

The Methanol Project

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Fuel Choices Summit 2016

Tel Aviv – November 3, 2016





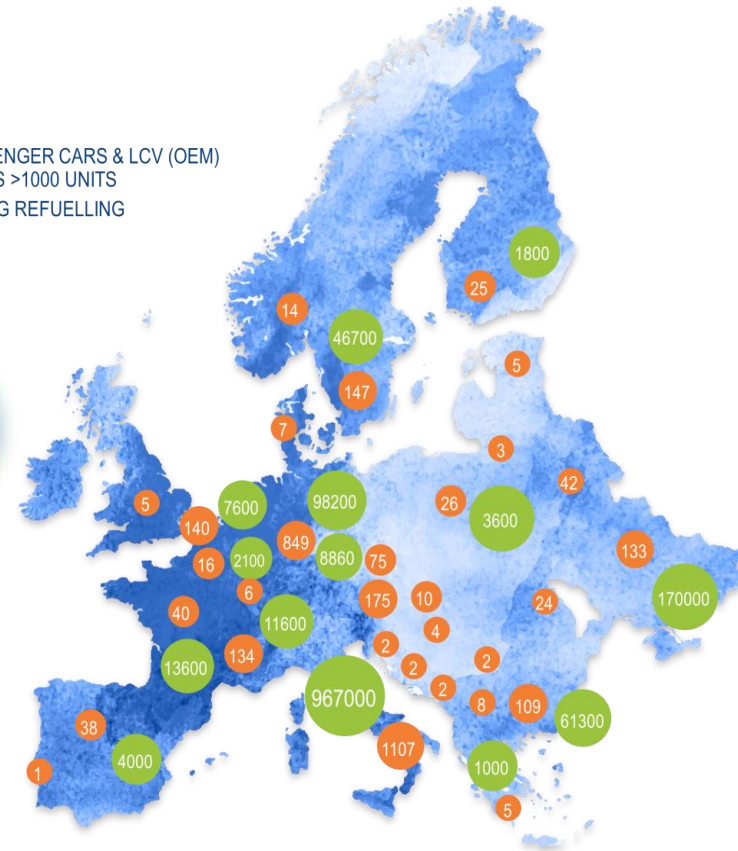
EU alternative fuels development, turning Italy into the best country in alternative fuels utilization

... THANKS TO THE FCA CNG TECHNOLOGY,
DEVELOPED AT CRF (CENTRO RICERCHE FIAT)



**natural
power**

- CNG PASSENGER CARS & LCV (OEM)
COUNTRIES >1000 UNITS
- PUBLIC CNG REFUELLING
STATIONS





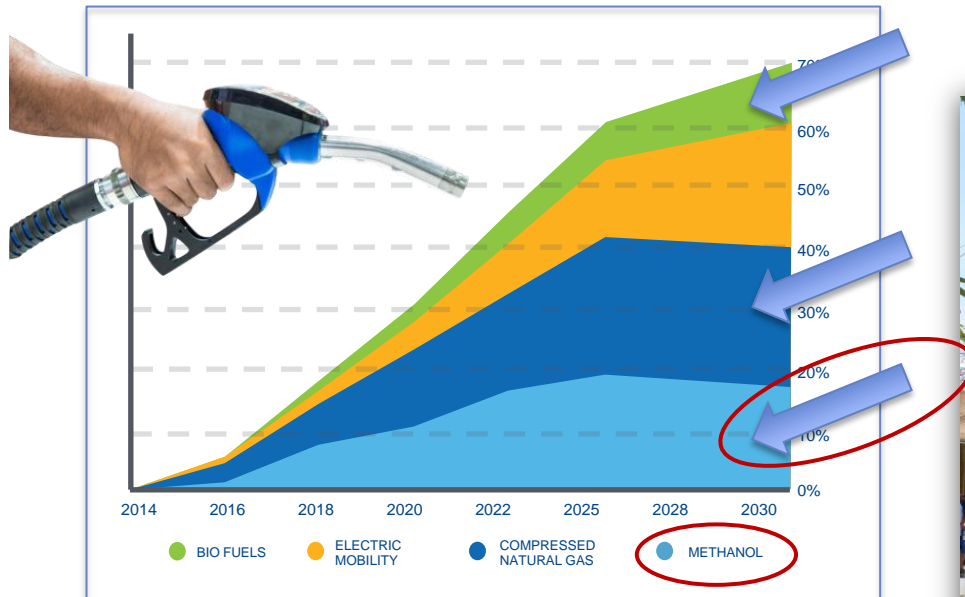
Revolution of the Brazilian transportation energy matrix

...THANKS TO THE PIONEER DEVELOPMENT OF THE SFS®
SOFTWARE FLEXFUEL SENSOR, DEVELOPED BY MAGNETI
MARELLI (AN FCA COMPANY)





In January 2015, FCA, CNHi and Magneti Marelli signed an MoU with Israel Fuel Choices Initiative for the development and testing in Israel of alternative fuels based on natural gas



In 2015 FCA/CRF signed MOU with one of the top Israeli fuel producer company (DOR CHEMICALS) to develop methanol blends in terms of production, blending, infrastructure and automotive technologies





Objectives

1. Reduce the share of crude oil in **Israel's transportation by 30% by 2020** and by 60% by 2025 while supporting green growth
2. Turn Israel into a center of knowledge and industry of fuel alternative technologies
3. Raise world's awareness of alternative fuel choices and Israeli activity in the field and build a global partnership network from around the world



FIAT CHRYSLER AUTOMOBILES



... the Methanol Project

Leveraging on the existing FCA's experiences and know-how on Natural Gas and on alcohol fueled flex-fuel vehicles as well as on DOR's expertise on fuels and methanol, to develop a new advanced (E6) alternative fuel:

- Methanol for transportation complying with the highest emission standard

Joint activities to develop M15 application



2015/2016

Joint development & endurance tests performed in Israel



2015/2016

Joint development, measurements & tear down activities performed in Italy at CRF laboratories



In May 2016, M15 Israeli fuel specifications have been issued by the Ministry of Transport, based on IFCI, FCA and DOR recommendations

- Methanol produced from Natural Gas
- Israel is the first Country in the world – compliant with EU Euro6 and US regulations – that issued a national M15 standard for the methanol as alternative fuel
- Fiat 500 is the first vehicle at worldwide level to comply with the **Euro6 M15 standard**
- The **Fiat 500 M15**, running with a blend of 85% gasoline and 15% methanol, is a bi-fuel vehicle that can run on both M15 and gasoline, as well as any mixture of the two fuels.



SI 90 part 4

תקן ישראלי ת"י 90 חלק 4

May 2016

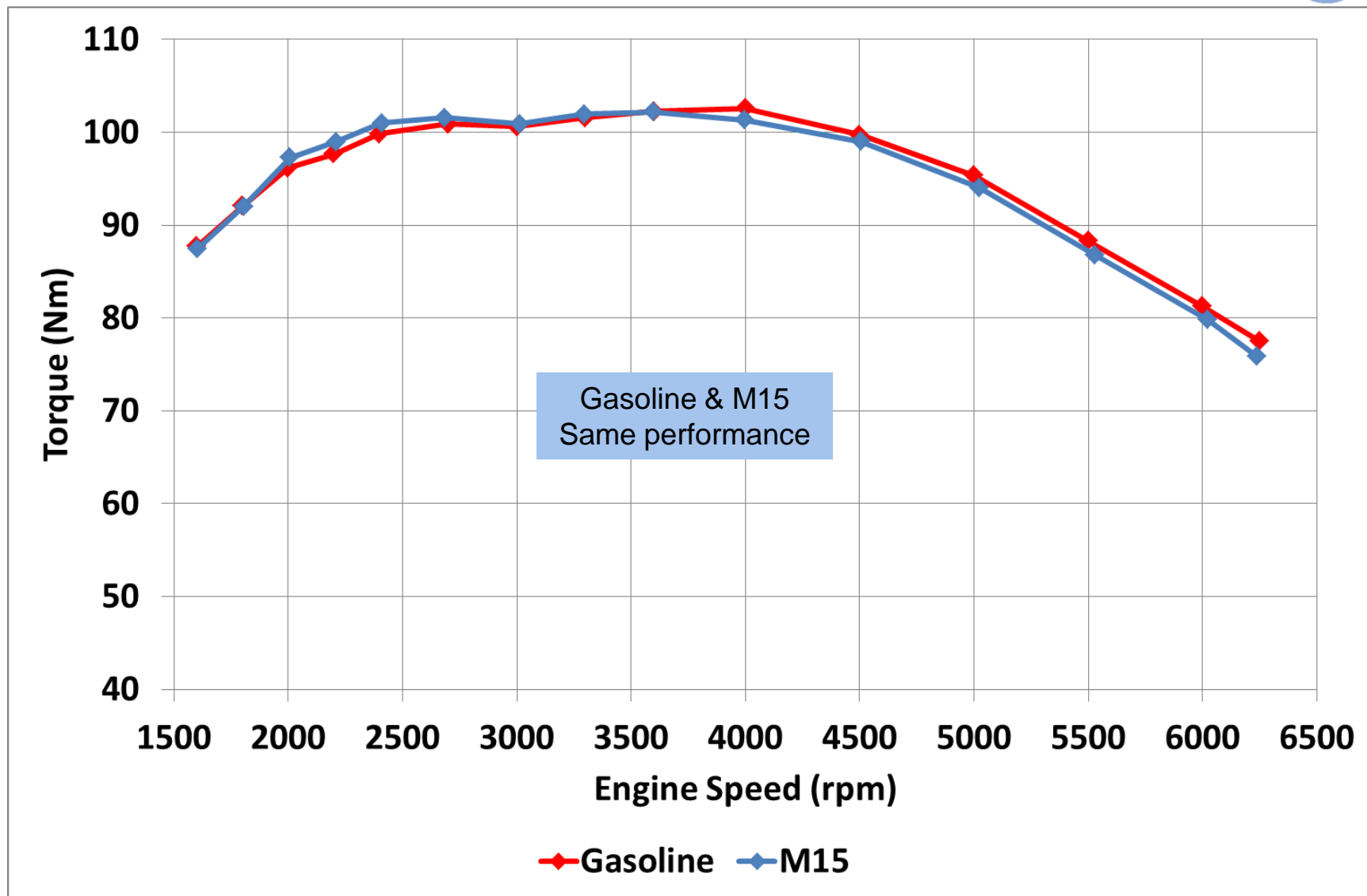
אייר התשע"ו – מאי 2016

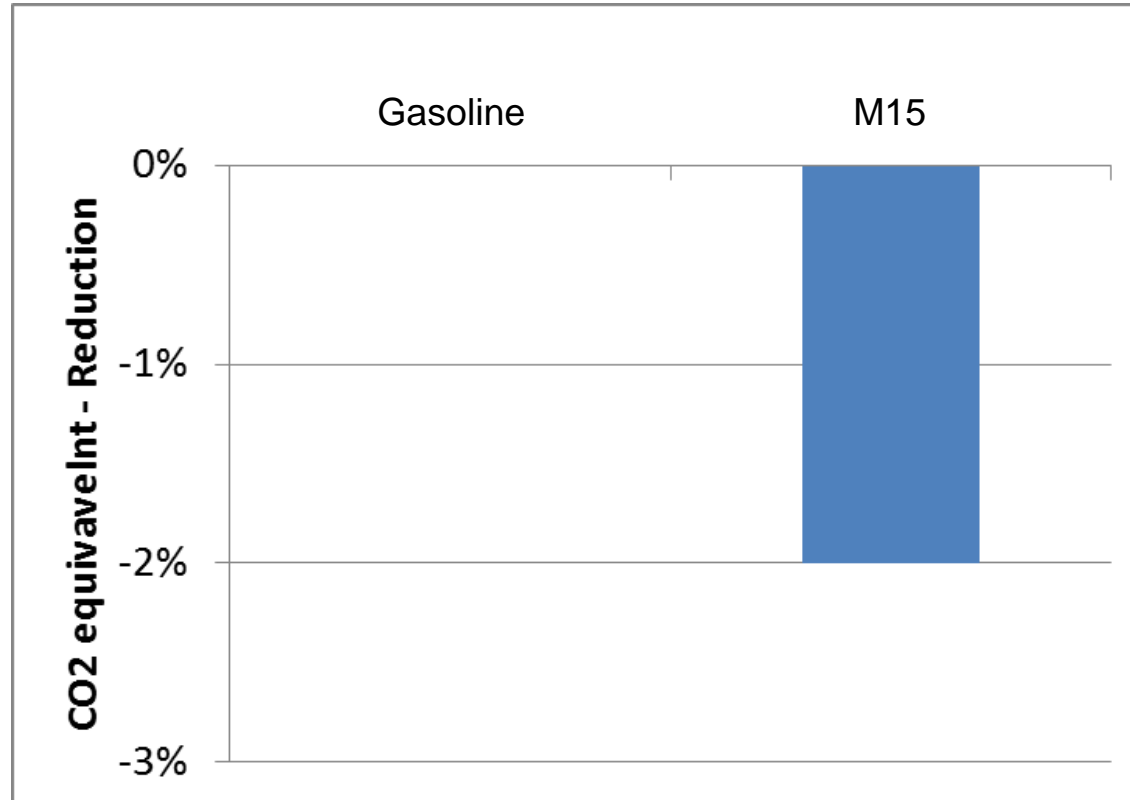
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**Automotive gasoline: Methanol-gasoline (petrol) fuel blend
composed of 85% unleaded gasoline (petrol)
and 15% methanol (M15)**

בנזין לרכב מנועי: תערובת מתנול-בנזין (דלק) המורכבת מ-85% בנזין נטול עופרת (דלק)
ו-15% מתנול (M15)

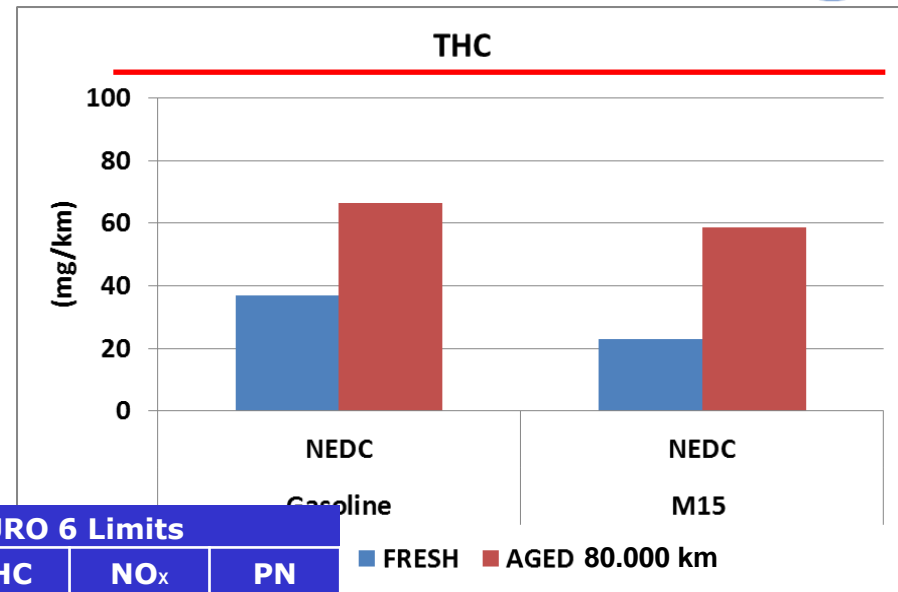
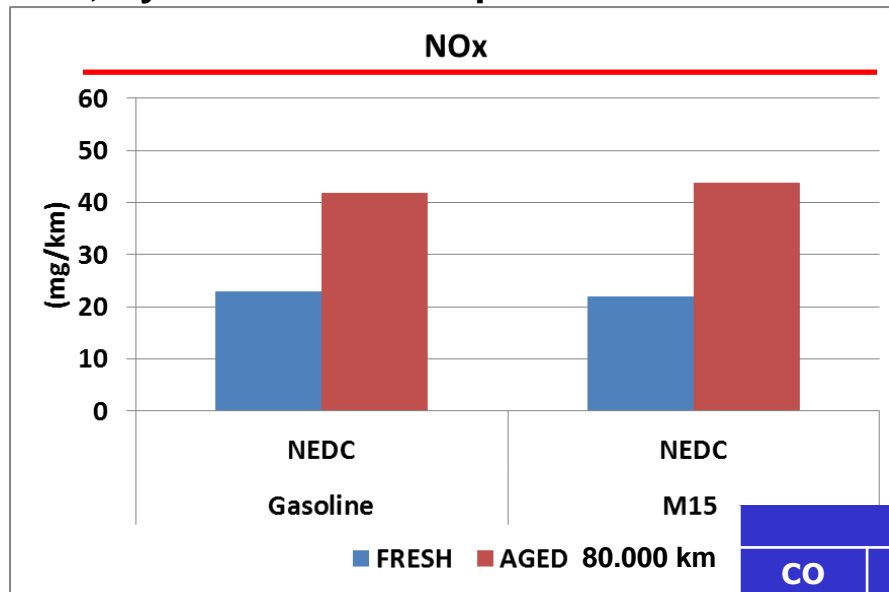
Fiat 500 EU Euro6 M15 – Engine Performance



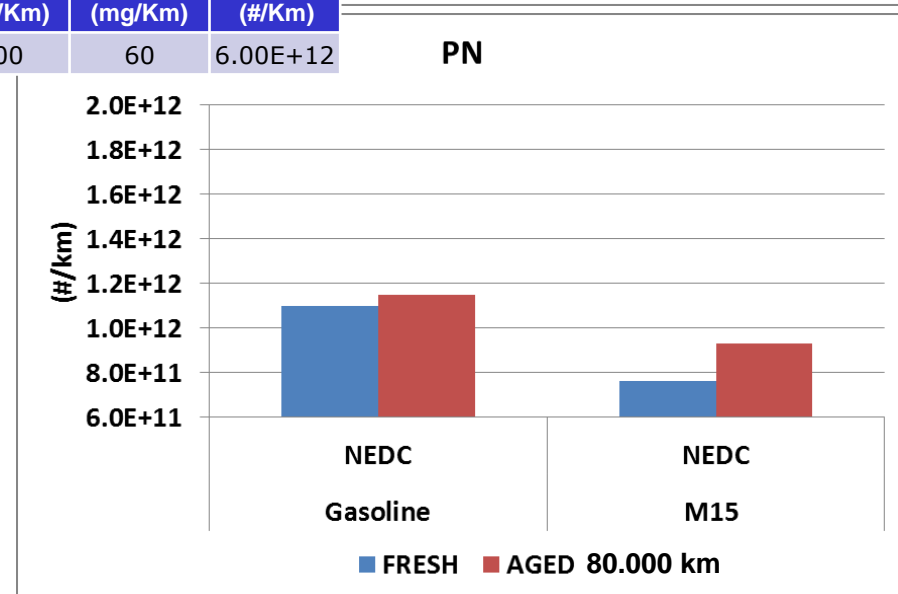
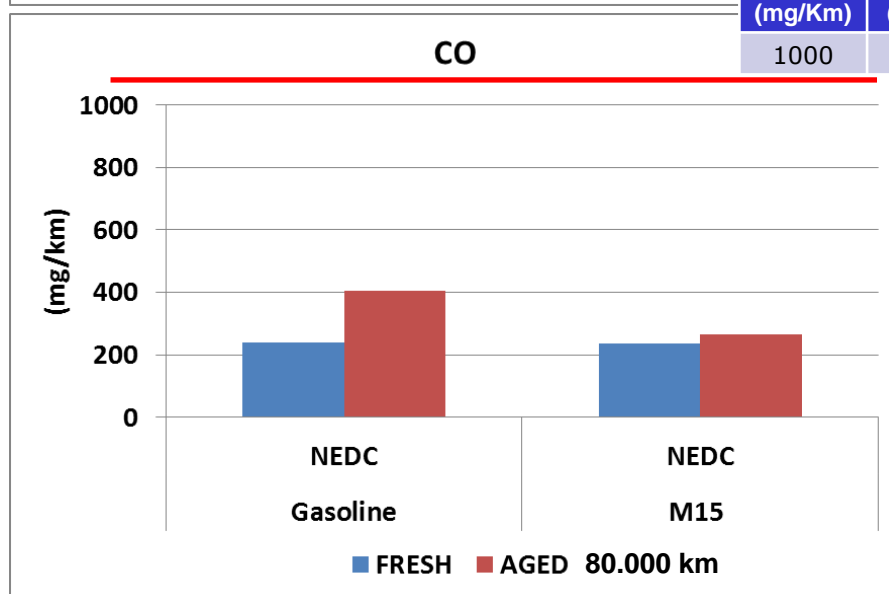


Fiat 500 EU Euro6 M15 – Noxious emissions

Adoption of low carbon and /or oxygenated fuel as methanol mitigates the emissions of CO, Hydrocarbons and particle matter



EURO 6 Limits			
CO (mg/Km)	THC (mg/Km)	NO _x (mg/Km)	PN (#/Km)
1000	100	60	6.00E+12



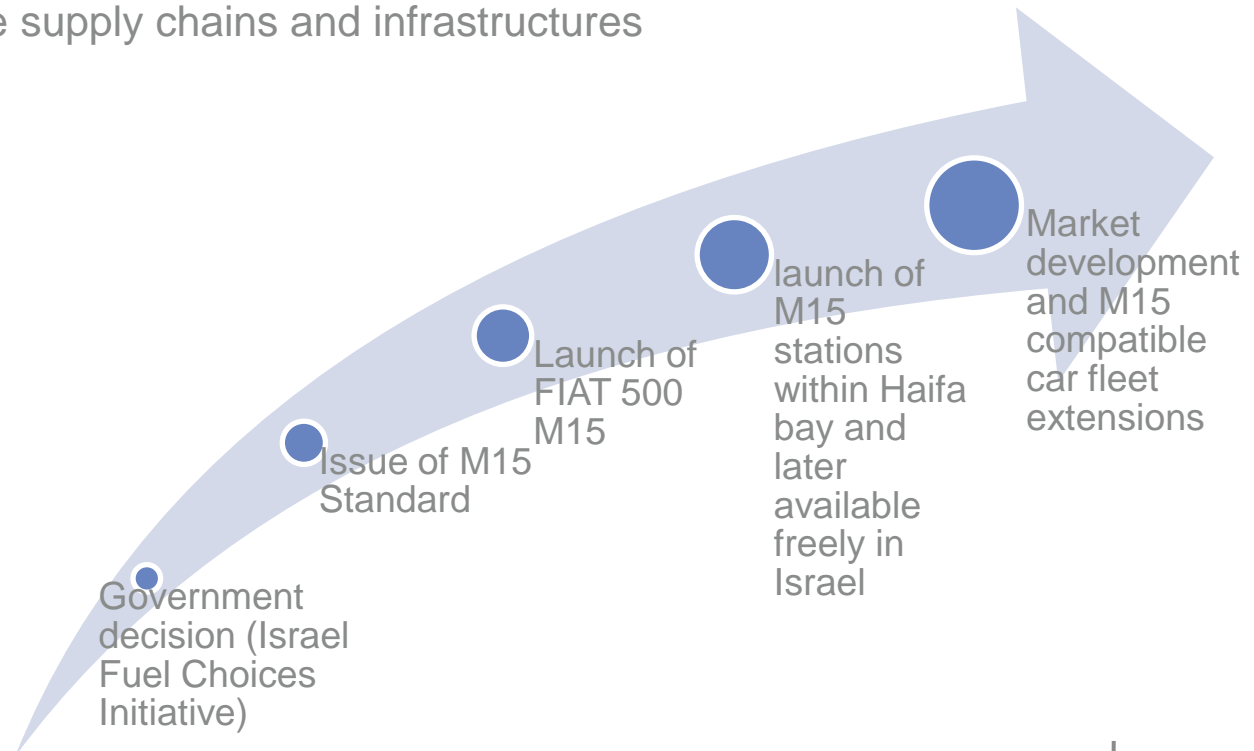
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Expected next steps



□ 2017- the year of M15, with the entry into force of the Arrangements Law, the following actions are expected:

- Reduced excise duty for M15
- Grants for the first gas stations adapting themselves to market the new fuel
- Purchase tax adjustments on vehicles approved for Methanol fuel in accordance with the vehicle's emissions
- Accelerated depreciation for investment of facilities producing Methanol gasoline blends
- Dor will be leading the supply chains and infrastructures



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An effective case of cooperation among different key stakeholders

Stakeholders

Topics

Israel National Goal



Public

Regulation

Taxation, Benefit & Incentives



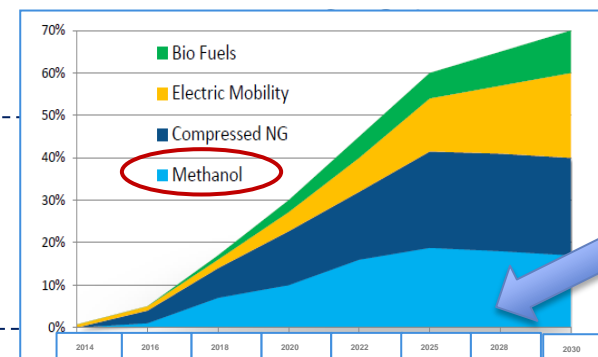
Transportation

Technology and vehicles



Energy

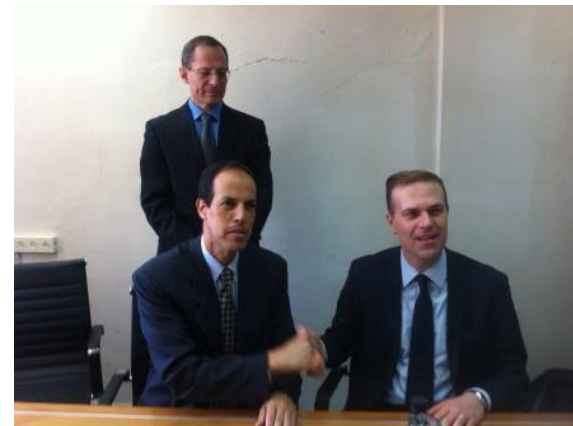
Fuels & Infrastructure



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A cross country /organization team with a common vision

FCA
FIAT CHRYSLER AUTOMOBILES

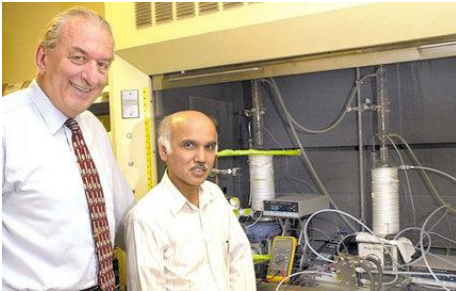
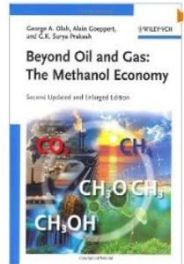


500 with logo

The Methanol Economy: ...a first significant and concrete milestone to develop a new sustainable fuel for transportation

2006




George A. Olah (Chemistry Nobel Prize) and G.K. Surya Prakash, theorized the Methanol Economy

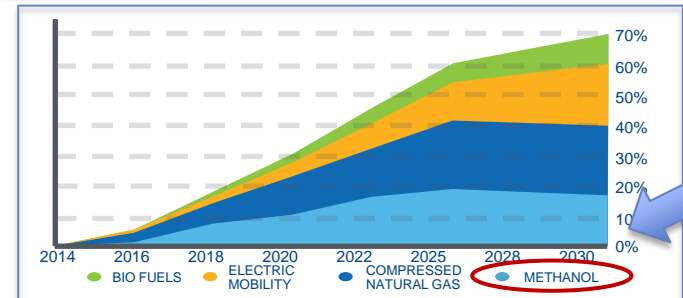


2013

Israel awards the 2013 Eric and Sheila Samson Prime Minister's Prize to George A. Olah, and G.K. Surya Prakash in recognition of their proposal to use methanol to replace fossil fuels and petroleum-based feedstocks.

2015

- MoU FCA/IVECO/MM with IFCI
- MoU FCA/CRF with DOR Chemicals
- Joint Development 
- Endurance tests 
- Measurement tests 



2016 – Fuel Choices Summit

The Team presents the Fiat 500M15: the first vehicle at worldwide level to comply with the Euro6 M15 standard

2017 over – the development of methanol in transportation