SUMMARY

Green hydrogen: Key success criteria for sustainable trade & production

SUMMARY OF THE SYNTHESIS BASED ON CONSULTATIONS IN AFRICA & LATIN AMERICA

Brot für die Welt

HEINRICH BÖLL STIFTUNG

Green hydrogen: Key success criteria for sustainable trade & production

Green hydrogen – hydrogen produced from renewable energy – will likely play an important role in the global energy transition. As its cost of production will be mainly determined by the availability of abundant and cheap renewable energy, countries with this potential are likely to become exporters of hydrogen or its derivatives. Many of these countries are located in the Global South. Yet, historical experiences with North-South trade have often been problematic: Power imbalances led to a history of exploitation and economic as well as environmental injustice. There are fears that the nascent global green hydrogen trade could fall into a similar pattern. However, the potential opportunities from green hydrogen for economic development and wellbeing in both consumer and producer countries are important, especially given the urgent global need to decarbonize.

Box 1

Main opportunities

- Green hydrogen can contribute to achieving climate targets, if it's used *only* for sectors that are hard to electrify.
- It can accelerate clean energy investment & renewable energy & hydrogen access in exporting countries, while diversifying energy production.
- It can reduce air pollution and correspondingly lead to better health, and improved biodiversity through avoiding fossil fuel production and pollution.
- It can create new jobs through new production facilities and transfer of skills and technology knowhow; creating economic opportunities in exporting countries, and earn foreign revenues from exports.

The Heinrich Böll Foundation (hbs) and Brot für die Welt (BfdW) therefore decided to undertake a project to assess how to apply the lessons learnt from the past to green hydrogen production and trade, to make it fair, equitable and sustainable. They consulted with a broad set of stakeholders at the local and national level in seven countries likely to be future green hydrogen exporters: Argentina, Brazil, Chile, Colombia, Morocco, South Africa, Tunisia. This process has yielded criteria and measures that would enable green hydrogen production and trade to start on a better footing, ensuring benefits for local people, communities, and exporting nations as well as importing countries, while maintaining environmental integrity, social justice, and human rights. To avoid the continuation of risky or polluting activities, hbs and BfdW reject the use of fossil or nuclear energy as a basis for hydrogen.

For green hydrogen, in summary, the following **criteria and policy recommendations emerged**:

The key recommendations mainly apply on the national level of exporting nations:

Green hydrogen production and trade need to be developed with a system-wide approach and **embedded in a country's overall development, energy and trade strategy** to be useful to all. Exporters should, then, create hydrogen roadmaps and national/regional strategies in line with their overall energy transition plan, to provide a long-term vision for green hydrogen. Such strategies need to be based on **strong social & sustainability standards** including respect for human rights and a "do no harm" principle regarding the environment and local communities. **Producer countries must benefit beyond revenue creation:** green hydrogen policies need to be shaped in such a way that producer countries do not just remain exporters of raw hydrogen, but benefit from value creation along the full value chain of production and trade. Exporting countries should therefore leverage external demand and the corresponding revenue to "bootstrap" renewable energy and hydrogen production for domestic purposes (consumer countries must consider what trade and investment arrangements would support this principle).

Figure 1: The Dimensions of a sustainable green hydrogen production and Trade

To ensure environmental benefits from green hydrogen several points are important:

- Monitoring requirements and control mechanisms to prevent leakage from pipelines; certification of the carbon footprint of hydrogen and its derivatives throughout the value chain.
- Minimizing water use, ensuring water supply is not endangered and carrying out potential desalination cleanly, creating additional water for local communities.
- Careful spatial planning for installations is key, with solid impact assessments and coordination with local communities; biodiversity-rich areas must be avoided as green hydrogen facilities sites.
- Resource use needs to be minimized, while recycling, in particular of rare materials, needs to be promoted.

To ensure social benefits, there are also key recommendations:

- Citizen participation is key – make sure local populations get involved to ensure a fair, transparent and sustainable energy transition overall. Concretely, promote community involvement from the very design of a project, including legal support for land-using communities to negotiate with energy companies in case of conflict – respect the principle of free, prior, and informed consent.
- A particular issue is the avoidance of expropriation, or removal of local communities. Rather, promote synergetic uses of land to avoid land use conflicts, e.g. for solar, use agro-voltaics.
- Ensure that projects contribute to energy access and overcoming energy poverty by making parts of the additional renewable energy/hydrogen generation available to the local population.
- Organize skills training for the local communities so that they can obtain the new jobs created. These jobs need to be fairly paid and safe.
- Importing countries should require that their procurement and certification frameworks for green hydrogen include international human rights, social (and environmental) standards.

Box 2

Main concerns and risks

- If H_2 production is prioritized for export over the longer term, that is a missed opportunity as RE capacity and H_2 would not benefit domestic energy supply.
- There could be land-use conflicts or expropriations for large scale RES installations, and human rights violations.
- Particularly in arid regions, there could be conflicts over water use for RE and electrolysis and fragile ecosystems could be damaged on badly chosen sites.
- Jobs could bypass locals, if no skills programmes exist or external workers are privileged.
- There are power balance questions, particularly for countries with bad governance, which could lead to profits for the few to the detriment of the many – with the latter often being the case in the Global South.

To ensure it's green hydrogen:

- Implement policies to generate initial scale-up for green hydrogen and to close the price gap to fossil hydrogen such as removing fossil fuel subsidies, installing carbon prices, public procurement, quotas and obligations. Ban fossil alternatives through market access restrictions or phase out obligations for non-green hydrogen. Increase certainty for investment through such measures.
- International cooperation and standardization can ensure a larger market for green hydrogen, including monitoring, certification, tracking and accounting with internationally agreed criteria. This includes a harmonized definition of green hydrogen so that "green" is indeed 100% renewable.

To ensure good governance:

Appropriate **governance** is crucial to ensure from the outset that the emerging green hydrogen market is geared to also deliver social and environmental benefits, and ends up being more transparent, inclusive and democratic than energy markets have traditionally been, as part of a just transition. Arrangements for the actual trading (which commodities, platforms, conditions, financial products, trading procedures) need to be agreed as well as assurances/guarantees to investors regarding the conditions under which they can market the hydrogen produced as green hydrogen in projected investment projects. Approaches can be bilateral, plurilateral or multilateral:

- **Bilateral policies can include** energy partnerships including long-term contractual arrangements between supplier and buyer countries, with the advantage of a speedy conclusion, as only two players are involved, potentially achieving high standards. A drawback of relying on bilateral deals would be the proliferation of standards, fragmentation of the market, and intransparency.
- **Plurilateral policies** could consist of a group of like-minded countries cooperating as a „Club" agreeing on ambitious social and environmental standards and benefits across a set of well-chosen countries – a gold standard, creating "the" standard others will also adopt. Drawbacks could consist of additional time needed to negotiate the policies. Further, with the ambition depending on the countries participating, this could result in competition with potential other hydrogen "clubs".
- **Multilateral policy approaches** could build on the "Club" option, enlarging participation over time. They could also extend the mandate of an existing initiative and equip it with the necessary resources; or tasking an existing intergovernmental organization to establish the standards and infrastructure for a future green hydrogen market, e.g. IRENA or IEA. This approach would be comprehensive and inclusive, but likely very time consuming.

The international green hydrogen market is still in its infancy. Policy-makers must seize the opportunity to create a model for how a human-rights based, equitable, just, and environmentally sound production and trade should work. The proposals from hbs and BfdW's report should be used as a template to make green hydrogen trade a positive reality for both, people and planet.

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