



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update May 2016: South Africa

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Covered Period	January - April 2016

1. New Policy Initiatives on Hydrogen and Fuel Cell

No major policy decisions have been made on hydrogen and fuel cell technology (HFC) during the reporting period. However, a process has been initiated with the Department of Environmental Affairs to include HFC as part of the technologies to consider for Climate Change Mitigation. A multi-stakeholder forum involving government, industry and the Mining sector has been set up to develop a fuel cell roadmap for South Africa with the objective of aligning current and future activities in the sector.

2. Hydrogen and Fuel Cell R&D Update

The HySA Centres of Competence have each progressed well in technology development through the development of specific components targeted at developing cost effective membrane electrode assembly and metal hydride storage material, which is being demonstrated in the forklift. With support from industry, the HySA Centres are also doing research on liquid organic hydrogen carrier (LOHC).

3. Demonstration and Deployments Update

The Department of Science and Technology facilitated the deployment of the first fuel cell powered forklift in the country and the related refuelling infrastructure at the Impala Platinum Refineries in Springs, which was launched by the Minister of Science and Technology on 31 March 2016. The Department, Impala Platinum and HySA committed to further collaboration and deployments.

4. Events and Solicitations

The Department of Science and Technology was one of several key organisations from South Africa that participated in the Energy Storage tour to the USA from 18 - 29 April 2016. The Energy Storage tour was organised and sponsored by the US Trade and Development Agency (USTDA) as part of a reverse Trade Mission. The tour involved site visits in San Francisco, Los Angeles, Charlotte and Washington DC. There are also plans to attend the Japanese Fuel Cell Expo in 2017.

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

The HySA Programme received funding of R81.4 million (~USD5.4 million) from the government through the Department of Science and Technology. An additional amount of R34 million (USD2.2 million) was leveraged from other Programmes within the Department to give a combined total of USD7.6 million. The amount has been severely affected by the exchange



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rate. In-kind support has been received from the Private Sector. Support in cash will be reconciled in time for the next meeting.



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Summary Country Update May, 2016: South Africa

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
Fuel Cell Vehicles ¹	N/A by 2020	None as of 20/11/2015		
FC Bus	N/A by 2020	None as of 20/11/2015		
Fuel Cell Trucks ²	N/A by 2020	None as of 20/11/2015		
Forklifts	No target	1 fuel cell powered forklift as of 31/03/2016	Government, Impala Platinum Refineries and HySA Systems. Project was contract R&D (ZAR 6 million over 3 years) from Impala Platinum	<ul style="list-style-type: none"> No support policy
H ₂ Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
70 MPa On-Site Production	No target	None as of 06/05/2016		
70 MPa Delivered	No target by 2020	None as of 06/05/2016		
35 MPa On-Site Production	No target as of 20/11/2015	None as of 06/05/2016		

¹ Includes Fuel Cell Electric Vehicles with Range Extenders

²As above



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35 MPa Delivered	No target	None as of 06/05/2016		
Stationary	Target Number ³	Current Status	Partnerships, Strategic Approach	Policy Support
Small ⁴	25 units made in South Africa by 2020	None	None	• None
Medium ⁵	No target by 2020	4 x 5kW units installed	Government, Anglo Platinum, Air Products, Clean Energy Investments	
Large ⁶	No target	None		
District Grid ⁷	No target	None		• None
Regional Grid ⁸	No target	None		
Telecom backup	No target	~2MW		
H ₂ Production	Target ⁹	Current Status	Partnerships, Strategic Approach	Policy Support
Fossil Fuels ¹⁰	No target, CO ₂ -free H ₂ by 2020	N/A		

³ Targets can be units installed and/or total installed capacity in the size range indicated

⁴<5 kW (e.g., Residential Use)

⁵5kW – 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 (Nm³, kg, t) and by percentage of total production; also, reference to efficiency capabilities can be a target

¹⁰Hydrogen produced by reforming processes



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Water Electrolysis ¹¹ (PEM, Alkaline, SOEC)	No target by 2020	N/A		
By-productH ₂				
Energy Storage from Renewables	Target¹²	Current Status	Partnership, Strategic Approach	Policy Support
Power to Power ¹³ Capacity	None	N/A	Discussions have been initiated	
Power to Gas ¹⁴ Capacity	None	N/A	Discussions have been initiated	

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)