

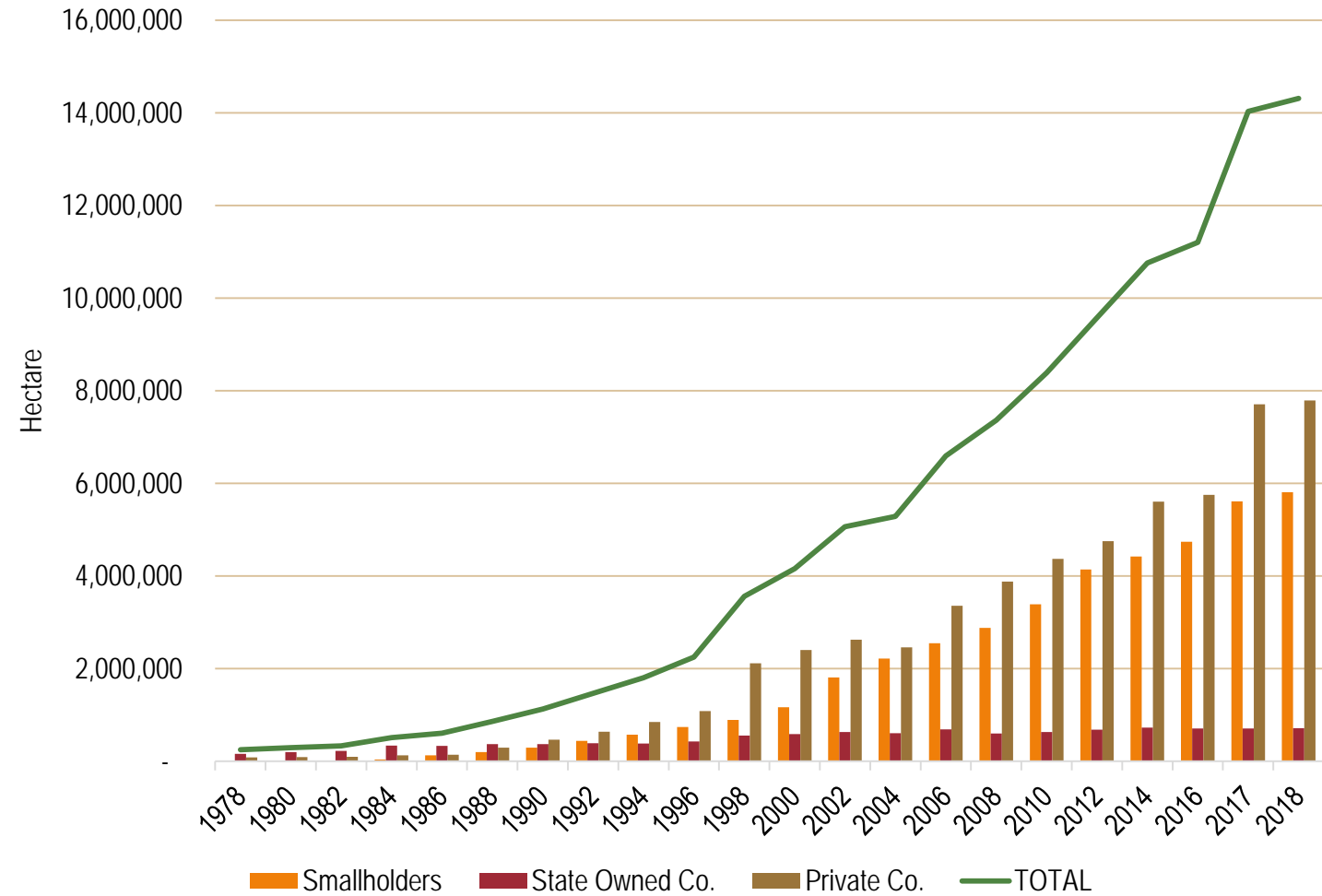
Indonesia Biodiesel Program: Toward Achieving B30 Blending 2020

Togar Sitanggang – GAPKI



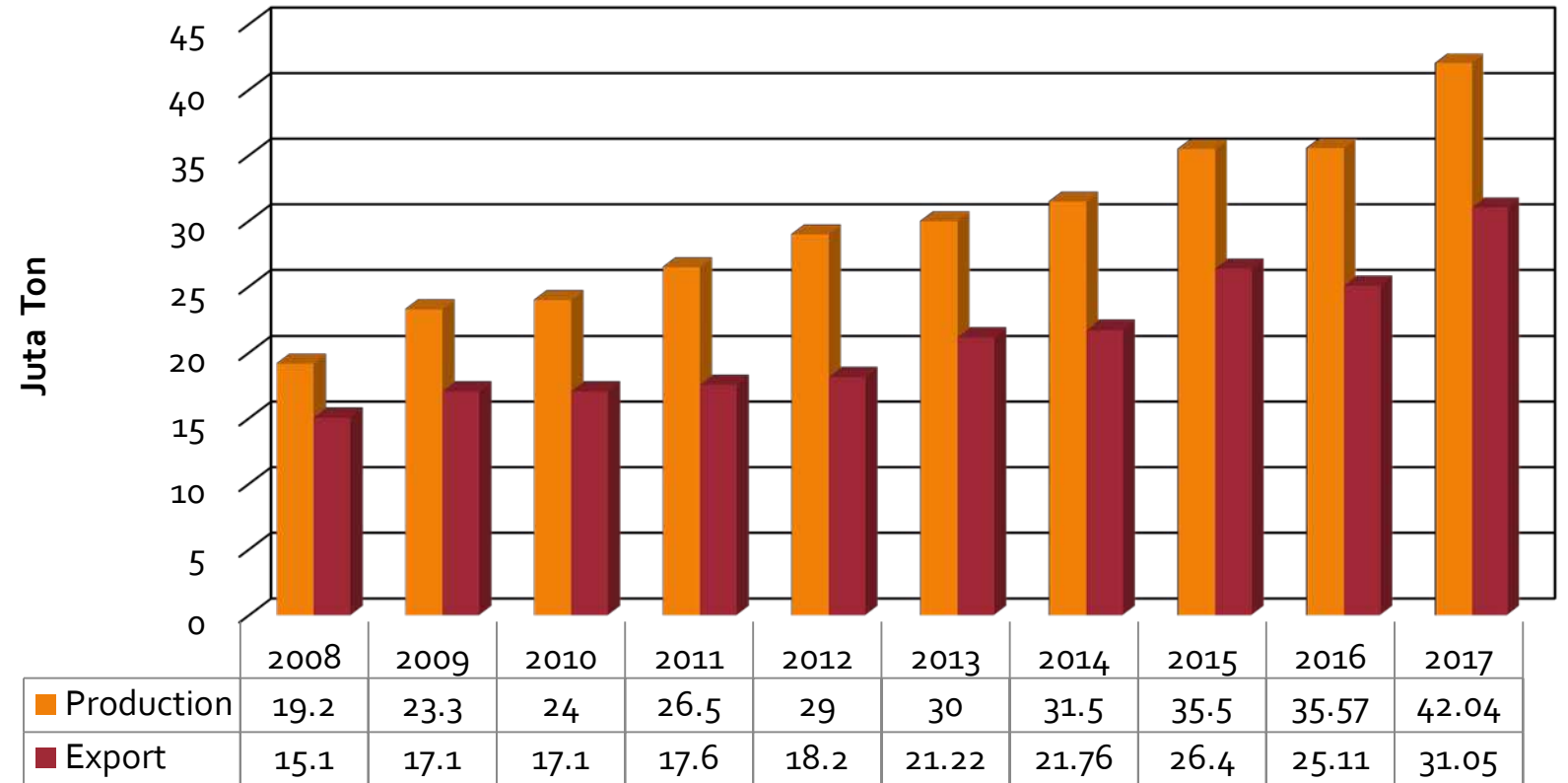
Oil Palm Plantations

Indonesia Oil Palm Plantations Evolution



Source : DG Estate Crop, Min of Agriculture
8/29/2018

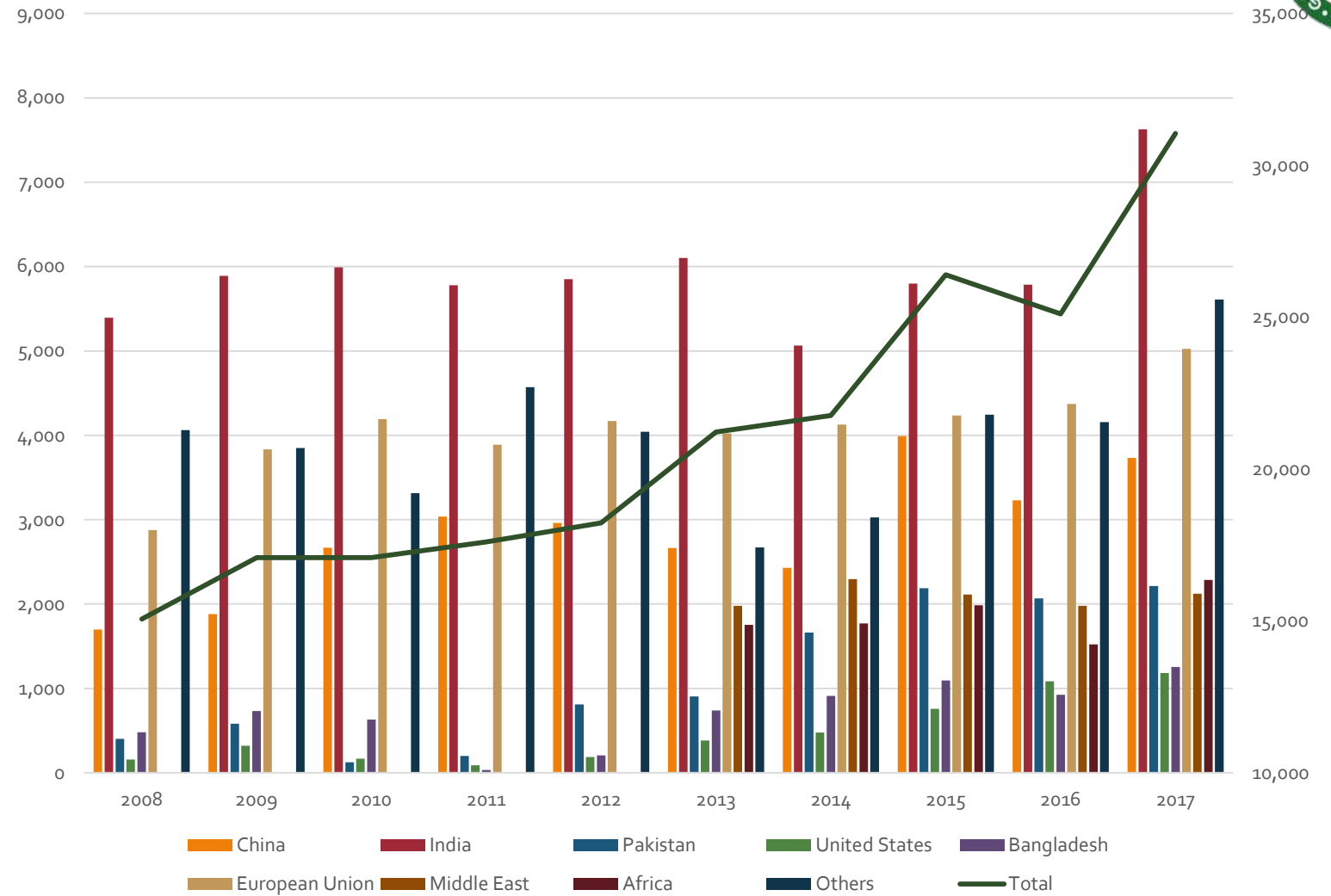
Production and Export of Palm Oil Indonesia



Palm Oil is one of Indonesian agriculture products that have huge surplus where 70% of its productions are being exported. Palm Oil also contributes significantly to Indonesia Trade Balance.



Palm Oil Export Destinations 2008-2017





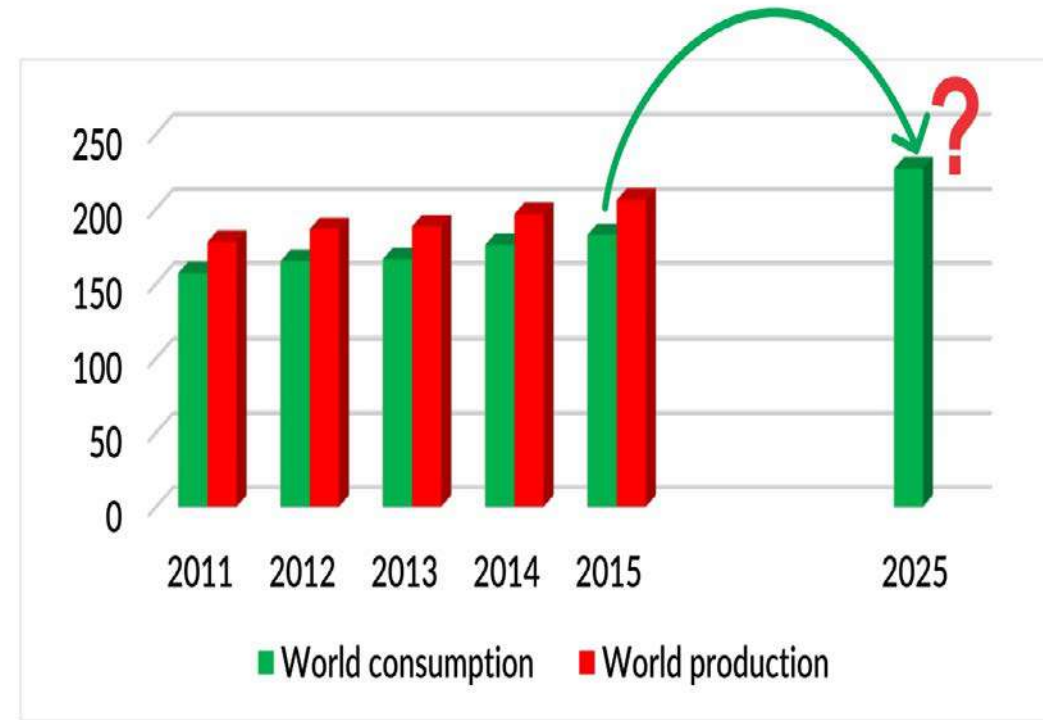
Vegetable Oil Consumption 2005-2025

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025
China	20.5	21.5	22.6	23.3	24.7	26.9	27.7	29.2	31.4	32.1	33.8	39.0	44.0
European Union	15.9	18.2	19.8	20.3	21.3	22.5	22.3	22.1	22.3	22.3	22.5	22.9	21.2
India	12.1	12.5	12.5	13.5	15.0	15.8	16.6	17.4	18.5	19.5	20.8	25.0	28.6
United States of America	10.6	11.4	11.9	12.5	11.3	11.4	12.1	13.0	13.2	13.5	13.6	15.7	16.3
Indonesia	5.4	5.6	5.6	6.2	6.3	7.2	8.6	9.6	11.1	12.4	13	16.6	21.2
Malaysia	3.1	3.5	3.6	4.3	4.3	4.1	3.8	3.8	5.2	5.6	5.8	6.3	6.9
Japan	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.4	2.4
ROW	45.8	48.9	48.5	52.8	55.4	55.5	63.5	67.6	62.4	68	70.6	81.3	86.1
World	115.7	123.9	126.8	135.3	140.6	145.7	156.9	164.9	166.3	175.7	182.4	209.2	226.7

Vegetable oil consumption steadily increase every year due to increase of world population and increase of per capita consumption, especially for food sector. Hence, Indonesia palm oil export to the world is way to contribute achieving World Food Safety.

Role of Palm Oil for the World

The world vegetable oil demand is projected about 226.7 million mt by 2025. This is an increase of 51 million mt from 2015 (when the study was conducted). This demand can be translated to increase of 5 million mt every year. **Which vegetable oil is the best to fulfill this demand?**



- If we depend only from **Palm Oil**, we need **13 million ha** new land with **3.96 mt/ha/year**.
- If we depend only from **Rapeseed Oil**, we need **51.5 million ha** new land with **0.99 mt/ha/year**
- If we depend only from Sunflower Oil, we need **71.8 million ha** new land with **0.71 mt/ha/year**
- If we depend only from Soybean Oil, we need **98.1 million ha** new land with **0.52 mt/ha/year**
- **Conclusion: Oil Palm is the most efficient vegetable oil in land used.**



Regulations on Biofuels

- Energy Law no 30 2007: Priority of provision and utilization of Renewable Energy, include BioEnergy
- Government Regulation 79/2014 on National Energy Policy: Renewable Energy Target for 2025 set to 23% from total National Energy
- President Instruction no 1 2006: Instructing all relevant ministries and governors to speed up the development of Biofuel industries.
- Minister of Energy and Mineral Resources regulations about Mandatory Biofuels Blending:
 - No 32/2008
 - No 25/2013 – First Revision
 - No 20/2014 – Second Revision
 - No 12/2015 – Third Revision



MER regulation no 32/2008

	Oct 2008	Jan 2009	Jan 2010	Jan 2015	Jan 2020	Jan 2025
Public Service Obligation (PSO)	1%	1%	2.50%	5%	10%	20%
Non - PSO	0	1%	3%	7%	10%	20%
Industrial and Commercial	2.50%	2.50%	5%	10%	15%	20%
Power Plants	0.10%	0.25%	1%	10%	15%	20%



MER 25/2013

	Sept 2013	Jan 2014	Jan 2015	Jan 2016	Jan 2020	Jan 2025
Public Service Obligation (PSO)	10%	10%	10.00%	20%	20%	25%
Non - PSO	3%	10%	10%	20%	20%	25%
Industrial and Commercial	5%	10%	10%	20%	20%	25%
Power Plants	7.5%	20%	25%	30%	30%	30%



MER 20/2014

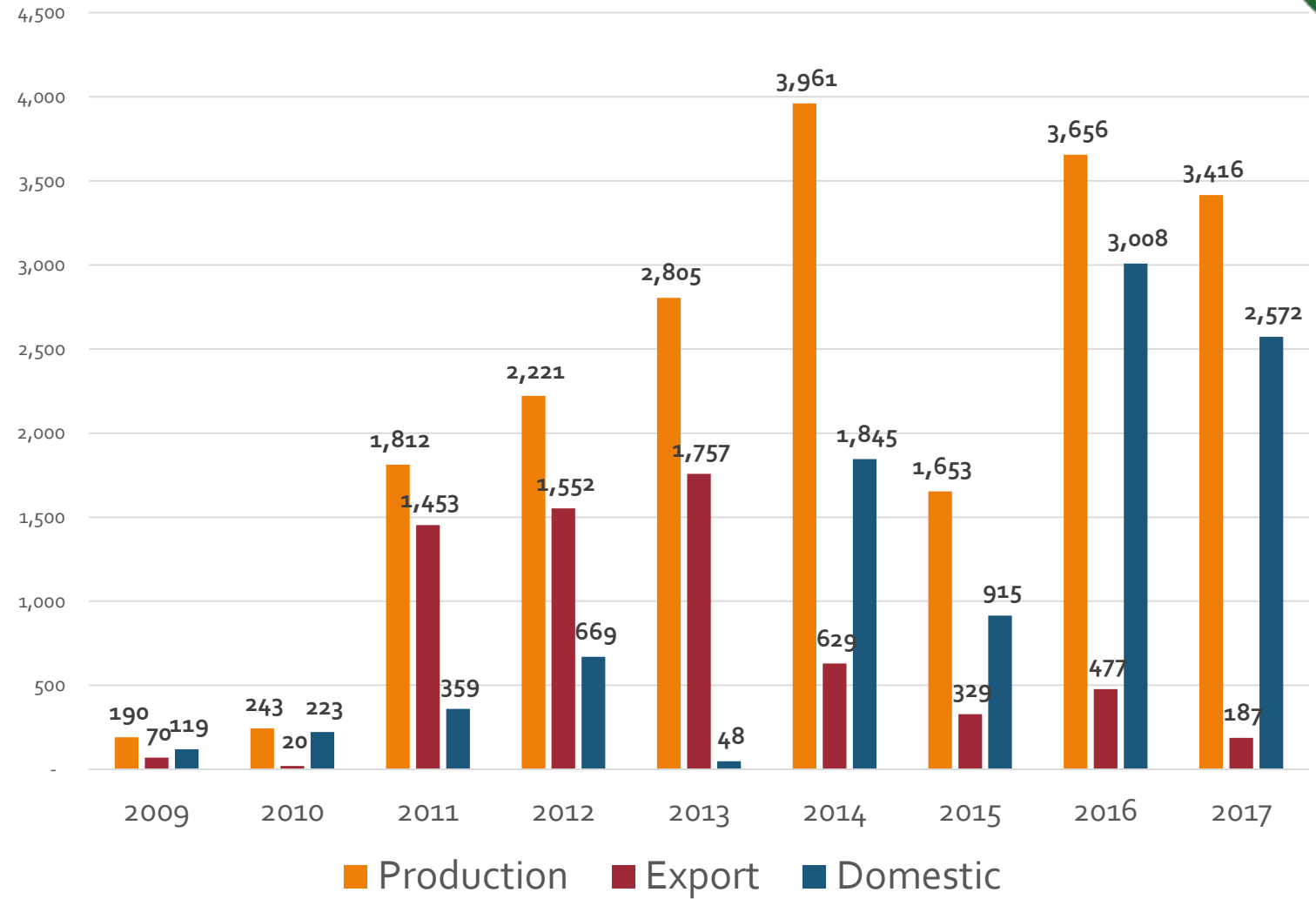
	July 2014	Jan 2015	Jan 2016	Jan 2020	Jan 2025
Public Service Obligation (PSO)	10%	10%	20.00%	30%	30%
Non - PSO	10%	10%	20%	30%	30%
Industrial and Commercial	10%	10%	20%	30%	30%
Power Plants	20%	25%	30%	30%	30%



MER 12/2015

	Apr 2015	Jan 2016	Jan 2020	Jan 2025
Public Service Obligation (PSO)	15%	20%	30%	30%
Non - PSO	15%	20%	30%	30%
Industrial and Commercial	15%	20%	30%	30%
Power Plants	25%	30%	30%	30%

Indonesia Biodiesel Performance (kilo liters)



Indonesia Biodiesel Facts 2017



B20 Domestic Utilization: 3 M kl /
18.867mbarrel



Upstream sector Workforce:
297,000



GHG Emissions Saving: 8.03 M Ton
(Tail Pipe) (-15%) CO₂ eq



Emission Saving Contribution: 22%
from Energy & Transportation
Sector Target



B20 Roadtest Result in Indonesia

- Total Road test: 40,000 km
- 1,000 km for two days covering city roads, toll roads, mountain roads.
- Engine Power reduced by about 2%
- Fuel efficiency reduced by 2.3%
- Car manufactures participant: Toyota, Mitsubishi, Isuzu, Chevrolet, Ford, HINO
- Toyota continued to 100,000 km after all participants stopped
- Japan Automobile Manufactures Association (JAMA) has published position to accept the B20 blending with conditions and requirements.





What's next in Biodiesel Policy in Indonesia

- Government of Indonesia will push the implementation of B20 to non Public Service Obligation starting September 1, 2018
- President Regulation no 66/2018 signed on 15 August 2018 as revision of President Regulation no 61/2015 to include support from CPO Fund to non PSO sector.
- Government of Indonesia is planning to move forward the B30 implementation to 2019, instead of 2020 as per MER 12/2015.
- Road Test for B30 will be done before the regulation revised, expected to start end of 2018.



Heavy Equipements Testing

- Caterpillar:
 - Had implemented and monitoring the Biodiesel Blending of B5, B10 and B15 on 785C and 789C heavy equipment since 2013
 - Finding: fuel filter plugging at the beginning of the test but none afterward
 - On B15 test: no direct power losses, no problem on injector and no significant effect on fuel consumption
- Cummins Engine: Approved B20 with Biodiesel in accordance with ASTM D 6751 or EN 14214
- Komatsu: approved B7 for Biodiesel in accordance with EN 14214 and any blending with ASTM D 7467. On going testing for 20,000 hours using B20.
- PINDAD (Indonesia Military Industry) has been testing Military Tanks to use up to B50 and so far satisfactory with the result



Locomotives Testing

- Period of testing: 10 February to August 2018
- Engine used: 2 set of Electro-Motive Diesel (EMD) CC205 and 2 set of General Electric (GE) CC206.
- Each manufacturer use Bo and B20, approximate total testing 65,000 km.
- Interim results: NO significant difference between Bo and B20 on nozzles, needles, fuel pumps, etc. All engines were opened and inspected.
- Further examinations on all parts of the engines are on going process at Bandung Institute of Technology.



B30 Road Test Preparations

- Setting up new parameters of B100 to be used in B30 blending: target soonest possible.
- Proposed revised parameters are:
 - Flash point from 100 C to 130 C
 - Sulphur content from 50 mg/kg to 10 mg/kg max
 - Acid number from 0.5 mg-KOH/g to 0.4 mg-KOH/g max
 - Oxidation stability from 480 min to 600 min
 - Monoglyceride from 0.8 % max to 0.55 % max
- New parameters are:
 - Water content: 350 mg/kg max
 - Cold Filter Plugging Point (CFPP): 15 C max
 - Methanol: 0.2 % max
 - Metal content (Na+K) and (Ca+Mg): 5.0 mg/kg max
- B30 road test of 40,000 – 100,000 km: immediately after all parameters agreed. My best estimate: end of 2018.



Thank You!

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