



# ***Biomass Conversion Technology for Transport - Thailand Experience -***



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*Regional Workshop on Overcoming Critical Bottlenecks  
to Accelerate Renewable Energy Deployment in ASEAN+6 Countries  
14<sup>th</sup> June 2016  
At Rama Garden Hotel, Bangkok, Thailand*

# Outline

- 1. Biodiesel Industry in Thailand**
- 2. Future Trend**
- 3. Challenges**
- 4. Conclusion**



# **Biodiesel Industry in Thailand**



## AE Milestones in Thailand

### Develop from Royal Initiatives

In 2001, relevant government bodies, and major petroleum companies have set up several pilot projects regarding the use of biodiesel.

### Develop Renewable Energy Development Plan 15 years (2008-2022)

Thai government has initially established Renewable Energy Development Plan to promote the use of alternative energy.

### Current : Alternative Energy Development Plan 2015 – 2036

30% of AE in total Energy Consumption

1985

2001

2005

2009

2011

2013

2015

### Royal Initiative Projects

In 1985, Royal initiative projects related biodiesel has been established.

### Commercialize & Implementation

biodiesel has become national policy and has been officially implemented across the country.

### Alternative Energy Development Plan 10 years (2012-2021)

25% of AE in total Energy Consumption  
In 2013, revised version was published.

**SUCCESS**



## Alternative Energy Development Plan 2015 - 2036

**Target** : 30% of AE in total energy consumption by 2036

Biofuel



**Target Use** 25%



Ethanol

**Target Use**

2026 → 7 MML/D

2036 → 11.3 MML/D

Biodiesel

**Target Use**

2026 → 5 MML/D

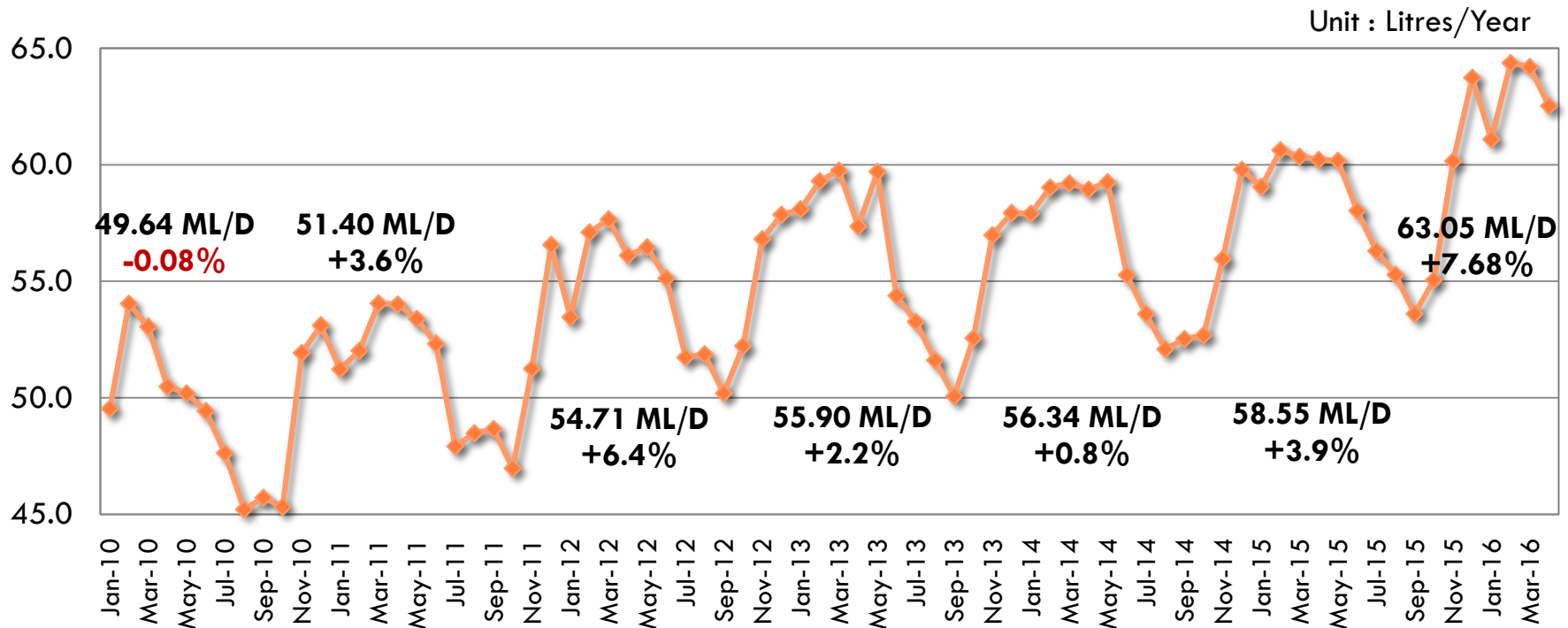
2036 → 14 MML/D

Source : DEDE



## Domestic Diesel Consumption

### Monthly Diesel Consumption, Jan'10 – Apr'16

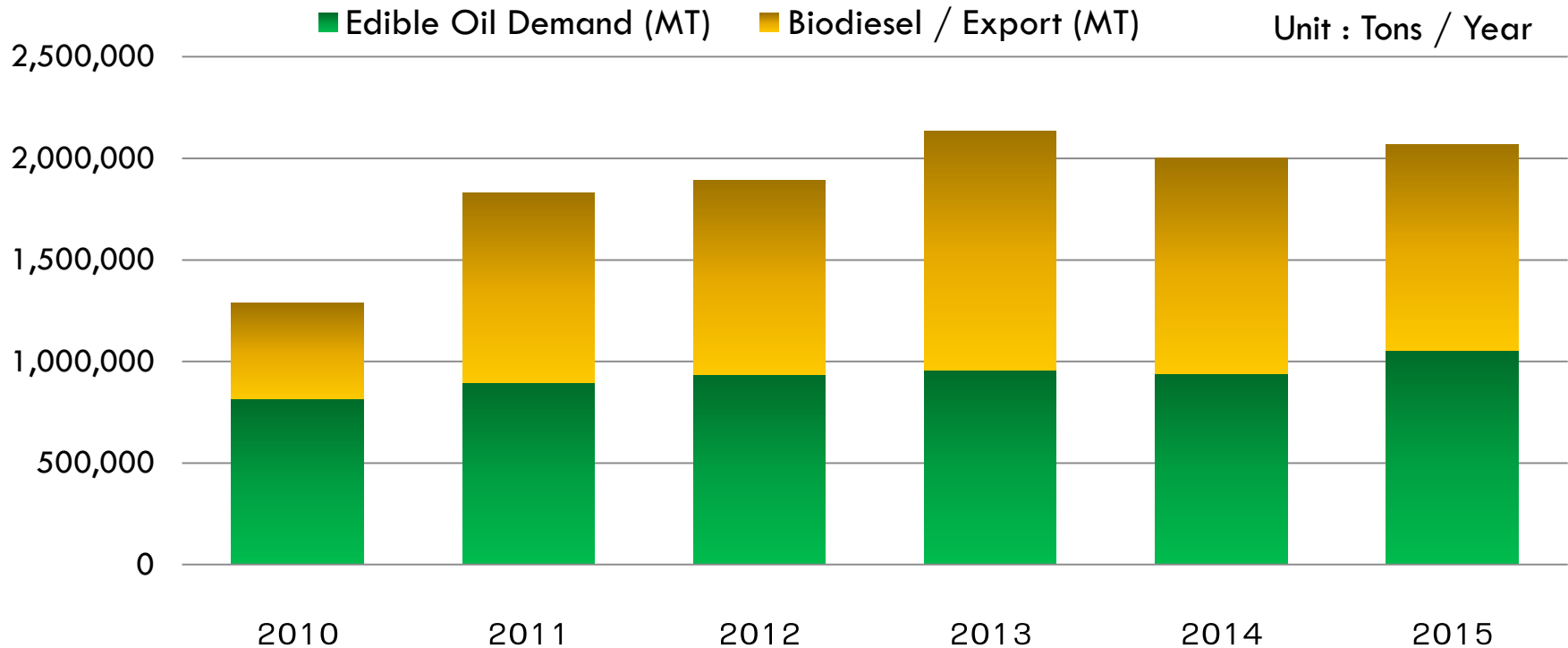


Source : Department of Energy Business



## Domestic CPO Production

### CPO Production, 2010 - 2015

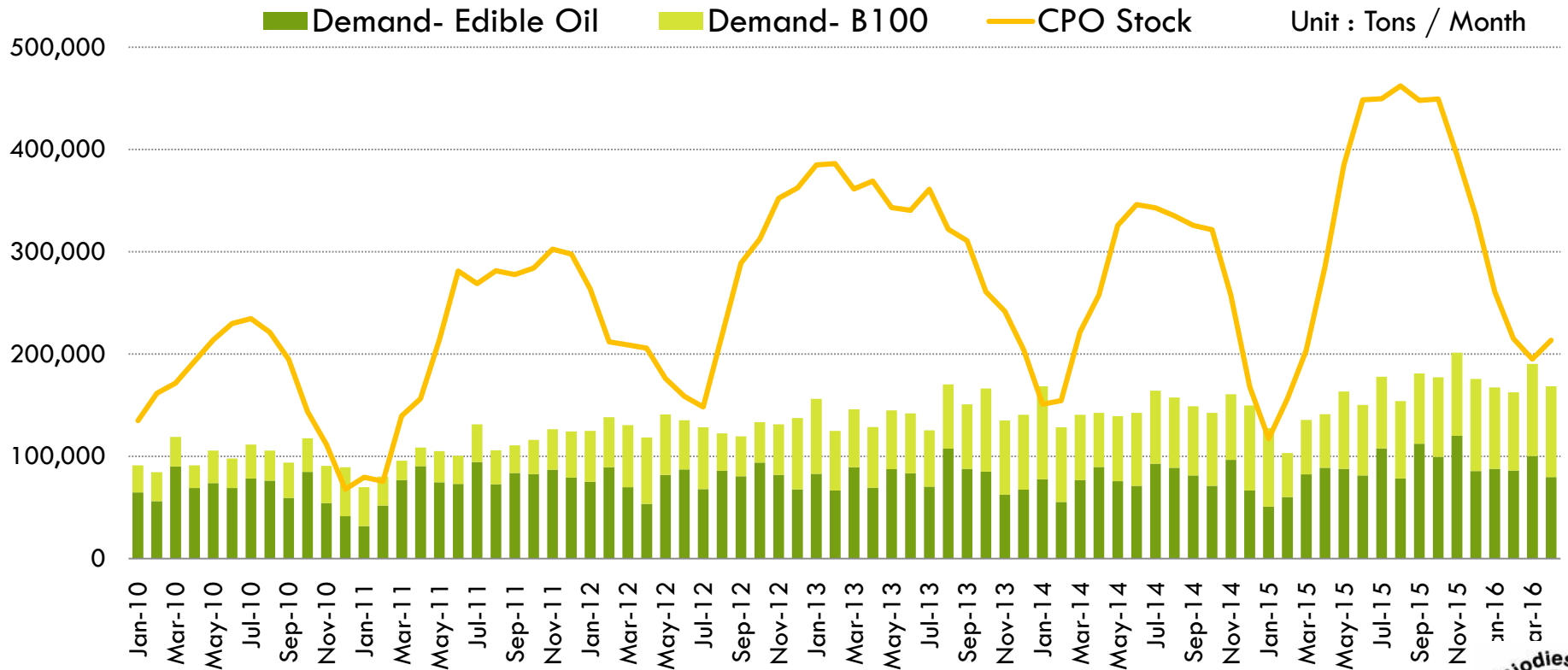


Source : Department of Internal Trade



## Domestic CPO Demand and Supply

CPO Stock, Demand, and Supply : Jan'10 – Apr'16



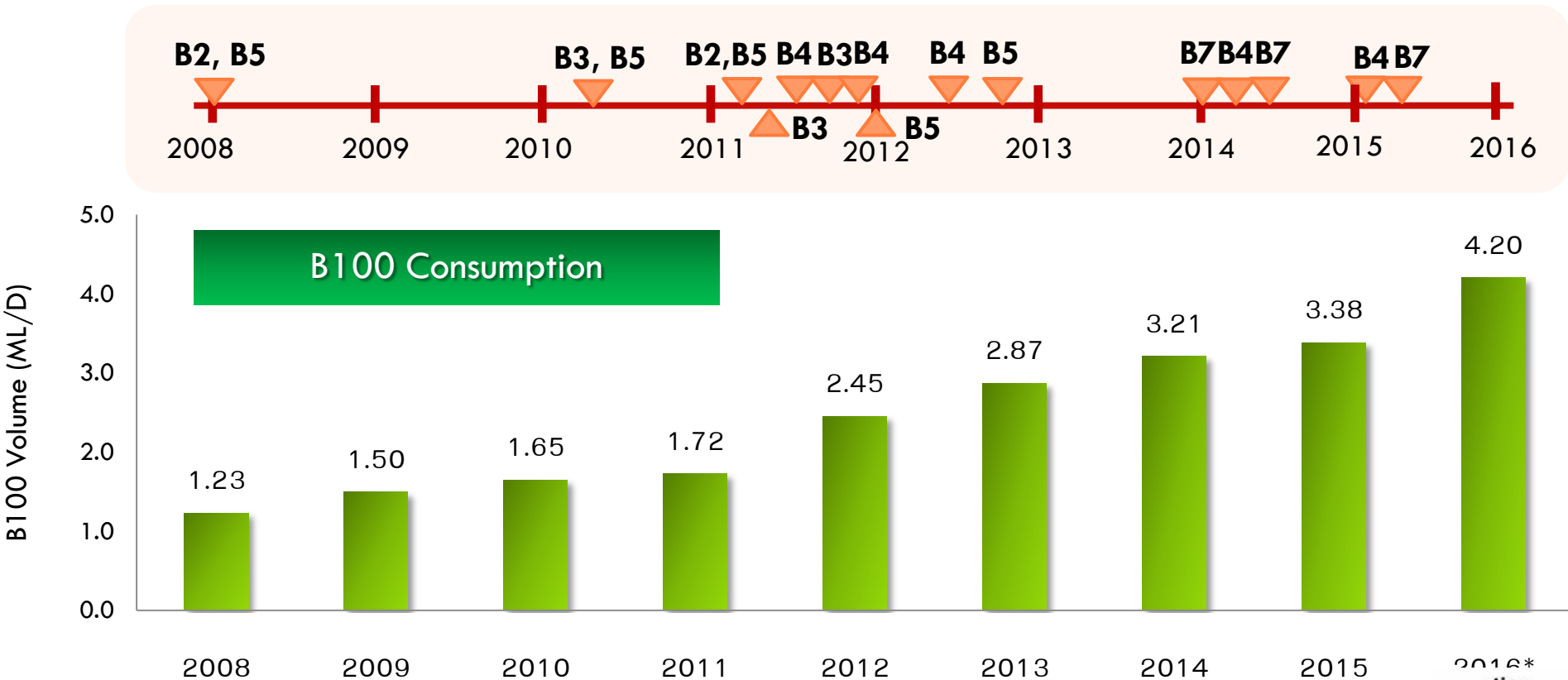
Source : Department of Internal Trade





## Domestic Biodiesel Consumption

### Government Mandate



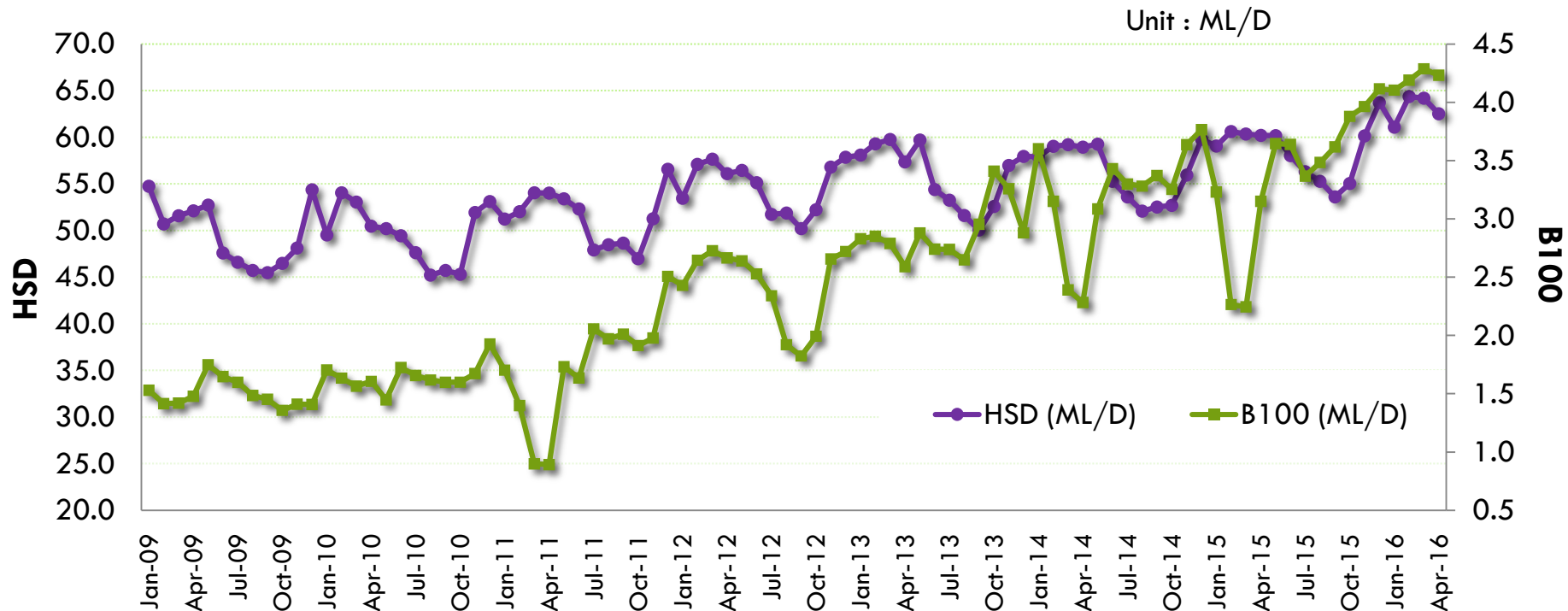
Source : Department of Internal Trade

\*Jan-Apr'16



## Domestic Diesel and Biodiesel Consumption

### B100 vs Diesel Consumption

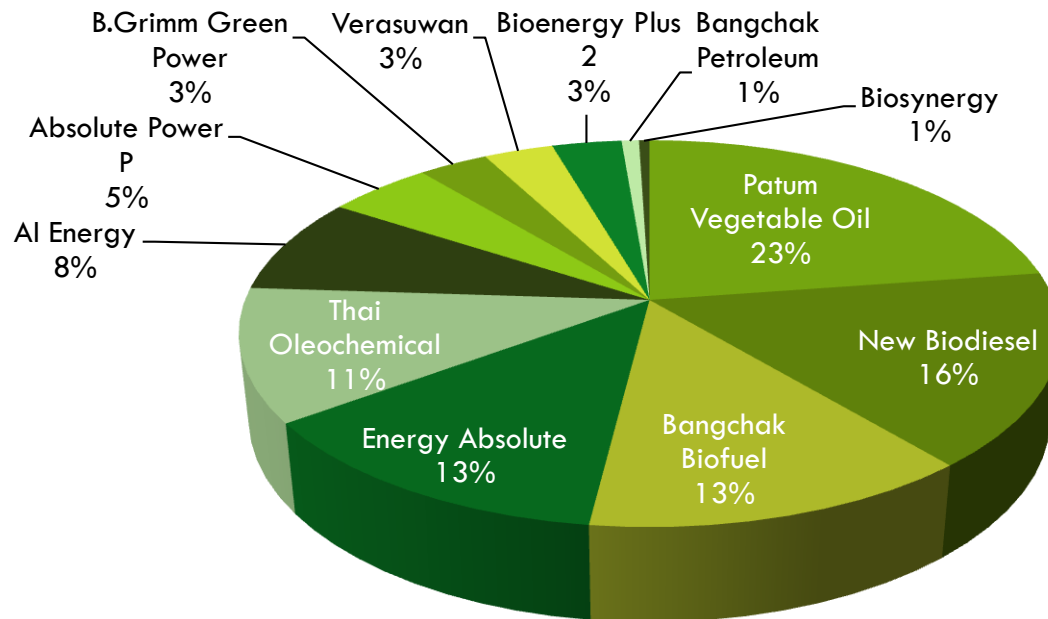


Source : Department of Energy Business



## B100 Producers

### Lists of B100 producers & Installed Capacity



#### Producers

#### Cap (ML/D)

Patum Vegetable Oil	1,400,000
New Biodiesel	1,000,000
Bangchak Biofuel	810,000
Energy Absolute	800,000
Global Green Chemical	685,800
AI Energy	500,000
Absolute Power P	300,000
B.Grimm Green Power	200,000
Verasuwan	200,000
Bioenergy Plus 2	200,000
Bangchak Petroleum	50,000
Biosynergy	30,000

**No. of Producer : 12**

**Total Capacity : 6.18 ML/D**

Source : Department of Energy Business, Jun'16



# Future Trend

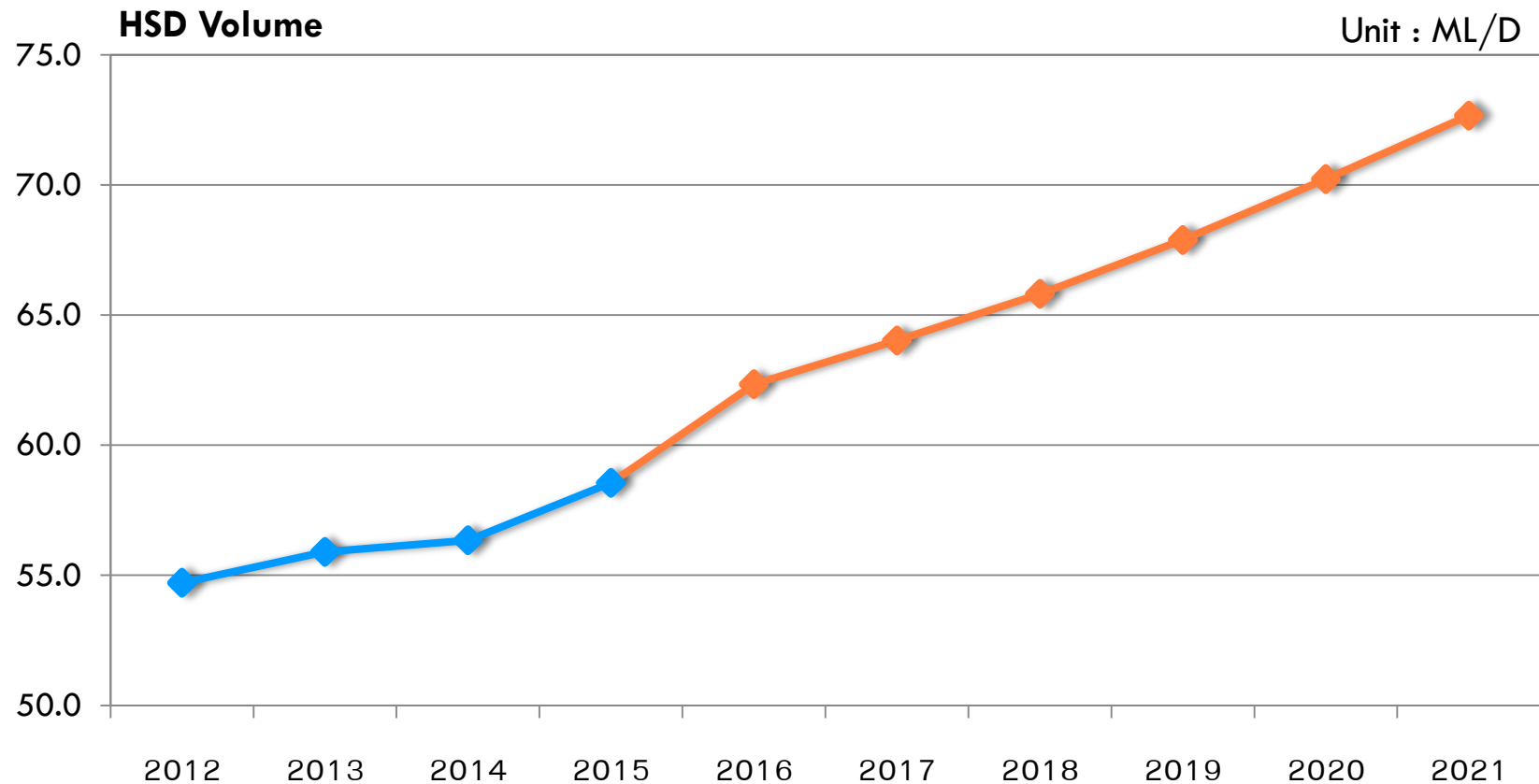


## Future Trend ??

1. Biofuels would still be driven by national policies
2. Global biofuel demand would remain unstable
3. Feedstock availability would be limitation
4. Improve of engine efficiency VS demand growth
5. Automotive technology is fading away from conventional fuel
6. Sustainability would become pre-requisite



# Project Diesel Consumption

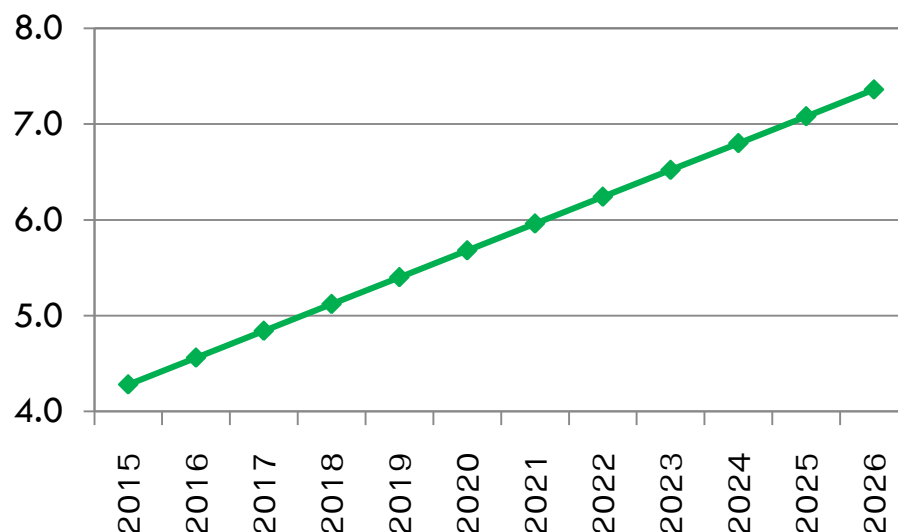


Source : 2012 - 2015 Department of Energy Business  
 2015 - 2021 Projected by Energy Policy and Planning Office

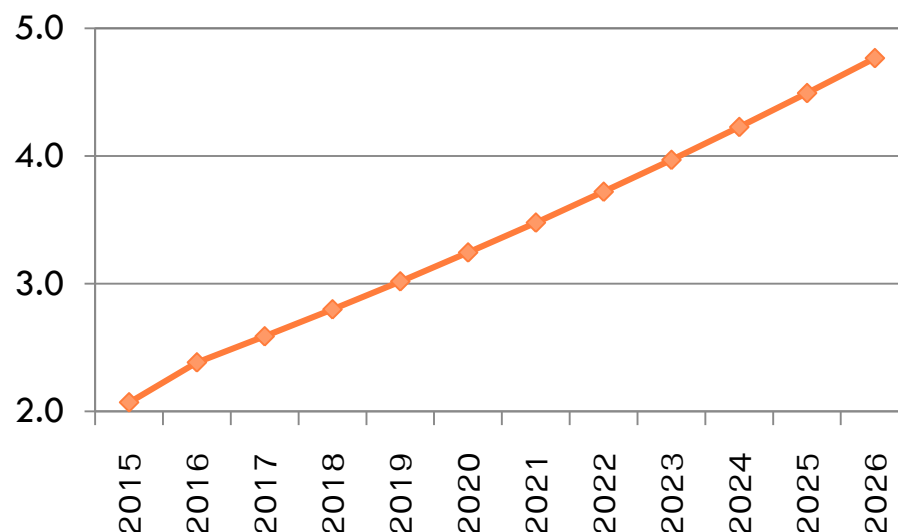


## Roadmap of Palm Oil and Oil Palm 2015 - 2026

### Plantation Area (Rai)



### CPO Production (MT)



### GOAL IN 2026

- Expand plantation area 250,000 rai per year
- Replant for old plantation 30,000 rai per year
- Increase productivity of FFB from 3.2 to 3.5 tons/rai
- Increase oil extraction rate (OER) from 17% to 20%

### Assumption

- Productivity of FFB increases by 0.025 tons/rai/year
- Oil extraction rate increases by 0.25 % per year

Source : Office of Agricultural Economics

# Potential Diesel Substitute

## DIESEL SUBSTITUE

### Technology Development

BHD

BTL



### Replace diesel with ethanol

Diesohol

ED95

FAEE

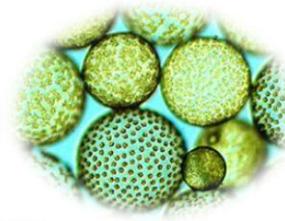


## FEEDSTOCK

### For FAME / BHD



*Palm*



*Algae*



*Jatropha*

### For BTL



*Eucalyptus*

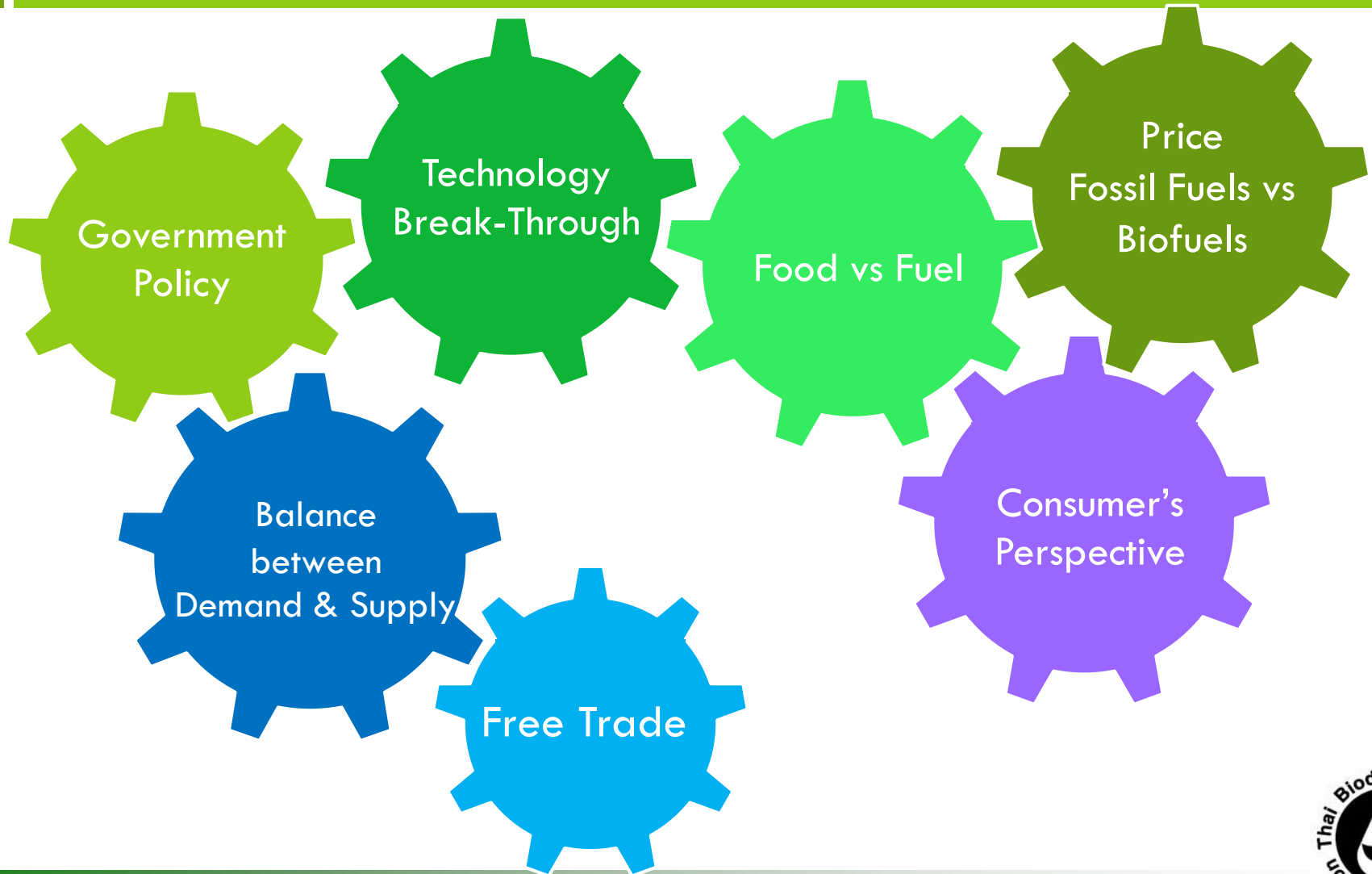




# Challenges



# Challenges



# Conclusion

- 1. Thai government has strongly supported alternative energy including biofuels**
- 2. Diesel & Biodiesel's consumption are growing**
- 3. AE surely has bright future, but which one and growing at what rate?**





# *Thank You*

*By Mr. Sanin Triyanond*

*Chairman of Thai Biodiesel Producer Association*