



**sanedi**

South African National Energy  
Development Institute (SOCI) Ltd.



# GH2 Research, Public Policies and Industry Needs

Emerging themes and priorities of green hydrogen research  
to support public and private sector objectives.

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# Who is SANEDI?



Department of  
Mineral Resources  
and Energy



- Technology RD&I
- Policy Information
- Data Management
- Thought Leadership
- Capacity Building
- Project Management
- Demonstration & Pilot Projects

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# Overview



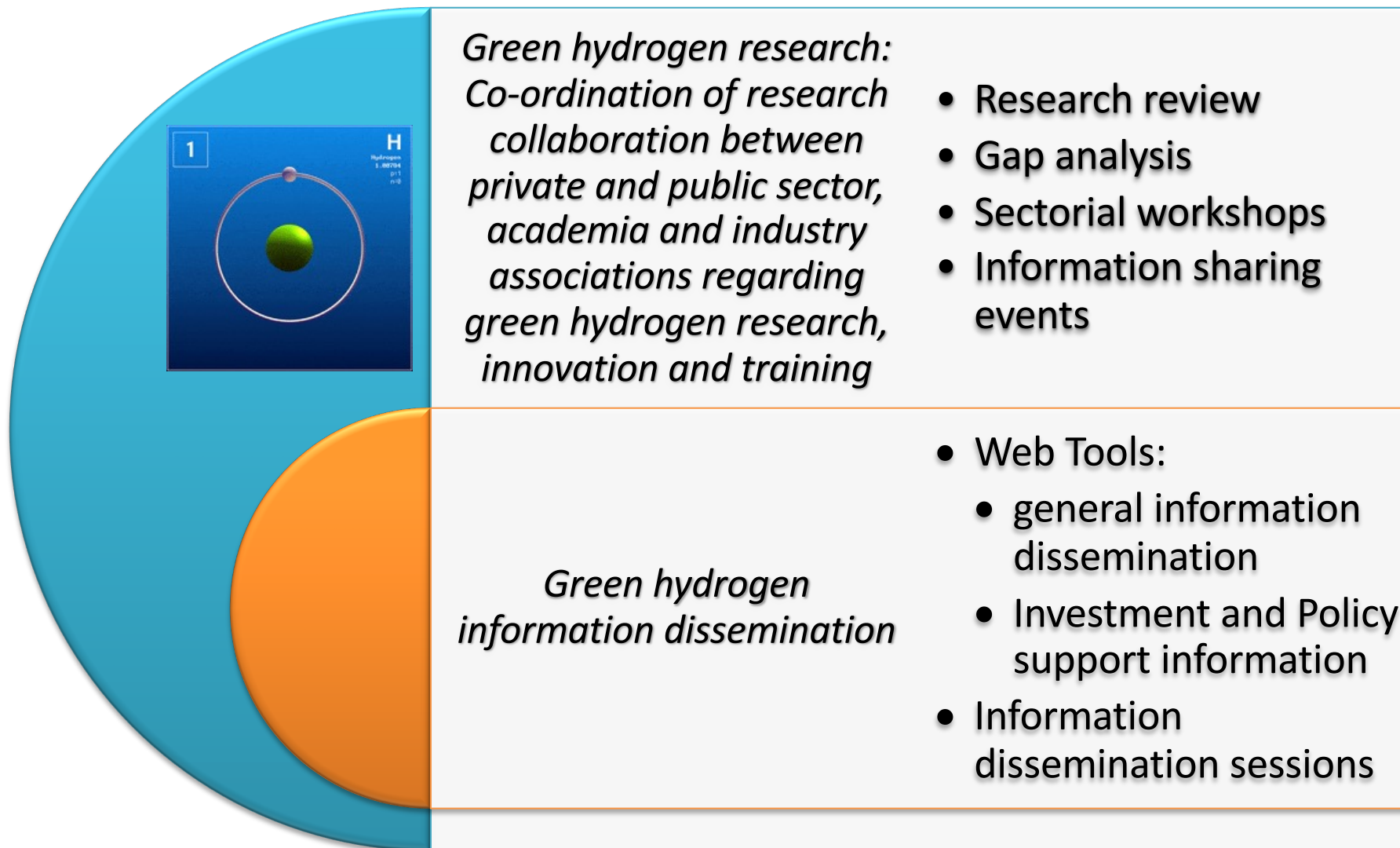
- 🌱 SANEDI is mandated to help catalyse sustainable energy innovation, transformation, and technology diffusion, including in the green hydrogen (GH2) sector
- 🌱 SANEDI, with support from GIZ under the H2.SA project, commissioned DNA Economics to conduct a review of the status quo and gaps in GH2 research in South Africa
- 🌱 Ultimate project aim is to enhance collaboration between the public sector, private sector, academia, and industry associations regarding research, innovation, and commercialisation of the SA GH2 research portfolio

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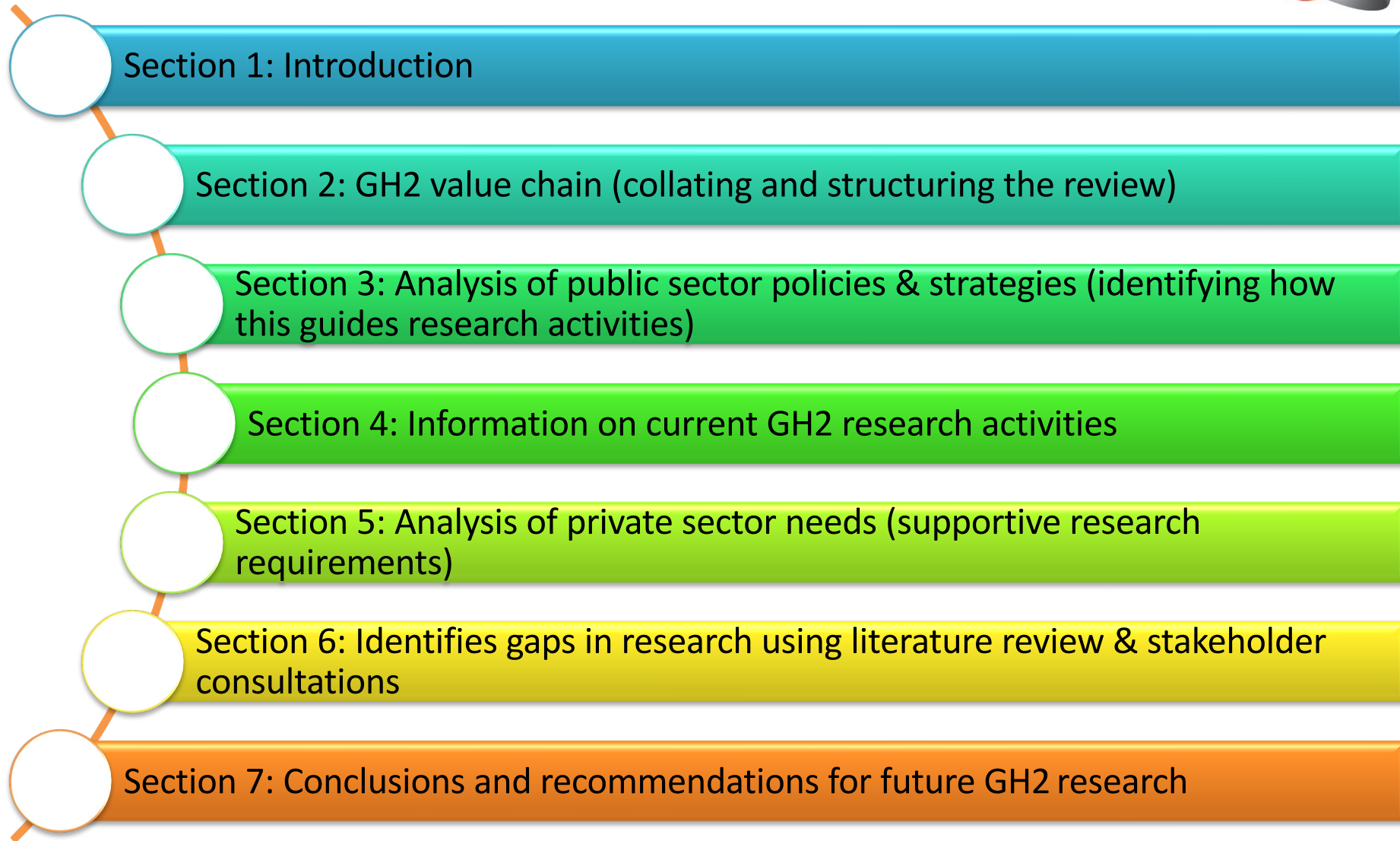


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# Objectives



# Report Content



# Review of Public Sector Policies Objectives that are Associated to the GH2 Research & the Economy

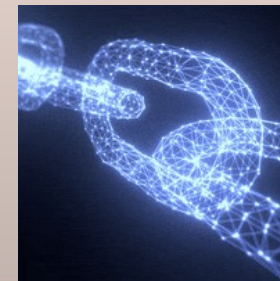


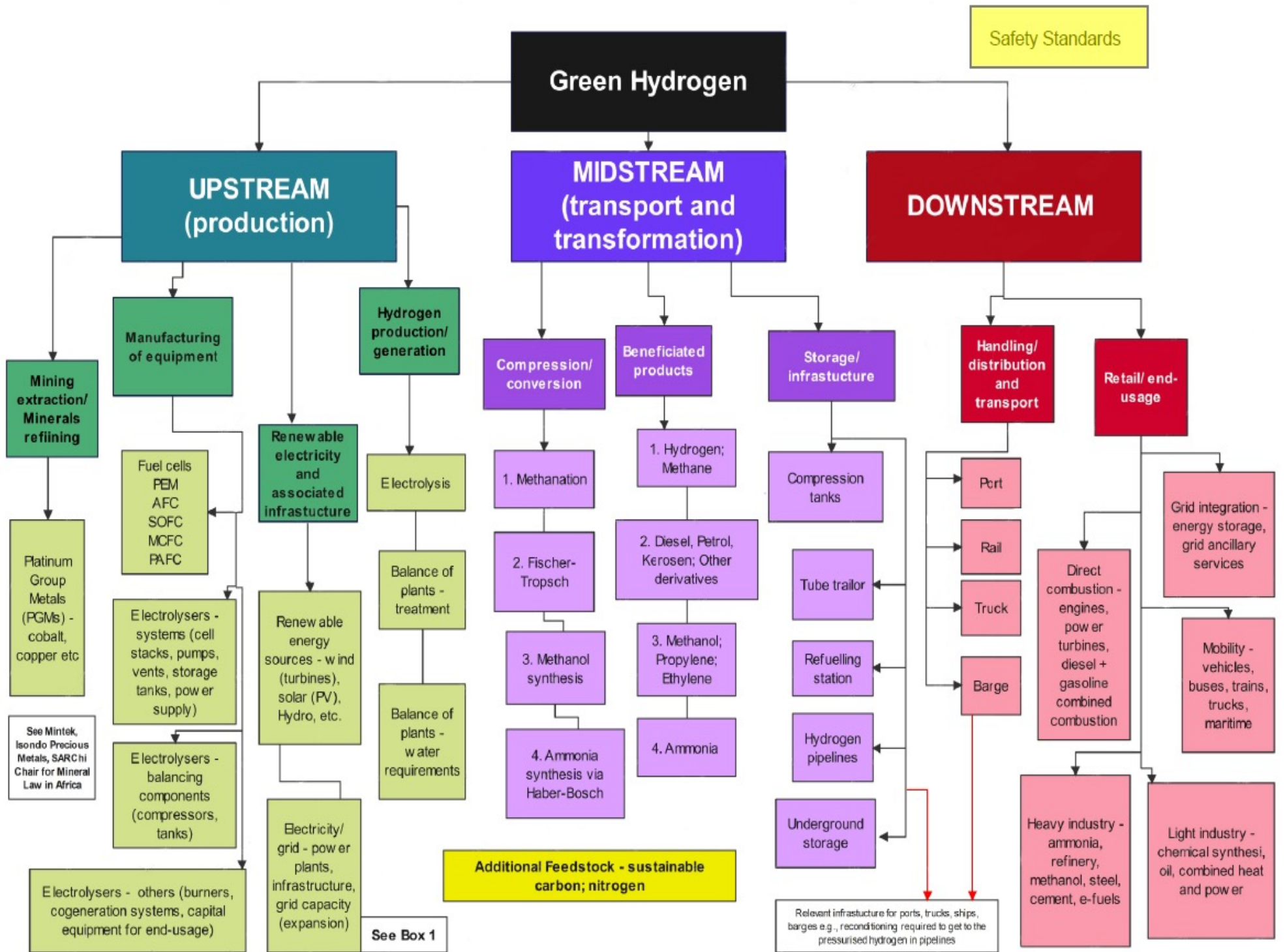
## Public sector policies and strategies

- South Africa's National Determined Contribution (DFFE, 2015)
- Just Energy Transition Investment Plan (The Presidency, 2022)
- Integrated Resource Plan (DMRE, 2019)
- 2030 National Development Plan (National Planning Committee, 2012)
- HySA Strategy
- South African Hydrogen Society Roadmap (GH2, 2023)
- South African GH2 Commercialisation Strategy (dtic, 2022)

## GH2 value chain

- Upstream (production)
- Midstream (storage and transformation)
- Downstream (distribution and utilisation)





# Infrastructure requirements for scaling up - grid

Big systems modelling, integration and optimisation  
Commercial/ private sector input for commercial viability

Access to green finance  
Geographic and spacial data  
Linking electricity and GH2 research and systems  
CCUS for feedstock  
Storage and compression - realistic role to play  
Linking electricity and GH2 research and systems  
Specialise within the value chain  
Stability of scaling up existing technology  
Common use of infrastructure  
GH2 hub for research and industry to engage

Bunker fuels

Equipment manufacturing  
Infrastructure - refuelling stations

Grid capacity for GH2 cycle - lean on system when no RE?  
Justification and social acceptance (socio-economic development and JET)  
Transportation and logistics (GH2 and VC components)

Desalination (quantities) and water  
Techno-economic analysis

Structures - regulatory framework & standards  
Regional integration e.g., Namibia)  
GH2 backbone?  
Skills and existing institutions  
Infrastructure - piping and pressure  
Getting a project to be bankable  
Scaling up existing technology

Waste management  
Market access

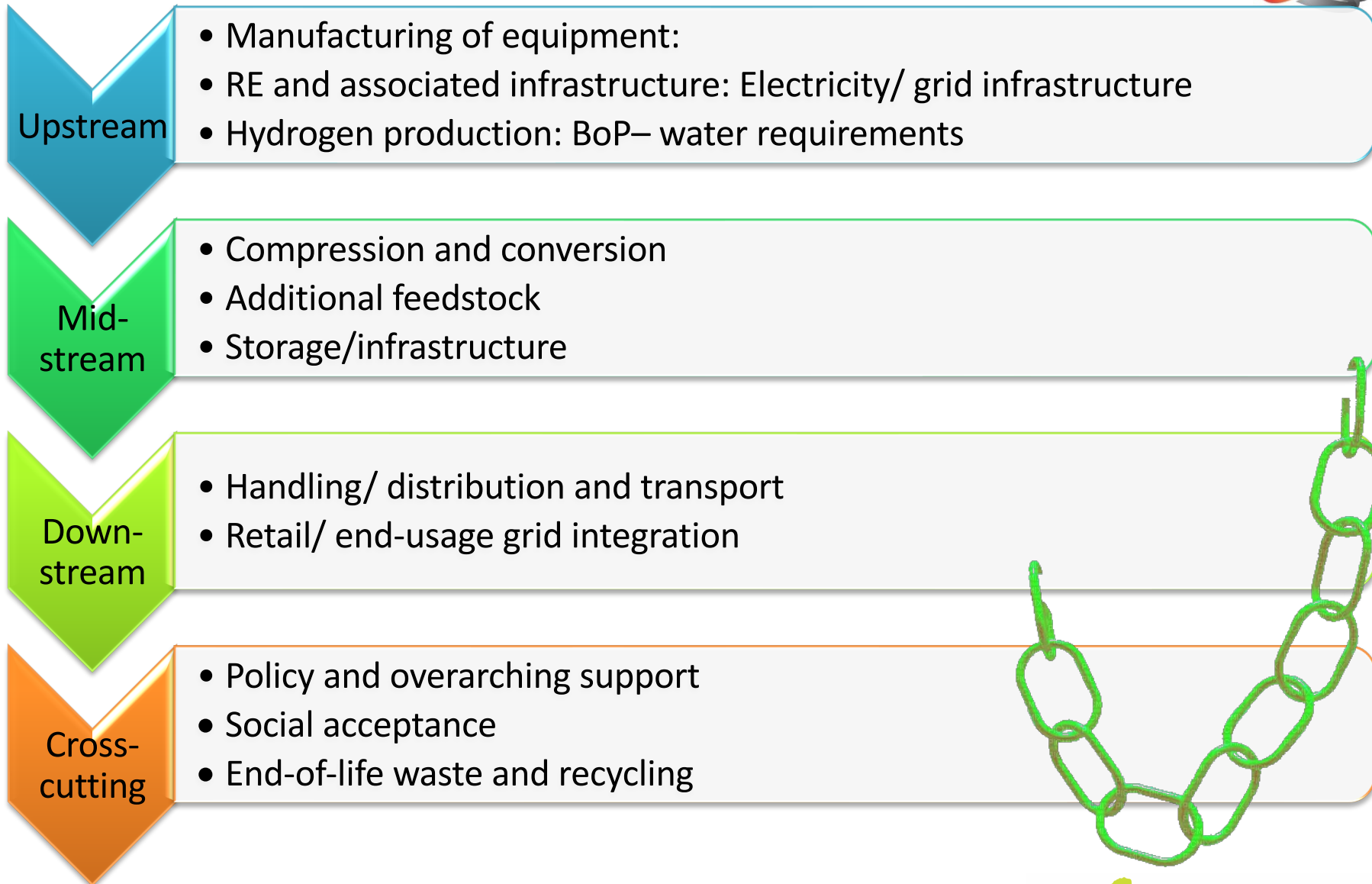
Safety

Scaling up and integrating into electricity system  
Further up the electrolyser value chain - systems, stacks, bipolar plates  
Material science - transitioning pipelines from gas to GH2

Electrolysers other than PEM



# Recommended Research Focus Areas



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# Recommendations and conclusions



- 🌱 Current policies & regulations not explicit on role of green hydrogen in their objectives
- 🌱 Current research activity focus:
  - Public sector on upstream and midstream GH2 value chain
  - Private sector research spread throughout entire GH2 value chain
- 🌱 Need for demonstration hubs/innovation parks to bridge gap between academic/pilot-scale R&D, and commercialisation and to stimulate communication between stakeholders involved in the GH2 economy
- 🌱 SA should prioritise developing specialist knowledge/technologies in focused areas such as GH2 production

# Recommendations and conclusion



- SA does not have local commercial manufacturers of fuel cells & electrolysers
  - Gap between small-scale laboratory/pilot demonstrations and commercial-scale production
- Investigate capability requirements of GH2 production cycle to support the grid
  - Include overarching support
  - Skills and training requirements
  - Policy alignment
  - Socio-economic development
  - Water & recycling
  - Geographic & market-specific research as well as possible regional linkages etc.



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# Access the Full Report here



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