

Update of biodiesel specifications in Thailand

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The 2nd APEC Workshop on Guidelines toward High Biodiesel Blend Diesel
(eg B20) Specification in the APEC Region

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Outline

- Overview of biodiesel policy in Thailand
- Development of biodiesel specification
- Current initiative for biodiesel blend higher than 7%

Thailand Energy Masterplan



PDP

Power Development Plan

(Cabinet approve in Jun. 30, 2015)

EEP

Energy efficient Plan

(Cabinet approve in Oct. 6, 2015)

AEDP

Alternative Energy Development plan

(Cabinet approve in Oct. 27, 2015)

GAS

Gas plan

(Cabinet approve in Oct. 27, 2015)

OIL

Oil plan

(Cabinet approve in Oct. 27, 2015)

AEDP 2015 Targets - Biofuel



8,712 ktoe*

2016 biofuel usage
1,742 ktoe



Compressed Biogas



3.67

14

3.37

Unit: MLPD

0.53

Pyrolysis oil

4,800 TPD

Unit: TPD

Bioethanol



Related Policies



2016

Phase2 Thailand excise tax scheme for B10 diesel eco-car

Excise tax rate at 12% starting from 1st Jan 2016



2018

Completion of double-track railway infrastructure

Option
B10

B10

B20

2016 17 18 19 20 21 22 23 24 25 2026 27 28 29 30 31 32 33 34 35 2036

B10 Promotion

B20 Promotion

- Develop diesel-substitution fuel (both traditional and advanced) in terms of both **feasibility** and **economically**
- Develop higher %biodiesel compatible vehicles

- Promote **B10** as an optional alternative fuel
(Price incentive/Service coverage/Quality control)
- Tax incentives for vehicles that use high % biofuel (2026)
- Mandate **B10** (2026)

- Promote **B10** usage in transport and industrial sectors
- Promote **B100** usage in agricultural machineries

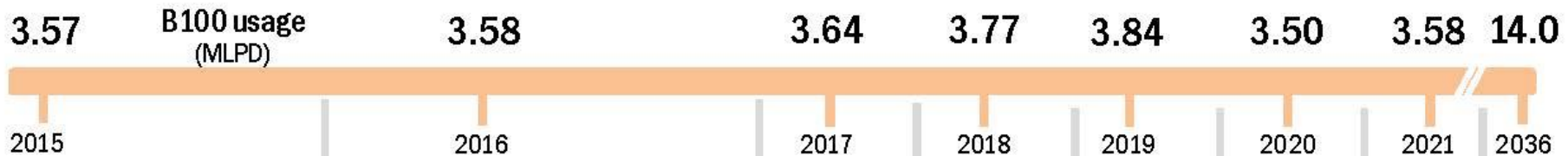
- Develop and improve new feedstock
- Promote production of advanced biofuel that can be commercially blended in higher percentage

- Promote consumption of **higher-blend biodiesel** as an optional alternative
(Service coverage/Quality Control)
- Excise Tax incentives for vehicles that use high % biofuel

- Promote consumption of biofuel-blended fuel in both transport and industrial sectors



Biodiesel Action Plan



Increase yield & efficiency of oil palm production– Ministry of Agriculture & Cooperatives



Implementing excise tax scheme for B10 diesel vehicles - MoF



Promotion of **B10** as an optional alternative fuel
(Gas station coverage, Price incentive, Public awareness promotion)



B10 Specifications Establishment
(DOEB) & Price Structure (EPPO)



B10 utilization test for personal pickup project



Preparation of administration
management of B10 distribution



B20 utilization promotion in large truck project



Pilot study of commercial **B100** utilization
in agricultural machines project



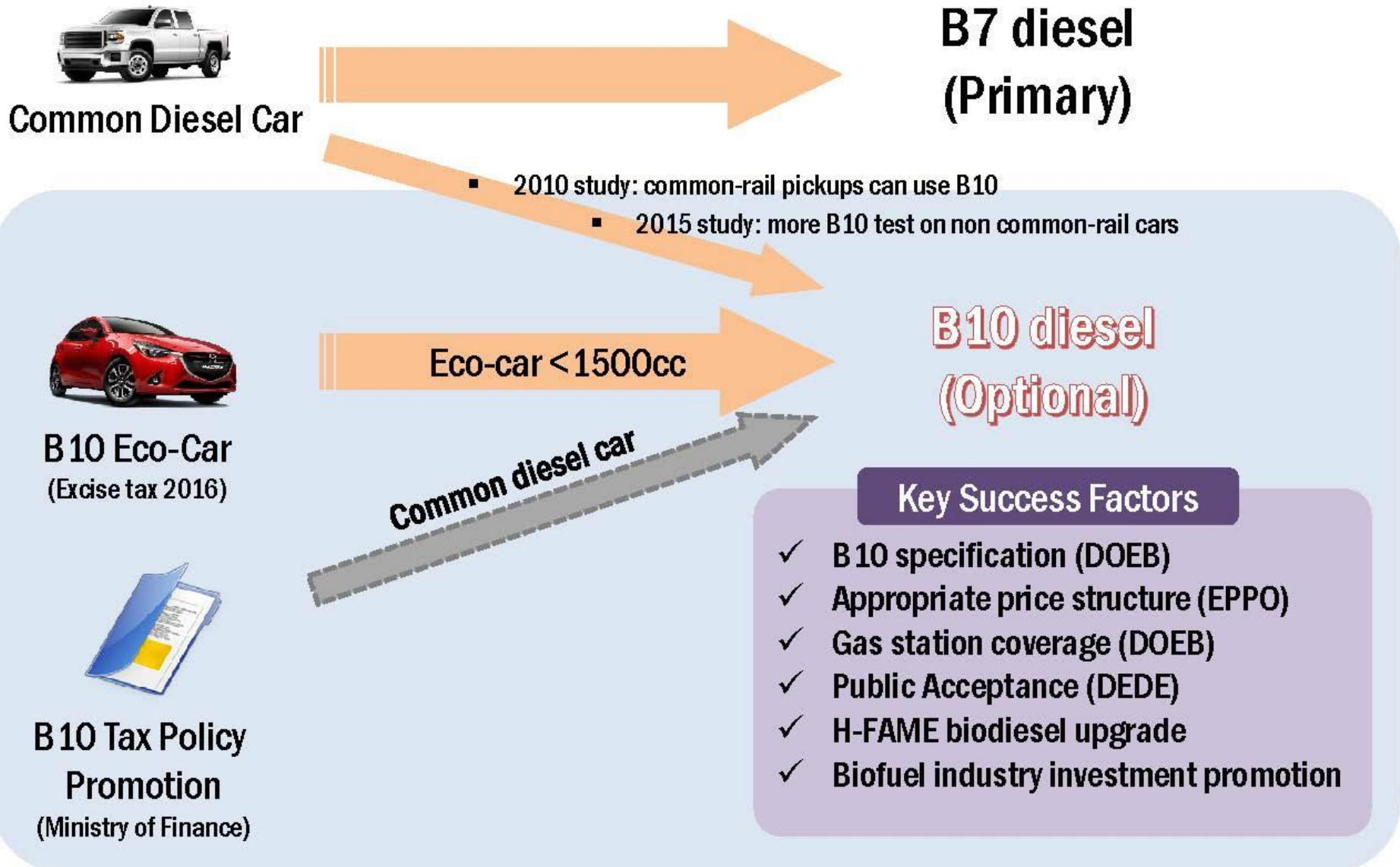
H-FAME Development
(Production and utilization)



Public perception/acceptance of
using higher % biodiesel campaign



Promotion of B10 as an optional alternative fuel



Thai biodiesel specification

- Following EN14214 standard
- 1st B100 specification issued in 2005 (for B0 & B5)
 - Oxidation stability > 6 hr, MG < 0.8%wt, water < 0.05%wt
- Revised B100 specification in 2007 (for B2 & B5)
 - Change method:
 - ✓ Water from ASTM D2709 to EN ISO12937
 - ✓ Total contaminate from ASTM D5452 to EN12662
- Revised B100 specification in 2009 (for B2 & B5)
 - Oxidation stability > 10 hr,
- Mandate blending of B3~5 in 2011
- Mandate blending of B5 in 2012
- Revised B100 specification in 2013
 - MG < 0.7%wt
- Mandate blending of B7 in 2014

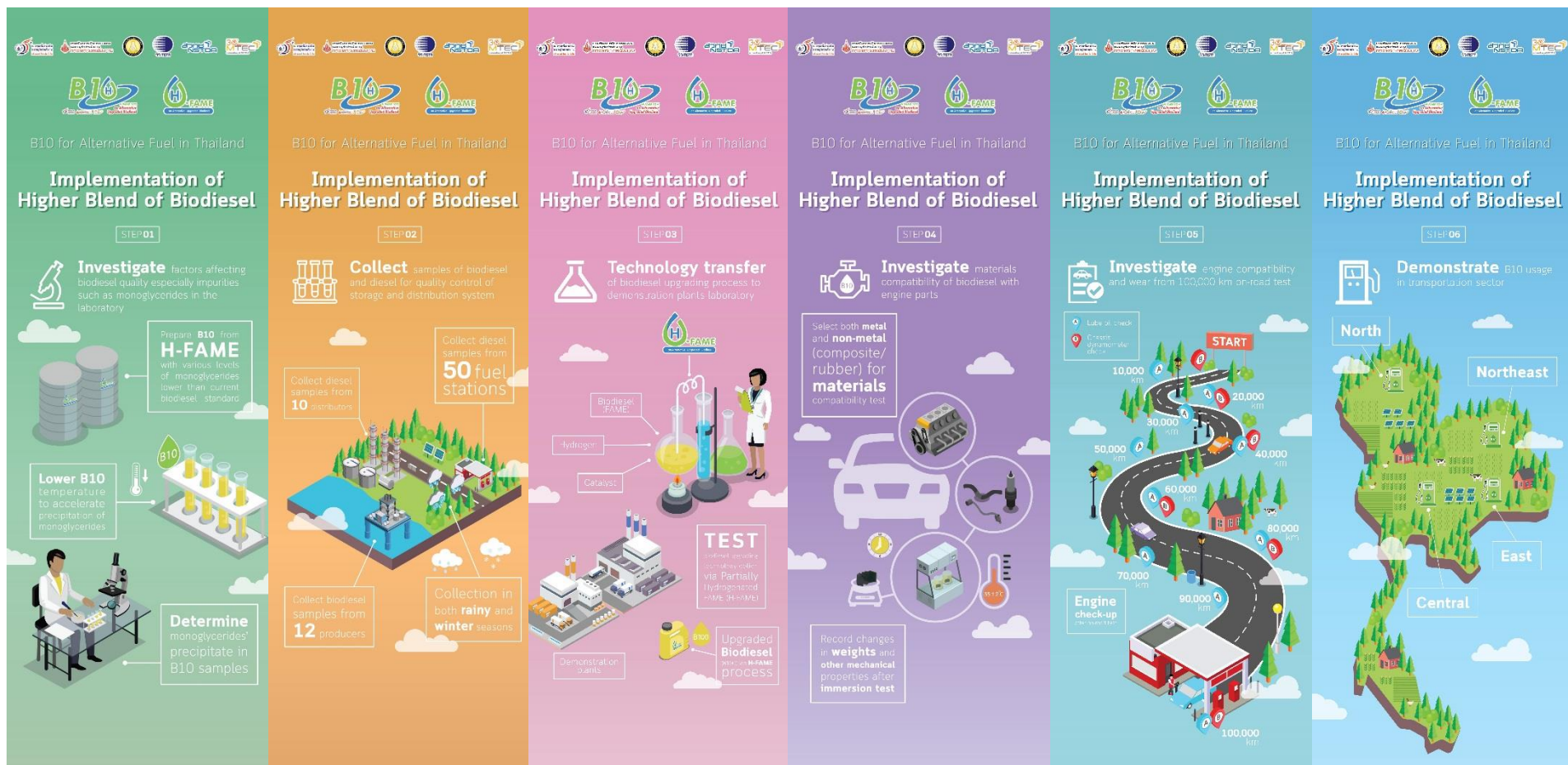
Recent problem with too much palm oil stock

- Thai palm oil board chaired by Deputy Prime Ministry has the following resolution to reduce palm oil stock
 - Ministry of Commerce facilitating palm oil export
 - Ministry of Energy increasing B100 stock (from 23 to 63 ML) & finding additional use of biodiesel
- B10 usage in Thai train
 - Joint effort between PTT and SRT (State Railway of Thailand)
 - 6 month trial with BaanLaem-MaeKlong route (Feb – Jul 2018)
 - Estimated 36,000L of B10 will be consumed



Biodiesel upgrading: H-FAME

Testing of B10 from H-FAME



1. %MG from precipitation test

2. Fuel quality survey

3. TT of H-FAME to local BDF producers

4. Materials compatibility with B10

5. 100,000km on-road test with B10/H-FAME

6. Large-scale demonstration with B10/H-FAME

Progress of B10 project

- Quality of B100 for B10 on-road test
 - Monoglyceride < 0.4 wt%
- Fuel quality survey
 - Quality of both B100 and diesel ($< B7$) from production to fuel station are maintained at standard
- 1 ton/day production facility of upgraded B100 (with monoglyceride < 0.4 wt%) is under construction
- Materials compatibility test on rubber/plastic parts to be conducted
- Eight 1-ton pick up trucks to be tested at 100,000km
 - 2 brands: Isuzu & Toyota
 - For each brand, 4 fuels to be test:
 - ✓ B7 with conventional FAME
 - ✓ B10 with conventional FAME
 - ✓ B10 with conventional FAME of low MG (< 0.4 wt%)
 - ✓ B10 with H-FAME (MG < 0.4 wt%)

Conclusion

- Thai government aims to promote the usage of biodiesel from palm oil surplus from edible oil consumption
- Biodiesel usage becomes significant fraction of total palm oil production (now similar amount to edible oil consumption)
- Target of B10 is in national plan with current testing efforts among related stakeholders (oil producer, biodiesel producer and car makers)
- Upgrading biodiesel may be a way to gain acceptance from car makers in implementing B10

Thank you

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