August 2018

STREAM 1 POLICY BRIEF 1.2B:

LOW–CARBON MANUFACTURING

Policy brief prepared for the Labour Caucus in the Jobs Summit Economic Sector Interventions working group by the Institute for Economic Justice (IEJ).

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1. NATURE OF THE PROBLEM

Manufacturing is particularly important to the economy as it has economic multipliers from value addition, linkages to the upstream production sectors of the economy (mining and agriculture) and the downstream sectors, including services; and because of its all-round contribution to strengthening integrated value chains[1].

Despite its importance, and efforts by government to support it, manufacturing output in South Africa has shrunk over the past 10 years by about 7%[2]. Various factors have impeded manufacturing including the inefficiency and cost of utilities (like electricity, ports, transport and logis-tics, telecommunications), monopolistic pricing in certain upstream industries, volatility in the exchange rate, lim-ited strategic coordination of public procurement and limited compliance with localisation procurement requirements, and poor coordination between government departments, for example between the Department of Mineral Resources and Department of Trade and Indus-try (DTI) on the beneficiation of minerals. Education and skills level also hamper the growth of certain industries as well as government's own infrastructure development programmes.

Compounding this is the fact that South Africa has an incredibly high level of carbon embedded in our exports. About 29% of South Africa's carbon emissions are export-ed to other countries – the highest percentage of any country's emissions that are so transferred[3]. This renders South Africa's exports highly vulnerable in the face of global low-carbon shifts. Apart from avoiding trade barri-ers, a shift to low-carbon manufacturing also offers South Africa various benefits: the OECD estimates that across G20 countries, combining climate action with economic reforms will lead to an increase of 1% of GDP by 2021 and 2.8% by 2050. Given this, South Africa's transition to a low-carbon and climate resilient economy presents a number of opportunities for the manufacturing sector to grow and establish capabilities within certain low-carbon manufactured goods. South Africa is particularly well po-sitioned in industries relating to its mineral endowments and existing pockets of competitive manufacturing, such as automotives, agroprocessing, clothing and textiles, capital equipment, amongst others. It should look to leverage off these existing capabilities as it expands into manufacturing low-carbon goods.

2. PREVIOUS AGREEMENTS BY SOCIAL PARTNERS

DTI's Industrial Policy Action Plan (IPAP) which is routinely updated in line with local and global trends, identifies key sectors, industries, products and enabling programmes through which DTI (and others) will support manufacturing. The 'levers' include research and innovation, access to incentives, designation as strategic goods for local content, procurement programmes of the state, and development finance (largely but not only through the Industrial Development Corporation). The IPAP requires greater resourcing for improved implementation, including amongst other departments, and public entities. The IPAP also needs to draw on the finalisation of a number of government's strategies and policies, such as the Integrated Resource Plan of the Department of Energy, the draft

Green Transport Strategy of the Department of Transport, and the draft Water and Sanitation Masterplan of the Department of Water and Sanitation. This will allow the DTI to identify key inputs to these major drivers of public and private infrastructure spend and associated local manufacturing potential.

The Competitive Supplier Development Programme (CSDP) of Government is a particular approach to identifying major procurement inputs required by State Owned Companies (SOCs) that present opportunities, due to their scale, to drive local manufacturing. In practice, however, the prescripts of this programme have not always been adequately applied (for example, in the case of rail locomotives), and its full potential to drive local manufacturing has not been unlocked.

3. THE PROPOSED APPROACH AND PROPOSALS

Manufacturing opportunities presented by the low-carbon economy relate both to processes and goods. Eco-design, material substitution, additive manufacturing, reducing yield loss, recycling and remanufacturing[4] are the kinds of process innovations that are required for the transition.

Particular opportunities for manufacturing goods include:

1. Renewable energy and for new energy technologies and systems

While South Africa cannot competitively manufacture all the parts for the Renewable Energy Independent Power Producers Procurement Programme (REI4P), there are certain parts that it can competitively produce. Furthermore, South Africa could establish itself as manufacturer for the regional renewable energy markets that are beginning to open up.

A possible 1 500 jobs could be created in the localisation potential of the 27 new projects in the latest round of the REI4P[5]. Components for this round are estimated at around 2.8 million solar PV modules, 600 inverters and 385 transformers; for the onshore wind projects roughly 500 wind towers and turbines are likely to be required. These renewable energy technologies, and others, require conventional metals such as steel and aluminium, as well as rare earth elements[6]. Examples:

- Smart meters and other small scale embedded energy generation technologies have tradable or import substitution potential[7].
- Evacuated tubes and flatplates hold potential for industrial solar thermal applications, as do other technologies. Manufacturing at scale for solar thermal requires greater industry awareness and sustained demand, and customised concessional finance, among other factors[8].
- Steel is needed in building foundations, towers, gear boxes and hydraulic systems for wind energy technologies, and for barrages and turbines for tidal energy.
- Aluminium is required for rotor blades and pumped storage in hydropower.
- Platinum-based fuel cells are being explored to supply heat (and decentralised power) to buildings and industries (in cold climates).

2. Transport

Hybrids and plug-in hybrids, full electric vehicles and fuel cell vehicles require:

- metals in high tech parts like batteries, electro-motors and fuel cells
- PGMs for exhaust system catalysts, catalyzed particulate filters and emission absorbers
- chromium, manganese, aluminium, iron ore and coal for the body of the car
- copper, gold platinum and tungsten for the wiring and circuitry
- cobalt, lead, lithium and rare earth oxides for batteries.

Manufacturing potential also exists for local niche electric utility vehicles. WWF has recently completed a business case into the potential for electric orchard tractors in horticulture including for the localisation of production of these electric tractors[9]. In order to unlock the poten-tial for local production, funding is required for further prototypes, pilots and the establishment of manufactur-ing facilities. Partnership with OEMs (original equipment manufacturers) or specialist industrial engineering firms will also be necessary for producing at scale.

3. Agriprocessing industries

Biofuels for aviation have the potential for large scale job creation in sub-Saharan Africa. A June 2018 study under-taken by WWF and the International Institute for Applied Systems Analysis establishes that there is meaningful po-tential for compliant biojet fuel that can be produced mostly using perennial biofuel feedstocks, which require less frequent and less intensive cultivation of soils. It is es-timated that some 50 000 to 100 000 person years of em-ployment could be created by the introduction of energy cropping for biofuels production in South Africa.

4. Water

South Africa's water scarcity presents particular opportunities for the local manufacture of products for transport, storage, treatment, management, supply, metring, desalination of water. The new draft Water and Sanitation Masterplan indicates that significant volumes of wastewater will need to be processed for re-use and greater efforts made in water conservation and harvesting. All of this indicates an opportunity for manufacturing for the domestic market to meet these needs. More funding is required for research and development, and technology commercialisation paired with local content requirements[10].

5. Waste and the circular economy

- Within construction, cement production is instrumental to the government's infrastructure expansion plans and development goals. The use of eco-blends is a simple and obvious way to reduce the significant carbon footprint of this industry. WWF's research into eco-blend cements8 clearly demonstrates that waste products, such as fly ash and slag, can be taken up even more as extenders to create eco-blends and as feedstocks for kilns. In order to unlock the potential for eco-blends, cement standards require revision, as does legislation pertaining to waste. More demonstration sites and data is also required to build the case for greater adoption of eco-blended cements[11] be-yond the current levels.
- Other industrial and household waste is increasingly being recognised as a commodity, e.g. in certain instances organic waste is already used for animal feed, composting, protein production, and energy generation. Recycling of materials such as plastics, glass, paper reduce resource use and create value. Legislation is driving some of these developments. Jobs can be created in establishing more deliberate programmes to source, sort, transport, process waste for its reuse.
- For a just transition, any actions to formalise waste industries must explicitly include and incorporate informal waste workers. Waste pickers and other informal economy businesses are very vulnerable to the 'formalisation' of these economic opportunities[12].

4. POLICY OPTIONS

- Policy clarity is required for a number of infrastructure sectors like transport, electricity production through the finalisation of the IRP 2016 and Green Transport strategy respectively, as well as broader energy considerations in the Integrated Energy Plan (IEP) for the country and for water and sanitation. These policies and plans should prioritise investment in low-carbon technologies. City infrastructure plans can also provide clarity to direct government procurement spend towards low-carbon technologies. Updating standards to drive the uptake of low-carbon materials can also require industry to also adopt these within their own capital programmes and infrastructure upgrades and investments.
- Sustained local procurement must be more effectively implemented in line with the local content provisions within the Preferential Procurement Policy Framework Act Amended regulations of 2011 which allows for the designation of certain components, parts, products for local content.
- Effective implementation of Competitive Supplier Development Programmes by State Owned Companies can provide the predictable demand at scale to encourage investment in new low-carbon products and technologies.

5. FINANCING

- Treasury to look at tax instruments and support to DTI incentives to stimulate investment in low-carbon manufacturing.
- DTI's IPAP needs to provide greater support to low-carbon manufacturing sectors. Linked to this, the National Cleaner Production Centre should be resourced to play a larger role here.
- Both public and private investment must be scaled up in research and development, and actual manufacturing activities for low carbon technologies and its value chains.
- The IDC and other DFIs need to target key industries with preferential finance; commercial banks must also play a role here.
- Large firms need to re-invest in the economy. Existing medium-sized manufacturing firms should be supported to expand, and small businesses to grow.

6. THE ROLE OF STATE INSTITUTIONS AND SOCIAL PARTNERS

In taking forward recommendations for low-carbon manufacturing, a number of industry associations should play a role in their particular industry areas:

- The Solar Water Heater Manufacturers Cluster of

South Africa (SWH-MANCOSA) of the South African Capital Equipment Export Council with industrial solar water heating;

- The Concrete Institute and the Association of Cementitious Material Producers industry association for the extension of cement ecoblends;
- The South African National Energy Development Institute and the Electric Vehicle Industry Association on electric vehicles;
- Various waste and recycling industry associations on waste and 're-manufacturing' initiatives;
- The South African Waste Pickers Association must be involved in any efforts to formalise waste industries to ensure the inclusion of waste pickers and informal economy businesses in the process. StreetNet and WIEGO organise among workers in the informal economy.

In national government:

- The Departments of Energy, Water and Sanitation, Transport must finalise plans, strategies and policies.
- The Department of Public Enterprise with SOC's to ensure that localisation legislation and Competitive Supplier Development Programmes are fully implemented, in concert with DTI and its manufacturing support programmes.
- Treasury to ensure that low-carbon manufacturing is resourced through DTI's incentives, and other levers of government; Department of Science and Technology to ensure, through its entities and programmes, that innovation, technology, research and development efforts focus on emerging low-carbon and green manufacturing potential.
- DFIs and commercial banks to expand concessional finance to the various low-carbon industries that hold potential.
- Firms to ensure investments take place in low-carbon processes as well as within the new manufactured goods that are required.
- Unions to work with firms in this re-gard, and to ensure (with employing firms) that skills upgrading takes place amongst workers to ensure a just transition. The SETAs also have a role to play here.

7. SEQUENCING AND TIMEFRAMES

The next steps are:

1. Government, through its relevant infrastructure line departments to finalise infrastructure plans. Cities todo so within their municipal plans for public trans-port and social housing (amongst others infrastruc-ture plans). SOCs to effectively implement localiza-tion plans.
2. Relevant industry associations to work with govern-ment, unions, DFIs and commercial banks to design low-carbon manufacturing programmes.
3. In the context of a 'just transition' unions and indus-try to work on developing low-carbon processes and goods and reskill accordingly.

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Appendix: Just transition processes

- As a result of labour organisations' and their allies' efforts, the United Nations' Paris Agreement on climate change notes the imperative of a just transition of the workforce and the creation of decent work as essential elements in global and national responses to climate change.
- A South African Just Transition Taskforce should be established, driven by the Presidency and housed in NEDLAC, involving all the social partners.
- The National Planning Commission is running a programme 'Developing models and pathways for a low-carbon economy and climate-resilient society' with all social partners. The desired outcome is progress toward a social compact about the kind of economy we want and how to get there[13]. Labour could get more actively involved.
- In 2016 ITUC established a Just Transition Centre with partners. The Centre brings together workers and their unions, communities, businesses and governments in social dialogue to 'ensure that labour has a seat at the table when planning for a Just Transition to a low-carbon world[14]'.

A labour and civil society Just Transition Charter could be developed. There are existing polices and guidelines that could provide a framework from labour's perspective:

- For example, in 2011, the COSATU Central Executive Committee adopted a Policy Framework on Climate Change, which comprises 15 principles. The principles were included in a 2012 COSATU booklet 'A just transition to a low-carbon and climate resilient economy: A call to action[15]'.
- In 2015, the International Labour Organisation constituents adopted 'Guidelines for a just transition towards environmentally sustainable economies and societies for all.' The Guidelines offer a framework and a tool to 'ensure that national and global efforts to tackle climate change advance employment creation goals, social justice and promote just transitions for workers, enterprises and communities[16].

The role of unions in a transition:

- On the next page are ideas from South African unionists about union actions in a transition. The ideas arose in transport union workshops run in five provinces in 2013, noting that these were not decision-making forums. The workshops involved identifying the sources of carbon emissions in the transport sector, and what can be done about those. Participating unionists developed ideas to reduce emissions while at the same time protecting the interests of workers; and discussed what the union could do to take the issues forward.
- There are examples from elsewhere, for example Germany's mine union, IG Bergbau, participated in promoting early retirement and shift-time reduction as a means of slowly winding down that country's coal industry.

Union at national level

- Need to develop a national union policy and strategy for a transition. This would involve consolidating union mandates and researching international trends.
- National office bearers can co-ordinate calling joint or umbrella meetings of the relevant Bargaining Councils. Then it is easier for sector co-ordinators to take it up.
- There may be inter-union issues to work on collectively.
- Engage NEDLAC to amend any relevant legislation.
- Create job loss fund for retrenched and older workers.
- Take to the federation the proposal that it co-ordinate a national process for passing members from one union to another when there are sector changes, so that members are not lost.

Collective bargaining

- A strategy for national, provincial and local bargaining.
- Shopstewards to engage management to begin to budget for emissions reductions and training of workers for the transition.
- Companies don't have green policies – this must be included in all negotiations.
- Defend working conditions as companies make low-carbon changes.
- Incorporate climate protection arguments into bargaining around issues of commuting and flexible hours.
- Encourage employers to incentivise use of public transport. Promote bicycling and walking.
- Prepare for possible retrenchments by compiling demands now already.
- One of these demands must be that any workers that lose their jobs must be reskilled for other work.
- If there are retrenchments the companies should help workers to set up cooperatives, and then actively support the cooperatives by buying from them.
- Demand that new jobs be decent, not casualised. Many can be in communities e.g. walking children to school.

Research to inform union strategy

- Research what companies where we organise are doing that causes emissions, and any plans they have to reduce emissions. These plans may affect working conditions, may change processes and technologies, or involve restructuring.
- Do research at workplace and provincial level to get information about workers; what categories companies might start retrenching; what are new jobs emerging?
- Analyse what jobs will be lost or gained, and by who.

At workplace/local level

- Climate change updates and information and awareness raising must be put on the agenda of monthly meetings with employers.
- Engage management of all companies about what their carbon reducing plans are. This might also involve negotiating with management about making changes in the workplace and in the work process to cut emissions.
- Encourage energy saving measures in the workplace. Present cost-benefit analysis to management to show them how they will save on electricity and fuel costs if changes are implemented.
- Negotiate that any savings made by the company because of carbon emission reducing measures are shared with workers.
- Use workplace and bargaining forums to ensure management keeps workers informed about changes to technologies.
- Negotiate with management about driver training so that drivers can drive more efficiently.
- Recruitment of new members is important – the bigger the union membership, the more the demands and plans of the union carry weight.
- Engage and sensitize members on possibilities of job losses and gains from carbon reduction measures.
- At a provincial level, work with media, schools, members of public, NGOs and civil society to raise awareness.

At sector level

- Urge larger companies to develop a 'mobility plan' to make travel to and from work more energy efficient and time friendly to workers.
- At provincial level identify sector contributing most to emissions and run campaigns at provincial level educating this sector.
- Union to form teams within the high-emission contributing sectors and be at the forefront of advocating issue of climate change.

Education and training

- Induction process for bus drivers to know that they are delivering a public service and therefore need to work hard to make sure buses run on time and are reliable.
- Engage TETA (Transport SETA) about providing skills to workers that are required in a low-carbon economy.
- Negotiate education and training for workers in new technologies and skills that will be needed.
- Skills levies to be used for retraining.

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