

The next frontier in mobility.

Initiatives for Strengthening Competitiveness of Powertrain Business

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Basic Stance of Powertrain Business Strategies



**Initiatives to
Increased Demands
for Automatic
Transmissions**

**Global initiative to rise capability
for the increased demands for
Automatic Transmissions**



**Development Strategy
for Electrification**

**Development strategy for improving
lineup of electrified products**



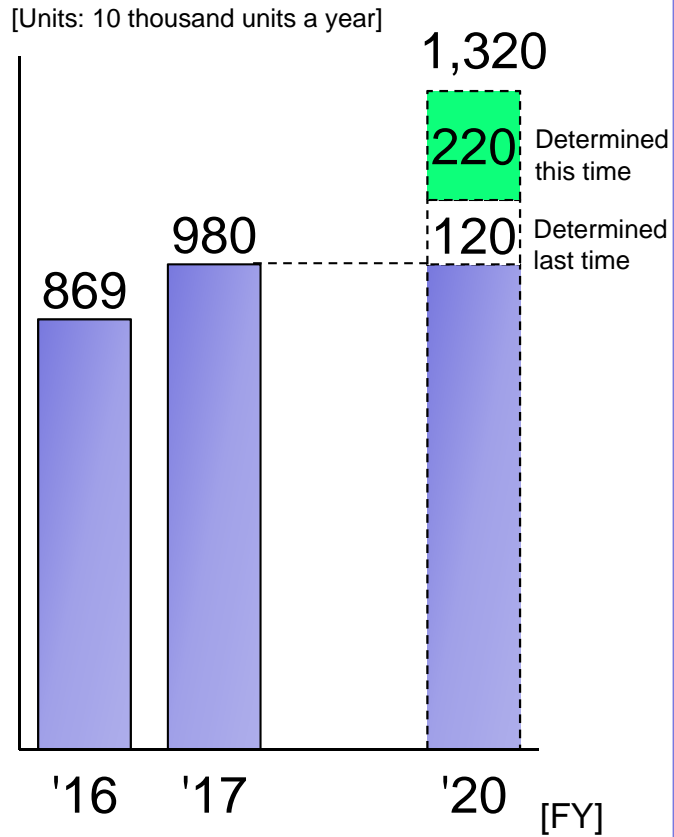
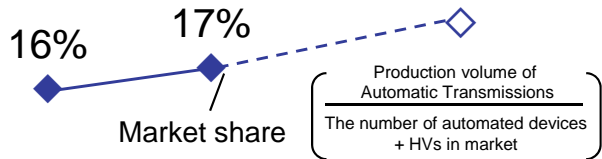
**Market Trend and
Sales Targets**

**Forecast of global market trend
Powertrain business's sales volume
targets (quantity and amount)**

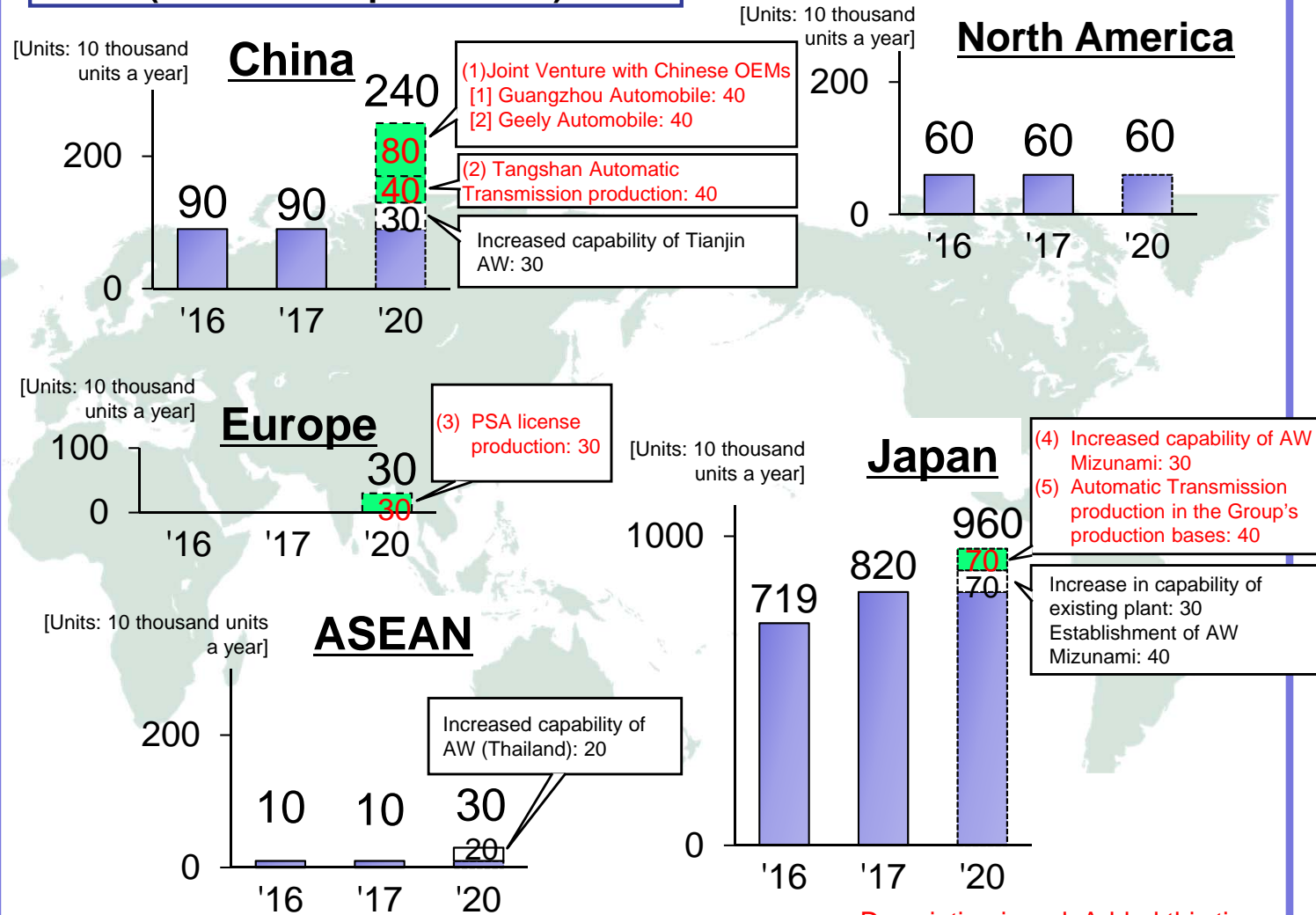
I Initiatives to Increased Demands for Automatic Transmissions

1. Global Initiative to Rise Capability for Increased Demands for Automatic Transmissions

Production volume of Automatic Transmissions (incl. HVs)



Production volume of each area (incl. license production)



Description in red: Added this time.

(1) Joint Venture with Chinese OEMs



We decided two Joint ventures for establishment of long-term partnership with Chinese OEMs.

Joint Venture Partner	Guangzhou Automobile	Geely Automobile
Capital	117 million USD	117 million USD
Total investment	350 million USD	350 million USD
Investment ratio	Aisin AW 60% Guangzhou Automobile 40%	Aisin AW 60% Geely Automobile 40%
Items produced	6-speed automatic transmissions	6-speed automatic transmissions
Capacity	400,000 units per year	400,000 units per year
Location	Guangzhou, Guangdong Province(TBD)	Zhejiang Province (TBD)
Start of production	2020 (scheduled)	2020 (scheduled)

(2) Production of Automatic Transmission in Tangshan Aisin Gear Co., Ltd.

Saving investment by utilizing the existing production base efficiently.

Tangshan Aisin Gear Co., Ltd.



Location	Tangshan, Hebei, People's Republic of China
Establishment in	April 1996
Number of employees	Approximately 2,200
Items produced	Manual transmission AMT(Automated Manual Transmission) etc.
Major customers	Tianjin FAW Toyota, Sichuan FAW Toyota, GAC Toyota, SAIC-GM-Wuling Automobile, Geely Automobile, Guangzhou Automobile, etc.

« Automatic Transmission Production Plan »

Newly installed line	Assembly of FF 6-speed Automatic Transmission (Annually 400,000 units per line). Machining the Automatic Transmission components.
Capital investment	20 billion yen
Start of production	Planned to start in August 2019

(3) License Production in the Peugeot Citroën Group

We decided the license production for the purpose of saving in investment and human resources.



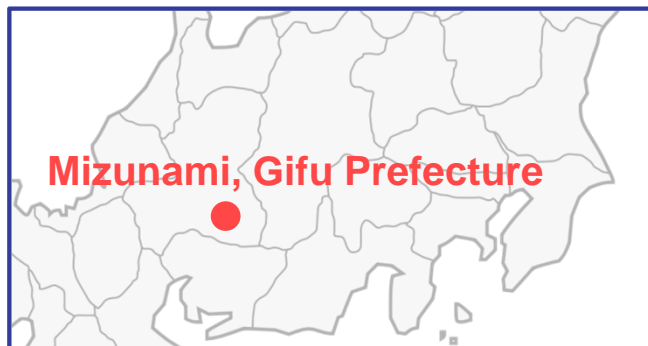
« Automatic Transmission Production Plan »

Place of production	PSA Valenciennes Plant (France)
Items Produced	FF 6-speed Automatic Transmission (Annually 300,000 units per line)
Relevant brands	Peugeot, Citroën, DS

(4) Increased Assembling Capability of AW Mizunami

AW Mizunami Co., Ltd.

Location	Mizunami, Gifu Prefecture
Established in	November 2017



[First project (determined in October 2017)]

Newly installed line	Assembly of FF 8-speed Automatic Transmission (400,000 units per line) Machining the Automatic Transmission components
Capital investment	21.4 billion yen
Start of production	Assembly of Automatic Transmission: Feb.2019 Machining of components: Dec. 2018



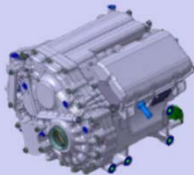





Further increase of capability is planned.

Newly installed line	Planned to produce 300,000 units
Capital investment	9 billion yen
Start of production	Planned to start in 2019

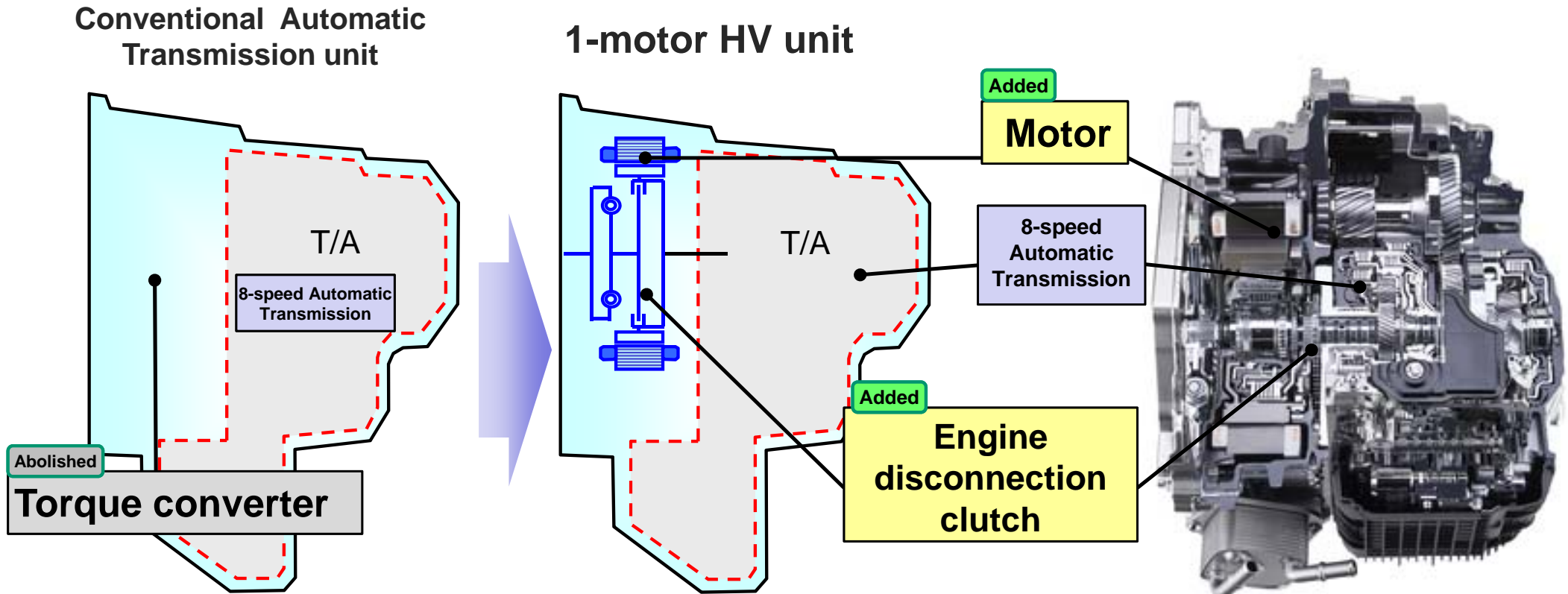
II Development Strategy for Electrification

1. Development Strategy for Improving Lineup of Electrified Products

We will advance product development **omnidirectionally** by utilizing the technological bases which were developed for Automatic Transmission and the 2-motor HV.

Market		Product lineup	Status of development	Features	
Electrified vehicle	EV/FCV	EV unit 	Being developed	<ul style="list-style-type: none"> • Unitized for EVs by increasing power of the eAxle and adding the system control. • Developed by the driving and braking control system containing steering and regenerative cooperating braking system. 	
	Strong HV	PHV	eAxle 	Being mass produced / Being developed	<ul style="list-style-type: none"> • Small-capacity type for Prius was high-powered for the large cars and SUVs. • Change to the PHV is possible by adding on the rear section later.
		PHV•HV	2-motor HV Transmission 	Being mass produced	<ul style="list-style-type: none"> • Advantageous for the small and medium-sized cars such as Prius. • Excellent in cost performance and fuel efficiency when driving urban areas.
			PHV•HV	1-motor HV Transmission 	Being prepared for mass production
	Mild HV	Automatic Transmission 	Being considered	<ul style="list-style-type: none"> • Mild HVs can be produced by adding belts, alternators and starters to the Automatic Transmissions and they can be sold also in the market for 48V. 	
Conventional	Gasoline-powered vehicle	Automatic Transmission 	Being mass produced	<ul style="list-style-type: none"> • Main products that take a global market share of 17%. 	

2. Initiatives for Development of 1-motor HV



- Sporty drive style that provides a feeling of direct operation and good fuel efficiency when driving at high speed.
- A combination of “Automatic Transmission + motor + engine disconnection clutch” improves fuel efficiency drastically at the time of EV driving.
- Existing production facilities can be utilized for production of the Automatic Transmission section.

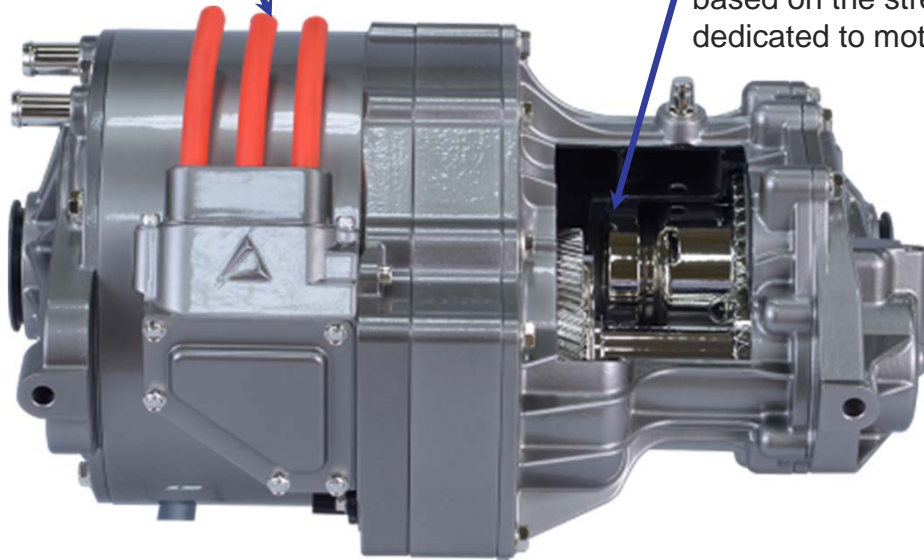
3. Initiative for Development of eAxle

< Structure of eAxle >

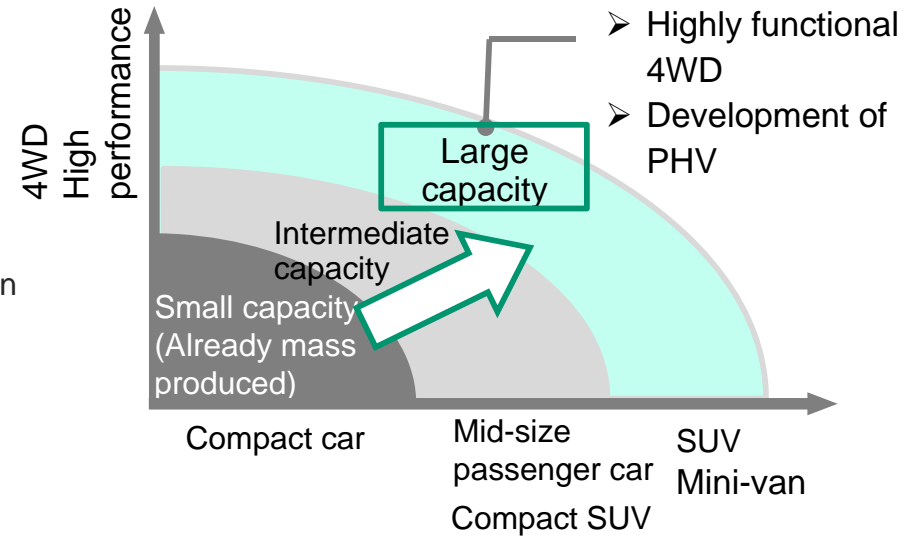
Maximum torque: 2400 Nm
 Maximum generating power: 106 kW

Motor
 (High-efficiency water-cooled IPM motor)

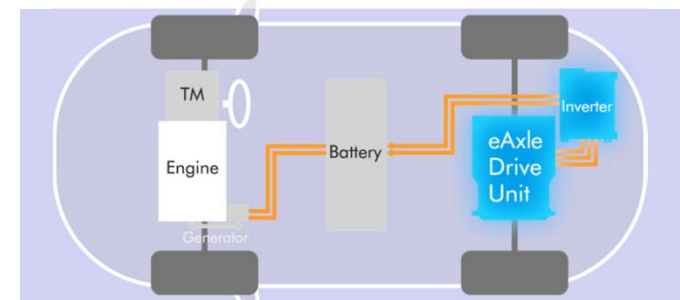
Speed reducer
 (Compact speed reducer based on the strength design dedicated to motors)



< Concept of development of the series >



< Example of Installation of the System >



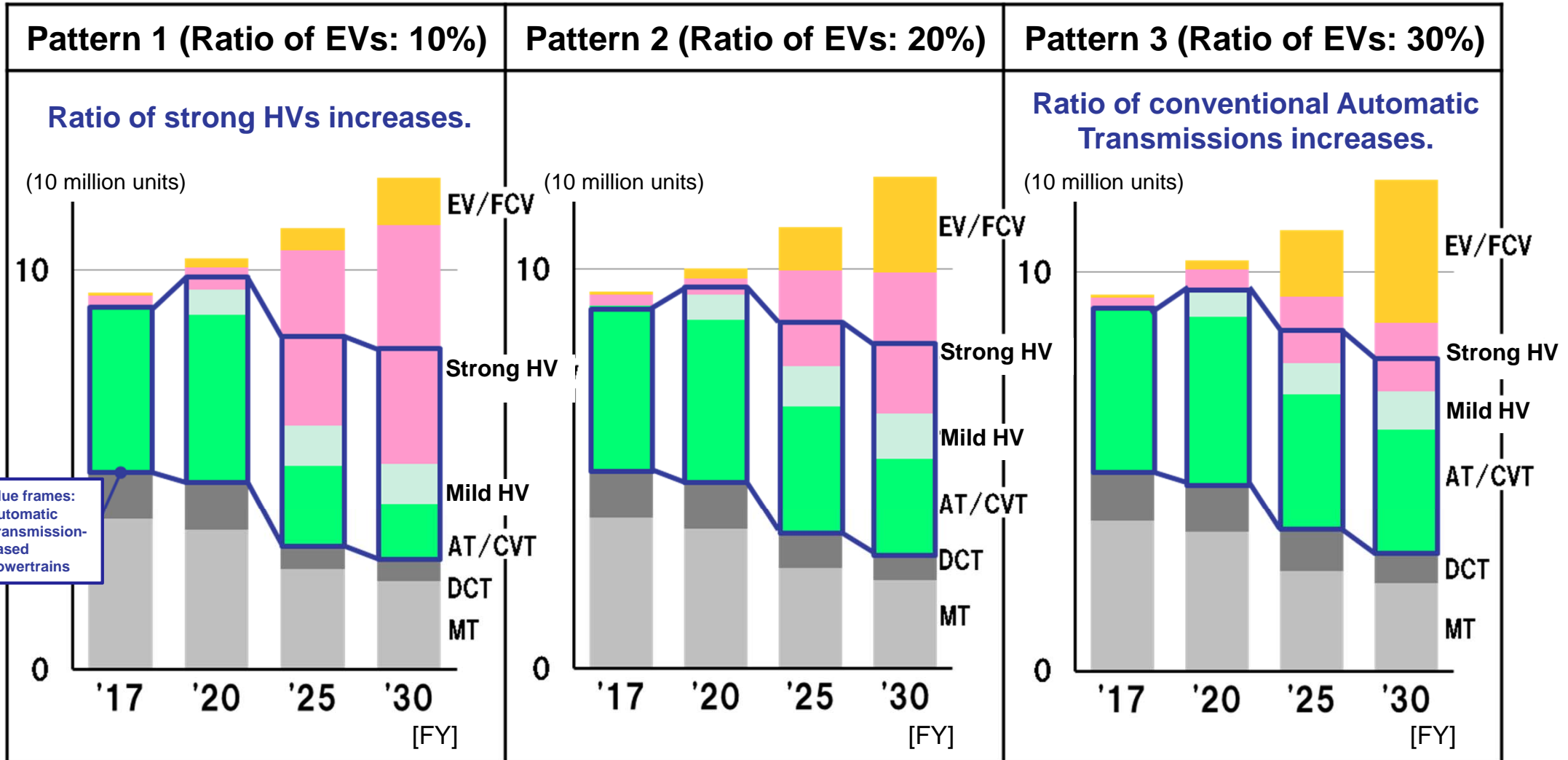
- As a PHV: It can be used as the electric-powered system for PHVs by adding to the rear section.
- As a 4-wheel drive: Contributing to powerful and high-quality drive of premium SUVs.

1. Forecast of Global Market Trend of Powertrain

Precondition

Progress of the CAFE standards in various countries is as planned and compliance with the standards has been achieved.

(Source: Surveys by Deloitte, IHS and Aisin Seiki)

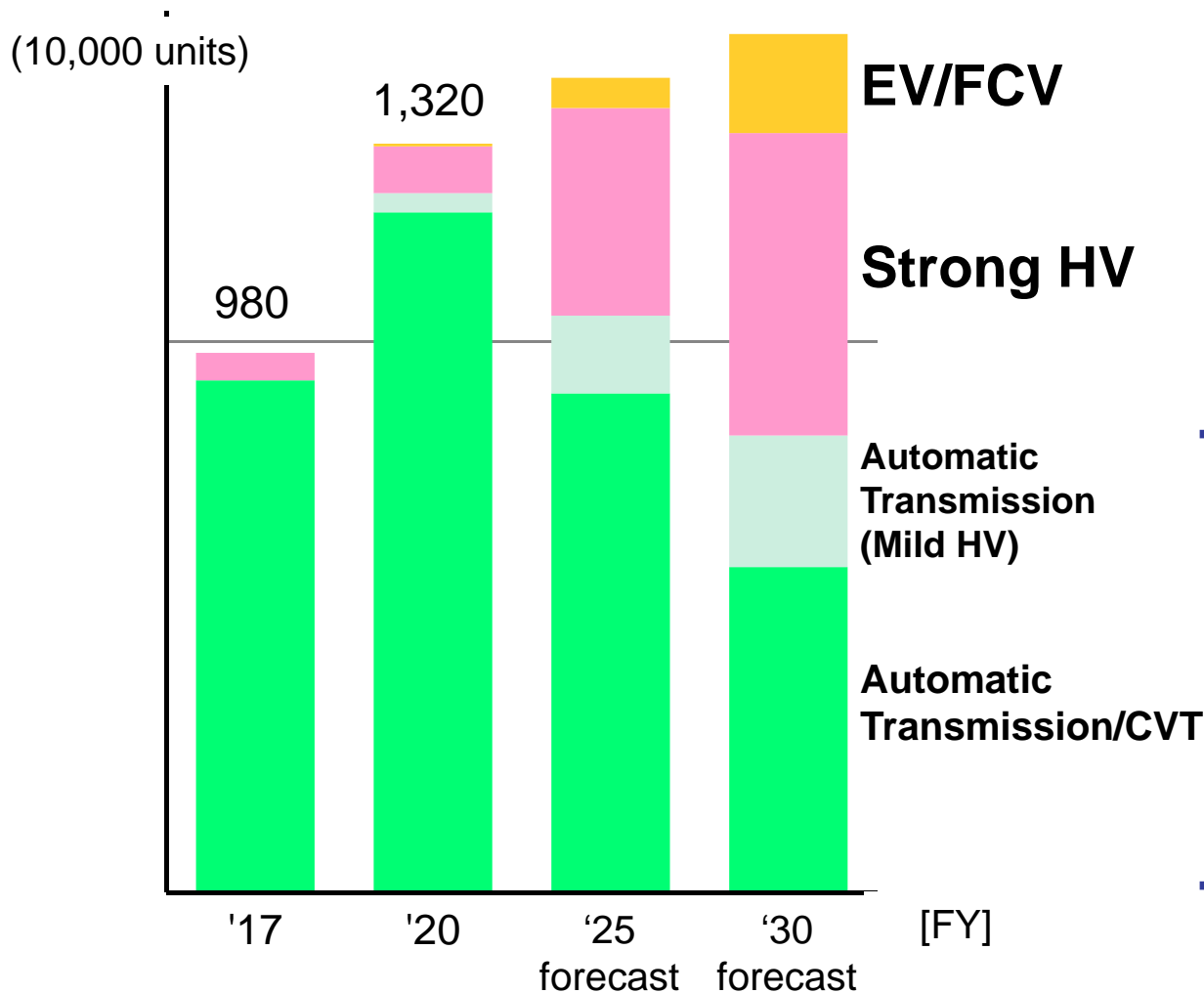


Market for the Automatic Transmission-based powertrains does not change largely regardless of the changes in the ratio of Evs in 2030.

2. Sales Plan for Powertrain Business

Steadily shifting the business structure to electrification and growing further

Precondition → **Pattern 2 (Ratio of EVs: 20%)**



Launching the EV units early onto the market by utilizing the elemental technologies for HVs.

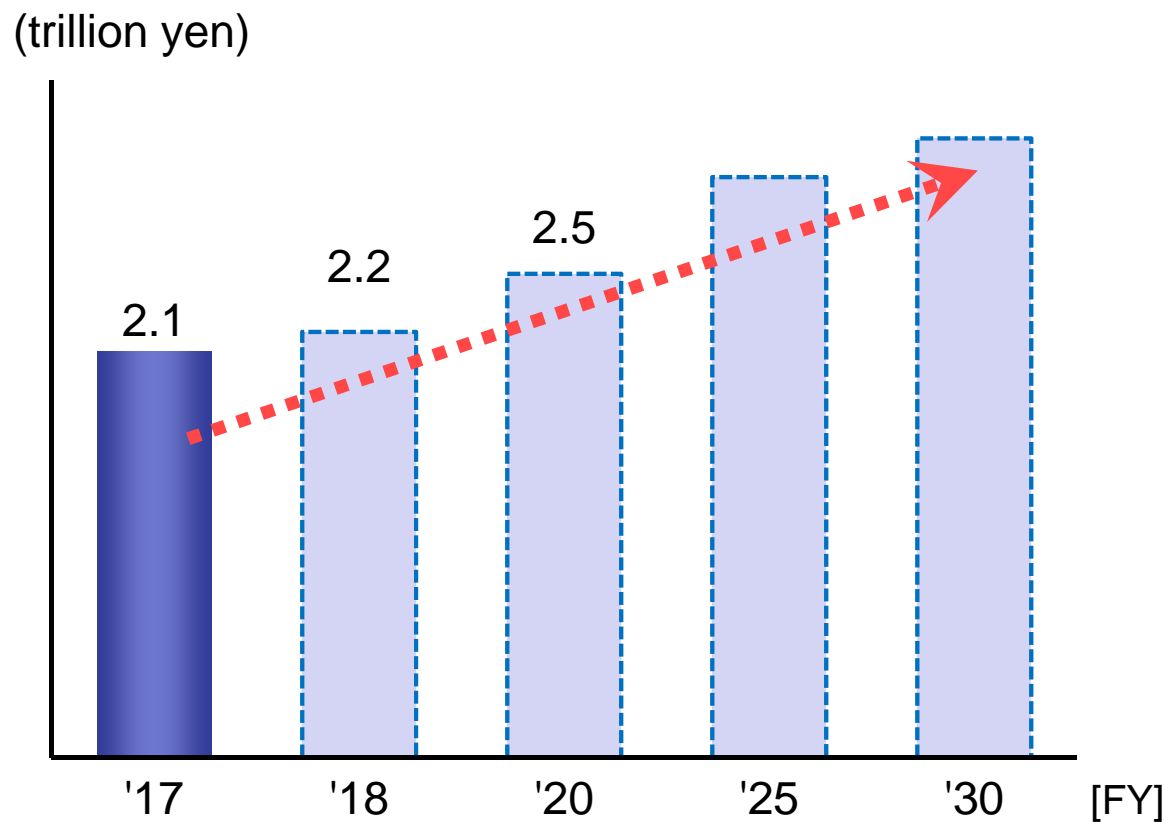
Capturing demands by launching the 1-motor HVs in addition to the 2-motor HVs.

Maintaining the market shares of Automatic Transmissions and CVTs in FY2020.

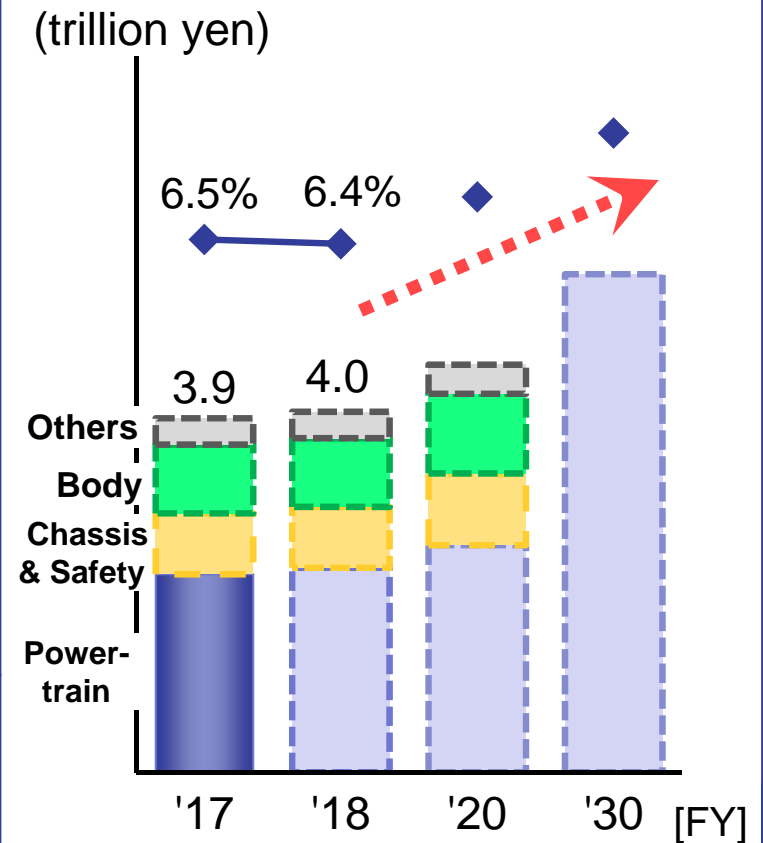
3. Powertrain Business's Sales Targets

For the powertrain business, the production system has been established and the development strategies have been oriented.
We will attain achievements steadily from now.

Sales target of the powertrain business



Consolidated sales / operating profit ratio





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