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## Just Transition Report: Decarbonising South Africa's Heavy Manufacturing Sector

**South Africa has an opportunity to grow its heavy manufacturing sector into a global green manufacturing hub that supports its socio-economic development by decarbonising and diversifying with new green industries.**

**Decarbonising South Africa's Heavy Manufacturing Sector** is the latest report to be released as part of the series of publications from the Climate Pathways and Just Transition Project run by the **National Business Initiative (NBI),** in partnership with **Business Unity South Africa** (BUSA) and **Boston Consulting Group (BCG)**.

South Africa's heavy manufacturing sector, which includes industries such as steel, cement, and heavy machinery, is a critical socio-economic contributor, accounting for ~16% of the national GDP and providing 792K direct jobs. However, South Africa's heavy manufacturing sector has been in structural decline for the past decade due to unreliable power supply, inadequate transportation infrastructure, increasing global competition, amongst other factors, and has seen 50K job losses from 2009-2019. Further, if the heavy manufacturing sector does not decarbonise, South Africa risks losing up to 353K heavy manufacturing jobs as export partners begin to act on their climate targets and enforce policies, such as carbon border tax adjustments. These job losses will worsen South Africa's already challenging socioeconomic position.

The report finds that South Africa is well positioned, through its access to high-quality renewable energy resources, proximity to critical raw materials, existing relevant local capabilities, and a growing young population, to expand its heavy manufacturing sector and capture new green manufacturing opportunities to become a global green manufacturing hub. Further, although the heavy manufacturing sector is a hard-to-abate sector, mature

technologies, can already reduce ~40% of its total scope 1 and 2 emissions. The remaining ~60% requires disruptive technologies such as green $H_2$ and Carbon Capture Utilisation and Storage (CCUS).

Another key finding from the report is that South Africa needs to grow its heavy manufacturing sector to allow it to realise a Just Transition to net-zero by 2050. This is because as adjacent sectors decarbonise, demand for heavy manufacturing goods will significantly increase. For instance, the increase in renewable energy rollout in the power sector, new transportation systems and increased residential housing will increase demand for heavy manufacturing goods. The transition could see demand increases of 270% in local steel, 70% in cement, and 240% in aluminium respectively by 2050, compared to today's demand.

To capture this growth opportunity and support South Africa's socioeconomic development will not be easy, and will require integrated policy support, and collaboration amongst all key stakeholders. This coordinated action includes workforce planning and reskilling to address the mismatch of the workforce's current skillset and future capabilities, implementing trade support to protect local low-carbon production from cheap, carbon-intensive imports and policies to grow new green industries.

The Climate Pathways and Just Transition study is anchored on a robust analytical fact base, the assumptions and outcomes of which have been debated and socialised with a broad set of 450+ stakeholders from business, government, civil society and labour in 200+ hours of workshops to drive alignment and establish the credibility of the proposed net-zero pathways. The work was also supported by a group of Champions representing 30+ of South Africa's largest companies across a range of sectors.

The Climate Pathways and Just Transition study is an ongoing project, several detailed analytical and model-based sector-level reports have been released. The remaining report in the series will focus on the building and construction sector. Access all the reports **here**.

**TEN KEY FINDINGS ON THE HEAVY MANUFACTURING SECTOR ANALYSIS**

1. South Africa is well-positioned to grow its heavy manufacturing sector to become a future global green manufacturing hub for energy-intensive goods, given its access to abundant, high-quality renewable energy resources; proximity to critical raw materials; existing relevant local capabilities; and a growing young population. To drive ambitious decarbonisation of the sector, it is critical to overcome the existing structural challenges, including the lack of a reliable power supply, inadequate transportation infrastructure, weak local demand, and challenging local labour market conditions (for example, skills shortages) that currently impair the sector's competitiveness.

2. If the heavy manufacturing sector does not decarbonise, South Africa risks losing ~50% or ~ZAR170 bn of its export value as its top export partners, the EU, USA, UK, China, and Japan, are all increasing their climate targets and regulations and translating these commitments into their trade relations. This means 32% of iron and steel, 49% of non-ferrous metals, 22% of minerals, 64% of transport equipment, and 26% of machinery exports could disappear together with ~353K jobs linked to exports.

3. Local demand for South African heavy manufacturing goods is expected to increase to enable South Africa's Just Transition to net-zero by 2050. This would result from growth in other sectors – such as the expansion and net-zero transition of the energy and transportation sectors – and overall national development, which drives increased activity in the construction of public infrastructure and residential housing. South African local steel, cement, and aluminium demand could increase by more than 270%, 70% and 240%, respectively by 2050.

4. By strategically decarbonising and diversifying the heavy manufacturing sector, South Africa can further grow the sector and create up to ~740K net jobs, primarily linked to the production of metals, transport equipment, and machinery, and spearhead South Africa's industrial and socio-economic development – hence, supporting a Just Transition through sustainable job creation. However, workforce planning is required to ensure that the workforce is able take-up the jobs of the future.

5. Mature technologies, such as process and energy efficiency improvement, fuel and feedstock switching and material substitution, can reduce ~40% of the overall heavy manufacturing Scope 1 and Scope 2 emissions. The remaining ~60% requires disruptive technologies such as green $H_2$ for steel and yet to be proven carbon removals technology – Carbon Capture Utilisation and Storage (CCUS) – for cement.

6. Access to renewable power and green hydrogen ($H_2$) at scale is critical for decarbonising heavy manufacturing, reducing ~50% of the sector's emissions. By 2050, the sector could require ~80 TWh of renewable power p.a. (>33% of national demand) and ~0.3 Mt p.a. of green $H_2$ for steel decarbonisation.

7. Heavy manufacturing sectors (excluding steel and cement) can be fully decarbonised through the deployment of mature levers. Full decarbonisation of steel is possible but requires ~0.3 Mt p.a. of green $H_2$. However, the main uncertainty lies in the future feasibility of CCUS. Without CCUS, there could be ~15 Mt CO2 p.a. annual unabated residual emissions from cement by 2050.

8. Growing and greening the South African heavy manufacturing sector enables socioeconomic development. Failing to do this could result in systemic risk to the ability of other sectors to transition, such as power and transport, due to their dependence on heavy manufacturing outputs. Moving to green production can also improve the trade balance through the increased value of exported goods – a critical enabler to managing the financial risk of the transition.

9. Affordable green power and globally competitive local green $H_2$ production can be a source of competitive advantage for South Africa's heavy manufacturing sector – but it will require extensive investment (~ZAR150–160 bn) to upgrade heavy manufacturing plants to incorporate green processes and technology.

10. To enable the net-zero pathway, the heavy manufacturing sector requires a coordinated effort among public and private stakeholders. South Africa needs to ramp up renewable power production to enable sector decarbonisation, align a low-carbon market definition for heavy manufacturing goods, create local green lead markets, and ensure a trade support mechanism that protects local low-carbon production from cheap, carbon-intensive imports.

**[ENDS]**

The National Business Initiative (NBI) is an independent and voluntary coalition of South African and multinational businesses launched in 1995 by the then President, Nelson Mandela.

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