

Insights from Green hydrogen for sustainable (re)industrialisation in South Africa paper

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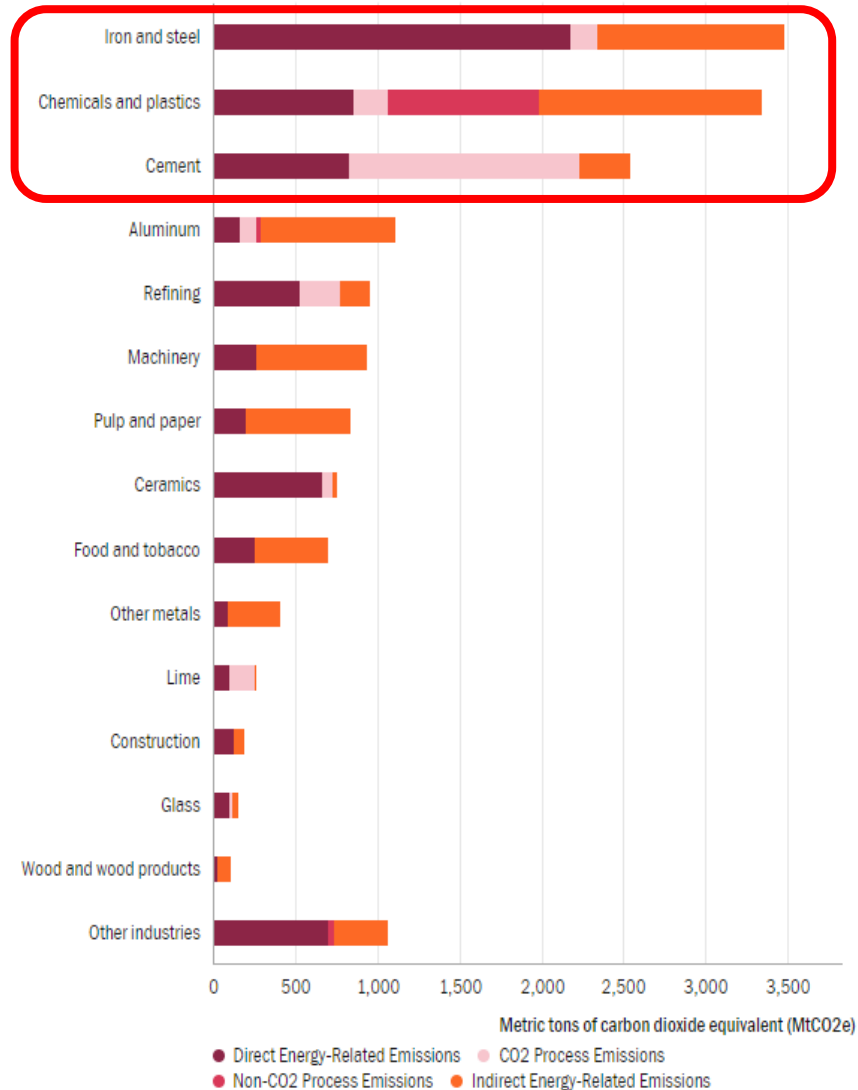
**TIPS Development Dialogue on
Green Hydrogen and Industrial Policy**

Overview of the core issues

- **Climate change is already uncovering vast inequalities between global North and South countries.**
 - These inequalities => the structure of the economy, particularly industrial production and trade.
 - Most climate change impacts stem from already-industrialised nations' historical records of pollution.
 - Developing economies are expected to bear the costs of mitigation and transition.
- **How countries target the problems of climate change → implications for industrial, competition, and trade policies.**
 - Global North economies (the EU) are producing policy frameworks, interventions, and taxonomies to address greenhouse gas emissions.
 - Yet, developing countries possess fewer resources and capabilities → exacerbating climate inequalities and mitigation and adaptation outcomes.
- **Thus, South Africa's response (given its high CO₂ emissions) is crucial for the future of its industrial and trade prospects in the era of global green transitions.**
 - Employment, investment, exports, & local industrial development.

Cement, steel, and chemicals are the highest CO₂-emitting sectors, globally

Figure 1: Global GHG emissions by industry, 2014



- **Historically, cement, steel, and chemicals production have ranked well above other sectors in terms of global GHG emissions.**
 - Steel sector = 8-10% of emissions (blast furnace-basic oxygen furnaces, mining, and transport and logistics)
 - Chemicals sector = 4% of emissions (50% feedstock)
 - Cement sector emissions originate from the calcination process (unavoidable for original Portland cements)
- **The importance of these sectors to SA's industrial base => risks and opportunities.**
 - Risks: EU CBAM and the EGD (trade barriers given steel and chemicals are heavily trade); creation of enclaves
 - Opportunities: hydrogen for structural transformation

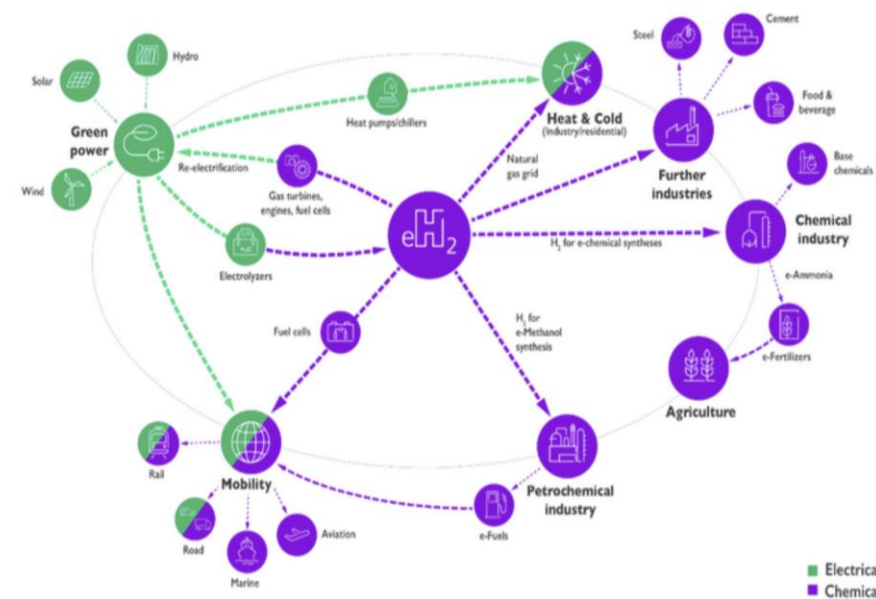
Risks: International trade will have crucial impact on the green transition

- **The trade-oriented policies drafted in developed economies such as the EU will impact developing economies' export prospects in two ways:**
 1. Reduce consumer demand
 2. Influence the “rules of the game” => how markets are governed and barriers to entry are established.
- **These will weaken developing economies' access to major export markets.**
- **The risk is that South Africa's structural transformation objectives may not be achieved.**
- **Therefore, SA's transformation away from energy-intensive, resource-based sectors and diversifying into higher-value-added sectors is urgent.**

Opportunities: GH₂ as a catalyst for re-industrialisation & decarbonisation

- **South Africa, and other countries like it, face several significant structural transformation risks from trade-related climate change policies being developed in wealthier countries.**
 1. Threaten an "unjust transition" (existing productive capabilities)
 2. Those that lock in an "unjust future" (future productive capabilities)
- **Green hydrogen (GH₂) => a viable route for the large-scale decarbonisation in South African, notably in hard-to-abate sectors.**
 - Focus on three sectors: cement, steel and chemicals.
 - Strong linkages of these sectors and the linkage potential for GH₂.
- **This is to take advantage of SA's strong position to become a competitive GH₂ producer.**
 - Given its competitive advantage in solar and wind yields.
- **However, the critical question is how the GH₂ transition will take place.**
 - Part of building local linkages to ensure capabilities in inputs for renewable energy and linkages to a diversified green industrial base, or
 - Enclaves for exports inputting into the greening of global North industry.
 - Transition = expensive, requiring active gov't (market shaping), coordination, linkages and infrastructure development.

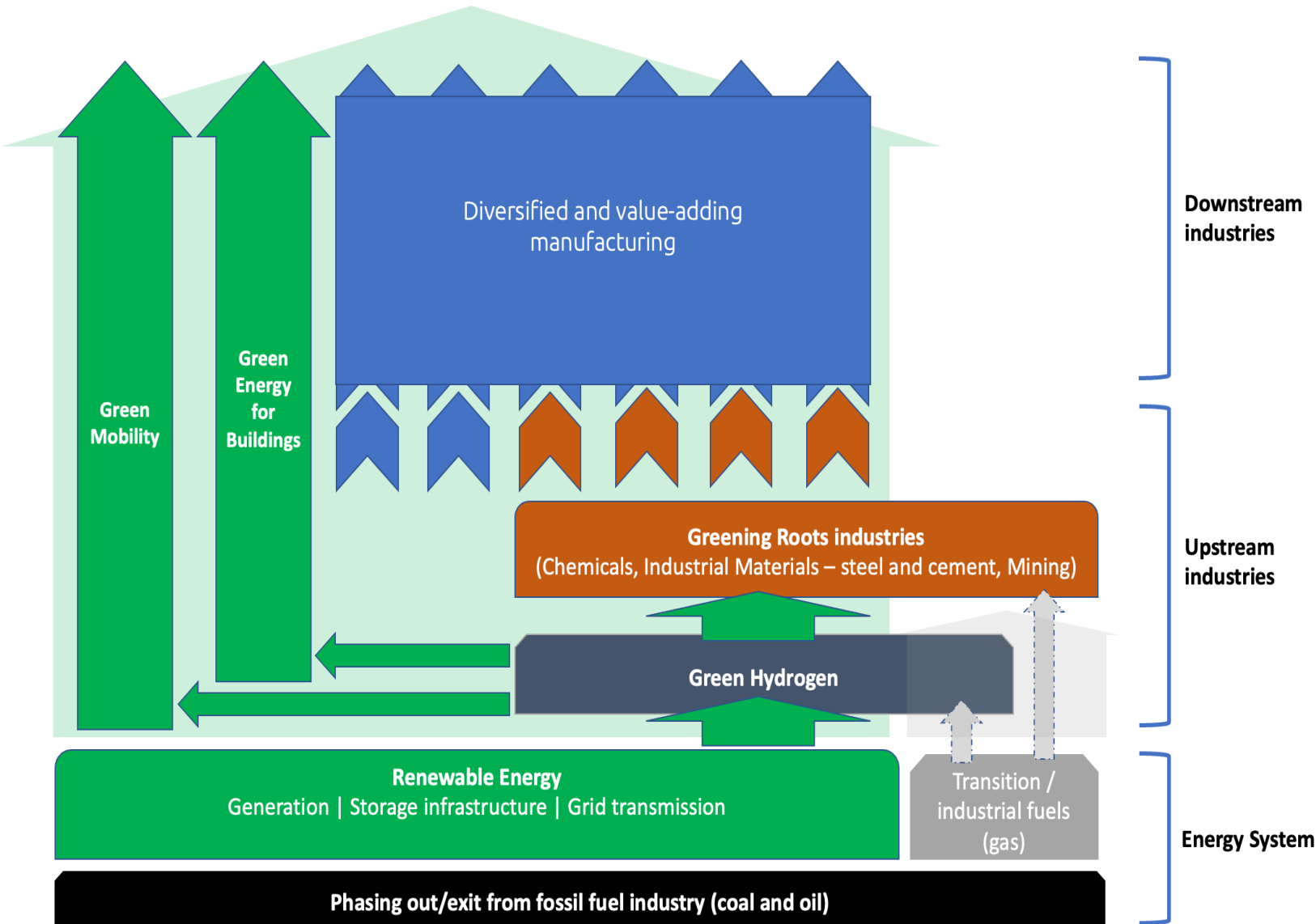
Figure 2: Industrial linkages of renewable power and green hydrogen



Source: Siemens Energy

GH₂ transition must be framed from a structural transformation perspective

Figure 3: A structural transformation perspective



- **Risks and opportunities for GH₂ in SA necessitate adopting a structural transformation perspective.**
 1. Sector-specific GH₂ transitions (capabilities, incentives and constraints)
 2. Structural interdependencies and potential for linkages across sectors & new industrial priorities in the GH₂ economy
- **To ensure the efficacy of GH₂ in South Africa's hard-to-abate sectors.**
 1. Coordination between upstream and downstream
 2. Cost-competitive investments considering these sectors are capital- and scale-intensive
 3. Overcome export enclave in GH₂ risk → failure to develop domestic linkages and a diversified industrial base beyond the economy's core mineral industries whose sole focus shifts to inputting into European industries.

What can we do?

- **Industrial policy must be viewed as a fundamental set of tools and policies to usher in GH₂ as part of South Africa's larger economy-wide GH₂ transition.**
 - GH₂ offers tremendous opportunities for SA to de-link its most egregious polluting industries away from coal AND create entirely new markets, industries, and jobs in the green economy.
- **However, such a seismic shift in the economy's structure will not come through the isolated actions of the public, private, or civil society sectors.**
 - Coordination, enforceable conditionalities & ground-up movements demanding wholesale changes to the status quo ("Great green reset").
- **The "great green reset" necessitates achieving a few critical objectives:**
 1. The **transmission grid must be separated from generation** (requires fast-tracked infrastructural investments).
 2. Gov't must empower all facets of society to join the cause and build a determined **coalition of interests** who have stakes in green industrial ecosystem (Green political settlement => **building downstream industries** and communities beyond existing mining and energy-intensive enclaves).
 3. The green political settlement must ensure the benefits of the green economy are **inclusive, sustainable, and distributed evenly**
→ rebuild social solidarity & reindustrialise the economy around a collective green economic vision.

Thank you for your time!

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