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# Critical Cartographies of the Green Hydrogen Rush in Namibia

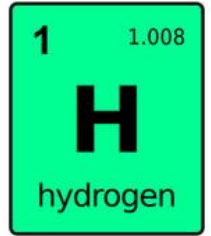
William Monteith, Queen Mary University of London

# Global Ecologies of Work

- Explores historical and contemporary (dis)connections between the twin global crises of unemployment and ecological collapse
- Critically examines recent investments in ‘green frontier’ industries and the ‘green jobs’ they are predicted to create (24 million by 2030)
- Seeks to understand how the benefits of the green hydrogen economy will be distributed along the value chain

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# I. The ‘green hydrogen rush’

- We are entering ‘a new energy age’ which will reshape relations between states and communities and bring about a “new world” of power, security, energy independence and prosperity.

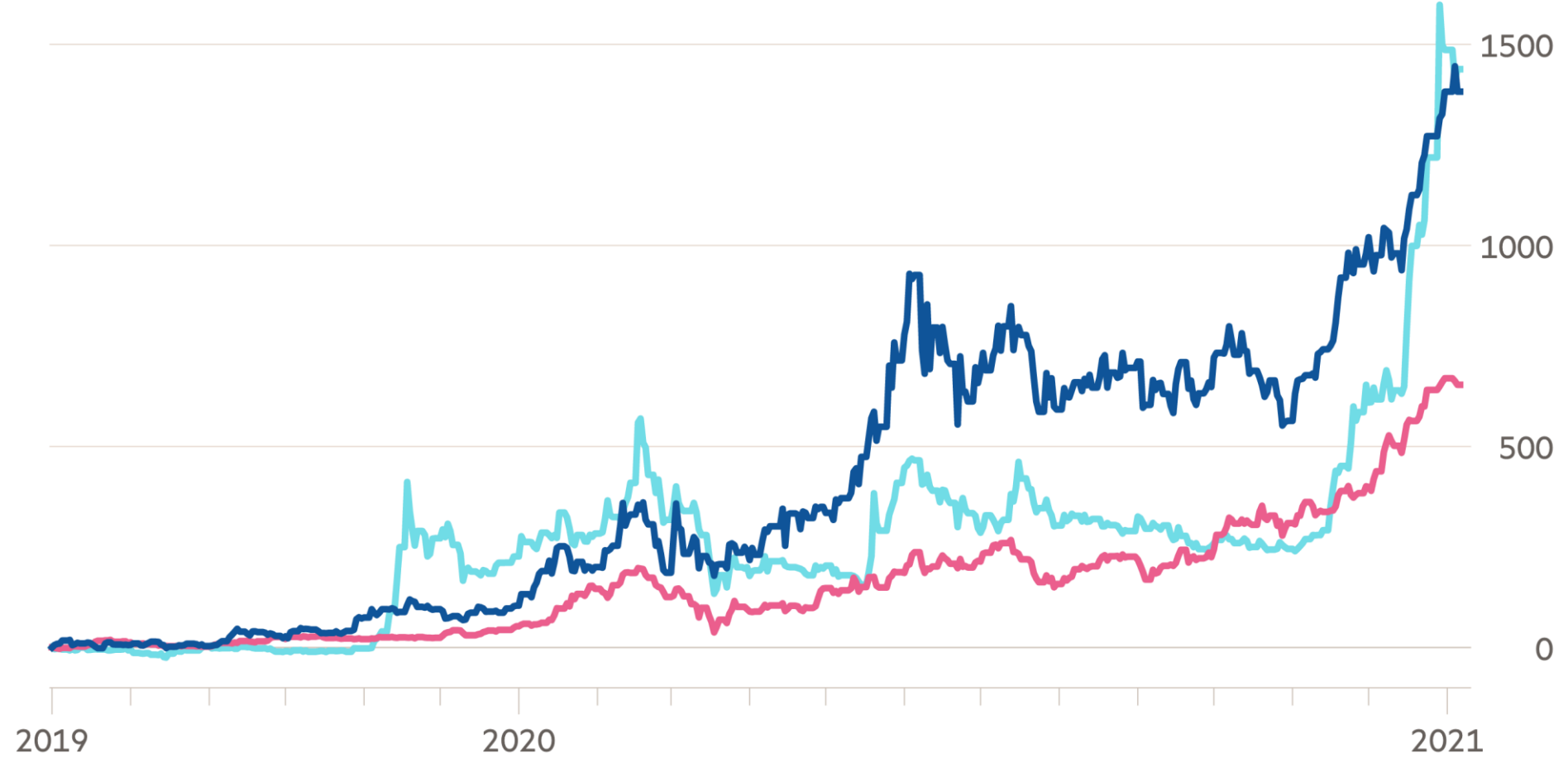
(International Renewable Energy Agency 2022)

- Hydrogen has taken central stage as an energy source capable of decarbonising ‘hard-to-abate’ sectors (steel, cement, aluminium, ammonia, transportation)
- German National Hydrogen Strategy (2020), EU Strategy on Hydrogen (2020) – hydrogen imports key to energy independence and net zero, accelerated as a result of war in Ukraine

# The hydrogen boom continues

% change in share price since mid-2019

ITM Power   Ceres Power   AFC Energy



Source: FactSet

© FT

# Critiques of green hydrogen

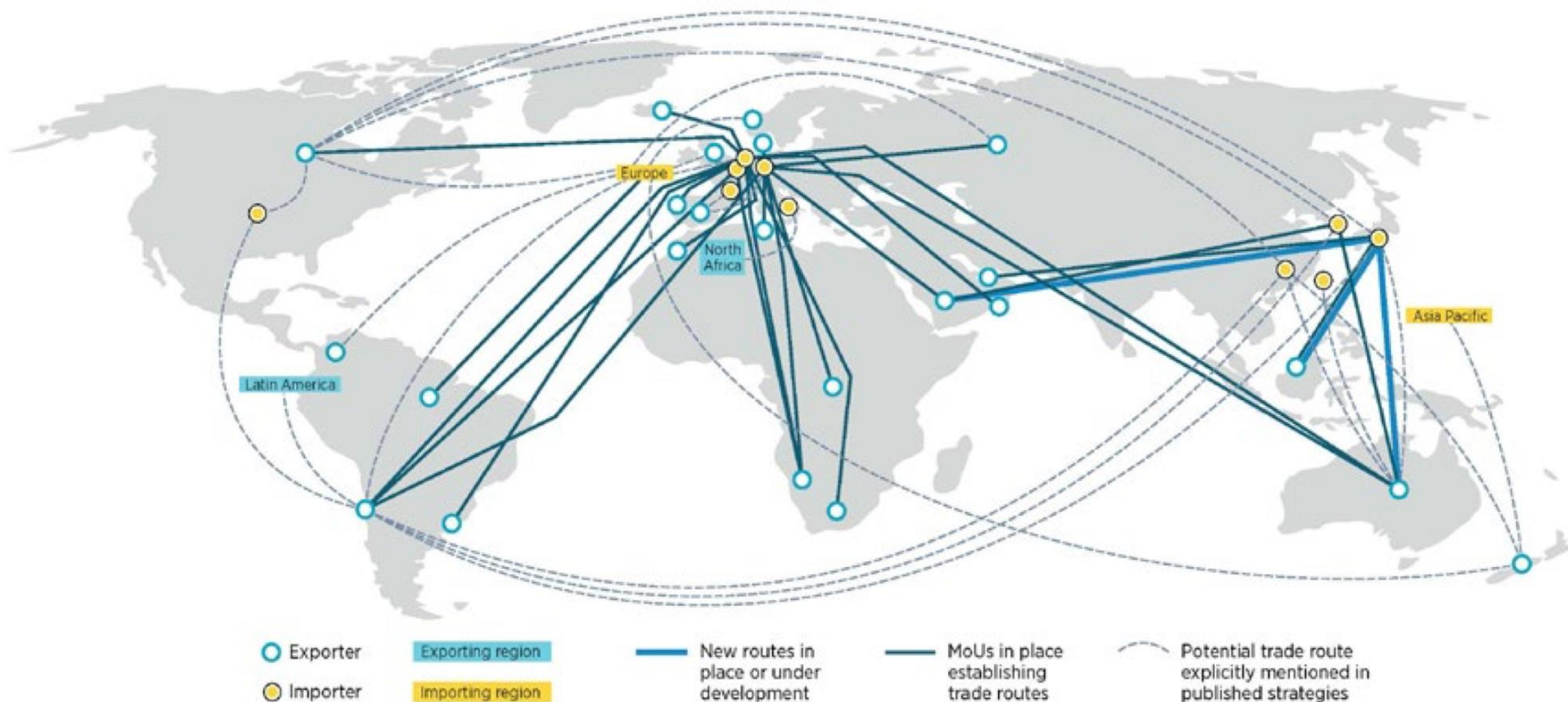


- Platinum intensive
- Water intensive
- Electricity intensive
- Inefficient energy carrier (20-50% efficient)
- Limited uses (today) – assumed growth of European market (tomorrow)

## II. Critical cartographies of the GHR

- Debates on green hydrogen to date largely technical and apolitical; lack of attention to how the gains of the GH2 economy will be distributed
- Cartographic representations (maps) key to the normalisation and extension of the global green hydrogen rush
  - Maps don't simply reflect 'reality', they produce it
  - Whose interests do they represent?
  - What relations of power do they uphold?
  - Who or what is 'off the map'?

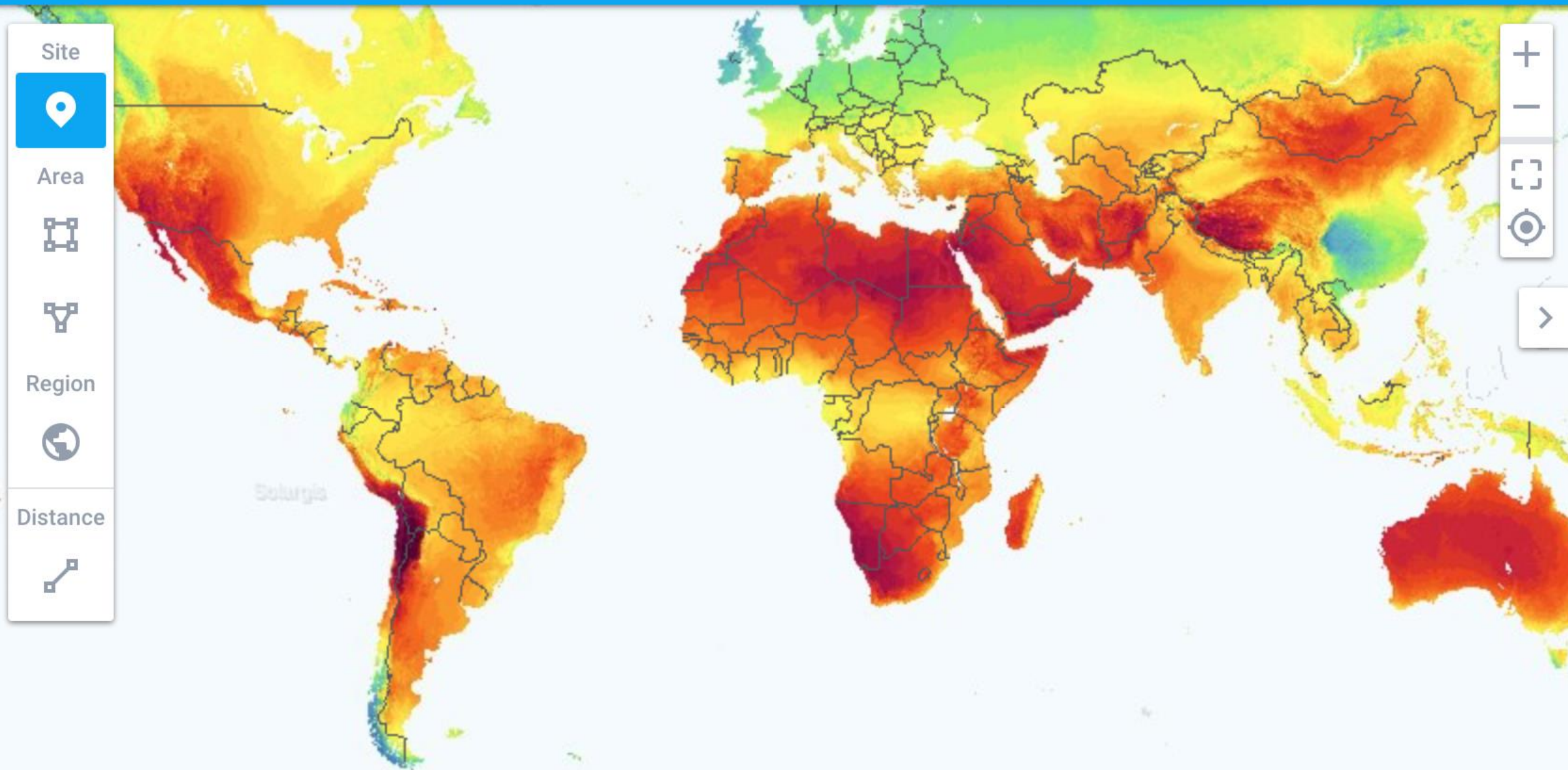
## An expanding network of hydrogen trade routes, plans and agreements



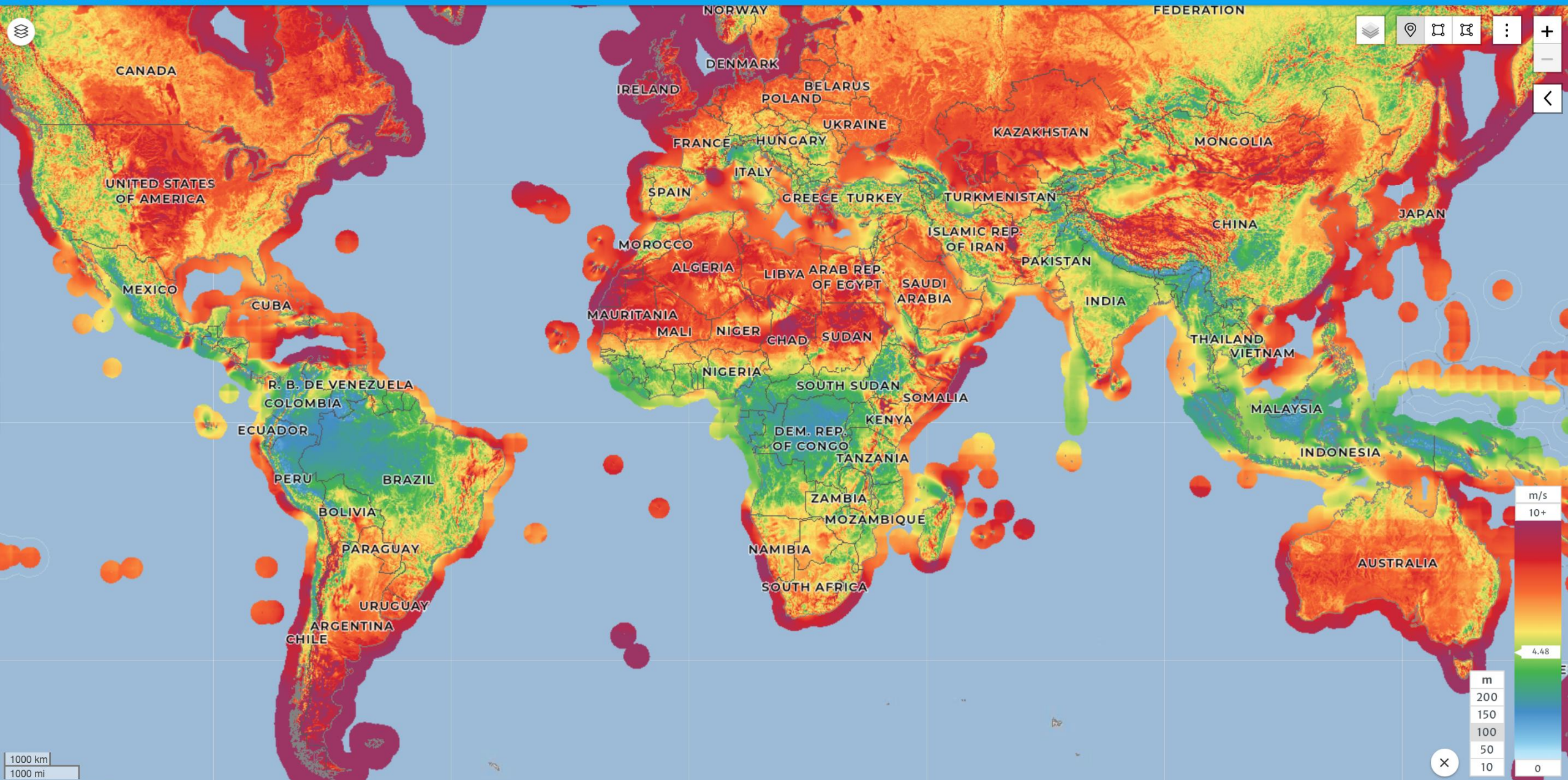
**Source:** IRENA (2022) *Geopolitics on Hydrogen* at [www.irena.org](http://www.irena.org)



Search locations

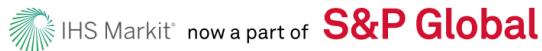






# Africa as the green hydrogen ‘El Dorado’

- “Africa, due to its abundant renewables potential and in particular North Africa due to geographic proximity, is a potential supplier of cost-competitive renewable hydrogen to the EU”  
(EU Hydrogen Strategy 2020)
- “[Namibia] has excellent co-located wind and solar resources, large swathes of uninhabited, government-owned land”  
(Mark Raffinaetti, Hyphen CEO)



Energy & Natural Resources Research & Analysis >

Will Africa become the new green hydrogen “El Dorado”?

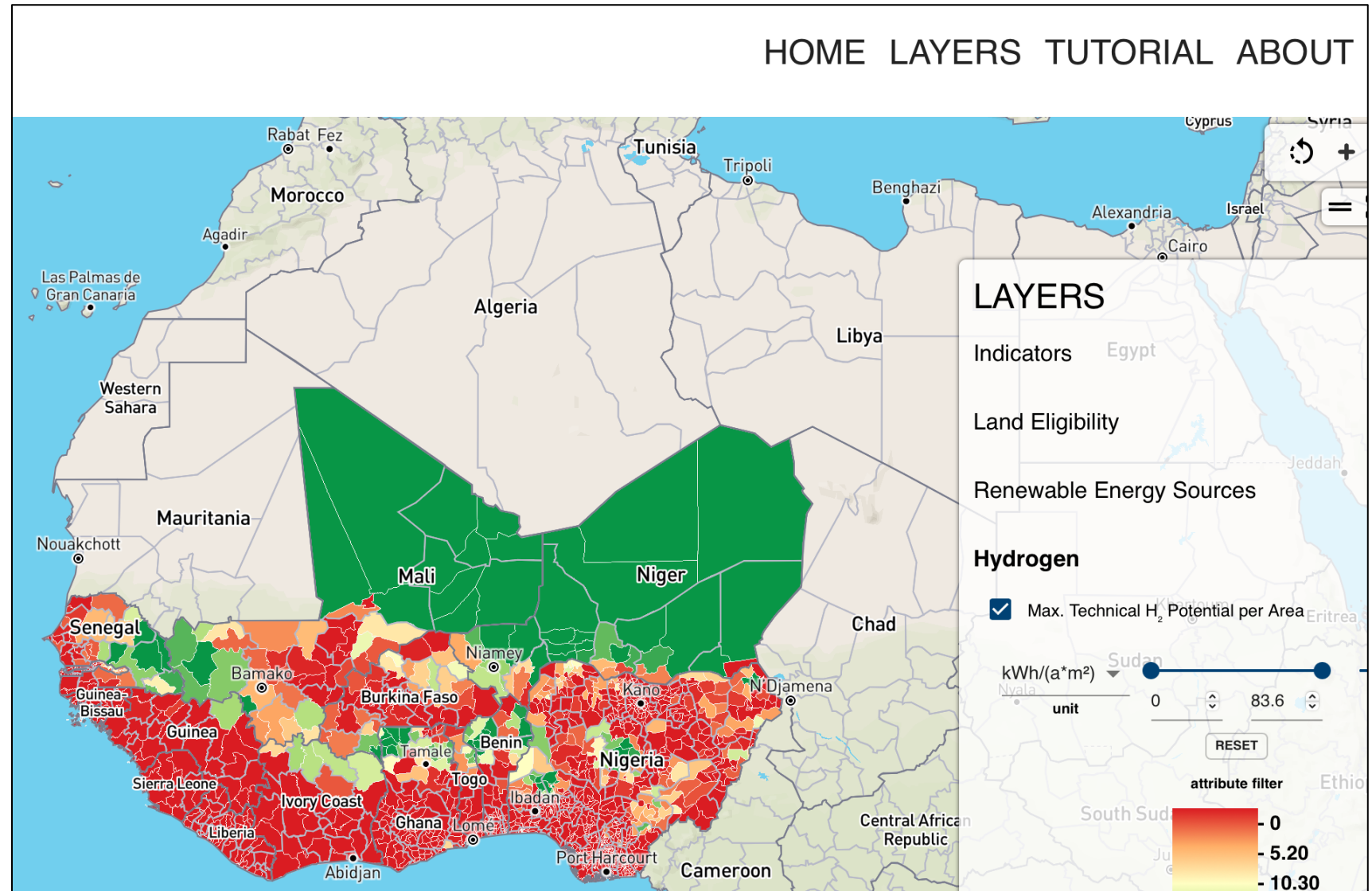
## Germany to fund four green hydrogen projects in Namibia

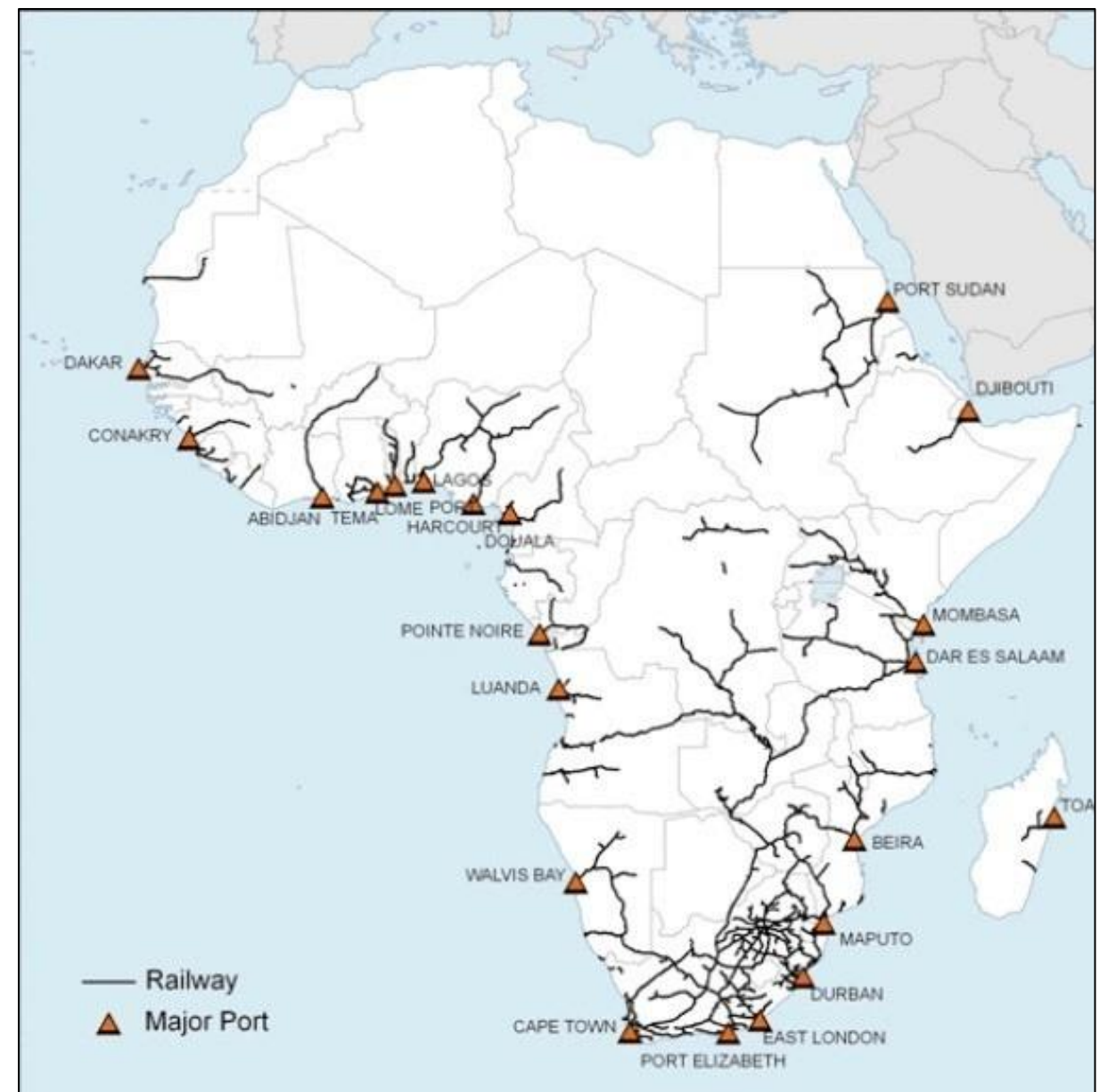
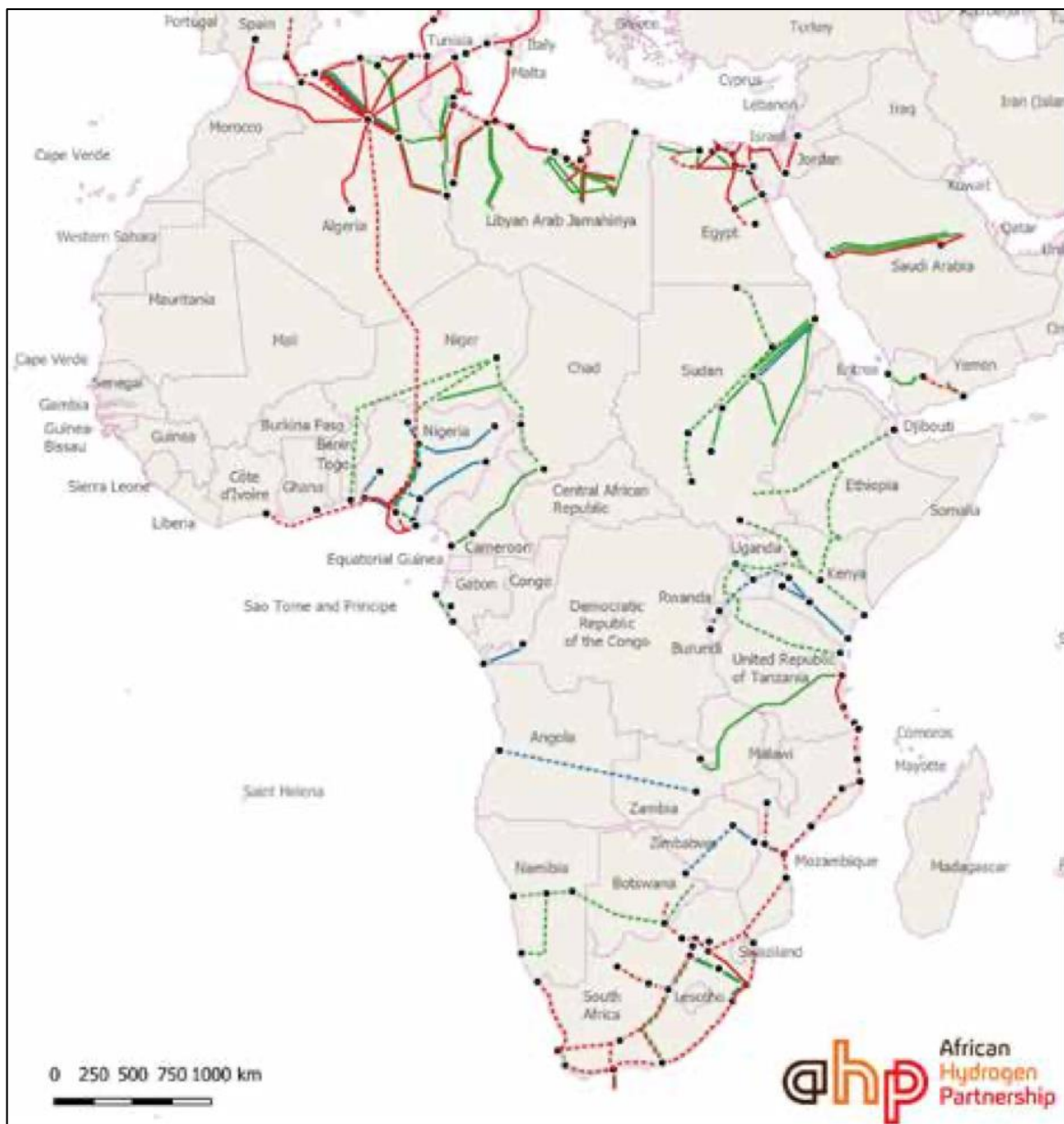
German government will splash about N\$500 million on four Namibian green hydrogen pilot projects



# H2Atlas.de

- “Joint initiative of the German Federal Ministry of Education and Research (BMBF) and African partners in the Sub-Saharan region to explore the potentials of hydrogen production”
- “Enormous potential for the production of green hydrogen exists throughout the region. The production "hot spots" can be viewed in the interactive map”





Map of colonial railway infrastructure, 1960





**Above:** Simplified visual layout of the SCDI (Southern Corridor Development initiative) the the //Karas Region

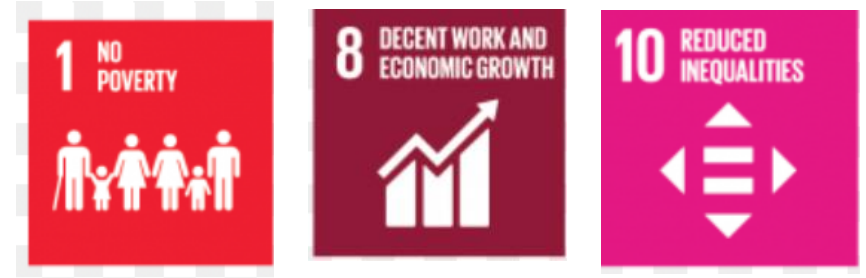
# Initial reflections

- Debates on the 'green hydrogen rush' in Europe present the African continent as the solution to European carbon consumption and energy dependency
- Current hydrogen infrastructure on the African continent is geared towards export rather than domestic and regional use
- Cartography has been used as a key tool for identifying and exploiting areas of high green hydrogen potential, yet these maps have predominantly been made by and for European states and investors
- Need for green hydrogen mapping and 'countermapping' initiatives by governments, researchers and citizens on the African continent and for infrastructural planning and investments that retain more of the benefits of the emergent green hydrogen economy (upstream and downstream)

“How [will] host communities respond when nearby wind and solar farms become export factories to support the carbon and climate goals of affluent countries?”

Brannstrom and Gorayeb (2022) ‘Geographical Implications of Brazil’s Emerging Green Hydrogen Sector’, *Journal of Latin American Geography*, 21(1), p.188

# III. Redistributing sunlight



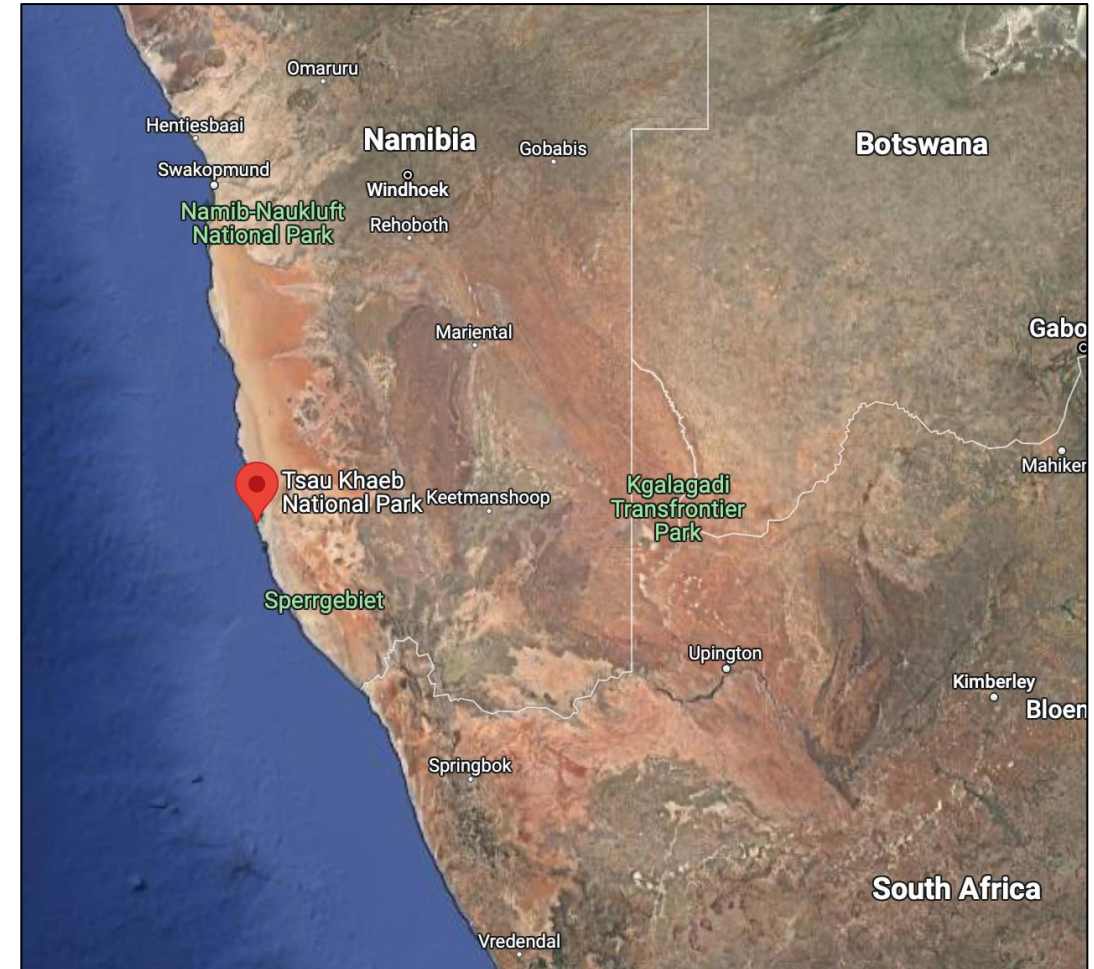
- How are the benefits of GH2 distributed along the value chain and among the general population?
- Importance of thinking about the distribution at different scales:
  - Global (Europe-Africa) - AGHA
  - Regional (Southern Africa) - SAPP
  - National (Namibia)
  - Sub-national (IlKaras)



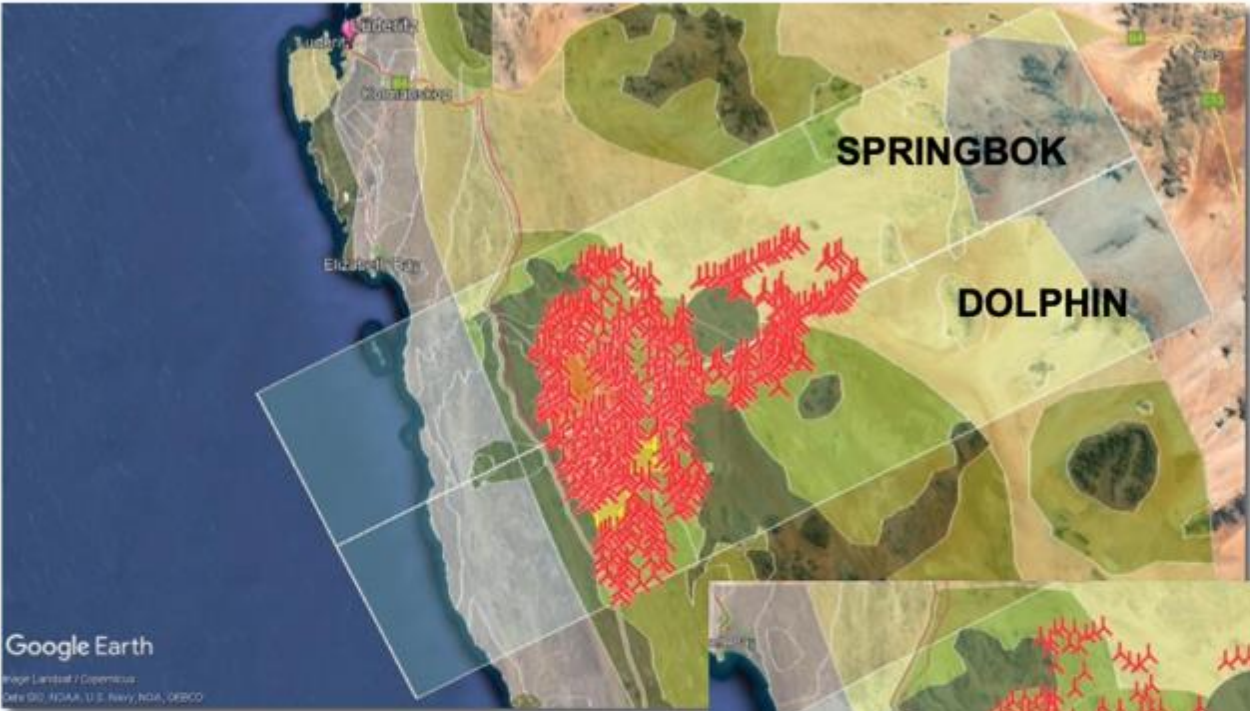


# ‘The largest tender in Namibian history’

- 4,000km<sup>2</sup> of Tsau/Khaeb National park tendered to Hyphen Energy in 2021
- A rare arid biodiversity hotspot
- Formerly the *Sperrgebiet* and site of colonial genocide
- Hyphen Energy bought the right to operate the project for 40 years
- Production of up to 300,000 tonnes of green hydrogen per year
- Cost of project approx. **US\$ 9.4 billion** government of Namibia can take up 10-24%



# Springbok and Dolphin Phase 1 & 2 Renewable Energy Layout



Special Value	No development zone as per environmental consultant guidance
Minimal Disturbance	This is a zone of no permanent development, but it does make allowance for renewable assets
Wildlife Disturbance	This is a zone of no permanent development, but it does make allowance for renewable developments.
Managed Resource	Same guidelines as minimal and wildlife disturbance zones.



*Consideration for the sensitive environmental zones was key in designing the buildable area within the park. All special value areas were identified as non-buildable*

The Nature Conservation Amendment Act 2017 under Section 17(2)(k) empowers the minister of environment and tourism “to establish a renewable electricity source for the purposes of the management of game parks, nature reserves and other protected areas or protection of the environment **or the combating of climate change**” ([The Namibian, 2020](#))

# Remaining questions

1. **Water:** what impacts will desalinisation have on local ecosystems? How will its byproducts (sludge) be managed and disposed of?
2. **Transport:** what impacts will deep sea ports, and submarine pipelines have on local ecosystems?
3. **Economy and inequality:** what impacts will the green hydrogen economy have on 'formerly disadvantaged Namibians and rural communities living in and around protected areas'?
4. **Sustainability:** what will happen to green hydrogen infrastructures at the end of the 40-year Hyphen project? How will the 'green hydrogen rush' of the 2020s be different to the 'diamond rush' of the 1900s?







# Current commitments



- ‘GDP boost of c.\$20bn/year, \$6bn-\$8bn contribution to trade balance and national energy independence’
- 15,000 FT employees during construction phase (4-5 years)
- 3,000 operational and management jobs (post-construction)
- 90% to Namibian citizens, with 20% youth participation
- 200 scholarships for Namibians as part of upskilling programme (NGHRI)
- Fulfilling vision 2030: ‘Economic growth and **full employment** with **equitable wealth** and resources **eliminate poverty**’

**Source:** Government of Namibia (2022) Traction: Namibia’s Green Hydrogen Overview

# ‘Green jobs’

- Most jobs in the green hydrogen sector are fixed-term (2-5 years) construction jobs
- Other FT jobs in the green hydrogen sector do not currently exist and do not have occupational titles defined in official classifications.
- "Many of these jobs require different skills and education than current jobs, and training requirements must be assessed so that this rapidly growing part of the economy has a sufficient supply of trained and qualified workers"

(Bezdek 2019)

- Need for further research on occupational categories and skills gaps, drawing from examples from the wind and solar industries (NGHRI)
- But also a need to think about redistribution beyond job creation

# Redistribution beyond jobs

- Connecting demands for reparations to those for hydrogen justice
- Possibility for direct cash transfers to provide Namibian citizens with a 'rightful share' of green hydrogen dividends

(Ferguson 2015 *Give a Man a Fish*)

**Source:** Government of Namibia (2022)  
Namibia's green hydrogen opportunity: key questions and initial answers

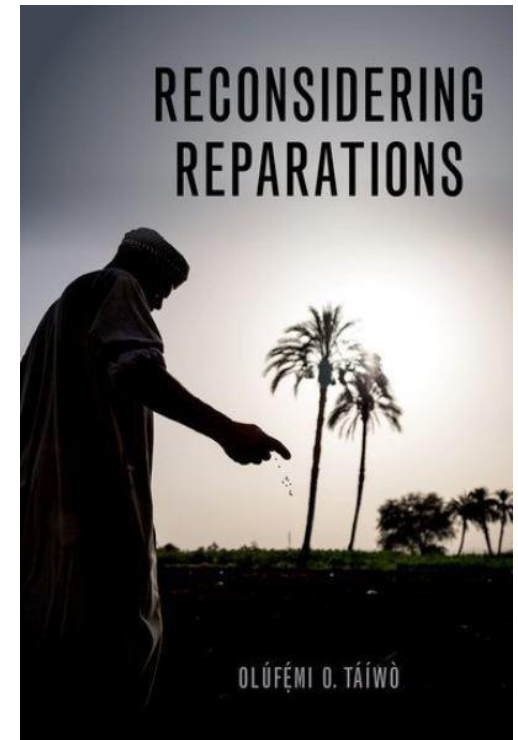
## Options for use of revenues

- Challenge: investing into broader economy to drive wholesale uplift

OPTIONS		
a	b	c
Direct Dividend Payments	National Budget Allocation	National Resource Fund
<b>Description</b> <ul style="list-style-type: none"> <li>▪ <b>Cash transfers</b> directly to citizens</li> </ul>	<ul style="list-style-type: none"> <li>▪ Invest in development via <b>budget process</b></li> <li>▪ <b>Annual or multi-year</b> development plans</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Extra-budgetary fund</b> domestic &amp; foreign</li> <li>▪ <b>Fiscal rules</b> set by multi-year govt. objectives</li> </ul>
<b>Examples</b> <ul style="list-style-type: none"> <li>▪ <b>Alaska Permanent Fund Dividend Scheme</b></li> <li>▪ Mongolia Cash Transfer Program</li> </ul>	<ul style="list-style-type: none"> <li>▪ Nigeria Excess Crude Account</li> <li>▪ <b>Botswana Sustainable Budget Index</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Norwegian Oil Fund</li> <li>▪ Abu Dhabi <b>Investment Authority</b></li> </ul>
<b>Pros &amp; cons</b> <ul style="list-style-type: none"> <li>⊕ <b>Direct poverty alleviation</b>, especially if targeted</li> <li>⊕ Limits risk of political instability if equitable</li> <li>⊖ Increase to expenditure, <b>not investment</b></li> <li>⊖ Limited domestic absorptive capacity risks <b>inflationary pressure &amp; currency appreciation</b></li> </ul>	<ul style="list-style-type: none"> <li>⊕ Supports <b>strategic spending programmes</b> – e.g.: education, infrastructure</li> <li>⊕ Lifts civil service salaries → <b>attract &amp; retain talent</b></li> <li>⊖ Limited domestic absorptive capacity risks <b>inflationary pressure &amp; currency appreciation</b></li> </ul>	<ul style="list-style-type: none"> <li>⊕ <b>Limits risk</b> of domestic economic <b>overheating</b></li> <li>⊕ Secures <b>revenue continuity</b> including counter-cyclical</li> <li>⊖ <b>Risk</b> of mismanagement against multi-year objectives <b>if fiscal rules not consistently followed</b></li> <li>⊖ Lack of direct benefit to public can disenfranchise</li> </ul>

# Reflections

- Existing research on the socio-economic dimensions of the green hydrogen rush have so far been limited to a focus on GDP growth and direct job creation
- Need for further research on green hydrogen as a social, political and geographical, *as well as a technological* phenomenon, in order to connect questions of energy production back to broader questions of land and livelihood
- Need for further research and consultation on the how the value created through the green hydrogen sector will be redistributed at different scales (local/national/regional/global)
- At the global level, work needs to be done to ensure the green hydrogen sector doesn't become an example of 'climate colonialism'
- At the national level, work needs to be done to ensure Namibia's first green hydrogen project contributes to local development priorities; for example, through interventions such as a **green basic income**





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