

New Rejuvenation Model for Regional Railways in Japan—The Case of Wakayama Electric Railway's Kishigawa Line

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Introduction

Railways were the main passenger transport mode in Japan until the 1970s peak. However, with rising personal income and progress in building road networks, their market share was eventually overtaken by automobiles. By FY2005, the automobile's share (passenger-km basis) of Japanese passenger transport exceeded 50%, while that of railways had fallen below 30%. With the relocation of many urban functions of regional cities, such as housing, businesses, administration, education, and medical care to the suburbs, city centres, including areas near stations, have fallen into decline.

As a result, almost 70% of the 114 regional railway operators in Japan showed an operating loss in FY2005 and a total of 29 (605 km) railways, track sections and trams (excluding freight and funicular lines, unopened lines, and lines taken over by other operators) disappeared between 2000 and November 2008.

Although Japan's regional railways are in a difficult business situation, there have been cases of proposed line closures being overcome, as well as successes in rejuvenating lines. As one example, this article describes the rejuvenation of the 14.3-km Wakayama Electric

Railway Kishigawa Line between Wakayama and Kishi as the Kishigawa Line Model. This model is characterized by broad-ranging participation by community residents, effective support by local government, creative efforts by the new operator, and creation of a citizen–industry–government–academia coordination system. The creation process, characteristics, and significance of these features are introduced here.

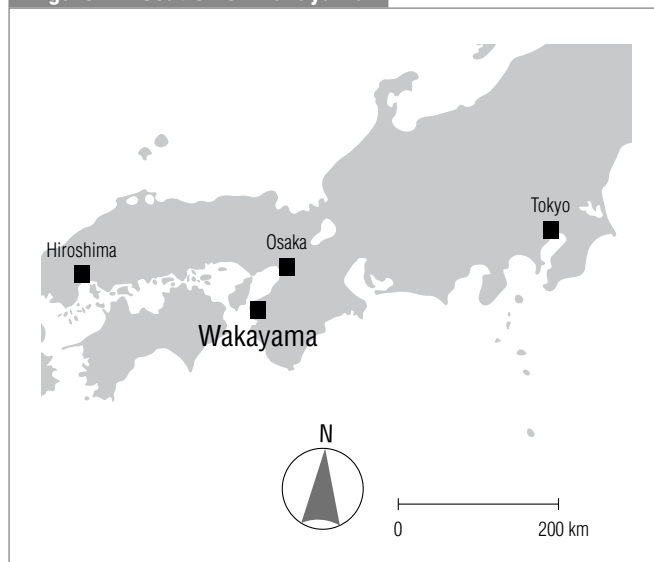
Overview of Kishigawa Line

The Kishigawa Line opened in February 1916 mainly to carry worshippers to the famous shrines at Hinokuma-jingu and Kunikakasu-jingu (collectively called Nichizengu), Kamayama-jinja, and Idakiso-jinja. Figure 1 shows the location of Wakayama and Figure 2 shows the Kishigawa Line. The original line was operated by Sando Keihin Railway and started at Ohashi and terminated at Sando. It was lengthened later to connect Wakayama and Kishi, and the operator changed in succession to Wakayama Railway, Wakayama Electric Tram, Nankai Electric Railway, and finally Wakayama Electric Railway. Today, there are 14 stations separated by an average of 1.1 km. There are 49 services in each direction on weekdays, and 43 on weekends and holidays. Fares are based on distance travelled and the single fare between Wakayama and Kishi is ¥360 (US\$1 = ¥98). There are no automatic ticket gates and the main passengers are students and commuters. However, tourists are growing in number after the transfer to Wakayama Electric Railway.

Wakayama Station, the starting point, is in Wakayama City (about 370,000 population), which is the capital of Wakayama Prefecture (about 1.01 million population). There is a department store with 32,000 m² of floor space, hotels, and other urban services nearby; the line runs by a private junior college, three prefectural high schools, and a driving test centre. The trackside population is about 80,000 and growing slightly; the journey by JR West's rapid train from Wakayama Station to Osaka City—the major conurbation of the Kinki region—takes about 1 hour. The other terminus at Kishi Station is on the edge of Kinokawa City's Kishigawa District (about 21,000 population).

Roads running parallel to the Kishigawa Line are mostly

Figure 1 Location of Wakayama



two lanes or less and are very congested in the morning and evening. The time between Kishi and Wakayama during the morning rush is about 50 minutes by car or about 30 minutes using the Kishigawa Line. However, two- and four-lane roads are being built at several locations alongside the line. This reflects the growth of private car ownership in the Wakayama urban area, where the number of automobiles per 1000 people has increased from 485 in 1990 to 656 in 2005.

Problems of Elevating or Closing Line

Passengers on the Kishigawa Line peaked at 3.614 million in FY1974 but then dropped rapidly to 2.533 million by FY1985 due to growing car ownership. Volume recovered to 2.739 million in FY1996 but fell again with the opening of a bypass running parallel to the line in December 1996 and the opening of a four-lane shortcut to the city centre in September 2001. In FY2004, the number had dropped to a low of 1.926 million, or about 47% of the FY1974 peak (Figure 3).

Although the operator Nankai Electric Railway pursued cost savings and aggressive investment in facilities, the

number of passengers continued dropping. Investments included introduction of Automatic Train Stop (ATS) and Centralized Traffic Control (CTC) systems, one-man operation, more daily services, full air-conditioning, changing some major stations to unmanned operation, and opening the Kotsu Center-mae Station in May 1995 in response to a passenger petition. These investments cut losses from a peak of about ¥800 million in FY1995, but the company still faced annual losses of ¥400 million to ¥500 million. Nankai managed to keep the Kishigawa Line operating by using cross-subsidies, but in October 2003 it notified the local governments that it would undertake widespread business changes that included closing the Kishigawa Line.

Recognition by Trackside Residents and Local Governments and Decision to Retain Line

One year after the Nankai closure announcement, local governments still hoped to continue operations using Nankai's traditional cross-subsidies. Local residents

Figure 2 Route of Kishigawa Line

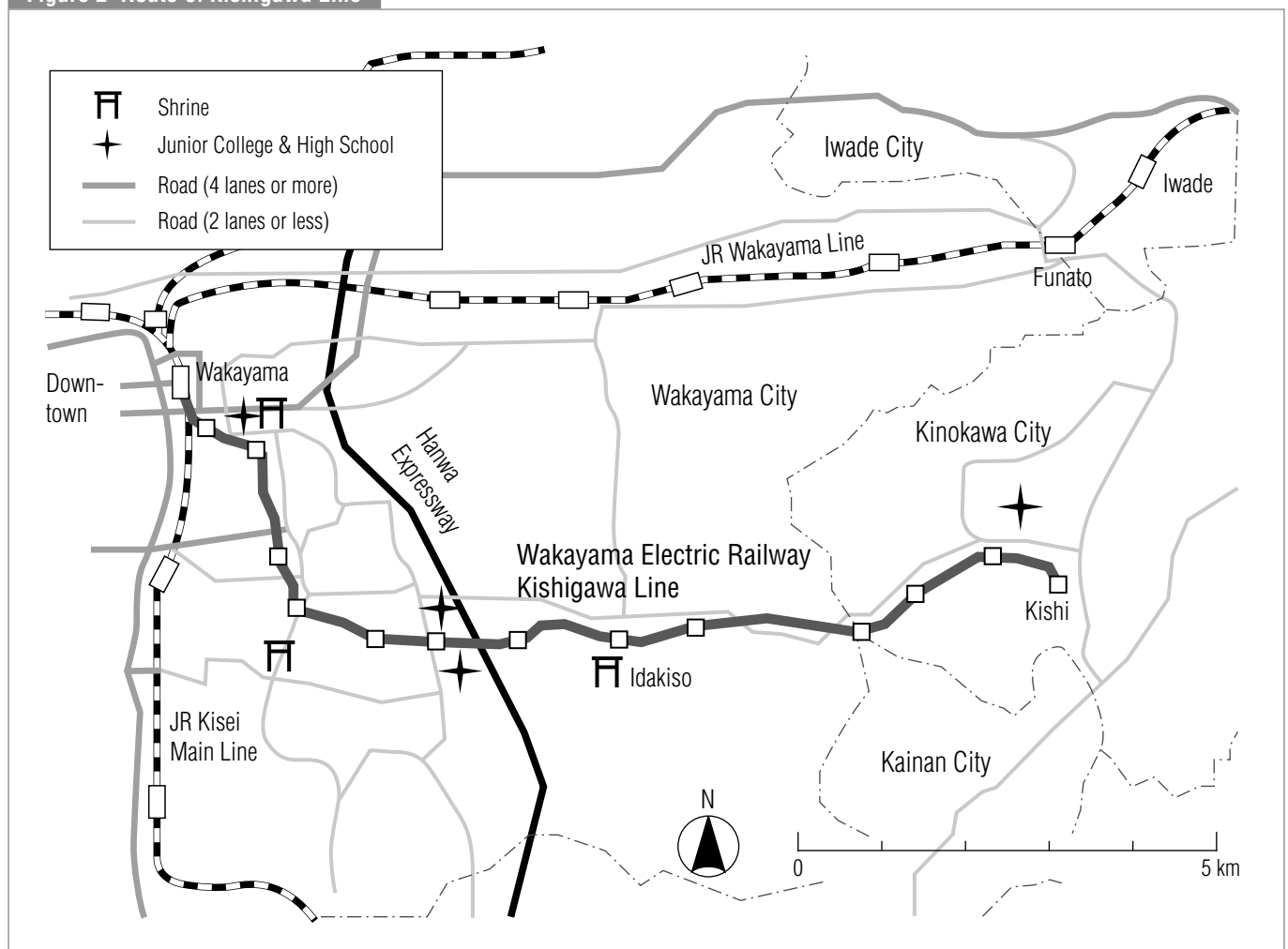
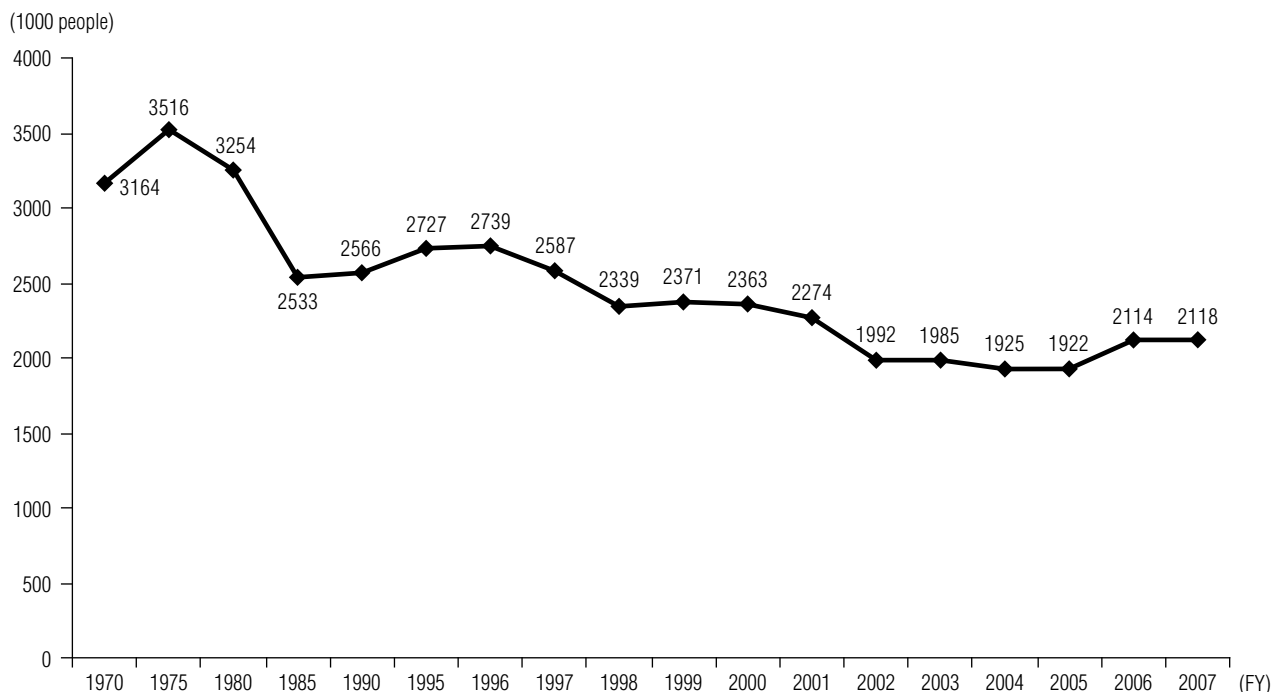


Figure 3 Passenger Trend on Kishigawa Line



Source: Wakayama Prefecture and Wakayama Electric Railway

Table 1 Framework of Support for Kishigawa Line by Local Governments

Wakayama Prefecture	<ul style="list-style-type: none"> • Prefecture to defray all expenses incurred by Wakayama City and Kishigawa Town in acquiring railway land by subsidies. • Prefecture to defray large cumulative maintenance expenses up to ¥240 million. • Under following two conditions: <ul style="list-style-type: none"> – Prefecture will not participate as main entity in railway operation. – Wakayama City and Kishigawa Town will defray operation losses for 10 years or more.
Wakayama City and Kishigawa Town (now Kinokawa City)	<ul style="list-style-type: none"> • Wakayama City and Kishigawa Town will own acquired railway land. • Wakayama City will compensate operator for 65% of any losses up to ¥820 million for 10 years; Kishigawa Town will compensate operator for remaining 35% of losses. • Public tender for line operator to be made with cooperation of prefecture. • Town will work with private sector to promote line use as much as possible.

were also putting their trust in leaving decisions to local governments. However, some experts saw the coming crisis and began explaining the role of railways in society and the difficulties facing the Kishigawa Line to residents. They urged residents to break from their passive approach of leaving decisions to local governments. Eventually, these actions were successful in mobilizing action by trackside residents.

The situation developed rapidly in September 2004. The

citizen's movement gained a great boost when the Kishigawa Line closure problem was covered by national broadcaster NHK on 2 September 2004 in a TV programme called '*Problem solved! The power in your neighbourhood*'. This was followed 6 days later by a symposium held by Wakayama City and Kishigawa Town to promote retaining the Kishigawa Line.

As required by the Railway Business Act, Nankai submitted a line-closure notice in late September 2004.

Figure 4 'Love Letter' to Ryobi Group

We believe that it is only natural that local residents bear responsibility for and cooperate in the operation of regional railways such as the Kishigawa Line along with the operating company and subsidizing government agencies responsible for operation. Based on this idea, in addition to actively using the Kishigawa Line, we actively participate in cleaning and planting at stations on the Kishigawa Line, plan and execute projects to attract passengers, conduct surveys and analyses on traffic on roads parallel to the line, hold citizen funding study groups, propose a transport vision for the Wakayama urban area, carry out educational activities for local residents, and conduct other activities. We are fully prepared to continue to cooperate with and support the company that takes over operations in coordination with various groups along the line. We hope that you will consider our request, and respond to the public tender to take over operations of the Kishigawa Line. We eagerly await the chance to welcome your group as a partner in the Wakayama urban area.

This highlighted the limit of the residents' over-reliance on local governments, and strengthened the approach of the community to thinking about and taking actions for itself. Many citizens' groups started activities that made use of their characteristics. The Group to Build the Future of the Kishigawa Line, made up mostly of residents of trackside housing developments, reached a membership of 5500 in early January 2005. The group held station beautification events, forums, and other activities. High schools along the line held open discussions and a festival to highlight the Kishigawa Line problem. The Wakayama Citizens Active Network (WCAN) Kishigawa Line Subcommittee conducted a cost-effect analysis on retaining the Kishigawa Line with its own funds, without relying on government assistance. Residents participated in every step of the analysis, from planning through data compilation, study of results, and report presentation with the cooperation of Wakayama University. The results showed that the line provided benefits to the local society as a whole by preventing traffic congestion, road accidents, and air pollution and saving transport expenses. The total social benefit was estimated to be worth ¥1.48 billion.

Encouraged by the citizens' movements, trackside local governments announced a policy of support for the Kishigawa Line on 4 February 2005. The framework included acquisition of railway land, compensation for losses,

defrayment of large-scale maintenance expenses, and public tender for an operator (Table 1).

As a result of the public tender, Ryobi Group's Okayama Electric Tramway was chosen as the line operator due to its broad experience, good transport safety record, and firm financial standing. The company established Wakayama Electric Railway as the new operating company taking over the line from Nankai on 1 April 2006. Okayama Electric Tramway responded to the public tender partly due to the sense of unity between citizens, government, and Nankai, which was demonstrated by the passion of residents along the Kishigawa Line, the resolve of local authorities to retain the line, and the resolve of Nankai to cooperate in areas such as transfer of track, rolling stock, stations and other facilities. Okayama Electric Tramway was also requested to take over the line by Okayama's Rail transport system Amenity Community Design Association (RACDA).

During the tender period, trackside residents sent a petition (nicknamed love letter) to the Ryobi Group (Figure 4).

The Kishigawa Model for Rejuvenation of Regional Railways

Broad participation by local residents

An important point in the rejuvenation of the Kishigawa Line was the residents abandoning their traditional over-reliance on local government. They implemented a wide range of activities from station beautification to cost-effect analysis, and the media actively reported their activities.

Resident activities continue even after the decision was made to retain the line. The Group to Build the Future of the Kishigawa Line continues beautification activities as well as event planning. The WCAN Kishigawa Line Subcommittee grew into the Group to Promote Wakayama's urban development through improvement of transportation (also known as Wakayama Komachi), which has since produced the Wakayama Transit Map (wap), planned and conducted a mobility management project, and carried out other activities. The Transit map design was highly acclaimed, earning a Management Design Award at the 2007 Japan Conference on Mobility.

The trackside residents changed their stance from one of passive complaining to one of making proposals and being active. They are working to do more than leave a physical legacy for the next generation in the form of the Kishigawa Line. Their legacy is actually an intangible, but important, asset in the form of a firm foundation for resident participation.

Support by local governments

Local governments in the form of Wakayama Prefecture, Wakayama City, and Kishigawa Town made an important



Exterior of Strawberry Train

(Author)



(Author)



Interior of Strawberry Train (renovated with warm interior, displaying contributors' names)



(Author)

contribution to the project through a range of decisions. These included bearing costs incurred through the introduction of a publicly owned, privately operated scheme, subsidizing losses up to ¥820 million for 10 years, making a public tender for a private-sector operator, and selecting Okayama Electric Tramway as the operator.

The problem of retaining or closing the Kishigawa Line was an important opportunity for government to rethink urban formation, which had been centred on outward spread and reliance on automobiles. The Wakayama 21st Century Transportation City Development Conference was set up in January 2006 to achieve sustainability in the Wakayama urban area by incorporating compatibility with the environment, society, and economy. The conference was made up of national and regional government representatives, transport operators, economic organizations, citizens' groups, and academics, and was positioned as a platform for city development through

citizen–industry–government–academia coordination. The Wakayama Joint Local Transport Plan (draft) was compiled using examples from previous mobility management projects and the UK's Local Transport Plans (LTP). Furthermore, the Wakayama Electric Railway Kishigawa Line Regional Public Transport Stimulation and Rejuvenation Conference compiled the Kishigawa Line Regional Public Transport General Coordination Plan in FY2008.

Imaginative efforts by Wakayama Electric Railway

The creative ingenuity of Wakayama Electric Railway, which took over line operation, made a major contribution to the rejuvenation of the Kishigawa Line. The line saw a sudden increase in the number of passengers in FY2006 with a 10% increase over the previous year and continued to see good performance in the following 2 years. Encouraged by this momentum, ingenious efforts such as the *Strawberry Train (Ichigo Densha)*, which features excellent designs



'Super stationmaster Tama' receiving certificate from President of Wakayama Electric Railway (Author)

both inside and out, the *Toy Train (Omocha Densha)*, and the 'super stationmaster cat Tama'—who gained almost nationwide fame, helped the Kishigawa Line become a tourism resource.

The *Strawberry Train* is made up of cars some 40-years old that were inherited from Nankai and customized. It started operations in August 2006 and a famous designer was placed in charge of both the interior and exterior design. Customization costs reached about ¥20 million with about half covered by contributions from local residents and others. Today, you would be hard-pressed to find a pre-school child along the line who does not know the *Strawberry Train*. Furthermore, people besides kindergarteners feel the Kishigawa Line is 'cute', 'fun to ride', and 'something that should be preserved'.

In a second project, operation of the *Toy Train* started in July 2007. A well-known designer was also employed to redesign these cars. About ¥25 million in advertising fees was paid by a local toy manufacturer to cover the customization expenses. A third project scheduled for the end of FY2008 is a 'Tama the Cat' train. Plans are for subsidies from the national government and donations from local residents and others to cover the ¥37.5 million in customization expenses.

The plan is based on the huge popularity of 'super stationmaster Tama' a female calico station cat who is visited almost every day at Kishi Station by a stream of tourists. A French director even visited to film Tama for a documentary, and several photostories featuring Tama have been published. Tama's contribution to stimulating the regional economy has also been recognized, with the governor of Wakayama making her a 'knight' of Wakayama in autumn 2008.

Wakayama Electric Railway also holds a monthly Kishigawa Line Operation Committee meeting, carrying out various activities, such as making awards to groups that

help stimulate areas along the line, and setting-up parking lots for park-and-ride systems. The committee is made up of members from Wakayama Electric Railway, local residents' groups, students from trackside schools, and others. It plays a role as a communication venue for activities, such as exchanging opinions regarding business conditions along the Kishigawa Line and event planning.

Furthermore, while it took 42 people to operate the Kishigawa Line during the Nankai era, Wakayama Electric Railway now operates it with just 34 staff. This and other cost-reduction measures have succeeded in cutting operating expenses from about ¥800 million to nearer ¥300 million.

As these projects show, the rejuvenated Kishigawa Line has also earned attention as a new model for rejuvenating regional railways from the viewpoint of operator ingenuity.

Four-way coordination with universities

Expertise at regional universities helped play a role in building the foundations for rejuvenating the Kishigawa Line and the Wakayama Joint Local Transport Plan. Four-way coordination with universities in the citizen-industry-government-academia model is a key characteristic of the Kishigawa Line Model.

Conclusion

If treasures belonging to a country are national treasures, regional railways that can be centrepieces of sustainable city development with environmental, social, and economic compatibility are community treasures. Railway treasures shine brightly when given more affection and that bright light surely brightens the future of communities. I hope the Kishigawa Line Model provides important clues for rejuvenating regional railways worldwide. ■



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