International Partnership for Hydrogen and Fuel Cells in the Economy

South Africa Update

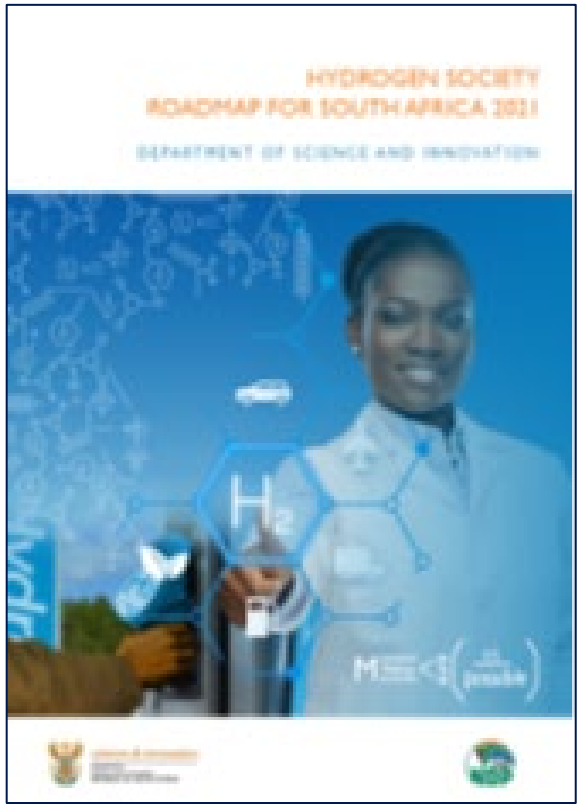
37th IPHE Steering Committee Meeting

26 – 27 April 2022

Virtual Meeting

Announcements / New Initiatives *South Africa*

Minister of Higher Education, Science and Innovation, **Dr BE Nzimande** launched South Africa's Hydrogen Society Roadmap



https://www.dst.gov.za/index.php/resource-center/strategies-and-reports/3574-hydrogen-society-roadmap-for-south-africa-2021

Key Collaborations

- Collaboration by the public, private sector, academia and civil society stakeholders in the development of the Hydrogen Society Roadmap (HSRM).
- Collaboration with UNIDO in putting in place a mechanism to coordinate the implementation of the HSRM.
- Hosting of the International Workshop on Safety Codes and Standards with participation of the Regulations, Codes, Standards & Safety (RCSS) WG.

3RD INTERNATIONAL WORKSHOP ON HYDROGEN SAFETY, CODES AND STANDARDS IN THE SOUTH AFRICAN CONTEXT (IWHSCS-2022)

Virtual event: Zoom platform, 02-03 March 2022

Making sure it's possible.

Registration link (Free): https://zoom.us/meeting/register/tJ0vcu2urD8uE9w5JENIK5ITeQJf5k8uKF-w

With the global drive to decarbonise, Green hydrogen is gaining attention as an attractive option for transitioning the world's energy mix and systems from fossil fuels to renewables. South Africa is in an excellent position to play a major role since the country's renewable energy resources are among the best in the world. Hydrogen production, storage, transport, and utilisation projects are being considered at large scales. But, hydrogen is a very flammable and explosive gas, and hence the country will need skilled people to design, build and operate such plants and systems safely. In this regard, the CSIR in collaboration with HySA Infrastructure CoC and with the support of the Department of Science and Innovation (DSI), has identified the need for information sharing related to Hydrogen Safety and RCS (Regulations, Codes, and Standards). Therefore, we will be hosting the 3rd International Workshop on Hydrogen Safety Codes and Standards (3rd IWHSCS-2022) on **02-03 March 2022.**

The 3rd IWHSCS-2022 builds on the previous events and continues the discussions/engagements on the topical area of Hydrogen Safety and RCS. From the safety point of view, the focus will be on hydrogen flammability, materials compatibility issues, lessons (accidents and near misses), whereas the RCS perspective will highlight progress made on the Hydrogen Regulations, Codes, and Standards. Renowned international and local experts will deliver the workshop content.

Target participants: First responders, researchers, artisans, engineers and professionals working within the hydrogen value chain space.

Attendance is free for all participants - No Registration fees.

Organisers: Dr Nicholas Musyoka, Dr Brian North, Dr Khavharendwe Rambau, Mr Ashton Swartbooi, Prof Dmitri Bessarabov, Dr Neels Le Roux.

For more information, please contact Dr Nicholas Musyoka (nmusyoka@csir.co.za).

science & innovation
Department: Science and Innovation
REPUBLIC OF SOUTH AFRICA

CSIR
Touching lives through innovation

HySA Infrastructure
Hydrogen South Africa

South Africa– Profile April 2022

Status of Deployments

Some deployments earmarked for launching within the next few months will be reported in the next meeting.

Leading Government Initiatives

- Green Hydrogen Economy Skills Study: Just labour transition through the Technical, Vocational Education and Training (TVET) College System
- Development of the South African Renewable Energy Master Plan
- Development of the Green Hydrogen Commercialisation Strategy
- The National Business Initiative (NBI) has released a number of Just Transition Pathways reports:
  - *Decarbonising South Africa's Power Sector*
  - *Decarbonising the South African Mining Sector*
  - *Decarbonising South Africa's Petrochemicals and Chemicals Sector*
  - *Decarbonising the Agriculture, Forestry and Land use Sector in South Africa*
  - *The Role of Gas in South Africa's Path to Net-Zero.*

  https://www.nbi.org.za/climate-pathways-and-a-just-transition-for-south-africa/

Goals or Focus Areas

- Decarbonisation of transport sectors: heavy duty trucks, shipping, aviation and rail
- Decarbonisation of energy intensive industry: iron & steel, chemicals, mining, refineries, cement
- Creation of an export market for green hydrogen and green ammonia
- Green and enhanced power sector and buildings
- Creation of a manufacturing sector for hydrogen products and components
- Transition from grey to blue to green hydrogen

Catalytic Projects

- Platinum Valley
- CoalCO2-X project
- Boegoebaai Special Economic Zone
- Sustainable Aviation Fuels

Funding

- Approved Funding for 2022/23 financial year will be consolidated and presented in the next SC meeting

Deployment Goals *South Africa*

https://www.dst.gov.za/index.php/resource-center/strategies-and-reports/3574-hydrogen-society-roadmap-for-south-africa-2021

2021-2024

PRODUCTION
- Small scale electrolysis production
- At least 1MW GH2 production piloted

USE
- At least 100 buses and trucks powered by H2 by 2025
- At least 20 forklifts converted to fuel cell power by 2025
- At least 5 refueling stations deployed by 2025
- Demonstration in power generation and stationary fuel cells in public buildings
- Industry demonstration including SAFs

JOBS
- Upscaling of training and reskilling for new jobs

2025-2030

PRODUCTION
- 5GW electrolysis capacity under construction in NC
- 10GW electrolysis capacity deployed in NC by 2030
- 1.7GW electrolyser capacity deployed in H2 Valley by 2030
- At least 500kt H2 produced annually by 2030

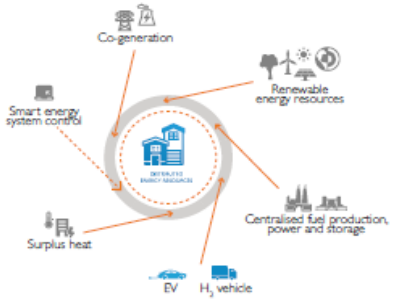
USE
- At least 500 buses and trucks powered by H2 by 2030
- Power generation in turbines using H2 and ammonia
- Sector coupling and use in transport, industry

JOBS
- At least 20 000 jobs created annually by 2030

2030-2040

PRODUCTION
- Increase electrolysis capacity to at least 15GW by 2040

USE
- Sector coupling and full use in transport, industry and power



JOBS
- At least 30 000 jobs created annually by 2040

Establish targets and policy signals

Support demand creation

Mitigate investment risk

Harmonize standards and remove barriers

Promote Research, Development and Innovation

Strategic demonstration and deployment projects

Skills development and public awareness

Examples of Lessons Learned and Impact *South Africa*

Please include up to 3 examples of policies, regulations or mandates that have been used in your country to deploy sustainable energy technologies. Please include a lesson learned for each example (i.e. if you had to do it all over again, what would you do different? Or what worked well?)

Program initiative, policy, regulation or mandate	Lessons Learned/Outcomes
Development of the Hydrogen Society Roadmap through a multi-stakeholder Consultation process	• While the consultation process can be a protracted process, it is an essential step to get the key stakeholders on board in preparation for the implementation process
The increase from 1MW to 100MW for companies to generate and even sell-on electricity without a license	• Policy levers have a critical role to play in stimulating private sector investment in renewable energy projects. There is room for more to be done in support the scale up of hydrogen related technologies.

Thank you

International Partnership
for Hydrogen and Fuel Cells
in the Economy