

# Ensuring (Digital) Startups and Local Innovators Benefit from Potential in the Green Hydrogen (GH2) Sector in Namibia

Documentation of the ii2030 Green Hydrogen in Africa Edition  
July 2023


# ii2030

INCLUSIVE INNOVATION 2030

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# Introduction to ii2030 Methodology

# ii2030 GH2 in Africa Edition

Green hydrogen can be transformative for Africa. The sector will create **green jobs** and **new opportunities** for local startups and innovators.

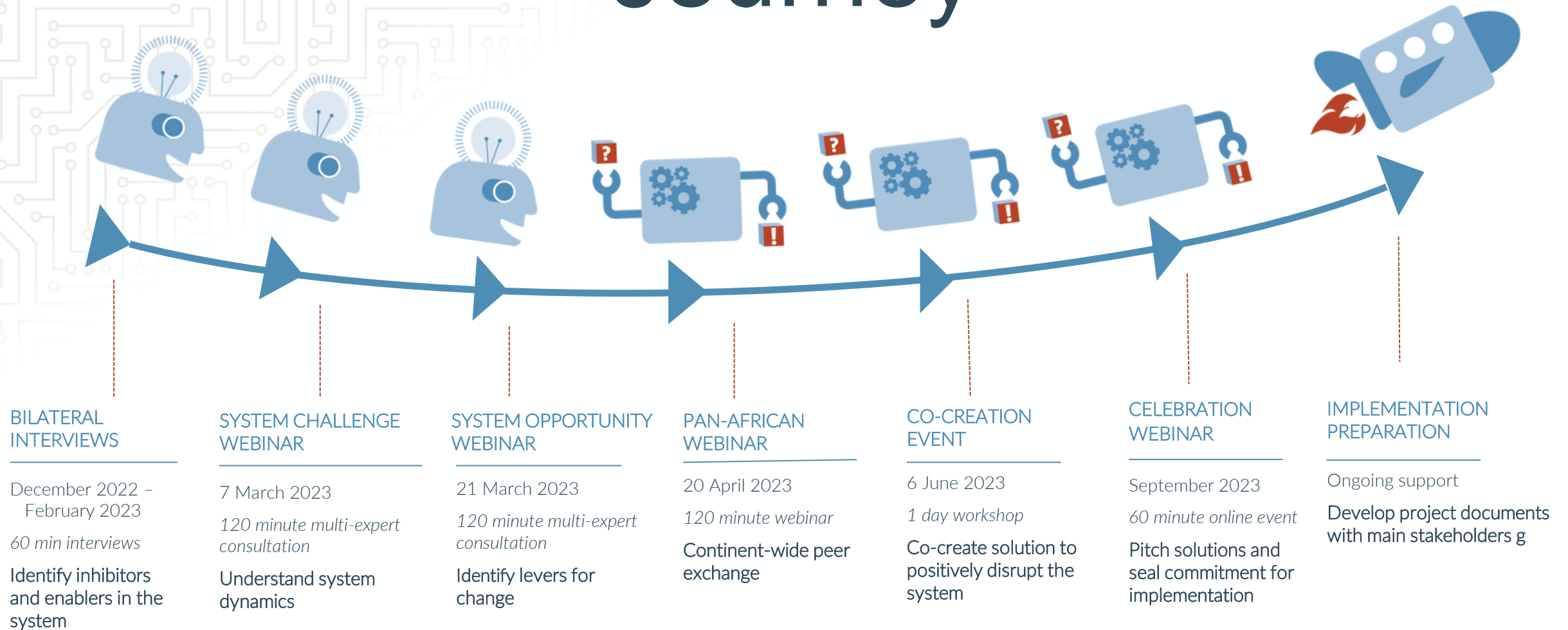
Now is the time to create the fertile ground for entrepreneurs, who often lack access to adequate finance, skills, or even awareness of opportunities in the GH2 sector.

ii2030 is a **catalytic process** that begins with a problem and an opportunity and ends with a prototype of a systemic solution that can be implemented to **strengthen the GH2 support ecosystem** for local startups and innovators at the national and pan-African levels.



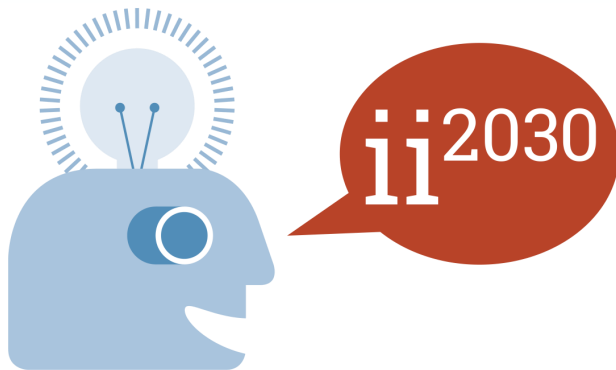
Photo: Co-Creation in Windhoek in June 2023 (Endeva)

# ii2030 GH2 in Namibia Edition Journey

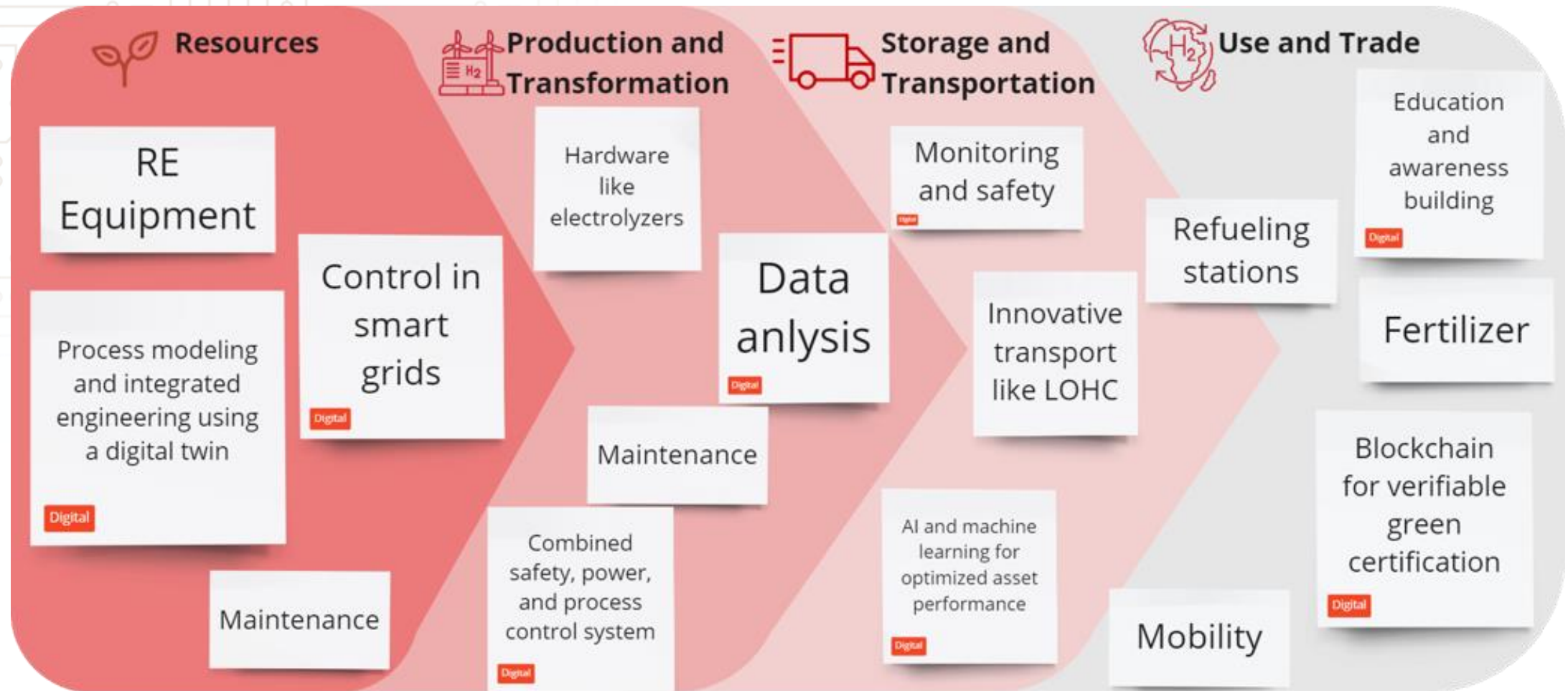


# Guiding Question for the ii2030 Green Hydrogen Edition

How might we ensure that (digital) startups and local innovators benefit from the potential in the green hydrogen sector?



# Scope: Opportunities for (Digital) Startups and Innovators





# Status of the GH2 Sector in Namibia



# GH2 in Namibia by the Numbers

- The Namibia Green Hydrogen and Derivatives Strategy targets a production of 10-12 million tonnes per annum hydrogen equivalent by 2050.
- Through the pilot project HYPHEN Tsau Khaeb, Namibia has set a hydrogen production target of 300,000 tons per year
- The electrolyser capacity target for the Hyphen Tsau Khaeb project is 3 GW.
- McKinsey estimates that Namibia could be producing green hydrogen at US\$1.5/kg by 2030.

# Milestones of the Sector

Namibia's world-class solar and wind resources give it a long-term competitive advantage in producing green hydrogen and green ammonia.

**May 2021:** The President of The Republic of Namibia established an **Inter-Ministerial Green Hydrogen Council (GHC)** as outlined in the Harambee Prosperity plan II

**November 2021:** Hyphen Energy is selected as preferred bidder by the Namibian Government to invest around 9.4 bn USD in a GH2 plant near Lüderitz

**November 2022:** Namibia's Green Hydrogen Council launched its **GH2 strategy** which supports the country's commitment to the Paris Agreement

**2026:** The Hyphen project is planned to start producing GH2



**Namibia.**  
Green Hydrogen and Derivatives Strategy



The Namibian Green Hydrogen Strategy

# Map of GH2 Projects (03/2023)

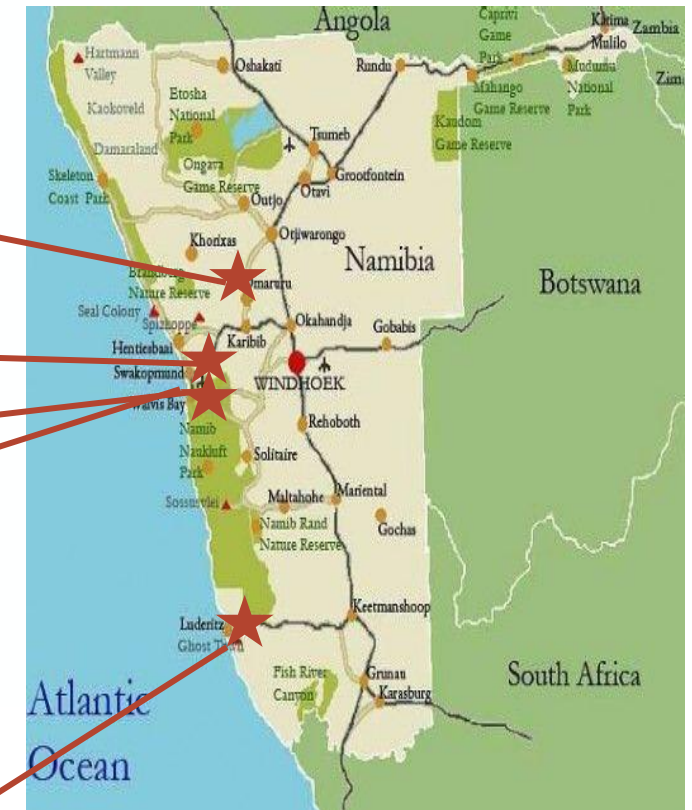
**HDF Energy Namibia:** French hydrogen specialist Hydrogène de France (HDF) is moving forward with its green hydrogen project. The facility is planned to sell energy to the Namibian grid. (<https://www.renewstable-swakopmund.com/the-project>)

**Daures Green Village:** production of green hydrogen and green ammonia and the utilization of its derivatives; Run by Daures Green Hydrogen Consortium (DGHC), National Green Hydrogen Research Institute (NGHRI) and the University of Stuttgart. ([www.daures.green](http://www.daures.green))

**Cleanergy Solutions Namibia** - a joint venture between CMB.TECH and the Ohlthaver & List (O&L) Group - works on setting up a Hydrogen pilot plant and refuelling station at the coast of Namibia ([www.cleanerynamibia.com](http://www.cleanerynamibia.com))

**The HyRail Namibia project:** Hyphen Technical, CMB.TECH, TransNamib, the University of Namibia and Traxtion, aim to develop Africa's first dual-fuel hydrogen-diesel locomotive to be fuelled with Namibian green hydrogen ([www.hyphentechnical.com](http://www.hyphentechnical.com), <https://cmb.tech>)

**Hyphen:** Planned US\$9.4 billion plant producing 300,000 metric tons of GH2/year from 5GW RE capacity and 3GW electrolyser; Produce green hydrogen partly for domestic use, but mainly for export to Europe through a pipeline ([www.hyphenafrica.com](http://www.hyphenafrica.com))



# Key Actors



# Enablers of GH2 Development



Government drives development of the GH2 sector; GH2 strategy and inter-ministerial Green Hydrogen Council are in place



Access to natural resources will allow Namibia to produce GH2 at a highly competitive price globally



Trust and support of the international governments, businesses and finance providers



Namibian Green Hydrogen Research Institute, Namibian Green Hydrogen Private Sector Task Force and Namibian Investment Promotion and Development Board are enablers for the GH2 startup ecosystem



Planned projects are large-scale, with an agreed percentage of local contribution

# Inhibitors of GH2 Development



Overall situation of policies, offtake and financing is unclear as the sector is in its early stages



Negligible domestic market for green hydrogen



Lack of awareness on opportunities in the GH2 industry for digital startups and innovators

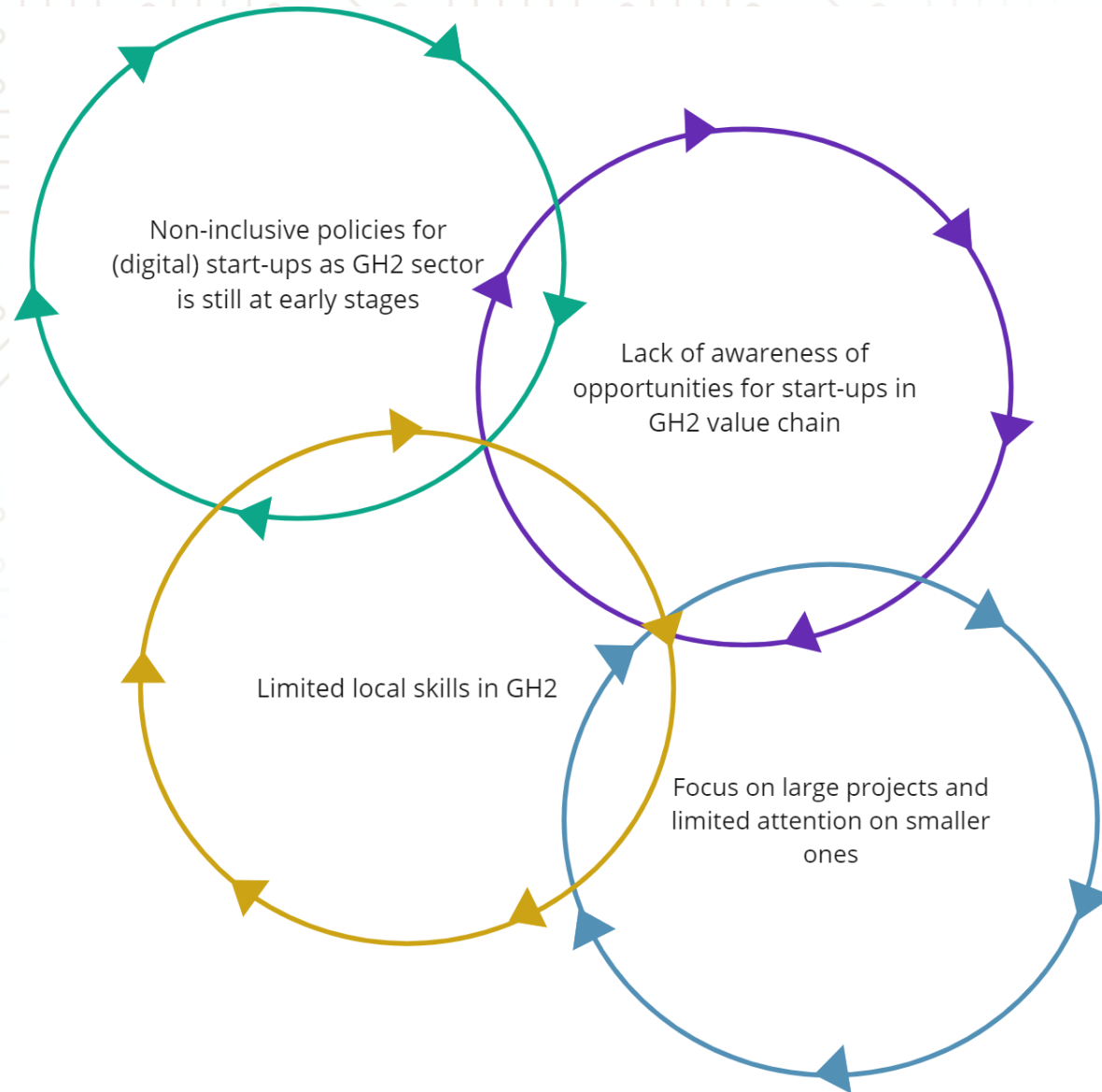


Unclear whether Namibian companies can provide GH2 at the global/EU standards that the large companies will require



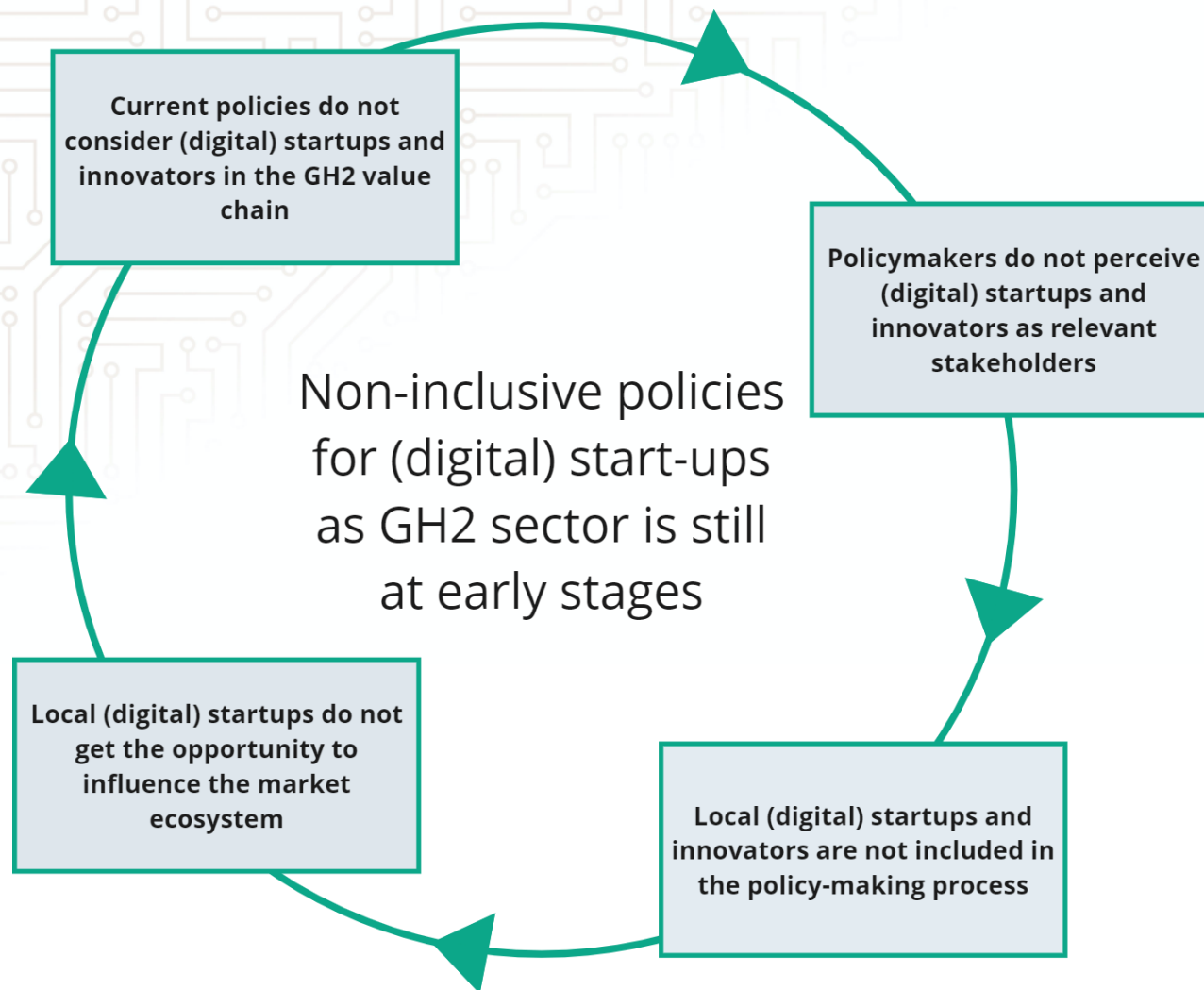
Skills and knowledge on GH2 and related sectors are underdeveloped

# Core Story of the System



Overall, we see that the loops combine to form a system that is currently optimized to maintain strong foreign influence on the Namibian GH2 sector through skills and investments for export, with more attention on large-scale projects, and less attention on smaller scale projects and startups.

# Loop 1: Unclear Policy Framework



Current policies (at this early stage) do not include specific regulations to support startups and innovators in GH2.

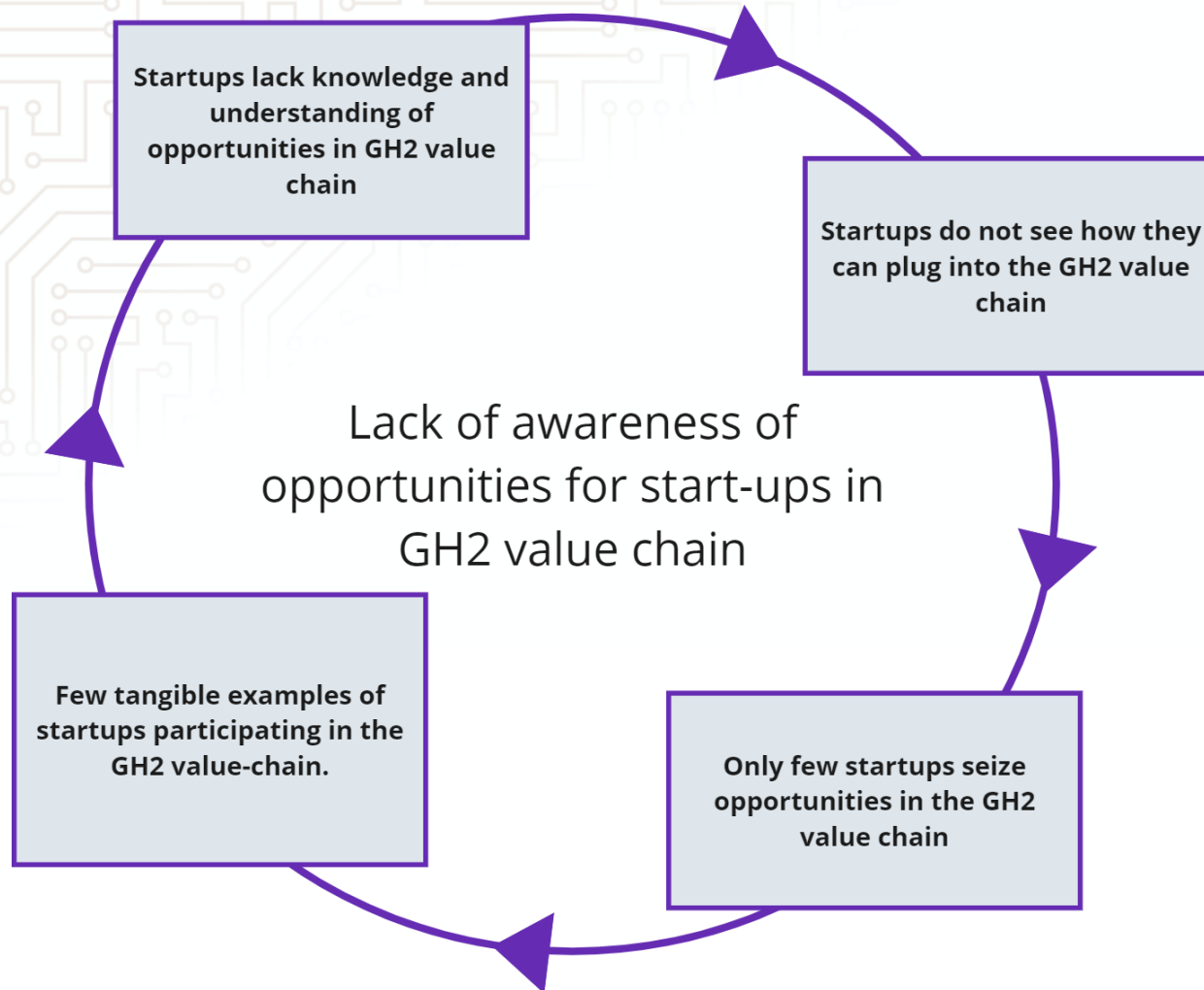
This is due to the fact, that policymakers don't perceive (digital) startups as relevant stakeholders in the sector.

Therefore, they do not include them in the policymaking process.

This means that startups cannot influence or inform policies and the market ecosystem, which then further keep policies in a state that does not consider startups in the GH2 value chain.



# Loop 2: Lack of Awareness

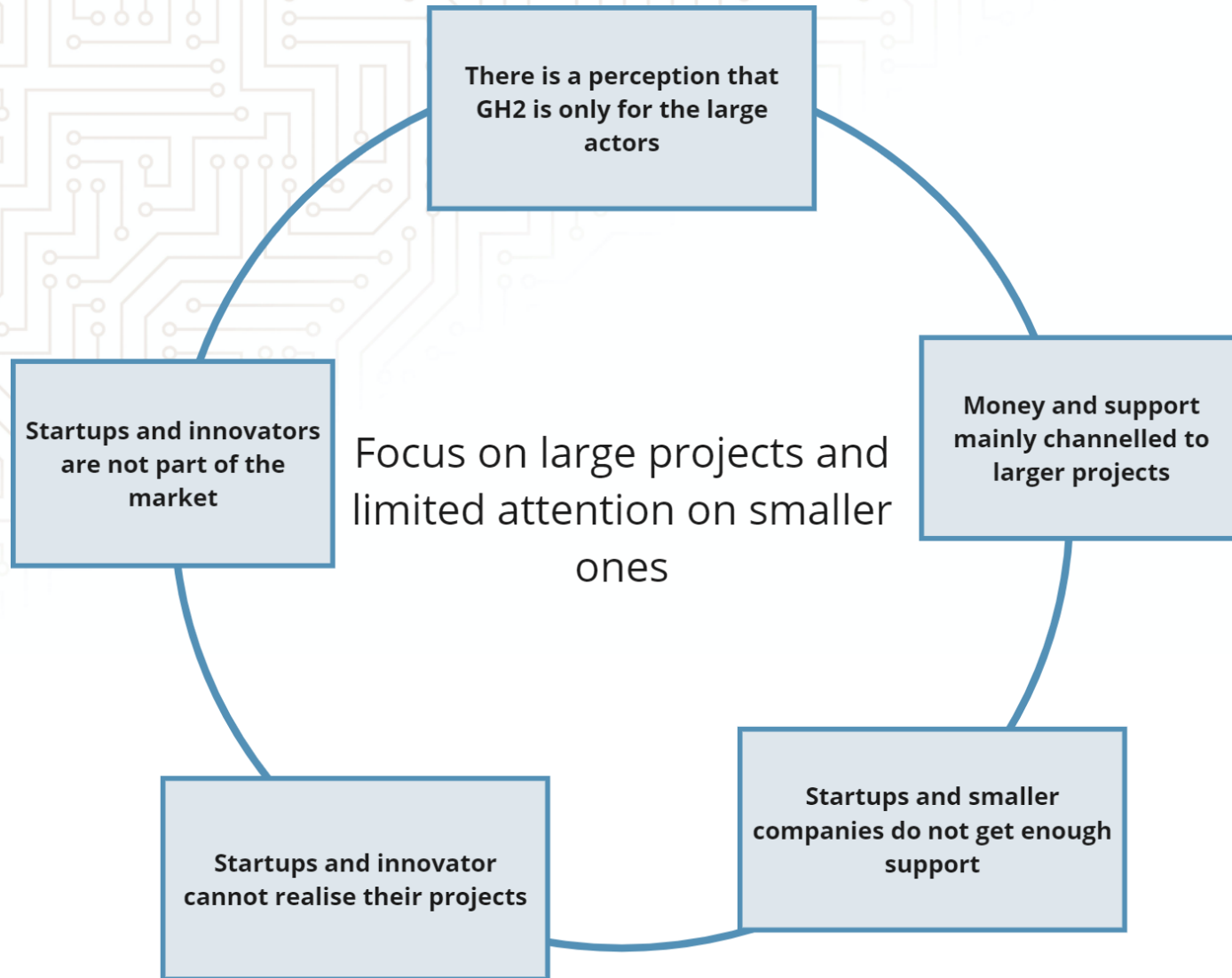


The lack of knowledge and understanding of opportunities for startups in the GH2 value chain means that startups do not see how they can plug in the value chain.

This leads to only a few startups seizing opportunities available in the GH2 value chain.

Therefore, there are only a few tangible examples of startups participating in the value chain, further reinforcing the state of lack of awareness of opportunities in the GH2 value chain.

# Loop 3: Focus on Large Projects



The overall impression that GH2 is only for large-scale actors leads to money and support mainly channeled to larger projects.

Startups and smaller companies thus do not get enough support, which hinders the realisation of their projects.

This dynamic means that startups are not part of the GH2 market, which further reinforces the impression that GH2 is only for large-scale actors.

# Loop 4: Limited Local Skills



Local GH2 curricula are underdeveloped, which limits local skills and experience in GH2 among graduates and skilled workers.

This limitation means that there is a lack of awareness regarding opportunities for local graduates and skilled workers in the sector,

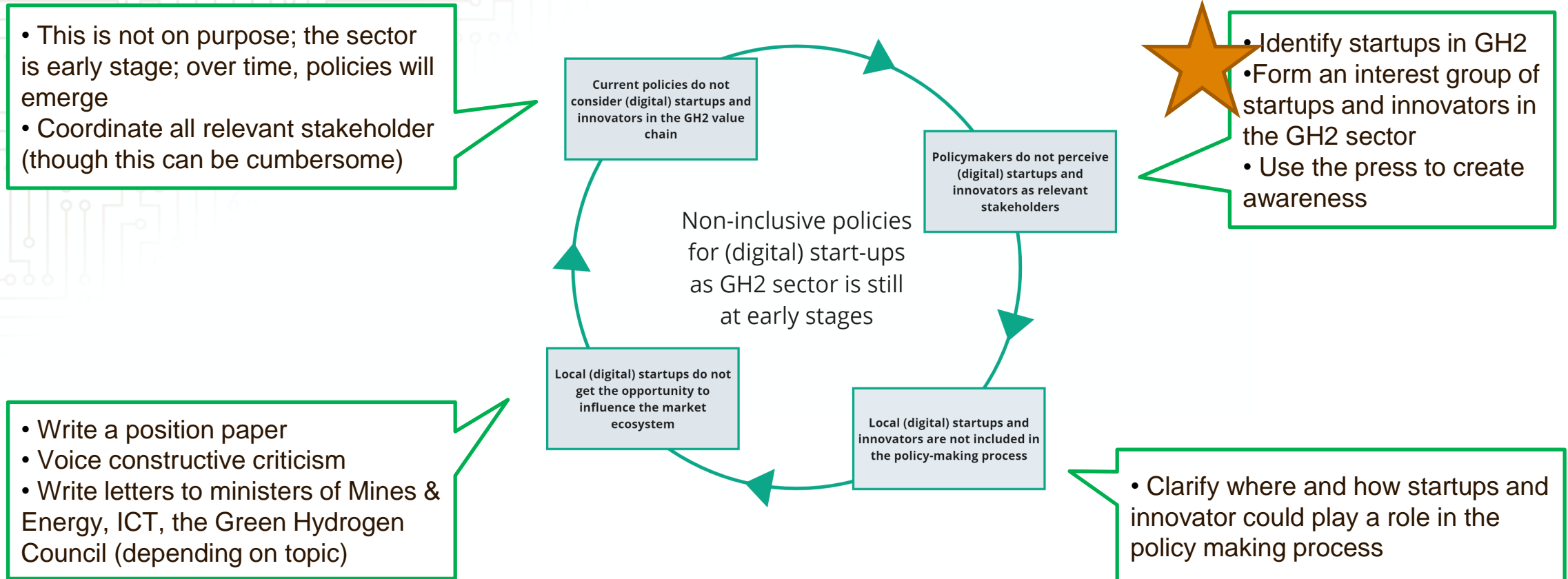
This lack of awareness and participation in the sector creates little incentive for local GH2 skills programs to be developed, which in turn feeds back into underdeveloped GH2 curricula in Namibia.

# Levers and Solutions for Change

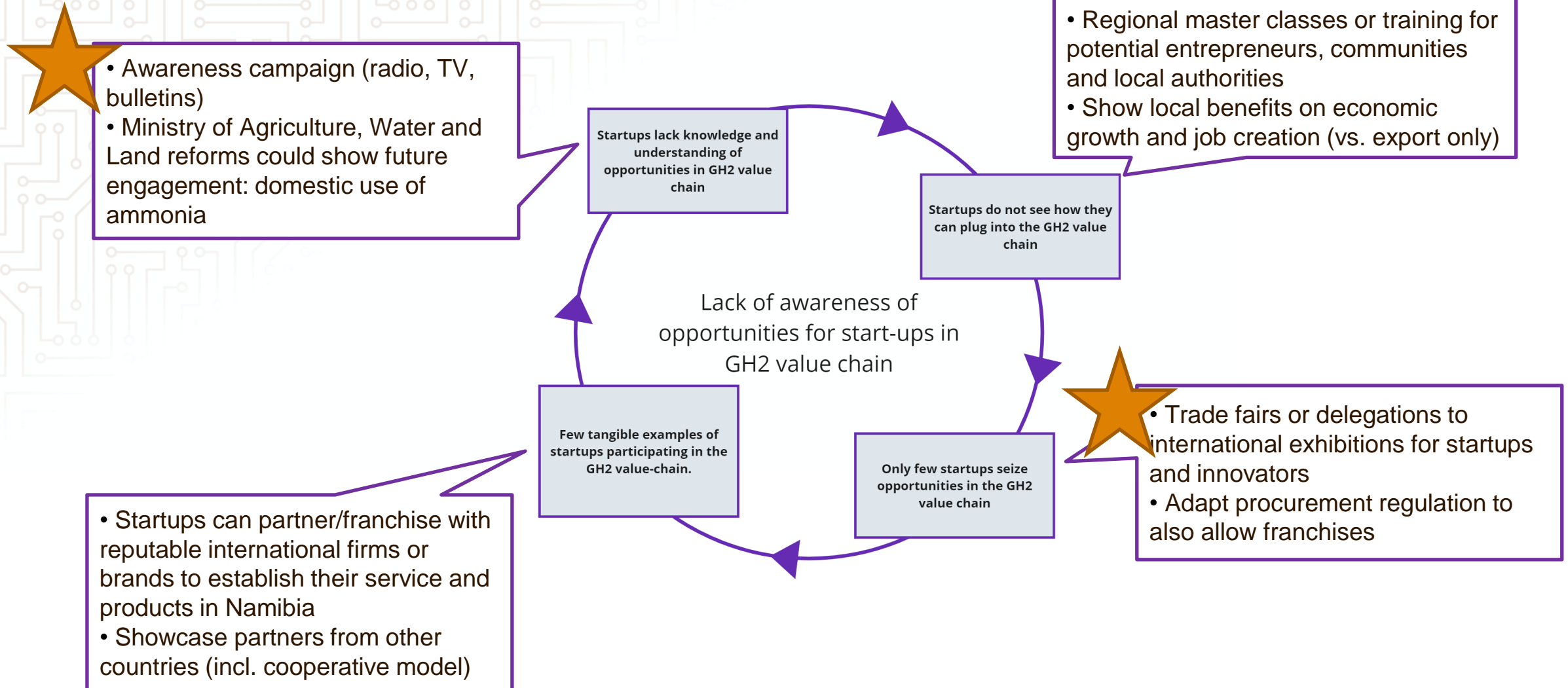


Stars mark the solutions which resonated most with the consultations' participants

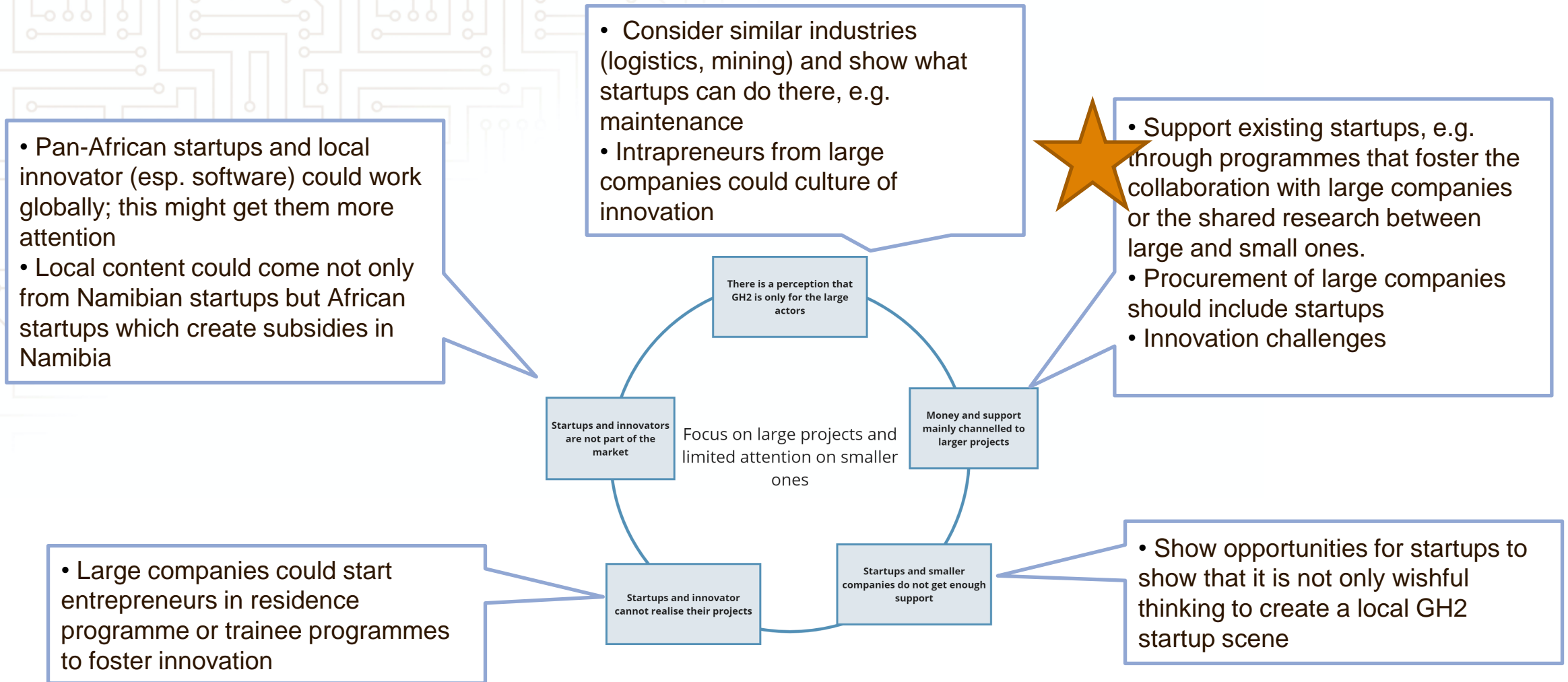
# Solutions to Create a Conducive Policy Framework



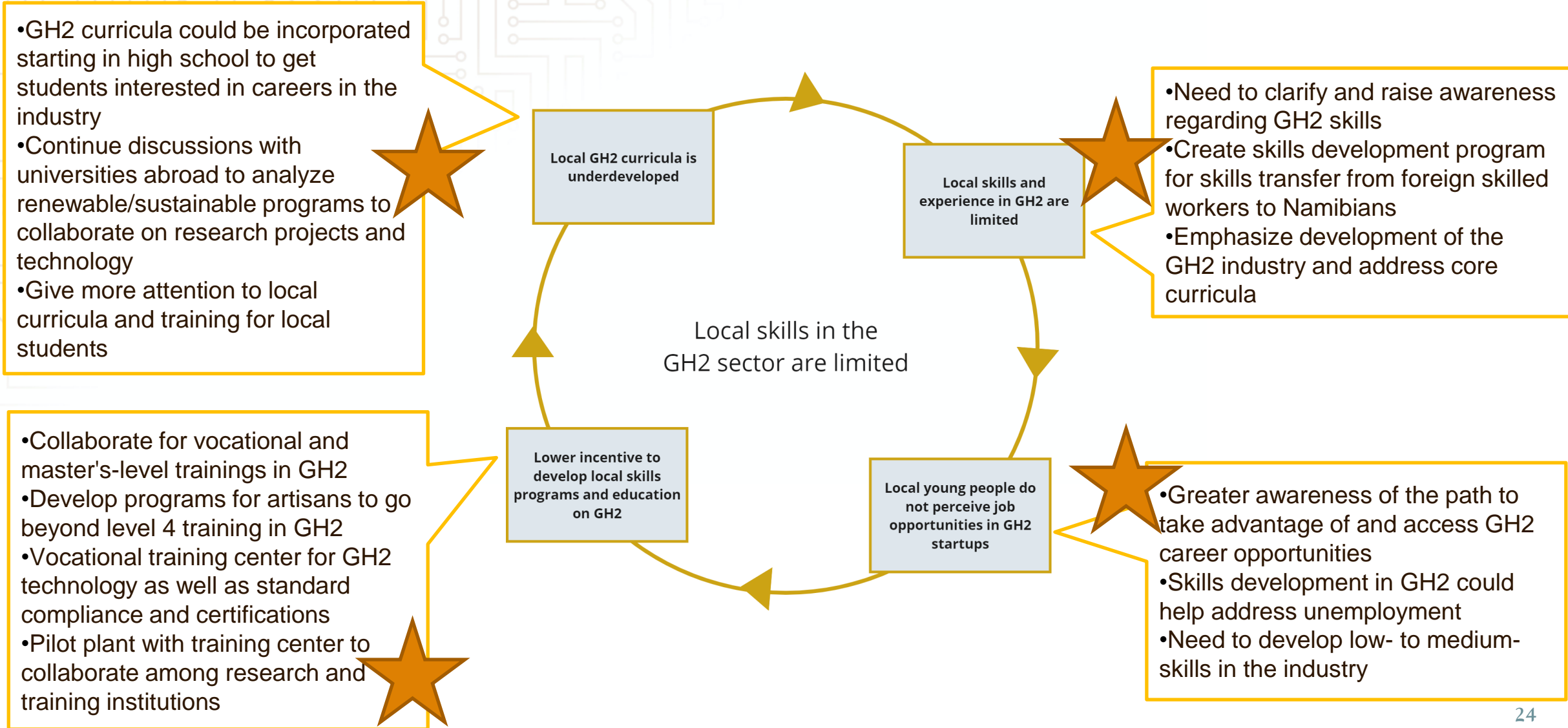
# Solutions to Create Awareness




# Solutions to Re-Focus on Startups



# Solutions to Develop Local Skills





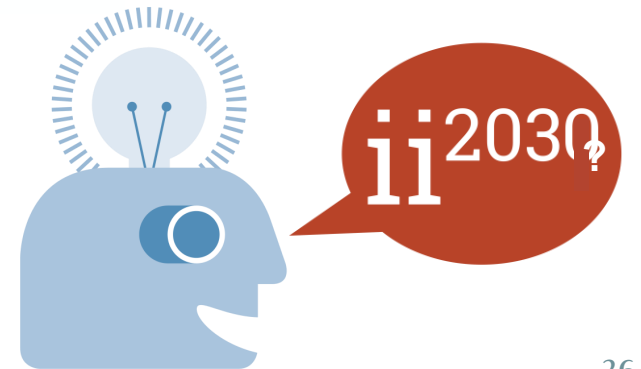
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# Results of Co- Creation: Skill Building for GH2 in Namibia

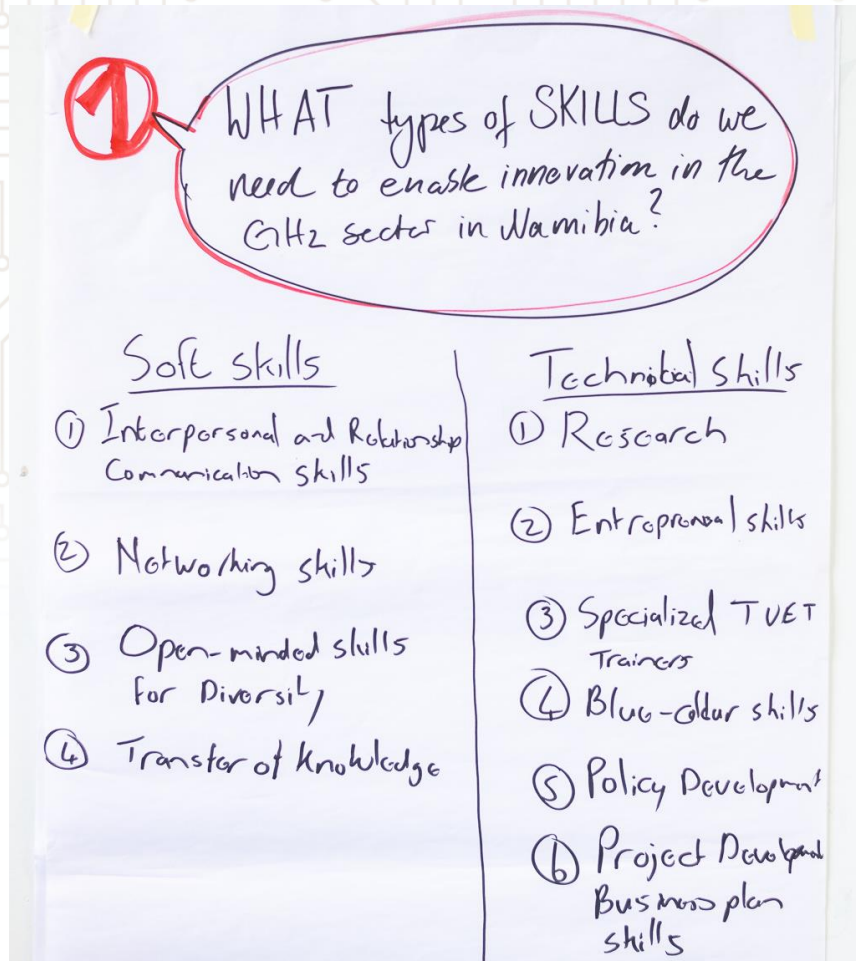
# Starting Point



How can we create a hub/platform/format to support the exchange of theoretical and practical skills and experience for students, professionals and workers on a Pan-African and global level?



# Fast networking, Q1



## What type of skills do we need to enable innovation in the GH2 sector in Namibia?

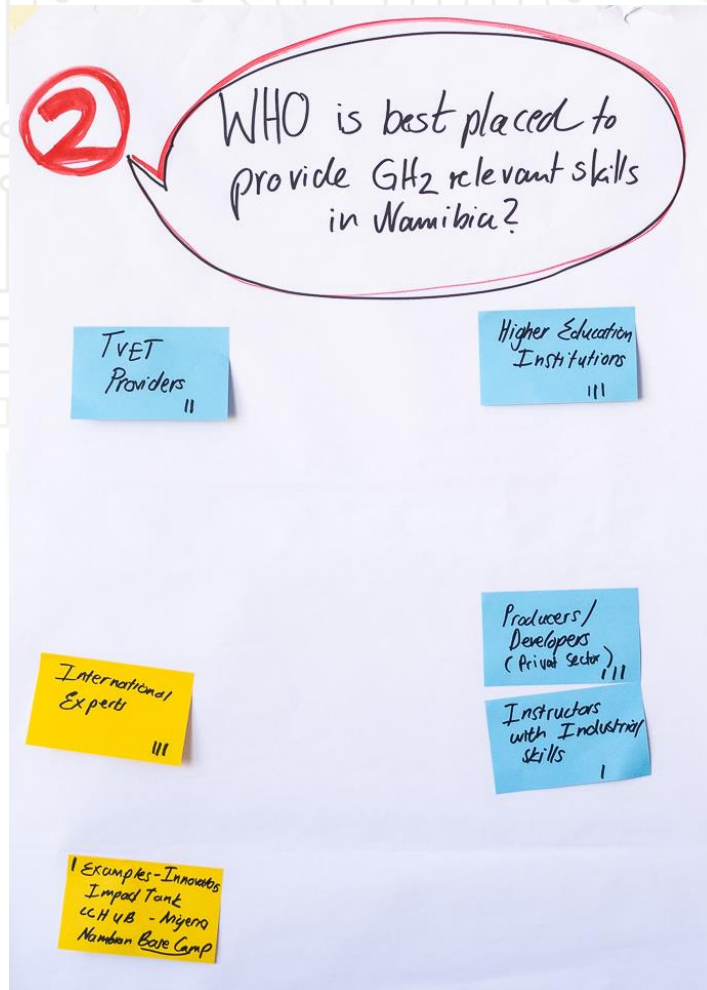
### Soft skills:

- 1) Interpersonal, relationship and communication skills; identifying all stakeholders
- 2) Networking skills
- 3) Open-mindedness and diversity; identifying how to expand your business to incorporate GH2
- 4) Ability to transfer of knowledge and skills, including both soft skills and technical skills

### Hard skills:

- 1) Research skills
- 2) Entrepreneurial skills, including writing a business plan and how to generate revenue
- 3) Specialized TVET trainers
- 4) Blue-collar and vocational skills for construction of the various projects
- 5) Policy development, including an obligation for businesses to benefit local companies and skilled workers
- 6) Skills in project development and business plan skills, including knowledge regarding necessary approvals

# Fast networking, Q2



## Who is best placed to provide GH2 relevant skills in Namibia?

- 1) TVET providers, including training centres
- 2) International experts such as Innovators, Impact Tank, CCHub, Nigeria and Namibian Base Camp
- 3) Higher education institutions
- 4) Producers/developers (private sector), including Hyphen, Daures and H2WS
- 5) Instructors with industrial skills who would be well-placed to upskill Namibians for niche skills relating to GH2
- 6) Innovation Hubs and Impact think tanks

# Fast networking, Q3

3

WHO can play a role in financing the skills development

(NTA)

-<sup>NA</sup>GRN

- Developers / Development Agencies  
- Foundations

- Philantropists

- Banks: Development  
Local  
Financial Institutions  
International Organisations

- Private Sector

- \*NCRST: Facilitator

- Credit Guarantee Scheme

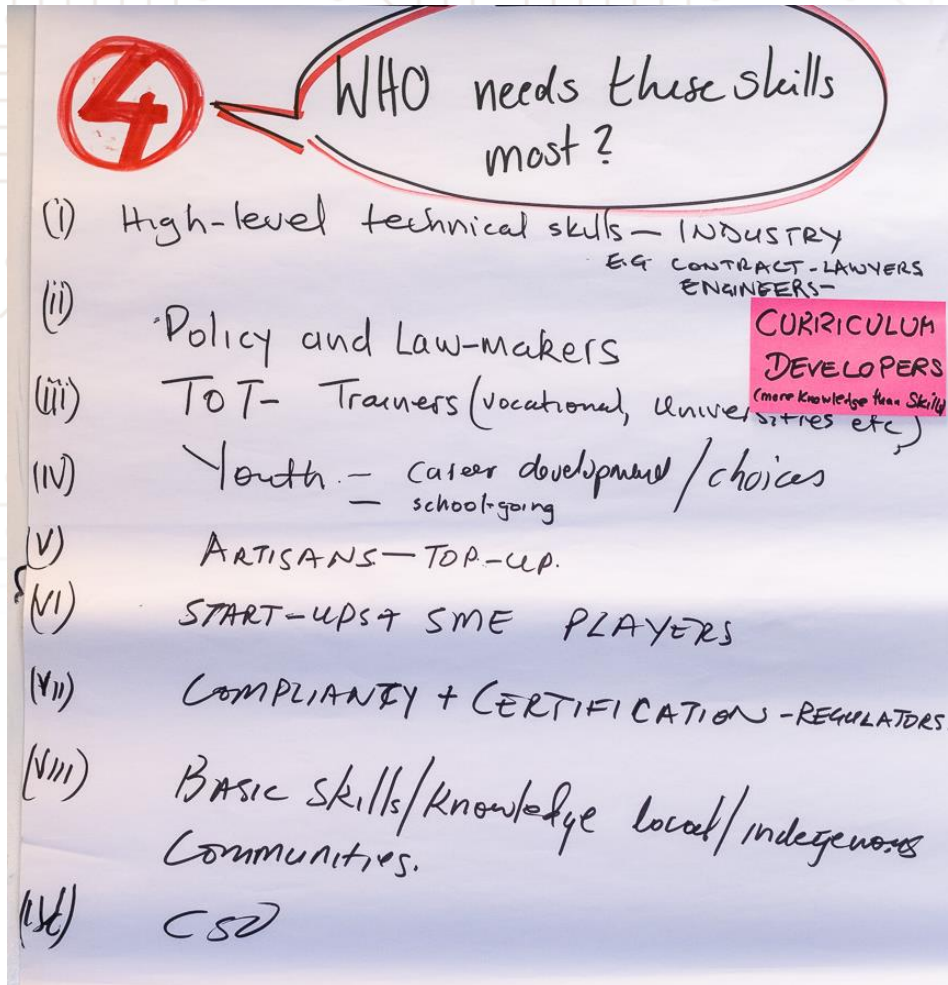
- Development Bank

- National Council for Higher Education

## Who can play a role in financing the skills development?


- 1) Government of the Republic of Namibia, from ministries to state-owned enterprises. Namibia Training Authority (NTA), NCRST as a facilitator, National Council for Higher Education representing the universities
- 2) Developers and development agencies such as SASCAL
- 3) Philanthropists, foundations
- 4) Banks, including development financial institutions, local and international institutions; Development Bank of Namibia assists SMEs and guarantees 60% of the collateral to local banks, allowing ventures to come up with only 40%, de-risking. This has been underused and could be replicated to enable banks to more easily fund skills development
- 5) Private sector
- 6) Credit Guarantee Scheme

# Fast networking, Q4



## Who need these skills the most?

- 1) High-level technical skills/knowledge in industry, e.g., contract lawyers, engineers and curriculum developers
- 2) Policy and lawmakers
- 3) Training of Trainers (ToT) scheme for university staff and vocational trainers
- 4) Youth: career development and choices, school programs
- 5) Artisans, including upskilling existing artisans
- 6) Startups and SMEs: how the industry is organised and building a business in/around GH2
- 7) Local and indigenous communities need basic skills/knowledge so they can participate and benefit
- 8) Civil society organisation – basic knowledge for advocacy work

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# Prototypes for Building GH2 Skills from the Co-Creation Workshop

# 1: Namkanda - Renewable Skills Training Centre





# Namkanda - Renewable Skills Training Centre



## Prototype 1 - Upskilling/Reskilling

**Developers/Group participants:** Representatives from Hyphen and GIZ

A GH2 training centre with multiple components focusing on renewable energy and GH2 production with hands-on learning opportunities and research on use cases.

Featuring:

- 1) Faculty of Renewable Energy: Located along the coast with hands-on access to renewable and GH2 production training facilities, which allow students and trainees to work with simulated components hands-on
- 2) Agricultural Institute: green ammonia from GH2 production feeds into an aquaponics/hydroponics centre
- 3) Battery Research Facility: utilizes the brine waste from GH2 production to incorporate into sodium-ion batteries
- 4) School of GH2: pupils include technicians who have previously completed higher courses, and some are apprentices and TVET students being taught by previously graduated technicians
- 5) GH2-powered jet bringing in international exchange experts and flying out Namibians to exchange programs

# 2: RECOGREEN



# RECOGREEN



## Prototype 2 – Collaboration between local and international players

**Developers/Group participants:** Representative from the National Commission on Research, Science, and Technology (NCRST), Kaoko GES Ltd, H2WS Ltd, University of Namibia, Namibia Training Authority (NTA)

An open-border policy framework for free-flow of skills, knowledge and expertise from the international community to Namibia with knowledge transfer and exchange obligations.

Featuring:

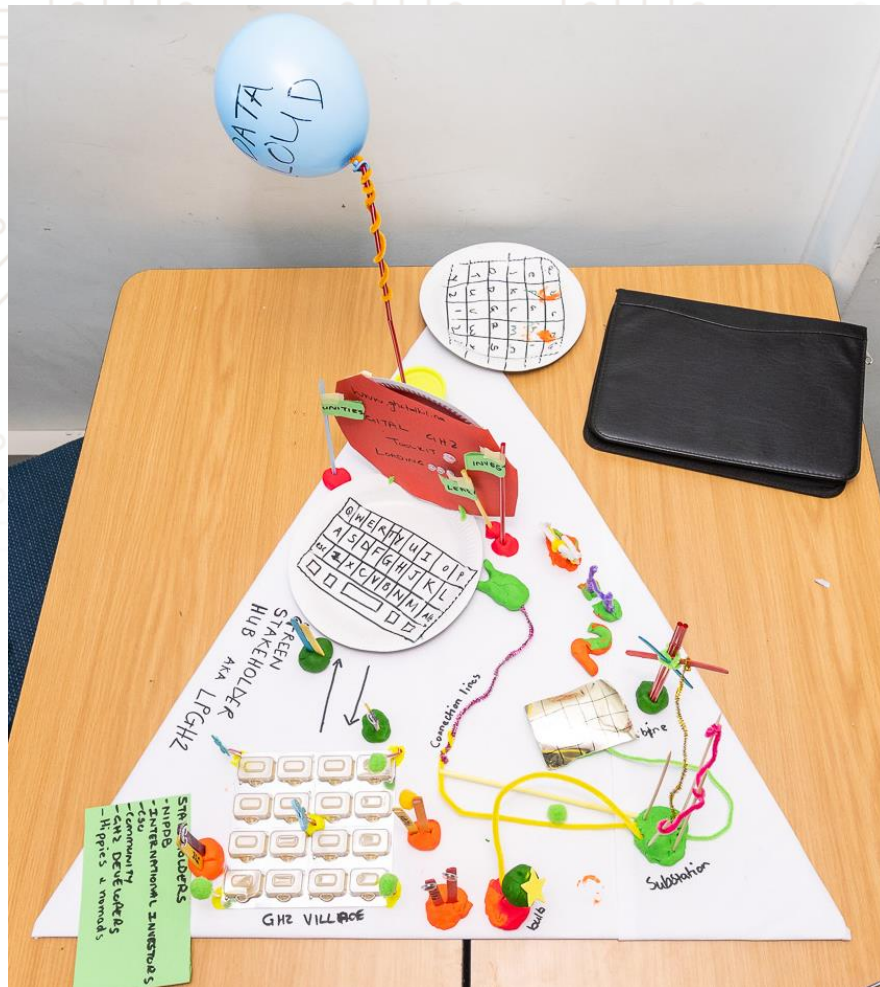
- 1) Report of Skills Audit in Namibia
- 2) Open-Door Border Policy: lowering the bureaucratic barrier to entry for international experts while requiring exchange obligations for entry
- 3) Including stakeholders into the GH2 value chain, including youth
- 4) Defining new GH2-specific qualifications
- 5) HyCooker: exploring use cases for GH2, including GH2-powered cooking

# 3: Green Stakeholders Hub



# Green Stakeholders Hub

AKA Love, Peace, GH2



## Prototype 3 – Increasing Awareness and Stakeholder Engagement

**Developers/Group participants:** Representative from EU, GIZ, H2WS Ltd, Daures, South Africa Resource Watch (SARW)

Large digital awareness centre and GH2 village that allows for inclusive stakeholder engagement and education.

Featuring:

- 1) An informational digital kit, which stores information and shares it via radio, TV, the internet, etc.
- 2) Engages surrounding communities and the youth as well as stakeholders including NIPDB, international investors, CSOs, and GH2 developers to work together
- 3) GH2 village powered by green energy and utilizing green materials
- 4) Green energy is produced via wind and solar, which is transmitted to the grid and powers the digital kit as well as the GH2 village

# 4: NAM GH2 Hub



# NAM GH2 Hub



## Prototype 4 – Academia

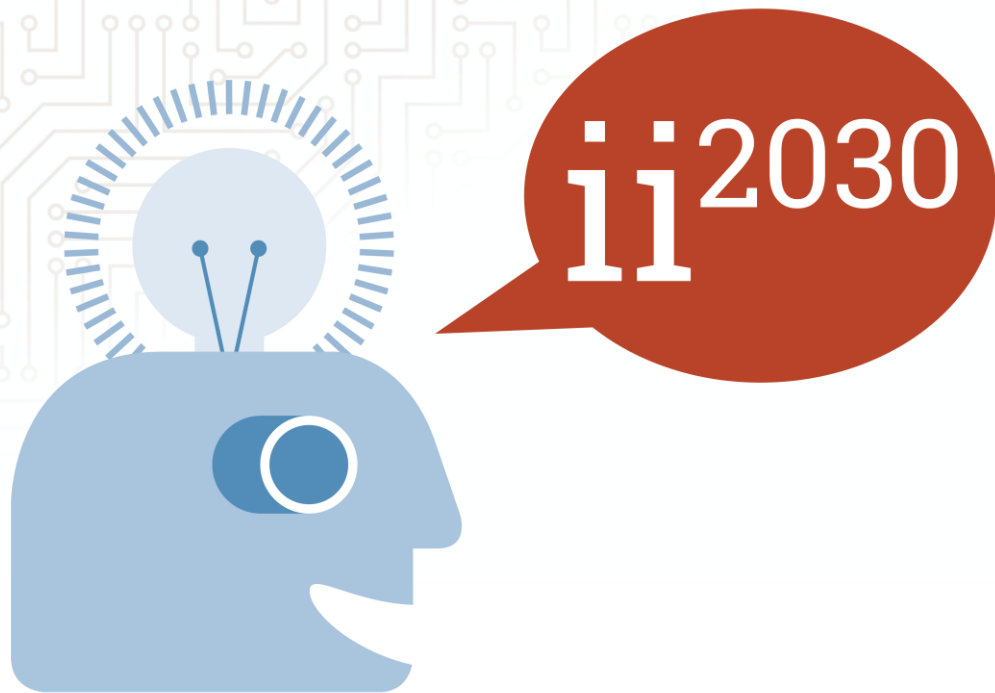
**Developers/Group participants:** Representatives from Namibia Investment Promotion and Development Board (NIPDB), Namibia Green Hydrogen Research Institute (NGHRI), University of Namibia, Namibia University of Science and Technology (NUST)

A centre in the university that allows for curriculum development, youth engagement and training for entrepreneurial skills.

Featuring:

- 1) Centre for Curriculum Development, including stakeholders such as the Namibia Training Authority (NTA) and National Quality Assurance (NQA)
- 2) Youth Engagement Centre: platform for youth to engage with experts
- 3) Research Centre: academia can do research in a co-working space or mobile lab that can travel to the different regions of Namibia for information sharing and data collection
- 4) Innovation Hub: allows entrepreneurs to test their software and experiment with prototypes, including a GH2-powered stove
- 5) Centre for Entrepreneurial Skills: focused on ideation and incubation

# Thank You!



For more information, feedback  
or comments, please contact

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