

ALIMENTATION

COUCHE-TARD INC.

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# PROSPECTS FOR THE FUTURE ROAD TRANSPORTATION MARKET

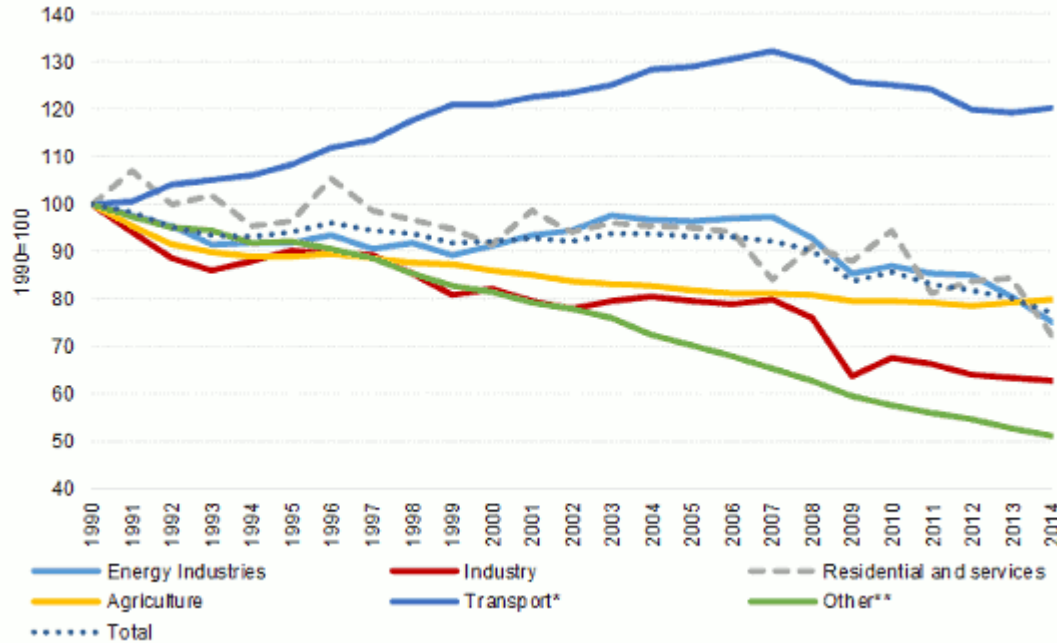
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Sjur Haugen

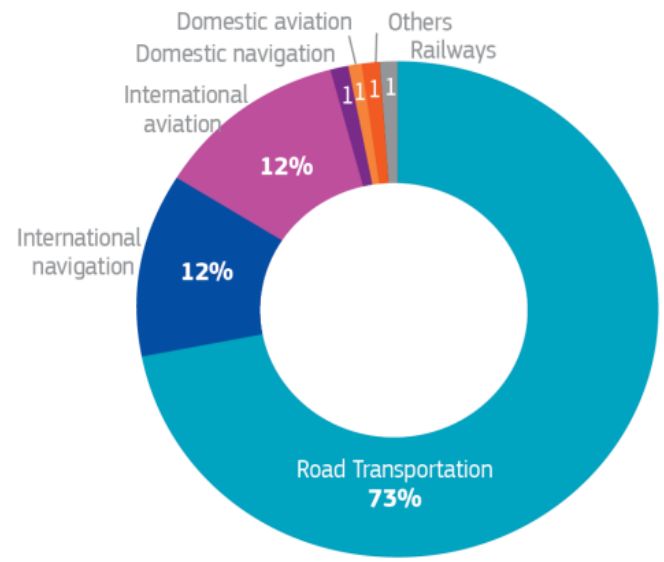
Director Product Quality & Development

16.03.17

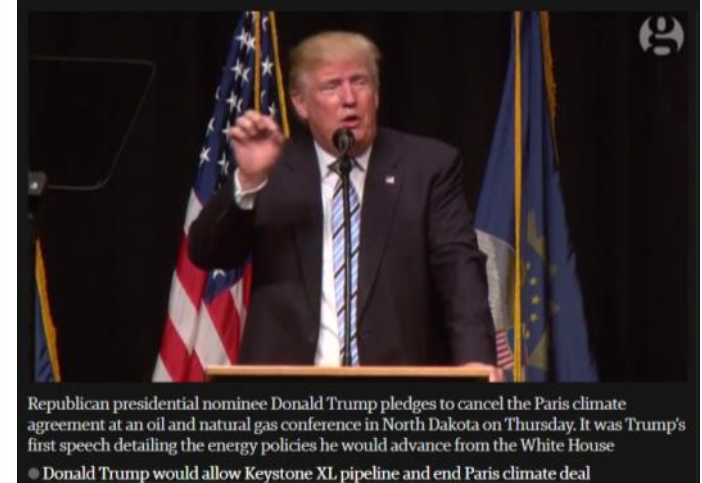
# EU GHG EMISSIONS FROM TRANSPORT UP 20% SINCE 1990



GHG from Transport in the EU 2014



# THE BIG PICTURE – WHAT HAS HAPPENED THE LAST YEARS – AND MONTHS?

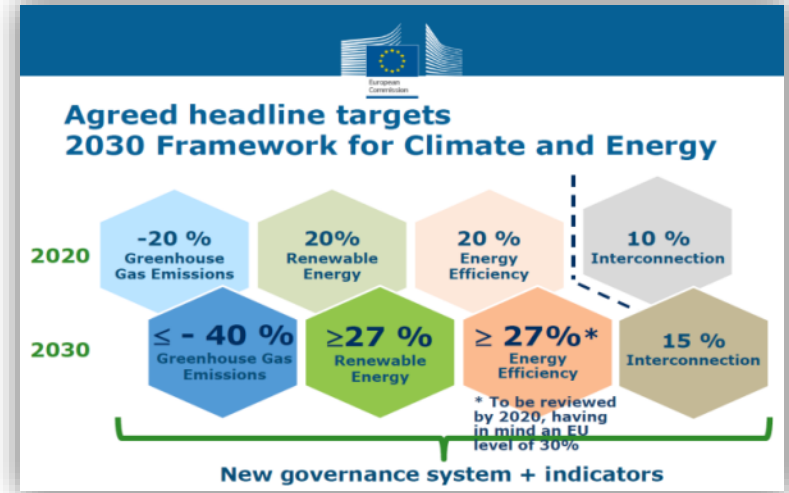
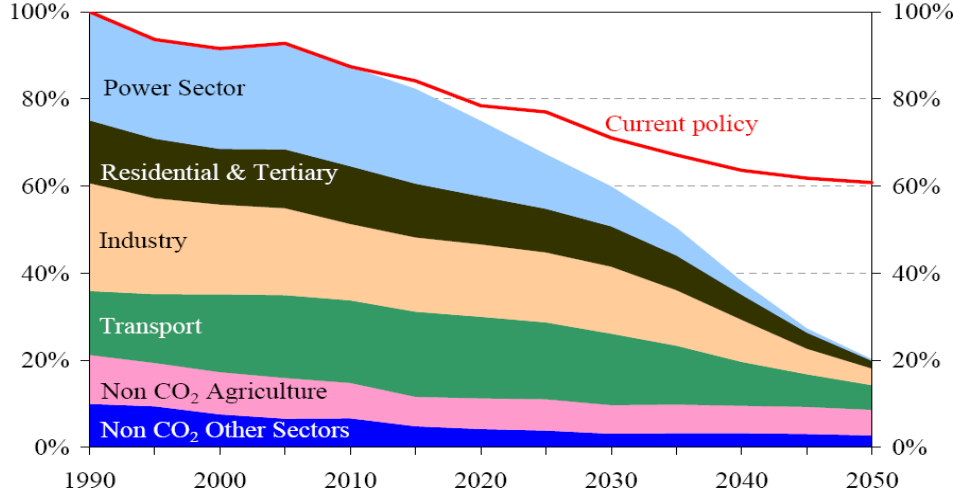


Republican presidential nominee Donald Trump pledges to cancel the Paris climate agreement at an oil and natural gas conference in North Dakota on Thursday. It was Trump's first speech detailing the energy policies he would advance from the White House  
● Donald Trump would allow Keystone XL pipeline and end Paris climate deal

## Agreement – or not?

- Restrict GHG emissions to keep global temperature well below an increase of 2°C
- EU committed to 40% GHG reduction by 2030 vs. 1990
- Global Carbon Neutrality by the end of the century

# TOWARDS CARBON NEUTRALITY – LEGAL FRAMEWORK



**RED**

- 10% renewable fuel by 2020 on energy basis
- Minimum 50% GHG reduction from bio fuels
- Double counting

**FQD**

- WTW 6% GHG reduction by 2020
- ILUC – max 7% biofuels from 1G feedstock

# RENEWABLE FUELS IN THE 2020 – 2030 PERSPECTIVE

*Proposal*

## Renewable Energy Directive II

- Proposed by the EU Commission on November 30, 2016
- Main overarching target is to decarbonize the transport sector
- “Advanced” renewable fuel
  - *Increased share from 1,5% in 2021 to 6,8% in 2030*
  - *of which at least 3,6% advanced biofuels*
- To mitigate possible ILUC, food based bio fuels to be reduced from max 7% in 2021 to 3,8% in 2030
- New advanced biofuels to demonstrate at least 70% GHG emission reduction compared to fossil fuels



# NORWAY - STEPS OUT OF LINE WITH EU

## 1. For 2017:

- *The renewable fuel requirement up from 5,5% (2016) to 7%*
- *Minimum 4% of the volume sold to gasoline vehicles shall be bio fuel (ethanol)*
- *Minimum 1,5% of total fuel volume in road transportation sector shall be “advanced biofuel”*

## 2. 20% bio fuels in 2020

- *Amplifies all previous arguments related to unpredictability*
- *Doubles the renewable target compared to the EU Renewable Energy Directive*
- *Advanced biofuel to increase from 1,5% to 8% in 2020*
- *Remaining 12% could be 1G biofuel which would be in conflict with the ILUC directive*
- *Fuel offered will have to comply with existing EN specifications*
- *Escalating fuel product cost and Taxes and VAT would come on top*

 **but expensive**

 **But less flexibility**

 **Availability and cost**



**Blending Requirements x Acceptable Feedstock x Availability x Fuel Specifications x Infrastructure  
= ERROR**

# «DE-FOSSILIZE» ROAD TRANSPORT - OPTIONS

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Improve the base fuels



Renewable Fuel



Electric Mobility



Hydrogen



# RENEWABLE FUELS - DIESEL



## 1G BioDiesel (FAME)

- Surplus capacity
- Quality limitations B7 = ok
- Up to 60% GHG reduction
- Rape, Soya, Sunflower etc.



## “1,5G” Renewable Diesel (HVO)

- Capacity deficit
- High fuel quality = high blending possibility %
- Up to 90% GHG reduction
- Animal waste, used cooking oil, palm oil etc.



## 2G Cellulose BioDiesel (BTL)

- Highly complex and expensive technology
- Not commercially available
- Up to 70% GHG reduction expected
- Forest / cellulosic material

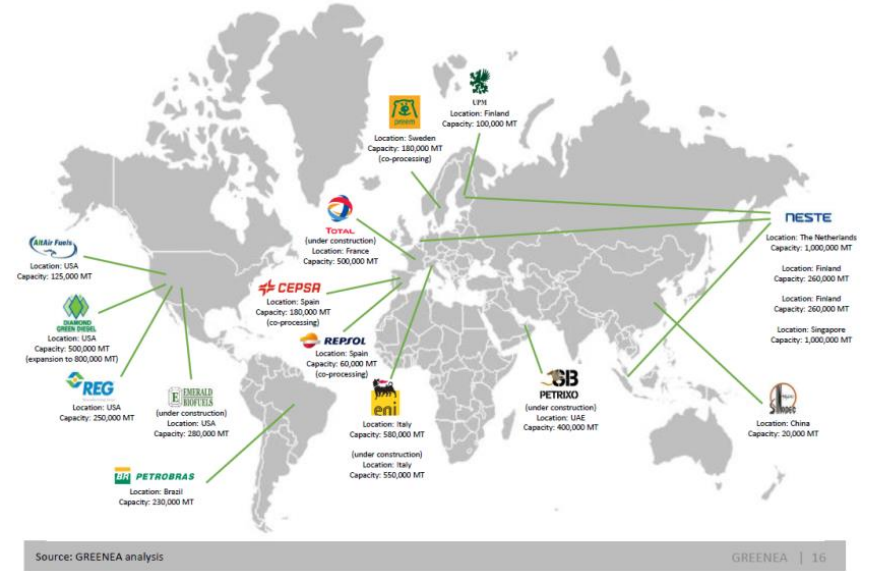




# SIGNIFICANT HVO SUPPLY DEFICIT ON THE HORIZON - ALREADY SURFACING

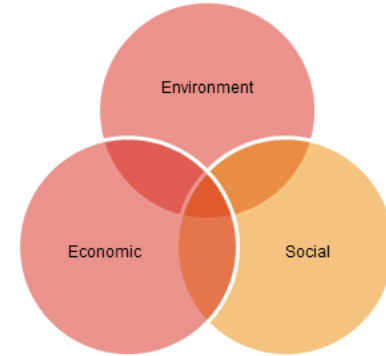


In the last 5 years, HVO has been developing rapidly



# FEEDSTOCK

## Sustainability dilemmas - Examples



Rape Oil	Pine Oil	Animal waste	UCO	Palm Oil
Produced in Europe	Produced in Europe	Available in Europe	Available in Europe	Not produced in Europe
Fodder & Fuel	Bi product used in chemical industry	Waste/ bi product material	Waste material	Food or Fuel
Probably no ILUC	No ILUC but replaced by fossil feedstock in chem	Could have ILUC	No ILUC	Possible LUC/ILUC Essential employer
0,7 ton oil/ha Low CO <sub>2</sub> capture/ha/year	Limited volume Medium CO <sub>2</sub> capture/ha/year	Limited volume	Limited volume	4 ton oil/ha High CO <sub>2</sub> capture/ha/year
Growth potential?	No growth potential	Eat more meat?	Limited growth potential	Growth potential

# CIRCLE K – ELECTRIC MOBILITY

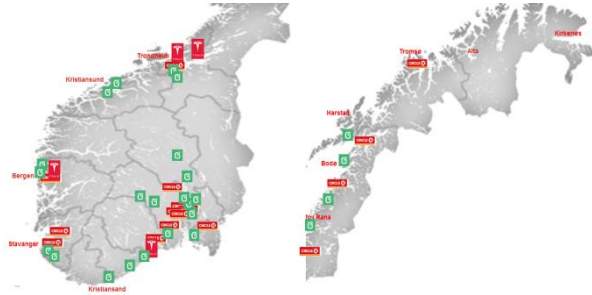
Norway:



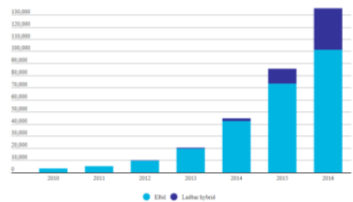
BEV: approx. 110.000

Quick chargers in CK network: 50+

Partners: Grønn Kontakt and Tesla



Antall elbiler og ladbare hybrider i Norge



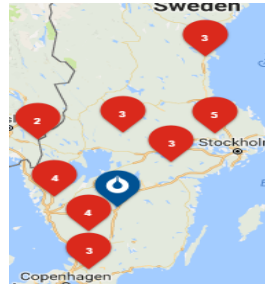
Sweden:



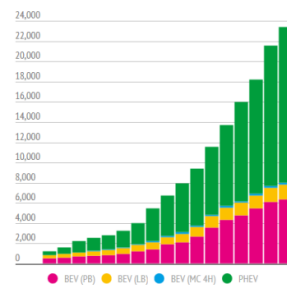
BEV. approx : 9.000

Quick chargers in CK network: 31+

Partner: CLEVER



ANTAL LADDBARA FORDON I SVERIGE 2012-2016



Danmark



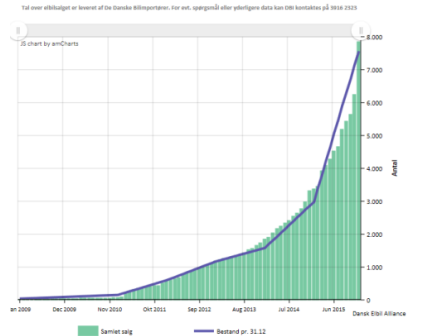
BEV: approx. 9.000

Quick chargers in CK network: 17

Partner: E-On and CLEVER



SALGS- OG BESTANDSTAL FOR ELBILER I DANMARK



## BUT IS “ALL ELECTRIC” REALLY THE ANSWER ALL OVER?

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# HYDROGEN – A ZERO EMISSION SOLUTION?

- **It all started with hydrogen – and «all» is still hydrogen**
- **So why not as a fuel?**
  - *All hydrogen on earth is trapped in water or hydrocarbon = must be produced*
- **Problem:**
  - *Production is highly energy intensive*
  - *No infrastructure is available – must be built on a global scale*
  - *Very low energy density – must be compressed – 700 bar*
  - *Material compatibility – increased cost*
  - *Hydrogen highly explosive requiring expensive fuel stations*
  - *Hydrogen require new engine technology (fuel cells)*
- **More efficient to use electricity and gas directly as fuel**
- **Should the world turn to hydrogen the risk is increased CO<sub>2</sub> emissions**
- **Hydrogen – a very costly solution**

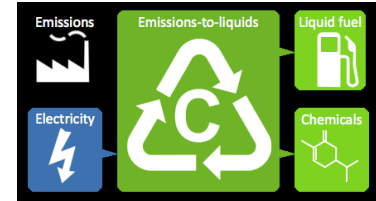
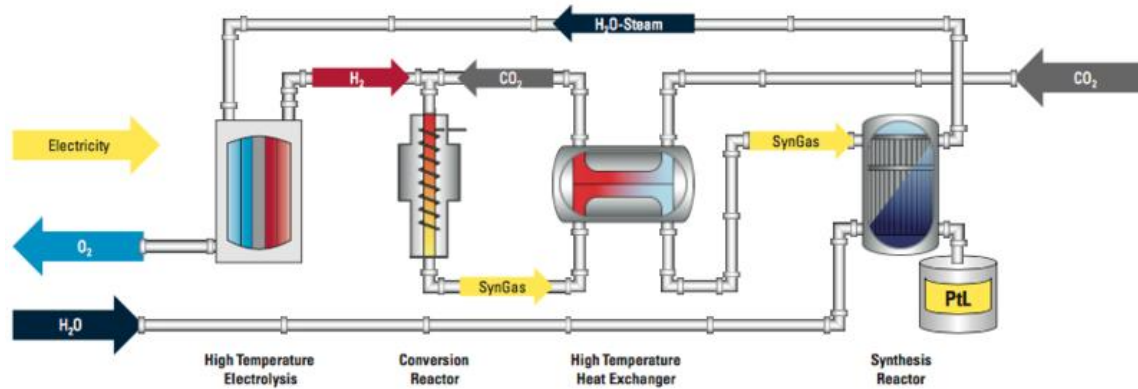


Today,  
**95%**  
of hydrogen is  
produced from fossil  
fuels



# AN ALTERNATIVE WAY TO USE HYDROGEN (AND CO<sub>2</sub>)

- The key is to turn CO<sub>2</sub> from the problem to a part of the solution
- Carbon Capture and Utilization (CCU / CCR) – reusing CO<sub>2</sub>
- CCU/CCR – the only way to reach a positive market based pricing of CO<sub>2</sub>
- «Electrofuels»



# CIRCLE K – BEING PART OF THE SOLUTION

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1. Circle K will continue to be an early mover in the supply of economically viable fuel products having less environmental footprint
2. Circle K will continue to offer E5, B7 and HVO to the market
3. Circle K will continue to use renewable fuels in accordance with the EU sustainability requirements
4. Circle K will continue to expand its engagement in electric mobility
5. Circle K is an independent retailer responding to the market demand and not to the interests of the oil industry



Circle K – A Part of the Solution