






Country	Institute	Category	Related programs (with short summary)	Target / Goal Outcome	Lead person / Organization	Partnership (if any)	Related information
South Africa	CSIR	Storage	<p>CSIR has been involved in the development of the materials-based hydrogen storage approach with the focus being on porous materials such as metal organic frameworks (MOFs), porous carbon and their composites.</p> <p>Current 2012 - 2021 (R&D span)</p> 	Develop efficient and reliable hydrogen storage technology for light-duty vehicles.	Drs Mkhulu Mathe & Nicholas Musyoka	(Domestic) - North West University, University of South Africa, Tshwane University of Technology, University of Pretoria (International) - University of Nottingham (UK), Lublin University of Technology (Poland) (Desired collaboration) - Institutes in Japan with expertise in materials-based hydrogen storage, methanol catalyst development and field testing of composite cylinders	https://www.hysainfrastructure.org/ https://www.csir.co.za/smart-places
			<p>Development of high-pressure composite cylinders (Type IV) with the eventual goal of incorporating the porous materials to derive conditions was done with attractive properties for lightweight hydrogen storage systems.</p> <p>Current 2015 - 2022 (R&D span)</p> 	Develop cylinders for natural gas and hydrogen storage for pressures ranging from 350 bar to 700bar. This to be applied in cars, buses and UAVs	Ashton Swaabooi/ Dr Mkhulu Mathe, CSIR	(Domestic) - North West University, University of South Africa, Tshwane University of Technology, University of Pretoria (Desired collaboration) - Institutes in Japan with expertise in materials-based hydrogen storage, methanol catalyst development and field testing of composite cylinders	https://www.hysainfrastructure.org/ https://www.csir.co.za/smart-places
		Standards	<p>Localisation of international Hydrogen standards for implementation of hydrogen transportation and stationary solutions in South Africa</p> <p>Current 2013 - 2023 (R&D span)</p> 	To have standards implemented in the introduction of Hydrogen mobility by buses and cars in South Africa	Drs Brian North/ Mkhulu Mathe, CSIR	(Domestic) - North West University, University of South Africa, Tshwane University of Technology, University of Pretoria (International) - University of Nottingham (UK) (Desired collaboration) - Institutes in Japan with expertise in materials-based hydrogen storage, methanol catalyst development and field testing of composite cylinders	https://www.hysainfrastructure.org/ https://www.csir.co.za/smart-places

Country	Institute	Category	Related programs (with short summary)	Target / Goal Outcome	Lead person / Organization	Partnership (if any)	Related information
South Africa	CSIR	Climate change	<p>Carbon dioxide utilisation in the production of methanol, other liquid fuels and chemicals</p> <p>Current</p>  <p>2018 - 2025(R&D span)</p>	To produce lowered cost methanol and related products utilizing green hydrogen	Drs Brian North/ Nicholas Musyoka/ Xolile Fuku/ Mmalewane Modibedi, CSIR	(Desired collaboration) - Institutes in Japan with expertise in materials-based carbon dioxide utilization for production of chemicals	https://www.hysainfrastructure.org/ https://www.csir.co.za/smart-places

Country	Institute	Category	Related programs (with short summary)	Target / Goal Outcome	Lead person / Organization	Partnership (if any)	Related information
South Africa	CSIR	Utilization	<p>Development of electrocatalysts, membranes and membrane electrode assemblies for fuel cells and electrolyzers</p> <p style="text-align: center;">Current</p> 	Production of lower cost materials solutions	Dr Mmalewane Modibedi/ Dr Mkhulu Mathe, CSIR	(Domestic) ● Universities of Johannesburg and Western Cape (International) ● University of Georgia, KIER (South Korea) (Desired collaboration) ● Tokuyama for the anion exchange membrane development	https://www.hysainfrastructure.org/ https://www.csir.co.za/smart-places