35-1 Reconstruction of Homes and Cities (Restoration and reconstruction of railroads, ports and airports)

Case study	Conversion of JR Kesennuma and Ofunato lines to BRT
Location	Iwate Prefecture, Miyagi Prefecture
Phases	Emergency response phase Recovery phase Early reconstruction phase Late reconstruction phase
Members	JR East Japan Railway, local motor vehicle operators, other

Activity overview:

An acronym for “Bus Rapid Transit”, BRT is a bus system with higher order functions that can ensure rapid and on-time delivery and increase transportation capacity through a combination of articulated buses, PTPS (Public Transportation Priority Systems), bus-only roads and bus lanes.

The Great East Japan Earthquake caused damage to the JR Kesennuma and Ofunato lines across an extensive and widespread area. BRT operations were launched in order to provide safe and convenient transportation services as quickly as possible.

BRT presented a new option to maintain public transportation services, rather than simply a choice between reopening or discontinuing railway operations.

Activity details:

■Extensive damage and proposals on the early restoration of transportation services using BRT in the middle of falling demand that started before the disaster

The shift to an automobile-centric society had already started along the JR Kesennuma and Ofunato lines even before the Great East Japan Earthquake, and transportation/passenger volume had fallen to about half that of 20 years ago. Both lines had been severely damaged during the earthquake, and included low-lying areas that needed to be raised, leading to the expectation that a considerable period of time would be required to restore railway services.

Under these conditions, a proposal was made to offer “temporary restoration” of the railway lines using BRT, so that transportation functions could be restored earlier than they could by rail, contribute to earthquake recovery efforts, and offer a sustainable transportation system that would be better suited to the actual conditions of the area.

The Kesennuma Line restarted operations using an alternative bus system three months after all parties reached agreement in May 2012, using existing roads for operation routes and converting the original railway lines into a dedicated BRT road.

■Installation of flexible stations and operation routes in line with city development

BRT stations were newly built or relocated in response to feedback from local residents, and took the location of town hall, hospitals, shopping areas, schools, construction-type emergency housing complexes, temporary shopping areas and other convenient infrastructure into account. New stations were built or relocated in accordance with the various stages of the city development, with operation

routes also changing accordingly. A survey of local passengers in 2015 showed that only a small number of passengers were dissatisfied with the BRT system.

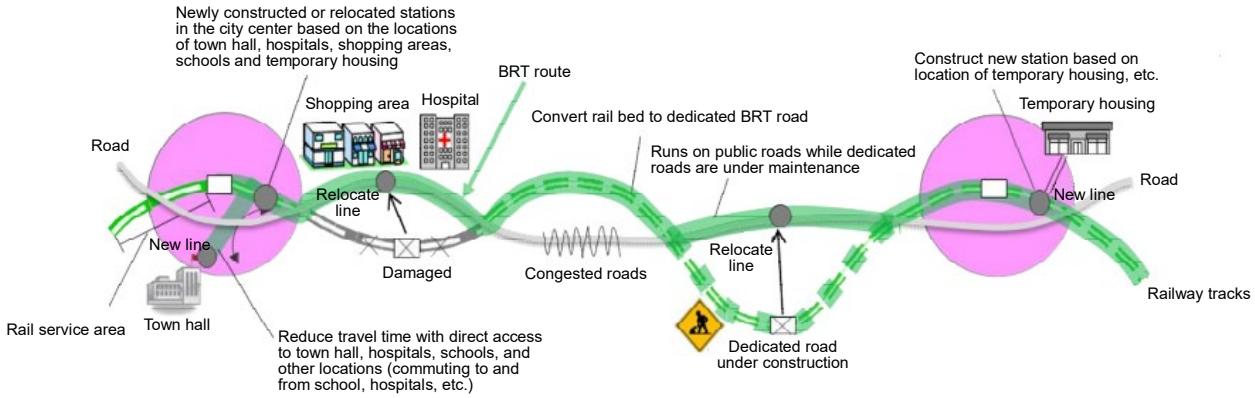

Fig.: Image of temporary restoration using the BRT system (Source: Symposium materials, other)

■Improved convenience

Delays for each line are less than five minutes for most buses, even in fiscal 2020 when the dedicated road was not fully constructed. The number of buses has increased by 1.5 to 3 times compared to the years the railway was in operation. The bright and smartly designed stations are also barrier free, and passengers can change trains on the same platform at the station connected to the railway. The BRT's GPS-based "location system" is constantly checking the vehicle's location, which can be accessed by passengers via station monitors and smartphones and offer a sense of security.

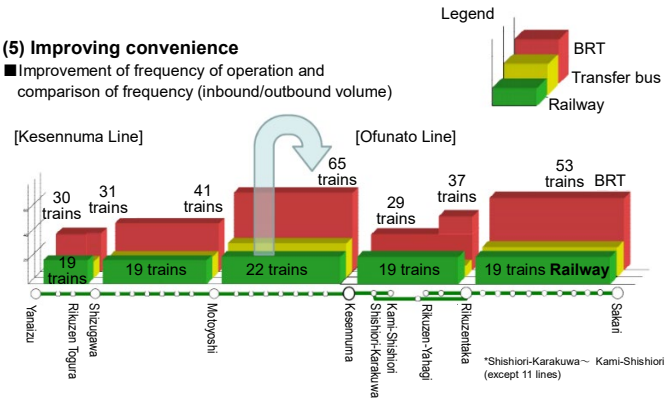

Photo (left): Connecting stations between BRT and railroads (Source: JR East website)
Photo (right): Comparison of frequency of operations with rail service (Source: Symposium materials)

■Ensuring safety when evacuating from a tsunami

In the event of an earthquake or tsunami, vehicles travel under their own power as far as they can. Each vehicle is equipped with a tsunami evacuation map, and evacuation drills are conducted to ensure passenger safety. When tsunami warnings and advisories were issued after earthquakes in 2012 and 2016, evacuations were completed in a little over 10 minutes.

■Eco-friendly, fun-to-photograph vehicles

Eco-friendly hybrid vehicles are the most common type of vehicle used. The vehicle's exterior is designed with local characters, creating community-based routes loved by local passengers and visitors.

■Full-scale operations outsourced to local motor vehicle operators

After obtaining a motor vehicle business license, the BRT system moved into full-scale operation, which was outsourced to local motor vehicle operators.

Sources (Listed in other case studies, etc.):

- JR 東日本「気仙沼線・大船渡線 BRT（高速バス輸送システム）」 https://www.jreast.co.jp/railway/train/brt/system.html
- JR 東日本「地域公共交通シンポジウム in 旭川　事例発表③気仙沼線・大船渡線の BRT による復旧」 https://wwwtb.mlit.go.jp/hokkaido/bunyabetsu/tiikikoukyoukoutsuu/69shinpojiumu/290616/06jrhigasi.pdf
- 公益財団法人日本デザイン振興会「グッドデザイン賞　BRT（バス高速輸送システム）　［気仙沼線／大船渡線 BRT]」（2016 年）https://www.g-mark.org/award/describe/43923

Systems and mechanisms applied:

Project cost: