

Cash Crop Conference: 30 June 2016, Eastin Grand Hotel, Bangkok

'Thai sugar industry'

Challenges, trends and current development affecting the industry

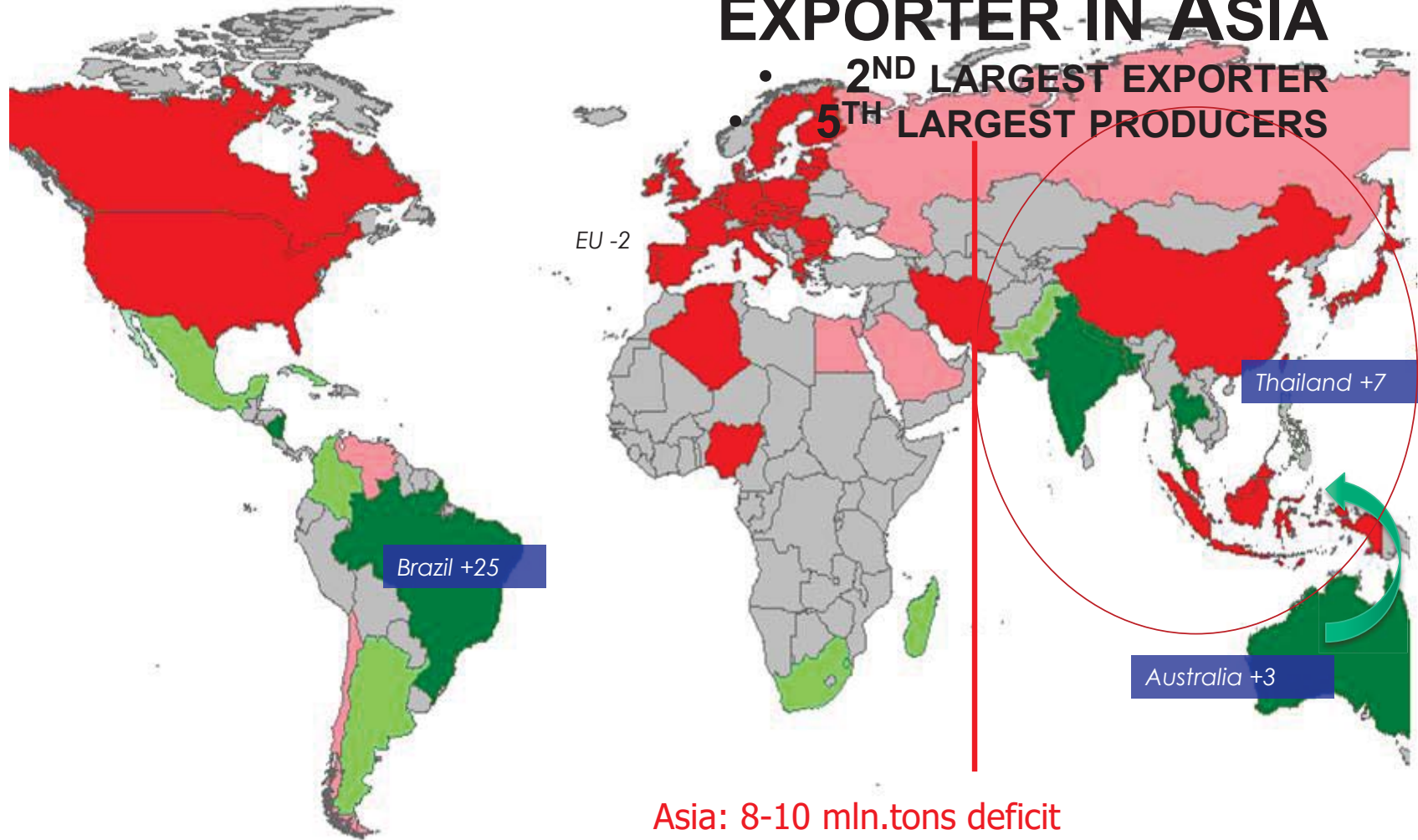


**Cane-natural
and more than sugar**



Rangsit Hiangrat
Director-General
Thai Sugar Millers Corp., Ltd.

THAILAND: THE ONLY NET SUGAR EXPORTER IN ASIA



Cane and Sugar Act B.E. 2527 (A.D.1984)

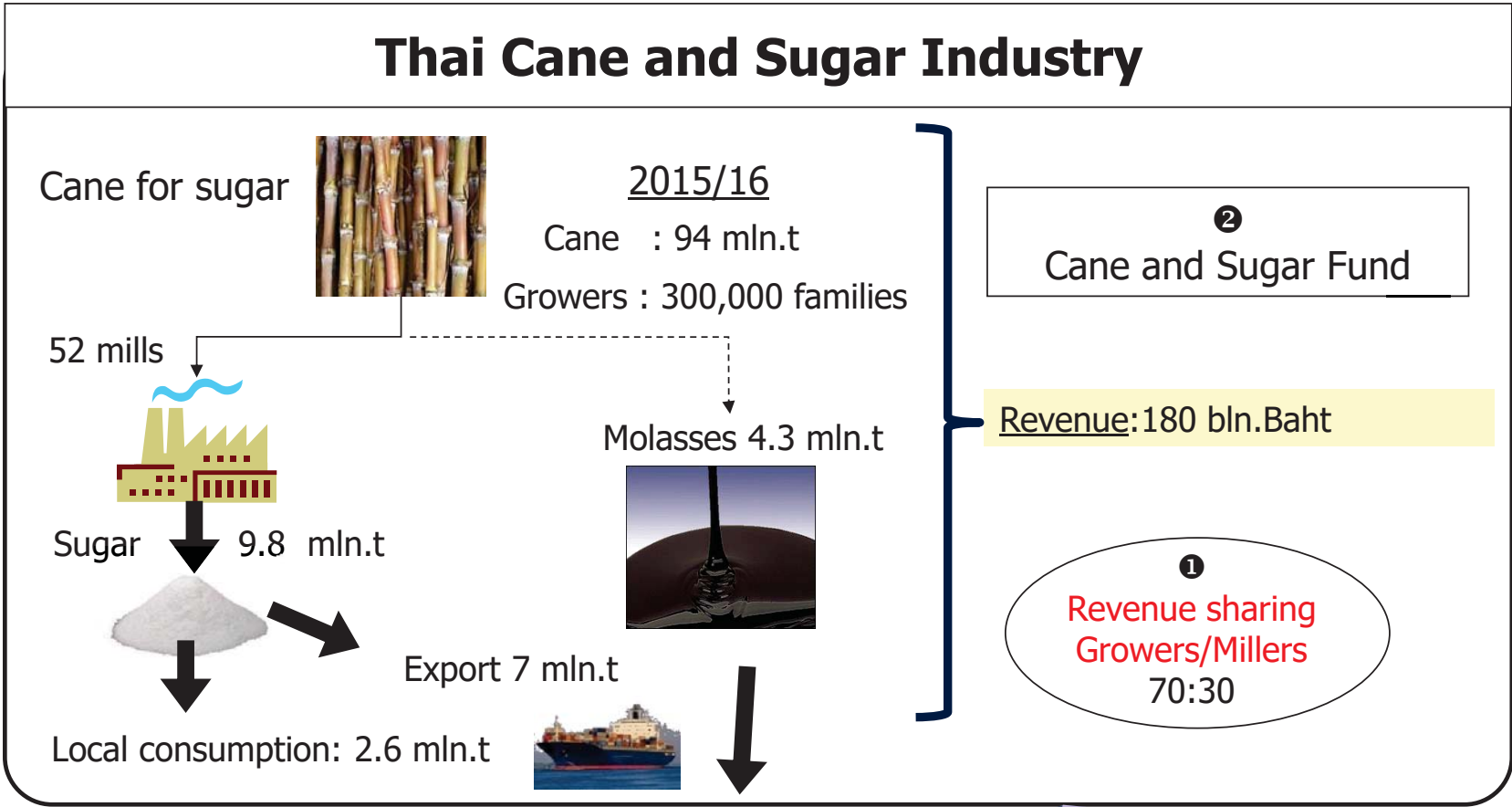


Thai Cane and Sugar industry:

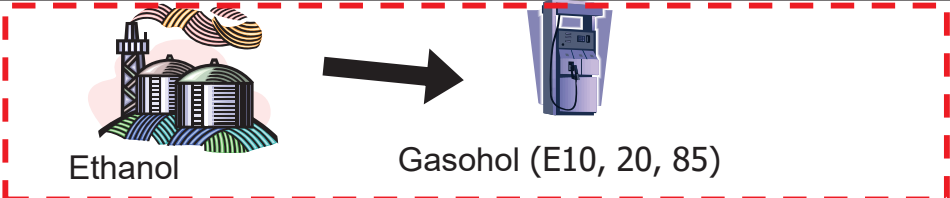
- **300,000 families of cane growers**
- **33 Cane growers associations**
- **3 Sugar millers associations**
- **1.5 million workers in related businesses and industries**
- **Generates 6 Bln.USD yearly from local sales and export**



Cane and Sugar Act B.E. 2527 (1984)



Ethanol
Not governed by the Law



Thai Sugar mills

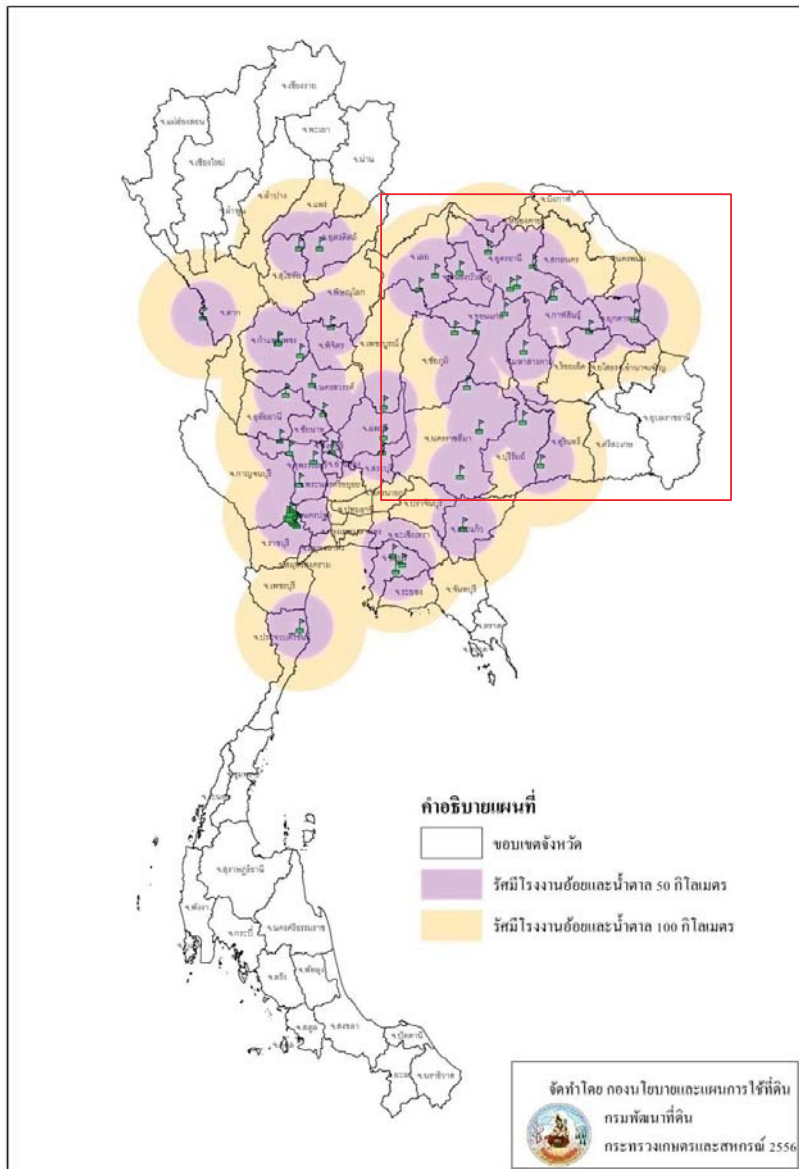


Source: Ministry of Industry

- Mills : 52
- Cane areas: 49 provinces
1.6 mln.ha

- Rules for new mills:
 - 50 kms distance between new and existing mills
- Mills crushing capacity:
 - 1 mln.tcd
- New mills coming: +300,000 tcd



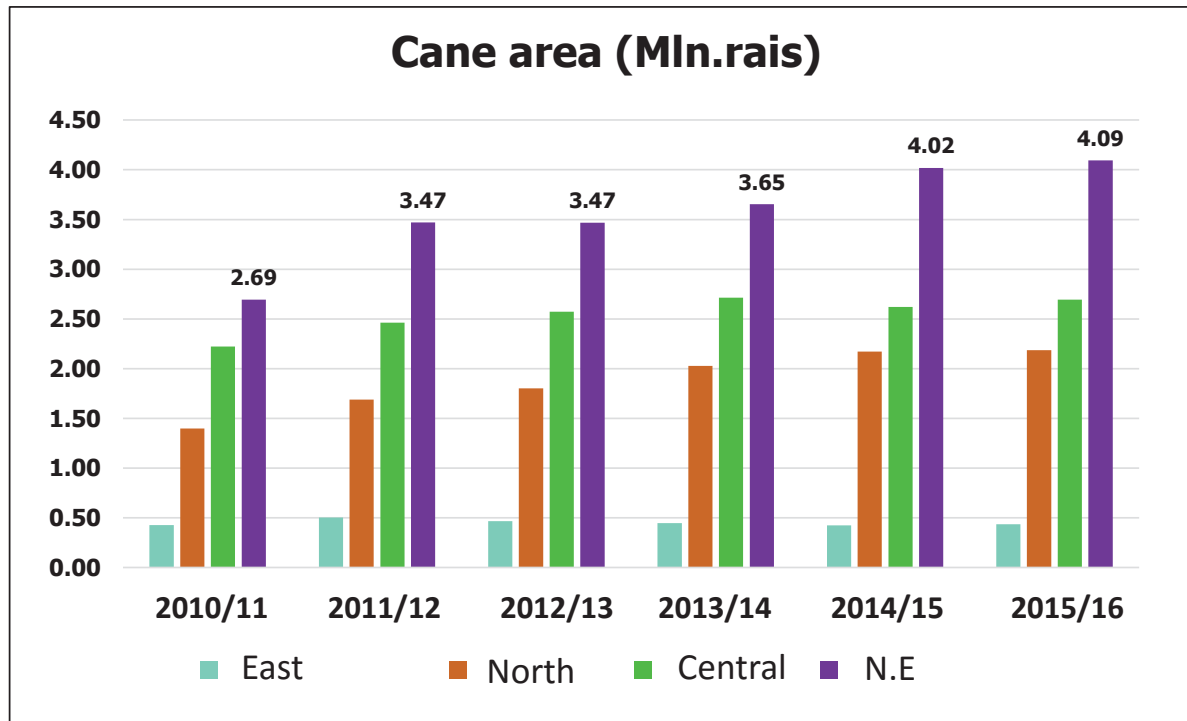


Cane Zoning



- Areas within 50 km. radius
- Areas within 100 km. radius





หน่วย : ล้านไร่

ที่มา: สอน.

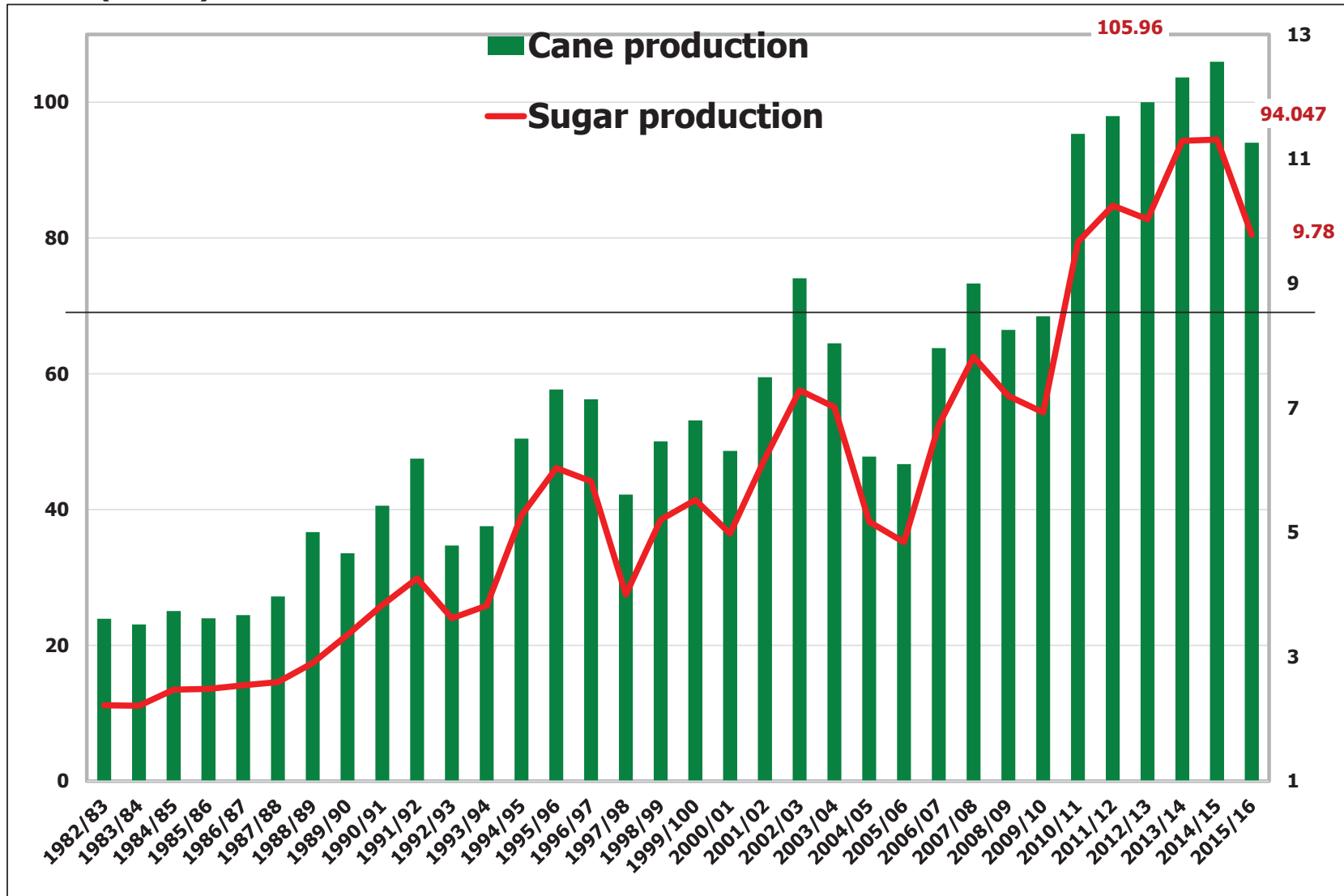
	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Cane areas	6.74	8.12	8.31	8.84	9.23	9.59	10.28



2015/16 crop: Production decrease in the last 5 years

Cane (M.tons)

Sugar(M.tons)



Challenges: Climate change

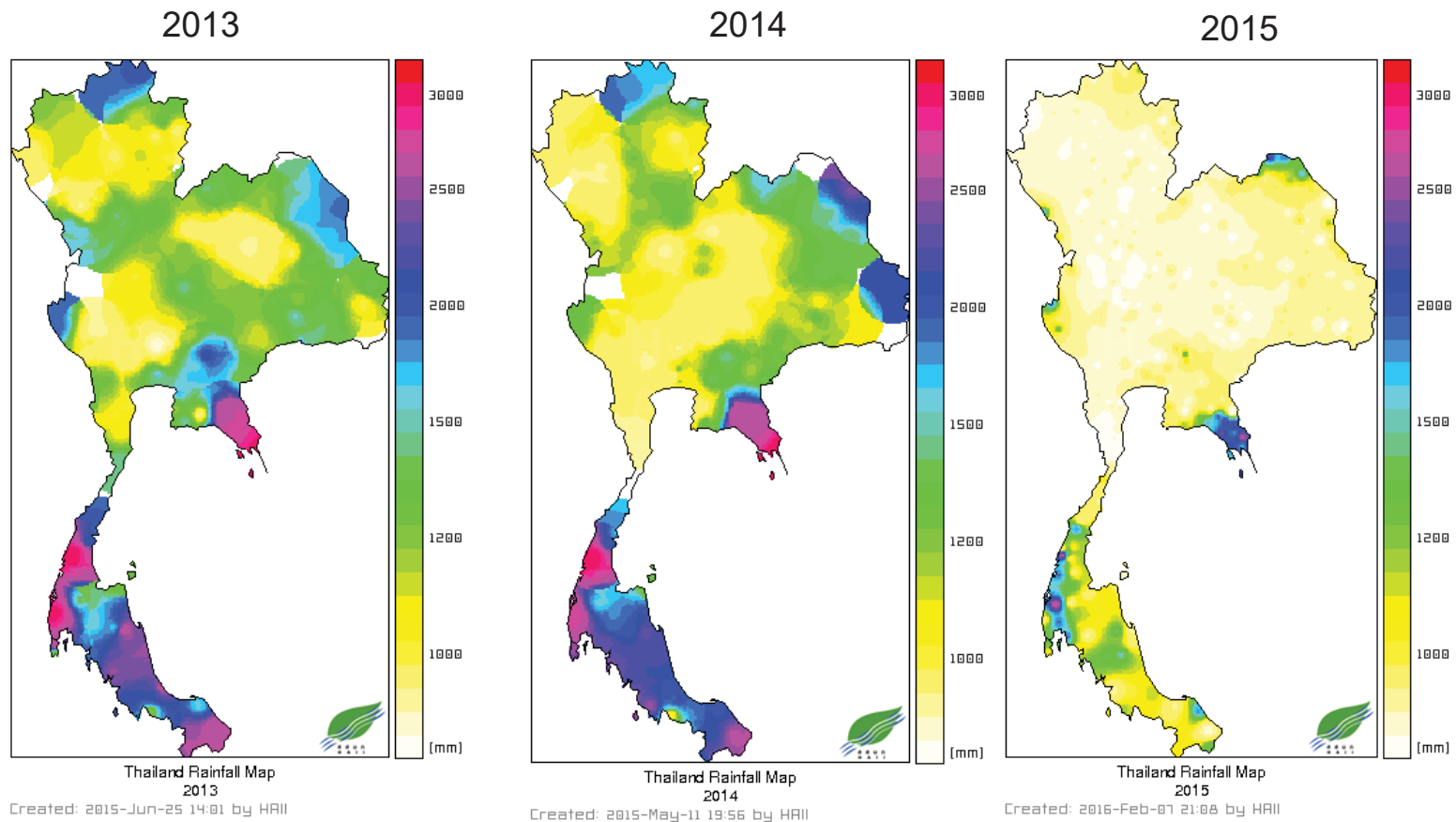
- Water crisis
- Drought, Flood, and pest



Unsustainable supply of cane delivery to mills

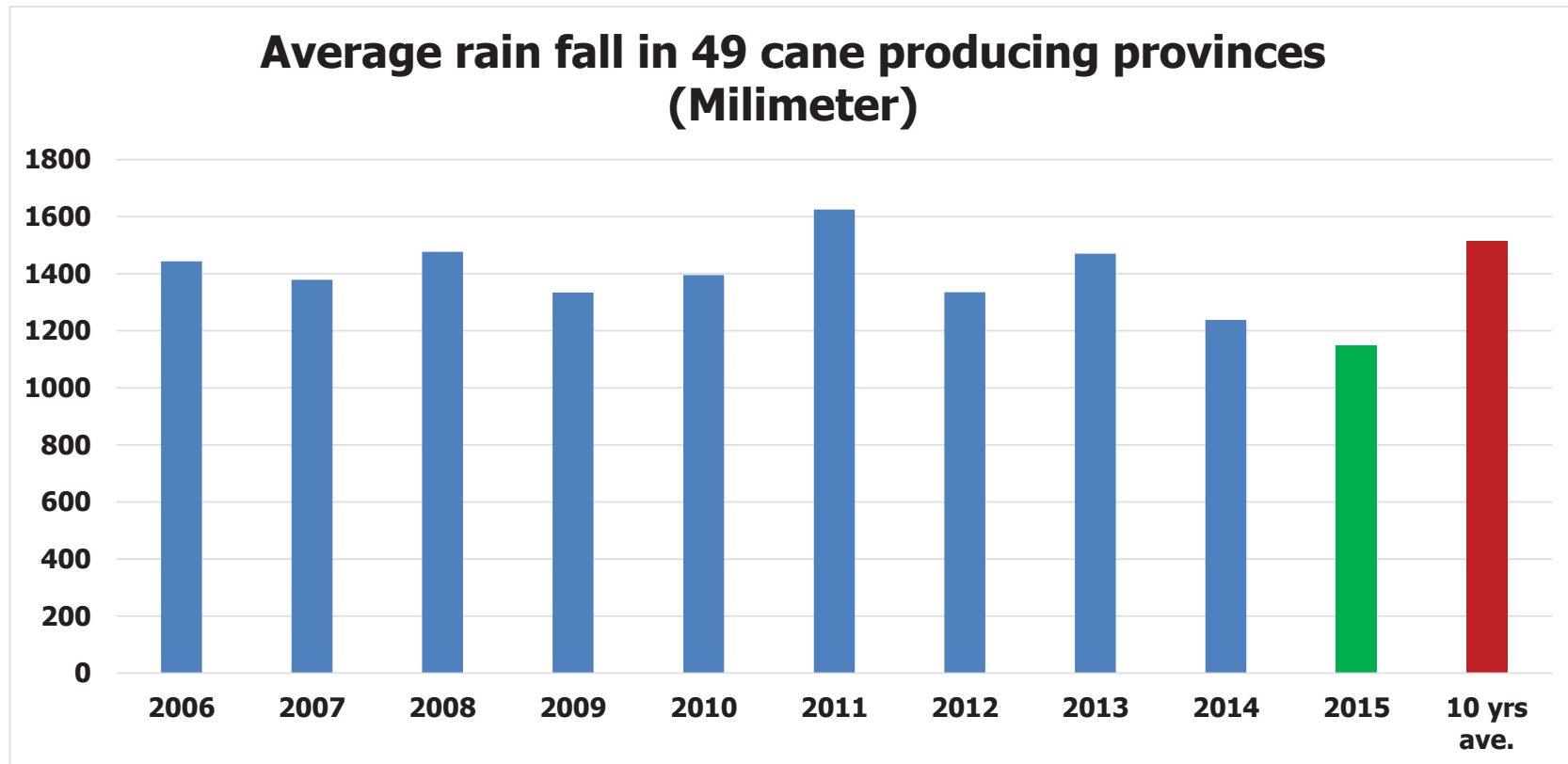


Yearly Rainfall 2013, 2014 and 2015



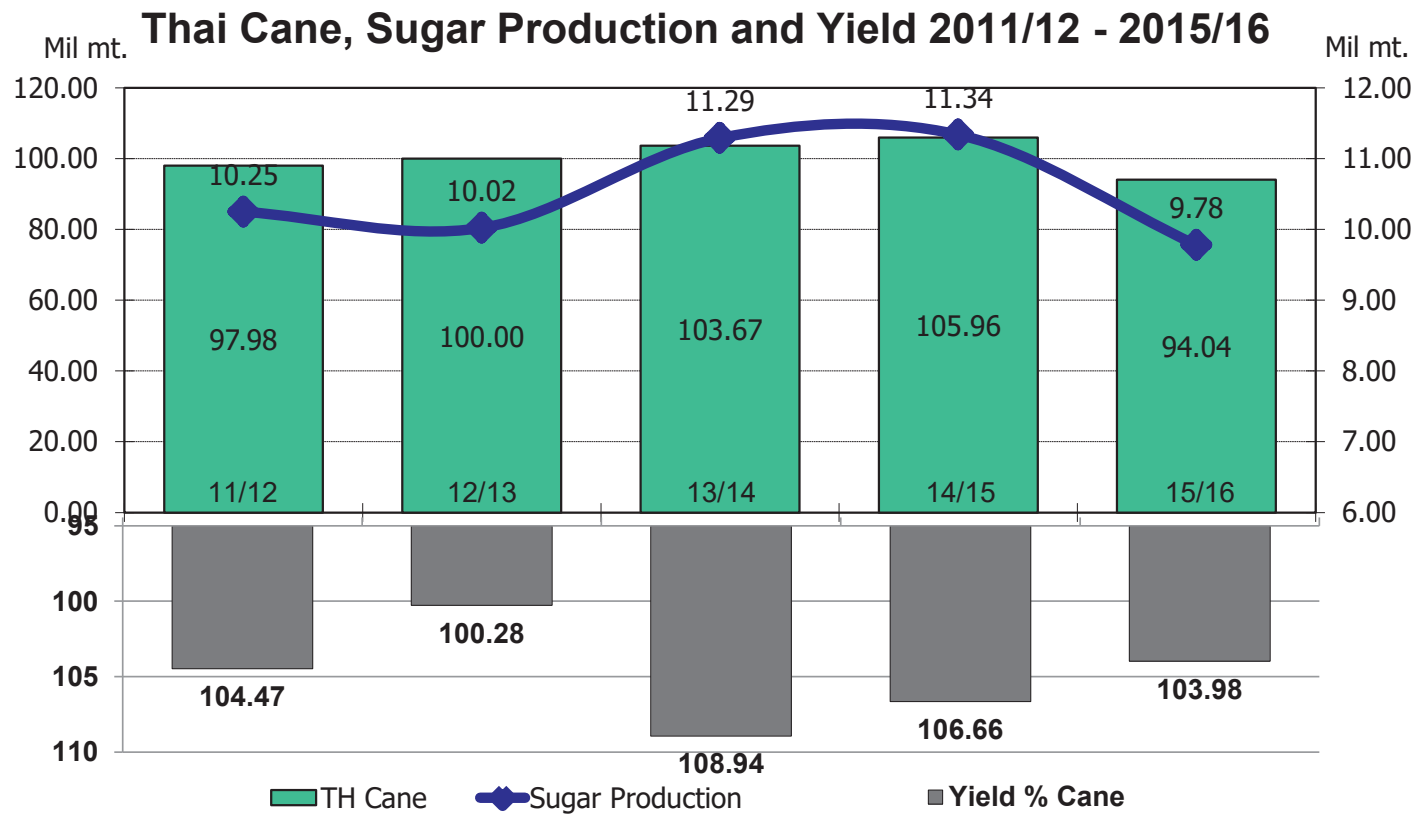
Source: Thai Meteorological Department (TMD)

Climate change: Drought & flood



Thai Cane and Sugar Production

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Farm productivity

Crop yr	Cane Production	Cane Area	Cane yield
	(Mln.t)	(Mln.ha)	(t/ha)
2007/08	73.31	1.00	74
2008/09	66.46	1.03	65
2009/10	68.48	1.08	64
2010/11	95.36	1.30	73
2011/12	97.98	1.33	74
2012/13	100.00	1.41	71
2013/14	103.66	1.48	70
2014/15	105.96	1.51	70
2015/16	94.05	1.64	57.15



Crop prediction 2016

“A prosperous economy, plentiful water and abundant food were predicted during this year's Royal Ploughing Ceremony at Sanam Luang Royal Ground on 9 May 2016”



The sacred oxen were offered seven bowls containing grass, paddy, maize, sesame seeds, soy bean, water and liquor. The oxen ate paddy and maize, leading to the prediction that there will be plenty of food and sufficient water for agriculture; that communication and foreign trade will improve, leading to a prosperous economy.

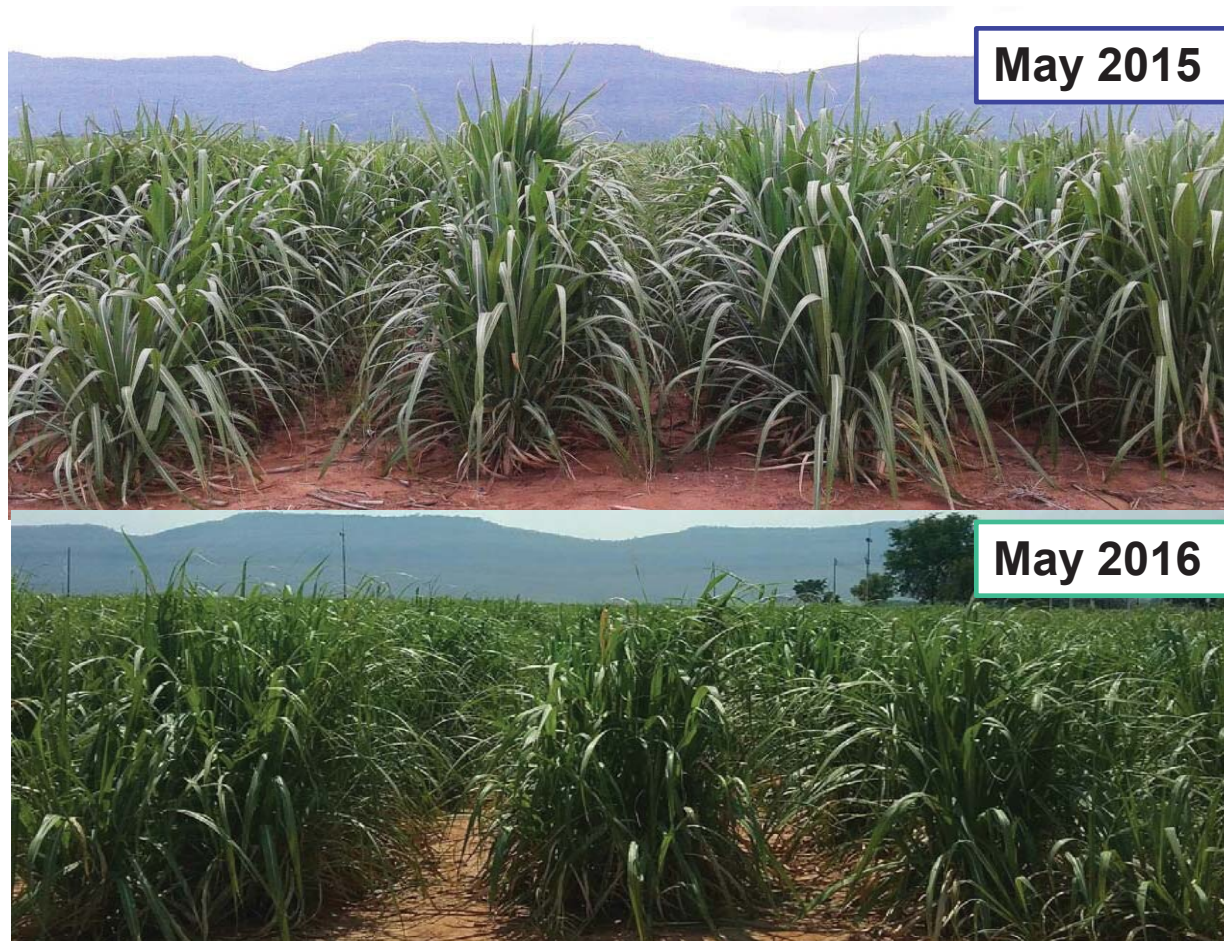
Comparing Cane Condition in May 2015 vs. May 2016

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Comparing Cane Condition in May 2015 vs. May 2016

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Challenges: Competing crops

Economic crops
Rice, cane, cassava, palm oil, maize



Country's total land: 51 mln.ha

- **Agricultural land: 24 mln.ha (47%)**
- **Non agricultural land: 16.2 mln.ha (20%)**
- **Forest: 17 mln.ha (33%)**

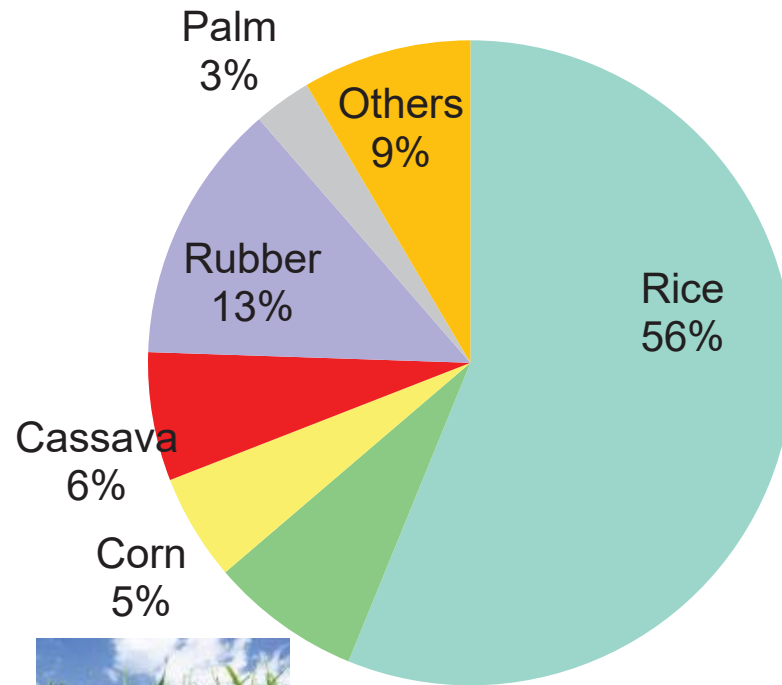
Challenges: Competing crops

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- **Sugarcane: 8% of total of Agricultural land.**
- **With the current cane price, cane is considered reasonable attractive compare to other crops**

Cane vs. Other Crops



Competing crops

Major crops areas

	Year 2014	Year 2015*	% Δ
In season rice	60.54 mln.rais	55.95 mln.rais	- 7.58%
Off season rice	15.06 mln.rais	8.49 mln.rais	-43.61%
Cassava	8.43 mln.rais	8.96 mln.rais	6.29%
Cane	9.08 mln.rais	9.59 mln.rais	5.6%
Maize	7.29 mln.rais	7.24 mln.rais	-0.70%
Rubber	18.22 mln.rais	18.85 mln.rais	3.41%
Palm oil	4.15 mln.rais	4.40 mln.rais	6.09%

Source: Office of Agricultural Economics

Remarks * Estimation (Nov 2015)

Economic Crops Zoning

**(Rice, corn, palm oil,
cane and cassava)**



New potential area for cane

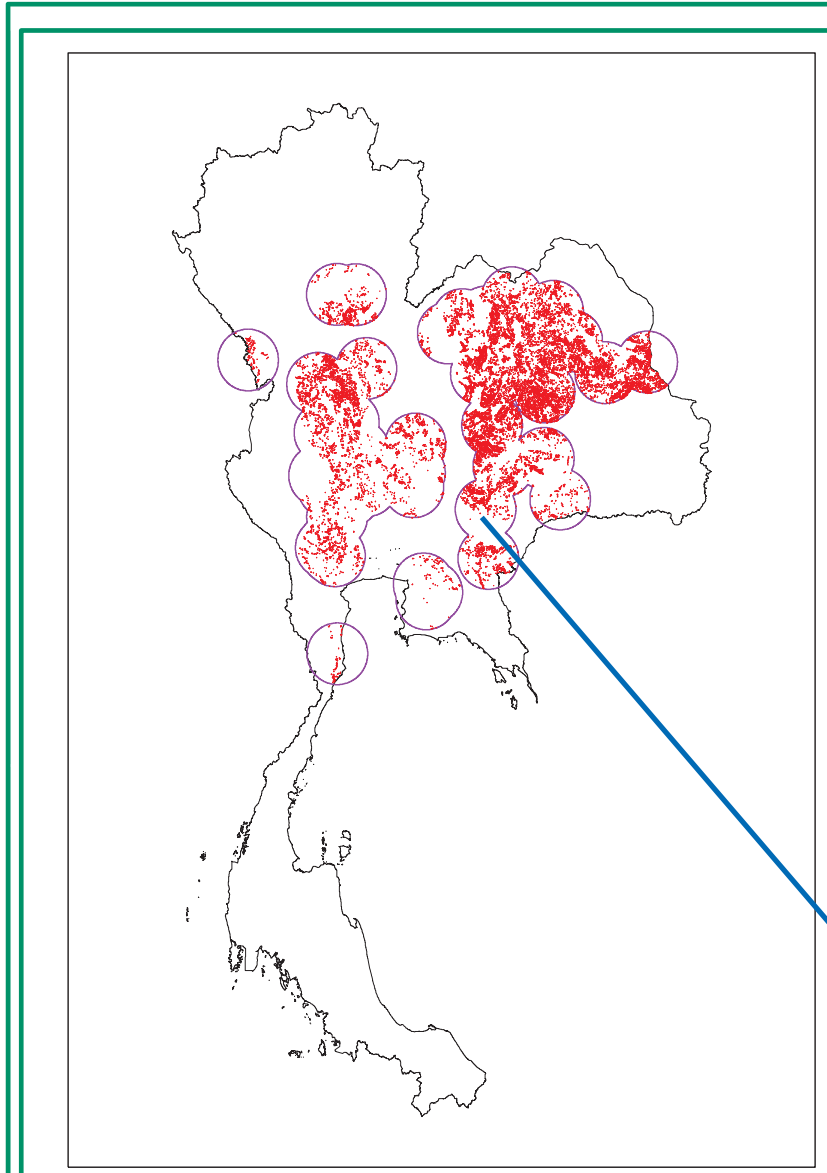


- Land unsuitable for rice
- Current area **4.4 m.ha.**

- Potential area for cane
- **1.07 m.ha.**

- Area within 50 kms radius from the existing mills

- New areas for cane
- **0.7 m.ha.**



Cane and Sugar Industry Roadmap 2014-2026

2013/14



- Cane area 10.07 mln.rais
- Farmer/labor: 1 mln.
- Cane: 103.67 mln.tons
- Sugar: 11.29 mln.tons
- Ethanol: 2.5 ML/D
- Electricity: 1,542 MW
- Revenue 200,000 mln.Baht

- Improve productivity and efficiency at farms and factories
- Diversification

Supply/Demand

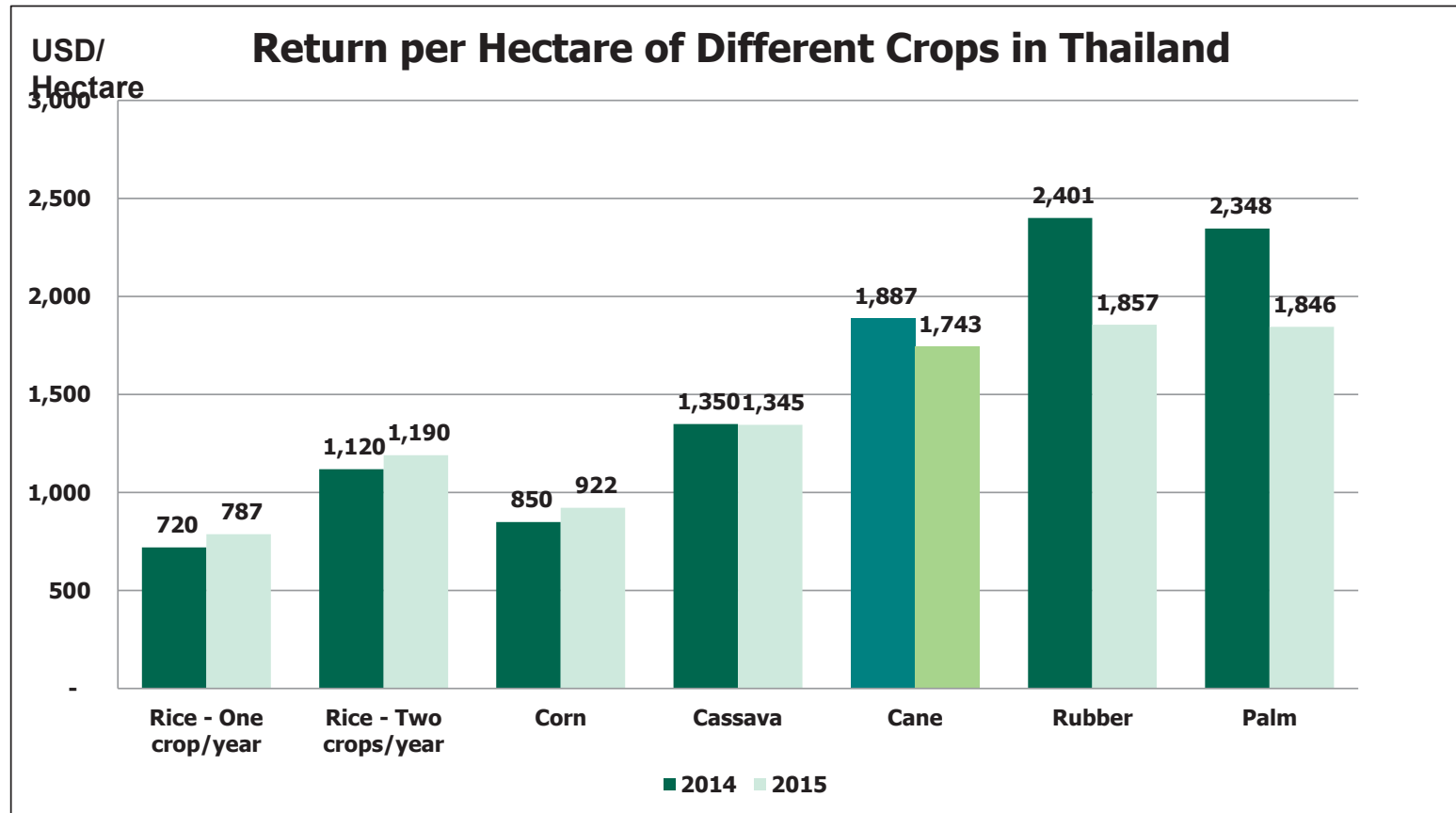


- Cane area: 16 mln.rais (Modern Farm)
- Cane 180 mln.tons
- Sugar 20 mln.tons for Bioenergy+industry
- Ethanol 5.4 ML/D
- Electricity 4,000 MW (Hi-pressure boiler)
- Revenue 450,000 mln.Baht

Competing crops

Crop Comparison: USD/hectare

* Based on FX Rate: 1 USD = 35.24 THB



Source: Data from Office of Agricultural Economics

Challenges: Cane logistics





Challenges: Lack of cane varieties

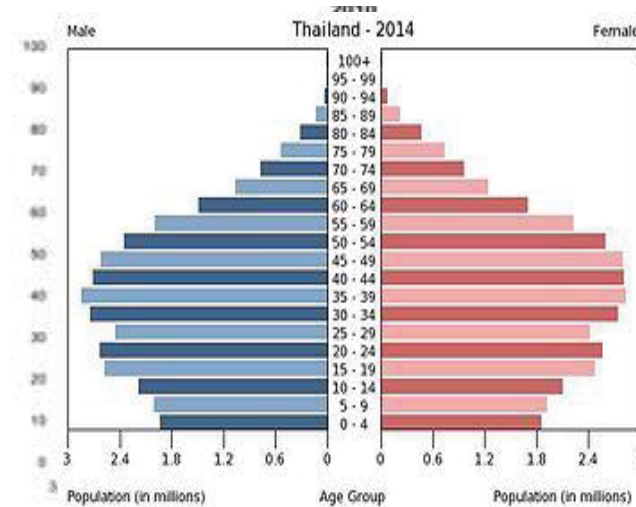
Thailand Sugarcane Breeding Center (TSBC)



Challenges: *Aging population* *Shortage of labor*

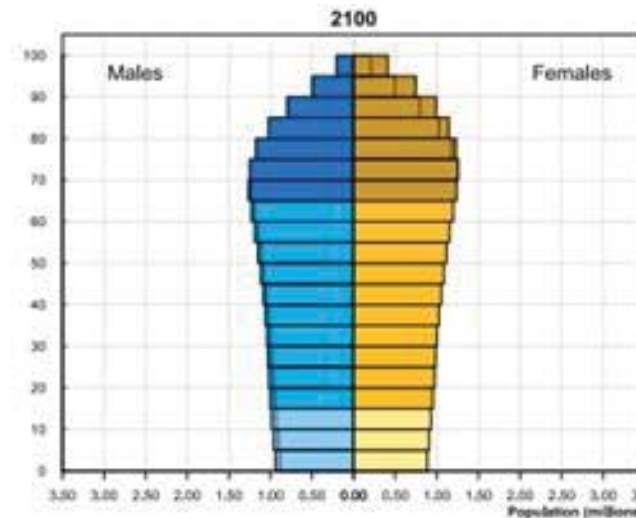


Thailand population structure



Thailand population

- 65 mln people
- 7.5 mln above 65 (11%)
- 49 mln working age
- Working age will decrease by 11% in the next 25 yrs



Challenges: Small scale farms unsuitable for mechanization



Millers+Farmers+(Government) collaborative programs

Productivity improvement

- Farm mechanization
- Farmers' capital access
- Irrigation development
- Cane variety development
- Diversification
- R&D
- Go green

Soft loan for:

- Small irrigation scheme
- Harvest mechanization
- Crop management



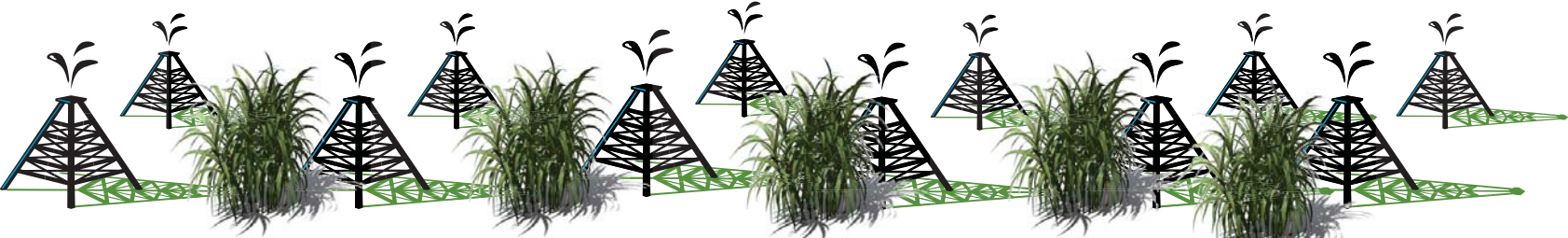
Challenges

Diversification Bioenergy/biochemical



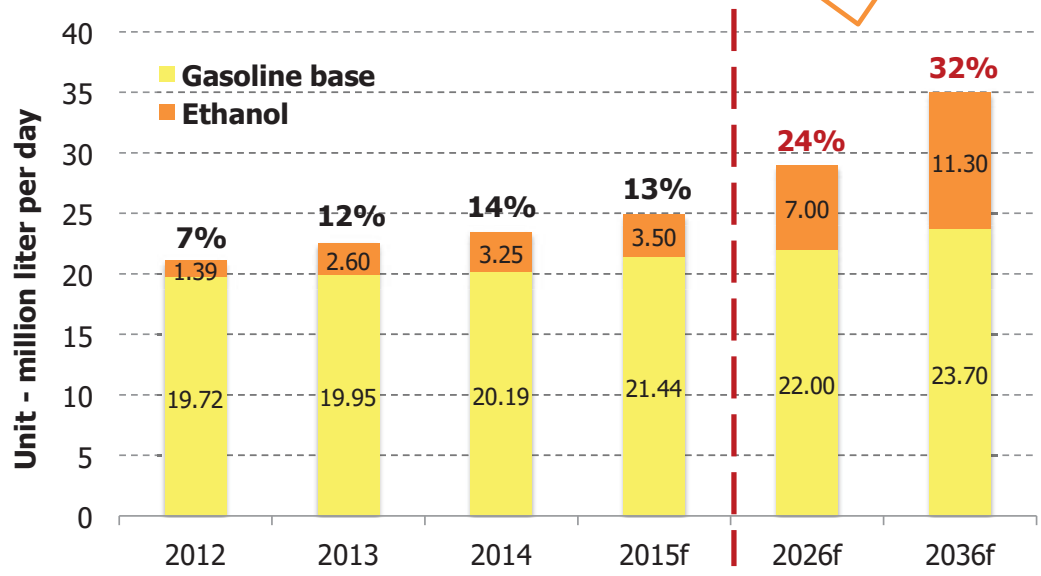
Alternative Energy Development Plan (AEDP)

Target: 25% use of AE by 2064



AEDP 2015: Strategy

Ethanol Consumption Target
In 2026 = 7.0 MLPD
In 2035 = 11.3 MLPD



Action Plan

- Technology development
- Second generation biofuels
- Automotive technology for high blending ratio
- Conversion kit for any old cars, motorcycles and buses to capably fuelled by E20 or E85
- Price structure to create incentives for the user/producers
- Investment promotion on renewable energy
- Promote FFV Car by reducing excise tax.
- Reducing the cost of production and transportation.



Regular ULG 95

Source: Ministry of Energy

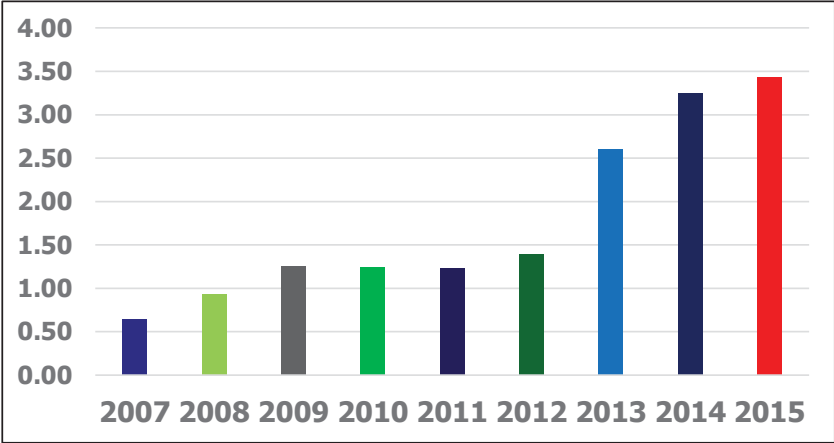
Diversification

Ethanol Plants

Existing Companies	Installed cap. (Liters/day)	Raw mat.
1. Thai Ethanol	100,000-	Molasses
2. Thai Alcohol	200,000-	Molasses
3. Thai Agro Energy	150,000-	Molasses
4. Thai Ethanol Power	130,000-	Cassava
5. Khon Khan Alcohol	150,000-	Molasses
6. Mitrphol Biofuel (Chaiyabhum)	500,000-	Molasses
7. E 85	250,000-	Molasses
8. KI Ethanol	100,000-	Molasses
9. Mitrphol Biofuel (Kalasin)	230,000-	Molasses
10. Akarat Pattana*	230,000-	Molasses
11. Thai Roong Ruang Energy	120,000-	Molasses
12. Ratburi Ethanol Co., Ltd.	150,000-	Cassava
13. ES Power Co., Ltd.*	150,000-	Molasses
14. Mae sord Co., Ltd.*	230,000-	Cane
15. Sapthip Co., Ltd.	200,000-	Cassava
16. Tai ping Ethanol Co., Ltd.	150,000-	Cassava
17. P.S.C. Starch Product Plc.	150,000-	Cassava
18. Mitrphol Biofuel (Danchang)	200,000-	Molasses
19. Khonkaen Alcohol (Bo Ploy)	200,000-	Molasses
20. Thai Agro Energy 2	200,000-	Molasses
21. Ubol Bio Ethanol	400,000-	Cassava
21 plants	4,190,000	

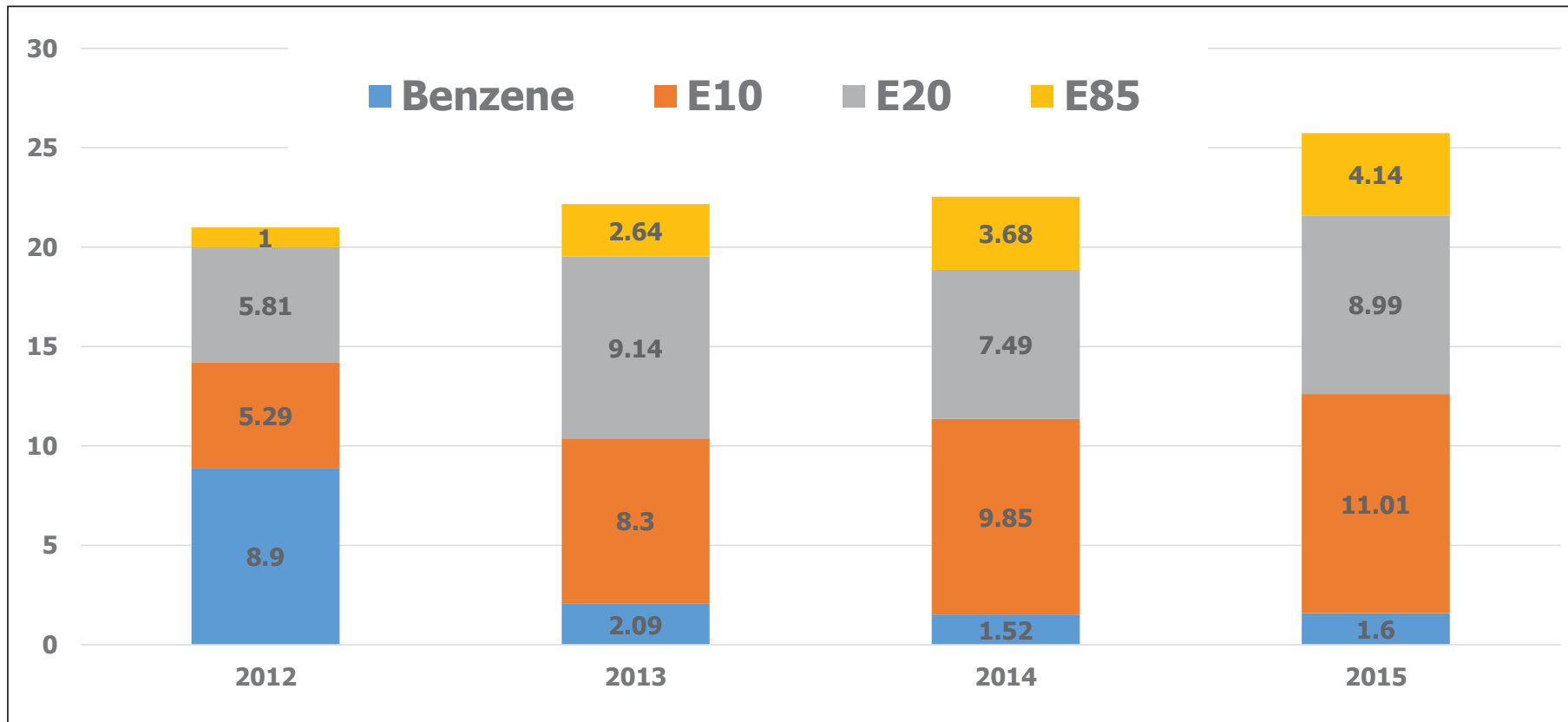
21 Existing projects (4.19 ML/D)
 14 molasses-based
 1 cane-based
 6 cassava-based

- Ban on ULG 91 in Jan 2013
- Rising demand of E10, E20 and E85
- Current demand rises above 3.5 mln./D



Feedstock (Mln.tons)		Ethanol production in 2015 (Mln.Litres)	
Molasses	2.89	694.30	66%
Cane juice	0.88	66.17	6%
Cassava	1.8	297.83	28%
Total		1,058.30	

Gasoline/gasohol (ML/Day)



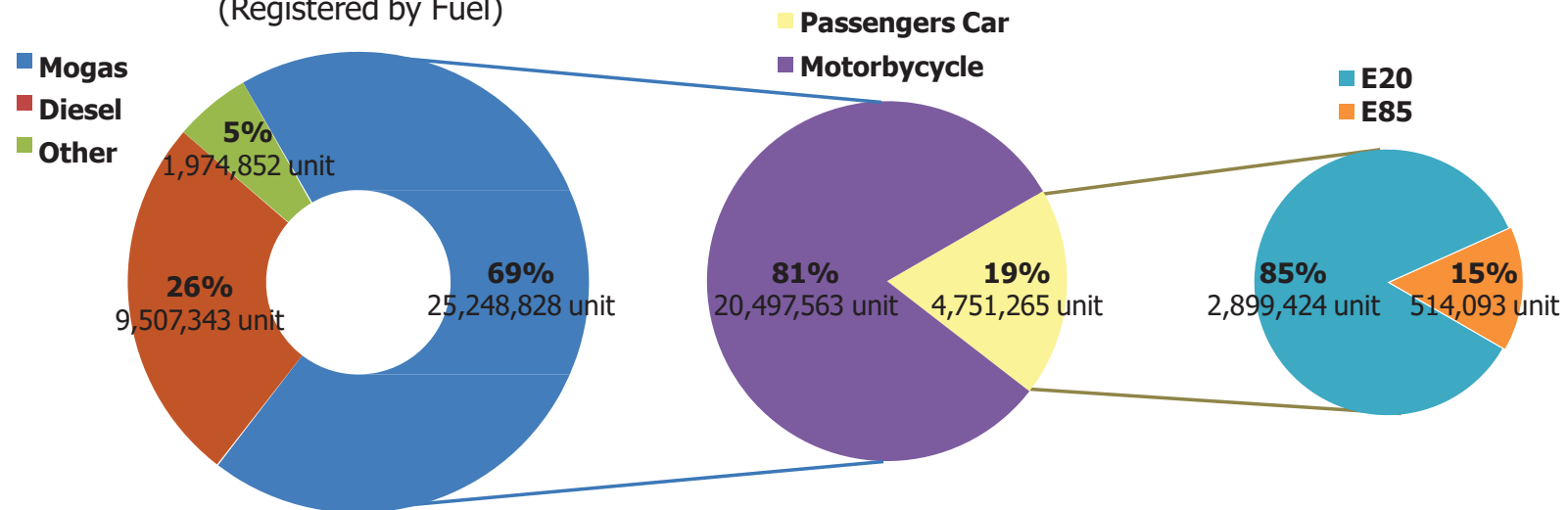
Demand Side – Number of Vehicles in Operation

Motorcycle	Passenger Car	Pick-up	Passenger Van	Bus	Truck Tractor	3 wheels Agriculture
						
20,497,563	7,854,295	6,135,571	428,083	153,757	1,533,272	128,162

As of Jan 2016

Total: 36,731,023 unit

**Number of Vehicles
(Registered by Fuel)**



Sugar Cogeneration

All 52 sugar mills generate electricity for internal use

- Most mills sell excess power to the grid during crushing season under non firm contract (total capacity: 1600 MW)
- Firm contract sales to the grid: 500 MW
- Most coming projects will attach ethanol and cogeneration facilities

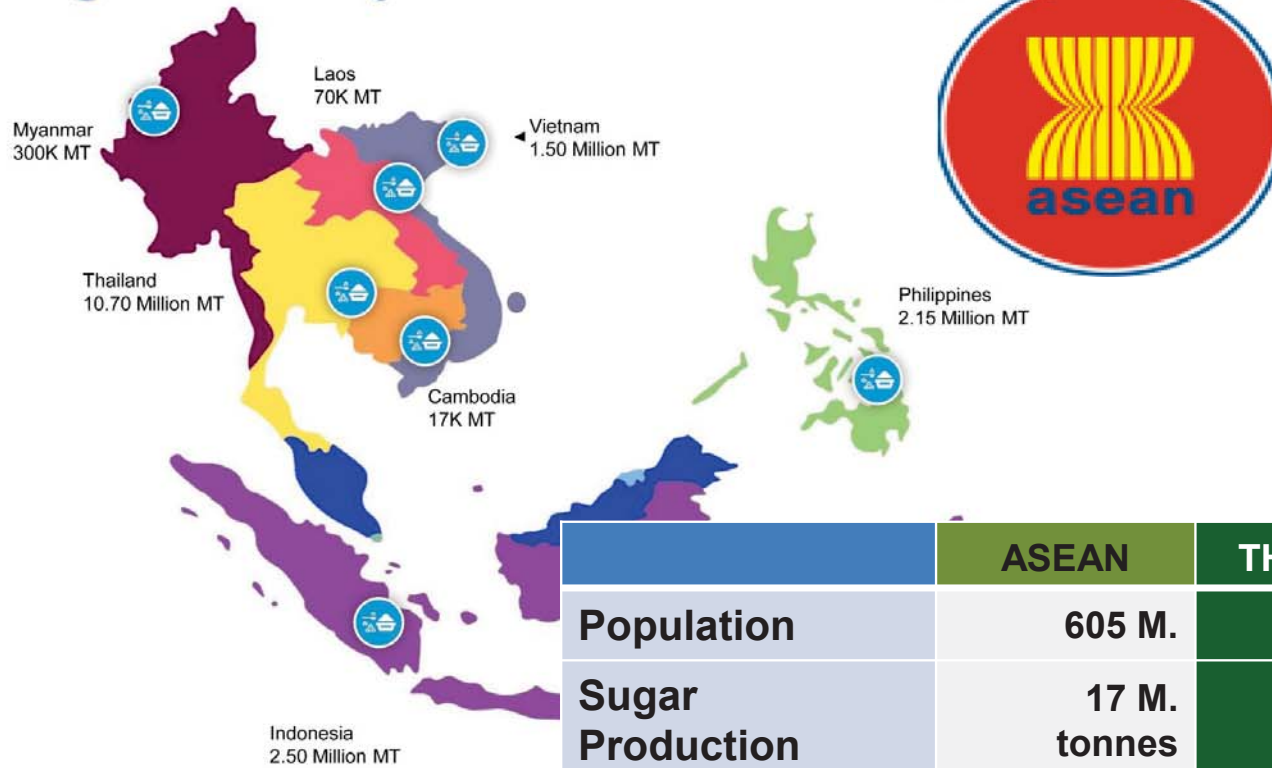


Challenges:



Thailand: bilateral and multilateral trade agreements

Sugar Industry in ASEAN – Production




	ASEAN	THAILAND
Population	605 M.	67 M.
Sugar Production	17 M. tonnes	10-11 M. tonnes
Imports	5-6 M. tonnes	0.0 M. tonnes
Sugar balance	Net import	Net export

สน

Thailand is the only net exporting in ASEAN

Net exporters	Self-sufficient countries	Net importers	No local production
Thailand	Myanmar Philippines Vietnam	Indonesia Cambodia Laos Malaysia	Brunei Singapore

ASEAN Sugar Balance in 2020 (8.5 Mln.tons deficit)

Country	Production	Consumption	S/D
	13,000	3,669	9,331
Philippines	2,600	2,751	-151
Indonesia	2,800	7,776	-4,976
Vietnam	1,700	2,120	-420
Singapore	0	312	-312
*Malaysia	0	2,000	-2,000
Myanmar	600	750	-150
Cambodia	25	346	-321
Laos	80	83	-3
Total	20,805	19,807	998

Unit: 1,000 tonnes

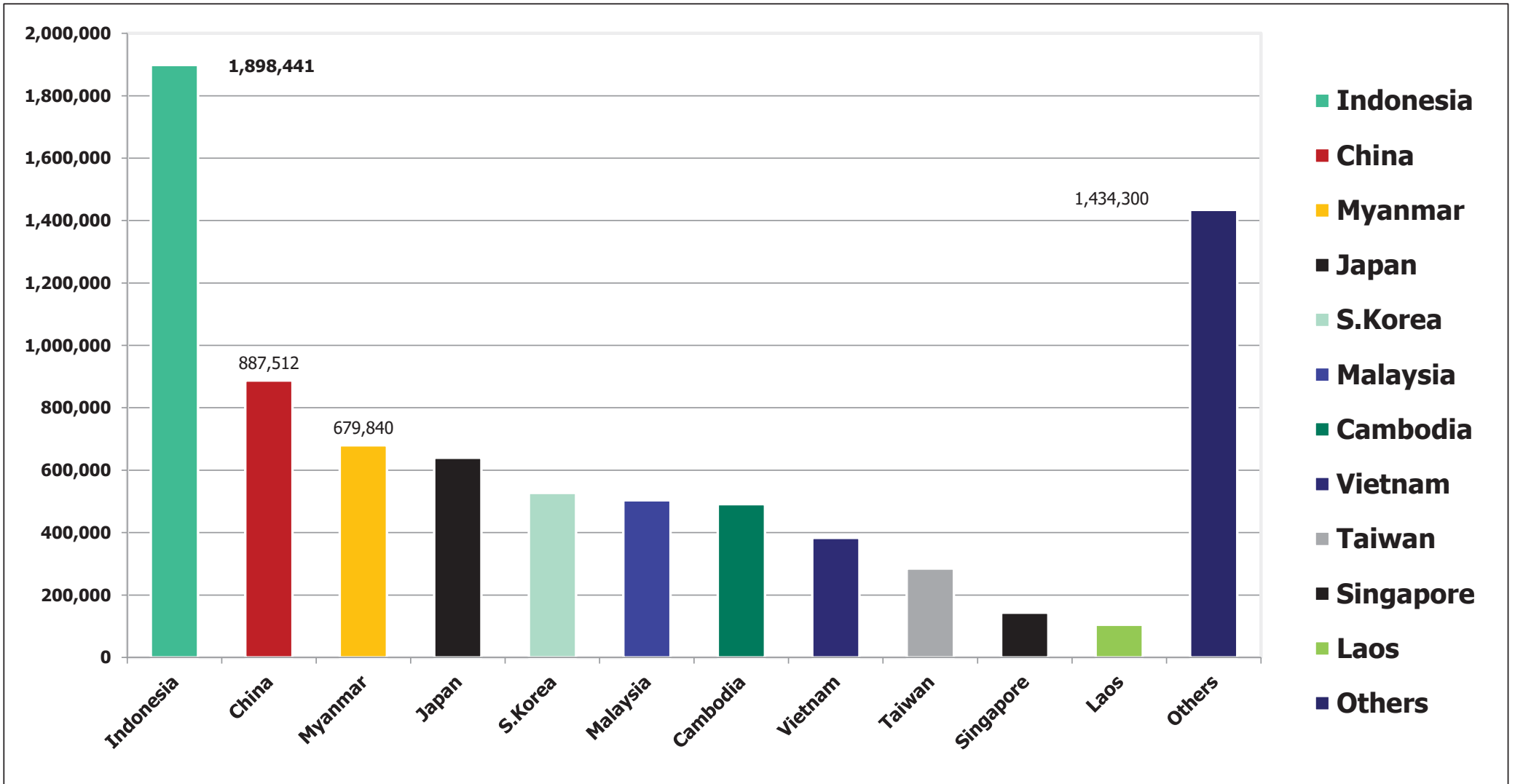
Thai Sugar Market



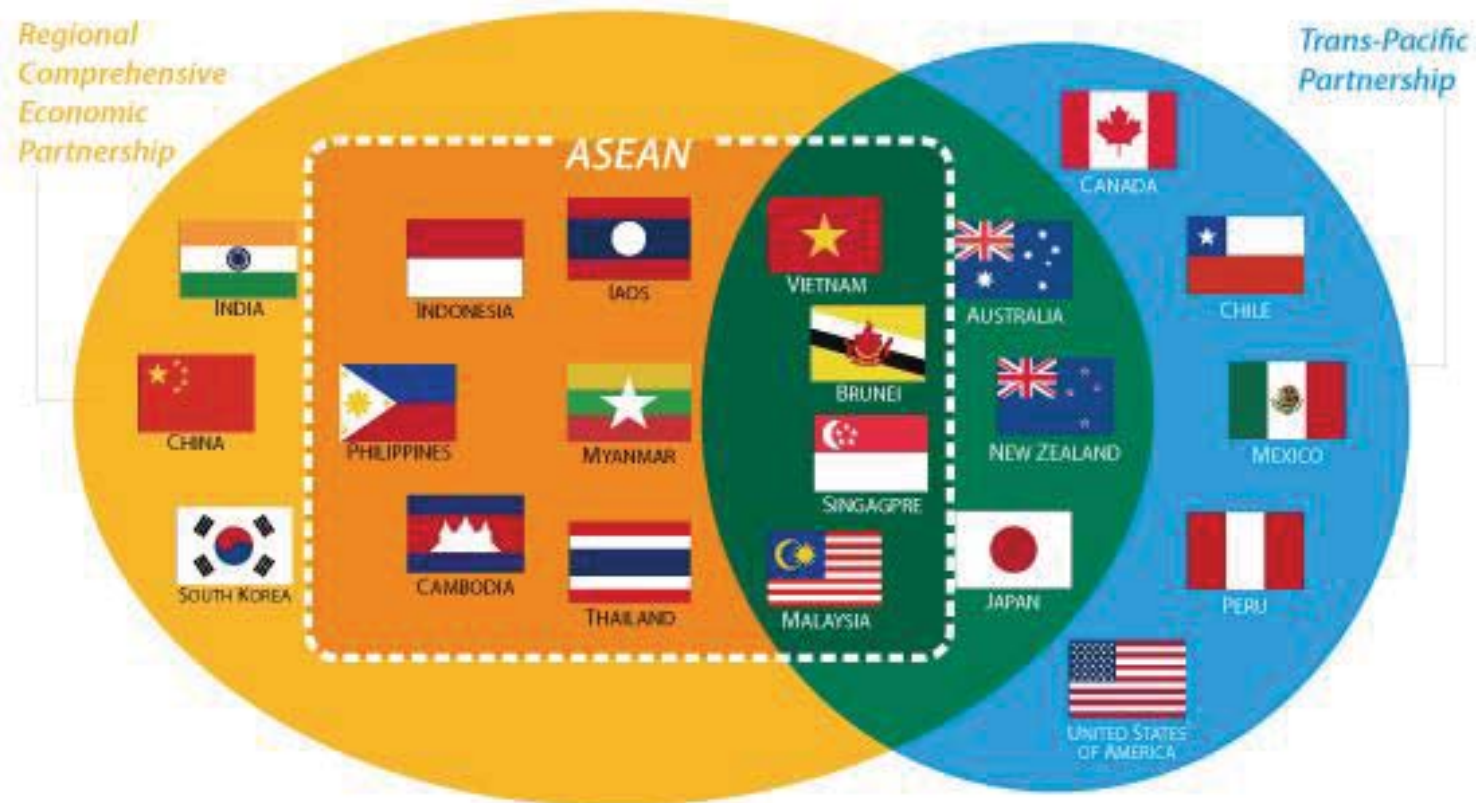
Thai Sugar Market	2011	2012	2013	2014	2015
Total (Tons)	6,681,070	7,544,398	6,517,727	7,363,004	7,978,025
Total Asia (tons) <i>(% of total export)</i>	5,981,089 <i>(90%)</i>	6,950,532 <i>(92%)</i>	5,677,726 <i>(87%)</i>	6,335,045 <i>(86%)</i>	6,884,371 <i>(97%)</i>
ASEAN(tons) <i>(% of total export)</i>	2,729,286 <i>(41%)</i>	3,591,812 <i>(47%)</i>	3,359,940 <i>(51%)</i>	3,443,045 <i>(47%)</i>	4,274,569 <i>(53%)</i>
Indonesia	1,316,049	1,869,417	1,781,116	1,746,595	1,898,441
Myanmar	33,579	46,955	109,990	131,381	679,840
Malaysia	343,702	455,106	326,164	681,460	503,636
Cambodia	389,208	599,585	651,578	533,830	491,005
Vietnam	289,757	331,207	265,365	123,755	382,849
Singapore	183,630	123,094	117,979	134,780	143,439
Philippines	121,821	76,599	71,129	49,375	64,059
Others ASEAN countries	51,540	89,849	36,619	41,869	111,300

Thai sugar markets in 2015

Unit: tons



ASEAN's Regional Free Trade Agreements (Proposed)

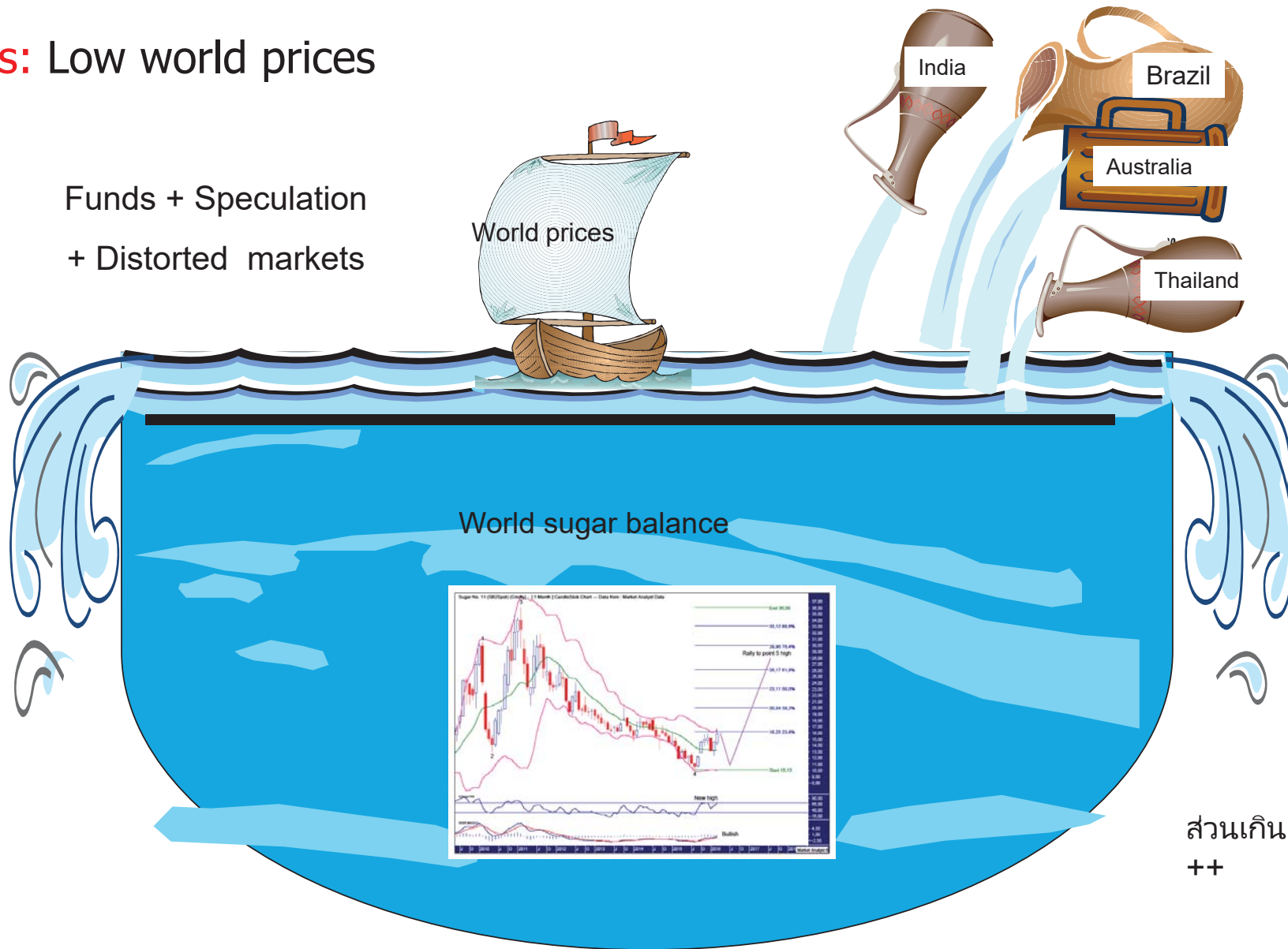


ASEAN-GMS connectivity Great Mekong Sub-region East West Economic Corridor



Challenges: Low world prices

Funds + Speculation
+ Distorted markets



Sugar & Health Issues in Thailand



Current Situations

Campaigns in public medias:

- * Less “sweet – fatty – salty” foods.
- * Thai Kids bye bye sweet
- * Less than 6 teaspoons of sugar for daily consumption



School campaigns on sugar



Maikinwan campaign :
Thai kids consume less sugar



Less than 6 teaspoons campaign



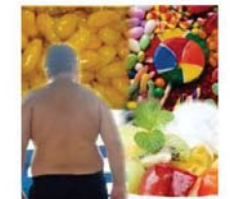
TVCs & Documentaries

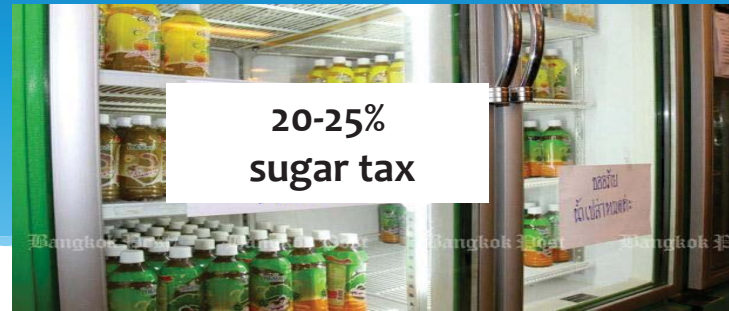
“Slender Thais Campaigns” Nutrition Dept., Ministry of Public Health



3 key success factors

- Less sweet
- More exercise
- Determination





➤ Taxing-by-sugar-content proposal for beverages

- * The National Reform Steering Assembly voted on 20 April 2016 on the sugar tax to keep people more healthy.
- * Fatness, heart disease & overburdened public hospitals from too much sugar in national diet to be fought with taxes.

Conclusion: Factors affecting Thai sugar industry

Weather development:
La Nina or El nino?



Licenses for New
Mills



Land availability...
Suitable for cane or not.



World Sugar Prices



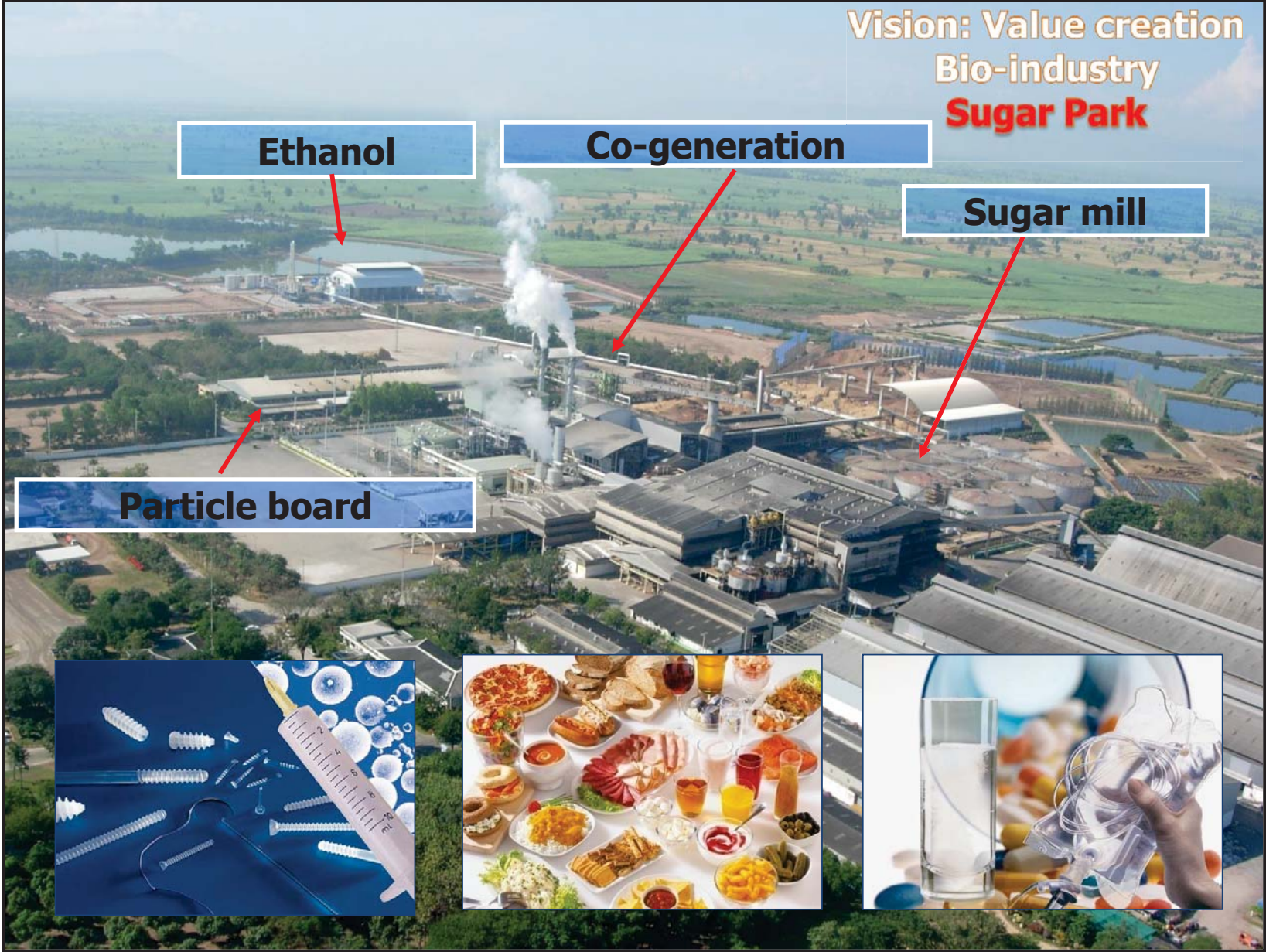
Vision: Value creation
Bio-industry
Sugar Park

Ethanol

Co-generation

Sugar mill

Particle board



The XXIX ISSCT Congress 2016

Pre-Congress

- 2nd-3rd December 2016
- Khon Kaen

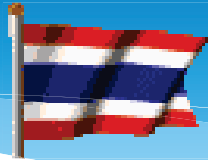
■ Congress & Exhibition

- 5th-8th December 2016
- Chiang Mai

■ Post-Congress

- 9th-11th December 2016
- Sukhothai, Pitsanuloke, Nakhon Sawan, Bangkok





Sawasdee

Welcome to Thailand

