

Thailand

Bangkok Mass Transit Authority (BMTA)

**REPORT OF
COLLABORATION PROGRAM WITH
THE PRIVATE SECTOR FOR
DISSEMINATING JAPANESE
TECHNOLOGIES
FOR HYBRID CITY BUS**

2019 March

Hino Motors, Ltd.

OS
JR
19-026

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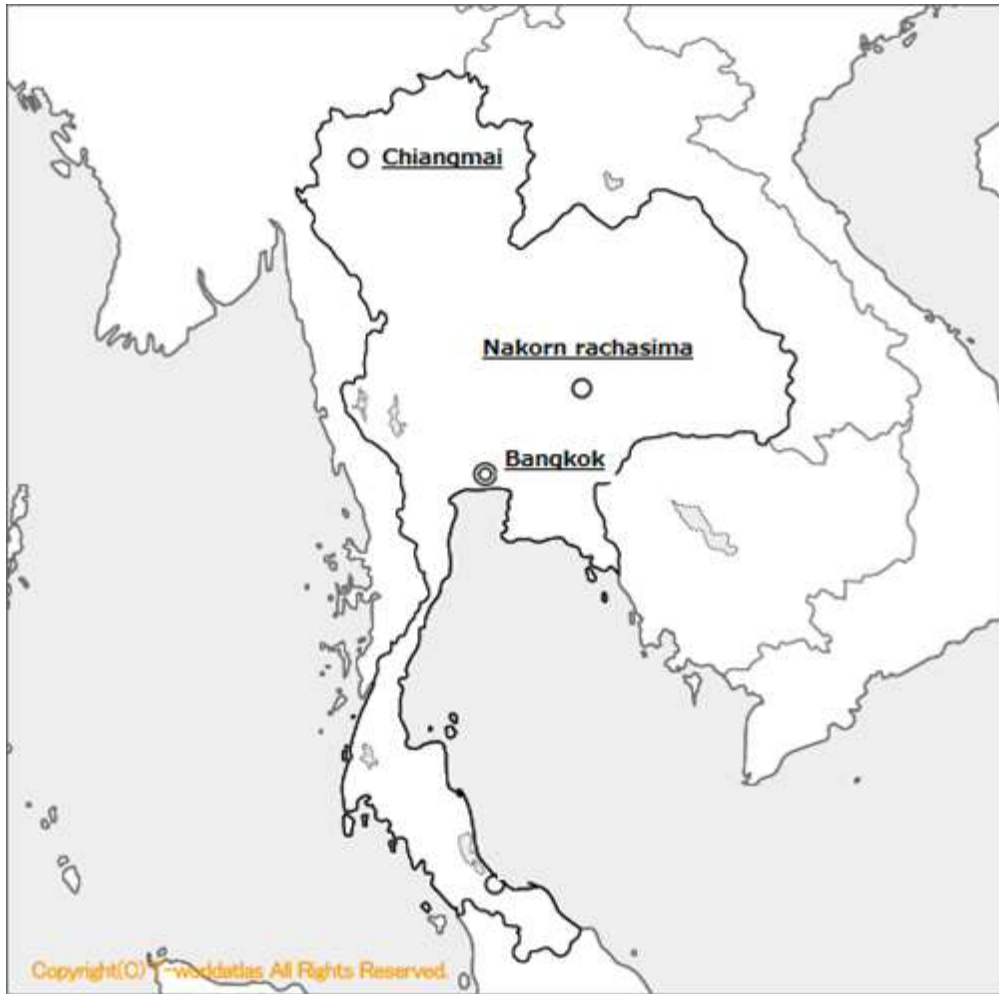
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Map

The program was conducted in Bangkok in Thailand.



List of abbreviations

Abbreviation	Full name
BMTA	Bangkok Mass Transit Authority
HV	Hybrid Vehicle
EV	Electric Vehicle
CNG	Compressed Natural Gas
HMST	Hino Motors Sales (Thailand) Ltd.
HMMT	Hino Motors Manufacturing (Thailand) Ltd.
CTV	Cho Tha Vee
AMT	Automated Manual Transmission
AT	Automatic Transmission
ES Start	Easy and Smooth Start
MOT	Ministry of Transport

Chapter 1 Outline of the program

1.1. Summary

- Background (Problems in Bangkok)

Due to expanding city area in Bangkok, the situation of traffic jam becomes heavier than before. To solve this problem, Subway (MRT) and Sky Train (BTS) are introduced as new transport systems. However, these public transportations cover only a part of Bangkok city, and city buses have the huge responsibility to cover remaining area as public transportation. These city buses are operated by BMTA, Bangkok Mass Transit Authority. At the moment BMTA has about 3,500 buses. However, most of them are getting old, and their fuel efficiency is low. It causes big amount of CO2 emission and leads serious air pollution.

In order to relieve the above problem and contribute to the energy policy of Thai government, HINO would like to promote the high quality HINO HV bus both in the environmental and fuel economy performance to BMTA and Thai government persons through the vehicle test in Bangkok city. HINO believes that this activity will help to let BMTA to select HINO HV bus in the city bus procurement project of BMTA in the future.

- Purpose of the program

The purpose of the program is to promote the high quality HINO HV bus both in the environmental and fuel economy performance to BMTA and Thai government persons through the vehicle test in Bangkok city in order to be selected as the new city bus of BMTA in the next bus procurement and contribute to improve the air pollution in Bangkok, which is caused by the old diesel buses. The other purpose is to contribute to the stable profitability of HMST as well as the stable operation of HV city buses though the “after-service” including “HINO Total Support”

- Activities

Type of activity	Period	Content / purpose of activity
1 st Local activity	May 2018	<u>HV test vehicle PR ceremony (3 days)</u> Purpose: In order to appeal the test vehicle, for the start of “Vehicle test” since June, to BMTA persons and make a public appeal
2 nd Local activity	June 2018	<u>HV test vehicle tuning (5 days)</u> Purpose: In order to tune the vehicle for the best performance in vehicle test in Bangkok
3 rd Local activity	June 2018	<u>Lecture on HV vehicle before the test (6 days)</u> Purpose: In order to enhance understanding of BMTA drivers about HV vehicle
4 th Local activity	August 2018	<u>Midterm reporting of the test vehicle (4 days)</u> Purpose: In order to give the midterm report about the result of the vehicle test to BMTA
5 th Local activity	November 2018	<u>Final reporting of the test vehicle (3 days)</u> Purpose: In order to give the final report about the result of the vehicle test and let BMTA to understand quality of Hino HV bus

- **Result of the activity**

Type of activity	Period	Result
1 st Local activity	May 2018	<u>HV test vehicle PR ceremony (3 days)</u> Public appeal of the test vehicle 2.1.2. Purpose: to have BMTA and MOT have better understanding about HINO HV city bus 2.1.3. Content: HV bus PR to the related VIPs and the vehicle presentation ceremony 2.1.4. Result: BMTA president, Minister of MOT had better understanding on HINO HV bus
2 nd Local activity	June 2018	<u>HV test vehicle tuning (5 days)</u> Tuning the vehicle for the best performance 2.1.2 Purpose: Tune the vehicle for the expected performance in fuel economy and test running 2.1.3 Content: Tuning the vehicle with the data measuring device 2.1.4. Result: Tuned the vehicle to the expected performance
3 rd Local activity	June 2018	<u>Lecture on HV vehicle before the test (6 days)</u> BMTA drivers understood HV bus features and how to drive them efficiently. BMTA executives also understood the effectiveness of HV vehicle
4 th Local activity	August 2018	<u>Midterm reporting of the test vehicle (4 days)</u> Purpose: The executives of both BMTA and MOT understand that compared to the current diesel bus and EV bus, HINO HV bus has the advantage in fuel economy as well as operational performance for drivers. Result: We explained that HINO HV bus had the advantage compared to the diesel and EV bus. BMTA president commented that Japanese manufactures with high & reliable technology is desirable.
5 th Local activity	November 2018	<u>Final reporting of the text vehicle (3 days)</u> We explained that HINO HV bus the significant advantage in both CO2 emission and cost reduction compared to the current diesel bus and EV bus to Minister of MOT, Mr. Arkom.

- **Current business chance**

We explained that the significant advantage of HINO HV bus in both CO2 emission and cost reduction compared to the current diesel bus and EV bus to Minister of MOT, Mr. Arkom, which probably can increase the probability of the adaptation of HINO HV bus in the next city bus procurement of BMTA in the future.

- **Reason of the current business chance**

The key persons such as Minister of MOT have understood the advantages in both CO2 emission and cost reduction of HINO HV bus. If BMTA replaces their old diesel bus to HV bus, we assume that lots of CO2 emission can be reduced and contribute to improve air pollution and the energy policy of Thai government as well.

- **Challenges & countermeasures for the business development**

The PR activity to MOT and BMTA, which was our objectives, has been finished though this program. We will make our efforts to win in the next competitive bidding.

- **Next plan for the business development**

After TOR announcement, we will study the followings in order to win the bidding;

- 1) Understanding of the bidding schedule, 2) Details of bidding content, 3) Profitability, 4)Preparation for Production

Chapter 2 Background of the program

2.1. Background of the program

- Current situation of the city

The new railroad, the Subway (MRT) and Sky Train (BTS) have been introduced as the new mass transportation means with expansion of the city area in Bangkok since 1990s, but the main public transportation is still the city buses.



- Problem of the city

More than 12% (8,200,000 persons) of the whole population (about 67,000,000 persons) in Thailand live in Bangkok. With the congestion of population, the car ownership ratio has been also increasing. It has brought very severe traffic jam in Bangkok eventually and become one of the social problems.

Because there is no regulation about the vehicle life (including buses), most of BMTA buses (about 3,500 buses) are very old, and their fuel efficiency is low. It causes big amount of CO2 emission and causes serious air pollution.

2.2. Disseminating technology & contribution to the problem

2.2.1. Details of disseminating technology

	Disseminating technology HINO Diesel HV bus	Competitor
Product picture		
Year of sales start	2015	2012
Features	Reliability and high performance with many years' experience. High performance in both fuel economy and running performance since both our transmission and E/G are in-house made, which creates "perfect-matching" in the performance.	HV unit is made by the foreign manufacturer. The transmission and E/G are not in-house made (used outside products).
Specs	Category : Diesel Electric HV バス HV type : 1 motor parallel type	Same with the left spec
	HV function Motor output: 90kW Battery capacity: 7.5kWh	HV function Motor output: 44kW Battery capacity: 3.8kWh
	E./G: 4-cylinder 5L 250ps T/M: 6 gear AMT Differential gear: 5.857	E./G: 6-cylinder 8L 250ps T/M: 6 gear AMT Differential gear: 5.571

2.2.2. Actual sales units both in Japan and Overseas (Compared to competitor)

	Disseminating technology HINO Diesel HV bus	Competitor
Market share in Japan	93%	7%
Market share in Overseas	None	None
Actual sales unit in Japan	91 units (Accumulated sales units about 1,000 units)	80 units
Actual sales unit in Overseas	None	None

Japan: Accumulated total sales units is around 1,000 units since we started to sell it in 1991. We sold many HV buses to many bus companies such as Tokyo metro bus all over Japan.

Overseas: No sales yet because we haven't introduced HV buses.

2.2.3. Safety of the product

	Disseminating technology HINO Diesel HV bus	Competitor
Safety	introducing N Shift lock	introducing N Shift lock

There is no specific risk information such as incident and recall.

2.2.4. Evaluation of technology

HINO Motors, Ltd has received many awards since the introduction of HIMR bus with "Diesel - Electric HV system in 1991.

1993 the Science and Technology Director Award

1994 Ichimura industry and outstanding achievement prize

2001 Director General Prize of Agency of Natural Resources and Energy at the Energy Conservation Grand Prize awards

2009 Minister of Land, Infrastructure and Transport Award

2.2.5. Contribution to the problem

We expect that we can reduce about 49tons of CO2 per year if BMTA replaces their diesel bus to HV bus.

Ministry of Energy in Thailand made EEDP (Thailand 20-year Energy Efficiency Development Plan 2011-2030), and they planned that traffic section should contribute many of the total reduction.

Thailand 20 year Energy Efficiency Development Plan 2011-2030	Energy consumption should reduce 25% per GDP from 2011 to 2030.
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In Thailand, tax preference for purchasing new passenger car finished by the end of 2012, and sales volume of new passenger car market hit the wall until now. However, with the progress of economic growth in Thailand, CO2 emission is increasing due to raise of oil consumption in traffic section. Under these situations, HV bus can contribute to reduce CO2 emissions in traffic section.

Chapter 3 Outline of the program

3.1. Purpose of the program

3.1.1. Purpose of the program

- To enhance understanding of HV bus to Ministry of Transport (MOT) and BMTA through test run and presentation of its results.
- To confirm vehicle regulation and compatibility in Thailand market.
- To familiarize HV bus by appeal of HINO HV bus durability and safety in Thailand.

3.1.2. Purpose of the program (Contribution to the problem)

Hino promotes the high environmental performance of HV bus to Thai government person and BMTA through this program, which helps us to win in the next city bus procurement of BMTA. If old diesel buses which BMTA owns are replaced with HV buses, it would contribute to reduce CO2 emissions in traffic section.

3.1.3. Purpose of the program (Business side)

Hino promotes the advantage of HV bus in fuel economy, life cost and environmental performance compared to EV bus to Thai government person and BMTA through this program. It is expected to help us to win in the next city bus procurement of BMTA, which also contributes to the stable profitability of HMST as well as the stable operation of HV buses though the “after-service” including “HINO Total Support”

3.2. Program content

3.2.1. Schedule

2018 May: HV bus PR ceremony
2018 June- June Running test
2018 August: Midterm report
2018 November: Final report

3.2.2. Implementing Organization

- Supplying bus: HINO Motor, Ltd.
- Assembling the bus chassis: HMMT
- Bus body: Local body builder
- Vehicle test running: BMTA
- Vehicle maintenance: HMST

Evaluation of test running: HINO Motor, Ltd. / BMTA and HMST

3.2.3. Content of implementation

Implementing content is the followings;

Item / Task to do to achieve the goal		Activity plan					Content	Goal
		1st (Local)	2nd (Local)	3rd (Local)	4th (Local)	5th (Local)		
1	HV test vehicle PR ceremony	■■■■■ ■■■■■					Public appeal of the test vehicle as well as enhancing understanding of the people on HV city bus.	The state of that Public recognize the test vehicle as well as the people have the better understanding on HV city bus.
2	Tuning of HV bus vehicle		■■■■■ ■■■■■				Tuning the vehicle to show the best performance	Tune the vehicle for the expected performance in fuel economy and running
3-1	Lecture on HV bus vehicle to BMTA drivers			■■■■■ ■■■■■			Lecture on HV vehicle before the test vehicle (knowledge) to BMTA drivers	BMTA drivers understood HV bus features and how to drive them efficiently. BMTA executives also understood the effectiveness of HV vehicle
3-2	Lecture on HV bus vehicle to BMTA drivers with the actual vehicle			■■■■■ ■■■■■			Lecture on HV vehicle before the test vehicle (practical skills) to BMTA drivers	BMTA drivers understood HV bus features and how to drive them efficiently. BMTA executives also understood the effectiveness of HV vehicle
4	Midterm report to BMTA executives				■■■■■ ■■■■■		Midterm report the test vehicle result to BMTA executives	The executives of both BMTA and MOT understand that compared to the current diesel bus and EV bus, HINO HV bus has the advantage in fuel economy including the advantage from the driver's point of view.
5	Final report to BMTA executives					■■■■■ ■■■■■	Report to the final result to show the advantage of HINO HV bus before the bidding	Both BMTA executives and MOT understands that HINO HV bus has the significant advantage in both CO2 and cost reduction compared to the current diesel bus and EV bus.

The equipments used in the program are the followings;

	Name	Part No.	Volume	Usage	Delivery timing	Setting Place
1	Air conditioner	44100-71704D	1	Use for bus body	2018 May 28th	HMST
2	HV bus chassis	None	1	Use for lower side of vehicle	2018 May 28th	HMST
3	HV bus body	None	1	Use for upper side of vehicle	2018 May 28th	HMST

Chapter 4 Summary of the program (Evaluation of the result)

4.1. Result of the program (Contribution to the country /area/city)

In the program, HINO promoted and presented the advantage of the HINO HV bus in the fuel economy, environmental performance and costs through the test vehicle activities to the stakeholders of BMTA and MOT (especially for Mr. Akhom, Minister of Transport).

Through the result of test run and study, it is proven that HINO HV bus had the highest advantage in all categories (fuel economy, environmental performance, and CO2 emission), especially for the fuel and environmental performance compared with the current BMTA diesel bus and EV bus, which is expected to be competitor in the bidding in the future.

We consider that we could promote HINO HV bus to the stakeholders since we could successfully enhance understanding on HINO HV bus to Directors of BMTA and Minister of MOT with the result of the program, which helps to increase the possibility for HINO to win the bidding of BMTA in the future.

4.2. Result of the program (business side), problems left and their solutions

The followings are the result of the program (business side), problems left and their solutions.

4.2.1. Result of the program (in the business)

The followings are the result of the program.

	Item / Task to do to achieve the goal	Activity plan & result					Status & evaluation	Problem & solution	Action for solution
		1st (Local)	2nd (Local)	3rd (Local)	4th (Local)	5th (Local)			
1	HV test vehicle PR ceremony	■■■■■ ■■■■■					Done • We could successfully done public appeal of the test vehicle as well as giving the people the better understanding on HV city bus.◦	• None	• None
2	Tuning of HV bus vehicle		■■■■■ ■■■■■				Done • Tuned up the vehicle to show the best performance	• None	• None
3-1	Lecture on HV bus vehicle to BMTA drivers			■■■■■ ■■■■■			Done • Had a lecture on HV vehicle before the test vehicle (knowledge) to BMTA drivers	• None	• None
3-2	Lecture on HV bus vehicle to BMTA drivers with the actual vehicle			■■■■■ ■■■■■			Done • Had a lecture on HV vehicle before the test vehicle (practical skills) to BMTA drivers	• None	• None
4	Midterm report to BMTA executives				■■■■■ ■■■■■		Done • Did midterm report the test vehicle result to BMTA executives	• None	• None
5	Final report to BMTA executives					■■■■■ ■■■■■	Done • Reported the final result to show the advantage of HINO HV bus before the bidding to the stakeholders	• Make efforts to join and win the bidding in the future.	• Keep watching the bidding ion • Within 2019

1. HV test vehicle PR ceremony

We could enhance the recognition of HINO HV bus in the Thailand market to the stakeholders such as BMTA executive and the governmental official of MOT through the HV test and vehicle PR ceremony. Ceremony was hold in the BMTA Bangkok headquarters and reported by more than 20 mass-media companies (newspapers and TV news), with the concrete explanation of the HINO HV advantages in the fuel economy and environmental performance.

2. Tuning of HV bus vehicle

We tuned up the vehicle for the best performance. After tuning the vehicle for road and environment in Thailand, HV bus ran in the best performance. Performance was confirmed with the attached measuring equipment.

3-1 Lecture on HV bus vehicle to BMTA drivers

3-2 Lecture on HV bus vehicle to BMTA drivers with the actual vehicle

We had the lectures on HV bus vehicle to BMTA drivers before the driving practice in order to give a better understanding on HV bus and understand how to utilize the feature of HV bus efficiently.

<Understanding on HV bus features>

We did the test about the lectures before and after giving lectures to check level of understanding of the drivers. The test score improved to double compared to the test done before the lecture, which proved that the drivers had better understanding on HV bus.

<Confirmed that the drivers learned how to drive HV bus efficiently (fuel economy wise)>

All the drivers learned each driving techniques quickly because of long experiences in driving buses and high operatability of HV bus. We confirmed that almost all the drivers could drive in low-fuel consumption on the actual roads.

4. Midterm report to BMTA executives

We could enhance understanding on the advantage of HINO HV bus in the fuel economy and environmental performance such as CO2 emission reduction including the driver's merits compared to the current diesel bus and EV bus by reporting the test vehicle result conducted on the 3 bus routes (2 weeks on each route) in Bangkok from Mid-June to the end of July.

5. Final report to BMTA executives

We presented data of fuel consumption information from test running as well as comments from the drivers and passengers who actually derived bus or ride the bus, to BMTA & MOT executives in order to enhance understanding of HINO HV bus. It is proven that HV bus has advantage to diesel bus and EV bus. In the reporting, we always emphasized that HINO HV bus had significant CO2 emission reduction effect and economic effectiveness. Mr. Akhom, Minister of MOT, who is the most important key person commented "I really have understood that HINO HV bus is the very high performance vehicle."

4.2.2. Problem and Solution

The followings are the problems and their solutions of each activity

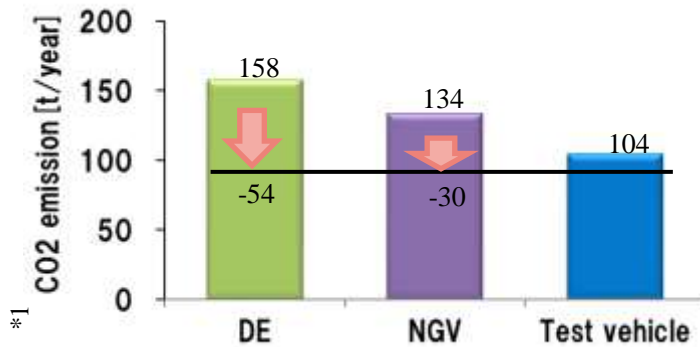
1. HV test vehicle PR ceremony: No specific problem
2. Tuning of HV bus vehicle : No specific problem
- 3-1 Lecture on HV bus vehicle to BMTA drivers: No specific problem
- 3-2 Lecture on HV bus vehicle to BMTA drivers with the actual vehicle: No specific problem
4. Midterm report to BMTA executives: No specific problem
5. Final report to BMTA executives: Keep watching the BMTA action through the website or public announcement on the mass media and prepare the vehicle production in order to join the bidding timely and win the bidding.

Chapter 5 Business development plan after the program

5.3. Purpose and goal of the business

5.3.1. Expected effect through the business (Contribution to the society)

The graph below shows expected amount of CO2 emission reduction by replacing Diesel bus or NGV bus to HV bus One HV bus can reduce more CO2 emission than Diesel vehicle by 54 tons per year, which is 5 tons more than our forecast (Our forecast is 49 tons). Therefore, it is estimated that if BMTA replaces all the diesel buses (around 3,500 units) to HV buses, "CO2 emission decrease" increases to 180 thousands ton per year, which helps to achieve around 12% of the CO2 emission decrease target (3.00 million tons CO2 from 2013-2020) of the transport sector in "Bangkok Master Plan on Climate Change 2013--2023" by Bangkok Metropolitan Administration only in two years.



CO2 emission per year comparison

*1 CO2 emission factor: Diesel 2.7446

Source: Mahidol university (<http://www.en.mahidol.ac.th/EI/Downloads/waytoevaluateCFO.pdf>)

CO2 emission factor: Natural Gas 2.2472 (Source: IPCC)

Running distance per year: 11,000 km (300km per day x 365 days)

5.3.2. Expected result through the business

HINO expects that the program helps to increase the possibility for HINO to win the bidding in the next BMTA city bus procurement and HINO can supply HV city buses to BMTA. It will contribute to the stable profitability of HMST as well as the stable operation of HV city buses through the “after-service” including “HINO Total Support”

Moreover, currently the severe air pollution has been the one of the big social problems. Therefore, the government of Thailand has been considering to set the new exhaust gas regulations (from Euro 3 to Euro 4) and Bio fuel standard (from B7 to B20) as a countermeasure. The momentum for protecting the environment has been growing very much.

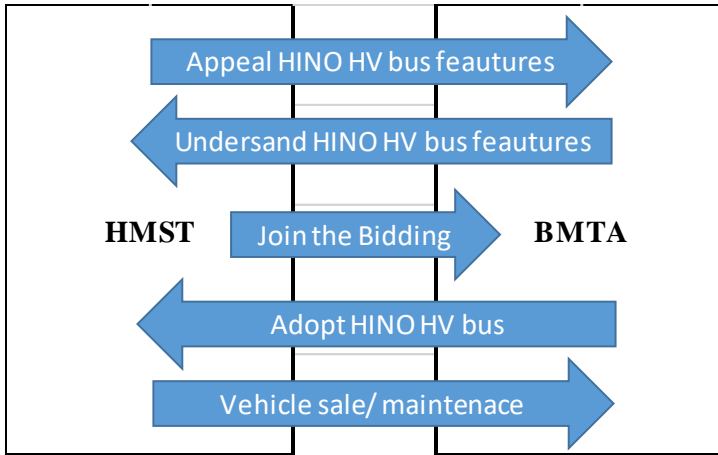
HINO assumes that currently there is no actual standard for the eco-friendly buses, but if HINO HV bus is adopted by BMTA as their city buses, HV system bus could become the standard bus vehicle for the eco-friendly bus. As a result, it helps to increase the possibility for HINO to win the other bidding in the other bus procurement plan of BMTA.

And HINO also expects to expand business to other cities with the experience of the program in the future.

5.4. Business development plan

5.4.1. Outline of the business

Hino expects that BMTA has better understanding of HINO HV bus features by appealing the advantage of HINO HV bus in fuel economy performance, life cycle cost, and CO2 emission with ultimate HINO “Total support” service in order to win the bidding and be adopted as BMTA city bus.

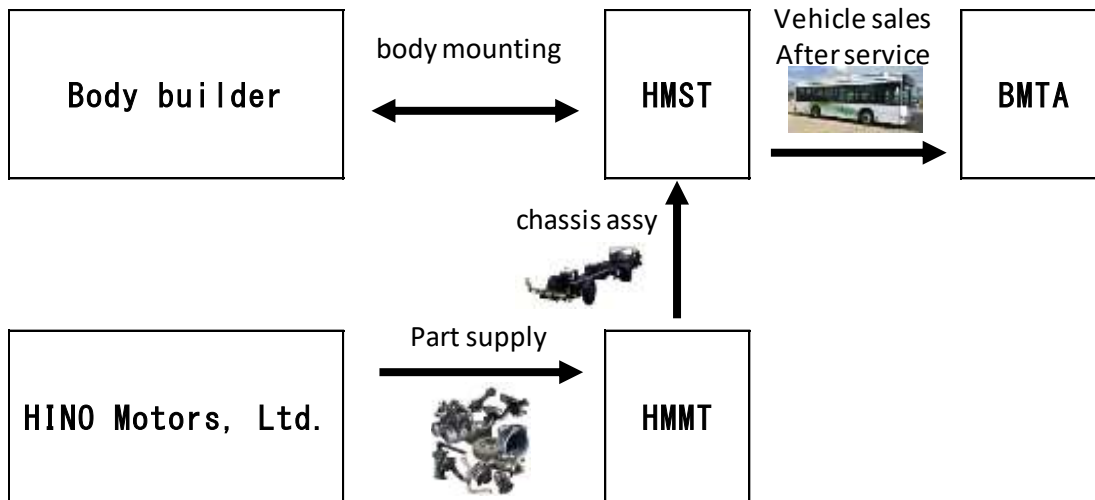


5.4.2. Business Target

- BMTA: BMTA owns about 3,500 city buses (892 units of 3,500 are HINO bus).
- The bus operators in the other cities except Bangkok

5.4.3. Business implementing organization

HMST sells vehicles and provides “After service to BMTA.

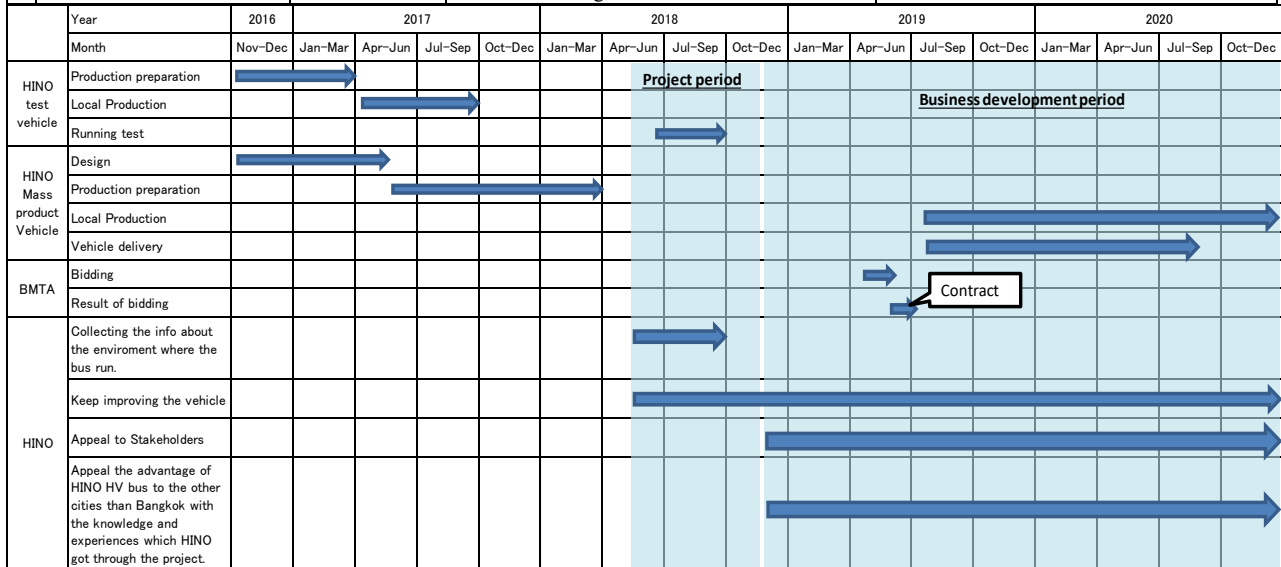


5.4.4. Schedule of Business development

HINO keeps to improve the HV bus and to appeal the advantage of HINO HV bus to the other cities than Bangkok with the knowledge and experiences which HINO got through the program.

HINO also continues to appeal the advantage of HINO HV buses to stakeholders such as Thai government officials in the several occasions such as Motors shows or Memorial events of BMTA etc.

#	Item / Task to do to achieve the goal	Implementing timing	Content	Goal
1	Win a bid of BMTA	2019 March	• Make a successful bid for the eco-friendly bus which BMTA will plan to procure by PR activities during the HV bus vehicle test	• BMTA chooses HINO HV bus as their city bus.
2	Delivery HV buses to BMTA	2019 April ~	• Delivery HV buses on April 2019 after the bidding	• Delivery the HV buses which have the specs BMTA requests at the best timing BMTA requests.
3	Appeal of advantage of HINO HV buses	At any time	• Give the stakeholders such as governmental officials to a better understanding on the advantage of HINO HV bus through the several PR activities	• BMTA chooses HINO HV bus as their city bus.
4	PR activities of HINO HV bus in other cities	TBD	• Hold PR seminars to the bus operators in the other provinces to give a better understanding on HV buses	• HV bus becomes popular in not only Bangkok but also in the other provinces.



5.4.5. Investment and financial plan

Total cost is around 200,000,000 yen (Most of the cost is from the vehicle development), which we expects to cover from the bidding in the future.

5.4.6. Current situation of the competitor

<Competitor> EV bus of the competitor

<Advantage>

- 1) After service for the vehicle and stable operation of the vehicle

The most important point in the city bus operation is to operate the buses stably without any breakdown, which means after service for the buses is key factor. HMST has lots of “know-how” about the after service, which allows HMST to have been providing the after service to BMTA buses for more than 30 years.

- 2) Initial investment

For HV bus, no battery charging facility are required while EV bus does.

3) CO2 emission

Taking CO2 emission from the electric generation plant into account, HV bus emits less CO2 than EV bus (See the table below for details).

4) Level of completeness in technology

The technology which is used for HV bus has been already completed and used for long time after its practical use. Therefore HV bus has more advantage than EV bus in this point.

	Fuel/Electricity consumption	CO2 emission factor [g-CO2/km]		
		Well-to-Tank (Resource→Fuel)	Tank-to-Wheel (Running)	Total
HV	(※1) 3.0 km/L	(※2) 0.30 [kg-CO2/L] ÷ 3.0 = 100 [g-CO2/km]	(※3) 2.7446 [kg-CO2/L] + 3.0 = 915 [g-CO2/km]	1015 [g-CO2/km]
EV	1.7 kWh/km	(※4) 188.6 + 14.76 + 419.3 = 622.7 [g/kWh] (coal) (oil) (Natural gas) (Power plant CO2 emission factor) 622.7 × 1.7 = 1059 [g-CO2/km]	CO2 mission during vehicle running = 0 [g-CO2/km] = 90% (※5)	1177 [g-CO2/km]
				(1177-1015) × 11 [10K km] (※6) × 10 ⁻⁶ = 10.2 [ton/year]

*1 The test vehicle data in 2017, which was implemented by Hino itself.

*2 Source: Petroleum Association of Japan(PAJ). We use the data in Japan because we cannot find any data in Thailand.

*3 Source: Mahidol university <http://www.en.mahidol.ac.th/EI/Downloads/waytoevaluateCFO.pdf>

*4 Energy mix ratio of the electricity plant in Thailand

*5 Energy ratio: Battery ratio x Inverter ratio x Motor ratio (general ratio)

*6 Annual running distance: 11,000 km (=300km/day×365days)

5.4.7. Problem and solution policy in the business development

• As public announcement on TOR of the bidding has not been opened yet by BMTA, the exact schedule for the production hasn't been prepared.

➔ Countermeasure: Keep watching the BMTA action through the website or public announcement on the mass media and prepare the vehicle production in order to join the bidding timely and win the bidding.

• Precise bus procurement plan of BMTA is not clear.

➔ Countermeasure: Keep trying to get the information about the bidding through the discussion with BMTA

5.4.8. Risk and countermeasure in the business development

Financial risk in case that the vehicle volume in the bidding is too big for manufacturing capability of HINO.

5.5. Possibility of Collaboration with ODA projects

Japanese manufacturers had the big presence in the bus market in Thailand before, but recently other foreign manufacturers have been increasing their presence in the market with the reasonable prices. With this program as a start, if HINO can win the bidding this time and show the presence again as Japanese manufacturers, there will be possibility of collaboration with ODA projects. Recently the eco-friendly bus has been getting more popular in ASEAN countries. If HV bus is chosen in Bangkok, these ASEAN countries might pay more attention to and consider to use HV bus in their countries, which increases the possibility of new businesses expansion including ODA.