bringing together railway lines and residential areas, while also incorporating commercial, educational, cultural, and other businesses (Yajima & Ieda, 2014).

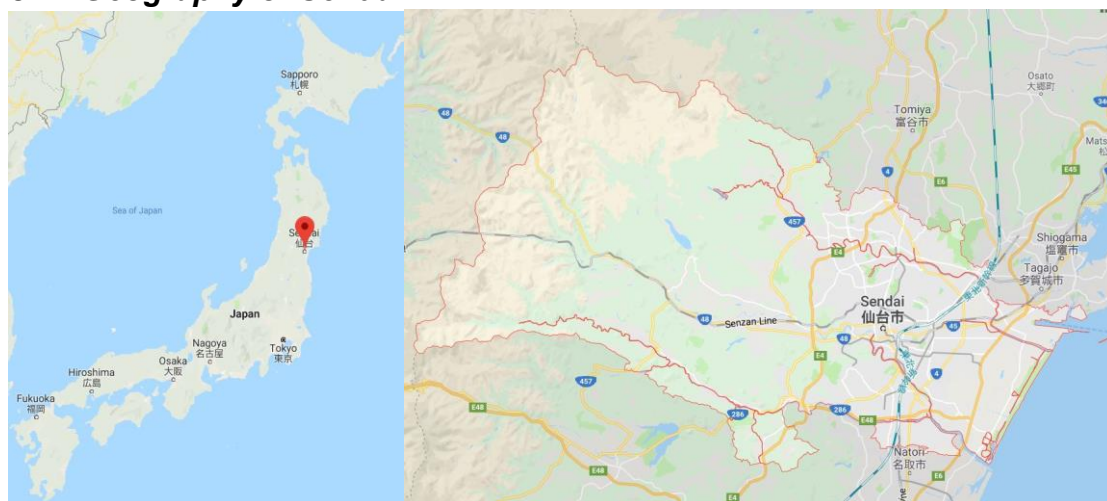
To help address the lack of TOD policy comparisons, this research focuses on TODs in Japan and Australia as a comparative study. As cities with similarly sized metropolitan areas and populations, Sendai, Japan, and Adelaide, Australia have been selected, with the aim of using the TODs of Sendai as a basis for enhancing TOD development in Adelaide. Sendai is the provincial capital city of Miyagi Prefecture and the largest city in the Tohoku Region. Adelaide is the capital city of South Australia, with a reputation for being one of the most livable cities in the world. This research addresses two questions concerning TOD development in these cities: (1) What are the key differences between government plans and policies; (2) What have the results of implementation been and what factors have led to these results?

## 2. Methodology

Secondary data was used in this comparative study, including statistical data for government plans and policies in Sendai and Adelaide, official reports, and other related articles.

## 3. Comparative results

### 3.1. Geography of Sendai



**Figure.1.** The geographic location of Sendai, Japan (Source: Google map)

### 3.2. Geography of Adelaide



**Figure. 2.** The geographic location of Adelaide, Australia  
 — Great Adelaide; — Metropolitan Adelaide areas (Source: Google map; SA government, 2017)

### 3.3. Comparative analysis of Sendai and Adelaide

**Table. 1.** Comparative summary of TOD in Sendai and Adelaide

	Sendai	Adelaide
Railway networks	Extends in many directions.	Mainly oriented north to south.
Public transport use	High passenger volumes (rail>bus)	Low passenger volumes (rail<bus)
Fare revenues	Two official railway lines and buses: benefited by the high passenger volumes, fare revenues could cover more than half expenses in 2017. Government funding accounted for the deficit of 9%.	Fare revenues could only cover 14% of the expense in 2017.
Limitation of private vehicles	High taxes and fees for private vehicle	No
Average land-use intensity around railway stations	High	Generally low
TOD planning start	Long histories, especially after 1970.	Since 2010 ( <i>30 Year Plan for Great Adelaide</i> ).
TOD policies	Consistent with TOD development, and further extending TODs from individual locations to ribbons.	Differing views on new public transport infrastructure; mainly focus on infill development.

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TOD implementation approaches	Flexible. Both the public and private sector can work toward promoting intensity of land use and renewing urban functions under policy guidelines, whether in terms of individuals or groups of landowners.	TOD development in Adelaide refers to individual projects under the administration of the government agency Renewal SA. Current urban renewal lands consist of previously industrial areas or market lands lacking prior homeowners.
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#### **4. Conclusion**

This paper has looked at Sendai, Japan, and Adelaide, Australia in order to compare their TOD planning approaches and policies, with the aim of using the TODs of Sendai as a basis for enhancing TOD development in Adelaide. The results show that increasing railway transit network development in Adelaide is essential to changing the way people travel. Also, Adelaide can learn lessons from Japan's experience by maximizing using private sectors and improving the ridership along with the increasing the revenue from other sources besides farebox.

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