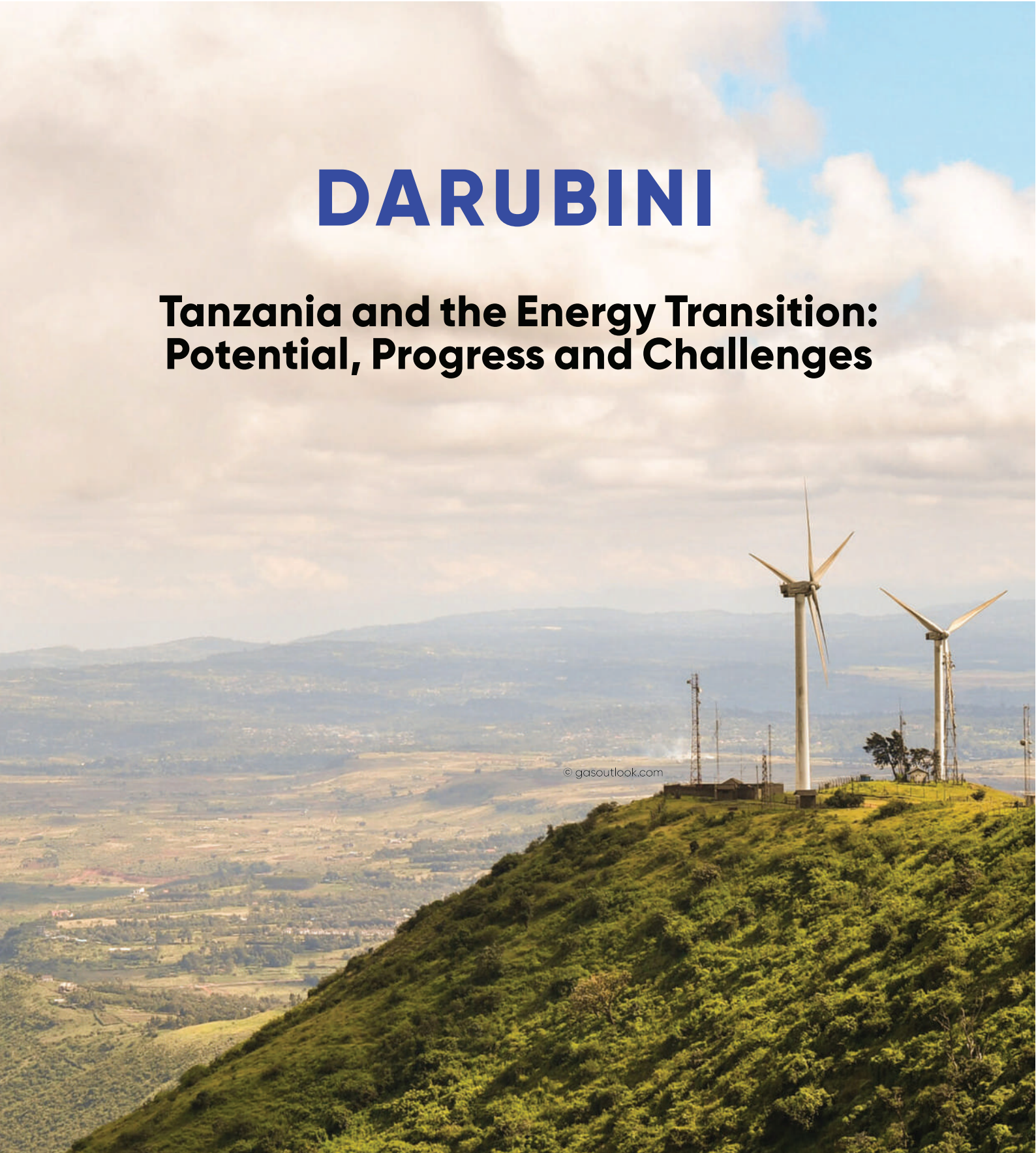


# DARUBINI

## Tanzania and the Energy Transition: Potential, Progress and Challenges



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## Tanzania and the Energy Transition: Potential, Progress and Challenges

The global debate on the energy transition is also heating up in African countries. It relates to the urgent need for climate change adaptation, resilience, and mitigation<sup>1</sup> as highlighted by the Paris Agreement of 2015.<sup>2</sup> This agreement committed member countries to limit global temperature increase to 1.5 degrees Celsius. According to the International Renewable Energy Agency (IRENA), the concept of energy transition refers to a long-term, structural change in energy systems and sources to achieve a sustainable and secure energy future while reducing greenhouse gas emissions and mitigating climate change.<sup>3</sup> This brief focuses on the ongoing energy transition debate in Tanzania by examining the progress, potential and challenges it poses for the country to transition from fossil fuels to cleaner energy sources.

### Access to (renewable) energy in Tanzania

Providing access to secure and reliable energy is an important first step in the transition towards a more sustainable energy future. Tanzania has abundant renewable energy resources, including solar, wind, hydro and geothermal energy. However, according to the International Energy Agency (IEA), as of 2021, around 80% of households in Tanzania still rely on traditional biomass sources, such as firewood and charcoal, for cooking and heating.<sup>4</sup>

According to the World Bank, Tanzania ranks as one of the countries with the fastest electricity expansion rates in Sub-Saharan Africa, with an overall increase in access of 37.7% between 2011 and 2020 in both rural and urban areas. As a result, Tanzania, in 2021, moved up 8 places in one year in terms of readiness to shift to clean energy, to position 80 out of 115 countries in the Energy Transition Index of the World Economic Forum.<sup>5</sup> This has been linked to political goodwill and financial support for initiatives such as the National Rural Electrification Program (NREP) or the Tanzania Rural Electrification Expansion Program (TREEP) which is majorly funded by the World Bank. This program aims at increasing the supply of and access to renewable energy sources such as solar, wind, and hydro for rural areas.<sup>6</sup>

However, still less than 60% of Tanzanians have access to electricity. Electricity access is particularly low in rural areas where it "is at 24.5% , compared to 73.2% of people in urban areas".<sup>7</sup> This falls far short of the Sustainable Energy for All (SE4All) goal of 75% connectivity by 2025.<sup>8</sup>



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<sup>1</sup> Yixin Lyu et al., "Energy Transition, Sustainable Development Opportunities, and Carbon Emissions Mitigation: Is the Developed World Converging Toward SDGs-2030?," *Frontiers in Environmental Science* 10 (August 8, 2022): 912479, <https://doi.org/10.3389/fenvs.2022.912479>.

<sup>2</sup> UN, "Paris Agreement," 2015, [https://unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](https://unfccc.int/sites/default/files/english_paris_agreement.pdf).

<sup>3</sup> IRENA, "World Energy Transitions Outlook 2022," 2022.

<sup>4</sup> Francis Callistus Nyoni, "RELATIONSHIP BETWEEN ENERGY CONSUMPTION AND ECONOMIC GROWTH IN TANZANIA" (2013).

<sup>5</sup> WEF, "Energy Transition Index Report 2021," World Economic Forum, 2021, <https://www.weforum.org/reports/fostering-effective-energy-transition-2021/>.

<sup>6</sup> WORLD BANK IBRD-IDA, "Changing Lives and Livelihoods in Tanzania, One Electricity Connection at a Time," 2022, <https://www.worldbank.org/en/news/feature/2022/06/28/changing-lives-and-livelihoods-in-tanzania-one-electricity-connection-at-a-time>.

<sup>7</sup> WORLD BANK IBRD-IDA, "Access to Electricity (% of Population) - Tanzania," 2020, <https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=TZ>.

<sup>8</sup> Multiconsult, "Clean Energy Transition in Tanzania: Powering Sustainable Development" (Dar es Salaam: Norwegian Embassy, 2022), <https://www.norway.no/contentassets/00c56b3642e5429fbc917d5-fa42f869/clean-energy-transition-in-tanzania-report.pdf>.

In 2021, Tanzania's power generation comes mostly from natural gas (48%), followed by hydro (31%), petrol (18%), solar (1%), and biofuels (1%).<sup>9</sup> However, it is important to note that access to electricity remains low in Tanzania, with only about 45% of the population having access to grid electricity as of 2020.<sup>10</sup>

## Critical minerals and gas: a timely opportunity?

Critical minerals are minerals considered essential for the transition to a low-carbon economy based on renewable energy technologies.<sup>11</sup> Tanzania is endowed with a variety of critical minerals, including lithium, cobalt, nickel, graphite, and rare earth elements, which are key components in the manufacturing of batteries for electric vehicles and renewable energy storage systems.<sup>12</sup> According to the World Bank, the demand for critical minerals is expected to increase with 500% by the year 2050.<sup>13</sup> It is estimated that the world will need 6 times more mineral input by the year 2030 to fill the demand gap for the transition.<sup>14</sup>

The discovery of critical mineral deposits such as an estimated 1.5 million tonnes of nickel in Kagera region, over 18 millions tonnes of graphite in Lindi, Morogoro and Tanga regions and 138 billion cubic feet of helium at Lake Rukwa Basin presents Tanzania as a key potential supplier of critical minerals for the world.<sup>15</sup> If fully exploited this can be a game changer in the country's economic development.<sup>16</sup> Due to the current global energy transition, it is critical that Tanzania develops legal and policy frameworks to guide the attraction of strong and responsible investors to carry the exploration and extraction of its critical minerals. This may not require formulating new policies, but rather amending current frameworks such as the 2010 Mining Act to include critical minerals.<sup>17</sup>

Additionally, with the discovery of gas deposits there are signs that the total gas reserves in Tanzania has surpassed 10 trillion cubic feet.<sup>18</sup> The country discovered huge deposits of natural gas on- and offshore Songo Songo Island (Lindi region) and in Mnazi Bay (Mtwara region),<sup>19</sup> in the last 5 decades. There has since been new investments totaling up to 57 trillion cubic feet. The current annual production for the two fields together with Kiliwani is 110 billion cubic feet.<sup>20</sup> This offers an alternative to the importation of oil; however natural gas has not been fully exploited due to the underdeveloped markets and poor infrastructure.<sup>21</sup>

Nevertheless, Tanzania's Ministry of Energy recently announced the completion of negotiations with investors for the construction of a 30 billion USD liquefied natural gas (LNG) terminal. Gas from the two fields of Songo Songo Island and Mnazi Bay is already being used to generate power for six power plants. The country has also signed a contract to construct a gas pipeline from Mtwara to the Dar es Salaam.<sup>23</sup>



## Is Tanzania on its way to a sustainable, clean energy future?

Overall, Tanzania is making significant strides towards a more sustainable and cleaner energy system, with a focus on increasing access to modern energy services and promoting the use of renewable sources. In 2021, Tanzania published its Nationally Determined Contribution (NDC)<sup>24</sup> with interventions on climate change adaptation and mitigation as part of the Paris Agreement. This outlines structures, roles and responsibilities, but does not yet determine a clear budget line for implementation.

<sup>9</sup> <https://www.trade.gov/energy-resource-guide-tanzania-renewable-energy>

<sup>10</sup> <https://www.trade.gov/energy-resource-guide-tanzania-renewable-energy>

<sup>11</sup> IEA, "The Role of Critical Minerals in Clean Energy Transitions – Analysis," IEA, 2021, <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>.

<sup>12</sup> Lucy Shao, "Critical Minerals and Energy Transition in Tanzania: A New Dance, Maybe?," 2022, <https://www.policyforum-tz.org/blog/2022-06-14/critical-minerals-and-energy-transition-tanzania-new-dance-maybe>.

<sup>13</sup> World Bank, "Mineral Production to Soar as Demand for Clean Energy Increases," Text/HTML, World Bank, 2021, <https://www.worldbank.org/en/news/press-release/2020/05/11/mineral-production-to-soar-as-demand-for-clean-energy-increases>.

<sup>14</sup> IEA, "The Role of Critical Minerals in Clean Energy Transitions – Analysis."

<sup>15</sup> Padili Mikomangwa, "Tanzania's U.S.\$18 Billion Renewable Energy Ambition," The Exchange Africa, November 11, 2022, sec. News, <https://allafrica.com/stories/202211110001.html>.

<sup>16</sup> Policy Forum, "Exploiting Critical Minerals for Clean Energy Transition in Tanzania | Policy Forum," April 2022, <https://www.policyforum-tz.org/news/2022-04-13/exploiting-critical-minerals-clean-energy-transition-tanzania>.

<sup>17</sup> Louis Kalumbia, "Why Critical Minerals Are Vital to Tanzania," The Citizen, April 3, 2022, <https://www.thecitizen.co.tz/tanzania/news/national/why-critical-minerals-are-vital-to-tanzania-3769790>.

<sup>18</sup> Fumbuka Ng'wanakilala, "New Discoveries Boost Tanzania's Gas Reserves," Reuters, September 23, 2011, sec. Investing News, [https://www.reuters.com/article/ozabs-tanzania-gas-20110923-idAFJ0E78M04S20110923.TanzaniaInvest, 'Gas Archives,' TanzaniaInvest \(blog\), 2023, https://www.tanzaniainvest.com/gas](https://www.reuters.com/article/ozabs-tanzania-gas-20110923-idAFJ0E78M04S20110923.TanzaniaInvest, 'Gas Archives,' TanzaniaInvest (blog), 2023, https://www.tanzaniainvest.com/gas).

<sup>19</sup> Niyoni, "RELATIONSHIP BETWEEN ENERGY CONSUMPTION AND ECONOMIC GROWTH IN TANZANIA."

<sup>20</sup> TanzaniaInvest, "Gas Archives."

<sup>21</sup> Aida Čučuk, "Shell and Equinor Complete LNG Project Negotiations with Tanzania," Offshore Energy (blog), March 7, 2023, <https://www.offshore-energy.biz/shell-and-equinor-complete-lng-project-negotiations-with-tanzania/>.

<sup>24</sup> United Republic of Tanzania URT, "NATIONALLY DETERMINED CONTRIBUTION," July 2021, [https://unfccc.int/sites/default/files/NDC/2022-06/TANZANIA\\_NDC\\_SUBMISSION\\_30%20JULY%202021.pdf](https://unfccc.int/sites/default/files/NDC/2022-06/TANZANIA_NDC_SUBMISSION_30%20JULY%202021.pdf).

Tanzania is also keen on using the critical minerals opportunity to attract international mining companies. In 2015, Tanzania developed a National Energy Policy that focuses on increasing access to modern energy services and promoting the use of renewable energy sources.<sup>25</sup> It is currently updating its national mineral strategy, with a dedicated section on critical minerals.<sup>26</sup>



However, several challenges remain. At present, the country is still over-relying on biomass and petroleum and suffers from poor access to electricity and green technology for a large portion of its population. Funds to accelerate the clean energy transition are limited<sup>27</sup> and the supply chain disruptions, rising energy demand and infrastructure prices following the COVID-19 and the start of the Russia-Ukraine war have only added challenges.<sup>28,29</sup> The two crises have increased the demand for energy sources, posing a challenge for Tanzania to stick to clean energy sources for instance the coal export increased by 780% by the end of year 2023. Furthermore, the crises also led to roll backs in the support for emerging countries, tightening of policies and increased costs among other barriers towards energy transition.<sup>30</sup>

To address the immense challenges and needs of the energy transition, Tanzania is exploring new climate funding opportunities designed to support climate change adaptation and mitigation measures. Access to these funds depends on the goodwill of Global North countries, who have so far not lived up to their promises.<sup>31</sup> However, such support will be essential to avoid that developing countries such as Tanzania stay locked into fossil-fuel production systems, and sustainable development goals for energy access remain unmet.<sup>32</sup> It is estimated that Africa alone requires between USD 1 and 2 trillion to meet the 2030 targets for the clean energy transition.<sup>33</sup>

Tanzania has set a target of achieving 50% renewable energy generation by 2030, and has developed policies and programs encouraging investment in the sector. For instance, the National Energy Policy and the National Renewable Energy Strategy set out an approach to increase the share of renewable energy in the electricity mix, identifying hydropower, solar and biomass as priority areas for development.<sup>34</sup> It is further investing in large-scale renewable energy projects, such as the 2,100 MW Stiegler's Gorge hydropower project,<sup>35</sup> which is expected to be one of the largest of its kind in Africa. It is simultaneously exploring the potential of geothermal energy, with the drilling of several exploratory wells in the Rift Valley region. Furthermore, to enhance a just energy transition, Tanzania is implementing a resettlement policy framework (RPF) for its Renewable Energy Carbon Development Mechanism (CDM)<sup>36</sup>. The CDM aims at increasing electricity generations by increasing the capacity of installed renewables such as hydro, solar, wind and/or biomass and also taking action to raise awareness on every-day clean energy solutions, such as policies to promote the use of improved cooking technologies. The RPF provides strategies by which people affected by energy investments can be humanly resettled or compensated. Where possible it stipulates how the investments can avoid or minimize negative impacts on people such as displacement or distraction of property.<sup>37</sup>

## News In Brief: More Energy Stories from Tanzania

- President Samia Suluhu Hassan reaffirms Tanzania's position on energy transition at the COP27 climate summit in Sharm el-Sheikh, Egypt where she pitched a USD 18 billion plan to build renewable power generation capacity in Southern Africa as part of the African leaders aim at increasing climate financing.<sup>38</sup> She hosted a meeting of world leaders and financial institutions in an effort to persuade developed nations to back up this effort to move away from fossil fuels.<sup>39</sup>
- The Tanzanian government seeks the support of Barrick Gold Corporation's, a major global mining company with long-standing experience in Tanzania, to conduct research on Tanzania's potential for extracting critical minerals.<sup>40</sup>

<sup>25</sup> Magreth S Bushesha, "Alignment to Climate Compatible Development: A Content Analysis of the Tanzania National Energy Policy," Energy Policy 26 (2019).  
<sup>26</sup> The Citizen, "Tanzania Opens Bids for Construction of Stiegler's Gorge Project," The Citizen, April 16, 2021, <https://www.thecitizen.co.tz/tanzania/news/national/tanzania-opens-bids-for-construction-of-stiegler-s-gorge-project-2602138>.

<sup>27</sup> World Bank Group, "Tanzania - Renewable Energy Carbon Development Mechanism (CDM) Program of Activities Project: Resettlement Plan (Vol. 5): Resettlement Policy Framework," Text/HTML, World Bank, 2007, <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/344689146831145514/Resettlement-policy-framework>.

<sup>28</sup> TEDAP, "RESETTLEMENT POLICY FRAMEWORK," 2007 <https://documents.worldbank.org/curator/en/344689146831145514/pdf/RP15610V5OP12758508x38213890PUBLI00.pdf>.

<sup>29</sup> David Malingha and Will Kennedy, "Tanzania's President Hassan Pitches \$18 Billion Plan for Energy Transition in Africa," BloombergCom, November 7, 2022, <https://www.bloomberg.com/news/articles/2022-11-07/tanzania-s-hassan-pitches-18-billion-plan-for-energy-transition-in-africa>.

<sup>30</sup> Calvin Matandiko, "Samia: Renewable Energy a Way Forward," The Citizen, November 9, 2022, <https://www.thecitizen.co.tz/tanzania/news/national/samia-renewable-energy-a-way-forward-4013652>.

<sup>31</sup> Louis Kalumbia, "Government Seeks Barrick Support in Energy Transition," The Citizen, January 27, 2023, <https://www.thecitizen.co.tz/tanzania/news/business/government-seeks-barrick-support-in-energy-transition-4100966>.

2023. This will include a strategic plan to enable a shift towards 80% of Tanzanians using clean energy for cooking by 2033.<sup>41</sup>

- USD 1.9 billion has been allocated by the government to strengthen and expand the national electricity grid. Currently, environmental impact assessment and valuation of assets of projected affected persons are being completed for the Tabora - Katavi, Tabora - Urambo, Tabora - Kigoma, Mabibo - Kinyerezi, Benako - Kyaka, Shinyanga - Simiyu and Ilala - Kurasini projects.<sup>42</sup>

- On 29th December 2022, President Samia Suluhu Hassan participated in the unveiling of the Julius Nyerere Hydropower Project (JNHPP) at Stiegler's Gorge hydropower project. This will deliver over 2,100 megawatts (MW) of electricity when completed in June 2024. This is seen as an historical step in Tanzania's journey in the energy transition.<sup>43</sup> JNHPP is the largest hydropower plant in East Africa and could potentially be the fourth biggest in Africa in terms of power production.<sup>44</sup> However, the location of the dam is subject to controversy as it is situated in the Selous game reserve, a UNESCO heritage site. Proponents of the project counter that it will contribute to reducing Tanzania's reliance on fossil fuels, lowering greenhouse gas emissions, and providing electricity to rural areas, which would contribute to economic development and poverty reduction.<sup>45 46</sup>

## COMMUNITY VOICES

### Investing in Critical Minerals for the Energy Transition: How are Project Affected Persons (PAPs) protected?

In January 2021, Tanzania entered into a framework agreement with Kabanga Nickel giving birth to the joint venture Tembo Mining Limited, in which the government owns 16% and Kabanga 84% of shares. Tembo was subsequently issued a Special Mining Licence, paving the way for mining operations in Ngara district in Kagera region (northern Tanzania). This area is believed to host the world's largest nickel deposits containing 1.52 million tonnes of this key ingredient for electric vehicles.<sup>47</sup> The company is currently in the process of valuation for land acquisition and in a bid to compensate affected community members.<sup>48</sup>

During its 2022 Jukwaa La Uziduaaji conference,<sup>49</sup> HakiRasilimali organised a panel session titled Community Story Telling and Networking: Do extractive Investments in Tanzania Leave Project Affected Persons (PAPs) in Grief?<sup>50</sup> During the session, a resident from Ngara narrated some of the challenges his community is facing in relation to the land and property valuation process by Tembo Mining Ltd. Many locals complain of the low values being suggested, which do not correspond to the productivity of their land, especially for avocado farming. The Ngara resident further narrated grievances about the proposed reallocation areas being much smaller than what they currently have, far away from their villages, and without any opportunities for economic activities. He pointed out that community members have stopped conducting economic activities on their land as they expect to either be reallocated or compensated in the near future.

In response, a representative from Tembo Mining Ltd. explained that compensation is a long process that, by law, includes many different preparatory steps. Furthermore, he stressed that even before any production will be started, community empowerment and Corporate Social Responsibility (CSR) projects are already being conducted by the company. This is the results of an agreement signed by Tembo signed with Ngara Municipal council amounting to two hundred and eight million (208,000,000) TZS for CSR provision. Community members were advised to participate in monthly meetings for the reallocation and validation process, which the Chairman of the Municipal Council leads.

### THE NEXT PUBLICATION.

The next quarter briefing publication will be published in July 2023, the publication will be on the Local content study in the extractive sector as conducted by HakiRasilimali in Tanzania.



<sup>49</sup> HakiRasilimali, "Jukwaa La Uziduaaji (Tanzania Extractive Industries Conference)," HakiRasilimali (blog), March 21, 2022, <https://www.hakirasilimali.or.tz/program/jukwaa-la-uziduaaji/>.

<sup>50</sup> "HakiRasilimali (@HakiRasilimali) / Твіттер," Twitter, April 24, 2023, <https://twitter.com/HakiRasilimali>.

“It is encouraging to see politicians committing to direct Tanzania towards an energy transition. However, the political stance needs to be supported by policy and strategic frameworks, which will outline strategies for Tanzania to transition to cleaner energy while addressing the need to increase energy reliability for its people, especially those living in rural areas who are in desperate need of affordable and reliable energy sources”.

Paul Mikongoti – HakiRasilimali

“It’s a very timely occasion at this COP to talk about infusing renewables” into the Southern African Power Pool, Makamba said. “You want us to transition? This is the opportunity.”

Tanzanian Energy Minister January Makamba (2022)

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