INTERNATIONAL PARTNERSHIP FOR
HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update December 2018: South Africa

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

The Green Transport Strategy (GTS), led by the Department of Transport, was approved by Cabinet in September 2018. The Department of Science and Technology contributed a Chapter on Innovation that advocates for the adoption of low carbon technologies in the transport sector through hydrogen fuel cell powered vehicles and battery electric vehicles.

The draft Integrated Resource Plan (IRP) which gives an indication of the energy mix for the country, was released for Public comments looking at an energy mix that is in line with the country's developmental goals as outlined in the National Development Plan. Further consultations with stakeholders is ongoing.

The Department of Science and Technology released the Draft White Paper on Science, Technology and Innovation for public comments in October 2018. The paper reviews the performance of the National System of Innovation for the past two decades and identifies the gaps that need to be addressed in order to improve and guide innovation for the coming years.

2. Hydrogen and Fuel Cell R&D Update

HySA Catalysis has upscaled the production of their platinum-based catalysts from 1 kg per batch to 3kg per batch. HySA Systems has developed a new recipe for their metal hydride hydrogen storage material, which has a higher hydrogen storage capacity. The material has been used to develop a refuelling system for a fuel cell powered electric scooter.

3. Demonstration, Deployments, and Workforce Developments Update

HySA Systems has completed the integration of a fuel cell unit in a battery electric scooter as a range extender. Using a new recipe for their metal hydride. A canister based refuelling system incorporating the new metal hydride has been developed and is being deployed to support the electric scooter.

4. Events and Solicitations

South Africa, represented by the Deputy Director-General for Technology Innovation, Mr Mmboneni Muofhe, participated in the Hydrogen Energy Ministerial Meeting held in Tokyo in October 2018.

A Platinum Group Metals (PGMs) Day was held in Johannesburg on 10 April 2018. The event brought together mining companies, government departments and other stakeholders to discuss technological developments, beneficiation, recycling and other issues facing the mining industry in South Africa. The Director: Hydrogen and Energy from the Department of Science and Technology took part in a panel discussion on beneficiation and hydrogen fuel cell technology development.

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

Fuel Cell Funding for 2018/19 financial year (1 April 2018 to 31 March 2019) is as follows:

Government: R108 million (USD 8.0 million);

Private Sector Funding: still to be confirmed; and

Other Private sector fuel cell projects: still to be confirmed.

6. Regulations, Codes & Standards, and Safety Update

None.

Summary Country Update December 2018: South Africa

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Support Mechanism
Fuel Cell Vehicles[1]	No target	0 as of 30/11/18	• N/A	• General incentives exist within the Department of Trade and Industry
FC Bus	4 by 2020	0 as of 30/11/18	National and provincial government	• Specific subsidies may be developed
Fuel Cell Trucks[2]	No target	0 as of 30/11/18	N/A	General incentives exist within the Department of Trade and Industry
Forklifts	No target	1 as of 30/11/18	National and mining companies as well as development finance institutions	• No support policy
FC Electric Scooters	No target	1 as of 30/11/18	National government and state owned companies	• No support policy
H_2 Refueling Stations	**Target Number**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
70 MPa On-Site Production	No target	0 as of 30/11/18	• N/A	• No Subsidy for operation
70 MPa Delivered	No target	0 as of 30/11/18	N/A	No Subsidy for installation • Subsidy for operation
35 MPa On-Site Production	No target	0 as of 30/11/18	N/A	• Subsidy for installation through a tax measure of an annual 50% capital expenditure write-off

[1] Includes Fuel Cell Electric Vehicles with Range Extenders

[2] As above

35 MPa Delivered	No target	0 as of 30/11/18	N/A	
Stationary	**Target Number[3]**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
Small (≤ 5kW)[4]	No target	5 as of 30/11/18	N/A	• None
Medium (100kW)[5]	No target	1 as of 30/11/18	N/A	None
Large[6]	No target	0 as of 30/11/18	N/A	None
District Grid[7]	No target	0 as of 30/11/18	N/A	• None
Regional Grid[8]	No target	0 as of 30/11/18	N/A	None
Telecom backup	No target	>300 as of 30/11/18 but number needs to be confirmed	N/A	None
H_2 Production	**Target[9]**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
Fossil Fuels[10]	No target	0 as of 30/11/18	• N/A	None

[3] Targets can be units installed and/or total installed capacity in the size range indicated
[4] <5 kW (e.g., Residential Use)
[5] 5kW – 400 kW (e.g., Distributed Residential Use)
[6] 0.3MW – 10 MW (e.g., Industrial Use)
[7] 1MW – 30 MW (e.g., Grid Stability, Ancillary Services)
[8] 30MW plus (e.g., Grid Storage and Systems Management)
[9] Target can be by quantity (Nm^3, kg, t) and by percentage of total production; also, reference to efficiency capabilities can be a target
[10] Hydrogen produced by reforming processes

Water Electrolysis[11] (PEM, Alkaline, SOEC)	No target	0 as of 30/11/18	N/A	None
By-product H_2				
Energy Storage from Renewables	**Target[12]**	**Current Status**	**Partnership, Strategic Approach**	**Support Mechanism**
Power to Power[13] Capacity	No target	0 as of 30/11/18	N/A	None
Power to Gas[14] Capacity	No target	0 as of 30/11/18	N/A	None

[11] Please indicate if targets relate to a specific technology (PEM, Alkaline, SOEC)
[12] Can be expressed in MW of Installed Capacity to use the electricity from renewable energy generation, and Annual MWh of stored energy capacity
[13] Operator has an obligation to return the electricity stored through the use of hydrogen back to electricity
[14] 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)