# Duke Innovation and Entrepreneurship Team We Care Solar: Light Every Birth

April 2023

**Landscape Report** 

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# The Republic of Benin

# **Energy Access**

The Republic of Benin, a West African country with a population of approximately 13 million people, has made significant progress in improving access to electricity in recent years. According to the International Energy Agency (IEA), Benin had an electrification rate of 47% in 2018, up from 36% in 2010. However, despite these gains, more than half of the population still lacks access to electricity.

The primary source of electricity in Benin is thermal power plants, which are often powered by imported fossil fuels, particularly natural gas. The country has a total installed capacity of approximately 341 MW, with the largest power plant located in Maria Gleta, near the capital city of Cotonou. In addition to thermal power, Benin has a small amount of hydroelectric power, but this accounts for less than 2% of total installed capacity.

To expand access to electricity, the Beninese government has implemented a number of initiatives, including the National Program for Rural Electrification, which aims to increase electricity access in rural areas through the use of solar photovoltaic (PV) systems. The government has also implemented the Electricity Sector Development Plan, which seeks to improve the efficiency and reliability of the electricity sector and to increase the use of renewable energy sources.

Despite these efforts, significant challenges remain. The cost of electricity in Benin is relatively high, particularly for low-income households, and frequent power outages are a common occurrence. In addition, the country's energy infrastructure is outdated and in need of significant investment to improve its capacity and reliability.

In summary, while Benin has made progress in expanding access to electricity in recent years, significant challenges remain, particularly in terms of affordability and reliability. The government's efforts to increase the use of renewable energy sources and improve the efficiency of the electricity sector are positive steps, but further investment is needed to fully address the country's energy access challenges.

# **Current Solarization Projects**

The Republic of Benin has been making significant strides in expanding access to electricity through solarization projects. One of the most notable projects is the Solar Energy Rural Electrification Project (PERER), which aims to provide electricity to rural areas through the installation of solar panels.

PERER was launched in 2018 and is being implemented by the Benin Ministry of Energy in collaboration with the West African Development Bank (BOAD) and the Global Environment Facility (GEF). The project's goal is to install 1,000 solar mini-grids across the country. providing electricity to approximately 2.5 million people in rural areas.

In addition to PERER, other solarization projects in Benin include the Solar for Education program, which aims to provide solar-powered electricity to schools in rural areas, and the Solar Power Naija program, a Nigerian initiative that is expanding into Benin to provide solar-powered electricity to homes and businesses.

Furthermore, private companies are also investing in solarization projects in Benin. For example, the telecommunications company MTN has partnered with Fenix International to offer solar-powered home systems to its customers in Benin. The systems include solar panels, batteries, and efficient appliances such as LED lights and televisions, providing customers with reliable and affordable electricity.

Overall, these solarization projects are helping to expand access to electricity in Benin, particularly in rural areas where traditional grid extension may not be feasible. The use of renewable energy sources such as solar power also contributes to the country's efforts to reduce carbon emissions and combat climate change.

# **Health System**

#### Health Sector Structure

Benin is composed of 34 health zones, half of which are functional. The system is based on a pyramid structure, with healthcare offered at a central, intermediate, and peripheral level.<sup>2</sup>

#### Health Sector Financing

The health sector is primarily financed by households. In 2009, only 11% of the general state budget had been allocated to healthcare, while households had financed up to 52% of the health sector.<sup>3</sup> In 2019, only 3.3% of the general state budget had been spent on services relating to healthcare.<sup>4</sup> In 2022, the World Bank had approved \$187 million to help Benin improve the quality of and access to healthcare, with a focus on reproductive, maternal, neonatal, child and adolescent health, and nutrition.<sup>5</sup>

<sup>&</sup>lt;sup>1</sup> https://www.afro.who.int/sites/default/files/2017-06/Benin-ccsbrief-en.pdf

<sup>&</sup>lt;sup>2</sup> https://www.severemalaria.org/health-system-in-benin

<sup>&</sup>lt;sup>3</sup> https://www.afro.who.int/sites/default/files/2017-06/Benin-ccsbrief-en.pdf

<sup>&</sup>lt;sup>4</sup> https://borgenproject.org/tag/healthcare-in-benin/

# Access and Quality of Care

Though 77% of the population lives less than five kilometers from a health facility, only 44% of the population utilizes these services, with the most common reasons for visiting being respiratory infections, malaria, and diarrhea.<sup>6,7</sup> 60.4% of women struggle to access healthcare, and there is a demonstrated correlation between access to care and the level of education of their husbands.<sup>8</sup> This is speculated to be a result of the relationship between education and income, and education and health literacy.<sup>9</sup>

#### **Maternal Health Outcomes**

Maternal Mortality Rate: 397 deaths per 100,000 live births (in 2017)<sup>10</sup> Infant Mortality Rate: 56.5 deaths per 1,000 live births (in 2020)<sup>11</sup> Neonatal Mortality Rate: 27 deaths per 1,000 live births (in 2021)<sup>12</sup>

#### **Antenatal Care**

In Benin, 9 women out of 10 use antenatal consultation services. 22% of child births occur at home, especially in the poorest households.<sup>13</sup> There are 4 midwives for every 1,000 births.<sup>14</sup> Only 61% of mothers in the poorest households had a skilled attendant at birth, while 91% of mothers did in the richest households.<sup>15</sup> In rural areas, 54% of women made at least 4 antenatal care visits, compared to 66% in urban areas.

#### **Deliveries**

In the north of Benin, cultural ideologies compel women to undergo the labor and delivery process alone, in the home without attendants.<sup>16</sup> In fact, women will proceed with daily activities during labor, such as to avoid making others aware that labor has begun.<sup>17</sup> In the south, it is more

<sup>&</sup>lt;sup>6</sup> https://www.afro.who.int/sites/default/files/2017-06/Benin-ccsbrief-en.pdf

<sup>&</sup>lt;sup>7</sup> Sargent, C.F. (1989). *Maternity, Medicine, and Power: Reproductive decisions in urban Benin*. Berkeley: University of California Press.

<sup>&</sup>lt;sup>8</sup> https://www.mdpi.com/1660-4601/18/2/750

<sup>&</sup>lt;sup>9</sup> https://www.mdpi.com/1660-4601/18/2/750

<sup>&</sup>lt;sup>10</sup> https://knoema.com/atlas/Benin/Maternal-mortality-ratio

<sup>11</sup> https://knoema.com/atlas/Benin/Infant-mortality-rate

<sup>&</sup>lt;sup>12</sup> "The State Of The World's Midwifery". United Nations Population Fund.

<sup>13</sup> https://www.afro.who.int/sites/default/files/2017-06/Benin-ccsbrief-en.pdf

<sup>&</sup>lt;sup>14</sup> "The State Of The World's Midwifery". United Nations Population Fund.

<sup>15</sup> https://data.unicef.org/country\_profiles/Benin

<sup>&</sup>lt;sup>16</sup> Sargent, C.F. (1989). *Maternity, Medicine, and Power: Reproductive decisions in urban Benin*. Berkeley: University of California Press.

<sup>&</sup>lt;sup>17</sup> Sargent, C.F. (1989). *Maternity, Medicine, and Power: Reproductive decisions in urban Benin*. Berkeley: University of California Press.

common for women to deliver in a health facility. 18 Approximately 4% of women deliver by cesarean section. 19

# **Emergency Obstetric Care**

Excessive costs, "lack of empathy and discrimination of the nursing staff, lack of resources for emergencies, lack of hygiene and comfort of the premises" were points of criticism made by the women receiving emergency obstetric care in Benin.<sup>20</sup> Further, although the hospitals studied in Benin have the relevant emergency obstetric care facilities, they are negated by the lack of adequate midwifery staff, blood, oxygen supplies, and intensive care facilities.<sup>21</sup>

• In Benin City, up to 50% of maternity care is provided by registered private health institutions. However, the referral system is poorly organized, with several communication failures between institutions, and inadequate provision of transportation.<sup>22</sup>

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https://www.internationalscholarsjournals.com/articles/maternal-mortality-and-emergency-obstetric-care-in-benin-city-southsouth-nigeria.pdf

https://www.internationalscholarsjournals.com/articles/maternal-mortality-and-emergency-obstetric-care-in-benin-city-southsouth-nigeria.pdf

<sup>&</sup>lt;sup>18</sup> Bénin (2001). *Enquête Démographique et de Santé* (in French)., cited in: "0,1% des ménages béninois accèdent aux équipements d'assainissement". Panapress. 2004-11-22.

<sup>&</sup>lt;sup>19</sup> Karim Okanla. "Science-based clinic or witch doctor?". D+C,development and cooperation.

<sup>&</sup>lt;sup>20</sup> https://pubmed.ncbi.nlm.nih.gov/16640620/

#### **Viable Partners**

# **Energy Initiatives**

The Solar Electric Light Fund (SELF) is one of the largest U.S.-based 501(c)3 solar nonprofits with operations in Benin.<sup>23</sup> SELF boasts an annual budget of around \$4 million USD, with operations in 12 countries across the African-subcontinent and 24 countries worldwide. The corporation strives to provide solar power to communities in need with the expressed interest of empowering women and reducing poor health outcomes. Their 2021 annual report<sup>24</sup> describes their impact across the globe. In Benin, the organization installed 23 solar-powered clean water stations in 2021. On behalf of the World Health Organization, SELF presented the tangibility of using solar power as an energy source for vaccine refrigeration and delivery. Across sub-Saharan Africa, SELF installed various solar-powered lights and a water pump to reduce violence against women, who no longer need to travel through unsafe areas to get drinking water. By extension, SELF strives to empower women in economics and entrepreneurship:

"With the newly available water, women could begin growing and preparing food and cold drinks for sale. All they needed was a place to store their products. To help get their business off the ground, SELF installed three solar-powered refrigerators. These refrigerators not only helped jumpstart operations, but they're also allowing the women to scale their enterprises." (SELF Annual Report, 2021)

In many respects, this organization offers significant similarities with the ambitions of We Care Solar; both organizations maintain a mission to provide solar power to areas in need in order to combat preventable poor health outcomes for women, with another common focus on women empowerment. A partnership could take many forms; We Care Solar could benefit from SELF's established presence in Benin, particularly in the distribution of solar materials within remote communities and health systems. Resources may be shared between organizations to better facilitate effective implementation within numerous Benin communities.

Solar Benin Energy (SBE) is another 501(c)3 nonprofit with similar initiatives, however this organization exclusively serves communities in Benin. For this reason, it can be inferred that SBE has closer ties to the communities in Benin, as opposed to organizations with larger global initiatives and chapters within many other countries. SBE focuses on providing solar energy to rural and underserved households in Benin, particularly targeting individuals and families. SBE strives to promote health outcomes by reducing the dangers that come from non-renewable energy sources currently used by many Benin households for light. Given that SBE is interested in addressing the lack of equal distribution of solar materials, it is evident that SBE has established an effective distribution network to provide remote communities with solar resources. We Care Solar could utilize this distribution network in the process of providing solar resources to health care systems.

<sup>&</sup>lt;sup>23</sup> https://www.self.org/

<sup>&</sup>lt;sup>24</sup> https://www.self.org/wp-content/uploads/2020/08/2021-Annual-Report.pdf

<sup>&</sup>lt;sup>25</sup> https://solarpeople.wixsite.com/english/about us

#### **Health Services**

*Jhpiego* is a large NGO affiliated with the Johns Hopkins University with several core focuses on the improvement of global health. The organization services 39 countries across 4 continents, the vast majority of which are located in Africa. One key initiative includes the facilitation of reproductive and newborn health. The organization describes how they attempt to address preventable causes of maternal/infant mortality during childbirth. This is accomplished in a variety of ways, including the increase of medical staffing and various basic equipment needed for deliveries. Jhepgio's established connections within the health care systems in Benin could be useful in assisting We Care Solar's implementation of resources within these systems. Additionally, Jhpegio has also done extensive research on preventable maternal/infant mortality during childbirth in different countries throughout Africa, which could be particularly useful to We Care Solar for future initiatives.

*Medecins Sans Fronteires (Doctors without Borders)* is a very well established global nonprofit that launched numerous initiatives across many countries.<sup>28</sup> It is one of the most recognized nonprofits in the world. MSF works to reduce illness and preventable deaths within both pregnant women and new-borns in Benin. Since 1985, MSF has worked to reduce maternal and newborn complications in Benin.

"We provide consultations on contraception, and pre- and post-natal services. We also provide care to victims of sexual violence, and safe abortion and post-abortion care to people who request it. Our teams help women deliver their babies and provide care to new-borns." (MSF)

MSF's long established presence in Benin and its shared focus with We Care Solar's mission make it an excellent choice for partnership. While its organization as a whole is less concerned with Benin as a single country, MSF has still done significant work within Benin alone.

#### Other Organizations

- *ABT Associates* Organization focusing on training healthcare service providers with tools to better the health outcomes and equality of women in Benin.<sup>29</sup>
- *JSI (John Snow, Inc.)* focused on reducing instances of malaria within children and mothers while also promoting the development of healthcare facilities in Benin.<sup>30</sup>
- *Humanity & Inclusion (Hi)* promotes those with disabilities in Benin by supplying them with biomechanical devices and individual health support.<sup>31</sup>

<sup>&</sup>lt;sup>26</sup> https://www.jhpiego.org/

<sup>&</sup>lt;sup>27</sup> https://www.jhpiego.org/wp-content/uploads/2019/10/info-sheet-mnh.pdf

<sup>&</sup>lt;sup>28</sup> https://www.msf.org/benin

<sup>&</sup>lt;sup>29</sup> https://www.abtassociates.com/projects/expanding-private-health-services-for-benins-women-and-children

<sup>30</sup> https://www.jsi.com/location/benin/

<sup>31</sup> https://www.hi-us.org/benin

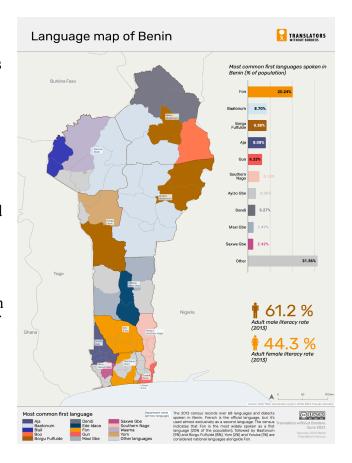
#### Language

#### Primary Language

The official language of Benin is French, which is spoken by approximately 3.8 million people.<sup>32</sup> This figure, however, only represents 38% of the total population of Benin.<sup>33</sup> This makes it clear that Benin is diverse in its spoken language composition, acting as a potential complication in the implementation of solar resources and collaboration with organizations and within communities. The uniformity of the primary language, relative to the total population, ranks 2nd compared to the other two countries of interest.

#### Other Languages

Indigenous languages are additionally popular in Benin, but these have significant variation based on region and seldom comprise the simple majority of spoken languages in any given area. Fon is the most common indigenous language, spoken by 24% of Benin's population.<sup>34</sup> The figure on the right demonstrates the varying prevalence of many indigenous languages in Benin based on area. The vast apparent language diversity in Benin makes simple communication challenging.



Indigenous Language Prevalence in Benin<sup>35</sup>

#### Literacy

The literacy rate in Benin is 52.5% overall. That is, 44.3% for women and 61.2% for men.<sup>36</sup> This rate ranks 2nd compared to those of the alternative countries of interest. This demonstrates a very high discrepancy in literacy based on gender; since We Care Solar serves expectant mothers, the issues of literacy are exacerbated with this focus. Compared to the world literacy rate of 87%, Benin is particularly low.

#### **Trajectory**

Languages and literacy are changing rapidly in Benin. The prevalence of the French language has been increasing. A 2012 study projects that Benin will be completely Francophone by 2060.<sup>37</sup> While this is an extensive timeline, it shows significant promise in both the increase in

 $<sup>^{32}</sup>$  https://translatorswithoutborders.org/language-data-for-benin#:~:text=French%20is%20the%20country's%20official,and%20Borgu%20Fulfulde%20(8%25).

<sup>33</sup> Ibid.

<sup>34</sup> https://web.archive.org/web/20151208070545/http://www.elan-afrique.org/quelles-actions-menees-page/benin

<sup>35</sup> https://translatorswithoutborders.org/wp-content/uploads/2021/07/Benin-Language-Map.png

<sup>36</sup> https://data.worldbank.org/indicator/SE.ADT.LITR.ZS?locations=BJ

overall literacy and uniformity of spoken languages. This means that it should become easier to do business in Benin as time progresses and the French language becomes more widespread as anticipated.

# **Security and Ease of Doing Business**

These sections give a concise overview of both governmental, as well as ease of doing business and security considerations. This entails the current governmental structures and factors that enable We Care Solar to conduct their business abroad in a feasible and plannable manner. Security, therefore, is also understood not only in terms of risk of danger but also stability of shipping and governmental cooperability with NGOs.

General and up to date information is always available through the following websites:

https://www.unicha.org/

https://www.incl.org/

https://www.cia.gov/the-world-factbook/countries/

https://www.trade.gov/

https://archive.doingbusiness.org/en/doingbusiness

https://www.osac.gov/

https://freedomhouse.org/report/special-report/2019/spread-anti-ngo-measures-africa-freedoms-u

nder-threat

#### Government Report

The Republic of Benin is a West-African country located on the Gulf of Guinea. Its constitutional capital is Porto Novo. The seat of government, however, remains in Cotonou, the most populous city of Benin and its economic epicenter. At 0.525 Benin claims a low 166th HDI rank globally. The president (Patrice Talon as of March 2023) is both chief of state, as well as head of government. Benin combines French and American political structures and was considered a relatively stable democracy until President Talon assumed office in 2016. However, according to the Freedom House political freedom has deteriorated ever since, rating Benin's political rights at a mere 59 out of 100 points, considering it only "partly free." Restrictions of political freedom take particular effect in the form of disqualification or arrest of political opponents leaving little to no competition.<sup>39</sup> Freedom house bases its judgements on a methodology that uses predefined questions which are then scored on numerical scales. Ultimately, a mean value will be calculated that provides for the final score. The effect of this is also to be observed in the declining participation in elections. This might be interpreted as a lack of confidence of the population in the effectiveness of their democracy. While 65% of Beninese citizens participated in the 2016 elections, a mere 50% did so in 2021 (according to the official government estimate). Independent civil society organizations report figures as low as 27%. On top of these findings and figures it has been reported that Benn is marked by heavily autocratic practices such as excessive prisoning sentences for oppositional politicians. In addition, the media is heavily regulated by elites and operated through a pay-for-play bribery system (see below for further details on bribery in the country). 40 This observation has also been made by Reporters without Borders who ranked Benin 121st out of 180 in 2022 lowering its previous ranking a further 7 positions. 41 Benin's government furthers to strengthen its grip on media control through the High Authority for Broadcasting and Communication (HAAC). For example,

<sup>38</sup> https://freedomhouse.org/country/benin/freedom-world/2022

<sup>39</sup> Ibid

<sup>40</sup> https://www.osac.gov/Content/Report/14e7534b-2c90-415f-8d8b-1d3f9fbe8a25

<sup>41</sup> https://rsf.org/en/country/benin

in 2020 this regulatory agency ordered the closure of "unauthorized" media outlets. This has led to an outcry and Reporters without Borders claiming to be "a new way of censoring dissident media" "42"

According to the United Nations Benin is ranked 166th globally in the 2021 HDI ranking.<sup>43</sup> The data collection conducted by the United Nations entails three dimensions: long and healthy life, knowledge, and standard of living. These dimensions are indicated by factors such as life expectancy, expected years of schooling, and gross national income values. With an index value of 0.525 Benin is held to have a low human development. Yet, it showed a trend towards ever growing development with only a very brief decline in 2020 (a measure that might likely be influenced by the COVID-19 pandemic) and is on the verge of being ranked as a medium human development country.<sup>44</sup>

The Beninese legal system is a civil law system that has its roots in the French civil law and has been imposed under colonial rule. However, while this system continues to apply. traditional, customary laws are also applied, mostly in village courts. 45 Technically speaking Benin guarantees the right to fair trials. However, this right is regularly eroded by judicial inefficiency, as well as corrupt structures. 46 Judicial personnel suggested that the judicial system is susceptible to corruption on all levels and Benin has been ranked 72nd (out of 180) globally on the Corruption Perception Index. This index "measures how corrupt each country's public sector is perceived to be, according to experts and business people" it accounts for factors such as bribery, officials using their public offices for private gain without consequences and nepotistic appointments in civil service.<sup>47</sup> With a score of 43 out of 100 (100 being less corrupt) it is in the middle-lower end of the scale. However, recent trends indicate a decline in corruption and the index score has been bettered over the past years. 48 In effect, this translates to a system that provides for a free democracy with high considerations of human rights which, however, applies laws differently than it states them. The effects of these corrupt strains have especially been visible for political opponents who have been subject to violent suppression and blackmailing. In addition, police remain largely unpunished for corruption-related crimes, fostering existing strains of corruption. One of the many consequences these inconsistencies have is behavior and prosecution of the LGBTQ+ community. While the law does not prohibit any conduct related to and persons affiliated with the LGBTQ+ community penalization might be sought for acts against nature or public decency. Furthermore, discrimination against those related is common and violence tolerated by law enforcement.<sup>49</sup>

#### **Security Considerations**

The US Government's travel status and recommendation for Benin is indicated as Level 2: "Exercise Increased Caution." This ranking is based on crime, kidnapping, terrorism, and maritime crime, with violent crime being especially common and including armed robbery and

<sup>&</sup>lt;sup>42</sup> https://rsf.org/en/benin-regulator-orders-unauthorized-media-outlets-close

<sup>43</sup> https://hdr.undp.org/data-center/human-development-index#/indicies/HDI

<sup>44</sup> https://hdr.undp.org/data-center/specific-country-data#/countries/BEN

<sup>45</sup> https://sunulex.africa/en/thebeniseselegalsystem/

<sup>46</sup> https://www.state.gov/reports/2022-country-reports-on-human-rights-practices/benin

<sup>&</sup>lt;sup>47</sup> https://www.transparency.org/en/news/how-cpi-scores-are-calculated

<sup>&</sup>lt;sup>48</sup> Ibid

<sup>49</sup> https://www.osac.gov/Content/Report/14e7534b-2c90-415f-8d8b-1d3f9fbe8a25

assault. Rural areas are most prone to become crime scenes post rain season, as vegetation enables concealment of crime. Nevertheless, in the past burglaries occurred everywhere including U.S. embassy residences and locations in direct proximity to the embassy. Especially the northern regions of Benin are considered dangerous with particular emphasis on the cities of Kandi and Tanguieta.<sup>50</sup> Also, Cotonou, in particular, resembles a critical threat location for crime that is directed or affecting U.S. governmental interests and its affiliates Furthermore, terrorist attacks continue to exist and target shops, markets, hotels, places of worship restaurants, bars, schools, government installations, transportation hubs, and generally crowded places. However, U.S. citizens that are subject to crime in Benin are usually victims to crimes of opportunity that regularly occur in the night. The official recommendation for security related behavior is to be cooperative and not resist. Usually, crimes end without violence if victims cooperate. However, non-cooperative individuals have been murdered before. U.S. citizens and westerners in general are held in high regard. Nevertheless, because of spillover from Sahel extremists, recent developments showed an increased kidnapping threat targeting westerners. Benin is held to be a medium threat location for terrorism directed at or affecting official U.S. government interests.<sup>51</sup> Maritime crime is prevalent in the Gulf of Guinea, which is notorious for piracy. Attacked vessels are subject to kidnapping for ransom and robbery of the crew.<sup>52</sup>

In general, vehicle maintenance and upkeep are poor. This leads to many fatal road accidents. In addition, worsening this situation, medical care (emergency trauma support in particular) is substandard or nonexistent nationwide. For this reason, night driving is strongly discouraged as road collisions with humans or animals are extremely high, given that rural roads double as sidewalks.<sup>53</sup>

#### **Economic Considerations**

Benin is part of the heavily integrated West African Economic and Monetary Union (WAEMU) currently undergoing robust economic growth. Julia Conrad of Harvard University's Growth Lab nevertheless held that WAEMU suffers from slow economic activity since integration is limited by other barriers such as logistical networks. Therefore, "larger trade agreements like AfCFTA may lead to limited impact only if negotiated policies and terms that aim to facilitate trade and capital flows lack a system of strict enforcement and external circumstances [...] remain unfavorable." <sup>54</sup>

As a member of WAEMU Benin uses the CFA Franc, a shared currency that has been pegged to the Euro ever since its introduction in 1999 and other European currencies before. In 2019, through the Macron Ouattara reform, WAEMU declared that it will replace the CFA with a new currency, the "eco." This way, WAEMU countries will no longer have to place 50% of their monetary reserves in the French treasury in exchange for a convertibility guarantee. The trade-off WAEMU took for this was a limitation of macroeconomic policy options, slower per capita growth, and diminished poverty reduction. However, it also led to decreased inflation

<sup>&</sup>lt;sup>50</sup>https://travel.state.gov/content/travel/en/traveladvisories/traveladvisories/benin-travel-advisory.html#:~:text=Benin %20%2D%20Level%202%3A%20Exercise%20Increased%20Caution&text=Reissued%20with%20updates%20to% 20security,Some%20areas%20have%20increased%20risk

<sup>&</sup>lt;sup>51</sup> https://www.osac.gov/Content/Report/14e7534b-2c90-415f-8d8b-1d3f9fbe8a25

<sup>52</sup> Ibid

<sup>53</sup> Ibid

<sup>&</sup>lt;sup>54</sup> https://growthlab.cid.harvard.edu/blog/what-we-learn-waemu-regional-integration-african-continent

which is remarkably low at 1.3% (tendency: further declining).<sup>55</sup> The current exchange rate is approximately 616 CFA for \$1. The GDP growth increased from 3.8% in 2020 to 6.6% in 2021 and an overall GDP of \$17.14 billion (\$3,300 per capita) in 2021. Benin imports cereals and mineral fuels and exports cotton and edible fruit and nuts in particular, amongst others.<sup>56</sup>,<sup>57</sup> In addition to its regular economy a large informal sector at 48.8% of its GDP exists as well, most of which is taking place between Nigeria and Benin.<sup>58</sup> A high fiscal deficit of 5.6% of Benin's GDP is currently tackled by fiscal measures that are ought to reduce this deficit starting in 2024.<sup>59</sup>

# Ease of Doing Business

According to the world bank Benin is ranked 149th globally in the ease of doing business. 60 Visas for Benin are issued through the embassy of Benin in Washington DC or the nearest consulate. For the granting of a visa the passport must not expire within the next six months of travel and applicants must be vaccinated against yellow fever (for those arriving from or through countries with a high risk for yellow fever – see WHO recommendations https://www.who.int/news-room/fact-sheets/detail/yellow-fever#:~:text=It%20is%20important% 20to%20vaccinate,from%20the%20yellow%20fever%20vaccine.) In addition, Benin is considered a high-risk polio area and vaccinations are recommended. 61

English is not widely spoken in Benin and French proficiency is therefore crucial. The local crime emergency line is 166 for the police and 118 for fire and ambulance services (bear in mind the poor emergency infrastructure that is often unavailable). Benin has a very inefficient bureaucracy. Therefore, the resolutions of civil disputes can be remarkably slow. However, since 2017 a Commercial Tribunal has been working on more efficient resolution of business-related disputes, which might render arguments with potential contractors less of a risk. Another challenge that is to be kept in mind is the bad internet connectivity and electricity access, which is a challenge to businesses, especially outside of urban areas. Overall, the internet penetration in Benin as of 2021 is at 28.4% (compared to 90.9% in the US). When available, the most common electricity, voltage and plug types are 220V, 50Hz and plug types C and E. The Second Action Plan of 2022 fosters 342 projects across 23 sectors (with added emphasis

<sup>&</sup>lt;sup>55</sup>https://www.brookings.edu/blog/africa-in-focus/2021/08/05/cfa-franc-zone-economic-development-and-the-post-c ovid-recovery

<sup>&</sup>lt;sup>56</sup> https://trendeconomy.com/data/h2/Benin/TOTAL

<sup>&</sup>lt;sup>57</sup> https://www.trade.gov/country-commercial-guides/benin-market-overview

<sup>&</sup>lt;sup>58</sup> https://tradingeconomics.com/benin/gdp

<sup>&</sup>lt;sup>59</sup>https://www.worldbank.org/en/country/benin/overview#:~:text=Fiscal%20policy%20remained%20expansionary% 20for,2022%20against%205.7%25%20in%202021.

<sup>60</sup> https://data.worldbank.org/indicator/IC.BUS.EASE.XQ?locations=BJ

<sup>61</sup> https://www.hps.scot.nhs.uk/publications/hps-weekly-report/volume-53/issue-33/polio-in-benin/

<sup>&</sup>lt;sup>62</sup>https://www.worldbank.org/en/country/benin/overview#:~:text=Fiscal%20policy%20remained%20expansionary% 20for,2022%20against%205.7%25%20in%202021.

<sup>63</sup> https://www.trade.gov/country-commercial-guides/benin-market-challenges

<sup>64</sup> Ibid

<sup>&</sup>lt;sup>65</sup>https://datareportal.com/reports/digital-2021-benin#:~:text=There%20were%203.50%20million%20internet,at%20 28.4%25%20in%20January%202021.

<sup>&</sup>lt;sup>66</sup>https://www.electricalsafetyfirst.org.uk/guidance/advice-for-you/when-travelling/travel-adaptor-for-benin/#:~:text=For%20Benin%20there%20are%20two,220V%20supply%20voltage%20and%2050Hz.

upon education and social services).<sup>67</sup> Furthermore, according to the U.S. Department of State the government of Benin generally cooperates with NGOs and permits their operations.<sup>68</sup> The government of Benin is also willing to enhance import relationships beyond the already existing ties. Upon market entry it is encouraged to facilitate local agents to ease the operation within the local business landscape. Businesses can be registered easily and online within two days through https://monentreprise.bj/. Nevertheless, it is advisable to hire local notaries in advance to assist with and prepare required documentation. The U.S. Foreign Commercial Service also helps with these matters.<sup>69</sup>

As for the import of products or goods in general there seem to be no restrictions besides a prohibition to import guns, ammunition, narcotics (except for medical use), and materials that may endanger the environment. However, more detailed information is only scarcely available, and the website of Benin's customs authority is merely available in French (https://douanes.gouv.bj/). Import requirements and documentation is usually facilitated through private service providers such as "Bureau Veritas" (+225 20 31 25 00, contact.civ@bureauveritas.com).

# Generally helpful websites include:

https://www.advancingpartners.org/countries/benin

https://bj.usembassy.gov/ https://beninembassy.us/

<sup>&</sup>lt;sup>67</sup> https://finances.bj/presentation-du-programme-dactions-du-gouvernement-2021-2026/

<sup>68</sup> https://www.state.gov/reports/2020-country-reports-on-human-rights-practices/benin/

<sup>69</sup> https://www.trade.gov/country-commercial-guides/benin-market-entry-strategy

<sup>&</sup>lt;sup>70</sup> https://www.trade.gov/country-commercial-guides/benin-customs-regulations

# The Republic of South Sudan

# **Energy Access**

The Republic of South Sudan faces significant energy challenges, with the majority of the population lacking access to modern forms of energy. According to the International Energy Agency (IEA), in 2019, only 4% of the population had access to electricity, and over 80% of the population relied on traditional biomass for cooking and heating, leading to significant health and environmental issues (IEA, 2019).<sup>71</sup>

The country has vast untapped renewable energy resources, including solar, wind, and hydropower. However, due to limited infrastructure and investment, these resources have not been fully utilized. The government has recognized the need to increase energy access and is taking steps towards achieving this goal. In 2018, the government launched its National Electrification Strategy, aiming to achieve 100% electricity access by 2040, with a focus on off-grid and renewable energy solutions (Government of South Sudan, 2018).<sup>72</sup>

Several international organizations are also working towards increasing energy access in South Sudan. The World Bank is implementing the South Sudan Electricity Sector Strengthening Project, which aims to support the development of the country's energy sector, including expanding electricity access and promoting renewable energy sources (World Bank, 2020)<sup>73</sup>. The African Development Bank is also implementing the Juba Power Distribution System Rehabilitation and Expansion Project, which aims to improve the country's power distribution system and increase electricity access in Juba, the capital city (African Development Bank, 2019).<sup>74</sup>

Despite these efforts, significant challenges remain, including limited funding, insecurity, and a lack of skilled personnel. However, increasing energy access in South Sudan is crucial for improving living standards, promoting economic growth, and achieving sustainable development.

<sup>&</sup>lt;sup>71</sup> International Energy Agency. (2019). Energy Access Outlook 2019. Retrieved from <a href="https://www.iea.org/reports/energy-access-outlook-2019">https://www.iea.org/reports/energy-access-outlook-2019</a>

<sup>&</sup>lt;sup>72</sup> Government of South Sudan. (2018). National Electrification Strategy. Retrieved from <a href="https://www.mwe.go.ug/sites/default/files/National%20Electrification%20Strategy%20for%20South%20Sudan\_0.p">https://www.mwe.go.ug/sites/default/files/National%20Electrification%20Strategy%20for%20South%20Sudan\_0.p</a> df

World Bank. (2020). South Sudan - Electricity Sector Strengthening Project. Retrieved from <a href="https://projects.worldbank.org/en/projects-operations/project-detail/P166007">https://projects.worldbank.org/en/projects-operations/project-detail/P166007</a>

<sup>&</sup>lt;sup>74</sup> African Development Bank. (2019). Juba Power Distribution System Rehabilitation and Expansion Project. Retrieved from <a href="https://www.afdb.org/en/projects-and-programs/project-portfolio/project/p-z1-c00-066">https://www.afdb.org/en/projects-and-programs/project-portfolio/project/p-z1-c00-066</a>

#### **Current Solarization Plan**

There is a significant potential for solar energy in South Sudan, where more than 80% of the population lives in rural areas without access to electricity. Despite this, the development of solar energy infrastructure has been slow due to the country's ongoing conflict and political instability.

However, there are a few ongoing solar projects in South Sudan, including:

- 1. Solar-Powered Water Pumps: The United Nations Development Programme (UNDP) is implementing a solar-powered water pump project in South Sudan. The project aims to provide access to clean water for the population while reducing dependence on fuel-powered pumps.
- 2. Solar Microgrids: The government of South Sudan has launched a project to install solar microgrids in several communities across the country. The microgrids will provide electricity to households, schools, and health centers in areas without access to the national grid.
- 3. Solar Street Lights: The South Sudan government is also implementing a solar street lighting project in the capital city of Juba. The project aims to improve security and reduce crime in the city by providing lighting in public spaces.

# **Health System**

#### Health Sector Structure

Three tiers of healthcare are available: primary health care units, primary health care centers, and hospitals.<sup>75</sup> The first two tiers comprise the Basic Package of Health Services (BPHS) which cover "preventative, curative, health promotion, and managerial activities."<sup>76</sup> However, non-governmental organizations provide 80% of the nation's basic healthcare services.<sup>77</sup>

#### Health Sector Financing

In 2020, Sudan spent \$1.7 billion (6.5% of GDP) on healthcare. The BPHS is financed by the government, with contributions from various non-governmental organizations.<sup>78</sup> Out-of-pocket spending, however, accounts for 54% of total health expenditure.<sup>79</sup> In 2021, the World Bank

<sup>&</sup>lt;sup>75</sup> "Health system". Gurtong. Retrieved 4 August 2011.

<sup>&</sup>lt;sup>76</sup> Government of South Sudan. *Ministry of Health*, 2011. Government of South Sudan.

<sup>&</sup>lt;sup>77</sup> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5759875/

<sup>&</sup>lt;sup>78</sup> Government of South Sudan. *Ministry of Health, 2011*. Government of South Sudan.

provided a \$200 million grant to support the delivery of healthcare services in the remote and conflict-ridden areas of Jonglei, Pibor, Reweng, Upper, and Unity.<sup>80</sup>

# Access and Quality of Care

There is a severe shortage of medical professionals in South Sudan, with only one physician per 65,574 individuals, and one midwife per 39,088 individuals.<sup>81</sup> As of 2017, access to healthcare services was 28%.<sup>82</sup> Other factors, such as poor transportation services and conflict, have made more than half the country physically inaccessible, which contributes to reduced access to healthcare.<sup>83</sup>

#### **Maternal Health Outcomes**

Maternal Mortality Rate: 789 deaths per 100,000 live births (in 2018)<sup>84</sup> Infant Mortality Rate: 58.6 deaths per 1,000 live births (in 2023)<sup>85</sup> Neonatal Mortality Rate: 99.2 deaths per 1,000 live births (in 2018)<sup>86</sup>

#### Antenatal Care

In Juba, the capital city, only 25% of women visit a hospital during labor.)<sup>87</sup> Although 47.6% of women make one antenatal care visit, only 17% of women complete four antenatal care visits.<sup>88</sup> Health facilities lack essential resources, including medicines, childhood vaccines, and refrigerators, which is correlated with increased dissatisfaction with use of antenatal care services.<sup>89</sup> Further, long waiting times, and lack of beds and seats in waiting areas at maternity care facilities hinder women from utilizing these services.<sup>90</sup>

#### **Deliveries**

Many mothers in South Sudan claim that delivery at a health facility was their first preference, however, they went into labor at night, when public transportation is unavailable.<sup>91</sup> Additionally,

https://www.unicef.org/southsudan/stories/world-bank-provides-additional-70m-boost-south-sudans-healthcare-system

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<sup>81</sup> https://borgenproject.org/maternal-mortality-in-south-sudan/

<sup>82</sup> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9475057/

<sup>83</sup> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9475057/

<sup>&</sup>lt;sup>84</sup>http://apps.who.int/iris/bitstream/handle/10665/136881/ccsbrief\_ssd\_en.pdf;jsessionid=063FBBE88AEF5F8E2EE AC4F8DD466226?sequence=1

<sup>85</sup> https://www.macrotrends.net/countries/SSD/south-sudan/infant-mortality-rate

<sup>86</sup>http://apps.who.int/iris/bitstream/handle/10665/136881/ccsbrief\_ssd\_en.pdf;jsessionid=063FBBE88AEF5F8E2EE AC4F8DD466226?sequence=1

<sup>&</sup>lt;sup>87</sup>http://apps.who.int/iris/bitstream/handle/10665/136881/ccsbrief\_ssd\_en.pdf;jsessionid=063FBBE88AEF5F8E2EE AC4F8DD466226?sequence=1

<sup>&</sup>lt;sup>88</sup> Government of South Sudan. *National Bureau of Statistics*, 2011. Government of South Sudan.

<sup>89</sup> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5759875/

<sup>90</sup> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5759875/

<sup>91</sup> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5759875/

both women and men argue that lack of safety at night is a primary reason for their decision to deliver at home (the on-going inter-tribal conflict has led to increased instances of murder, armed robbery, and carjacking, especially for those traveling at night). 92

# **Emergency Obstetric Care**

Access to emergency obstetric care is poor in South Sudan, but favors those with a higher socioeconomic status. Women in urban areas are twice as likely and women who have completed a formal secondary school education are five times as likely to receive emergency obstetric care than their counterparts without these characteristics.<sup>93</sup>

<sup>92</sup> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5759875/

<sup>93</sup> https://bmjopen.bmj.com/content/8/2/e018739

#### **Viable Partners**

# **Energy Initiatives**

Sungate Solar is a for-profit corporation that specializes in the installation of solar resources in South Sudan. <sup>94</sup> While they are for-profit, Sungate Solar does frequent solar installations on behalf of nonprofits/NGOs. They are one of the very few entities in South Sudan performing solar installations; no other nonprofit or for-profit installer could be found online. Some of the installation fields include Home, Office and Commercial Systems, Solar Microgrids, Electric, Cooking, Solar street lighting, Data Center & Internet Server Backup systems. We Care Solar could benefit from a partnership Sungate Solar for the implementation of solar resources in South Sudan. This may be less incentivizing as Sungate Solar is not a nonprofit, but they offer the resources to help We Care Solar expand its mission.

#### **Health Services**

*UNICEF* (United Nations International Children's Emergency Fund) is a multinational organization with initiatives in over 190 countries for promoting childrens' health. <sup>95</sup> UNICEF boasts numerous different initiatives ranging from addressing diseases to combating malnutrition to strengthening education systems. UNICEF provides solutions to remedy issues of maternal and newborn health in developing countries, including South Sudan.

"UNICEF supports countries to provide essential packages of high-quality maternal and newborn services, such as home visits, small and sick newborn care, and kangaroo care that uses skin-to-skin contact between parents and babies to increase their chances of survival. We also work with partners to eliminate maternal and newborn tetanus, collect information on adolescent pregnancies, and train health-care workers to address the specific needs of adolescent mothers."

We Care Solar could network with UNICEF to distribute and implement solar resources in the health centers currently supported by UNICEF. This would likely simplify the process of implementation for We Care Solar and reduce the chances of complications during such a process.

*CARE* is a large nonprofit with global initiatives to help address social inequities. CARE serves numerous countries across the globe with efforts to support "health and nutrition, food security and livelihoods, women's economic empowerment and gender-based violence prevention and response." <sup>96</sup> CARE has focused heavily on bolstering the social status and equality of women in South Sudan. While the organization does not detail the specifics of their impact with respect to their health initiatives, they claim to have impacted over 1.6 million people living in South Sudan. The established presence of CARE within South Sudan may help We Care Solar navigate the process of implementing their services.

North American Centenary Committee is a nonprofit with initiatives solely serving South Sudan. <sup>97</sup> This organization is specifically committed to reduced infant and neonatal mortality in Mundri, South Sudan. The NACC has done this by building a hospital to serve the area and treat maternal health needs. It is continuing to expand upon this mission, stating:

<sup>94</sup> https://www.sungatesolarsolutions.com/overview/

<sup>95</sup> https://www.unicef.org/

<sup>&</sup>lt;sup>96</sup> https://www.care.org/our-work/where-we-work/south-sudan/

<sup>97</sup> https://northamericacc.org/

"South Sudan experiences one of the highest rates of maternal mortality, one that is five times that of other developing countries, based on data from the World Bank. The NACC is currently raising funds to construct the new facility which will consist of 25 beds, a Women's Ward, a Pediatric Ward, an operation theatre, a Labor (Delivery) room, a post-natal room, a pharmacy, a laboratory, and an outpatient clinic." (NACC)

The NACC's efforts are concentrated in the greater Mundri area, which may pose a limiting factor in their ability to assist in other parts of the country. Regardless, the NACC proves to be a valuable potential partner that maintains similar ambitions to We Care Solar.

#### Other Organizations

- Sudan Relief Fund nonprofit dedicated to bringing health resources and food security to parts of South Sudan. 98
- *Catholic Medical Mission Board* supports maternal and newborn health in areas with limited healthcare development.<sup>99</sup>
- *Save the Children* nonprofit providing South Sudan's children with access to education, health care and nutrition support. 100

<sup>98</sup> https://sdnrlf.com/

<sup>99</sup> https://cmmb.org/our-impact/

https://www.savethechildren.org/us/where-we-work/south-sudan

#### Language

#### Primary Language

The official language of South Sudan is English. There are no reliable estimates for the proportion of the population in South Sudan that speaks English. This is likely due to the fact that English is more often spoken as a secondary language than a primary language in South Sudan, making it difficult for researchers to gauge the population's true English literacy on its own. The lack of data here makes South Sudan's language uniformity impossible to compare with the other countries of interest.

#### Other Languages

South Sudan is home to over 60 languages, many of which are indigenous.<sup>101</sup> The most widely spoken indigenous language as a primary language is Dinka at 29.8%.<sup>102</sup> This is considerably higher than estimates for English (as a primary language) at 7.5% (this figure is not to be confused with the unknown total proportion of residents speaking English as a more common secondary language).<sup>103</sup> Keep in mind that the aforementioned data on languages may be unreliable due to limited research. There are no relevant graphics depicting the language composition in South Sudan, again, as a result of limited data.

#### <u>Literacy</u>

South Sudan's total literacy rate sits at an estimated 27-35%. This means that South Sudan ranks last in terms of literacy in comparison to Benin and Mozambique. This figure is well below the world literacy rate and a huge discrepancy from the other countries of interest. This very low literacy presents an obvious conflict in the ease of doing business and communication that is necessary with an expansion of operations. Further, only an estimated 8% of women in South Sudan are literate, ranking South Sudan as not only having the lowest rate of female literacy in comparison to Benin and Mozambique, but also potentially having the lowest female literacy in the world. 105

#### **Trajectory**

No research is readily available which demonstrates the future trajectory of South Sudan's literacy and language uniformity. However, when a country is as illiterate as South Sudan, it is more prone to seeing growths in literacy in multiples of previous figures in a relatively short time.

<sup>101</sup> https://www.jstor.org/stable/608274

<sup>102</sup> Ibid

<sup>103</sup> Ibid

<sup>104</sup> https://www.voaafrica.com/a/africa south-sudan-promoting-adult-literacy-maintain-peace/6179024.html

<sup>105</sup> https://pdf.usaid.gov/pdf docs/pnaec812.pdf

# **Security and Ease of Doing Business**

# Government Report

South Sudan is a presidential republic in East Africa. It has only gained independence from Sudan in 2011 and its capital city is Juba. It is governed by a bicameral national legislative system and the president is both, chief and head of state (currently Salva Kiir Mayardit). As of 2022 South Sudan claims a last 191st place on the United Nations HDI ranking with a HDI value score of merely 0.385. 106

According to Freedom House South Sudan is not a free country and political rights in particular are almost non-existent, which is indicated by a negative score of minus 3 out of 40 points and an overall rating of 1 out of 100. National elections have been delayed multiple times and actually never took place since South Sudan gained independence. This effectively undermines the technically multiparty system which, however, is dominated by the Sudan People's Liberation Movement (SPLM) who effectively holds a political monopoly and oppresses political opposition. Peace agreements following the violent civil war have further delayed these overdue elections and "cemented the dominant position of President Kiir." 109

Technically the constitution of South Sudan created a balanced democracy. However, partly because of the large military influence and background of political elites' large loyalty exists in favor of the president and vice-president. This "undermines the effective power of democratically elected political representatives [and president] Kiir has used his power multiple times to replace governors and even members of parliament at the national as well as state level." Despite this seemingly unlimited discretionary power at will the government, as a result of the ongoing conflicts, lacks influence and control which undermines effective policymaking and implementation of governmental decisions. Another indicator for this political instability is the fact that the two legislative chambers are still transitional, and the government officially is a "federal provisional unity government." This gives proof that fully functioning, and truly democratic institutions have yet to be developed. In compliance with Article 142(3) of the transitional constitution of South Sudan minimum 25% of the legislature's seats are reserved for women.

#### **Security Considerations**

Reporters without borders ranked South Sudan 128th globally and described the situation in South Sudan as "extremely precarious [...] where journalists work under constant threat and intimidation, and where censorship is ever-present." Both local and foreign reporters that aim to provide independent reporting are exposing themselves to threats to their own life and

<sup>106</sup> https://hdr.undp.org/data-center/country-insights#/ranks

<sup>107</sup> https://freedomhouse.org/country/south-sudan/freedom-world/2022

<sup>108</sup> https://www.state.gov/reports/2022-country-reports-on-human-rights-practices/south-sudan/

<sup>109</sup> https://bti-project.org/en/reports/country-report/SSD

<sup>110</sup> Ibid

<sup>111</sup> Ibid

<sup>112</sup> https://www.cia.gov/the-world-factbook/countries/south-sudan/summaries

<sup>113</sup> https://www.constituteproject.org/constitution/South Sudan 2013?lang=en

<sup>114</sup> https://rsf.org/en/country/south-sudan

arbitrary intention. Impunity for crimes related to such practices is common.<sup>115</sup> In addition, reporting from South Sudan without proper documentation form the Media Authority is illegal and therefore very dangerous, which could prove problematic for some parts of NGO work.<sup>116</sup>

As of October 5th, 2022, the U.S. Department of State categorized South Sudan amongst its highest level of travel warnings "Level 4: Do Not Travel." This recommendation is based on recent incidents related to crime, kidnapping, and armed conflict. 117 As a result of the ongoing danger, consular service to U.S. citizens is very limited and government personnel in the country are under a strict curfew for security reasons. 118 Aid work is heavily affected by violence and restricting behavior from both the population and the government with 86 operational interferences, 272 non-violent incidents, and 322 relocated aid workers in 2021. Furthermore, as of 2021 41 aid workers have been detained in 2021 (all of these figures increasing from 2020). 119 36% of agencies affected by access incidents in 2023 were international NGOs. 120 Furthermore, NGOs regularly face pressure through authorities and organized youth groups to influence recruitment based on ethnicities. <sup>121</sup> Especially the federal state of Central Equatoria poses difficulties in the operation of humanitarian aid organizations. It "recorded the highest number of reported incidents (137) in 2021. Armed conflict and roadside ambushes in Laniya, Yei and Morobo counties particularly affected the humanitarian environment in the state. Staff detentions, harassment, intimidation, and extortion accounted for most of the reported incidents."122

#### **Economic Considerations**

South Sudan's economy is largely oil-based. Low-income, extreme poverty, and food insecurity remain to be major problems and COVID-19 as well as the ongoing violence keeps having a negative impact on South Sudan's socioeconomic potential. Therefore, and because of a lack of infrastructure, the vast array of natural resources is incapable of being leveraged to change the situation for the better. Up-to date information on South Sudan's GDP is unavailable. However, in 2019 it was merely at \$1 billion in 2019 steadily decreasing since 2013 when it was still reported at \$18.43 billion. At 27.78% in 2023 South Sudan is also suffering from a very high inflation rate of its South Sudanese Pound (130 SSP to \$1 US), which, however, lowered compared to the remarkable 83.4% of 2018.

<sup>115</sup> Thid

 $<sup>^{116}</sup> https://travel.state.gov/content/travel/en/traveladvisories/traveladvisories/south-sudan-travel-advisory.html$ 

<sup>117</sup> Ibid

<sup>118</sup> Ibid

<sup>119</sup> https://reliefweb.int/report/south-sudan/south-sudan-2021-humanitarian-access-overview-january-december-2021? \_gl=1\*14yitae\*\_ga\*MTk1ODY0NTgxMS4xNjc4MDU2MDk5\*\_ga\_E60ZNX2F68\*MTY3ODA1NjA5OS4xLjAuMTY3ODA1NjA5OS42MC4wLjA

<sup>120</sup> Ibid

<sup>121</sup> Ibid

<sup>122</sup> Ibid

<sup>123</sup> https://tradingeconomics.com/south-sudan/gdp

<sup>124</sup> https://www.statista.com/statistics/727347/inflation-rate-in-south-sudan/

# **Ease of Doing Business**

South Sudan ranked 185th overall in the 2020 ease of doing business index of the world bank and especially trading across borders seems to be an issue of relevance to this low score. The Non-Governmental Organizations Act lays out the rules for incorporation and operation of NGOs in South Sudan. It is hard to identify which version is the most up to date since there are two documents available online that speak of enactment in 2015 and 2016 respectively (both of which repeal a 2003 version).

# PDF versions of the Act are available through the following links:

https://www.icnl.org/wp-content/uploads/SoNuth-Sudan\_Lawofss.pdf; https://www.icnl.org/wp-content/uploads/South-Sudan\_NGOBILL.pdf

In addition to the Act there is a paper by the official and governmental Relief and Rehabilitation Commission that elaborates on the registration, procedures, and governance of NGOs in South Sudan. 125 NGOs are registered with the registrar of NGOs in South Sudan and a form (https://www.icnl.org/wp-content/uploads/South-Sudan\_ssform.pdf) must be filled in and filed with them. NGOs should bear in mind that some individuals in the country are subject to sanctions imposed by the U.S. and any business to them could lead to legal difficulties.

For the entrance to South Sudan a Visa is required. As of 2023 only single-entry visas are issued by the Southern Sudanese embassy in Washington DC making operations considerably more complicated. Visa requirements include validity of the applicant's passport for at least 180 days from date of arrival and is filed through this form:

https://www.southsudanembassyusa.org/wp-content/uploads/2015/08/Form-5-A-Visa-Applicatio n-Form.pdf . This document must not be printed double sided and accompanied by two passport-sized photos. Furthermore, the embassy requires an official letter from the organization/company, or an invitation letter addressed to the embassy explaining the purpose of the visit to South Sudan. A service fee of \$160 is also due for U.S. citizens (varies depending on the nationality of the applicant) and a self-addressed and prepaid return envelope (UPS USPS, or FedEx) must be included in the application. If these requirements are complied with, a Visa will be issued within five business days. Shipment into South Sudan is facilitated by private operators that offer assistance such as "easyship." In addition, South Sudan offers governmental services for the procedures relating to the flow of goods (accessible through: https://customs.eservices.gov.ss/).

<sup>125</sup> https://docs.southsudanngoforum.org/sites/default/files/2019-04/NGO%20Act%20Regulations 0.pdf

<sup>126</sup> https://www.easyship.com/countries/shipping-to-southsudan

# The Republic of Mozambique

# **Energy Access**

The primary source of electricity in Mozambique is hydropower, with the Cahora Bassa dam on the Zambezi River providing the majority of the country's electricity. However, the country also has significant potential for developing other renewable energy sources, including solar, wind, and biomass.

To increase energy access and reduce reliance on fossil fuels, the Mozambican government has implemented a range of policies and initiatives to promote renewable energy development. In 2015, the government launched the National Renewable Energy Strategy, which aims to increase the share of renewable energy in the country's energy mix to 50% by 2025. The strategy focuses on expanding the use of renewable energy in rural areas, where access to electricity is most limited.

One notable renewable energy project in Mozambique is the Mocuba Solar Power Plant, which was commissioned in 2018. Located in the Zambézia province, the 40 MW solar power plant is the largest in sub-Saharan Africa, and is expected to provide electricity to approximately 175,000 households. In addition, there are several other solar projects currently under development, including the Cuamba Solar Power Plant and the Metoro Solar Power Plant, both of which are expected to have a capacity of 40 MW.

Despite these initiatives, Mozambique still faces significant challenges in expanding energy access. The country's limited infrastructure and lack of investment in the energy sector have hindered progress, particularly in rural areas where access to electricity is most limited. However, the government's commitment to renewable energy development and ongoing efforts to attract investment suggest a positive outlook for increasing energy access in Mozambique.

# **Current Solarization Projects**

Mozambique has made significant progress in solar energy development in recent years. According to the International Renewable Energy Agency (IRENA), Mozambique had a total installed solar capacity of 130 MW at the end of 2020. This capacity is expected to increase significantly in the coming years with the implementation of several large-scale solar projects.

One of the most notable solar projects in Mozambique is the Mocuba solar power plant. The 40 MW project, located in the province of Zambezia, was commissioned in 2018 and is the country's first grid-connected solar plant. The project was developed by the Norwegian company Scatec Solar, and its power is sold to the state-owned electric utility, Electricidade de Moçambique (EDM), under a 25-year power purchase agreement.

Another significant solar project in Mozambique is the Metoro solar power plant, which is currently under construction in the Cabo Delgado province. The 40 MW project is being developed by the French energy company Total and is expected to be completed in 2022. The power generated by the plant will be sold to EDM under a 25-year power purchase agreement.

In addition to these large-scale projects, there are several smaller-scale solar projects in Mozambique, including the installation of solar mini-grids in rural areas. These mini-grids are typically used to provide electricity to off-grid communities that are not connected to the national grid. For example, the World Bank is supporting a project to install solar mini-grids in the northern part of the country, which will provide electricity to over 150,000 people in rural areas.

Overall, while Mozambique still faces significant challenges in providing electricity access to its population, the country's solarization projects show great potential for increasing access to clean and reliable energy.

# **Health System**

#### Health Sector Structure

The health system in Mozambique consists of four levels: the primary level, which comprises urban and rural health facilities, the second level, which comprises the general, rural, and district hospitals, the tertiary level, which comprises the hospitals of the provincial capitals, and the quaternary level, which represents the central hospitals of Beira, Nampula, and Maputa, as well as the specialized hospitals.<sup>127</sup>

# **Health Sector Financing**

The health system is financed primarily through domestic funds from the state budget, and external funds received through a variety of different mechanisms. Most commonly, external funds come from the Common Fund, which is a basket fund where partners pool their resources to support various initiatives. <sup>128</sup> In 2015, 75% of Mozambique's health budget was funded by these external donors. <sup>129</sup> Almost 80% of the health sector is domestically funded, while the remainder is supported by foreign assistance. <sup>130</sup> The WHO estimates that, in 2006, Mozambique spent \$56 per person on health, comprising 4.7% of the GDP. <sup>131</sup>

<sup>127</sup> https://equityhealthj.biomedcentral.com/articles/10.1186/s12939-016-0455-0

<sup>128</sup> https://www.afro.who.int/health-topics/health-topics-mozambique

<sup>129</sup> https://www.healthpolicyproject.com/pubs/7887/Mozambique HFP.pdf

<sup>130</sup> https://www.trade.gov/country-commercial-guides/mozambique-healthcare

<sup>131</sup> http://www.access2insulin.org/mozambiques-health-system.html

# Access and Quality of Care

There is only one health facility for every 15,000 citizens, and 90.2% of citizens are unable to access a health facility within 60 minutes of walking. Maputo City, Manica, and Zambezia have the greatest coverage of health care centers, with Tete, Cabo Delgado, and Gaza are the most underserved. Health care centers are underserved.

#### **Maternal Health Outcomes**

Maternal Mortality Rate: 289 deaths per 100,000 live births (in 2022)<sup>135</sup>
Infant Mortality Rate: 44.9 deaths per 1,000 live births (in 2023)<sup>136</sup>
Neonatal Mortality Rate: 28 deaths per 1,000 live births (in 2021)<sup>137</sup>

#### Antenatal Care

Women typically start antenatal care at the end of the second trimester, and this late start is primarily a result of a lack of pregnancy tests in health services, which compels women to wait until visible signs of pregnancy emerge. Beyond not knowing that they are pregnant, other reasons for poor utilization of antenatal care include not thinking it is important to attend several visits, not having easy access to a health facility, not having a companion for the visits. It is also found that women in Mozambique, culturally, view pregnancy as a normal life event, and thus consider antenatal care only necessary in the event of disease.

# **Emergency Obstetric Care**

Mozambique suffers from severe delays that hinder women from accessing emergency obstetric care. In 2007, around 46% of maternal deaths occurred within health institutions, surprising considering that these women did reach a health facility.<sup>141</sup> The primary causes of death were postpartum hemorrhage (28%) and uterine rupture (14%).<sup>142</sup>

<sup>132</sup> http://www.access2insulin.org/mozambiques-health-system.html

<sup>133</sup> https://equityhealthj.biomedcentral.com/articles/10.1186/s12939-016-0455-0

https://equityhealthj.biomedcentral.com/articles/10.1186/s12939-016-0455-0

<sup>&</sup>lt;sup>135</sup>https://pophealthmetrics.biomedcentral.com/articles/10.1186/s12963-022-00281-8

<sup>136</sup> https://www.macrotrends.net/countries/MOZ/mozambique/infant-mortality-rate

<sup>137</sup> https://data.unicef.org/country/moz/

<sup>138</sup> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8570256/

<sup>139</sup> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8570256/

<sup>&</sup>lt;sup>140</sup> Finlayson K, Downe S. Why do women not use antenatal services in low- and middle-income countries? A meta-synthesis of qualitative studies. *PLoS Med.* 2013;10(1):e1001373. doi: 10.1371/journal.pmed.1001373. [PMC free article] [PubMed] [CrossRef] [Google Scholar][Ref list]

https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-018-1699-z

<sup>&</sup>lt;sup>142</sup> https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-018-1699-z

#### **Viable Partners**

# **Energy Initiatives**

*Project Vita* is a nonprofit focused on supplying energy resources to a particular region in Mozambique.<sup>143</sup> Their primary project, Light Up Linga Linga, supplies solar and light resources by purchasing them from a partner for-profit organization and distributing them. The partner organization, Sunbell Kenya Ltd, provided solar resources free of charge for Project Vita to employ in their philanthropic endeavors.

"Sunbell Kenya Ltd. which is a subsidiary to Bright Products, Oslo is a supplier of solar powered solutions and has chosen to donate a larger quantity of products and systems which will be used for lighting up 150 health clinics, as well as products for hundreds of households that can be used for lighting and mobile phone charging." (Project Vita)

Beyond Project Vita's initiative to "Light Up Linga Linga," it lacks substantial impact in providing energy resources across the larger part of Mozambique. This offers great potential for We Care Solar to expand upon Project Vita's similar mission by implementing solar resources more extensively through Mozambique. Project Vita may be able to provide the distribution resources, connections for solar resources, and partnerships for mutual expansion.

The Mozambican Association of Renewable Energies (AMER) is a non-profit organization with the mission of promoting renewable energy resources in Mozambique. AMER has similar initiatives to Project Vita, however, they are not localized in one area in Mozambique and they also consider the implementation of a variety of different renewable resources (wind, geothermal, etc.), not just solar. Though AMER seems to have very similar interests to We Care Solar, the true impact of AMER thus far is difficult to gauge as they do not make their impacts easily accessible. AMER claims to have done research in the implementation of renewable energy sources for Mozambique, raise funds for future projects, promote legal and technical support for their mission, and conduct general hands-on activities to expand its mission. AMER may be a promising partner for We Care Solar as it seems to have a well-established presence in Mozambique, but many uncertainties remain without being able to clearly gauge their true impact.

#### **Health Services**

The *Maternal & Child Survival Program* (MCSP) is a multinational program in support of USAID's priority goal of preventing child and maternal deaths. <sup>145</sup> Rather than being a single organization making an independent impact, it boasts numerous connections with relevant organizations, many of which were previously mentioned as potential partners.

"MCSP was a partnership led by Jhpiego, with Save the Children Federation, Inc., John Snow, Inc., ICF, Results for Development Institute, PATH, CORE Group and PSI as lead partners, and Broad Branch Associates, Johns Hopkins Bloomberg School of Public Health, Communications Initiative and Avenir Health as associate partners. In addition to contributing to high-level technical and policy dialogue at the global level, the Program provided tailored technical

<sup>143</sup> https://projectvita.org/en/home

<sup>144</sup> https://amer.org.mz/sobre-a-amer/

<sup>145</sup> https://mcsprogram.org/

assistance to help countries meet specific priorities and contextual needs of local RMNCH programs." (MCSP)

Collectively, these organizations work to make a tangible impact in the reduction of child and maternal deaths. They have accomplished this to an extent by supplying areas in need with nutritional products, increased healthcare services, innovations in health, and female empowerment. We Care Solar could consider joining or partnering with the MCSP and take advantage of its numerous well-established connections in the field.

# Other Organizations

- *PATH* a nonprofit organization focused on reducing the instances of Malaria in Mozambique by supplying bed nets to individuals to reduce mosquito transmissions.
- AHF a nonprofit organization interested in mitigating the occurrence of HIV/AIDS transmission in Mozambique by supplying necessary health resources and educational material.<sup>147</sup>

<sup>146</sup> https://www.path.org/where-we-work/africa/mozambique/

<sup>147</sup> https://www.aidshealth.org/global/mozambique/

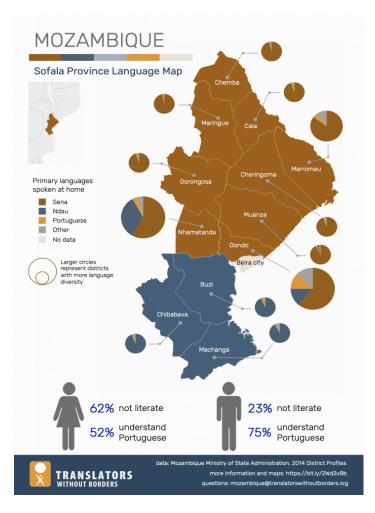
#### Language

#### Primary Language

The official language of Mozambique is Portuguese. Portuguese is spoken by around half (47.3%) of the population in Mozambique. While this is not a particularly high distribution in terms of uniformity, it ranks 1st in comparison to the countries of interest in this respect. The diversity of spoken languages in Mozambique may prove to be a challenge for We Care Solar, but it is comparatively more viable than the alternative countries.

#### Other Languages

Indigenous languages are still prevalent in Benin, though also not uniform. Sena makes up the majority of the primary language spoken in Mozambique households. <sup>149</sup> The figure to the right illustrates the prevalence of alternate and indigenous languages in Mozambique. It is apparent that Portuguese is not the most prevalent language in any single area, however, it remains the most commonly spoken language across the entire country (often spoken as a second language).



Indigenous Language Prevalence in Mozambique<sup>150</sup>

#### Literacy

Sources produce a large variation in the estimated literacy rate for Mozambique. From a slight consensus, the literacy rate in Mozambique is around 61% overall in 2017.<sup>151</sup> That is, 50.3% for women and 72.6% for men.<sup>152</sup> This rate ranks 1st compared to those of the alternative countries of interest, showing comparatively higher promise in regards to ease of business and communication. There still is a very high discrepancy in literacy based on gender. At a difference of around 22.3% in literacy based on gender, Mozambique has the 2nd highest discrepancy. Regardless, the overall literacy rate in women still exceeds that of Benin. Compared to the world literacy rate of 87%, Mozambique is not too far off.

<sup>&</sup>lt;sup>148</sup>http://www.ine.gov.mz/iv-rgph-2017/mocambique/censo-2017-brochura-dos-resultados-definitivos-do-iv-rgph-nac ional.pdf/view

<sup>&</sup>lt;sup>149</sup> Ibid.

 <sup>150</sup>https://translatorswithoutborders.org/wp-content/uploads/2020/02/LanguageMap\_Mozambique\_CaboDelgado.png
 151 https://countryeconomy.com/demography/literacy-rate/mozambique
 152 Ibid.

# **Trajectory**

The body of literature does not contain any estimates as for the trajectory of potential uniformity of a single spoken language. However, the relatively high prevalence of Portuguese as a second language in Mozambique demonstrates great potential in becoming more uniform in the coming years.

# **Security and Ease of Doing Business**

# Government Report

Mozambique is a presidential republic located in southeastern Africa. In 1975 it gained independence from Portugal after four centuries of colonial rule and suffered from a civil war that ended in 1992 and hindered development. Ever since its independence Mozambique has been ruled by the FRELIMO party. Its president (currently Filipe Nyusi) is both chief of head and state. Portuguese is the only official language. In addition, regional languages are recognized, but English is not. Nevertheless, English is spoken especially amongst educated Mozambicans.

A unicameral legislative body, the Assembly of the Republic is governing Mozambique. The United Nations rank Mozambique 185th overall in their 2022 HDI index with a low index score of merely 0.466 (tendency declining since 2019). According to the Freedom House Mozambique is only partially free (45/100 score) and especially political rights are limited. It has been held that FRELIMO managed to "establish significant control over state institutions [and that the] opposition has disputed the results of recent elections." A realistic opportunity for oppositional parties to increase their support or gain power through elections is held to be almost nonexistent. 156

Furthermore, Mozambique is ranking at a low 116th place in reporters without borders 2022 world press freedom index. A diverse media landscape is largely constraint because independent news outlets are economically not viable and a significant amount of the remaining outlets are directly or indirectly controlled by FRELIMO, undermining their independence. Although the constitution technically provides for the right to information, legislation is rarely applied, and authoritarianism is steadily increasing. This is a trend that spreads across the entirety of governmental actions and president Nyusi has repeatedly been accused of leading Mozambique into a full-fledged authoritarian regime. Mozambique into a full-fledged authoritarian regime.

In addition to those political constraints Mozambique is suffering from insurgency efforts by the ISIS franchise Ahlu Sunna Wal Jama, also known as Al-Shabab.<sup>160</sup> This internal conflict leads to a further decrease of humanitarian rights and many people in Mozambique being internally displaced.<sup>161</sup>

# **Economic considerations**

Economically Mozambique is highly dependent on South Africa who provides for 16% of the country's exports and 31% of its imports. <sup>162</sup> It has a GDP of \$39.351 billion (2021) and a

<sup>&</sup>lt;sup>153</sup> https://www.cia.gov/the-world-factbook/countries/mozambique/summaries

<sup>154</sup> https://hdr.undp.org/data-center/specific-country-data#/countries/MOZ

<sup>155</sup> https://freedomhouse.org/country/mozambique

<sup>156</sup> https://freedomhouse.org/country/mozambique/freedom-world/2022

<sup>157</sup> https://rsf.org/en/country/mozambique

<sup>158</sup> Ibid

<sup>&</sup>lt;sup>159</sup> https://issafrica.org/iss-today/can-mozambiques-march-to-authoritarianism-be-stopped

<sup>160</sup> https://www.state.gov/reports/2021-country-reports-on-human-rights-practices/mozambique/

<sup>161</sup> Ibid

<sup>162</sup> https://www.cia.gov/the-world-factbook/countries/mozambique/summaries

comparatively low inflation rate of 5.69% (tendency increasing). <sup>163</sup>, <sup>164</sup> Mozambique's currency is the Metical (\$1 for 63 Meticals). The country is furthermore under huge economic pressure following the 2016 "hidden debt" scandal that saw fraudulent state-backed loans of over \$2 billion to finance a tuna fleet and patrol vessels, which was orchestrated by political elites without government awareness. <sup>165</sup>

#### Ease of Doing Business

According to the World Bank Mozambique ranked 138th globally in 2019 with more up-to-date information unavailable. The business language remains Portuguese, so it is advisable to acquire basic Portuguese skills in addition to the readily available translator services that are offered in Maputo. 166 Generally, the government of Mozambique is cooperative and responsive to the views of NGOs. 167 However, a draft bill on the creation, organization, and operation of non-profit organizations was proposed in 2022 and claimed to tackle money laundering and terrorism. However, according to multiple sources including the American Bar Association and Human Rights Watch it could lead to substantial difficulties in the operation and creation of Civil Society Organizations (CSOs) and NGOs. 168, 169 Furthermore, the bill would grant government officials' overboard discretion in deciding whether to authorize the creation of new organizations or not and excessive civil liability on officers and members of such organizations. In addition, it has been reported that especially those areas which have a large amount of internally displaced people are hard to access and activists reported police, as well as security force harassment. The last point would, in fact, even violate Mozambique's constitution and international human rights instruments. 170 This is a clear indicator for the furthering of authoritarian trends and declining political freedom in Mozambique. In 2022 President Biden chose Mozambique as a focus country under the Strategy to Prevent Conflict and Promote Stability, which could be in favour for NGOs. 171 The plan seeks to reinforce government, civil society, and private sector efforts to increase resilience and improve the quality of life. Particularly the health-focused support of the strategy including maternal and child health could prove to be in favor of We Care Solar and should be closely observed.

Information on visa requirements can be found <u>here</u> and broadly cover the following:

The passport of the applicant must be valid for 6 months from entry in Mozambique. Furthermore, at least three consecutive blank pages must still be available in the passport. It is advised to plan one to two months processing time prior to travel to obtain a visa. Two current passport pictures without eyewear must be provided with the application, as well as a business cover letter from a U.S. based company or an invitation by a company operating in Mozambique (including a copy of their legal status issued by the Mozambican authorities). There is also a

<sup>163</sup> Ibid

<sup>&</sup>lt;sup>164</sup>https://www.macrotrends.net/countries/MOZ/mozambique/inflation-rate-cpi#:~:text=Mozambique%20inflation%20rate%20for%20201,a%200.36%25%20increase%20from%202019.

<sup>165</sup> https://www.state.gov/reports/2021-country-reports-on-human-rights-practices/mozambique/

<sup>166</sup> https://www.expatarrivals.com/africa/mozambique/doing-business-mozambique

<sup>167</sup> https://www.state.gov/reports/2021-country-reports-on-human-rights-practices/mozambique/

<sup>&</sup>lt;sup>168</sup> https://www.hrw.org/news/2023/02/10/mozambique-draft-law-threatens-civil-society-groups

<sup>169</sup> https://www.americanbar.org/groups/human rights/reports/mozambique-ngo-law-analysis/

<sup>170</sup> Ibid

<sup>&</sup>lt;sup>171</sup>https://www.state.gov/wp-content/uploads/2023/03/CSO-2023-SPCPSPlan-Mozambique-2023-03-20-Final-Acces sible.pdf

requirement to hand in the completed application form (found here), a copy of the itinerary, as well as a confirmation of accommodation. Lastly, all of the mentioned documents must be accompanied by a prepaid and self-addressed envelope with a tracking number (unless application is made in person) and a visa fee of \$160 for single-entry or \$180/210 for multiple entry (90/180 days respectively) must be paid. Once these requirements have been complied with, a three-day processing time (two for urgent processing and for additional fees) applies (the information on processing time is contradictory). Applicants that previously traveled to endemic countries must provide proof of a yellow fever immunization certificate.

Importers shipping to Mozambique must be licensed by the Ministry of Industry and Commerce whose website is only available in Portuguese. The cost and time to import and export from and to Mozambique are below southern African averages and Mozambique does not apply import quotas. Despite being below average the customs clearance procedure can nevertheless be time-consuming and highly bureaucratic. In 2019 the U.S. and Mozambique entered into a bilateral memorandum to help facilitate trade and investments in the energy, infrastructure, agricultural, and tourism sectors. However, there is no official trade agreement.

<sup>172</sup> https://www.mic.gov.mz/por/Industria/Licenciamento

 $<sup>^{173}</sup> https://www.trade.gov/country-commercial-guides/mozambique-trade-barriers\#:\sim:text=Mozambique\%20 does\%20 not\%20 apply\%20 import\%20 quotas.$ 

<sup>&</sup>lt;sup>174</sup>https://www.trade.gov/country-commercial-guides/mozambique-trade-agreements#:~:text=However%2C%20in% 202019%2C%20Mozambique%20and,between%20Mozambique%20and%20the%20United