

# Industrials, Manufacturing & Trade

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Big boost for a South African green hydrogen economy as new tools released



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## Big boost for a South African green hydrogen economy as new tools released

On 17 February 2025 two key environmental planning tools were published with the aim of guiding and supporting the responsible development of green hydrogen projects which will play an important role in South Africa's commitment to achieving a Just Energy Transition by replacing the use of fossil fuels in the fertilizer industry and in other hard-to-abate industries such as the heavy mobility, steel and cement industries.

The first tool is the Environmental Impact Assessment (EIA) Guideline for green hydrogen projects (EIA Guideline) and the second is the South African Green Hydrogen Potential Atlas (Hydrogen Potential Atlas). Both the EIA Guideline and the Hydrogen Atlas were developed by the Department of Forestry, Fisheries and the Environment in association with the Deutsche Gesellschaft für Internationale Zusammenarbeit, the Council for Scientific and Industrial Research and the GFA Consulting Group.

The underlying purpose of the EIA Guideline is to provide practical guidance on managing and resolving issues that arise during applications for environmental authorisation (EA) for green hydrogen projects. The EIA Guideline is available [here](#).

The EIA Guideline is titled "*Managing the impacts of a green hydrogen/Power-to-X economy: An environmental impact assessment guideline for South Africa*." The guideline specifically focuses on green hydrogen projects that follow a Power-to-X approach. Power-to-X deals with the conversion of renewable power into various forms of energy carriers, chemicals or materials. The EIA Guideline, therefore, does not provide sufficient guidance to projects that follow a Power-to-Power approach, which can be described as converting power from a renewable source to hydrogen, which is then used to create electricity (hydrogen power plant). Although some of the principles will remain the same in a Power-to-Power project, such as applying for EAs and that the development of projects should be just and equitable, there are other considerations which would be specific to Power-to-Power projects which the EIA Guideline does not provide guidance on. This alert therefore focuses on the Power-to-X process as described in the EIA Guideline.

### The Hydrogen Potential Atlas

The Hydrogen Potential Atlas is a geospatial tool designed to identify the most suitable regions for green hydrogen production in South Africa. In developing the atlas and identifying the most suitable locations, key spatial variables were taken into account, such as environmental conditions and sensitivities as well as various current uses of the environment, all of which were considered against the backdrop of the requirements for green hydrogen production. The atlas can be accessed online [here](#).



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### Key points in the EIA Guideline

The EIA Guideline provides comprehensive details regarding the following key issues for making informed decisions regarding green hydrogen projects in South Africa:

- The different green hydrogen technologies that can be harnessed to produce power.
- The relevant policy and regulatory framework that is currently applicable to the implementation of green hydrogen projects.
- Best practices for EIA and permitting requirements that will need to be considered when submitting the numerous licensing and authorisation applications applicable to green hydrogen projects.
- The identification of various tools that will be of significant assistance for future project planning.

The EIA Guideline is divided into five parts, aspects of which are highlighted below.

### Part 1: Introduction to green hydrogen and context setting

With the aim of kick-starting South Africa's green hydrogen economy, the Government has identified a R300 billion investment pipeline under its Green Hydrogen National Programme. This initiative is part of a Strategic Integrated Project (SIP) designed to fast-track the development of the newly proposed green hydrogen sector. The EIA Guideline

therefore provides an in-depth explanation of the science behind green hydrogen, how the production thereof would work and its application in the South African context. It also confirms that nine projects have already been registered as SIPs as part of the Green Hydrogen National Programme and that 11 projects are awaiting formal registration.

Part 1 of the EIA Guideline proceeds to identify and discuss the three broad categories that green hydrogen projects can be divided into,:

- **Category 1:** Green ammonia and/or methanol export projects
- **Category 2:** Green hydrogen/ammonia/methanol projects for local consumption or inland projects
- **Category 3:** Green hydrogen for mobility or green steel and other uses



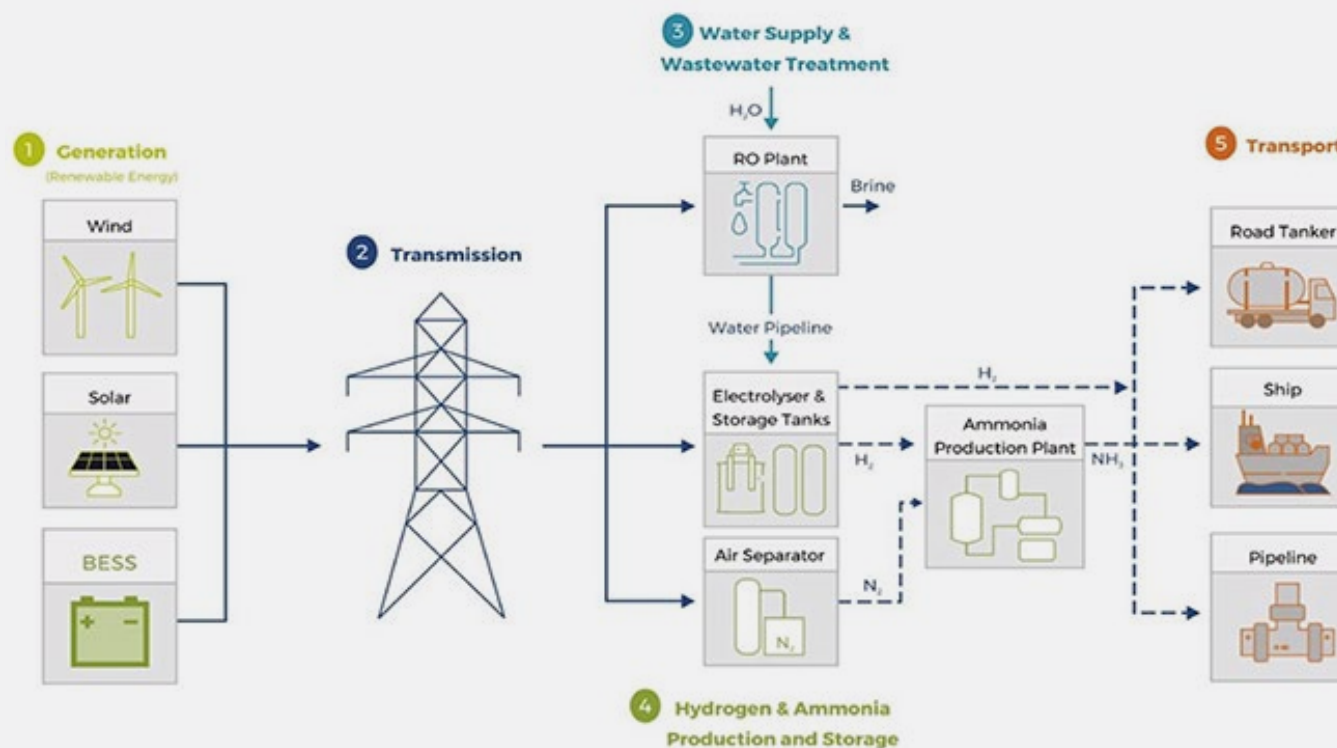
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Green hydrogen, which can be used as a fuel source, is produced by electrolysis where water is split into its hydrogen and oxygen molecules by using electricity. To produce hydrogen that is considered “green”, the electricity used should be supplied by renewable sources from solar photovoltaic (PV) facilities and windfarms. Ideally, the required water input should be supplied from seawater reverse osmosis at coastal locations or mine water reverse osmosis around old mining sites. The use of water from these two processes will ensure that water sources currently used for the supply of potable water are not compromised. Once a green hydrogen product is produced, it can be converted to ammonia as a carrier fuel or used to produce green methanol.

The process can be visually expressed as follows:



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### Part 2: EIA regulatory framework for green hydrogen projects

The EIA Guideline also identifies various permits and licenses that are likely to be applicable to green hydrogen projects to be developed in South Africa. It confirms that the existing regulatory framework in South Africa is sufficient to regulate the significant infrastructural and technological components that will be required to support a green hydrogen economy, subject to any changes in the future. It further identifies 10 important determinants to encourage public acceptance of the development of green hydrogen projects.

### Part 3: Planning and conducting the EIA process

The EIA Guideline provides a thorough review of the various phases in planning and conducting an EIA for green hydrogen projects, namely the preapplication, application, scoping, impact assessment and appeal stages. This section provides guidance on how the appointed environmental assessment practitioner (EAP) should manage each of these phases, and developers are urged to engage with an EAP at the earliest possible stage of project planning to assess the environmental and social impact of the project with the ultimate aim of mitigating and de-risking the project's impacts.

In addition, Part 3 explains how an EAP can use the National Environmental Web-based Screening Tool to identify which specialist assessments will need to be completed based on the proposed location of a project. A detailed synopsis is also provided regarding the various additional obligations an EAP will be required to manage, such as appointing relevant specialists, undertaking a biodiversity offset study, conducting a seamless public participation process, initiating long-term monitoring and applying for the EA.

The EIA Guideline also makes a passing reference to the Green Hydrogen Community Development Toolkit, which was created to give developers practical advice and guidance on community development. The toolkit is specifically tailored to deal with the unique social challenges that will be faced by the green hydrogen sector in South Africa when applying for the relevant licences and authorisations for green hydrogen projects.

### Part 4: Technical guidance and tools

Green hydrogen projects will, for the most part, rely on project financing from third parties such as lenders, investors and banks (financial institutions). These financial institutions may have adopted the Equator Principles and International Finance Corporation Performance Standards, which are intended for projects that have environmental and social risks and impact. Consequently, these financial institutions will have to ensure that the environmental and

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social impact assessments comply with the broad principles of these frameworks together with complying with the local EIA regulations. The EIA Guideline further provides a non-exhaustive list of additional factors an EAP will have to consider in respect of these regulations, standards and principles.

As an overview, Part 4 of the EIA Guideline covers project financing, the required project infrastructure, needs and desirability considerations, as well as the contributions of green hydrogen projects on a global and national scale.

### **Part 5: Policy-level recommendations**

Finally, the EIA Guideline provides some cautionary remarks regarding how the advantages of a green hydrogen economy can be undermined if the adverse impacts of developing such projects are not mitigated. In this regard, the authors have highlighted, at a strategic level, some policy-level recommendations to assist in better understanding the opportunities and risks of a South African green hydrogen economy.

### **Conclusion**

South Africa's prime location on global shipping routes and ample solar and wind resources place it in a unique position to become a global leader in the green hydrogen industry. Government has taken a proactive approach by releasing these tools to ensure that projects are planned responsibly and by reinforcing its commitment to clean energy innovations. However, as briefly discussed, the EIA Guideline should be further refined as it does not currently provide sufficient guidance to Power-to Power facilities such as hydrogen power plants, which leaves a gap for the efficient development of these projects.

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**BBBEE STATUS: LEVEL ONE CONTRIBUTOR**

Our BBBEE verification is one of several components of our transformation strategy and we continue to seek ways of improving it in a meaningful manner.

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