INTERNATIONAL PARTNERSHIP FOR
HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update June 2021: Switzerland

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Covered Period	To June 2021

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

- **Energy perspectives 2050+**: Preliminary results published in November 2020, detailed scenario results in March 2021: Electricity-based energy carriers including hydrogen necessary to achieve the Net Zero target, especially in the transport sector: 2050: 56 kT/a Hydrogen production (domestic), 73 kT/a Hydrogen import (ZERO Basis scenario) https://www.bfe.admin.ch/bfe/en/home/policy/energy-perspectives-2050-plus.html
- **Parliamentary initiative "Hydrogen. Assessment and options for action for Switzerland"**, adopted by the National Council (2021.06.19) -> Development of a Swiss Hydrogen Roadmap (https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20204709)
- **Parliamentary initiative "Green hydrogen strategy for Switzerland"**, adopted by the National Council (2021.06.17) https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20204406
- **New association to promote production of CO2-neutral hydrogen** (https://www.h2produzenten.ch/): Eight Swiss utilities have founded the Association of H2 Producers to help achieve a breakthrough towards CO_2-neutral hydrogen production in Switzerland.
- **National Programme "H2-SNF"**, as of April, there is a new national programme promotes the use of heavy-duty vehicles (SNF = Schwere Nutzfahrzeuge) powered by green hydrogen (H2). The focus is on transport companies that wish to purchase, rent or lease hydrogen-powered heavy commercial vehicles from any supplier. If the H2 SNF is purchased, the subsidy consists of a one-off investment contribution of CHF 50,000. If the H2 SNF is rented or leased, the subsidy consists of an annual subsidy paid out until 2030, which covers around two thirds of the additional rental costs compared to a diesel SNF. https://wasserstoff.klik.ch/

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: 27.93 million Swiss francs per year (figures 2019).

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
  - 2021.02.04: Construction application for 2.5 MW electrolysis at run-of-river power plant (Rhine), production starting 2022

- **Infrastructure** 7 stations in operation (+6 since June 2020), 3+ in planning
- **Vehicles** Hyundai shipped 46 XCIENT Fuel Cellt rucks 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)
- **Power-to-Gas:** 2.5 MW PEM electrolysis. Construction start 2020.04.09. Powered by waste incineration plant (15 GWh/year). CO2 from sewage gas used for biological methanisation. 18,000 MWh of renewable gas per year https://www.powertogas.ch

3b. Demonstration

- **H2 Bois SA:** production of hydrogen based on wood. The plant, the first of its kind in Switzerland and the second in Europe, is to be built in Jura and will produce from 2022 on (225 tons of hydrogen, 1500 tons of biochar) https://new.in-24.com/business/7674.html

4. Events and Solicitations

- **EFCF** (2021.06.29-2021.07.02): European Fuel Cell Forum: Fuel Cells, Electrolysers & H2 https://www.efcf.com/2021
- **German-Swiss H2 Forum** (28.09.2021): NOW, SFOE

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

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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
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
70 MPa Delivered	nationwide H2 filling infrastructure by 2023	7 as of June 2021 (3 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	-	-		

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

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)	-
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				

[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)
[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)

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				

[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)