



51st MECAS MEETING

ETHANOL PRESENTATION

PETER DE KLERK

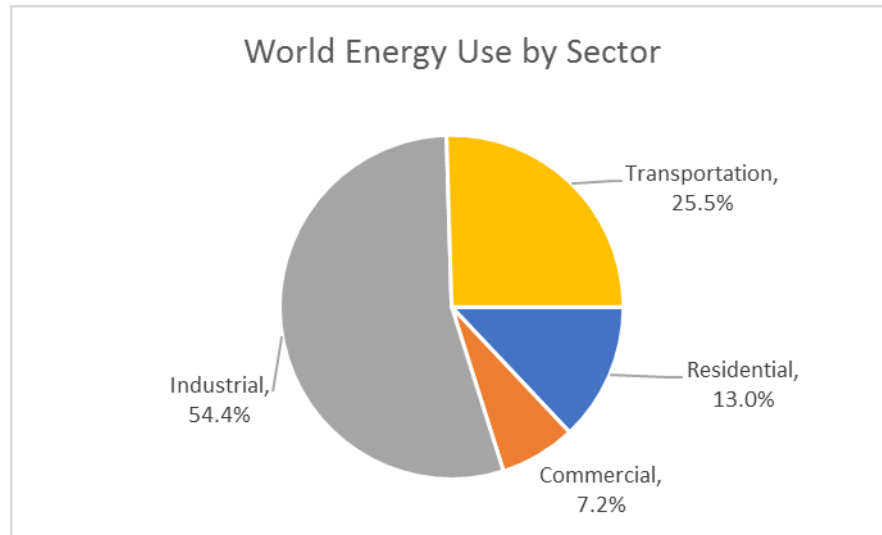
SENIOR ECONOMIST



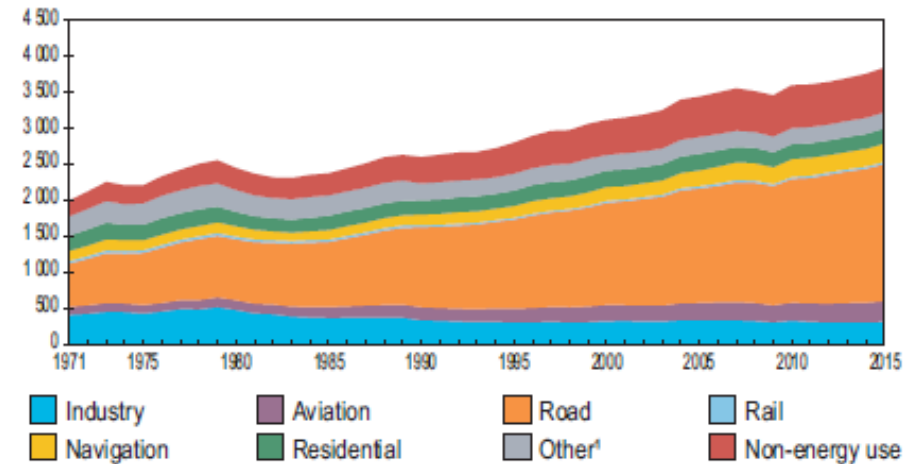
THE BIG PICTURE



World Energy and Oil Usage

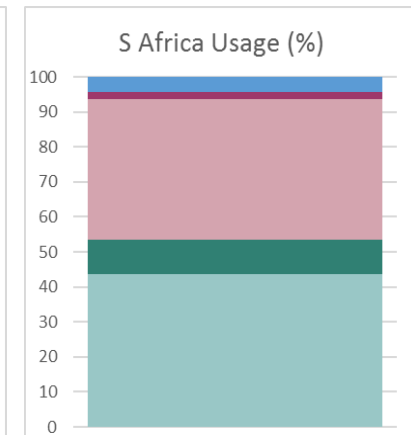
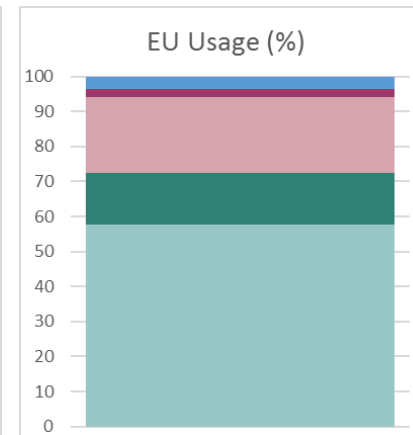
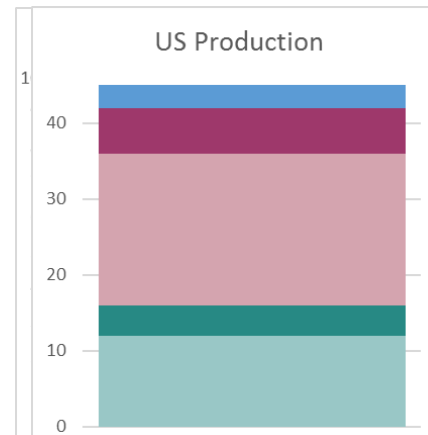
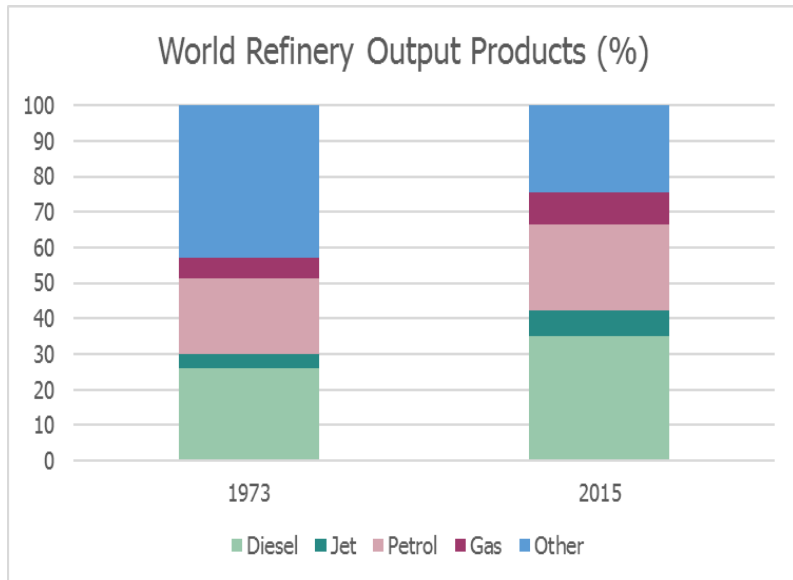


Oil TFC from 1971 to 2015 by sector (Mtoe)





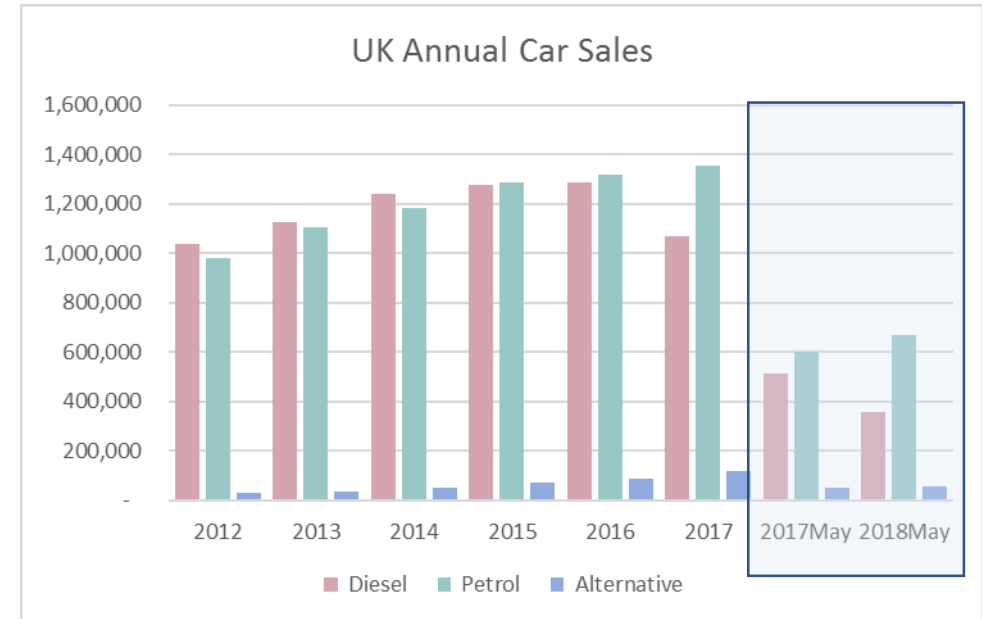
The Oil / Transport Fuel Market





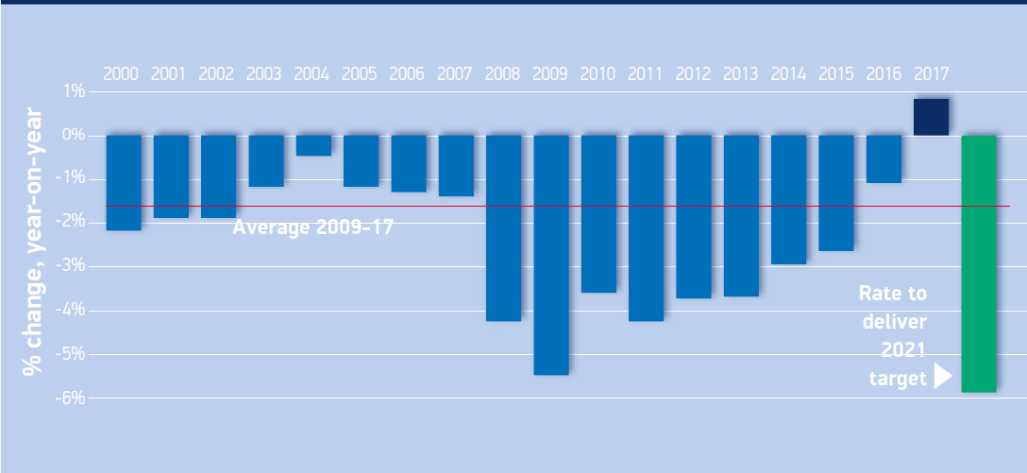
The changing landscape

- Diesel-gate
- NOx / PM (particulate matter) pollution
- Changing consumer behaviour
- Bad for CO₂ emissions



CO₂ issue for European governments

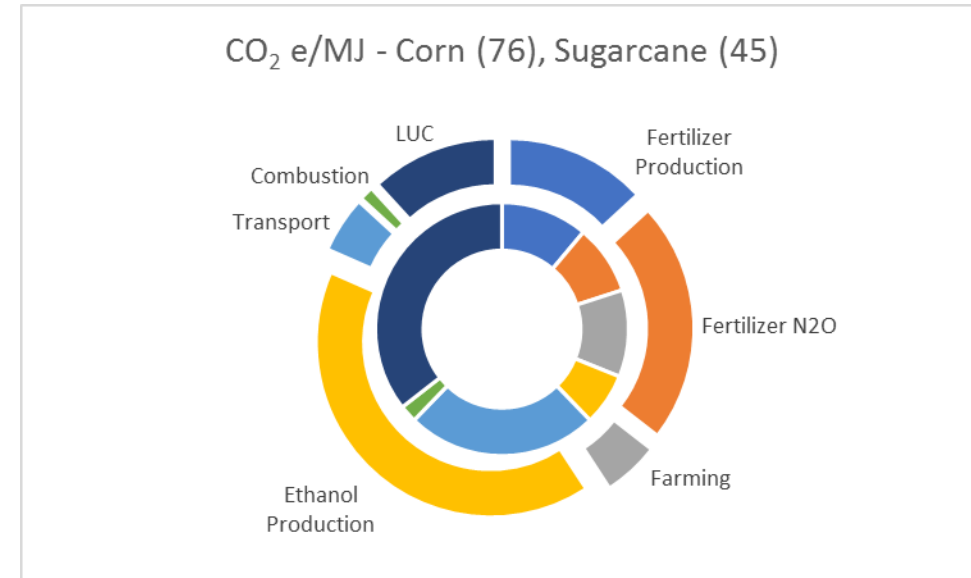
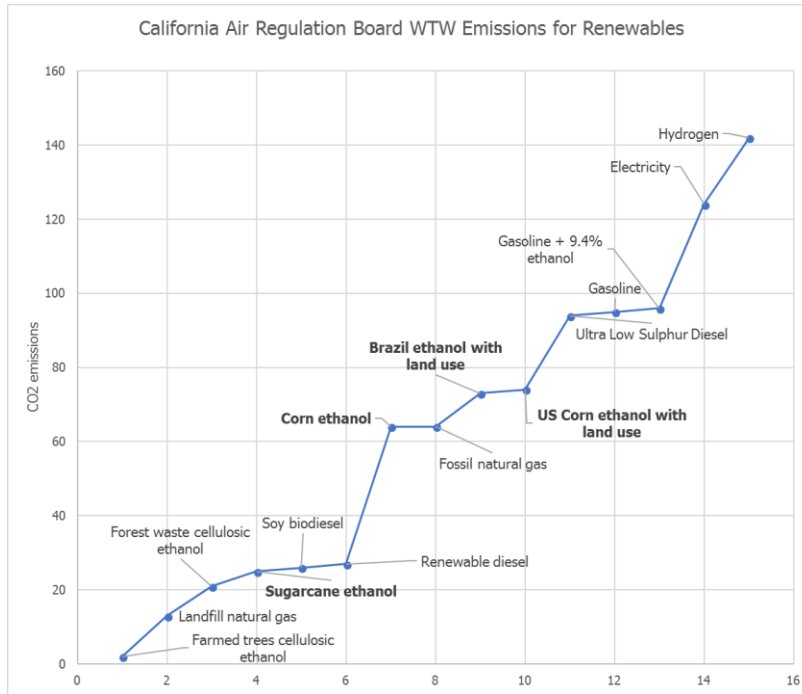
CHART 3 | CHANGE IN ANNUAL NEW CAR CO₂ EMISSIONS SINCE 2000



Year	New car CO ₂	CAGR
2000	181	
2007	165	-1.5%
2016	120	-3.5%
2017	121	0.7%
2021	95	-5.9%



CO₂ issue – Ethanol is a solution



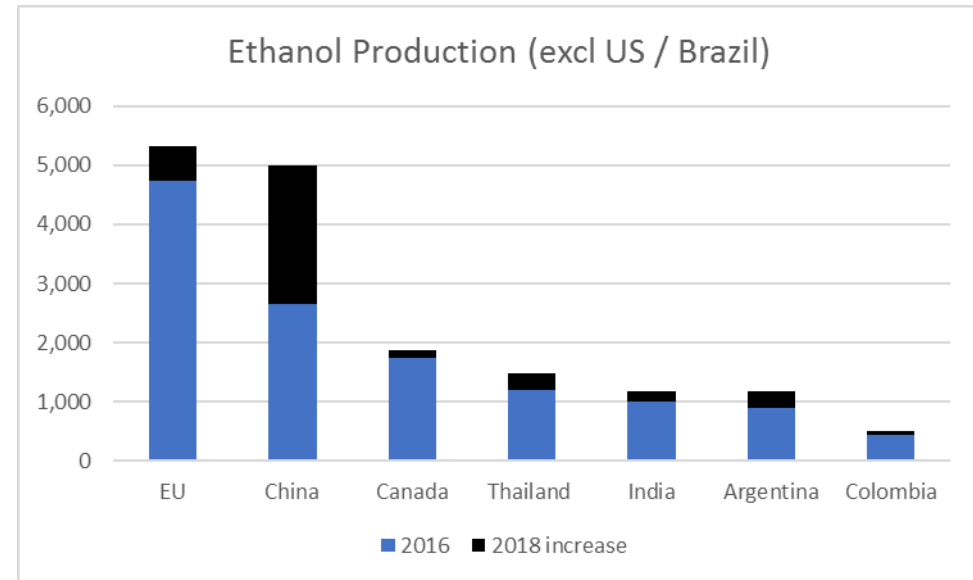
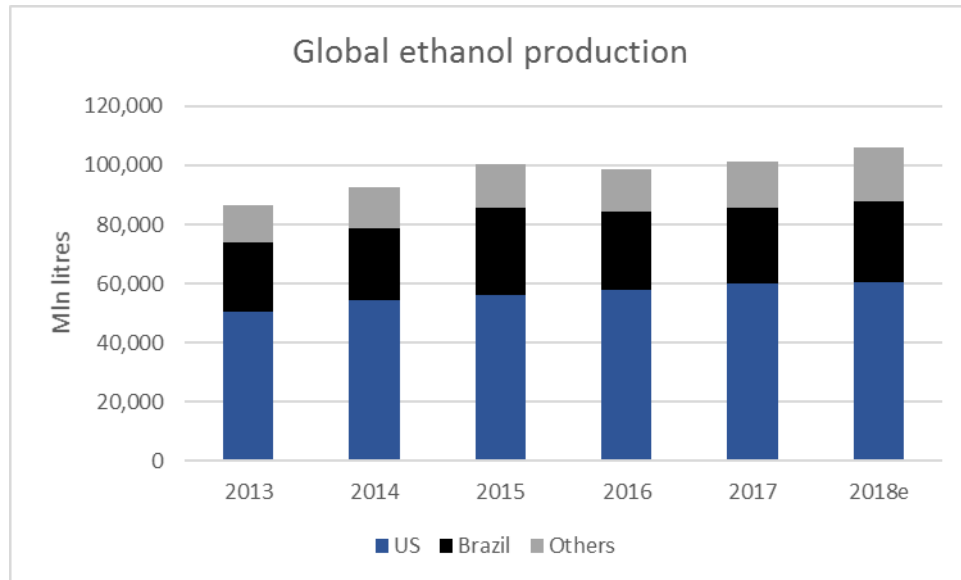
Excludes DDGS and Cogen credits



THE CURRENT MARKET



Global ethanol situation



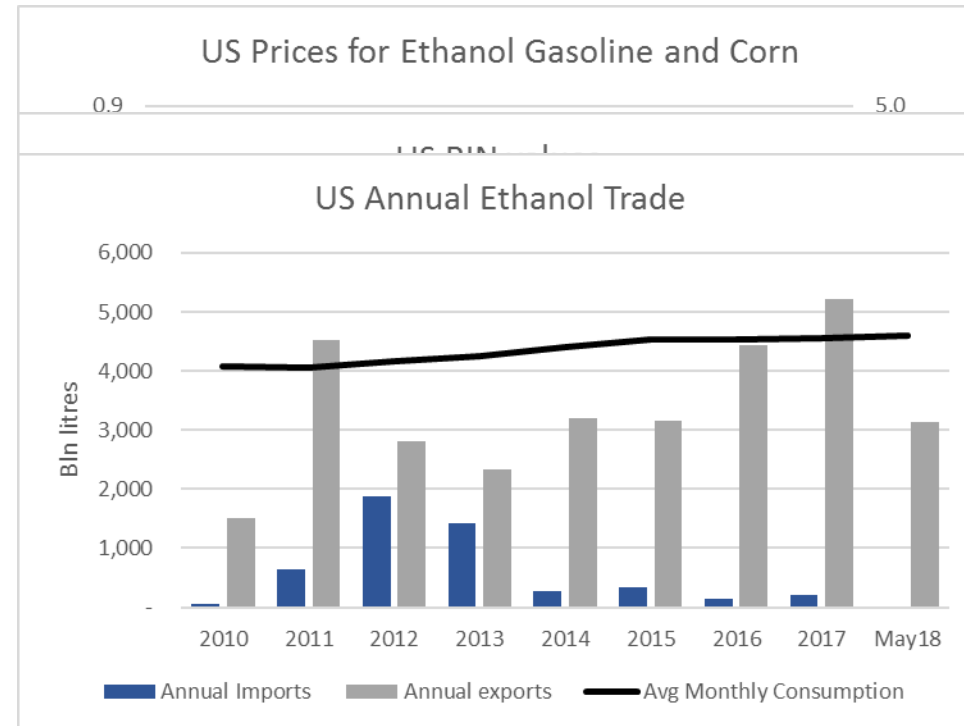


Current Dynamics - USA

Excess production from plentiful corn supply

New blend mandate – E15

RIN programme is a mess



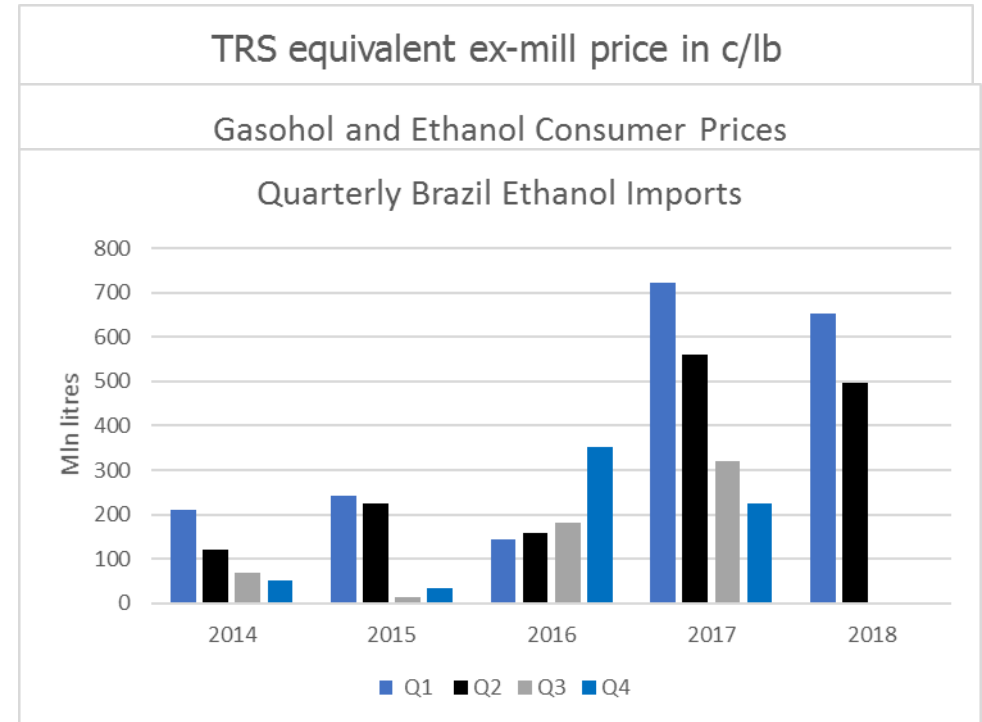


Current Dynamics - Brazil

Ethanol exceeds sugar returns

Petrobras' floating fuel price

Renovabio / elections awaited





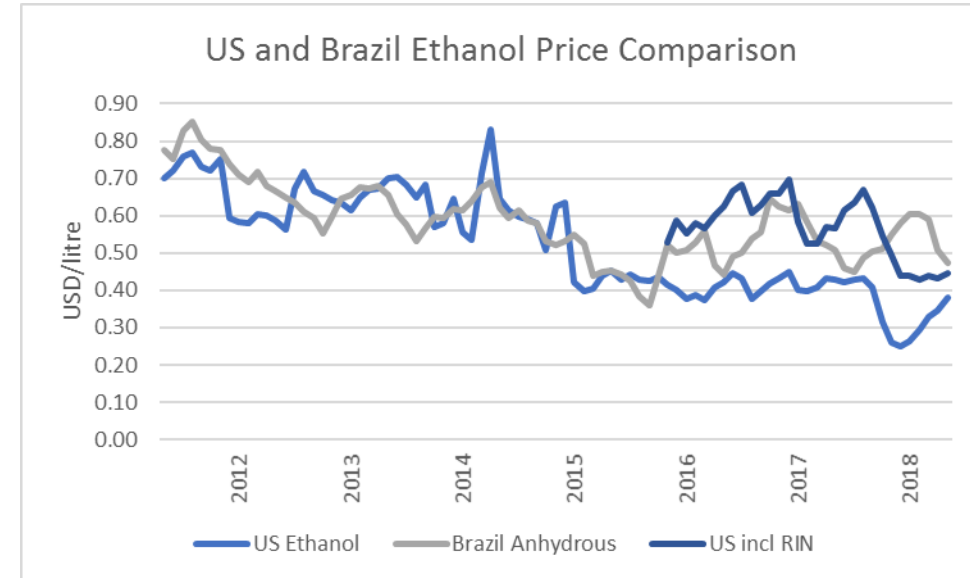
Current Dynamics - Prices

US ethanol has been cheap

Collapse in RIN price has reduced domestic premium

Falling Brazil price gives convergence

Doubts over next year's grains harvest.

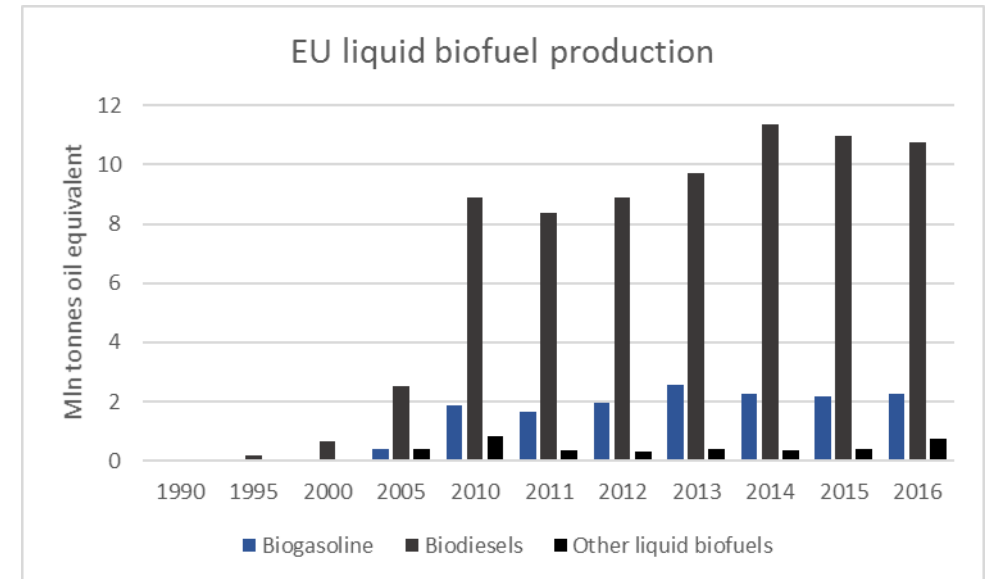


Current Dynamics - EU

France – expanding E10 fuel usage, but overall, uptake of ethanol is low

New EU legislation will limit palm oil biodiesel; improve ethanol prospects

Molasses was removed as an advanced biofuel feedstock, but PFAD remains





The Medium Term

- China is committed to E10 by 2020
 - Demand will rise by 50% to 5 bln litres in 3 years; E10 implies 12 bln litres of ethanol
 - Large investment programme commencing
 - Corn is primary feedstock; cassava is currently expensive; molasses is only alternative
- Indian ethanol volumes rose to more than 1.5 bln litres in 2017/18
 - Inclusion level is still low and government has pushed for a rise
 - Molasses feedstock has been cheap - given large sugarcane harvest – but ethanol prices remain high
- The end of the cellulosic pathway is projected





The Bigger Picture

- Short term
 - Rising oil prices / Strong dollar
 - Abundant feedstock / expansion of domestic programmes
- Medium term
 - Enlarged programmes in China, India and Brazil
 - End of search for cellulosic ethanol pathway
- Long term
 - Onset of the Electric Vehicle (EV) Era



THE MOLASSES MARKET





The molasses view

- Animal feed inclusion rate is declining although feed demand is growing
- Production as a ratio to sugar has increased this year due to extended harvesting seasons
- Prices collapsed in India, due to local legislation, and are weak in Europe.

