

# **Electrification and hydrogen as tools for industry decarbonisation**

**Some Vattenfall activities related to Power-to-X**

**Power-to-X seminar, World Trade Center, 2019-03-28**

**Johan Westin**

# Fossil free living within one generation



# Vattenfall partnership projects for a fossil free industry

Cement

Lime stone



Electrified process

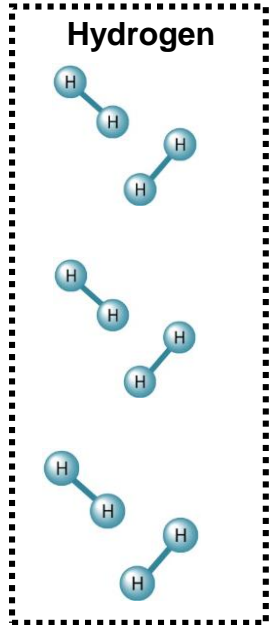


Cement



Iron & Steel

Iron ore pellets

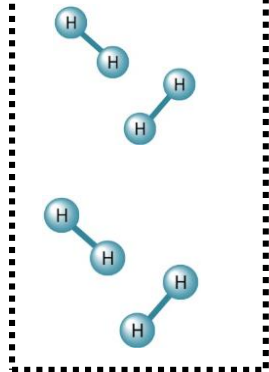


Iron



Refineries

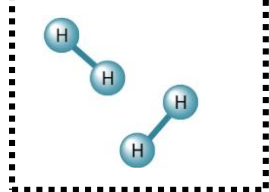
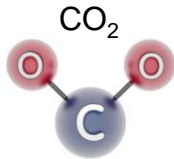
Biomass/Crude Oil



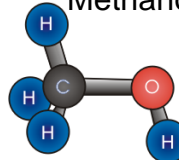
Fuel Products



Chemicals



Methanol



Polymers



## Partnerships



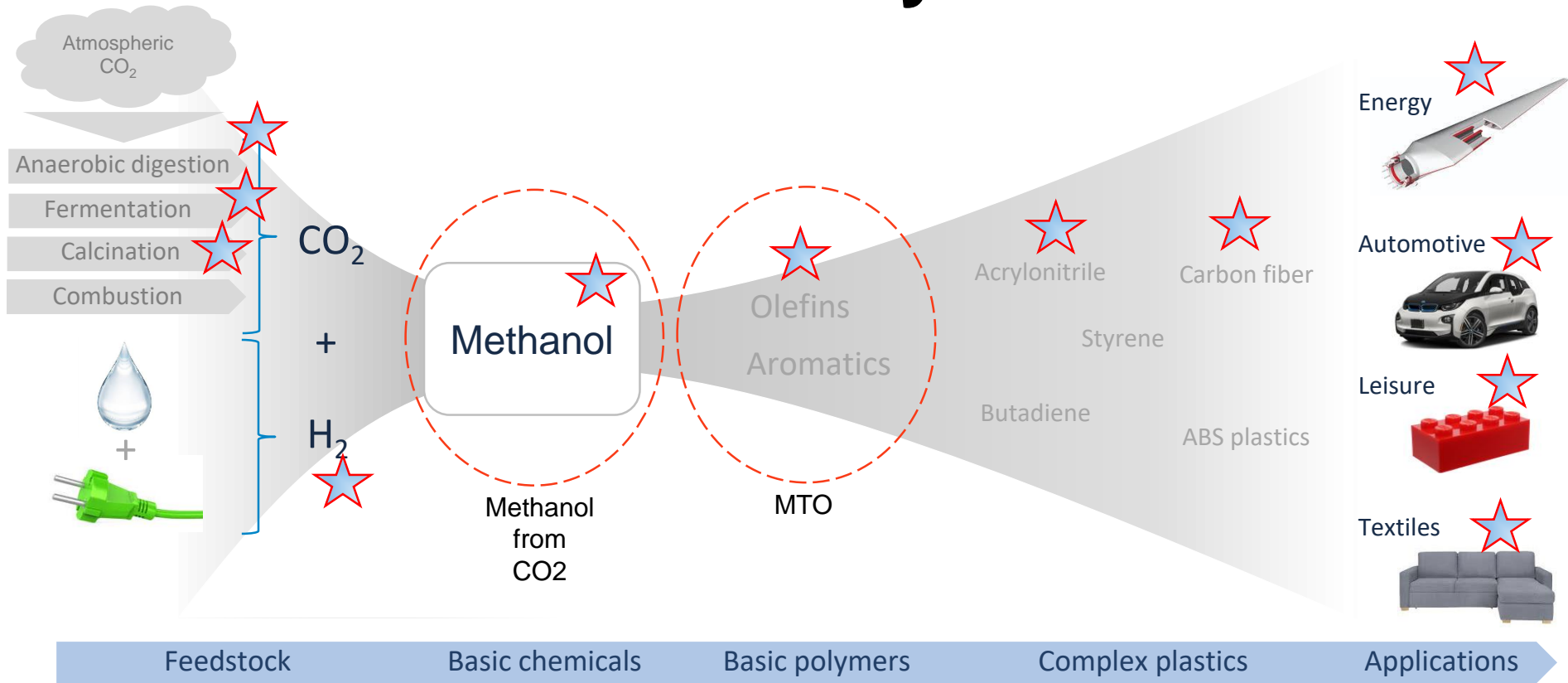
# Hydrogen will be important ...

1. as an **energy carrier** to reduce CO2 emissions in certain sectors
2. as a **fossil-free feedstock**, replacing fossil-based feedstock in industrial processes
3. as **energy storage** to support a system with high volatility, facilitating the integration of high shares of renewable energy sources like wind and solar



# Fossil free chemistry

★ Ongoing discussions with stakeholders in potential value chains

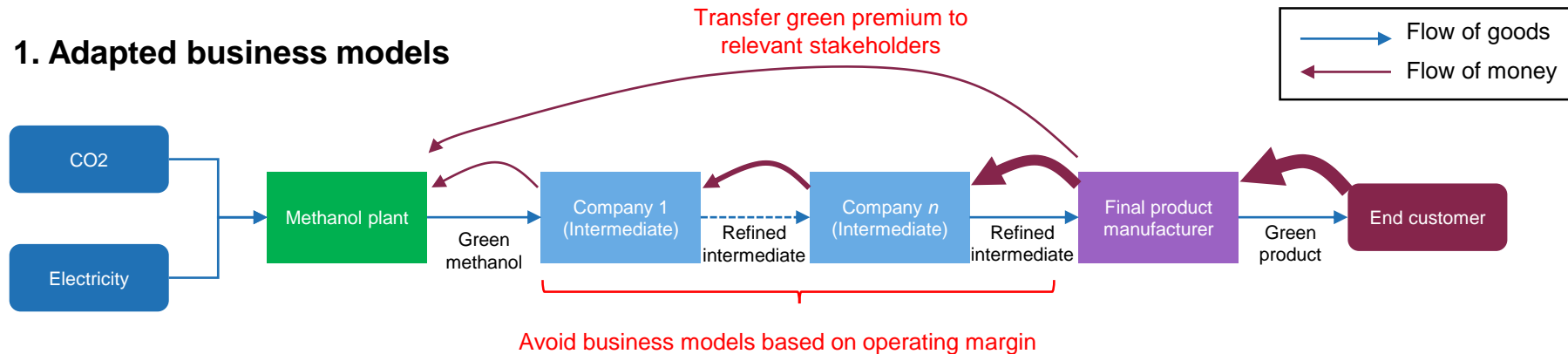




# Two success factors for fossil free materials

## Adapted business models and traceability of green products

### 1. Adapted business models



### 2. Traceability of green products

- Important to get acceptance for mass balance approach during a transition period (i.e. share production infrastructure with fossil production)
- Consumers must have confidence in a reliable system for traceability of green products (similar to renewable electricity)



# Elektrometanol kan ge fossilfri e-plast

i Power to X 25 mars, 2019 Morten Valestrand 0 Kommentarer



<https://second-opinion.se/elektrometanol-kan-ge-fossilfri-e-plast/>