

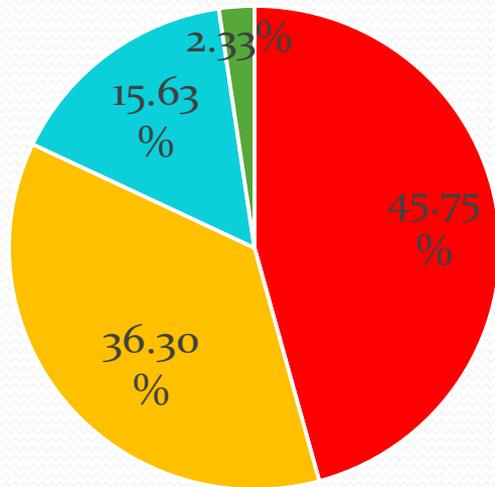
Thailand Biofuel policies

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Efficiency

Energy situation in Thailand

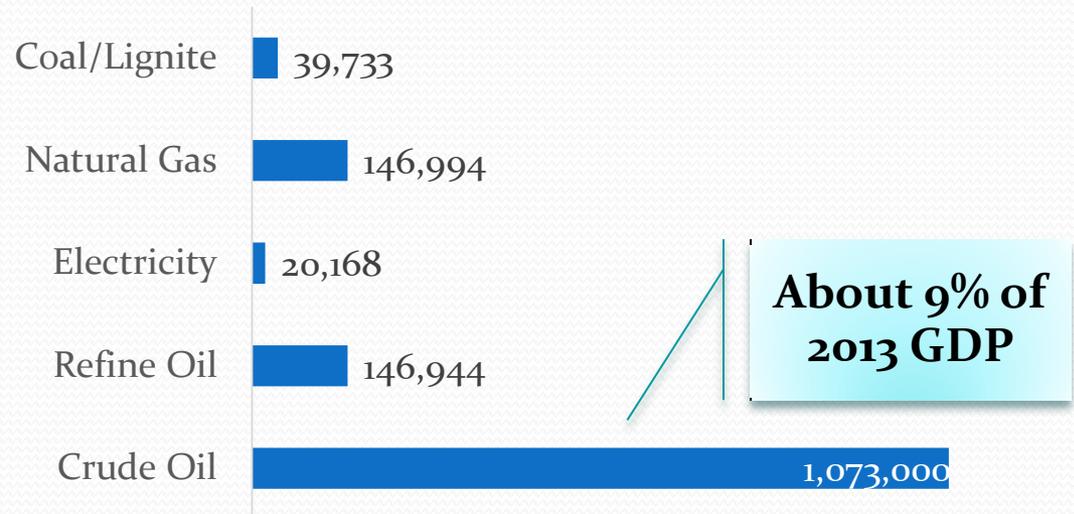
Primary Energy Consumption (2013)



■ Natural Gas ■ Fuel
■ Coal/Lignite ■ Hydropower

(Equivalent to 2 million Barrels of crude oil)

Energy Import (Million Baht)



Remark – In 2013 Thailand exported crude oil worth 30,297 million baht, refined oil 322,621 million baht and Electricity 4,348 million baht

– 2013 Thailand GDP = 11.897 Trillion baht (NESDB, 2014)

Alternative Energy Development Plan

AEDP
(2012 -2021)



Target - **25%** of RE in total energy consumption by 2021

Solar & Wind

Hydro power



Total electricity target 13,927 MW

Bioenergy

New energy



Total heat target 9,800 KToe

Biofuel

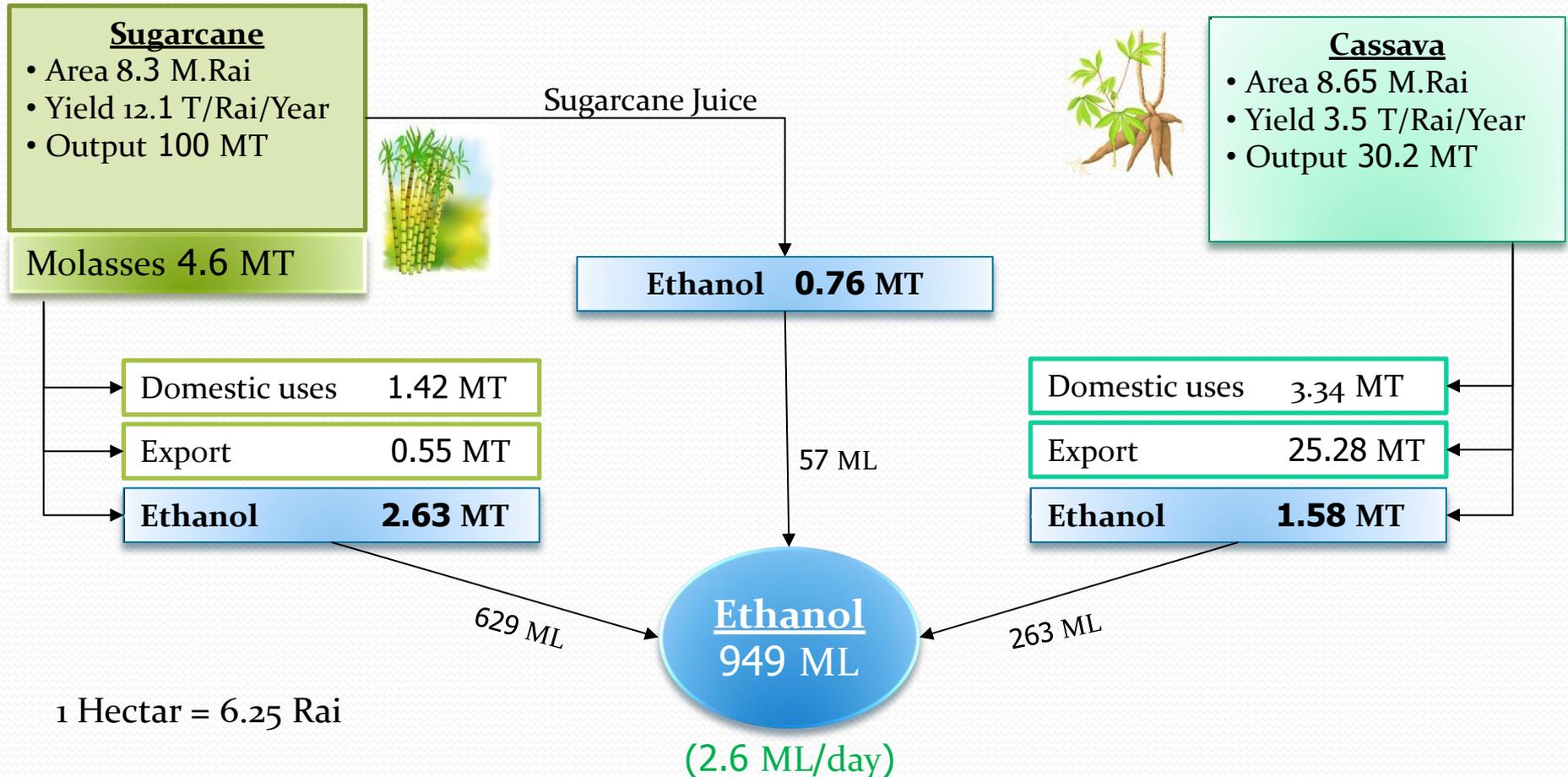


Biofuel targets

Ethanol	Biodiesel	Advanced biofuel
9 ML/day	7.20 ML/day	3 ML/day

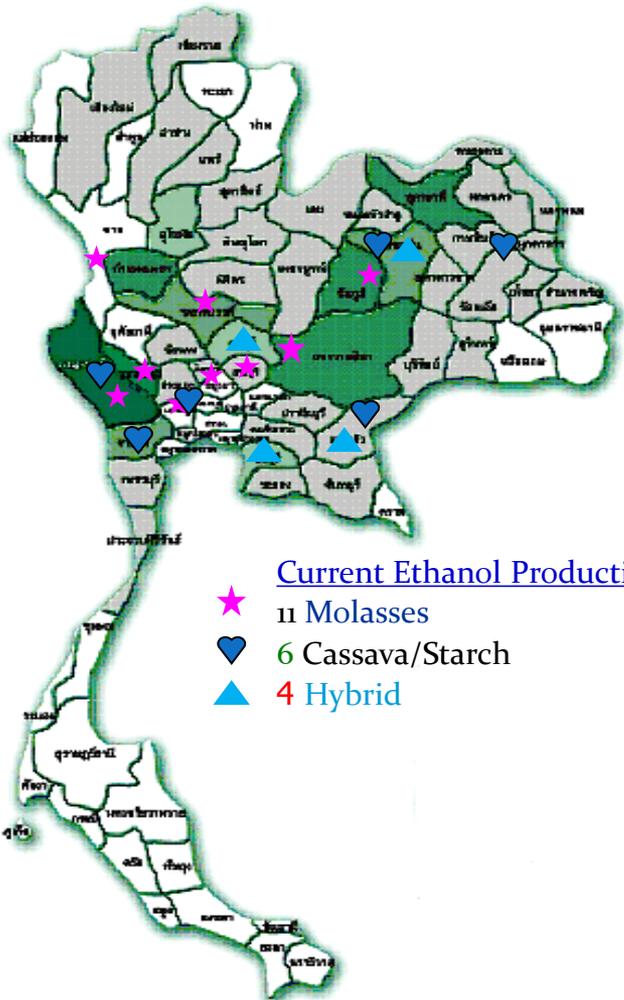
Bioethanol – Target 9 ML/day

Thailand Ethanol Feedstock



Bioethanol – Target 9 ML/day

Thailand Production Capacity



Feedstock	No. of plants	Total cap. (ML/day)
Molasses	11	2.41
Cassava	6	1.68
Molasses and Cassava	4	0.7
TOTAL	21	4.79

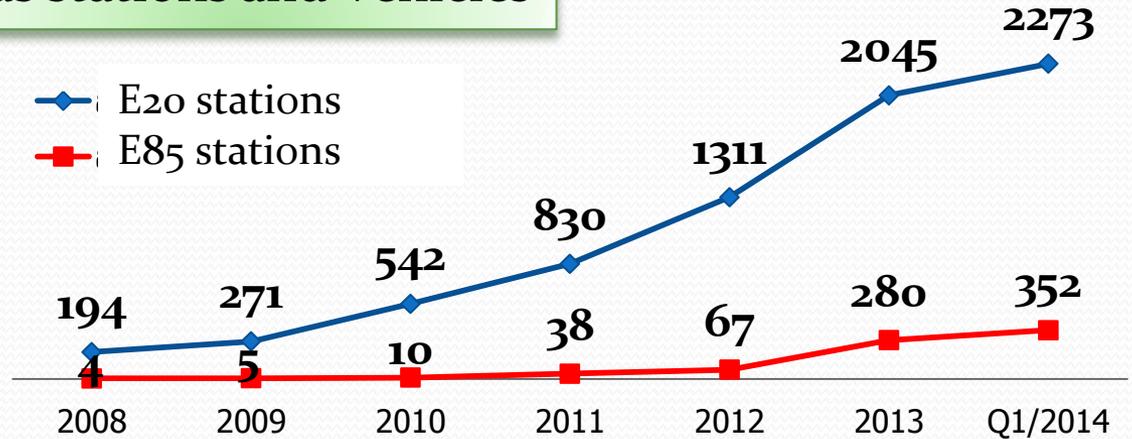


Bioethanol – Target 9 ML/day

Gas stations and Vehicles



E10 stations are well spread over Thailand



Most cars manufactured since 1995



Most cars manufactured since 2008



All Flex fuel cars (FFV)



CHEVROLET



HONDA



MITSUBISHI
MOTORS

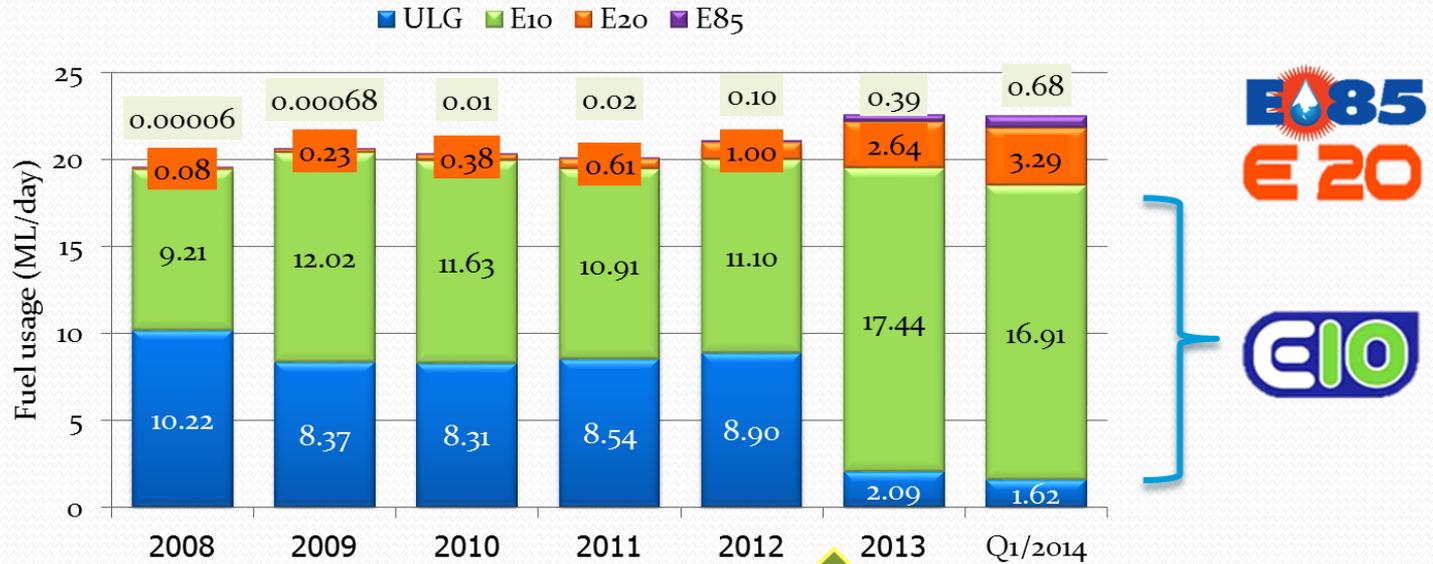


TOYOTA



Bioethanol – Target 9 ML/day

Ethanol usages



Ethanol usage ML/day



Phase out ULG 91
(Start Jan 2013)

Bioethanol – Target 9 ML/day

Ethanol policies

Upstream policy

Yield

Increase feedstock plants' yields



Midstream policy

Law & Regulations

Improve related law and regulations



Downstream policy

Price structure

Manage price structure to give E20/E85 incentives



Gas stations

Increase E20/E85 gas stations¹⁸



PR

Continuously raises people awareness of E20/E85



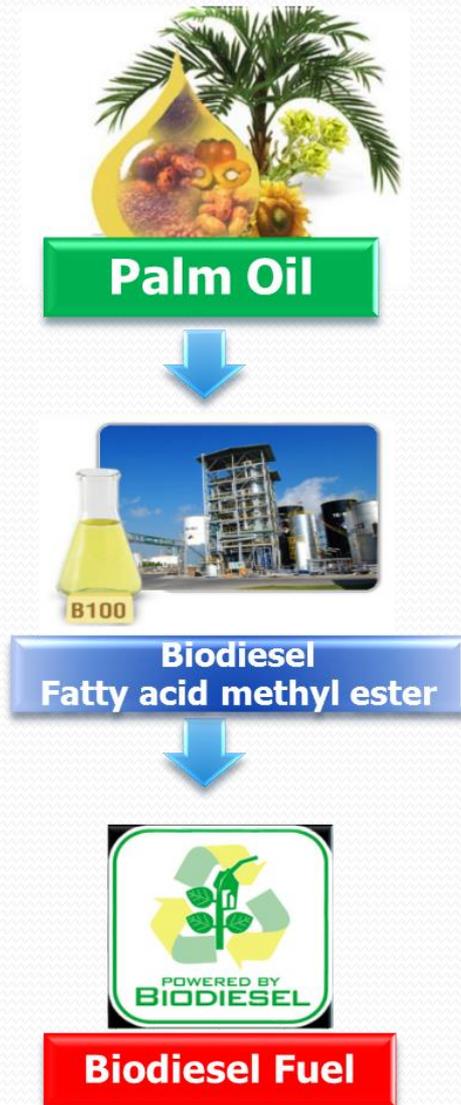
E85 cars

Increase incentive for E85 cars using tax structure

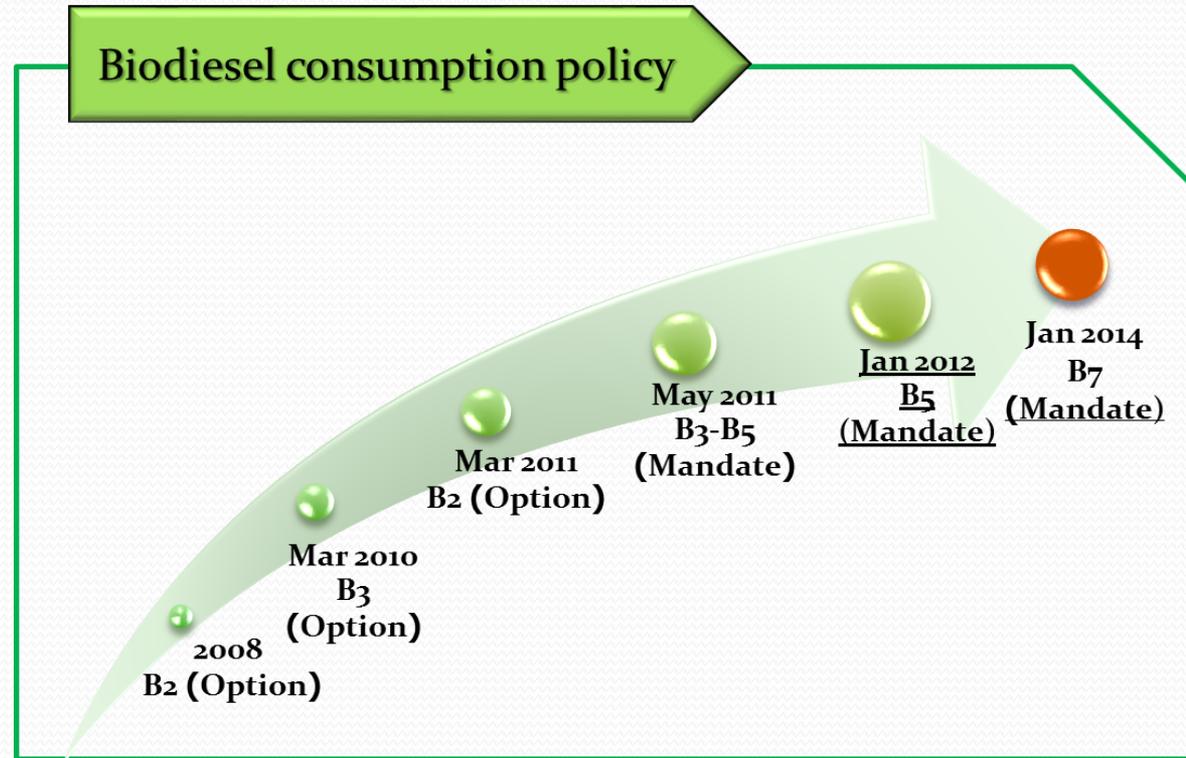


Biodiesel – Target 7.2 ML/day

Biodiesel situations



Biodiesel consumption policy



Dept. of Energy Business has announced policy
⇒ Biodiesel B7 (7% B100 blended)
⇒ since January 2014

Biodiesel – Target 7.2 ML/day

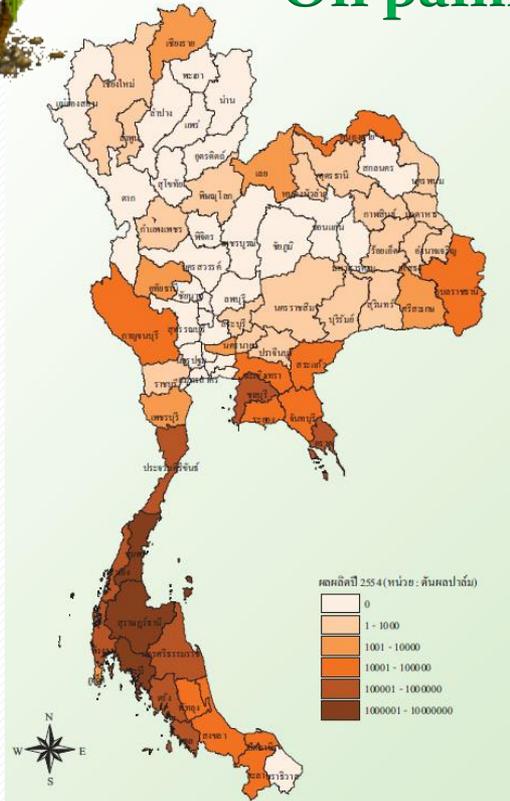
Biodiesel policies

There are only some certain area suitable for oil palm plantation in Thailand (e.g. such as Southern and Eastern part)

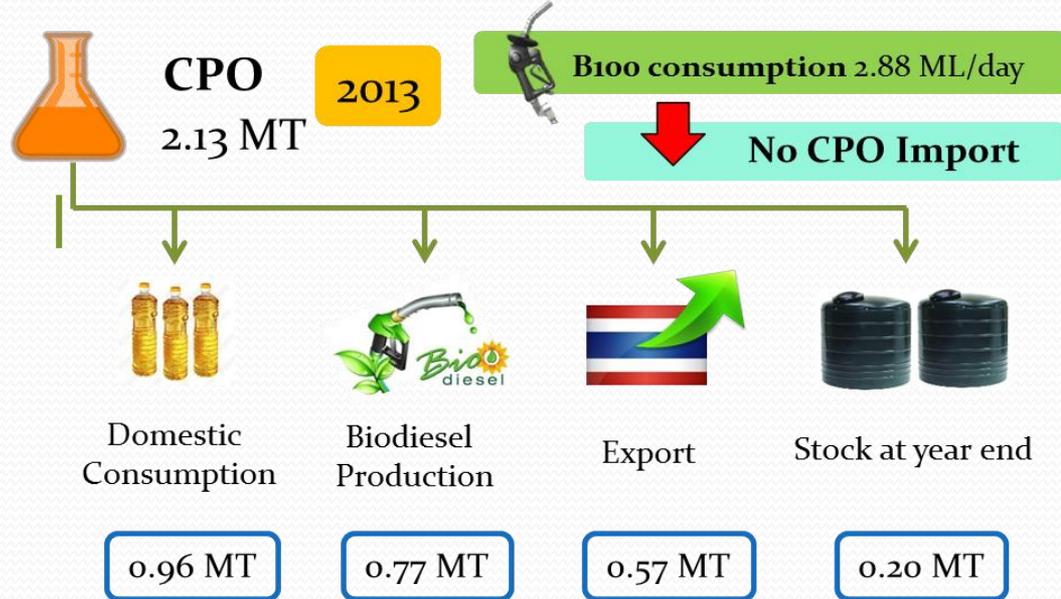
Oil palm plantation = ~ 7,520 sq.km
= ~ 4.77% arable land in Thailand



Oil palm

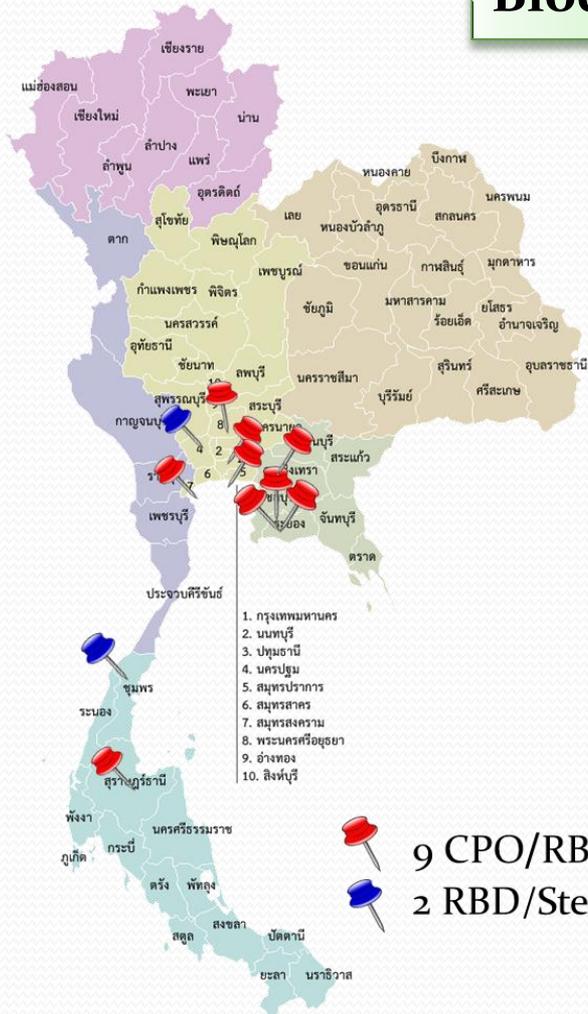


Oil palm plantation in Thailand

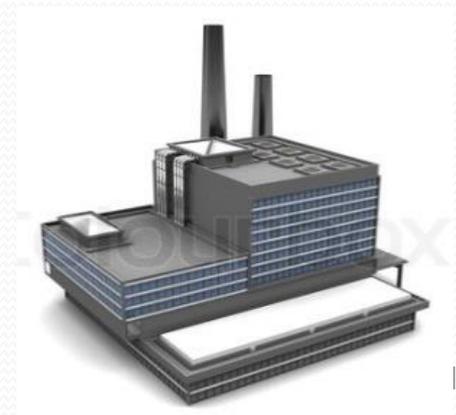


Biodiesel – Target 7.2 ML/day

Biodiesel production capacity



Feedstock	Registered capacity	
	No. of factories	Capacity (ML/day)
CPO/RBDPO/Palm stearin	9	4.56
Palm stearin	2	0.40
Total	11	4.96



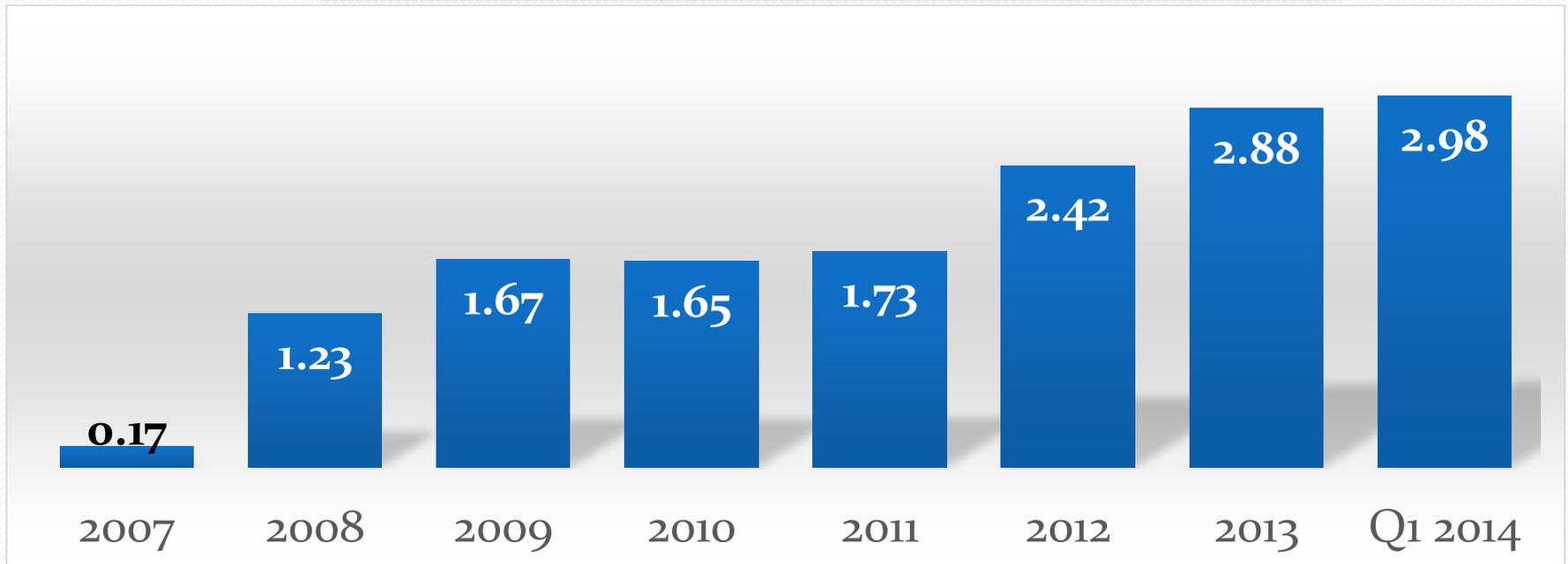
Biodiesel – Target 7.2 ML/day

Biodiesel usage



Thailand mandated 7% biodiesel (B7) blend for every liter of diesel sold since Jan 2014

Average daily usage of biodiesel (B100)



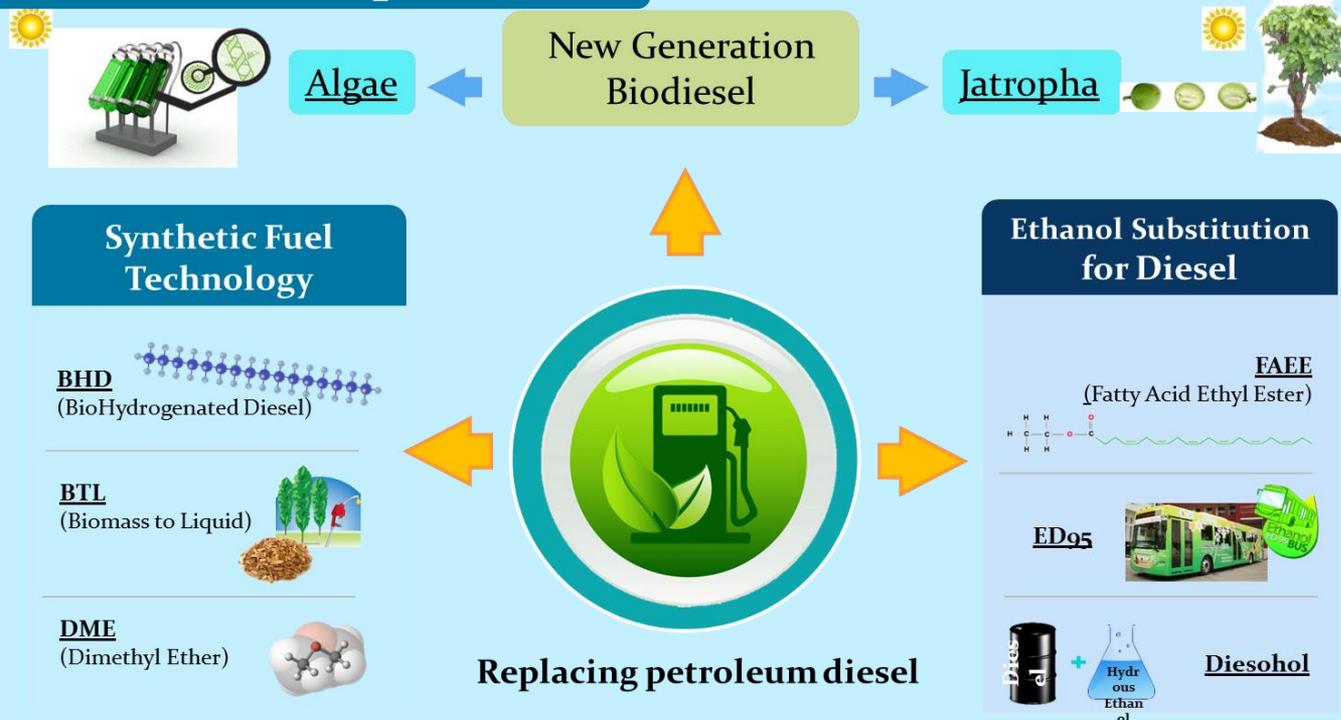
Biodiesel – Target 7.2 ML/day

Biodiesel policies

Biodiesel

- Ministry of Energy launched B7 beginning in Jan 2014

Advanced Biofuel to replace diesel





Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY



BIOFUELS

**BETTER FOR
PEOPLE
BETTER FOR
THE WORLD**

Thank you