INTERNATIONAL PARTNERSHIP FOR
HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update November 2021: Switzerland

Name	Stefan Oberholzer
Contact Information	stefan.oberholzer@bfe.admin.ch
Covered Period	To November 2021

1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells

Performance-related heavy vehicle charge: Under Consultation: Amendment of the Federal Act on an Performance-related Heavy Vehicle Fee (1997) and the Ordinance on an Performance-related Heavy Vehicle (2000) -> Prolongation of the exemption for electric drives (https://www.fedlex.admin.ch/de/consultation-procedures/ongoing)

2. Hydrogen and Fuel Cell R&D Update

Ongoing national programmes of the Swiss Federal Office of Energy on Hydrogen and Fuel Cells. Overview on projects: https://h2fc.ch. Overall funding: CHF27.93 million (Swiss francs) per year (figures 2019).

eHRS: rapid electric charging with green hydrogen
First mobile fast charging station for electric vehicles was put into operation September 16, 2021. In pilot operation, the charging capacity of the system amounts to 60 kilowatts. In the later commercial application, the system will be operated with a charging capacity of up to 150 kilowatts per vehicle. https://new.abb.com/news/de/detail/82385/premiere-fur-wasserstoffbetriebene-mobile-schnellladestation

3a. Deployments

- **Hydrogen production**
  - Since June 2020: 2 MW PEM electrolysis at run-of-river plant (51 MW) in Gösgen (Alpiq), without grid, 300 t/a of renewable H2 supply for 50 fuel cell trucks
  - 2.5 MW constructing started (2021.09.30)
  - 20 MW+ in planning/construction for 2022/2023.
- **Infrastructure:** 10 public Hydrogen stations, 2 will open soon (33+ by 2023), 31 tons of H2 fuelled per station per year, 1.3 stations per 1 Mio. capita
- **Current availability of H2 at 95%** -> increase in redundancy needed (stations, production)
- **Vehicles** Hyundai shipped 46 XCIENT Fuel Cell trucks to Switzerland last year. Cumulative driving range:750,000 kilometres (May 2021). Another 140 units of the new XCIENT Fuel Cell shipped to Switzerland by end of 2022 (part of roll out of 1,600 trucks in Europe by 2025 by Hyundai Hydrogen Mobility with a lot of interest outside Switzerland as well)
- H2 transport within Switzerland: New containers go into circulation in 2022 to cover higher demand
- 2021.09.02: Swiss company **H2energy** invests in 1 GW electrolysis in Denmark (wind power) to supply stations and industry

4. Events and Solicitations

- **EFCF** (2021.06.29-2021.07.02): European Fuel Cell Forum: Fuel Cells, Electrolysers & H2 https://www.efcf.com/2021
- **2021.09.24: German-Swiss H2 forum in Konstanz (NOW, SFOE), press release**

5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

NA

6. Regulations, Codes & Standards, and Safety Update

NA

Summary Country Update June 2021: Switzerland

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Support Mechanism
Fuel Cell Vehicles[1]	-	180 as of March 2021[2]		• Exemption from mineral oil tax for H2 as fuel
FC Bus	-	-		No support policy
Fuel Cell Trucks[3]	1000 by 2023 1600 by 2025	47 as of 2021.06	Hyundai Hydrogen Mobility AG https://hyundai-hm.com/en/	• Exemption from the performance-related heavy vehicle tax (CHF 0,023 tkm for Euro 6) • Exemption from mineral oil tax for H2 as fuel • Subsidy: investment contribution of CHF 50,000 / annual subsidy paid out until 2030, which covers around two thirds of the additional rental costs compared to a diesel truck. https://wasserstoff.klik.ch
Forklifts	-	1		No support policy
H_2 Refueling Stations	**Target Number**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
70 MPa On-Site Production	-	1 as of 2021	• Semi-public (R&D)	demo project

[1] Includes Fuel Cell Electric Vehicles with Range Extenders
[2] cumulative registrations since 2015
[3] As above

70 MPa Delivered	nationwide H2 filling infrastructure by 2023	9 as of Nov 2021 (2 in preparation)	https://h2mobilitaet.ch/en/ Operated by COOP, Avia, AGROLA Hydrogen from Hydrospider AG	2 funded through demo projects
35 MPa On-Site Production	-	-		
35 MPa Delivered	-	-		
Stationary	**Target Number[4]**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
Small[5]	No target	-	-	
Medium[6]	No target	10 (?)	-	
Large[7]	No target	-	-	
District Grid[8]	No target	-	-	
Regional Grid[9]	No target	-	-	
Telecom backup	No target	5	POLYCOM (Swiss security radio network)	

[4] Targets can be units installed and/or total installed capacity in the size range indicated
[5] <5 kW (e.g., Residential Use)
[6] 5kW – 400 kW (e.g., Distributed Residential Use)
[7] 0.3MW – 10 MW (e.g., Industrial Use)
[8] 1MW – 30 MW (e.g., Grid Stability, Ancillary Services)
[9] 30MW plus (e.g., Grid Storage and Systems Management)

H_2 Production	Target[10]	Current Status	Partnerships, Strategic Approach	Support Mechanism
Fossil Fuels[11]				
Water Electrolysis[12] (PEM, Alkaline, SOEC)				
By-product H_2				
Energy Storage from Renewables	**Target[13]**	**Current Status**	**Partnership, Strategic Approach**	**Support Mechanism**
Installed Electrolyser Capacity				
Power to Power[14] Capacity				
Power to Gas[15] Capacity				

[10] Target can be by quantity (Nm^3, kg, t) and by percentage of total production; also, reference to efficiency capabilities can be a target
[11] Hydrogen produced by reforming processes
[12] Please indicate if targets relate to a specific technology (PEM, Alkaline, SOEC)
[13] Can be expressed in MW of Installed Capacity to use the electricity from renewable energy generation, and Annual MWh of stored energy capacity
[14] Operator has an obligation to return the electricity stored through the use of hydrogen back to electricity
[15] Operator has the opportunity to provide the stored energy in the form of hydrogen back to the energy system through multiple channels (e.g., merchant product, enriched natural gas, synthetic methane for transportation, heating, electricity)


IPHE