INTERNATIONAL PARTNERSHIP FOR
HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update April 2018: South Africa

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Covered Period	November 2017 to April 2018

1. New Policy Initiatives on Hydrogen and Fuel Cell

The Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) report was presented to Parliament's Portfolio Committee on Energy in March 2018. The Report indicates that 62 of the projects had started commercial production by 31 December 2017. The total infrastructure investment from the 64 signed projects was R142billion.

The tariff has dropped consistently in every bid window to 86c/kWh in bid window 4. A total of 3,773 MW was installed as of December 31, 2017. Average construction time for each of the projects was 1.9 years. These projects created a total of 34,841 direct jobs, mostly during the construction phase.

Power Purchase Agreements (PPAs) were signed for another 27 renewable projects (mainly solar photovoltaic and wind) that will add 2,305 MW.

The National Planning Commission presented a draft Energy Paper 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.

2. Hydrogen and Fuel Cell R&D Update

Technologies such as electrochemical hydrogen compression and liquid organic hydrogen carriers have been of increasing interest to researchers and the resource industry over this period.

3. Demonstration and Deployments Update

The Minister of Science and Technology unveiled a HySA developed 2.5kW hydrogen fuel cell unit at a rural school. The system is comprised of 17kW of solar PV panels for powering an electrolyser for hydrogen production on-site. While this is a small unit within a global context, the interest it has generated in the domestic market is immense. Already some institutions are placing orders for their own facilities.

4. Events and Solicitations

The 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 of the Hydrogen and Energy Division in the Department of Science and Technology took part in a panel discussion on mineral beneficiation and hydrogen fuel cell technology development.

The South African Local Government Association (SALGA) held its annual energy summit in March 2018. The summit noted that:

- South Africa cannot avoid the energy transition
- A fundamental restructuring of the unsustainable large-scale utility model was therefore necessary.
- Rules needed to change in order to allow electricity consumers to play an active role in the production, storage, and sale of power into the grid.

The HySA Programme successfully held its second Technical Conference, November 27 to 28, 2017 in Cape Town. The Technical Meeting was well attended by both the public and private sector stakeholders.

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: R100 million (US$8.06Million);

Private Sector Funding: still to be confirmed; and

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

6. Regulations, Codes & Standards Update

The South African Bureau of Standards (SABS) held a meeting to look at the available hydrogen standards and where appropriate develop new and modify existing standards.

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Summary Country Update, April 2018: South Africa

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
Fuel Cell Vehicles[1]	No target	0 as of 26/04/18	N/A	• General incentives exist within the Department of Trade and Industry
FC Bus	4 by 2020	0 As of 26/04/18	National and provincial government	• Specific subsidies to be developed
Fuel Cell Trucks[2]	No target	0 as of 26/04/18	N/A	• General incentives exist within the Department of Trade and Industry
Forklifts	No target	1 as of 26/04/18	National and mining companies as well as development finance institutions	• No support policy
H_2 Refueling Stations	**Target Number**	**Current Status**	**Partnerships, Strategic Approach**	**Policy Support**
70 MPa On-Site Production	No target	0 as of 26/04/18	N/A	• No Subsidy for operation
70 MPa Delivered	No target	0 as of 26/04/18	N/A	• No Subsidy for installation • Subsidy for operation
35 MPa On-Site Production	No target	0 as of 26/04/18	N/A	• Subsidy for installation through a tax measure of an annual 50% capital expenditure write-off
35 MPa Delivered	No target	0 as of 26/04/18	N/A	

[1] Includes Fuel Cell Electric Vehicles with Range Extenders
[2] As above

Stationary	Target Number[3]	Current Status	Partnerships, Strategic Approach	Policy Support
Small (≤ 5kW)[4]	No target	5 as of 26/04/18	N/A	None
Medium (100kW)[5]	No target	1 as of 26/04/18	N/A	None
Large[6]	No target	0 as of 26/04/18	N/A	None
District Grid[7]	No target	0 as of 26/04/18	N/A	None
Regional Grid[8]	No target	0 as of 26/04/18	N/A	None
Telecom backup	No target	>300 as of 26/04/18	N/A	None
H_2 Production	**Target[9]**	**Current Status**	**Partnerships, Strategic Approach**	**Policy Support**
Fossil Fuels[10]	No target	0 as of 26/04/18	N/A	None
Water Electrolysis[11]	No target	0 as of 26/04/18	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
[11] Please indicate if targets relate to a specific technology (PEM, Alkaline, SOEC)

(PEM, Alkaline, SOEC)				
By-product H_2				
Energy Storage from Renewables	**Target[12]**	**Current Status**	**Partnership, Strategic Approach**	**Policy Support**
Power to Power[13] Capacity	No target	0 as of 26/04/18	N/A	None
Power to Gas[14] Capacity	No target	0 as of 26/04/18	N/A	None

[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)