

KYUSHU SHINKANSEN KAGOSHIMA ROUTE, KYUSHU, JAPAN

OVERVIEW

LOCATION: KYUSHU, JAPAN
SCOPE: INTER-URBAN
TRANSPORT MODE: RAIL
PRINCIPAL CONSTRUCTION: TUNNEL
NEW LINK: YES

PRINCIPAL OBJECTIVES

REGIONAL DEVELOPMENT
LOCAL ECONOMIC DEVELOPMENT
ACCESSIBILITY
TRAVEL TIME SAVINGS

PRINCIPAL STAKEHOLDERS

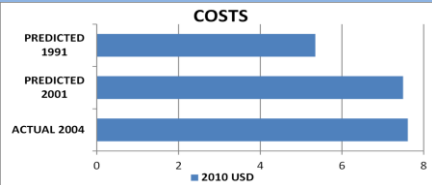
MAIN CONTRACTOR:
JAPAN RAILWAY CONSTRUCTION CORP.
FUNDERS: JNR/CENTRAL & LOCAL GOVT

PLANNING AND IMPLEMENTATION

PLANNING START DATE: 06/1972
CONSTRUCTION START DATE: 08/1991
OPERATION STATE DATE: 03/2004
MONTHS IN PLANNING: 230
MONTHS IN CONSTRUCTION: 151
PROJECT COMPLETED:
33 MONTHS BEHIND SCHEDULE

COSTS (IN 2010 USD)

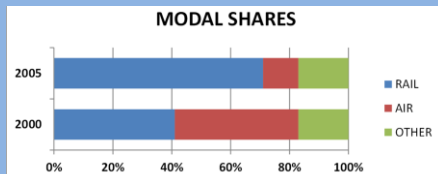
PREDICTED IN 1991: 5.58BN
PREDICTED IN 2001: 7.50BN
ACTUAL IN 2004: 7.45BN
PROJECT COMPLETED:
34% ABOVE ESTIMATE/ON BUDGET
FUNDING: 100% PUBLIC



INFRASTRUCTURE QUANTITIES

TRACK: 127KM, INCLUDING
TUNNEL: 88KM
BRIDGE: 25KM
COST PER KM (2010 USD): 0.06BN

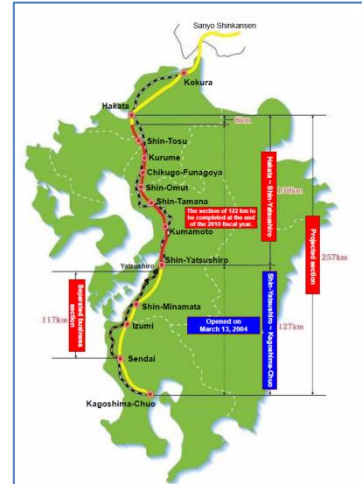
PATRONAGE



INTRODUCTION

A high speed rail line, from Kagoshima to Yatsushiro on the Japanese island of Kyushu, consisting of 127km of track, including 88km in tunnel and 25km of bridge. The line opened in March 2004.

The project includes five stations, in the cities of Yatsushiro, Minamata, Izumi, Sendai and Kagoshima. It is part of the country-wide Shinkansen high speed railway network, the overall aim of which is to encourage decentralisation of population and economic growth. It represents approximately half of the section planned for Kyushu, with the remaining section scheduled for completion at the end of the 2010 financial year.



BACKGROUND

The main objective of the project, as for the Shinkansen network as a whole, was to contribute to economic development, facilitating population dispersal and the growth of regional industry. The concept of the network derives from a comprehensive national development plan agreed in 1969, and the 1970 National Shinkansen Railway Construction Law defines procedures for planning and constructing parts of the network. Routes are decided by the relevant government minister, with advice from the Railway Construction Council.

Progress on this and other sections of the network was suspended in 1982 due to the budget deficit caused by oil shocks. In 1988, the government decided to start construction of this and four other high priority sections, and in 1989 it agreed to share the costs equally with local government bodies and the recently privatised Japan Railways. The opportunity to significantly reduce travel times by providing an alternative to single-track lines was a deciding factor in the prioritisation of this section in the south of Kyushu.

The Japan Railway Construction Corporation was the main contractor for the project and is the owner of the infrastructure, leasing it to the service operator, Japan Railways Kyushu. There was no distinct client organisation.

KYUSHU SHINKANSEN KAGOSHIMA ROUTE, KYUSHU, JAPAN

TIMELINE

CONTEXT: 1964: THE FIRST SHINKANSEN LINE OPENS IN TIME FOR THE TOKYO OLYMPIC GAMES

CONTEXT: 1969: NATIONAL DEVELOPMENT PLAN

CONCEPTION: 1970: NATIONAL SHINKANSEN RAILWAY CONSTRUCTION LAW

CONCEPTION: 1972: KYUSHU SHINKANSEN ROUTE PLANNED

INCEPTION: 1973: KYUSHU SHINKANSEN CONSTRUCTION ORDER ISSUED

CONTEXT: 1973: OIL SHOCK CAUSES FINANCIAL PROBLEMS FOR JAPANESE GOVERNMENT

DELAY: 1982: NATIONAL SHINKANSEN RAILWAY CONSTRUCTION PLAN SUSPENDED

INCEPTION: 1984: DRAFT ENVIRONMENTAL ASSESSMENT REPORT

INCEPTION: 1987: SUSPENSION OF NATIONAL PLAN LIFTED, JAPAN NATIONAL RAILWAYS PRIVATISED, JAPAN RAILWAYS KYUSHU ESTABLISHED

INCEPTION: 1988: GOVERNMENT AGREEMENT TO BUILD SOME SECTIONS OF NETWORK

INCEPTION: 1989: GOVERNMENT AGREES TO SHARE COSTS WITH JNR AND LOCAL GOVERNMENT

INCEPTION: 1990: GOVERNMENT AGREEMENT TO BUILD KAGOSHIMA-YATSUSHIRO LINE

CONSTRUCTION: 1991: CONSTRUCTION AUTHORISED. GROUND-BREAKING CEREMONY

CONSTRUCTION: 1992: CONSTRUCTION OF KAGOSHIMA-CHUO STATION AUTHORISED

DELIVERY: 1996: KAGOSHIMA-CHUO STATION COMPLETED

CONCEPTION: 1998: STARTING POINT CHANGED FROM YATSUSHIRO TO SHIN-YATSUSHIRO

CONCEPTION: 2000: SPECIFICATION CHANGED FROM SUPER EXPRESS TO FULL STANDARD

DELIVERY: 2004: LINE OPENED

Environmental impact assessments and public consultation formed part of the detailed planning and implementation process.

An evaluation report was published in 2009 and included a cost-benefit analysis suggested a benefit/cost ratio of 1.1 over 50 years. Journey times were reduced by up to 63%, with the journey from Kagoshima to Hakata quicker than by air. The modal share of rail increased significantly and passengers are able to spend up to 50% more time in their destination.

CHARACTERISTICS

Although the initial proposal authorised in 1991 was estimated to cost JPY 457bn (USD 5.58bn at 2010 prices), the project cost was estimated at JPY 640bn (USD 7.50bn at 2010 prices¹) at the second authorisation in 2001. The final cost was lower (JPY 629bn, or USD 7.45bn at 2010 prices), perhaps partly due to negative inflation.

Changes to the project scope, the increased price of goods, adoption of the higher specification 'full standard' and unexpected geological conditions contributed to increasing costs. However, innovative construction techniques also helped reduce costs: for example, four specific innovations saved about JPY 4.5bn.

A special tunnel construction method was required for part of the route, built through *shirasu* volcanic ash. This won an award from the Civil Engineering Society, one of nine for the project overall.

TIMELINE ISSUES

Changing from the 'super express' to the higher specification 'full standard' led to a revision of the estimated completion date, from 2001 to 2003.

FUNDING

From 1989 to 1996, Japan National Railways funded 50% of the construction costs of this and related projects. Central and local government funded 40% and 10% respectively of works related to infrastructure, and 25% each of works related to stations and community facilities. From 1997, funding has been shared between central and local government in a 2:1 ratio. The project was financed entirely by interest-free funds, including revenue from the transfer of the Shinkansen network to privatised rail companies.

¹ Costs have been converted to USD at 2010 prices, using historic inflation rates and current exchange rates, to allow comparison between projects.