

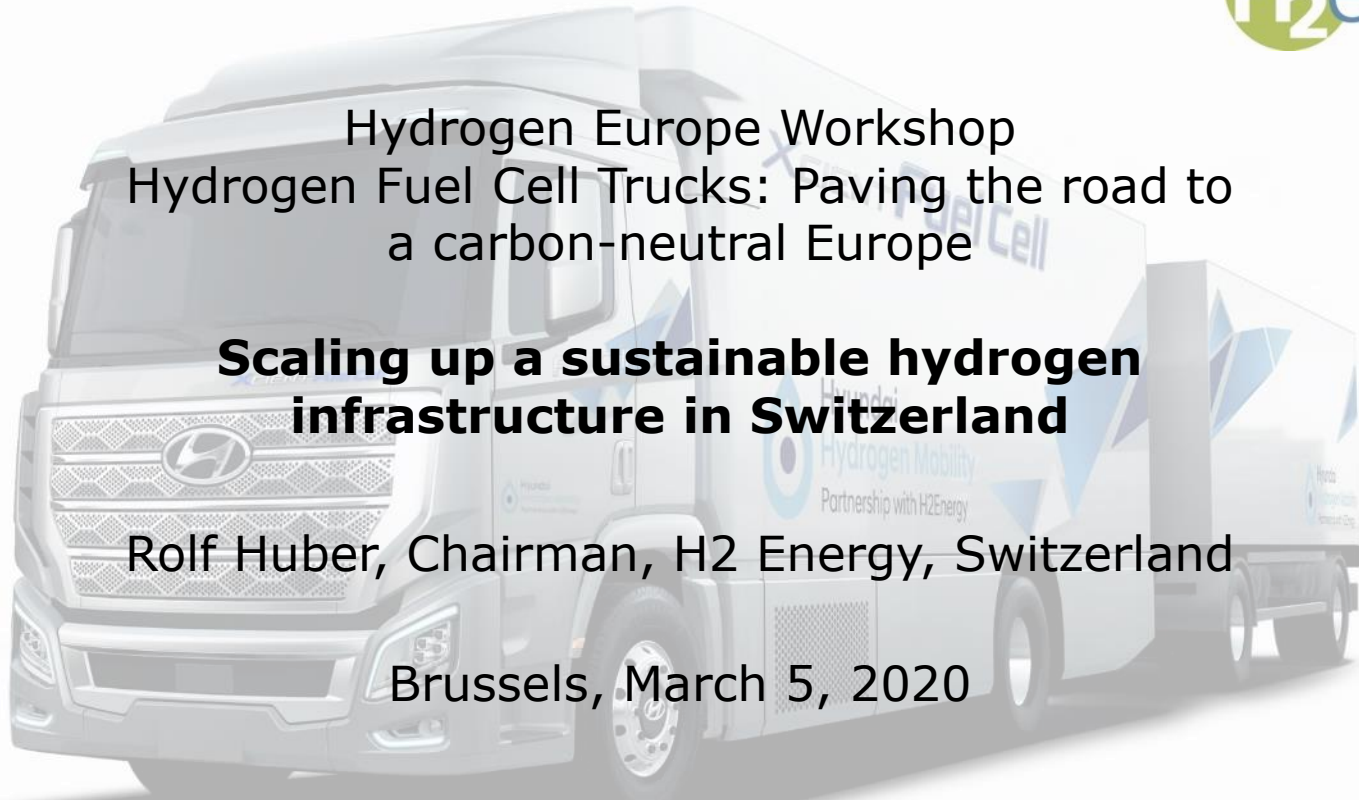


Hydrogen Europe Workshop  
Hydrogen Fuel Cell Trucks: Paving the road to  
a carbon-neutral Europe

**Scaling up a sustainable hydrogen  
infrastructure in Switzerland**

Rolf Huber, Chairman, H2 Energy, Switzerland

Brussels, March 5, 2020



# Development H2 Energy



Starting point and purpose of H2 Energy

**Fight global climate change** by leveraging partnerships and hydrogen technology as much as we can

Earn enough to make the difference

First dedicated ecosystem in Switzerland



Commercialization throughout Europe



100% renewable energy with no subsidies!

# Hydrogen infrastructure is basis to buffer, distribute energy and decarbonize sectors




Role	Buffering energy		Distributing energy		Decarbonizing sectors	
Sectors	Transport	Industry	Electricity	Fuels	Heating	
Applications	<ul style="list-style-type: none"><li>• Trucks and buses</li><li>• Cars</li><li>• Aviation, rockets</li><li>• Maritime</li><li>• Mat. handling vehicles</li><li>• Trains</li></ul>	<ul style="list-style-type: none"><li>• Ammonia, fertilizers</li><li>• Electronics</li><li>• Flat glass</li><li>• Hydrogenation for food</li><li>• Metalworking, refining</li><li>• Other use</li></ul>	<ul style="list-style-type: none"><li>• Back-up power</li><li>• Power generators</li></ul>	<ul style="list-style-type: none"><li>• Fuel production</li><li>• Oil-/ biomass up-grading</li><li>• Synthetic fuels</li></ul>	<ul style="list-style-type: none"><li>• Industrial heating</li><li>• Building heating</li><li>• District heating</li></ul>	

# Swiss eco-system sets the stage for commercial roll-out of heavy duty trucks



Hyundai H2 Energy



**H2-Truck-Fleet**


- Range 400 km
- Total weight 34 t
- 'Pay-per-use' Model

**Petrol Station owners – H2 Mobility Association**  
Avia, Agrola, Coop/CMA, Migrol, Shell, Socar, Tamoil

**H2 Refueling Station**  
50 – 100 HRS by 2023



Alpiq H2 Energy Linde



**Renewable Energy**

**H2-Production**

- 100 MW by 2023
- Decentralized locations

**H2-Logistics**

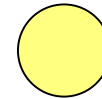
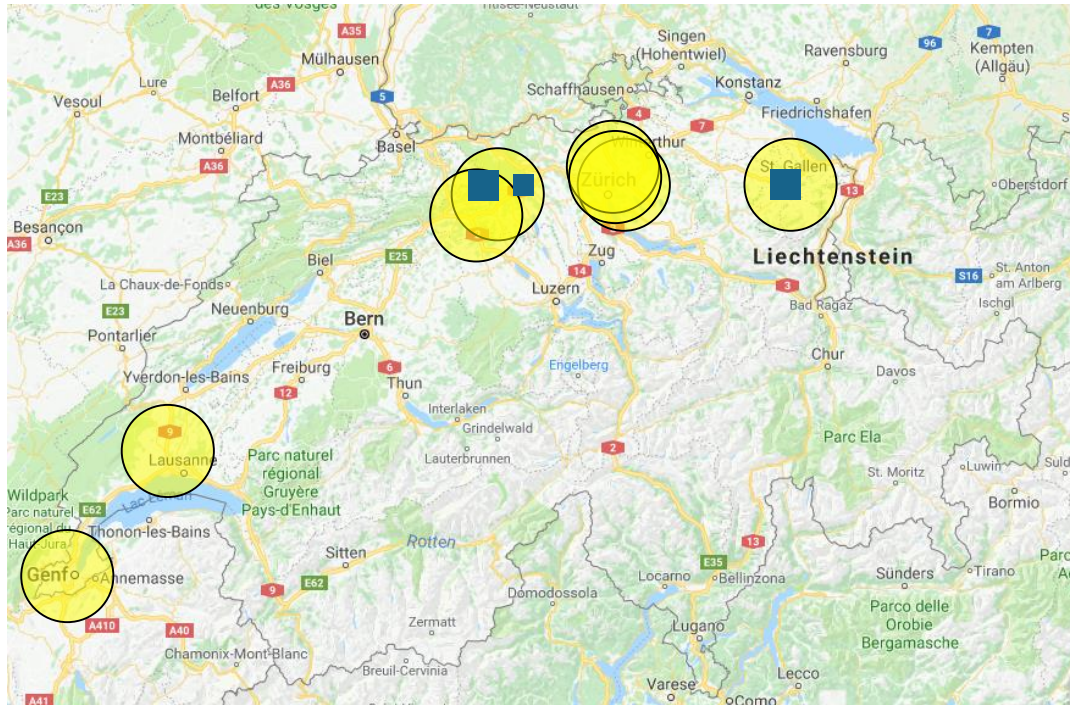
# Operational Hydros spider 2MW Electrolyser and storage container Switzerland/Gösgen



100MW electrolyzing capacity and 200 containers will be needed to supply 1'600 FC trucks

# Status Hydrogen Refueling projects in Switzerland – w/o subsidies

Plan as of end 2020, for 50 H2 trucks



Planned HRS in operation end of 2020

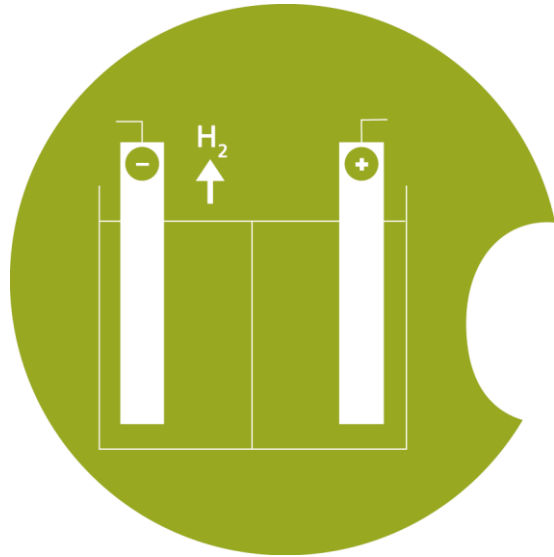


Planned H2 production facilities

# Hydrogen infrastructure with three pillars



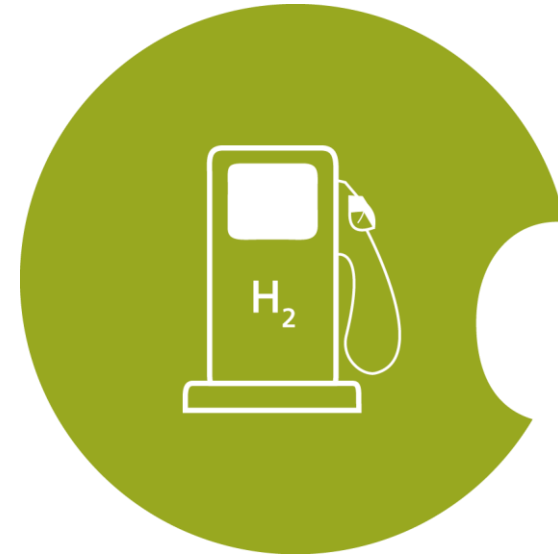
H2 Production



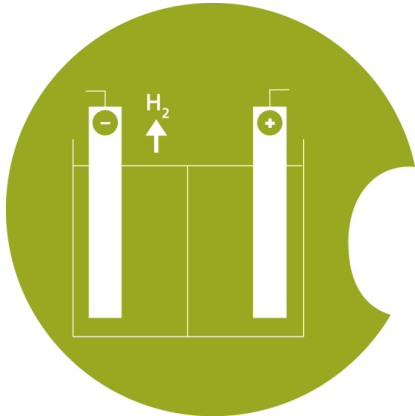
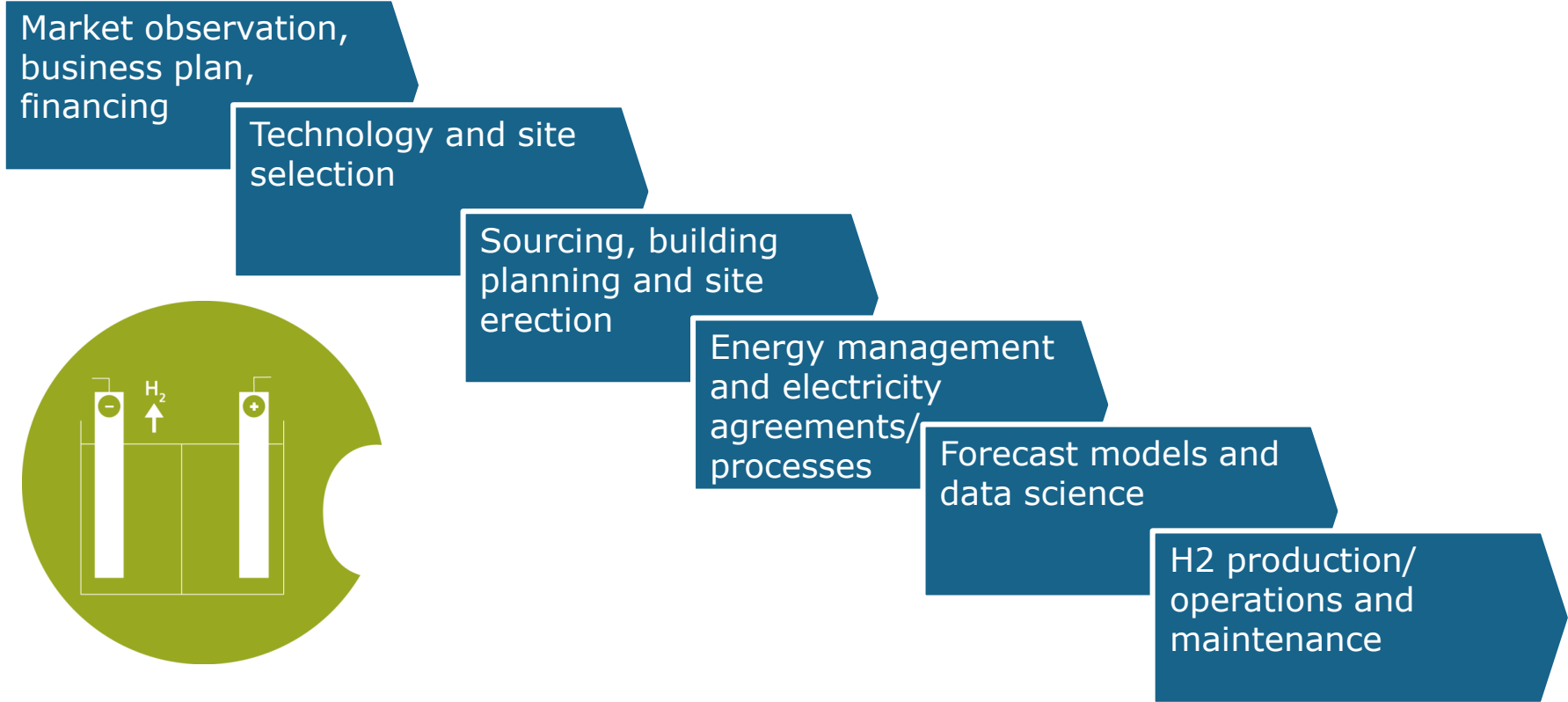
H2 Supply Chain



H2 Refueling



# Topics regarding H2 Production





# Topics regarding H2 Supply Chain



Selection supply infrastructure sites

Selection supply technology

Sourcing, building planning and supply chain erection

Logistic agreements with transport partners

Forecast models, planning & dispositioning

H2 delivery/ operations and maintenance



# Topics regarding H2 Refueling



Market observation  
and site selection

Selection HRS  
technology and  
sourcing

Sourcing, building  
planning and HRS  
erection

H2 sourcing, quality  
control and pricing

Payment systems and  
data science

H2 dispensing/  
operations and  
maintenance

