safcei SOUTHERN AFRICAN FAITH COMMUNITIES' ENVIRONMENT INSTITUTE

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Submission of comments on Green Hydrogen Commercialisation Strategy (GH strategy)

This submission is made by SAFCEI (Southern African Faith Communities' Environment Institute) in response to the publication of an invitation to comment on the Green Hydrogen Commercialisation Strategy, published by the Department of Trade, Industry and Competition on 9 December 2022

SAFCEI is a multi-faith organisation, committed to supporting faith leaders and their communities in Southern Africa. It aims to increase awareness, understanding and action on eco-justice, sustainable living and climate change. One of its focus areas is energy justice. Its vision is for South Africans to have accessible, affordable and sustainable energy, and to ensure that people of faith are informed about energy choices and the right to participate in energy decisions that affect them.

EXECUTIVE SUMMARY

1. The Purpose of the Department of Trade, Industry and Competition (DTIC) Green Hydrogen Commercialisation Strategy (the GH strategy) is broadly stated as follows:

> *"A comprehensive strategy will outline the commercial opportunity and development approach for a viable green hydrogen (GH) industrial sector, able to service both export as well as stimulate domestic demand and the right behaviour to meet sectoral decarbonization targets."*

and

> *"….a strategic framework and roadmap for commercialisation… will support further efforts to develop a full and detailed GH sector master plan. Such a sector master plan will require significant further quantitative studies and modelling as well as stakeholder alignment, some of which is already ongoing under the GHP. The report does not provide the technical, financial, socio or economic quantitative analyses ultimately required for investment decision making and quantifying economic cost-benefits.*[1]

2. It is clear from the green hydrogen strategy literature review that the role of GH in any economy must first be established and that at this stage the technology is still nascent.[2]

> *"In defining the opportunity for South Africa, it is important to recognize that GH is currently a nascent market representing less than a quarter of a percent of global energy.*[3]

The determination of such a role has not yet taken place in South Africa.

3. Although some aspects of a green hydrogen commercialisation strategy may fall within the mandate of the Department of Trade and Industry and Competition (DTIC) the determination of the role, and purpose of green hydrogen in future energy planning is not part of its mandate, but rather that of the Department of Minerals and Energy, and must be established through a process of integrated energy planning. The strategy is therefore premature in terms of the legislative scheme for policy development around energy issues.
4. It is also premature to assert that green hydrogen should be promoted in South Africa, given the early stages of its development for energy storage and transportation globally, its costs and given that the context is our current energy crisis. South Africa currently has a deficit of renewable energy for its domestic needs, and needs to deploy renewable energy on a large scale to

[1] Full Report Green Hydrogen Commercialisation Strategy – page 4

[2] Executive summary Green Hydrogen Commercialisation Strategy page 2

[3] Id

address the domestic energy crisis. A strategy that recommends making commitments to spend resources at this stage on the development of an energy export industry - and under circumstances of an unprecedented energy crisis, which demands renewable energy for domestic production - risks resulting in fruitless and wasteful expenditures, This is contrary to requirements of the Public Finance Management Act.[4]

5. Based on the above factors, a strategy that supports private sector development WITHOUT ANY EXPECTATION OF GOVERNMENT FUNDING IN ANY FORM is all that should be considered and supported at this early stage of green hydrogen commercial and other policy development.

A. LEGISLATIVE CONTEXT

6. The Constitution sets out the legislative and executive functions of the three spheres of government in general terms. The only reference to energy is the item "electricity and gas reticulation" in Part B of Schedule 4. By implication energy matters generally are by default national matters administered by the national Department of Mineral Resources and Energy.[5]
7. The Department of Mineral Resources and Energy (DMRE) confirms that it is mandated to ensure the transparent and efficient regulation of South Africa's mineral resources and minerals industry, and the secure and sustainable provision of energy in support of socioeconomic development.[6]

Integrated energy planning

8. In 1998 the then Department of Minerals and Energy published a White Paper on Energy Policy for South Africa indicating its intention to develop the energy sector through integrated energy planning (IEP). It committed itself to facilitate the provision of the necessary resources to establish IEP structures and systems to develop energy policy."[7]

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[4] Act 24 of 2008

[5] Jan Glazewski https://www.un.org/esa/sustdev/sdissues/energy/op/parliamentarian_forum/glazewski_re_sa.pdf

[6] https://www.gov.za/about-sa/minerals#:~:text=The%20Department%20of%20Mineral%20Resources,in%20support%20of%20socioeconomic%20development.

[7] 1998, Department of Minerals and Energy ISBN: 0-9584235-8-X paragraph 8.1.

9. The white paper defined integrated energy planning as follows.

"Integrated energy planning (IEP) is a process which entails the following technical functions:

- *interpreting the requirements of national economic, social and environmental policies for the energy sector;*
- *analysing energy needs in terms of how their fulfilment will contribute towards attaining national economic and social goals;*
- *analysing the potential of energy supply systems and demand side management to meet current and potential future energy needs. This would include analyses of individual supply sub-sectors and the linkages between sub-sectors;*
- *analysing energy sector linkages to the macro-economy;*
- *analysing the potential effects on the energy sector of global and technological developments;*
- *evaluating the effects of legislative, institutional and industry structure arrangements on energy supply and demand; and*
- *specifying, sourcing and presenting data on energy supply and demand, energy sector institutions, and linkages with economic and social factors in order to provide a statistical description of the energy sector's historic evolution and current impact on economic and social development."*

10. It is clear from the above definition and underlined sentences, that the development of green hydrogen within the macro energy planning context is a matter that falls squarely to be governed under integrated energy planning.
11. In 2008 the Electricity Regulation Act was promulgated, which gives effect to this intention to establish integrated energy planning under the Department of Minerals and Energy. The Act included extensive provisions for the development of 20-year integrated energy plans (IEP) in terms of section 6, which is to come into force by proclamation by the President. This has not yet taken place, contrary to what is stated in the GH strategy. Only drafts of this plan have been published to date but section 6 itself has not been brought into effect. The issue has become the subject of a high court litigation initiated by the Green Connection and SAFCEI[8] who seek a declaration that the President's failure to enact section 6 is unlawful. Further, an order is sought to ensure that the respondents take the necessary steps to bring section 6 into operation within three months.

[8] CASE NO 320/23 High court, Western Cape Provincial Division - The Green Connection and SAFCEI v The President of the Republic of South Africa and the Minister of Minerals and Energy

12. Section 6 states:

> *"Integrated energy planning*
> *(1) The Minister must develop and, on an annual basis, review and publish the Integrated Energy Plan in the Gazette.*
> *(2) The Integrated Energy Plan must deal with issues relating to the supply, transformation, transport,* ***storage*** *of and demand for energy in a way that accounts for— (a) security of supply; (b) economically available energy resources; (c) affordability; (d) universal accessibility and free basic electricity; (e) social equity; (f) employment; (g) the environment; (h) international commitments; (i) consumer protection; and (j) contribution of energy supply to socio-economic development.*
> *(3) The Integrated Energy Plan must— (a) take account of plans relating to transport, electricity, petroleum, water, trade, macro-economy energy infrastructure development, housing, air quality management, greenhouse gas mitigation within the energy sector and integrated development plans of local and provincial authorities; (b) inform and be informed by plans from all supply, production and demand sectors whose plans impact on or are impacted by the Integrated Energy Plan; and (c) be based on the results of the energy analysis envisaged in sections 3(4)(a) and 3(5).*
> *(4) The development of the Integrated Energy Plan must take into account— (a) sustainable development; (b) optimal use of indigenous and regional energy resources; (c) balance between supply and demand; (d) economic viability; (e) environmental, health, safety and socio-economic impacts; and (f) developmental requirements of the Southern African region.*
> *(5) The Integrated Energy Plan must have a planning horizon of no less than 20 years. (6) The Integrated Energy Plan must— (a) serve as a guide for energy infrastructure investments; (b) take into account all viable energy supply options; and (c) guide the selection of the appropriate technology to meet energy demand.*
> *(7) Before finalising the Integrated Energy Plan, the Minister must— (a) invite public comments; and (b) duly consider such comments.*

13. It is thus clear that all matters relating to the storage of energy that account for (a) security of supply; (b) economically available energy resources; (c) affordability; (d) universal accessibility and free basic electricity; (e) social equity; (f) employment; (g) the environment; (h) international commitments; (i) consumer protection; and (j) contribution of energy supply to socio-economic development are intended by section 6 to fall under the DMRE Integrated Energy Plan. As a result, policy development that includes strategic plans relating to the storage of electricity by means of green hydrogen or otherwise is intended by the Act to fall squarely under the DMRE.

14. To date macro energy planning has been confined mainly to planning for electricity generation through the promulgation of the Integrated Resource Plan in 2010 and 2019 under section 35(4) of the Electricity Regulation Act [9] read with item 4 of the Electricity Regulations on New Generation, 2011. However, this plan does not deal with energy sourced from liquid fuel, and does not address storage and transmission issues for electricity power generation. To date, it has made very little commitment to renewable energy and does not mention green hydrogen. A policy vacuum, therefore, exists that must be addressed before the role of green hydrogen in macro energy planning and storage can be determined in a rational manner.
15. The GH Strategy inappropriately suggests outputs and timelines for the development of regulation to promote green hydrogen[10] when the overall macro energy issues facing the country have not been addressed in terms of the legislative scheme governing energy planning.
16. Recommendations of the GH Strategy are concerning in the light of the limited role of the DTIC in energy governance - for example:

> *"…the following critical elements were identified: Direct investment by the state & economic and financial support mechanisms."*[11]
> *"Expedite an export pilot project to ensure SA is seen as a serious global player and achieves early market entry."* [12]
> *"Build on existing renewable energy-based regulatory tax incentives set out in the Income Tax Act to support the GH value chain."*[13]

17. Until the role of green hydrogen is considered and determined in a policy process that develops an integrated energy plan in terms of section 6 of the National Energy Act, the development of policy for its commercialisation of green hydrogen by the DTIC will be unconstitutional and should be discontinued.

[9] Act 4 of 2006
[10] Id page 15
[11] Executive summary – Green Hydrogen Commercialisation strategy page 3
[12] Id - Key Objective 1 on pg. 4
[13] Id pg. 15

C. Several practical concerns must be resolved by the DMRE before the state can lawfully expend resources on the development of green hydrogen.

18. In addition to ensuring that the correct process is followed in terms of the legislative scheme for energy, there are a number of concerns that must be resolved before green hydrogen can legitimately take its place within macro energy planning and make any contribution to the SA economy.

C1 **Green Hydrogen production must not compete with energy provision for domestic consumption, and the interests of domestic energy consumers must be protected.**

19. Under the National Energy Act[14] the state must balance security of supply and consumer protection:

> *Section 2 - Objects of the Act include:*
>
> *(g) – (to) provide for optimal supply, transformation, transportation, storage and demand of energy that are planned, organised and implemented in accordance with a balanced consideration of security of supply, economics, consumer protection and a sustainable development;*

Section 6 requires that energy planning must address the issues relating to energy in a way that accounts for consumer protection

> *Section 6(2) The Integrated Energy Plan must deal with issues relating to the supply, transformation, transport, of and demand for energy in a way that accounts for—*
> *(i) consumer protection; and (j) contribution of energy supply to socio-economic development.*
> *(4) The development of the Integrated Energy Plan must take into account— (a) sustainable development; (b) optimal use of indigenous and regional energy resources; (c) balance between supply and demand; (d) economic viability; (e) environmental, health, safety and socio-economic impacts; and (f) developmental requirements of the Southern African region.*
> *(6) The Integrated Energy Plan must— (a) serve as a guide for energy infrastructure investments; (b) take into account all viable energy supply options; and (c) guide the selection of the appropriate technology to meet energy demand.*

[14] Act 24 of 2008

20. Given the current energy crisis and deficit of renewable energy for domestic consumption it is the constitutional duty of the DMRE to determine whether the development of green hydrogen for export will compete for renewable energy resources against the demands of domestic consumers of electricity. The Act requires that the energy interests of energy consumers be protected. A just energy transition is being developed and energy planning must not undermine it. South Africa does not have surplus energy for the commercialisation of green hydrogen. Under present circumstances, the export of green hydrogen is in effect an energy transfer to richer nations (often Global North).
21. Given the shortage of renewable energy for domestic consumption the planned investments set out in the GH Strategy risk competing for renewable energy resources required for a just transition and domestic energy security. This is in conflict with the requirements of a just energy transition which requires that affordable, reliable energy be made available for all and for broad based economic growth.[15] No further investment should be made by the state into commercialising green hydrogen outside of an integrated energy planning process which will address these risks and concerns.

C2: Green hydrogen must promote efficiency before it can be considered for development by the state and promoted for export.

22. When preparing documents for public comment that purport to develop policy on energy and trade, DTIC officials must conduct themselves in accordance with section 195 of the Constitution, which sets out the basic values and principles governing administration in all spheres of government.[16] A central value is the duty to promote efficient, economic and effective use of resources by government.

[15] "A just transition builds the resilience of the economy and people through affordable, decentralised, diversely owned renewable systems, conservation of natural resources, equitable access of water resources; an environment that is not harmful to one's health and well-being; and sustainable, equitable, inclusive land-use for all, especially for the most vulnerable." Equitably distributing the costs and benefits of climate action." SOUTH AFRICA'S JUST ENERGY TRANSITION INVESTMENT PLAN (JET IP) for the initial period 2023–2027, Glossary of Terms.

[16] Constitution section 195(2)

The following aspects of section 195 are relevant to determining these duties:

"195. (1) Public administration must be governed by the democratic values and principles enshrined in the Constitution, including the following principles:
(b) Efficient, economic and effective use of resources must be promoted;
(c) Public administration must be development-oriented;
(e) People's needs must be responded to and the public must be encouraged to participate in policy making;
(f) Public administration must be accountable
(g) Transparency must be fostered by providing the public with timely, accessible and accurate information."

23. The stated aim of the GH Strategy is the production for commercial use of Green Hydrogen, for both local industrial use and for export. However, its literature review acknowledges that current GH production is nascent, and significantly costlier than alternatives in this statement:

> *"Benefits in terms of storage, trade and energy efficiency are clear …However significant cost reductions must be realised to make GH price competitive therefore significant focus on technology and scaling of manufacture capability is necessary"*[17]

However, in conflict with these cautionary assertions the GH Strategy is already encouraging investment into green hydrogen by statements such as:

> *"Supporting the efforts by the Northern Cape Economic Development Agency in the development of the Boegoebaai programme needs to be given top priority."*[18]

24. Clearly, the state (DTIC) is in the process of promoting the investment of its resources in the development of Green Hydrogen before it is established that doing so will promote efficient, economic and effective use of resources by government.
25. It is submitted that this approach is not only in conflict with the constitutional duty of the DTI and DMRE to respect their respective constitutional mandates, but is both premature and irresponsible given the expectations that are being raised in the process, in the poverty-stricken Northern Cape

[17] GH Strategy Summary page 6
[18] Id page 12

in particular. It is also alarming given the context of state capture around large capital projects. Given the constitutional duty to promote efficient, economic and effective use of resources, our national priority should instead be on addressing infrastructure and energy backlogs, rather than investing state resources in technology that at this stage is not proven to be price competitive.

C3: Uncertainties regarding the economic viability of green hydrogen must be resolved before in order to prevent fruitless and wasteful expenditure by the State in its development:

26. The PFMA is replete with provisions directing accounting officers, officials and other state employees to take effective and appropriate steps to prevent fruitless and wasteful expenditure which is defined in section 1 as:

> "*fruitless and wasteful expenditure" means expenditure which was made in vain and would have been avoided had reasonable care been exercise."*

For example, Section 45 states:

> *"45. Responsibilities of other officials.—An official in a department, trading entity or constitutional institution—*
> *(c) must take effective and appropriate steps to prevent, within that official's area of responsibility, any unauthorised expenditure, irregular expenditure and fruitless and wasteful expenditure and any under collection of revenue due."*

27. Expenditure of state resources at this early stage on the commercialisation of green hydrogen for export may well result in fruitless and wasteful expenditure, in conflict with the imperatives of the PFMA. South Africa's relative distance from commercial markets, compared to other countries, as well as lack of infrastructure for hydrogen production and transport may result in production here being uncompetitive. This is apart from considerations such as loss of efficiency in green hydrogen production, transport and conversion back to electricity process which already makes it inefficient and expensive. Green hydrogen may well become obsolete as cheaper energy storage options emerge.
28. The literature review confirms that technology is still in the development stage with a number of pilot projects being implemented globally to test

whether they are suitable to upscale for industrial and commercial viability. As such, there is no current market security. Given South Africa's lack of energy security, it is premature, and arguably, irresponsible for South Africa to invest public funds in the industrialisation for commercial gain of green hydrogen. Given the high cost of current green hydrogen technology and the financial risks associated with the development of more efficient green hydrogen technologies, South Africa would be wise to wait for a proven green hydrogen market. A similar example is the R10 billion wasted on developing the pebble bed modular reactor. [19]

29. To promote green hydrogen in the absence of these issues having been determined, and outside of the macro energy development project of the DMRE is premature and may well result in a significant waste of resources. It is in conflict with the constitutional duty placed on the DTI by section 195 of the Constitution and the public Finance Management Act. These significant uncertainties that have been glossed over in the strategy, which instead encourages South Africa to get involved in green hydrogen export in order not to lose a piece of the action. [20]

> *"The race for first-mover advantage is underway. South Africa is lagging behind competing export countries such as Morocco, Ukraine, Saudi Arabia, Chile, Australia and others."*

Conclusions

30. No role for GH has been developed to date in SA and the strategy is therefore premature. The GH Strategy literature review cites several references where the recommendation is made for the establishment of that role, given current uncertainties. For example, the International Energy Agency (IEA) report, (The Future of Hydrogen Part 1 and 2) referred to as "very holistic" by the GH Strategy lists 7 key recommendations for upscaling hydrogen which include:[21]

    a. Establish a role for hydrogen in long-term energy strategies.
    b. Address investment risks of first movers.
    c. Support R&D to bring down costs.

[19] The PBMR: An Obituary by Stephen Thomas
https://www.sciencedirect.com/science/article/abs/pii/S0301421511000826

[20] Executive summary GH Commercialization Strategy page 6

[21] Full Report Green Hydrogen Commercialisation Strategy – page 4

31. It follows that before there can be any export strategy developed for GH, a long-term energy strategy for the country has to be in place, where a role for GH has been determined. This has not happened yet. Green hydrogen cannot be developed separately in legal and physical islands without risking inter-governmental disharmony and further chaos, which has come to characterise our energy landscape.
32. Developing the hydrogen economy will depend on a number of factors: creating a market for clean hydrogen, cutting its production costs and creating an infrastructure for its transport and storage as stated in the GH Strategy literature review with reference to the EU Hydrogen policy.[22] In addition an important constraint on viability of green energy for export is the distance of South Africa from export markets for GH. It is potentially more viable to rather consider exporting products using GH – such as fuel cells - considering that South Africa has some of the world's biggest reserves of critical metals for fuel cell production e.g., Platinum. That said, the range of potential products and the market for these products are still in the early stages of development. This translates directly into high risks for funding for research and for commercial operations. Until the green hydrogen market matures globally, and it is clear which products are commercially viable, our government should not invest in high risk research and development given our other energy and infrastructure priorities.
33. As the role of GH has not been established in SA, what the GH Strategy presents is a series of assumptions that have been developed to promote GH, it is submitted prematurely. The strategy assumes, incorrectly, that the IEP has been through several drafts. It makes a series of suggestions as to how that role can be promoted, even though the department seized with energy planning has not even mentioned it in its Integrated Resource Plan.
34. In these circumstances and given the demand for renewable energy for domestic consumption currently in South Africa, it should rather let research and development for green hydrogen mature elsewhere (as with electric cars). As South Africa has many of the potential resources required by a

[22] Authored by Jensen, Climate Action Research and Tracking Service, Members' Research Service Full Report Green Hydrogen Commercialisation Strategy – Page 104

green energy market and it will be in a position to consider utilizing them once we have surplus electrical energy. There is much to be gained by waiting for the market to mature and then with our abundant wind and sun, and minerals South Africa can still be a prized location for generation of green hydrogen.

35. State funding into GH research and development represents a diversion from more critical energy security developments and their implementation and is unacceptable given the legislative scheme. Based on the above factors, a strategy that supports private sector development WITHOUT ANY EXPECTATION OF GOVERNMENT FUNDING IN ANY FORM is all that should be considered and supported at this early stage. South Africa does not have the surplus energy to embark on GH Commercialisation. Embarking on a GH CS at this stage is in direct competition with the objectives of a Just Energy Transition. In fact, it is likely to benefit energy elites at the expense of the population.

Regards

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