



# **A Statement and Position Paper by the Renewable Energy Association of Mozambique (AMER) for COP 26**





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## Mozambique in the Face of Climate Change

Mozambique is already suffering from the destructive onset of human-induced climate change. In March and April 2019, two of the top five worst cyclones ever to hit Mozambique, Idai and Kenneth, struck the cities of Beira (central Mozambique) and Pemba (northern Mozambique) within a month of each other. With a coastline of over 2800km along the Indian Ocean, Mozambique is an inescapable target for the types of climatic effects that human-induced climate change has been predicted to throw at humanity. According to climate scientists and the IPCC report these climatic effects include increased precipitation and violence of storms, agricultural and ecological droughts and marine heatwaves. Hurricane Idai alone caused over 600 deaths directly, with over 1600 injured and catastrophic flooding causing mass displacement and upending the lives of over 2.2m people in Mozambique, Malawi and Zimbabwe. The city of Beira was severely affected and neighbouring city of Dondo was vastly destroyed, and the flooding was so severe it was described as having created a new “inland ocean”.



*Beira covered by flood waters*



*Floodwaters far outside Beira*



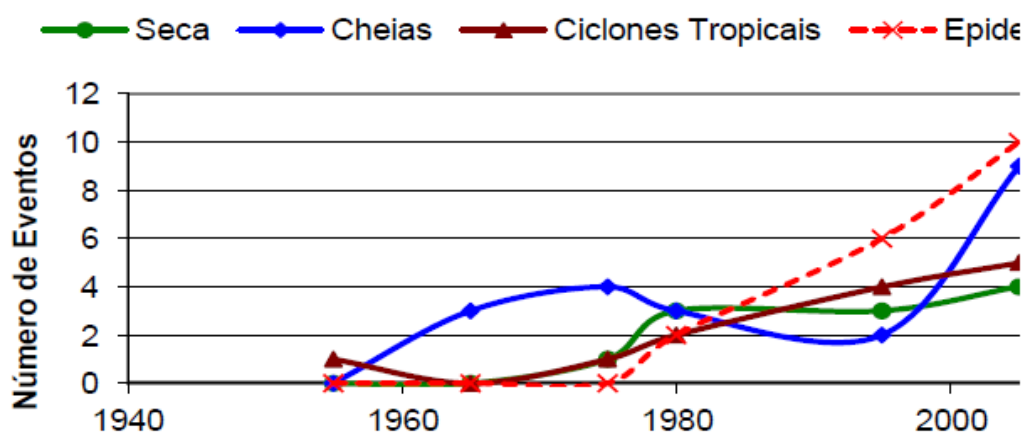
Woman rescuing personal items after flood



Displaced Mozambican families seeking shelter

*Pictures courtesy of NY Times/Agence France-Presse*

Hurricanes Idai and Kenneth are not outliers if one looks at the trend that has already been developing over the past three or four decades. They represent merely the latest expression of a climate in which extreme events have been battering the country in increasing numbers and frequency since the 80's and 90's (see Fig 1).



**Fig 1: Number of climactic events 1950 – 2010 (Source INGC 2015)**

\*Seca = Drought; Cheia = Flood; Ciclones Tropicais = Tropical Cyclones; Epide = Epidemics

Furthermore, as Mozambique is a country heavily dependent on subsistence agriculture, the fertility and productivity of land close to rivers is key to most of the population's survival. These crop-growing areas have also been increasingly affected more regularly to the point where

agricultural disruption of one kind or another is an almost annual phenomenon. Fig 2 demonstrates the increasing size of areas affected by either floods, drought or storms.

Year	Event	Affected region	Loss of area
2005	Severe drought	South and Centre	369 ha
2005	Cyclone Fávio	Provinces of Inhambane, Sofala and Manica	75 000 ha
2007	Moderate drought	South and Centre	102 000 ha
2009	Drought and floods	South and Centre	715 696 ha
2010/11	Flood	South and Centre	21 889 ha
2011/12	Storms Dando and Funso	Entire country	41 979 ha
2012/13	Drought and floods	Entire country	216 745 ha
2013/14	Floods	South and Centre and Province of Cabo Delgado	26 085 ha

**Table 1: Impact of climate change on yields (Source INGC)**

It is virtually certain that the climate is shifting and changing in ways that will almost be entirely negative for Mozambique. This trend can and must be stopped for future generations and there are clear ways for this to be done. Mozambique's companies and civil society must take the agency for such change within their own hands and it is in line with such agency that AMER respectfully makes its vision and position clear.

## Position Statement of AMER

It is the position of the Associação Moçambicana das Energias Renováveis / Renewable Energy Association of Mozambique (AMER) that although historically a minuscule contributor to global greenhouse gas emissions, Mozambique in its current and future plans must play its part in minimizing further climate degradation. It must do this while at the same time bringing energy access to more of its citizens by investing heavily in renewable energy generation over the next 10 – 15 years at the expense of other more polluting sources such as coal and heavy fossil fuels.

***It is AMER's vision that by 2030, energy from renewable resources such as solar, wind and small-to-medium hydro power should represent at least 30% of Mozambique's total installed and operating generating capacity. With the estimated maximum demand by 2030 being given by the 2018 Mozambique Power System Master Plan as 3,500 MW this represents about 1200 MW of total renewable energy that needs to be brought online.<sup>1</sup>***

The 2018 Mozambique Master Plan for Power Development currently proposes keeping the proportion of solar and wind power to just about 10% of maximum demand. AMER believes that this penetration can be increased from such a low threshold and the primary technical concerns about grid stabilization can be accomplished while raising the bar to at least 30% of peak demand.

By coupling different types of renewable energy sources - solar, small-to-medium scale hydro, and wind power resources – synced up with the intelligent placement of large-scale battery storage solutions we believe a stable, flexible base-load profile supply within a resilient grid can bring electric power to millions more homes and businesses in a growing Mozambican economy.

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<sup>1</sup> This capacity being additional to the 300 – 500MW being provided by the existing, legacy large-scale Cahora Bassa Dam.

## This vision by AMER can be summed up as “30 by 2030”.

In order to achieve this, AMER is seeking international support for three levers that we believe will allow us to achieve this goal and do our part in fighting climate change.

1. **Halt all unabated coal-power development in country:** AMER seeks to obtain international support that will work with the Mozambican Government to put a halt on any existing plans to develop, construct or operate any unabated coal-power projects in the country.
2. **Urgent and intensive professional upskilling of key public sector functionaries evaluating renewable projects to reduce the gestation time required to bring projects to financial close:** Talented and promising managers at institutions such as Ministry of Energy, Ministry of Finance, ARENE, EDM and FUNAE need to be quickly upskilled on the technical, commercial and E&S aspects involved in evaluating and advancing the deployment of green power projects within the framework of project development.
  - a. Training program, with certification, for the upskilling of 20 – 40 key functionaries at the relevant public-sector institutions over the course of an intensive 18 - 24 month period
3. **Concessional financing into battery storage solutions, primary generation equipment and transmission networks.**
  - a. Direct investments (grants) by DFI's and/or a Climate Bank for the purchase of grid-scale storage solutions directly (either lithium-ion or vanadium flow batteries which can be quickly deployed) whenever a renewable energy project is being developed
  - b. Direct concessional financing (grants) by DFIs and/or a Climate Bank paid to OEMs allowing for a 15 – 20% reduction in the cost of key generation equipment in all three sectors (solar modules, wind turbines, hydro-electric turbines), to allow Developers to keep tariffs low for Utilities and expand adoption.
  - c. An increase in direct concessional financing (grants) by DFI's and/or a Climate Bank for Transmission projects which promote the inclusion/incorporation of renewable generation projects.

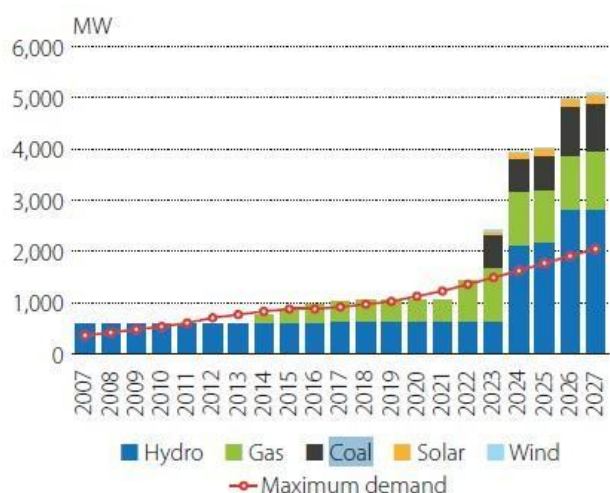
## 1. Halt on Unabated Coal-Power Development in Mozambique

Mozambique is heavily endowed with coal reserves, approximately 23 – 25 billion tonnes being the closest estimate. The largest coal mining companies in the world have been active in the country for over a decade and built significant infrastructure to support



Photograph: ANP

what it once believed was going to be a booming long-term market. The majority of the coal being mined is coking coal that has been exported (primarily to India but also South America and China), but there is also a significant amount of thermal coal, with EDM estimating the potential to feed power plants of up to 2,000 MW.



Source: EDM Annual Statistical Reports vs Master Plan

**Fig 2: EDM Projected Annual Energy Mix**

The incorporation of coal projects into the Mozambican energetic generation mix is part of the utility's strategic document which points to approximately 1100 MW of coal to be deployed - **Nacala** (200 MW), **Cuamba** (300 MW) and **Tete** (600 MW) - over the next 8 years.

*It is AMER's position that the Government of Mozambique via the Ministry of Energy and EDM, must halt any further development of all existing and future unabated coal projects and sign up to the No New Coal Power Compact.*

As evidence grows of the climate impact of coal energy projects, Mozambique should avoid it as means to produce energy and continue to capitalize on its natural resources (the largest resources of hydro-electric power, solar and wind assets of any country in southern Africa) to produce renewable energy.

As the costs for these technologies decrease significantly the argument is no longer about cost parity (renewable vs coal) but indeed about the external costs associated with coal – public health of local communities close to coal plants. There is an argument to be made for the importance of “firm”, or predictable baseload power, but this can be solved-for by coupling a variety of renewable resources that complement each other (e.g Wind+Solar) or (Hydro+Solar) and which in combination with strategically-placed and large-scale storage solutions, can produce the functional equivalent of a baseload scenario. Furthermore, Mozambique does have the benefit of a much less carbon-intensive fossil fuel, namely natural gas, which could act as an acceptable transition fuel to a more comprehensive renewables-powered economy.

*We as AMER respectfully ask the international community to support our statement to the Government of Mozambique to put an immediate halt on the development of any unabated coal projects on Mozambican soil and ensure those affected (especially communities) are included in energy transition process by endorsing the COP26 Just Transition Declaration.*

## 2. Upskilling/Capacity-Building/Professional Development of public sector functionaries

Private sector developers who can drive an aggressive investment into the renewable generation and transmission sector will need strong counter-parties on the public sector side who will best guide the projects to align with national standards and create a cycle of quick feedback to bring projects to close more rapidly.



*Photographs: Unsplash*

Public sector institutions in most of sub-saharan Africa, including those in Mozambique, usually only have a small number of senior managers who have the exposure and training to competently assess new projects and move them forward. This creates undue pressure on these few individuals and also means the bandwidth for the evaluation and progress of even highly viable projects is quite slow.

The current shortage of experienced and savvy executives on the public sector side means that there is usually a long development cycle, ie bringing projects from pre-feasibility all the way to financial close, averaging approximately 4 – 6 years currently. If we are able to shorten this time by 50% - so that a project takes only 2 – 3 years this would certainly raise investor confidence and accelerate how quickly Mozambique meets its goals. One of the best ways to assure this, and to assure a mature development of the internal capacity of human resources at public institutions is to focus on an intensive capacity-building program that gives public executives the confidence and full spectrum of tools that will help them quickly advance both technical and commercial dialogues with private sector developers who are promoting a project.

### 3. Concessional Financing for electrical infrastructure that underpins the green power economy

#### a. Direct concessions (Grants) for grid-scale storage solutions



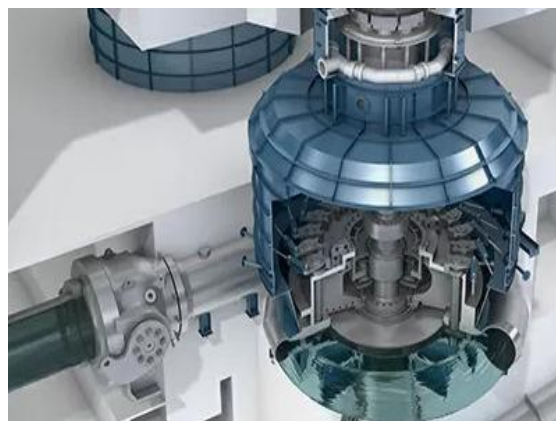
Neoen's (Tesla-powered) 300MW/450MWh battery facility in Geelong, Australia

Photographs: Neoen/Floodlight Media

Large-scale storage solutions (either lithium-ion or flow batteries) ought to be adopted into national grids and thereby help provide a reliable/baseload profile from energy generated at various renewable projects connected to the network. This will resolve the primary concern of the System Operator – which is the so-called “intermittency” of renewable energy projects. The System Operator embedded within a utility has the objective of being able to supply homes and businesses with electricity at all times – especially during peak periods (mornings, early evenings) when the sun may not be shining or the wind blowing. Storage solutions positioned at various key points in the network are the only and best way to assure this, but due to their relative high price they would typically tip the economic cost of the project towards unsuitably higher tariffs for the client utility (and Mozambican customer) if the private sector developer incorporated their commercial cost into the project-finance economics.

Concessional financing that would go directly to OEMs/battery manufacturers to provide bespoke grid-scale storage solutions on a project-by-project basis would solve a problem for all players and create a win-win-win situation. Concession-financed storage solutions would enable green power projects to be adopted and GHG-emissions to be kept low, while enabling Utilities to keep providing reliable baseload profile power, with the Mozambican customer still enjoying relatively low tariffs.

## **b. Concessional financing for reducing the cost of primary generation equipment**



*Photographs: Unsplash*

Developing nations such as Mozambique need to be provided with a further boost in being able to absorb renewable energy projects by more quickly driving down the price of adoption of such projects. While the price of equipment from solar panels/modules to wind turbines has fallen significantly over the course of a decade, developers aiming to deploy such assets in developing countries ought to be able to count on a grant/concession absorbing between 15 – 20% of the capital cost of such equipment, enabling them to offer even more cost-competitive tariffs to national utilities.

Financial instruments structured specifically to accelerate the downward cost curve of green power implementation in developing nations are needed in order for adoption to occur most rapidly.

### c. Concessional financing for expansion of Transmission networks



*Photographs: Unsplash*

The crucial backbone infrastructure-buildout that allows the deployment of the transmission grid to diverse parts of countries needs to be accelerated. Many transmission projects have already been studied with feasibility reports just waiting to be implemented. Private developers may even have additional transmission needs that would enable remote wind or hydro resources to be tapped.

While instruments such as low-interest loans already exist to promote transmission network buildout, such financial tools need to be expanded, and importantly the incredibly long-winded and tedious process of implementing such projects must be drastically shortened. Currently transmission projects implemented by DFI's for Utilities tend to take between 5-7 years to come to fruition due to the long-winded bureaucratic process through which development agency offices and government institutions work.

## Who is AMER?

Associação Moçambicana das Energias Renováveis (AMER) is a voluntary association of mostly private sector companies involved in the renewable energy sector in Mozambique. They include small local developers, engineering and design companies, as well as larger international developers and their Mozambican subsidiaries. A number of key public /government-owned organizations are also members of AMER, namely Electricidade de Moçambique (EDM), Mozambique's single vertically integrated electrical utility, as well as Energias de Portugal (EDP).

The Association was constituted in 2017 with the goal of being able to represent the interests of the private sector and indeed all stakeholders in Mozambique who are interested in seeing the adoption and growth of renewable energy in the country. While young, the Association has been very dynamic and vibrant and counts a membership of over 35 companies and 2 public bodies, with partnerships already having been established with the Global Wind Energy Council (GWEC) among others.

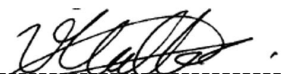
Signed by



**Ricardo Costa Pereira**  
President of AMER



**Andreas F. Ziegler**  
**Mendonça**  
Board Member, AMER



**Victor Mallet**  
AMER Representative COP26

## Contacts for AMER

1. **Ricardo Costa Pereira**, AMER President (ricardo@amer.org.mz)
2. **Victor Mallet**, Member, representing AMER at COP 26 (vmallet@catalyst-energy.com)