Assessment of Local Manufacturing of Off-Grid Solar in Sub-Saharan Africa

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Africa Clean Energy
Catalysing Africa's Solar Markets

TETRA TECH
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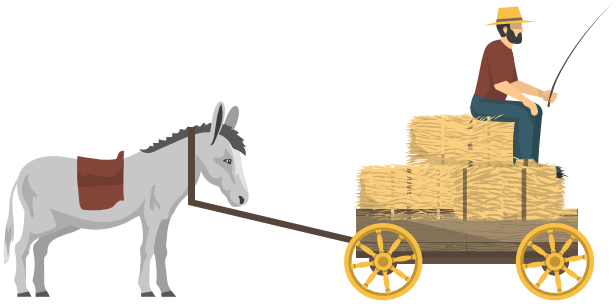
Introduction

The impact of the Covid-19 pandemic on the global supply chains, and the need to address local employment and income, has raised the importance of local manufacturing[1] within the stand-alone solar (SAS) sector in Sub-Saharan Africa (SSA). The government of Nigeria for example, under its Economic Sustainability Plan (2020), includes a solar strategy for the electrification of 5 million households, which specifically intends to increase local content within the off-grid solar value chain.

This brief outlines the current state of private sector participation in solar assembly and manufacturing and provides recommendations on how countries can stimulate local manufacturing in the area of off-grid solar (OGS) in the context of policies that are being put in place to promote local manufacturing.



> Policies and strategies that set targets for manufacturing are key. However, without creating an enabling environment for private sector to invest, they are unlikely to meet their goals and objectives.

Private sector participation in local manufacturing of off-grid solar

Even with the relatively large market for off-grid solar, private sector presence in solar assembly (or related electronics products) is currently limited. Only a small number of companies in Ethiopia, Nigeria, Rwanda, Tanzania and Zambia are currently in the business of assembling or manufacturing solar products. Of the five countries, Ethiopia and Nigeria have somewhat larger numbers of private companies already involved in local assembly. However, the Ethiopian companies are smaller and often struggling financially. The Nigerian companies are relatively larger compared to their Ethiopian counterparts with the ability to expand their capacities.

Nigeria, has three companies relatively more advanced: Ibeto Group, assembles battery for SHS; Auxano Solar, which assembles solar panels, Blue Camel Energy, which has a LED assembly unit.

Ethiopia has two companies, Forsera which assembles SHS (6 watts) and Abramba Technologies, assembles pico solar products and LED lights

Rwanda has one company, Sahasra Electronics, an Indian LED company, which has invested in the assembly of LED bulbs. NOTS solar had plans to undertake solar assembly in the country.

1. In the context of this report manufacturing refers to both the local assembly and manufacturing of solar systems.

In Tanzania, there is a general interest in OGS assembly/manufacturing as demonstrated by rebranding of imported products by the local solar companies.

Zambia has no company involved in assembly of solar products or even electronics. However, llight manufacturing is a potential area for investment in the country.

Challenges faced by local assembling companies

Several systemic issues make it hard to set up and operate local assembly/manufacturing facilities for OGS in the five countries, as follows:

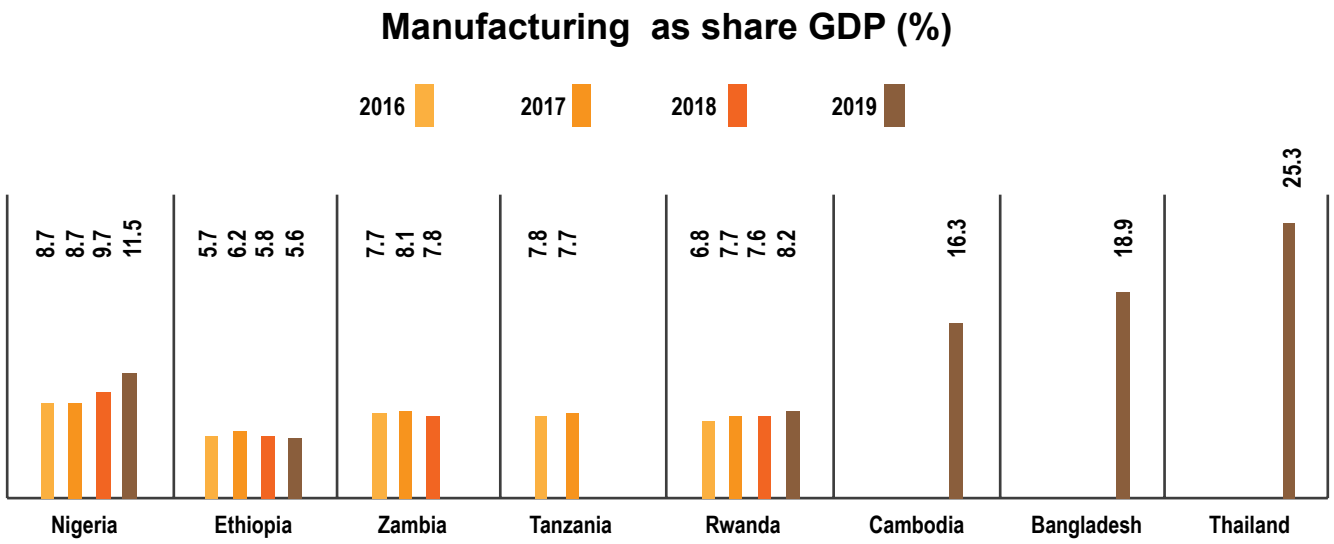
- Import tariffs and regulations that disadvantage locally produced products and which require onerous documentation for the various components imported.
- Lack of enforceable quality standards making it hard to build a vibrant local assembly/manufacturing industry.
- Lack of and poor implementation of incentives provided by the investment agencies to manufacturing.
- Uncertainty in off-take demand of OGS products caused by lack of clear electrification road map for off-grid sector.

The case for local manufacturing

There are several direct benefits of local manufacturing in off-grid solar. In addition to helping governments achieve their energy access targets, the other benefits are:

- Job creation
- Reducing imports hence savings on forex
- Economic growth

Employment from manufacturing can in turn lead to improved standards of living and poverty alleviation. Despite these great benefits, manufacturing contributes a very small share of the gross domestic product (GDP) across the five countries. The manufacturing sector in these countries is dominated by agro-processing and mining with very limited electronics manufacturing, and significantly lower than the levels in Asian countries as can be seen from the figure below.



There is a growing demand for solar products in other sectors beyond households. Productive use provides an extensive market for solar products. Estimates by Efficiency for Access Coalition indicate that close to 2.8 million farmer households will be using solar water pumps by 2030.[2]

Solar home systems are made up of various components including the solar panel, the power box which consists of batteries and charge controllers, connection cables, LED lamps, USB hub, switch and phone charging sets allowing for component or whole part assembly/manufacturing. Countries can enter the value chain at different points, either assembling the full product from imported components or by manufacturing some components themselves.

Support for local manufacturing

Governments in the five countries are keen on growing their manufacturing sectors as can be seen in their industrial policies and plans, in the table below.

Country	Policy/Strategy	Targets for Manufacturing
Nigeria	Economic Recovery Growth Plan 2017-2020.[3]	Average annual growth of 8.5% in manufacturing, rising from -5.8% in 2016 to 10.6% by 2020.
Ethiopia	Growth and Transformation Plan II.[4]	Manufacturing average annual growth rate target of 21.9%; attain 8% share in GDP by 2020.
Tanzania	Integrated Industrial Development Strategy 2025.[5]	Grow manufacturing sector by 15 % per annum on average and attain 23% share in GDP by 2025.

2. Efficiency Access Coalition (2019). Solar Water Pump Outlook 2019: Global Trends and Market Opportunities. https://storage.googleapis.com/e4a-website-assets/Solar-Water-Pump-Outlook-2019.pdf
3. Government of Nigeria (2017). Economic Recovery Growth Planhttps://yourbudgit.com/wp-content/uploads/2017/03/Economic-Recovery-Growth-Plan-2017-2020.pdf
4. Federal Government of Ethiopia (2015). Growth and Transformation Plan.https://www.greengrowthknowledge.org/sites/default/files/downloads/policy-database/ETHIOPIA%29%20Growth%20and%20Transformation%20Plan%20II%2C%20Vol%20I.%20%20%282015%2C16-2019%2C20%29.pdfS
5. Government of Tanzania (2011). Integrated Industrial Development Strategy 2025. http://www.tzdpg.or.tz/fileadmin/_migrated/content_uploads/IIDS_Main_Report.pdf

Zambia	National Industrial Policy 2018[6]	Increase growth of manufacturing sector from an average of 5 % to 20% by 2027; attain 15% GDP share by 2027
Rwanda	Industrial Policy 2011[7]	Industrial sector to contribute to 26% of GDP by 2020

Policies like the Made in Rwanda Policy, 2017 and the Zambian Local Content Strategy, 2018-2022 promote import reduction through local manufacturing and establishment of Small and Medium Enterprises (SMEs) within the countries. In addition to the policies and strategies set up to support and establish manufacturing, governments, have three categories of incentives to support local manufacturing across all sectors:

1 Faster and easier business licensing

Investment promotion agencies in the respective countries - Nigeria Investment Promotion Commission, Ethiopian Investment Commission, Tanzanian Investment Centre, Zambia Development Agency, and the Rwanda Development Board- function as 'one-stop' shops for obtaining investment permits and relevant business licenses.

2 Reducing financial risk through fiscal incentives

Countries use a blend of fiscal instruments to promote manufacturing. The most common form is tax and duty exemptions of capital goods, raw materials, and spare parts. Second to this is corporate tax exemptions and holidays. In Ethiopia for instance, companies in the manufacturing sector have access to 8-10 years of corporate tax exemption, in Nigeria 3-5 years tax holiday for pioneer companies, in Rwanda 7 years tax holiday and Zambia 2-7% discount on the corporate tax rate.

Other forms of incentives include allowances for research and development, and depreciation of plant machinery. None of the other four countries have specific fiscal incentives in place targeting local assembly of solar products except Nigeria where the government has plans underway of giving tax relief to local assemblers of solar components under its Economic Plan and Solar Connection Project.

3 Ready-made infrastructure

Governments across the five countries are setting up economic special zones / industrial zones to support manufacturing. Countries have also began setting apart industrial zones for electronics manufacturing. In Ethiopia, the Adama industrial park is focused on information and communication technologies while in Nigeria the Lekki Free Zone is inviting investments in light industries including solar panel assembly. In Zambia, Chambishi which is a sub-zone of the Lusaka East Multi Facility Economic Zone is open for engineering equipment assembly.

6. Government of Zambia, Ministry of Commerce (n.d), Trade and Industry. https://www.mcti.gov.zm/?page_id=5176
7. Ministry of Trade and Industry Rwanda (2011). http://www.minicom.gov.rw/fileadmin/minicom_publications/policies/Industrial_Policy-2.pdf

Overall policies to encourage local manufacturing are heading in the right direction. However, for them to attract investment in industries such as solar and electronic assembly, the companies that already exist should also be able to access faster business processing, fiscal incentives and infrastructure. Their specific challenges related to manufacturing components and being part of a global supply chain would have to be addressed.

Recommendations

For countries in SSA to undertake successful assembly/manufacturing of solar products, there is need to ensure an enabling environment is created to encourage companies and investors to move beyond future commitments. It is critical that countries put in place a conducive environment to encourage local manufacturing of SAS before putting in place polices that prioritise local content in OGS procurement, as otherwise this will likely create supply side constraints in reaching energy access targets.

In order to stimulate local manufacturing of OGS products, countries should:

Develop deliberate policies and regulations	Import tariff rates and regulations should not put locally assembled or manufactured products at a disadvantage over the import of finished products. Moreover, quality certifications and testing of locally assembled and manufactured products should be transparent and easily enforceable.
Avail the relevant infrastructure	Governments, through the relevant agencies, should make available infrastructure for local assembly and manufacture of OGS systems, such as special economic zones and industrial parks, transparent approval procedures and fiscal incentives to de-risk investment, such as exemption from taxes and duties and investment allowances.
Support market Development	Support needs to be provided to create sufficient demand for locally assembled and manufactured OGS products provided they meet quality and price standards. This can be achieved through end-user financing, government-led public procurement process or financial incentives, such as tailored results-based finance (RBF).

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