

Electrifying and improving the quality of vehicle and services in rural areas and its acceptability

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Background

- Introduction of Electric Buses in Japan
 - General Buses
 - Mid/Small size buses (often with autonomous driving system)
 - “Green-Slow Mobility”
- Nationwide progress in introduction, especially from FY2023
 - with financial support/subsidy for infrastructure development and introducing automated driving, by many ministers.
 - On the other hand, replacement of conventional (engine) buses is not progressing



Background

- *Replacement of conventional (engine) buses is not progressing*
- Tokyo: introduced 73 Fuel-Cell buses since 2018.
- Hiroshima Urban area
 - 8 bus company exist: 5 company introduced different types of EV buses
 - Local Government prepared large budget to buy EV buses.

▼ Hiroshima Dentetsu/
Hiroshima Bus
=> EV Japan



▼ Hiroshima Kotsu
=> BYD



▼ Hiroshima Dentetsu/
Hiroshima Bus
=> BYD



▼ Bihoku Kotsu
=> BYD



EV bus route/Operation pattern

- Downtown area loop line
- City Loop (Hiroshima City)



- Suburban residential area
- Seno skyrail bus



- Yokoshiba-Hikari (Chiba)



- Rural city loop (Miyoshi City)



- Shobara, Nat'l Park

- Autonomous city loop



Discussion on EV buses in the Hiroshima area

- **The “Co-creation and collaboration platform”**
 - Bus companies in Hiroshima City have established a platform for cooperative operation of bus services in 2024.
 - The purpose of the platform is to improve the efficient operation and service of buses and to introduce new technologies.
 - The platform exchanges information on issues arising from the operation of EV buses and on the characteristics of various bus vehicles.
- **Several EV bus operational problems have been pointed out;**
 - Many types of vehicles have different standards for charging connectors, and they are not compatible with each other.
 - Insufficient discussion of what to do in the event that the power supply runs out.

Why is the introduction of EV buses not progressing?

- **Many of Bus company pointed out;**
 - High cost of introduction of charging facilities
 - Low remaining value of the vehicle
 - Unknown durability of vehicles
 - Risk of breakdowns and lack of power
 - Few EV bus vehicles are produced in Japan
 - Japanese bus companies have great confidence in Japanese bus manufacturers
 - Taxation system for diesel vehicles
 - Part of fuel tax is returned to bus associations

The non-monetary value of EV buses

- Some Japanese bus companies recognize the non-monetary value of EV buses
- EV buses can renew people's impression of buses
- Expand the users of buses that have been difficult to target in the past
- High value-added
- Attract the talented staff and operators.



Conclusion

- Bus operators believe that the introduction of EV buses in Japan is a risky proposition at this time.
- In particular, they are concerned about the cost of installing charging facilities, the uncertainty of future breakdowns and maintenance costs, and the low residual value of the vehicles.
- On the other hand, if these risks are borne by the government, bus operators will find the non-monetary value attractive and will encourage adoption.
- Therefore, it is necessary in the future not only to provide financial support for the purchase costs of the vehicles, but also to solve the problems that the bus companies are currently facing in their management and organization by jointly introducing EV buses.