**The political economy of electricity access in Mozambique: supporting sustainable and inclusive investment**

The Indian Ocean nation of Mozambique has a wealth of energy resources through a combination of hydropower (20GW), solar (23TW) and wind (1.1 GW) capacity at coastal locations, as well as considerable fossil fuel reserves, [including natural gas](https://www.edm.co.mz/en/document/reports/edm-strategy-2018-2028) in the provinces of Inhambane (estimated 3.5 trillion cubic feet) and Cabo Delgado (128 trillion cubic feet). Mozambique is [currently developing](https://www.sciencedirect.com/science/article/pii/S2214790X20301593) one of the largest gas fields in Africa, situated off the coast of the northernmost province of Cabo Delgado. The total project cost is estimated between US$50-$100 billion over a decade, making it one of the largest investment projects in Africa. The U.S. oil company Exxon Mobil heads the consortium developing the gas resources in areas operated by France's Total and Italy's ENI, [with stakes held by Indian and Chinese oil and gas firms](https://www.sciencedirect.com/science/article/pii/S2214629616300354).

Despite the abundance of resources, however, Mozambique continues to face entrenched energy poverty, and electricity access is one the primary policy concerns. Currently, [only 32% of Mozambique](https://macauhub.com.mo/2019/08/16/pt-260-mil-familias-de-mocambique-vao-ter-acesso-a-energia-electrica/)’s 30 million inhabitants have access to electricity – one of the lowest rates in the world. [This falls to 6% in rural areas](https://www.edm.co.mz/en/document/reports/edm-strategy-2018-2028). Major cities, such as the capital Maputo, have, at least on paper, reached almost 100% electrification, with Matola (which recently became the largest city by population, and is a growing satellite of Maputo province), Nampula (the third largest city) and Beira (the fourth largest city) [achieving 80%, 89%, 88% electrification capacity](https://www.sciencedirect.com/science/article/pii/S0301421510005847), respectively.  Yet, inequalities in electricity access are also noticeable in urban areas where population growth has outstripped the pace of domestic grid connections, or where supply problems and [lack of maintenance lead to](https://www.sciencedirect.com/science/article/pii/S0301421509009707) [poor connection reliability](https://www.powerutilityleadership.com/wp-content/uploads/2018/02/Mozambique_Power_Crisis.pdf).

Although the headline figures suggest progress towards meeting the Sustainable Development Goal [SDG7](https://sdgs.un.org/goals/goal7) to ensure access to affordable, reliable, sustainable and modern energy; [the grid network itself is unevenly distributed](https://www.edm.co.mz/pt/document/reports/integrated-master-plan-2018-2043), with the antecedents of unequal access formed in the colonial era. Electricity systems have developed into three distinct path-dependent systems: the first in the south (around Maputo); the second in the centre, associated with the city of Beira; and the third consisting of dispersed urban centres. These systems remain largely [disconnected from one another](https://onlinelibrary.wiley.com/doi/full/10.1111/1468-2427.12314?casa_token=f5YbiPkZDBkAAAAA%3A1attK4FPR6s915IvTofftXHLqm4wpKVX12K1sUt5oFJ3vXPD9jlsmYT9k0gKUBxYZHdjv27pqWQRAQUr), with significant impacts to business and community development [as a result](https://www.powerutilityleadership.com/wp-content/uploads/2018/02/Mozambique_Power_Crisis.pdf). The grid network still bypasses extensive rural areas, where a combination of low population density and low-income communities makes it both technically and logistically challenging and costly to build ‘last mile’ access from centralised grid systems to [dispersed rural communities](https://www.sciencedirect.com/science/article/pii/S0301421510005847). This creates [structural energy injustice](https://www.sciencedirect.com/science/article/abs/pii/S2214629620302875). The central and northern provinces depend largely on a single, ageing transmission line each, such that a single line failure [is enough to cut electricity to a vast area](https://portal.edm.co.mz/en/document/reports-reports-and-accounts/annual-statistical-report-2015). Yet historically, the [private sector was excluded](https://www.edm.co.mz/en/document/reports/edm-strategy-2018-2028) from investing in electricity projects. User tariffs have therefore remained non-cost-reflective – income generation is insufficient to sustain operations and fund rural grid expansion, as well as maintenance and repair without Government subsidy, and so construction of badly-needed transmission and distribution infrastructure, and its repair, is [stymied by under-investment](https://www.sciencedirect.com/science/article/pii/S0301421518306803).

Poor private investment and government subsidy not only contribute to low electricity access rates and negative social development and wellbeing impacts on the rural poor, but it also [politicises electricity access](https://journals.sagepub.com/doi/abs/10.1177/2399654418784598?casa_token=jpm-H1iaeC0AAAAA:YGw2aTBJSaxLEy2x1_0qqFie_sWofY-3NNe1FH2bc9o3VyUvKRMNLXLiiXdbmubatq-w9oonjpbMuA). Though grid extension to rural regions is ostensibly motivated by social development concerns, promising access through grid extension is a key election campaigning tool used to [maintain ruling party dominance](https://cipmoz.org/wp-content/uploads/2019/02/CORRUPC%CC%A7A%CC%83O-E-MA%CC%81S-PRA%CC%81TICAS-1.pdf). This *political* *economy* of electricity explains why tariffs are still not cost-reflective, and why [EDM faces ongoing financial challenges](http://documents.worldbank.org/curated/en/135711468180536987/ACS17091-REVISED-PUBLIC-Mozambique-Energy-Sector-Policy-Note.pdf) since the government stopped subsidizing tariffs a decade ago. However, tariffs registered since 2015 have increased rapidly [to reflect increased operational costs](https://www.edm.co.mz/en/document/reports/edm-strategy-2018-2028), but that, in turn, leads to growing energy poverty. At the national-level, the Government of Mozambique (GoM) has set a policy framework to reach 50% access in 2013, and [eventual universal access by 2030](https://www.edm.co.mz/en/document/reports/edm-strategy-2018-2028). In 2018, the government approved the national electrification strategy, which encloses the Energy for All Program (PROENERGIA), with funding from World Bank Group. The program aspires to cover 80% of the population through on-grid connections and [20% through off-grid connections](https://www.edm.co.mz/pt/website-mobile/article/not%C3%ADcia/projecto-energia-para-todos-proenergia), though public and private revenue-raising for this level of infrastructure investment remains a steep challenge. The decision to focus on grid expansion prioritises centralised renewable and non-renewable energy generation ‘mega-projects’ such as hydro-dams and gas-fired power plants, which have stimulated rapid GDP growth, but [created few jobs and few local linkages](http://oro.open.ac.uk/23270/). Moreover, domestic energy projects and resources remain export-focused, either for electricity (e.g. export to South Africa) or gas (to global commodities markets) with little concern for [rural energy-poor communities](https://infohub.practicalaction.org/bitstream/handle/11283/621079/PPEO_Web_lowres.pdf?sequence=1;).

Off-grid energy for rural communities remains a ‘niche’ element of Mozambique’s energy system, with an estimated less than [1% of population](http://search.proquest.com/openview/3256f2971454ab0dffde67be5ce7bbfc/1?pq-origsite=gscholar&cbl=2069346) having access to micro-renewable systems (e.g. domestic solar photovoltaics). Off-grid solar, in particular, is promoted in rural areas by both public and private institutions. Private sector involvement in off-grid renewable transitions, however, is still limited, and [they are currently serving around 15,500 users of stand-alone photovoltaic systems](https://www.worldbank.org/en/news/press-release/2019/04/02/mozambique-gets-148-million-to-increase-access-to-electricity-in-five-poorest-provinces). The high costs and lack of incentives (e.g., exemption on import taxes) to implement off-grid projects contribute to the low coverage and high prices (Interview, EDM Maputo, 2019). Thus, the market has been dominated by low-quality products imported from South Africa and China [traded mostly within informal (i.e. untaxed and unregistered) markets](https://www.worldbank.org/en/news/press-release/2019/04/02/mozambique-gets-148-million-to-increase-access-to-electricity-in-five-poorest-provinces). Household connections commonly fail due to operational failures, and [this negatively affects the consumer confidence in solar equipment and systems](https://www.worldbank.org/en/news/press-release/2019/04/02/mozambique-gets-148-million-to-increase-access-to-electricity-in-five-poorest-provinces).

The Government of Mozambique (GoM) plans to incentivise and increase private sector participation in off-grid sector to support the country’s Energy for All program whilst simultaneously [reducing the burden of infrastructure provision on public finances](https://www.edm.co.mz/pt/website-mobile/article/not%C3%ADcia/projecto-energia-para-todos-proenergia). It is clear, however, that the public institution, FUNAE (Energy Fund) will continue as the principal promoter of solar PV standalone systems and mini-grids, mini-hydropower and biomass. Although FUNAE’s focus has mostly been on electrifying schools, hospitals, administrative offices and pumping stations with solar panels, [they are now expanding their scope](https://www.edm.co.mz/pt/website-mobile/article/not%C3%ADcia/projecto-energia-para-todos-proenergia) to cover more households in order to fulfil the government plans of energy for all by 2030.

**Conclusion**

Mozambique, like many least developed countries and economies in transition, struggles to capitalise upon domestic resource availability to meet socio-economic development and wellbeing needs of its citizens. Energy policy is both diverse and contradictory. The prioritisation of export markets for energy resources exacerbates rural community energy injustice, and the emphasis on centralised grid connections to urban centres politicises electricity access with attention paid to large urban voter blocs. The lack of public investment, and rapid rises in tariffs to meet growing operational costs further divide the country in terms of access and electricity availability. In meeting the Government of Mozambique’s own universal electricity access policy strategy, greater domestic revenue-raising from resources such as wind, gas, solar and hydropower needs to be redirected to social benefit programmes, creating last-mile grid access and long-term investment in centralised infrastructure, combined with islanded micro-grids where electricity access to centralised systems is impractical. Tariff subsidy to support EDM investment across rural, peri-urban and urban networks is necessary, and so creating strong domestic political economic structures for effective utilisation of available renewable and non-renewable energy resources is a vital priority for state-supported and inclusive socio-economic development with strong civic buy-in.