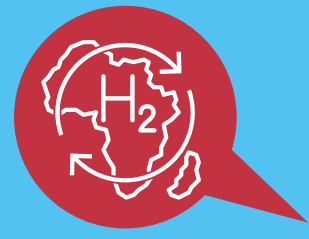




# Opportunities *for* *Digital Startups and* *Local Innovators* **in Green Hydrogen** *in Namibia*



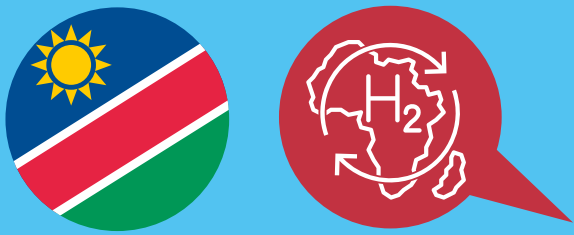


## Summary

**N**amibia's potential in green hydrogen could transform the local economy and the energy sector. However, the current ecosystem is dominated by large international projects and players, and digital startups and local innovators are not in the focus. Some systemic dynamics hinder the small actors, including non-inclusive policies, lack of awareness of opportunities, resources and support channelled principally to large corporations, and limited local skills in green hydrogen.

This brief outlines the climate for innovators in green hydrogen in Namibia, introduces some of the major players in the ecosystem, and shares recommendations to improve systemic dynamics for startups to enable them to grasp opportunities in the sector. The recommendations were gathered through Endeava's multi-stakeholder process called i2030 (inclusive innovation 2030).



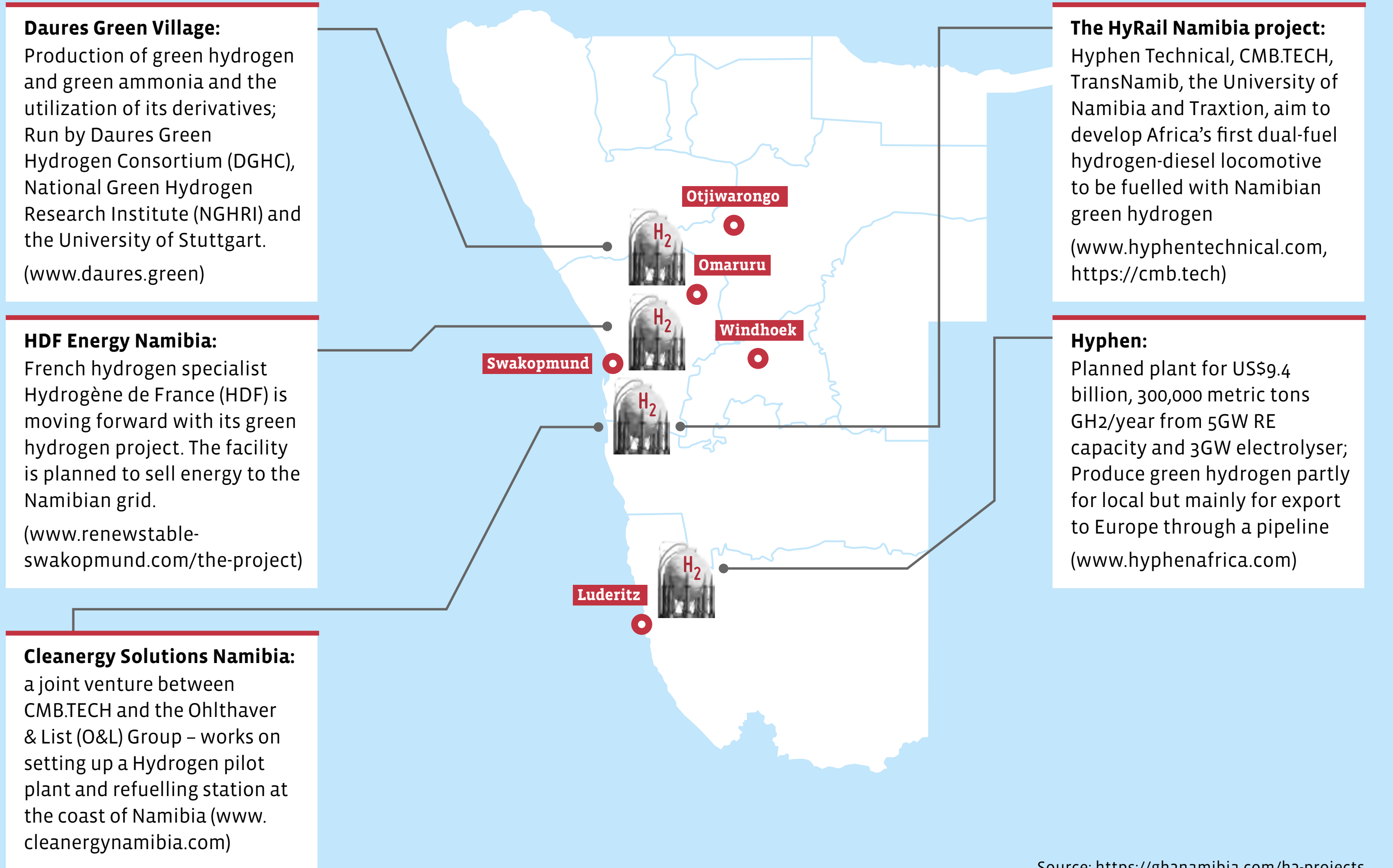


# Background

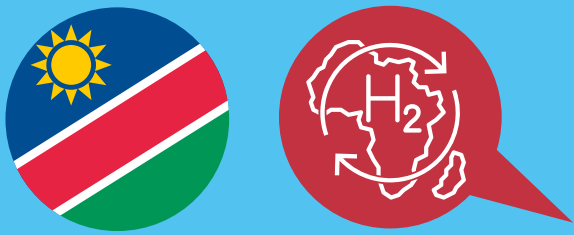
The green hydrogen sector in Namibia is still at an early stage. Yet, the country's position as a global leader in critical resources, such as access to renewable energy and support from the government and development partners, are strong assets for the sector's growth. The presidency established the Inter-Ministerial Green Hydrogen Council in 2021, and the body published Namibia's Green Hydrogen and Derivatives Strategy in 2022. The current green hydrogen projects in Namibia are shown on the map on the right.

Only a few Namibian companies and startups are active in the sector. The skills and knowledge in green hydrogen and related sectors like renewable energies are underdeveloped, and there are only few opportunities for startups. The overall situation of policies, offtake and financing is unclear due to the infancy of the sector. Nevertheless, the potential in the sector is excellent, and many stakeholders are starting to explore the sector, as detailed in the next section.

## Map of GH2 Projects (03/2023)



Source: <https://gh2namibia.com/h2-projects>



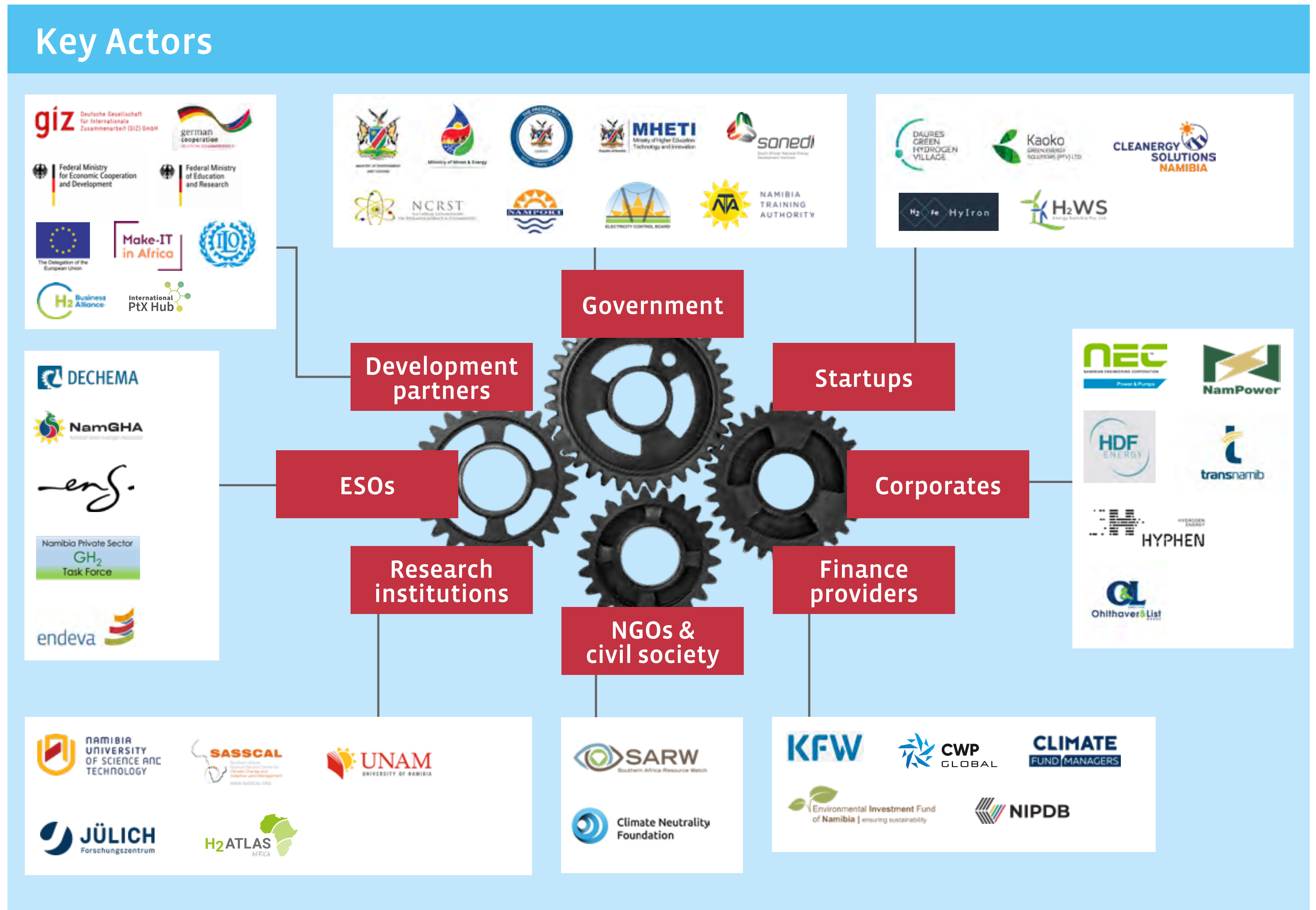
# Actors

While green hydrogen is a close-knit sector in Namibia, the landscape is still quite diverse. Thus, this section is a non-exhaustive sample of organisations focusing on supporting innovation and startups in green hydrogen.

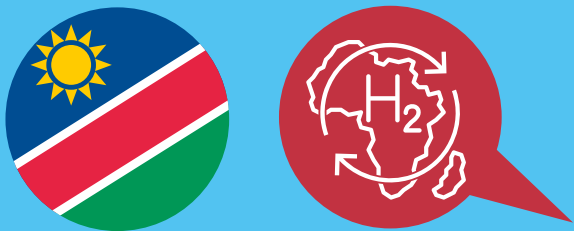
The following overview demonstrates some of the main actors in Namibia’s green hydrogen sector.

One of Namibia’s large players in the hydrogen landscape is Hyphen Hydrogen Energy. The company is developing a \$10 billion green hydrogen project to export to Europe. HDF Energy and Cleanergy Solutions Namibia (comprised of CMB.TECH and the Ohlthaver & List Group) likewise plan to build large-scale green hydrogen projects.

The HyRail Namibia project aims to develop Africa’s first dual-fuel hydrogen-diesel locomotive. It is backed by Hyphen Technical, CMB.TECH, TransNamib, the University of Namibia and Traxtion. Meanwhile,







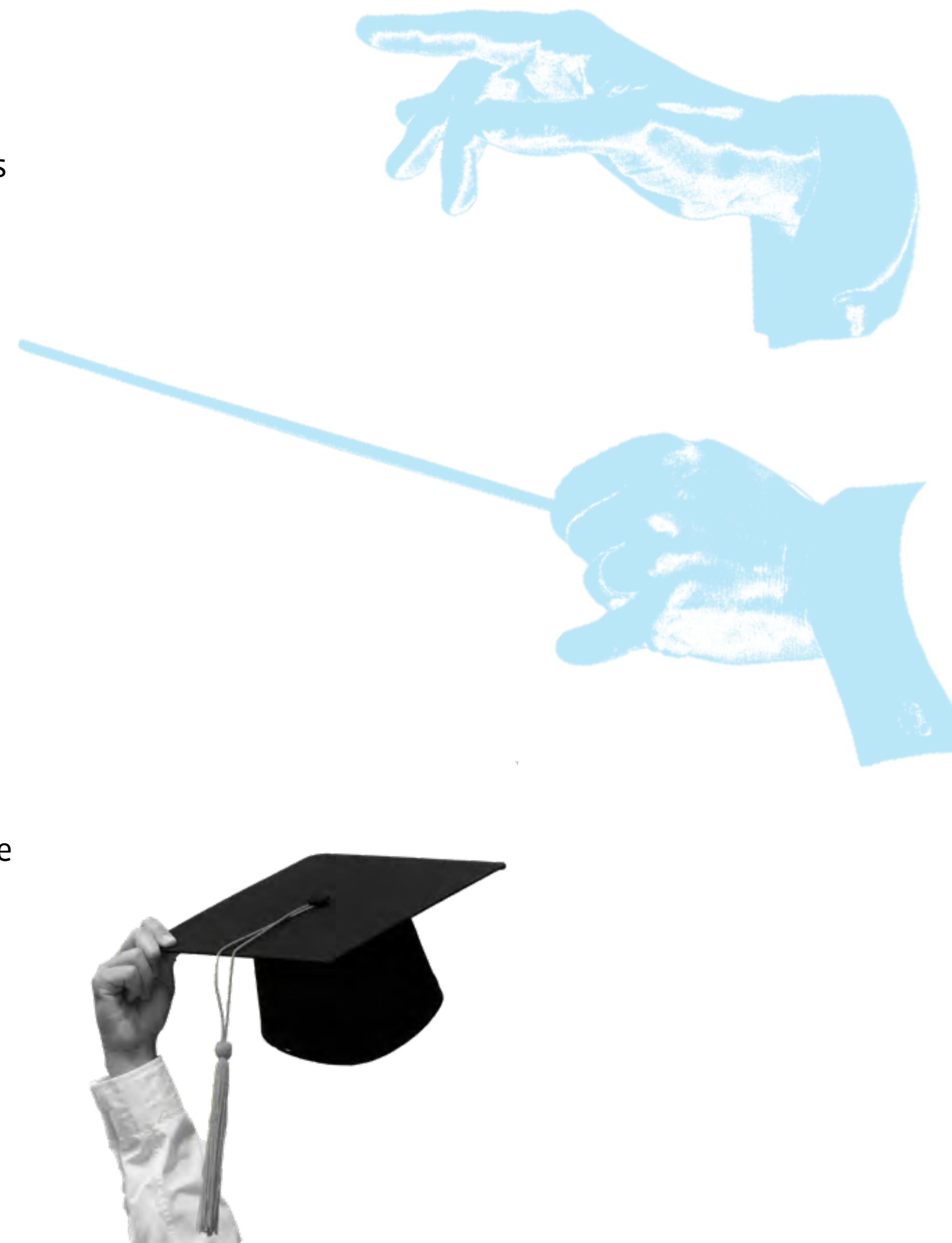
the Daures Green Hydrogen Village aims to produce green ammonia and use its derivatives. The village is run by Daures Green Hydrogen Consortium, the National Green Hydrogen Research Institute and the University of Stuttgart. The aim is to make it Africa's first net-zero village.

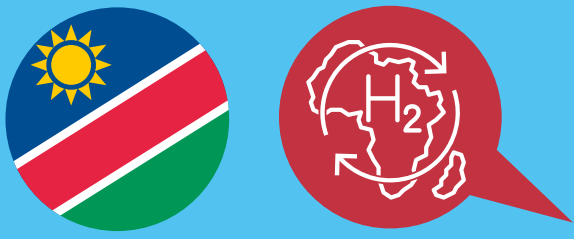
Large international projects such as these drive infrastructure development in the country and provide opportunities for collaboration with startups if leveraged properly.

Startups play a limited role in the sector but have a presence. Hylron produces green iron through the use of green hydrogen, and Kaoko Green Energy Solutions aims to drive the adoption of cookstoves fuelled by green hydrogen. H2WS focuses on producing green energy for Africa from wind, solar and hydrogen power.

The Namibia Green Hydrogen Research Institute, housed in the University of Namibia (UNAM), has a mandate in research and driving innovation. The Namibia University of Science and Technology works closely with UNAM. Other organisations focused on research and skills, including the Namibia Training Authority, CertifHy and the National Commission on Research, Science and Technology (NCRST).

Government entities such as the National Planning Commission, NamPower and the Namibia Investment Promotion and Development Board are heavily involved in developing green hydrogen framework conditions. Other development and ecosystem support organisations or associations related to the sector include GIZ, the Delegation of the EU to the Republic of Namibia, the International Labour Organisation, the Namibian Green Hydrogen Association and the Namibia Green Hydrogen Private Sector Task Force.



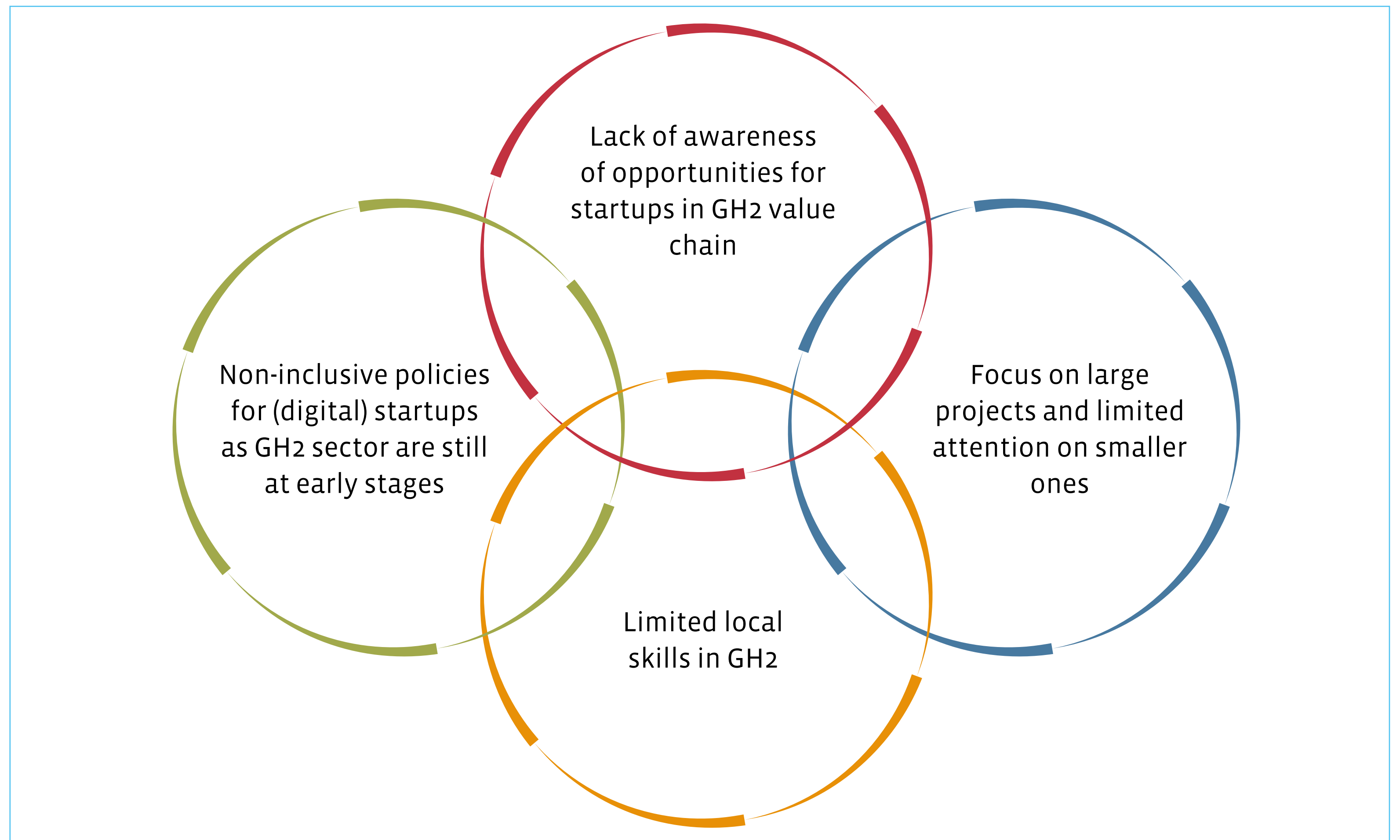


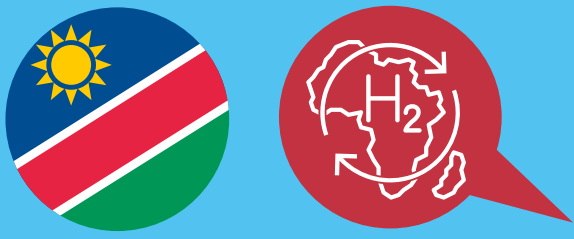
# Green Hydrogen System Dynamics

The two iiz030 expert consultations revealed, that there is a lot of energy and attention on Namibia's green hydrogen sector. The country's position as a global leader in critical resources, such as access to renewable energy and support from the government and development partners, are strong assets for the sector's growth. Yet, the sector is still in its infancy. Participation of local entrepreneurs and the development of startups in this sector is limited.

Overall, Namibia's green hydrogen ecosystem currently maintains foreign influence through the importation of foreign skilled workers and investments. The system is optimised for large-scale projects with less attention on smaller projects and startups.

Non-inclusive policies, a lack of awareness of opportunities, limited focus on smaller projects and organisations, and limited skills define the four core dynamics better, as shown in the system map on the right.

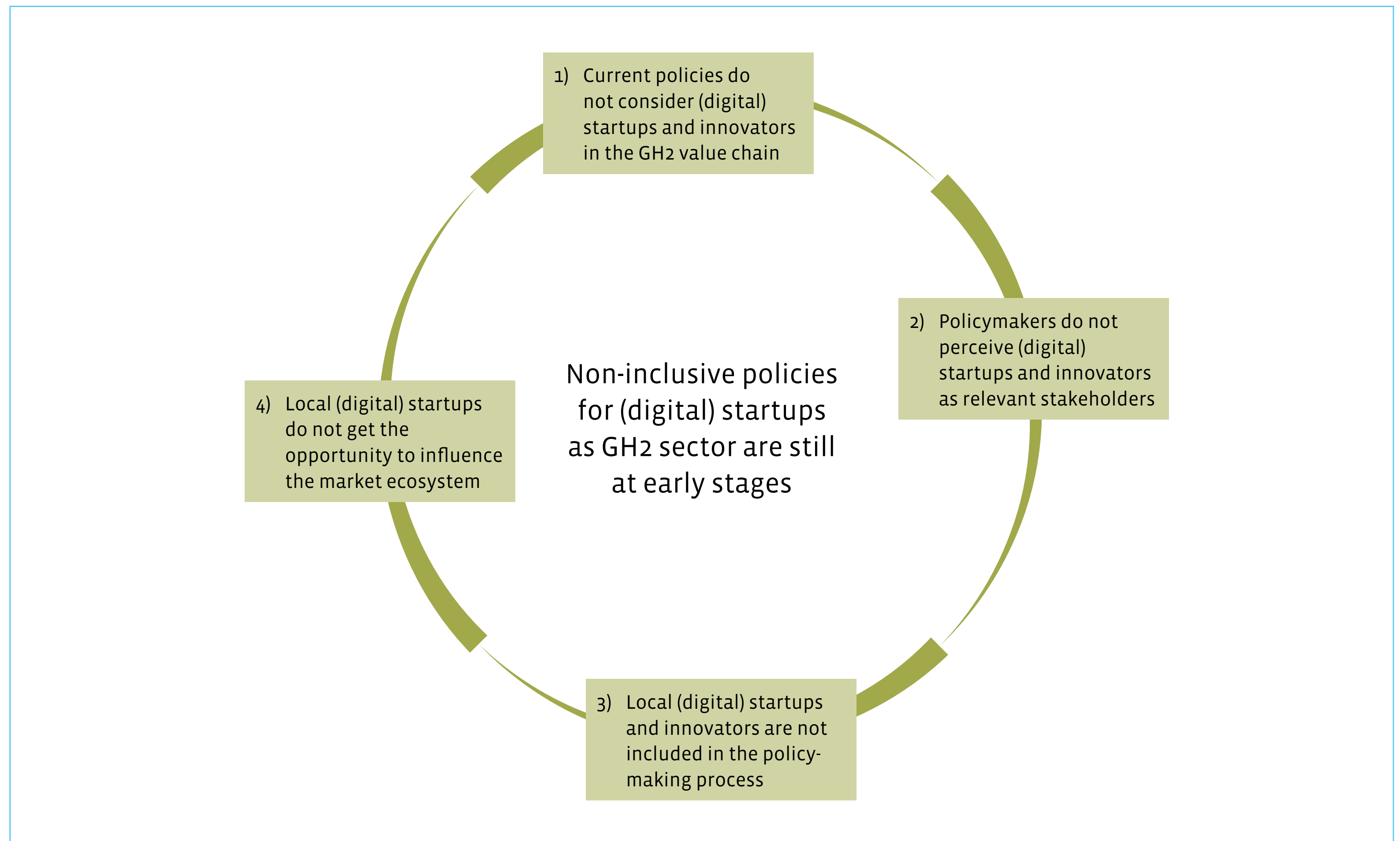




# Non-Inclusive Policies for (Digital) Startups

Because Namibia's green hydrogen sector is in an early stage, the policies related to (digital) startups in the sector are underdeveloped. Within the system, (1) current policies do not consider startups and innovators and their role in the green hydrogen value chain. This represents a lack of awareness and, therefore, a political vacuum for these players in which (2) policymakers do not perceive them as relevant stakeholders. Therefore, (3) local startups and innovators are not included in the policymaking process. This leads to the fact that (4) local startups do not get the opportunity to influence the framework conditions. When any player in the system leverages little influence, there is less political capital for these stakeholders, and this dynamic circles back into the (1) lack of consideration of startups and innovators in policies.

Because startups and innovators are excluded from policymaking it is difficult to break the cycle.





## Recommendations to Create a Conducive Policy Framework

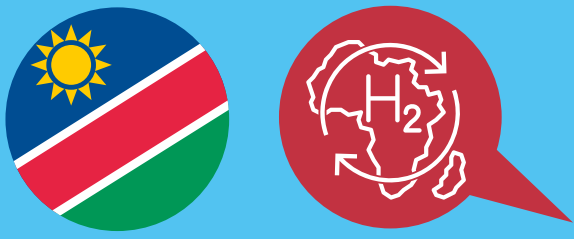
### ► **Increase the visibility of local startups**

Local experts recommended several solutions to increase local awareness of startups in green hydrogen and their role in the value chain. This work begins by identifying all local green hydrogen startups in Namibia to increase their visibility and to coordinate within the sector to align better and advocate.

### ► **Promote Startups' Needs and Interests**

The second proposed solution is related to better publicising startups' needs. The formation of an interest group could promote their presence and interests. Activities could be encouraging coverage in the press and writing open letters to ministers and organisations with a mandate to promote green hydrogen or innovation. Tools such as position papers could be utilised to inform policymakers and the public as well as define where and how startups and innovators can play a role in the policymaking process.

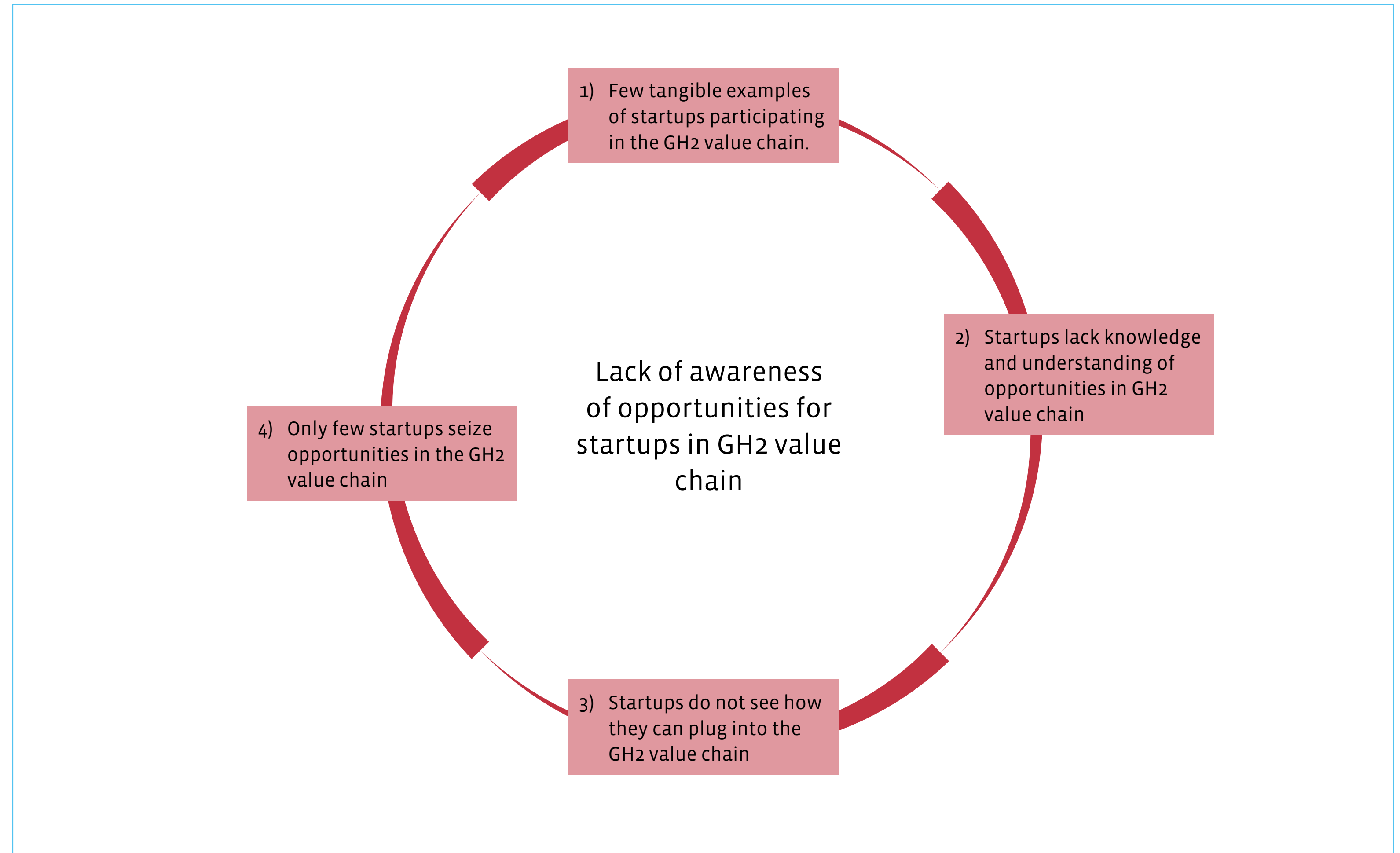


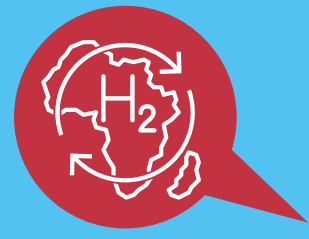


## Lack of Awareness of Opportunities

The second key dynamic relates to the lack of awareness of opportunities for startups along the green hydrogen value chain. There are (1) a few tangible examples of startups participating in the green hydrogen value chain in Namibia. Thus, (2) startups and innovators lack knowledge and understanding of opportunities. This is due, at least in part, to a lack of visibility and even the presence of startups in the ecosystem. Because of this lack of knowledge and understanding, (3) startups and innovators do not see how they can participate in the green hydrogen value chain. Thus, (4) few startups seize opportunities in the ecosystem, and (1) few startups exist in the system.

This loop demonstrates the challenge of establishing a startup in Namibia's green hydrogen ecosystem. Addressing this cycle would positively affect both current and potential startups and innovators.





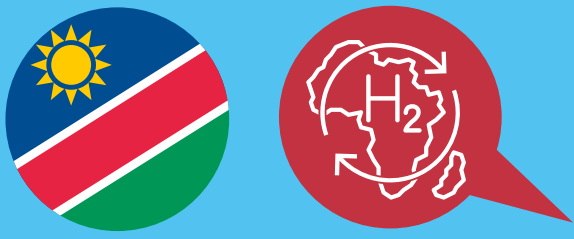
## Recommendations to Increase Awareness

▶ **Promote local entrepreneurs in Green Hydrogen**

One intervention to encourage entrepreneurship in green hydrogen is to adapt procurement regulations to allow for franchises with international organisations to establish a local presence in Namibia as well as partnerships for startups.

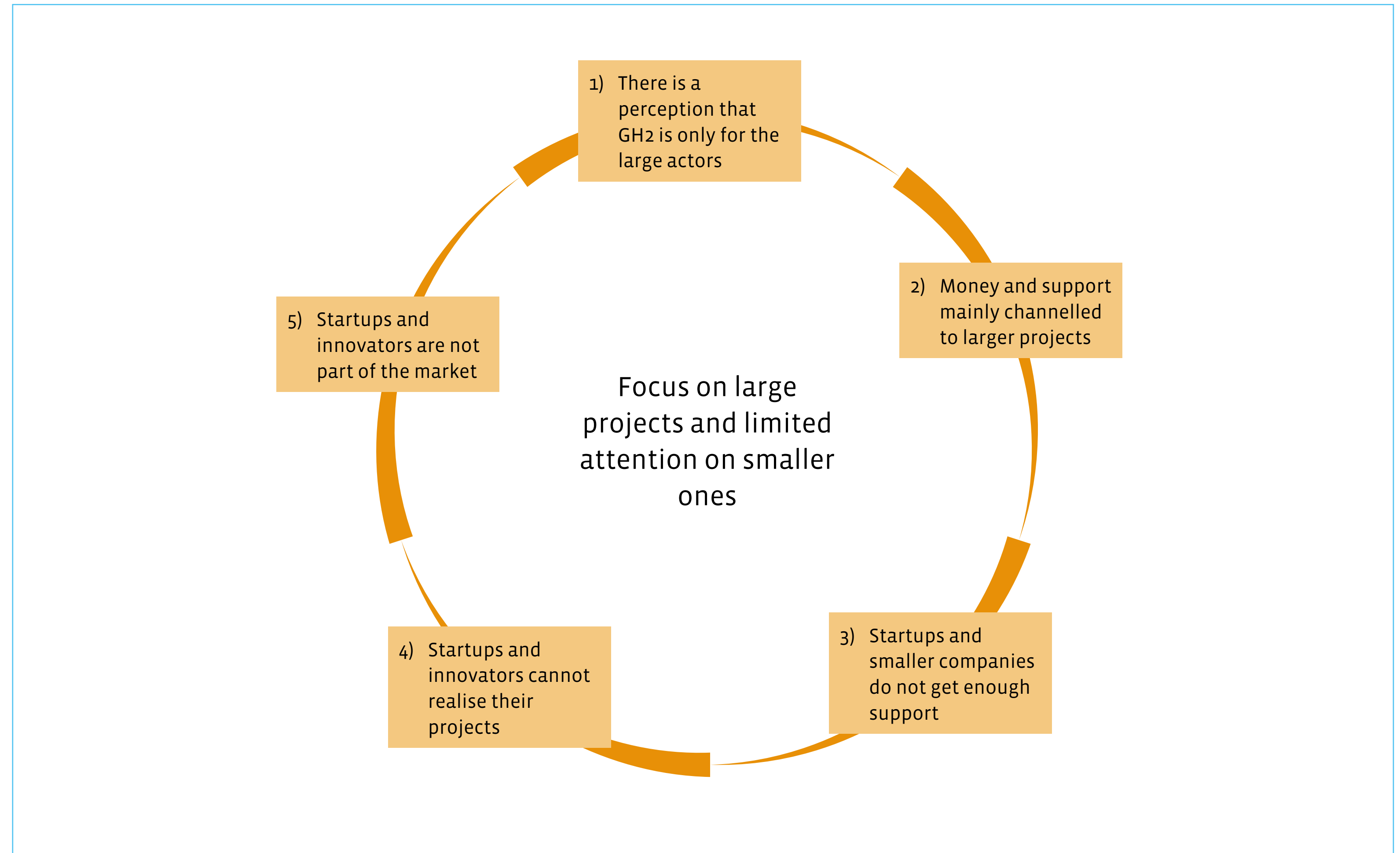
▶ **Showcase Opportunities in the Sector**

One solution could be to demonstrate opportunities in the sector by conducting studies and publishing reports on the potential domestic uses of green hydrogen and its products. Another proposal includes showcasing potential partners from other countries, including a cooperative model, as well as supporting trade fairs or delegations to international exhibitions for startups and innovators in green hydrogen.

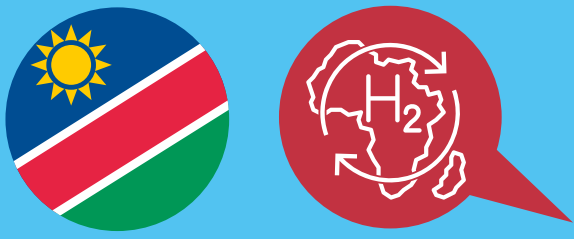


## Limited Attention on Small Projects

The third key dynamic identified for startups in the green hydrogen ecosystem is a lack of attention on smaller projects in favour of a focus on large projects. In green hydrogen, this can be especially tricky, as green hydrogen production and infrastructure require longer timelines, more expensive equipment and more innovative technology, which is perceived as more of a risk by investors. In Namibia, we see that (1) there is the perception that green hydrogen is only for the large actors. Because of this, (2) money and support are mainly channelled to larger projects. Because attention and resources are principally focused on large projects, (3) startups and smaller companies do not get enough support and funding. When there is not enough support and financial resources for smaller entities, (4) startups and innovators cannot realise their projects, and (5) startups and innovators are not part of the market. Because startups and innovators are not part of the market, the idea that (1) green hydrogen is only for the large actors continues.







## Recommendations to Support Startups

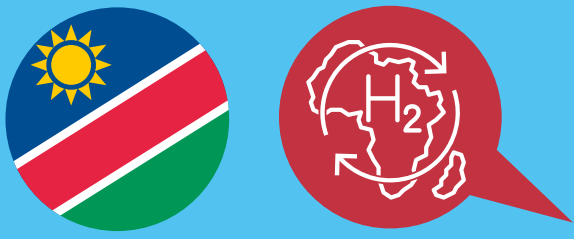
### ► **Incorporate Learnings from Related or International Industries**

To further highlight opportunities for startups in green hydrogen, one solution is to bring in examples from relevant industries such as logistics and mining. Another solution is to showcase examples of opportunities for startups that are being utilised in other country contexts, such as learning from neighbouring countries' green hydrogen startup ecosystems like in South Africa.

Another solution could include encouraging a more global approach in the form of pan-African startups and cross-border innovation, which could garner organisations attention on an international scale.

### ► **Encourage Collaboration Between Small and Large Organisations**

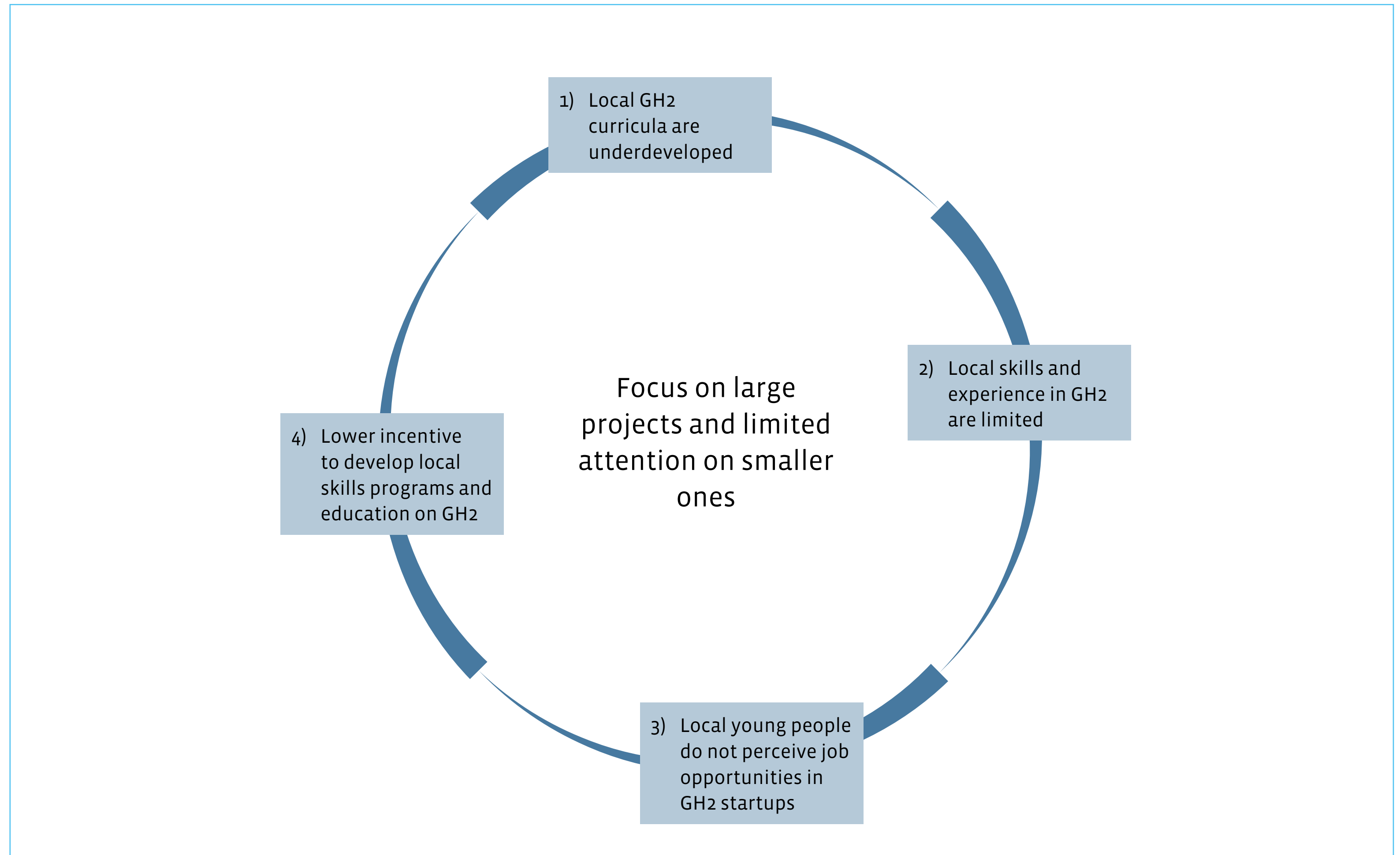
Another way to support existing startups and promote the establishment of new ones is through programmes that foster collaboration with large companies. This could take the form of shared research between organisations, mandating the inclusion of startups in the procurement of large projects, entrepreneurs-in-residence and trainee programmes to foster innovation, and intrapreneurs from large companies, hence establishing a more robust culture of innovation.

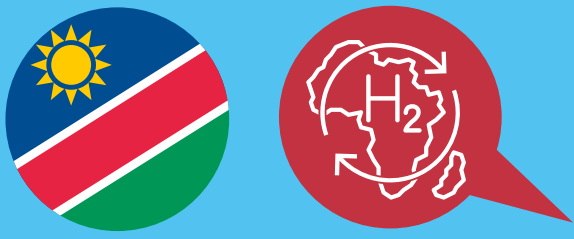


## Limited Green Hydrogen-Specific Skills

The fourth key dynamic identified in the Namibian green hydrogen ecosystem revolves around skills in green hydrogen and skilled workers in the industry. (1) The Namibian ecosystem has limited green hydrogen-specific skills programs and curricula. Because of the underdeveloped state of programming and curricula relative to the needs in the sector, (2) local skills and experience in green hydrogen are limited, and therefore (3) local young people do not perceive green hydrogen as an opportunity sector. This dynamic leads to a (4) lower incentive to develop local skills programs and education in green hydrogen. This closes the loop of the dynamic and leads us back to (1) a limited presence of green hydrogen-specific skills and programs in the region.

This vicious cycle of limited green hydrogen-specific trainings and a lack of skilled workers, graduates and opportunities for Namibians in the green hydrogen sector adversely impacts startups, who require training themselves, a diverse talent pool to hire from and opportunities for offtake.





## Recommendations to Develop Local Skills in Green Hydrogen

### ► **Develop Curricula**

Local experts recommended several solutions to ensure local workers and graduates are better-positioned and fit for industry. The first proposed solution is to incorporate green hydrogen curricula starting at the high school level to get students interested in careers in the industry. Another approach is to collaborate on vocational and master's-level training in green hydrogen.

A pilot plant with a training centre would allow for collaboration among research and training solutions and could give more attention to local curricula and training for local students. This could also contribute to greater awareness of career opportunities in green hydrogen.

### ► **Utilise International Connections**

The second proposed solution is related to linking Namibians with international partners. One approach is to continue discussions with universities abroad to analyse renewable/sustainable programmes to collaborate on research projects and technology.

One way to incorporate large international projects into skills development is to mandate skills transfer from foreign skilled workers to Namibians via a skills development programme.

### ► **Develop Low- to Medium-Skills**

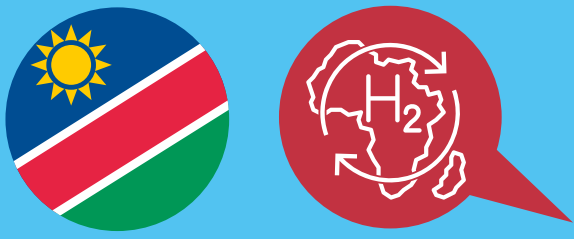
One recommendation includes developing training programmes for artisans to go beyond level four training in green hydrogen. Additionally, a vocational training centre for green hydrogen technology, as well as standard compliance and certifications, could contribute to this theme.

### ► **Green Hydrogen Skills Coordination**

During a co-creation workshop in Windhoek in June 2023, 16 organisations came together to co-create systemic solutions enabling startups to grasp opportunities in the green hydrogen sector. The workshop unveiled the need for more coordination in the skills development sector. The Ministry for Higher Education, Technology and Innovation is currently considering different options as to how best coordinate with all actors from the public and private sector to exchange on skills for the green hydrogen sector.

If you are involved in skills in green hydrogen and like to be involved in the development and coordination within the sector, contact Endeava at [info@endeva.org](mailto:info@endeva.org) for more information.





## About ii2030

ii2030 is a catalytic process that begins with a problem and an opportunity and ends with the implementation of the prototype of a systemic solution. It catalyzes collaboration amongst innovators from corporates, startups, the public sector, NGOs and science. Solutions are developed in tracks around tech-based opportunities. ii2030 is an impactful, action oriented collaborative process.

The ii2030 Green Hydrogen in Africa edition was organised by Endeava, fully funded by Make-IT in Africa on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) and supported by the Namibia Green Hydrogen Research Institute.

More information at  
[www.ii2030.com](http://www.ii2030.com)

### Acknowledgements

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Circle Innovation, CWP H1 Energy, Daures Green Hydrogen, DECHEMA, Delegation of the EU to the Republic of Namibia, ENSafrica, Forschungszentrum Jülich - Institute for a Sustainable Hydrogen Economy, GIZ Namibia, H2WS Energy Namibia Pty. Ltd., HDF Energy, Hyphen Hydrogen Energy, Innosun, Integrated Africa Power, International Labour Organisation, KAOKO Green Energy Solutions, KfW Development Bank Namibia, Ministry of Agriculture Water and Land Reform, Ministry of Finance, Ministry of Higher Education, Technology and Innovation, Ministry of Mines and Energy, Namibia Green Hydrogen Private Sector Task Force, Namibia Investment Promotion and Development Board, Namibia Training Authority, Namibia University of Science and Technology (NUST), NamPower, National Commission on Research, Science and Technology (NCRST), Office of the President, Ohlthaver & List Group – Cleanergy, Southern Africa Resource Watch (SARW), University of Namibia (UNAM) - Namibia Green Hydrogen Research Institute.

### Imprint

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