



Resource nationalism and energy transitions in lower-income countries: the case of Tanzania

Japhace Poncian ^a and Rasmus Hundsbaek Pedersen ^b

^aDepartment of History, Political Science and Development Studies, Mkwawa University College of Education, Iringa, Tanzania; ^bDanish Institute for Development Studies (DIIS), Copenhagen, Denmark.

ABSTRACT

As the world approaches the 2030 year marker for the implementation of 17 Sustainable Development Goals (SDGs) as defined by the United Nations, the global urgency for sustainable and energy sources grows. Lower-income countries, however, confront a choice between cleaner energy and ensuring cheap and reliable energy. This raises the question of how some countries can find a balance between meeting their global climate change commitments and meeting urgent energy generation needs. This article uses resource nationalism as a lens to examine Tanzania's energy transition dynamics. It seeks to understand why renewable sources such as wind and solar have been promoted in government policy but have not attracted much developmental support and investment. The authors argue that resource nationalism provides context within which to understand why the state has been quick to promote energy projects (notably geothermal, coal, natural gas and hydroelectric) where it has direct investment interests, as opposed to large wind and solar projects where private – often foreign – investors are dominant.

KEYWORDS

Resource nationalism;
energy transition; renewable
energy; energy security;
Tanzania

MOTS-CLÉS

Nationalisme des ressources ;
transition énergétique ;
énergie renouvelable ;
sécurité énergétique ;
Tanzanie

PALAVRAS-CHAVE

Nacionalismo de recursos;
transição energética;
energias renováveis;
segurança energética;
Tanzânia

Nationalisme des ressources et transitions énergétiques dans les pays à faible revenu : le cas de la Tanzanie

RÉSUMÉ

À l'approche de l'échéance de 2030 pour la mise en œuvre des 17 objectifs de développement durable (ODD) définis par les Nations unies, il devient de plus en plus urgent de trouver des sources d'énergie durables. Les pays à faible revenu sont toutefois confrontés à un choix entre une énergie plus propre et la garantie d'une énergie bon marché et fiable. Cela soulève la question de savoir comment certains pays oscillent entre leurs engagements mondiaux en matière de changement climatique et la satisfaction des besoins urgents en matière de production d'énergie. Cet article utilise le nationalisme des ressources comme grille d'analyse pour examiner la dynamique de la transition énergétique en Tanzanie. Elle cherche à comprendre pourquoi les sources renouvelables telles que l'énergie éolienne et solaire ont été promues dans la politique gouvernementale

mais n'ont pas attiré beaucoup d'investissements ou de soutien au développement. Nous soutenons que le nationalisme des ressources fournit un contexte permettant de comprendre pourquoi l'État s'est empressé de promouvoir des projets énergétiques (notamment la géothermie, le charbon, le gaz naturel et l'hydroélectricité) dans lesquels il a des intérêts d'investissement directs, par opposition aux grands projets éoliens et solaires dans lesquels les investisseurs privés - souvent étrangers - sont dominants.

Nacionalismo de recursos e transições energéticas em países de baixa renda: o caso da Tanzânia

RESUMO

À medida que o mundo se aproxima do marco de 2030 para a implementação dos 17 Objetivos de Desenvolvimento Sustentável (ODS), conforme definido pelas Nações Unidas, a urgência global por fontes sustentáveis e de energia cresce. No entanto, os países de rendimentos mais baixos confrontam-se com a escolha entre uma energia mais limpa e a garantia de energia barata e fiável. Isto levanta a questão de como alguns países se equilibram entre os compromissos globais em matéria de alterações climáticas e a satisfação das necessidades urgentes de produção de energia. Este artigo usa o nacionalismo de recursos como lente para analisar a dinâmica da transição energética da Tanzânia. Procura compreender por que razão as fontes renováveis, como a eólica e a solar, têm sido promovidas nas políticas governamentais, mas não têm atraído muito apoio e investimento para o desenvolvimento. Argumentamos que o nacionalismo de recursos fornece o contexto para entender por que o Estado tem sido rápido em promover projetos de energia (notadamente geotérmica, carvão, gás natural e hidrelétrica) onde tem interesses de investimento direto, em oposição a grandes projetos eólicos e solares onde os investidores privados - muitas vezes estrangeiros - são dominantes.

Introduction

Climate change is an existential crisis with severe ramifications for humanity and socio-economic development. More pressing is the fact that climate change disproportionately affects developing regions such as sub-Saharan Africa which are the least responsible for climate change (Markkanen and Anger-Kraavi 2019; Moellendorf 2022; Schilling et al. 2020; Sultan, Defrance, and Iizumi 2019; Kogo, Kumar, and Koech 2021). This has led some analysts and commentators to characterise climate change as an existential crisis facing the world, and in particular the global South, today (Chapman and Ahmed 2021; Huggel et al. 2022; Zhanda, Dzvimbo, and Chitongo 2021). This realisation has driven the world into a marathon of sustainability measures directed towards climate change adaptation and mitigation. At the global level, the 17 Sustainable Development Goals (SDGs) established in 2015 by the United Nations emphasise pursuit of sustainable solutions to global environmental challenges including SDG 13, which calls for urgent action to combat climate change and its impacts (Campbell et al. 2018). Of significance to this article is SDG 7, which focuses on ensuring global access to affordable, reliable,

sustainable and modern energy for all. Key to this goal is a global commitment to increase access to affordable and sustainable energy through, among others, harnessing renewable energy sources and increasing the share of renewables in the global energy mix, and expanding and upgrading energy infrastructure and technologies in developing countries (United Nations 2021). Striving to achieve this goal has spawned global campaigns by civil society, international institutions, organisations and bodies against fossil fuels and support for renewable and cleaner energy sources such as solar and wind. Given this global crisis, some international institutions and bilateral donors have pushed countries of the global South to transition from fossil fuels to use renewables and cleaner energy sources to mitigate climate change (Pedersen, Andersen, and Nøhr 2020). The World Bank, as the dominant donor in many countries, was rather late in emphasising non-hydroelectric renewable energy like solar and wind, but gradually shifted its policies towards the end of the 2000s, albeit towards doing so through market-friendly solutions (World Bank 2009, 2013). Other Western donors promoted green solutions through, for instance, bilateral assistance or support for the UN's Green Climate Fund (GCF) (Baker, Newell, and Phillips 2014; Newell and Bulkeley 2017).

In sub-Saharan Africa, a key area of contention has been over the potential conflict between transitioning to clean and renewable sources while rapidly increasing energy production and access. Evidence shows that access to electricity in sub-Saharan Africa was as low as 25% in the late 2000s (Brew-Hammond 2010). At present, 600 million people worldwide lack access to electricity; most of these are in sub-Saharan Africa (International Energy Agency 2022). Amid energy access challenges, it is also reported that sub-Saharan Africa derives much of its electricity from fossil fuels, which are a primary driver of environmental destruction and climate change (Gladkykh, Daviðsdóttir, and Diemer 2021). With the largest number of people worldwide living without electricity, the region faces a twin challenge: ensuring universal access in the context of limited power generation, and the challenges of climate change. This contradiction is of even greater concern given the evidence that with nearly one-fifth of the world's population, Africa accounts for less than 3% of the world's energy-related carbon dioxide (CO₂) emissions to date and has the lowest emissions per capita of any region (International Energy Agency 2022).

Yet while some donors seek private sector investment in large-scale renewable energy projects to drive forward Africa's sustainable transition, some African countries such as Tanzania, where the energy sector is more highly centralised under the purview of the state than in other nations, are challenged in transitioning to a market-driven, private energy sector. What we mean by a highly centralised energy sector is in reference to the structure of energy generation, transmission and distribution and to what role the private sector plays in that. Accordingly, the bulk of Tanzania's energy generation is dominated by TANESCO, the parastatal Tanzania Electric Supply Company, which generates 84% of electricity, with the remaining 16% generated by the private sector (Andreoni, Tasciotti, and Tayari 2022). Reportedly, Tanzania is said to lag behind its neighbouring countries when it comes to private sector engagement in the energy sector, despite having 'sound' frameworks for private investments in mini-grids and small power plants (Norwegian Embassy 2022; Dye 2021).¹ Tanzania is among the African countries with developed oil and gas resources, impacting the energy transition

dynamics and the tendency to embrace resource nationalist strategies. Exacerbating the perceived urgency to meet the needs of the large proportion of Tanzania's population without electricity, the legacy of corruption among private power producers, combined with the perceived unreliability of renewable sources, underscores the centrality of country context to the energy transition and climate change mitigation dynamics in Tanzania, and developing countries more broadly. As an interviewee put it, '[t]here is a British saying that "people don't care about where the power comes from as long as they can get a cold beer." This aptly covers the attitude here – they may care about the consequences of climate change but not about how power is produced' (interview with private energy consultant, Dar es Salaam, 3 March 2023).

This article sheds light on the contradictions posed by state involvement in the natural gas sector by undertaking a political economy analysis of the dynamics of energy transition in Tanzania, with a focus on the role and articulation of resource nationalism. It examines how Tanzania has resisted calls for sustainable energy development and why big wind and solar resources have not materialised, despite repeated government commitment. The article also shows that the dynamics of resource nationalism in Tanzania's continued promotion of climate-destructive sources such as hydro and natural gas, despite global backlash and the impetus from international bodies.

The article is based on a combination of a review of literature on energy sector development in Tanzania and interviews as part of the ongoing Danish International Development Agency (DANIDA)-funded research project *Energy Struggles: Renewable Energy in Africa*. Interviews from which this article draws were conducted with 50 current and former government officials working in the energy sector, private energy companies with interest in wind and solar energy in Tanzania, community members and donor representatives in April/May and October/November 2022 and March 2023.

We turn, first, to an analysis of resource nationalism in the context of broader energy politics and energy transition, followed by an analysis of climate change and the political economy of energy in Tanzania. Thereafter, the article examines how resource nationalism explains Tanzania's stalled transition to large-scale, renewable energy solar and wind projects. Finally, we provide concluding remarks on the implications of the Tanzanian case on climate change mitigation policy in Africa and beyond.

Resource nationalism and energy transition politics

Resource nationalism has been a dominant framework in understanding energy politics mostly in Latin America, where oil is a major economic and energy resource at the heart of the region's politics and international relations. In general usage, resource nationalism broadly refers to strategies and measures that resource-rich states adopt to exert control over resources and extract more economic benefits from resource extraction for their national socio-economic development (Wilson 2015). These measures can include local content requirements, state ownership, increased taxation in the event of a raise on global commodity prices, and outright resource nationalisation. In the context of energy and climate change research, however, resource nationalism has varied meanings and usages.

First, resource nationalism can refer to state ownership, typically with an emphasis on nationalisation and control of resources to justify fossil fuel extraction, and denial of

negative environmental and human consequences (Conversi 2020). This usage is the most common in discussions of resource nationalism in oil-rich Latin American countries, as well as in Saudi Arabia, Russia, Azerbaijan, Kazakhstan and Kuwait, all of which approach their oil and petroleum resources as ‘sacred’ resources to be fully developed irrespective of any commitment to reduce CO₂ emissions (Conversi 2020). In Ecuador, for example, the failure of its energy transition agenda has been blamed on oil nationalism in order to maximise government rents and to finance development (Fontaine, Luis, and Narváez 2019).

Second, resource nationalism in energy scholarship can be synonymous with energy nationalism. Energy nationalism, however, tends to have a strong interrelationship with energy security, that is, securing supplies through various means including the deployment of domestic energy resources. The concept and understandings of energy security were initially focused on securing access to oil and gas, but this has increasingly come to include electricity (Chester 2010). Where fossil fuels play a big role in national electricity generation, states may seek to roll back ‘environmental laws and rules considered obstacles to energy independence and economic development’ (Boylan, Mcbeath, and Wang 2021, 29; Collins and Erickson 2011). This dynamic gives a clear illustration of energy securitisation framework, of international energy politics as a contentious arena where states approach energy as an existential threat to their interests. This nationalist leaning underpins international conflicts over energy between major powers such as Russia, Australia, China and the United States and other nations (Boylan, Mcbeath, and Wang 2021; Wilson 2019).

Third, a strand of resource nationalism usage in energy scholarship is one that borders on national identity politics, especially where national governments fuse fossil fuels with identity and/or energy imaginaries (Berling, Surwillo, Sørensen 2022; Jasanoff and Kim 2013; Kuchler and Bridge 2018). Thus, resource nationalism may be deployed to promote fossil fuel extractivism as a public good and demonise critics as anti-national progress (see the case of Canadian petro-nationalism described in Gunster, Fleet, and Neubauer 2021). For developing countries struggling to meet increasing energy demand amid energy insecurity, resource nationalism provides an ideological and policy tool to defend harnessing conventional energy sources including fossil fuels, based on the premise that ‘this is their time now to invest in conventional energy to catch up the developed countries’ (Sokołowski and Heffron 2022, 4).

A fourth strand of how resource nationalism is framed in the literature is one that presents it as an anti-imperialist strategy in most resource-rich developing countries of Africa, Latin America and Asia. In this perspective, resource nationalism is presented as a strategy for resource-rich developing countries to muster courage to confront global imperialist exploitation of their energy resources (Biglari 2023; Riofrancos 2020). Not only is resource nationalism used as an anti-imperialist strategy by nation states, it is equally used by indigenous groups and organisations to defend their autonomy and resist foreign-led exploitation of natural resources (Pellegrini 2016). Tanzania’s enactment of ‘radical’ resource nationalist laws in 2017 to reassert its sovereign rights over resources and requiring mandatory state participation can partly be understood in this way (Poncian 2021).

It should be emphasised here that there are debates within the literature on resource nationalism and energy transition and often a mix of the above motives are at play, which

may affect the relationship between resource nationalism and the promotion of renewable energy in different ways. Wide differences exist between sub-Saharan African energy systems, and their energy mix and structure (Mulugetta et al. 2022). For example, between oil and gas producing and non-oil and gas producing states, the latter group has had a stronger inclination towards deploying non-hydro renewable energy to improve their energy security (Pedersen and Andersen 2023). Other states such as Tanzania have developed their gas resources and large-scale hydro projects, arguably to bolster sovereignty. Indeed, there is an observable phenomenon across Africa and beyond where resource nationalism has undercut the promotion of transition from fossil fuels to renewable energy sources. In contrast, a country like Kenya, which does not have viable oil and gas resources on a large scale, has pursued the development of non-hydro renewable energy like geothermal, wind and solar (*ibid.* 2023). Within the resource nationalism literature, there is a focus on understanding resource nationalism in its range of forms, for instance, ownership structures, which may affect the political economy of energy transitions, and also one that is historically contextual (Ostrowski 2023).

The development of energy systems in sub-Saharan African countries has been significantly undermined by the unreliability of international funding. This failure is accentuated for international climate change mitigation commitments, where disbursements have fallen short of commitments. For instance, the proportion of climate finance commitment disbursement has continued to lag behind official development assistance (ODA) each year since 2015: disbursement of climate mitigation funding declined from 81% to 75% in 2019 and 2020 respectively, while that of climate adaptation funding declined from a high of 73% in 2016 to 59% in 2020 (Cichocka and Mitchell 2022, 8). This uncertainty of funding leaves space for developing countries to leverage resource nationalism to promote fossil fuels as opposed to renewables (Poberezhskaya and Danilova 2022). As recently as the COP27 climate conference in 2022 in Egypt, the African Union chair, President of Senegal Macky Sall, stated that in light of the need for industrialisation and goals to achieve universal access to modern energy, Africa retained the right to ‘exploit its available resources’ (Sall and African Union 2022). These developmentalist aims may explain the reluctant and limited promotion of the transition from fossil fuels to renewables in many African countries. Likewise, this sentiment was expressed clearly in President Yoweri Museveni of Uganda’s call for Africa to continue exploiting its fossil fuels because Europe is doing the same, and advanced economies have failed to honour their funding commitment to enable developing countries’ transition (Bagala 2022). Museveni demanded that Africa not be prevented from exploiting its fossil fuels: ‘[i]t is morally bankrupt for Europeans to expect to take Africa’s fossil fuels for their own energy production but refuse to countenance African use of those same fuels for theirs’ (Bagala 2022). Further, stated Museveni, wind and solar are unreliable and, therefore, not appropriate for addressing current Africa’s urgent energy challenges:

We see hundreds of millions of our own citizens without access to electricity. We see climate-compulsive Western investment in African energy funnelled into wind and solar that creates intermittent electricity and not the consistent baseload generation required to power factories or produce employment. We see Europeans with jobs made possible by diverse means of electricity production, and Africans with neither, forcing

tens of thousands to make life-threatening crossings of the Mediterranean Sea to Europe. (Museveni 2022)

Museveni's perspective on global sustainability and climate change mitigation strategies reflects the position of several government officials we spoke with in Tanzania. Tanzania's Minister for Energy, January Makamba, summed up this sentiment in calling on wealthy nations to 'move away from hypocrisy' in their refusal to finance gas projects in developing countries when their economies still run on fossil fuels (Tan and Narayan 2023).

Climate change and energy transition in Tanzania's energy sector

The energy sector in Tanzania is dominated by the political and economic character of its highly centralised state ownership, especially with regards to grid power generation, distribution and supply (Le Picard 2022). The strong role played by the state-owned domestic natural gas industry, and the heavy investment in developing those resources, has affected the prospects of introducing more non-hydro renewable energy into the energy mix.

Resource nationalism and the energy mix

Since independence in 1961, the Tanzanian energy sector has been critical to its political economy and development. With the creation of TANESCO in 1964, rather than more liberal, hybrid or partially privatised forms of energy sector governance and ownership, energy has been key to the country's thinking on how to promote national economic and social development. Initially, much of Tanzania's power generation was hydroelectric, but increasingly domestic natural gas came to play a bigger role, so that hydroelectricity and natural gas, combined, make up over 94% of generated power (30.69% hydro and 64.04% natural gas) (Wizara ya Nishati 2023a), despite Tanzania's decades-long ambitions to diversify supplies in response to climate change.

Tanzania has experienced its fair share of the consequences of climate change and variability, especially on its energy sector. As a country historically reliant on hydro resources for electricity generation, it has suffered intermittent power cuts and rationing due to frequent climate-change-induced droughts. For instance, during the early 1990s Tanzania suffered a severe drought which put the country in darkness as hydropower generation ground to a near halt (Rwiza 1998). These conditions shed light on why improving energy security by reducing the reliance on hydropower and imported petroleum products has been a priority for decades. By 1992, a new energy policy committed the government to exploring and making use of indigenous energy sources, including non-hydro renewable energy, in order to increase energy production (Poncian and Pedersen 2023). In practice, it was Tanzania's domestic gas resources that were developed, beginning with a gas-to-power project in a complex partnership between private- and state-owned companies that began producing in 2004, using offshore gas from Songo Songo Island. Gas now comprises the largest source of energy for the central grid.

Nonetheless, the country developed a high profile with its international climate change declarations. The Tanzanian government made a commitment to explore non-hydro, renewable energy sources to address the impact of climate change on energy.

In its 2007 National Adaptation Programme of Action (NAPA), the government prioritised renewable energy projects, particularly exploring and investing in solar, wind and biodiesel (United Republic of Tanzania 2007). From 2007 to 2015, Tanzania played a leading role in Africa regarding global climate change commitments: it held the chair of both the Adaptation Fund Board (2008–09) and the UN Framework Convention on Climate Change's Subsidiary Body of Scientific and Technological Advice (2011–13). From 2013 to 2015, President Jakaya Kikwete served as the coordinator of the Committee of African Heads of State on Climate Change, and assumed the presidency of the African Ministerial Conference on the Environment (2012–15) (Jacob 2017).

Very little non-hydroelectric renewable energy on a larger scale has, however, been deployed. For instance, of the 11 power generation projects (both implemented and planned) mentioned in the 2023/24 Ministry of Energy budget speech, six projects with a total generation capacity of 3153.3 MW are hydroelectric, four (1085 MW) are natural gas and only one (150 MW) is solar (Wizara ya Nishati 2023a, 75–78). While noting ongoing talks with private investors for wind and solar – and also coal – projects to generate 950 MW of power in 2022/23 (Wizara ya Nishati 2022), it is obvious that Tanzania places more emphasis on hydroelectricity and natural gas than on non-hydroelectric renewables. This emphasis at a time when climate change has made hydroelectric power subject to frequent droughts and power generation unreliable exposes contradictions about intermittent Tanzania's power supply and its roots in climate-destroying fossil fuel sources.

Emphasis on these power sources is partly driven by perceptions about affordability, where enhancing domestic economic and social development through cheap energy plays an important role. An interview with a government official (Dodoma, 3 November 2022), revealed that 'there are problems with intermittent power from solar and wind, which is not so good.' There were also issues with pricing. Other interviews with several government officials revealed that non-hydro renewable energy projects are regarded as more expensive than hydro and fossil fuels. A former TANESCO official, for instance, stated in an interview (Dar es Salaam, 21 October 2022) that wind and solar projects have not been prioritised due to higher tariff rates: 13 US cents per kilowatt, compared to TANESCO's power selling price of 11 cents. This position is also held by the Africa Development Bank in justifying its funding of hydro and fossil fuels which are cheaper than renewables (Jacob 2017). At one point, the late President John Magufuli also hinted at the reliability and low-cost hydro power generation when inaugurating the Julius Nyerere Hydro Power Project (JHNPP): '[o]ur envisaged industrial economy needs adequate, cheap and reliable power supply through hydrogenation' (Tairo 2019). This implies that power generation from non-hydro renewables was perceived as costly. Speaking to parliament in 2019, Medard Kalemuni, then Minister for Energy, indicated that generating hydroelectric power was the cheapest because it cost 36 Tanzania shillings per unit of hydro power, in contrast to other sources such as nuclear energy (costing 65 shillings per unit), wind energy (103 shillings), solar energy (103.2 shillings), coal power (118 shillings), and natural gas (147 shillings) (Bunge la Tanzania 2019). In this sense, resource nationalism is used as a counter to the rhetoric of Western-supported sustainability initiatives that promote renewables and discourage the use of fossil fuels that Western economies were founded and continue to rely upon. Although one may argue that it is rather about looking for the best price, it remains true that resource

nationalism provides a fallback strategy to justify state's promotion of fossil fuels relative to Western-backed renewable energy (Dye 2021).

The importance of ownership and scale in Tanzania's energy sector

While there have been plans to unbundle and privatise TANESCO as well as to allow for more private participation in energy production since the early 1990s, implementation has been uneven and limited. Again, this has had consequences for non-hydro renewable energy, which has typically been promoted through private independent power producers (IPPs), who have a tainted reputation in Tanzania. Soon after the energy policy of 1992 that aimed at opening up the sector for private producers, a dubious agreement with an IPP, Independent Power Tanzania Ltd (IPTL) was signed, which, together with a later deal with Richmond – a briefcase company incapable of executing any energy project, let alone complying with the simplest specifications for the contract – tarnished the image of the energy sector with massive corruption scandals (Cooksey 2011, 2017; Gray 2015; Madaha 2012; Poncian and Pedersen 2023). Such scandals shook up not only the energy sector but the entire government, resulting in the resignation of the prime minister and sectoral ministers in 2007/08 (Madaha 2012). Apart from a few emergency power projects during times of drought, no new contracts – called power purchasing agreements – with private producers have been implemented on a larger scale since.

TANESCO thus remains the key player and actor in the energy sector with the responsibility of generating, transmitting and distributing power, and it has not until recently deployed non-hydro renewable energy. This emphasis remains, despite government commitment to explore and develop large-scale non-hydro renewable energy sources projects in various energy and national development plans. A large-scale wind project was announced in the 2009 Power System Master Plan (PSMP) as a 50 MW plant in Singida to be developed as an IPP project by Wind East Africa company (Bauner et al. 2012, 51). In subsequent PSMPs and Five Year Development Plans the government committed itself to commissioning various solar, wind and geothermal projects (United Republic of Tanzania 2012, 2016), but not a single large-scale project has been implemented. This happened again in 2020, with the government committing to generate at least 5% of energy from non-hydro renewables (United Republic of Tanzania 2020). The only progress in terms of implementation is the establishment in 2013/14 of a government-owned geothermal company, the Tanzania Geothermal Development Company (TGDC), which has carried out fairly limited activities with no commercial production, and a fairly recent solar project in Shinyanga that appears to be materialising under TANESCO.

Energy remains politically important and is a key government priority area, as Tanzania has increasingly striven for socio-economic transformation and industrialisation. In the Five Year Development Plan (2011/12–2015/16), for instance, the energy sector was identified as the key enabler of Tanzania's transformation, and plans were made to scale up investment in energy infrastructure in order to increase grid capacity and the proportion of households connected to grid electricity, at that time 12% and 2.5% in urban and rural areas, respectively (United Republic of Tanzania 2012).

Energy access had become increasingly prominent on the government agenda in the 2000s, when all PSMPs, broader national development plans and rural electrification projects emphasised energy generation projects, with the government committing to increasing access to electricity to 50% and 75% of the population by 2025 and 2033, respectively (United Republic of Tanzania 2014). Despite these commitments, access to electricity continues to be low. In 2019, only 40% of the population had access, with just 23% in rural areas and 71% in urban areas (Ferrall et al. 2021), despite 82% of all villages (10,127) in mainland Tanzania having been electrified under the rural electrification project (Wizara ya Nishati 2023b).

Tanzania's Rural Electrification Agency was established in 2005 as an independent body under the Ministry of Energy and Minerals, responsible for promoting, stimulating, supporting and enhancing access to modern energy for rural production use (Bishoge, Zhang, and Mushi 2018). Rural electrification has received significant support from a number of Western donors. At this scale, private small power producers (SPPs) have become key players in the energy sector, often using renewable energy technologies and operating with support from donors. These SPPs generate power and sell it to TANESCO under power purchase agreements. SPPs have increasingly become popular as the government seeks to electrify all villages and hamlets. An interview with a government official (Dodoma, 3 November 2022) reveals that government emphasis is more on SPPs than IPPs because these complement government electrification efforts in rural areas that are not serviced by the national grid and where SPPs can help replace TANESCO's reliance on diesel for power generation. Even with the engagement of the private sector in power generation, demand for power still surpasses the country's generation, transmission and distribution capacities (Wizara ya Nishati 2023a).

Domestically, renewable resources have continued to occupy some policy and strategic space in Tanzania's energy politics. Since 2008, there has been an increase in the number of private companies providing energy services in rural Tanzania through solar and hydroelectric mini-grids (Mottram 2022; Ngowi, Bångens, and Ahlgren 2019). On paper, mini-grids appear to have attracted more government support than large-scale, non-hydroelectric renewable energy projects such as solar and wind energy. The key issue of why planned projects do not get implemented will be examined in the next section.

Resource nationalism and Tanzania's stalled renewable energy generation

We now turn to a resource nationalism lens to explain why the Tanzania government makes policy commitments for large non-hydro renewable projects but does not implement them. Here we look at three cases of large-scale, non-hydro renewable projects: the Shinyanga solar project, the Singida wind project, and the wind and solar projects under the 2018/19 tender.

The rise and fall of private wind power projects in Tanzania

Towards the end of the 2000s several potential large-scale wind power projects emerged in Tanzania with the involvement of private developers (African Development Bank

2015). The private company Wind East Africa (Singida 50–100 MW) wind project made the most progress towards completion (World Bank 2011). Co-developed by the International Finance Corporation (IFC), UK-based Aldwych and Six Telecoms, a Tanzanian firm, the project was expected to start operating by 2017 (International Finance Corporation 2015). The following year, however, key personnel from Six Telecoms were jailed for money laundering (*The Guardian* 2017) and the government decided to halt negotiations, given the political concerns (interview with former government official, Dar es Salaam, 21 October 2022).

Another example of the broader pattern of wind projects emerging only to come to a standstill is the 2018 TANESCO call for tenders from private energy companies to build, own, operate and transfer ownership to TANESCO of solar and wind plants (African Energy Live Data 2018) in the Dodoma, Singida, Njombe, Shinyanga, Mwanza, Simiyu and Iringa regions, all by 2020 (African Energy Live Data 2018). This was an internationally open and competitive tendering process requiring even those potential developers who were already in the country doing some developments on solar and wind projects to also participate in the tendering (Bungane 2018). Yet after bids were submitted in 2020, the process soon came to a halt,² only being renewed in 2022 under a new Minister of Energy (interview with company representative, Dar es Salaam, 20 October 2022), stalling in the Ministry of Finance in an environment of limited interest in private power production (interview with company representative, Dar es Salaam 20 October 2022; interview with government representative, Dodoma, 4 November 2022). Negotiations resumed but came to a halt again due to disagreements over access to international arbitration, abolished under Magufuli, and over government payment guarantees demanded by private bidders that the government was unwilling to give (Howard 2023).

What is surprising is that these processes have been put in motion or facilitated by the government, but have not resulted in anything tangible: several large-scale wind and solar projects have been part of government renewable energy projects since as early as 2009 but none have materialised. The only exception is the Shinyanga solar project, which appears to be succeeding mainly because it is run by the state utility TANESCO, unlike other projects owned by private international companies. Based on our interviews with a range of participants, we argue that nationalist politics help explain this dynamic.

The state-led projects

In addition to solar and wind bids, in 2018 the government accepted a bid and began construction of a state-owned mega hydroelectric power project, the Julius Nyerere Hydropower project (JNHPP) (Dye 2019). The JNHPP, a historical project of great national interest, personally spearheaded by Magufuli (Movik and Allouche 2020), revitalised long-held developmentalist and resource nationalist aspirations of state-controlled industrialisation through a mega-energy project, preferring this to international public–private partnership projects (*The Citizen* 2018). Feared threats included having to purchase power from private producers at high costs, placing a burden on consumers. Responding to questions from members of parliament on why wind and solar projects had not materialised, the Minister for Energy, Kalemani, noted that private producers came with very high prices and that securing energy security late is preferable to

higher prices (Bunge la Tanzania 2019). Kalemami also noted that the government would welcome any interested private investor in wind, solar and coal power generation, provided that they accepted the obligation to sell power to TANESCO at reduced prices (Bunge la Tanzania 2019).

Another state-owned project that is materialising is the Shinyanga solar project, a maximum 150 MW solar project in the Kishapu district. Financed by a €130-million loan in 2021 through the French Development Agency (AFD), its main goal is to reduce the country's dependency on hydropower, especially during drought periods (Spaes 2021). It has two major components: power generation using solar photovoltaic technology, and upgrading TANESCO's transmission network to a 'smart grid' to increase power levels (AFD 2021). According to a Kishapu ward councillor, the project has been in preparation since 2016, when the land acquisition process began (Kiango 2022).

Unlike other solar and wind projects, the Shinyanga project has attracted government attention, as it is a project to be owned and run by the government, not the private sector. A government representative emphasised that the initiative came from the government and 'will also involve capacity building on how to do solar', and that 'there are no conditionalities from the French side regarding which companies should be involved in building the project' (interview with government representative, Dodoma, 4 November 2022).

Resource nationalism, especially with regard to energy project ownership, is a key driver of the adoption and implementation of renewable energy projects. Government ownership of the Shinyanga project differentiates it from the other solar and wind projects, which remain marginalised.

Announced at a time when the government had an increased interest in revamping the nationally significant JNHPP, the project hinders the development of non-hydro renewables because, as a foreign donor characterised, 'why adopt wind or solar when JNHPP is anticipated to produce substantial electricity?' (interview with donor representative, Dar es Salaam, 17 October 2022). Even with lower bids than TANESCO's prices, the government has been less interested in non-hydro renewable energy sources (interview with former government staff, Dar es Salaam, 21 October 2022).

Renewable energy projects and the land question

Undertaking large-scale, non-hydro renewable projects requires large land areas for investment, a requirement leading local politicians to discourage investment in solar and wind projects. In a parliamentary discussion, a senior member from the ruling Chama cha Mapinduzi (CCM) party stated,

you need many square kilometres of land to generate one megawatt of solar energy, so if we go that way, ... we have limited land ... for farming and livestock keeping, ... that is not the way to go. (Bunge la Tanzania 2019, 56)

In the case of a Dodoma wind project, the director of the Capital Development Authority claimed that 'some locals thought a wind farm would destroy the beauty of the capital [Dodoma]', even though communities had approved (interview with donor representative, Dar es Salaam, 17 October 2022). It should, however, be noted here that it is not only

non-hydro, renewable energy projects that require large tracts of land: large hydroelectric projects are also detrimental ecologically and in terms of community livelihoods (Bempah and Boama 2021; Tefera and Sterk 2008). Research has shown that large-scale renewable energy projects and climate change mitigation can drive catastrophic conflict, ecological degradation and community displacement (Ashukem 2020; Backhouse and Lehmann 2020; Dunlap 2020a, 2020b; Wario 2023). Our interviews with Dodoma community members revealed injustices associated with these large-scale renewable energy projects. One member whose land was taken for an anticipated solar farm through an acquisition process fraught with government-sanctioned threats, unfair compensation rates and delayed compensation, recalled a District Commissioner having said threateningly: *'ukigonganisha jiwe na nazi kipi kitaumia?'* (when you strike a coconut against a stone, which one will be hurt?: interview with community member, Michese, Dodoma, 15 March 2023). In other instances, the state has resorted to repressive techniques to secure land for large-scale wind and solar projects (Dunlap 2018; LaBrecque 2023). Where private investors have lacked government and TANESCO support, securing land has been difficult, despite their having memoranda of understanding with villagers (interview with former government official, Dar es Salaam, 21 October 2022; interview with company representative, Dar es Salaam, 24 October 2022).

Conclusion

This article has examined how resource nationalism helps to describe how developing countries commit to global sustainability initiatives to address climate change but shy away from implementing them. Drawing on Tanzania's political economy of energy transition, the article has shown that resource nationalism can explain why interest in non-hydro wind and solar energy resources has not resulted in investment in them. A combination of historic negative perceptions of private international corporations, the need to secure the energy sector against foreign manipulation, and fear of higher prices for renewable energy explain why Tanzania has not invested substantially in these renewable energy projects. The sole, fast-moving Shinyanga solar project is foreign funded, yet owned by the government through TANESCO, supporting our argument of resource-nationalist-driven energy security through state ownership.

Global sustainability initiatives are made more complex with other factors impacting fossil fuel use. With the outbreak of the Russia–Ukraine war and the disruption of international supply chains, many Western nations reverted to fossil fuels, undermining the push for greener transition. Here, developing countries may find solace in resource nationalism to justify their continued exploitation of fossil fuels and hydro sources for power generation. Based on our findings, we make a case that global sustainability and an energy transition agenda in developing countries must be suitable for the local political economy or run the risk of failure.

Finally, much of our analysis has focused on the period before the death of President Magufuli. It is still early to comment on whether his death signals a change in the political economic dynamics of energy in Tanzania, but anecdotal evidence suggests that not much has changed, despite stated commitments to renewables in the 2022/23 energy budget speech whose implementation does not feature in the more recent 2023/24

budget speech. Apart from geothermal projects, no government commitment has been made to non-hydro renewables, and the current administration has cancelled wind and solar projects. These developments, though not conclusive, indicate uncertainty still hovering over Tanzania's energy transition.

Notes

1. With capacity of up to 10 megawatts, mini-grids are sets of small-scale electricity generators interconnected to a distribution network that supplies electricity to a small, localised group of customers and that operates independently from the national transmission grid (Burrell 2021).
2. See Appeal Case No. 24 of 2019-20 between Emerging Markets Power (Tanzania) Limited and Tanzania Electric Supply Company Limited, available at <http://www.ppaa.go.tz/appealweb/Appeal.No.24.2019-2020.pdf>.

Acknowledgements

The authors would like to acknowledge the Ministry of Foreign Affairs of Denmark via the Energy Struggles: Renewable Energy in Africa research project (project no. DFC File No 20-09-DIIS), which is administered by the Danida Fellowship Centre, for generously funding the research upon which this article draws. The research results are independent, and the views and opinions expressed reflect the views of the authors alone.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Japhace Poncian is a senior lecturer and is Head of the Department of History, Political Science and Development Studies at Mkwawa University College of Education in Tanzania. He teaches and researches on development politics and the political economy of energy and extractive resources governance.

Rasmus Hundsbaek Pedersen is a senior researcher at the Danish Institute for International Studies (DIIS). He researches on energy and natural resource investments in sub-Saharan Africa, with a focus on politics and governance. He currently researches the political economy of energy transitions that involves work on renewable energy, as well as on the enduring role of oil and gas.

ORCID

Japhace Poncian  <http://orcid.org/0000-0003-1578-6766>

Rasmus Hundsbaek Pedersen  <http://orcid.org/0000-0003-3392-0201>

References

- AFD (Agence Française de Développement). 2021. "AFD to Finance the First Grid Connected Solar Photovoltaic Power Plant in Tanzania and the Modernisation of Electricity Network." Press release.

- African Development Bank. 2015. "Renewable Energy in Africa: Tanzania Country Profile." Abidjan: African Development Bank Group. https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Renewable_Energy_in_Africa_-_Tanzania.pdf.
- African Energy Live Data. 2018. "Tanzania: Prequalification for Wind, Solar, and Hydroelectric Projects." September 19. <https://www.africa-energy.com/live-data/article/tanzania-prequalification-wind-solar-and-hydroelectric-projects>.
- Andreoni, A., L. Tasciotti, and E. Tayari. 2022. "Feasible Pathways for Energy Transition in Tanzania: Shifting Unproductive Subsidies towards Targeted Green Rents." *ACE Working Paper 039*. London: SOAS University of London.
- Ashukem, J. C. N. 2020. "The SDGs and the Bio-economy: Fostering Land-grabbing in Africa." *Review of African Political Economy* 47 (164): 275–290. <https://doi.org/10.1080/03056244.2019.1687086>.
- Backhouse, M., and R. Lehmann. 2020. "New 'Renewable' Frontiers: Contested Palm Oil Plantations and Wind Energy Projects in Brazil and Mexico." *Journal of Land Use Science* 15 (2–3): 373–388. <https://doi.org/10.1080/1747423X.2019.1648577>.
- Bagala, A. 2022. "Museveni Wants Africa to Exploit Fossil Fuel Potential." *Monitor*, November 10. <https://www.monitor.co.ug/uganda/news/national/museveni-wants-africa-to-exploit-fossil-fuel-potential-4014844>.
- Baker, L., P. Newell, and J. Phillips. 2014. "The Political Economy of Energy Transitions: The Case of South Africa." *New Political Economy* 19 (4): 791–818.
- Bauner, D., M. Sundell, J. Senyagwa, and J. Doyle. 2012. "Sustainable Energy Markets in Tanzania - Report I: Background." https://www.renetech.net/wp-content/uploads/2013/03/Sustainable_Energy_Markets_in_Tanzania_I_final_.pdf.
- Bempah, G., and P. Boama. 2021. "Effects of Hydroelectric Dam Construction on Land Use Land Cover Changes in Bui National Park, Ghana." *Mercator - Revista de Geografia da UFC* 20 (2).
- Berling, T. V., I. Surwillo, and S. Sørensen. 2022. "Norwegian and Ukrainian Energy Futures: Exploring the Role of National Identity in Sociotechnical Imaginaries of Energy Security." *Journal of International Relations and Development* 25: 1–30.
- Biglari, M. 2023. "Resource Imperialism and Resistance: Labour, Security and Social Reproduction after Iranian Oil Nationalisation." *Journal of Energy History* 9: 1–21.
- Bishoge, O. K., L. Zhang, and W. G. Mushi. 2018. "The Potential Renewable Energy for Sustainable Development in Tanzania: A Review." *Clean Technologies* 1: 70–88. <https://doi.org/10.3390/cleantechnol1010006>.
- Boylan, B. M., J. Mcbeath, and B. Wang. 2021. "US–China Relations: Nationalism, the Trade War, and COVID-19." *Fudan Journal of the Humanities and Social Sciences* 14 (1): 23–40. <https://doi.org/10.1007/s40647-020-00302-6>.
- Brew-Hammond, A. 2010. "Energy Access in Africa: Challenges Ahead." *Energy Policy* 38 (5): 2291–2301. <https://doi.org/10.1016/j.enpol.2009.12.016>.
- Bungane, B. 2018. "TANESCO Invites Bidders for the Development of Wind Power Projects." *ESI-Africa*. ESI-Africa, October 3. <https://www.esi-africa.com/top-stories/tanESCO-invites-bidders-for-the-development-of-wind-power-projects/>.
- Bunge la Tanzania [Parliament of Tanzania]. 2019. "Majadiliano ya Bunge, Mkutano wa Kumi na Tano, Kikao cha Thelathini na Nane- Tarehe 29 Mei 2019 [Hansard for 29 May 2019]." Dodoma: Bunge la Tanzania. <http://parliament.go.tz/polis/uploads/documents/1566209464-29%20MEI,%202019.pdf>.
- Burrell, L. 2021. "What's So Important about Mini-grids?" <https://www.unido.org/stories/whats-so-important-about-mini-grids>.
- Campbell, B. M., J. Hansen, J. Rioux, C. M. Stirling, S. Twomlow, and E. L. Wollenberg. 2018. "Urgent Action to Combat Climate Change and its Impacts (SDG 13): Transforming Agriculture and Food Systems." *Current Opinion in Environmental Sustainability* 34: 13–20. <https://doi.org/10.1016/j.cosust.2018.06.005>.
- Chapman, A. R., and A. K. Ahmed. 2021. "Climate Justice, Human Rights, and the Case for Reparations." *Health and Human Rights* 23 (2): 81–94.

- Chester, L. 2010. "Conceptualising Energy Security and Making Explicit its Polysemic Nature." *Energy Policy* 38 (2): 887–895.
- Cichočka, B., and I. Mitchell. 2022. "Climate Finance Effectiveness: Six Challenging Trends." *CGD Policy Paper* 281. Washington, DC: Centre for Global Development.
- Collins, G., and A. S. Erickson. 2011. "Energy Nationalism Goes to Sea in Asia." *The National Bureau of Asian Research* 31: 15–28.
- Conversi, D. 2020. "The Ultimate Challenge: Nationalism and Climate Change." *Nationalities Papers* 48 (4): 625–636. <https://doi.org/10.1017/nps.2020.18>.
- Cooksey, B. 2011. "Public Goods, Rents and Business in Tanzania." *Africa Power and Politics Background Paper* 01. London: ODI. <https://doi.org/10.2307/1372636>.
- Cooksey, B. 2017. "IPTL, Richmond and 'Escrow': The Price of Private Power Procurement in Tanzania." *Briefing Note* 1702. London: Africa Research Institute.
- Dunlap, A. 2018. "Counterinsurgency for Wind Energy: The Bii Hioxo Wind Park in Juchitán, Mexico." *Journal of Peasant Studies* 45 (3): 630–652. <https://doi.org/10.1080/03066150.2016.1259221>.
- Dunlap, A. 2020a. "Bureaucratic Land Grabbing for Infrastructural Colonization: Renewable Energy, L'Amassada, and Resistance in Southern France." *Human Geography* 13 (2): 109–126. <https://doi.org/10.1177/1942778620918041>.
- Dunlap, A. 2020b. "Wind, Coal, and Copper: The Politics of Land Grabbing, Counterinsurgency, and the Social Engineering of Extraction." *Globalizations* 17 (4): 661–682. <https://doi.org/10.1080/14747731.2019.1682789>.
- Dye, B. 2019. "What Holds Back Dam Building? The Role of Brazil in the Stagnation of Dams in Tanzania." In *FutureDAMS Working Paper* 006. <https://doi.org/10.2139/ssrn.3538214>.
- Dye, B. 2021. "Unpacking Authoritarian Governance in Electricity Policy: Understanding Progress, Inconsistency and Stagnation in Tanzania." *Energy Research & Social Science* 80: article no. 102209.
- Ferrall, I., G. Heinemann, C. von Hirschhausen, and D. M. Kammen. 2021. "The Role of Political Economy in Energy Access: Public and Private Off-grid Electrification in Tanzania." *Energies* 14 (11): 1–23. <https://doi.org/10.3390/en14113173>.
- Fontaine, G., J. Luis, and I. Narváez. 2019. "Policy Mixes against Oil Dependence: Resource Nationalism, Layering and Contradictions in Ecuador's Energy Transition." *Energy Research & Social Science* 47: 56–68. <https://doi.org/10.1016/j.erss.2018.08.013>.
- Gladkykh, G., B. Davíðsdóttir, and A. Diemer. 2021. "When Justice Narratives Meet Energy System Models: Exploring Energy Sufficiency, Sustainability, and Universal Access in Sub-Saharan Africa." *Energy Research & Social Science* 79: article no. 102075.
- Gray, H. S. 2015. "The Political Economy of Grand Corruption in Tanzania." *African Affairs* 114 (456): 382–403. <https://doi.org/10.1093/afraf/adv017>.
- Gunster, S., D. Fleet, and R. Neubauer. 2021. "Challenging Petro-nationalism: Another Canada is Possible?" *Journal of Canadian Studies* 55 (1): 57–87.
- Howard, M. 2023. "Tanzania is Open for Business, But as Investors' Risk as Guarantees are Ruled Out." *African Energy*, February 17. https://www.africa-energy.com/news-centre/article/tanzania-open-business-investors-risk-guarantees-are-ruled-out?utm_source=African+Energy+general+marketing+list&utm_campaign=29d2c1368f-AE-non-subs-EMAIL_CAMPAIGN_21Feb23&utm_medium=email&utm_term=0_-29d2c.
- Huggel, C., L. M. Bouwer, S. Juhola, R. Mechler, V. Muccione, B. Orlove, and I. Wallimann-Helmer. 2022. "The Existential Risk Space of Climate Change." *Climatic Change* 174 (article no. 8): 1–20. <https://doi.org/10.1007/s10584-022-03430-y>.
- International Energy Agency. 2022. *Africa Energy Outlook 2022*. IEA. www.iea.org/t&c/.
- International Finance Corporation. 2015. "Tanzania Welcomes First Wind Farm." Formerly available at www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+events/news/tanzania-welcomes-first-wind-farm.
- Jacob, T. 2017. "Competing Energy Narratives in Tanzania: Towards the Political Economy of Coal." *African Affairs* 116 (463): 341–353. <https://doi.org/10.1093/afraf/adx002>.
- Jasanoff, S., and S.-H. Kim. 2013. "Sociotechnical Imaginaries and National Energy Policies." *Science as Culture* 22 (2): 189–196.

- Kiango, B. 2022. "Solar Energy Project to Change Kishapu Fortunes." *The Citizen*, July 21. <https://www.thecitizen.co.tz/tanzania/news/national/solar-energy-project-to-change-kishapu-fortunes-3887512>.
- Kogo, B. K., L. Kumar, and R. Koech. 2021. "Climate Change and Variability in Kenya: A Review of Impacts on Agriculture and Food Security." *Environment, Development and Sustainability* 23 (1): 23–43.
- Kuchler, M., and G. Bridge. 2018. "Down the Black Hole: Sustaining National Socio-technical Imaginaries of Coal in Poland." *Energy Research & Social Science* 41: 136–147.
- LaBrecque, S. 2023. "Why Solar and Wind Developers Ignore Indigenous Land Claims at Their Peril." Reuters, April 6. <https://www.reuters.com/default/why-solar-wind-developers-ignore-indigenous-land-claims-their-peril-2023-04-06/>.
- Le Picard, H. 2022. "New Paradigm for Electrification in Sub-Saharan Africa: How Are Decentralized Hybrid Systems Changing the Game?" *Notes de l'Ifri*. Paris: Ifri.
- Madaha, R. M. 2012. "The Corruption Noose: Will Tanzania Ever Develop?" *Africa Review* 4 (1): 48–64. <https://doi.org/10.1080/09744053.2013.764120>.
- Markkanen, S., and A. Anger-Kraavi. 2019. "Social Impacts of Climate Change Mitigation Policies and Their Implications for Inequality." *Climate Policy* 19 (7): 827–844. <https://doi.org/10.1080/14693062.2019.1596873>.
- Moellendorf, D. 2022. *Mobilising Hope: Climate Change and Poverty*. New York: Oxford University Press.
- Mottram, H. 2022. "Injustices in Rural Electrification: Exploring Equity Concerns in Privately Owned Minigrids in Tanzania." *Energy Research & Social Science* 93: article no. 102829. <https://doi.org/10.1016/j.erss.2022.102829>.
- Movik, S., and J. Allouche. 2020. "States of Power: Energy Imaginaries and Transnational Assemblages in Norway, Nepal and Tanzania." *Energy Research & Social Science* 67: article no. 101548.
- Mulugetta, Y., Y. Sokona, P. A. Trotter, S. Fankhauser, J. Omukuti, L. S. Croxatto, B. Steffen, M. Tesfamichael, E. Abraham, J.-P. Adam, L. Agbemabiese, C. Agutu, M. P. Aklilu, O. Alao, B. Batidzirai, G. Bekele, A. G. Dagnachew, O. Davidson, F. Denton, ... A. Yussuff. 2022. "Africa Needs Context-relevant Evidence to Shape its Clean Energy Future." *Nature Energy* 7: 1015–1022.
- Museveni, Y. 2022. "Europe's Failure to Meet Its Climate Goals Should Not Be Africa's Problem." Yoweri Museveni President blog. <https://www.yowerikmuseveni.com/blog/museveni/europes-failure-meet-its-climate-goals-should-not-be-africas-problem>.
- Newell, P., and H. Bulkeley. 2017. "Landscape for Change? International Climate Policy and Energy Transitions: Evidence from Sub-Saharan Africa." *Climate Policy* 17 (5): 650–663. <https://doi.org/10.1080/14693062.2016.1173003>.
- Ngowi, J. M., L. Bångens, and E. O. Ahlgren. 2019. "Benefits and Challenges to Productive Use of Off-grid Rural Electrification: The Case of Mini-hydropower in Bulongwa-Tanzania." *Energy for Sustainable Development* 53: 97–103. <https://doi.org/10.1016/j.esd.2019.10.001>.
- Norwegian Embassy. 2022. *Clean Energy Transition in Tanzania: Powering Sustainable Development*. Dar es Salaam: Norwegian Embassy.
- Ostrowski, W. 2023. "The Twilight of Resource Nationalism: From Cyclicity to Singularity?" *Resources Policy* 83: article no. 103599. <https://doi.org/10.1016/j.resourpol.2023.103599>.
- Pedersen, R. H., and O. W. Andersen. 2023. "A Contested Agenda: Energy Transitions in Lower-income African Countries." *Energy Policy* 175 (April): article no. 113496.
- Pedersen, R. H., O. W. Andersen, and H. Nøhr. 2020. "Trends in Development Assistance to New Renewable Energy in Sub-Saharan Africa." *DIIS Working Paper* 2020, no. 12. Copenhagen: Danish Institute for International Studies. https://pure.diis.dk/ws/files/3979713/Trends_development_renewable_energy_sub_saharan_africa_DIIS_WP_2020_12.pdf.
- Pellegrini, L. 2016. "Resource Nationalism in the Plurinational State of Bolivia." In *The Political Economy of Natural Resources and Development: From Neoliberalism to Resource Nationalism*, edited by P. A. Haslam and P. Heidrich, 191–203. Abingdon: Routledge.

- Poberezhskaya, M., and N. Danilova. 2022. "Reconciling Climate Change Leadership with Resource Nationalism and Regional Vulnerabilities: A Case-study of Kazakhstan." *Environmental Politics* 31 (3): 429–452. <https://doi.org/10.1080/09644016.2021.1920768>.
- Poncian, J. 2021. "Resource Nationalism and Community Engagement in Extractive Resource Governance: Insights from Tanzania." *Review of African Political Economy* 48 (170): 529–551.
- Poncian, J., and R. H. Pedersen. 2023. "The Political Economy of Energy Production in Post-independence Tanzania: A Review." *DIIS Working Paper* 2023, no. 1. Copenhagen: DIIS.
- Riofrancos, T. 2020. *Resource Radicals: From Petro-nationalism to Post-extractivism in Ecuador*. Durham, NI, and London: Duke University Press.
- Rwiza, K. M. 1998. "Energy for Sustainable Development in Tanzania." *Journal of Energy & Development* 24 (1): 39.
- Sall, M., and African Union. 2022. "77th Session of the United Nations General Assembly Address by H.E. Macky Sall, President of the Republic of Senegal, Current Chairman of the African Union." https://au.int/sites/default/files/pressreleases/42201-other-Discours_PR_77e_Session_AG_UNU_VF_en-GB_3.pdf.
- Schilling, J., E. Hertig, Y. Trambly, and J. Scheffran. 2020. "Climate Change Vulnerability, Water Resources and Social Implications in North Africa." *Regional Environmental Change* 20 (15): 1–12.
- Sokołowski, M. M., and R. J. Heffron. 2022. "Defining and Conceptualising Energy Policy Failure: The When, Where, Why, and How." *Energy Policy* 161: article no. 112745. <https://doi.org/10.1016/j.enpol.2021.112745>.
- Spaes, J. 2021. "French Government Finances 150 MW Solar Project in Tanzania with €130 m." *PV Magazine*, June 15. <https://www.pv-magazine.com/2021/06/15/french-government-finances-150-mw-solar-project-in-tanzania-with-e130m/#:~:text=From%20pv%20magazine%20France,solar%20power%20plant%20in%20Kishapu>.
- Sultan, B., D. Defrance, and T. Iizumi. 2019. "Evidence of Crop Production Losses in West Africa due to Historical Global Warming in Two Crop Models." *Scientific Reports*, 9 (12834), 1–15. <https://doi.org/10.1038/s41598-019-49167-0>.
- Tairo, A. 2019. "Tanzania Launches Rufiji Power Plant." *The East African*, July 26. <https://www.theeastafrican.co.ke/tea/business/tanzania-launches-rufiji-power-plant-1423592>.
- Tan, F., and M. Narayan. 2023. "'Move away from Hypocrisy': Global South Demands Energy Justice." *Reuters*, February 7. <https://www.reuters.com/business/energy/move-away-hypocrisy-global-south-demands-energy-justice-2023-02-07/>.
- Tefera, B. and G. Sterk. 2008. "Hydropower-induced Land Use Change in Fincha'a Watershed, Western Ethiopia: Analysis and Impacts." *Mountain Research and Development* 28 (1): 72–80.
- The Citizen*. 2018. "President Magufuli Reveals Struggle to Secure Stiegler's Project." *The Citizen*, December 13. <https://www.thecitizen.co.tz/News/President-Magufuli-reveals-struggle-to-secure-Stiegler-s/1840340-4893702-fieehz/index.html>.
- The Guardian*. 2017. "Four Charged with Economic Sabotage." *Dar es Salaam*, November 2021.
- United Nations. 2021. "Leveraging Energy Action for Advancing the Sustainable Development Goals." United Nations. https://sdgs.un.org/sites/default/files/2021-06/2021-POLICY%20BRIEFS_3.pdf.
- United Republic of Tanzania. 2007. "National Adaptation Programme of Action (NAPA)." Vice President's Office, Division of Environment. <https://doi.org/10.1007/BF02233368>.
- United Republic of Tanzania. 2012. "The Tanzania Five Year Development Plan 2011/2012-2015/16: Unleashing Tanzania's Latent Growth Potentials." Dar es Salaam: Planning Commission. https://planipolis.iiep.unesco.org/sites/default/files/ressources/tanzania_ur_fydp-2012-02-02.pdf.
- United Republic of Tanzania. 2014. "Electricity Supply Industry Reform Strategy and Roadmap, 2015–2025." Dar es Salaam: Ministry of Energy and Minerals.
- United Republic of Tanzania. 2016. "Power System Master Plan 2016 Update." Dar es Salaam: Ministry of Energy and Minerals. [https://rise.esmap.org/data/files/library/tanzania/Electricity%20Access/Tanzania_Power%20System%20Master%20Plan%20\(PSMP\)-Update_2016.pdf](https://rise.esmap.org/data/files/library/tanzania/Electricity%20Access/Tanzania_Power%20System%20Master%20Plan%20(PSMP)-Update_2016.pdf).
- United Republic of Tanzania. 2020. "Power System Master Plan 2020 Update." Ministry of Energy.

- Wario, H. T. 2023. "The Global Rush for Green Energy Shouldn't Undermine Rights of Pastoralist Communities." *Rural: The International Journal for Rural Development* 57 (1): 33–35.
- Wilson, J. D. 2015. "Understanding Resource Nationalism: Economic Dynamics and Political Institutions." *Contemporary Politics* 21 (4): 399–416. <https://doi.org/10.1080/13569775.2015.1013293>.
- Wilson, J. D. 2019. "A Securitisation Approach to International Energy Politics." *Energy Research & Social Science* 49: 114–125.
- Wizara ya Nishati [Ministry of Energy]. 2022. "Hotuba ya waziri wa nishati Mheshimiwa January Yusuf Makamba (Mb.) akiwasilisha bungeni makadirio ya mapato na matumizi ya Wizara ya Nishati kwa mwaka 2022/2023 [Ministry of Energy budget speech by Hon. Minister January Yusuf Makamba for financial year 2022/23]." Dodoma: Wizara ya Nishati. <https://www.nishati.go.tz/uploads/documents/en-1654156088-FINAL%20HOTUBA.016221530docx.pdf>.
- Wizara ya Nishati. 2023a. "Hotuba ya waziri wa nishati Mheshimiwa January Yusuf Makamba (Mb.) akiwasilisha bungeni makadirio ya mapato na matumizi ya Wizara ya Nishati kwa mwaka 2023/2024 [Ministry of Energy budget speech by Hon. Minister January Yusuf Makamba (MP) for financial year 2023/24]." Dodoma: Wizara ya Nishati. <https://www.nishati.go.tz/uploads/documents/en-1685520962-HOTUBA%20YA%20BAJETI%20YA%20NISHATI%202023-2024.pdf>.
- Wizara ya Nishati. 2023b. "Utekelezaji wa vipaumbele vya bajeti vya mwaka 2022/23 na vipaumbele vya mwaka 2023/24 [Implementation status of 2022/23 budget and priorities for 2023/24]." Dodoma: Wizara ya Nishati. <https://www.nishati.go.tz/uploads/documents/en-1685521238-KIPEPERUSHI%20CHA%20BAJETI%20YA%20NISHATI%202023-2024.pdf>.
- World Bank. 2009. "Energy Strategy Approach Paper." The World Bank Group. <http://documents.worldbank.org/curated/en/2009/10/17456991/energy-strategy-approach-paper>.
- World Bank. 2011. "Tanzania - Singida Wind Power Project." The World Bank Group. <http://documents.worldbank.org/curated/en/987081468311403174/Tanzania-Singida-Wind-Power-Project>.
- World Bank. 2013. "Toward a Sustainable Energy for All: Directions for the World Bank Group's Energy Sector." The World Bank. <https://www.worldbank.org/content/dam/Worldbank/document/SDN/energy-2013-0281-2.pdf>.
- Zhanda, K., M. A. Dzvimbo, and L. Chitongo. 2021. "Children Climate Change Activism and Protests in Africa: Reflections and Lessons From Greta Thunberg." *Bulletin of Science, Technology & Society* 41 (4): 87–98. <https://doi.org/10.1177/02704676211049690>.