



POWERING UGANDA'S FUTURE?

Key Facts, Community Insights &
Pathways to Green Industrialisation



Uganda's Energy Paradox

Uganda sits at one of the most remarkable energy crossroads on the African continent. The country possesses abundant renewable resources, a young population and strategic minerals needed for the global energy transition. Yet millions remain trapped in energy poverty. Uganda's electricity system is already among the cleanest in the world, but the benefits of that system are not reaching enough people. At the same time, the country is pursuing oil extraction through the East African Crude Oil Pipeline (EACOP), creating tensions between competing visions of development.

Key Facts

Around 95–98% of electricity generation comes from renewables.

Only around half the population has access to electricity.

More than 90% of households rely on biomass for cooking.

Uganda possesses world-class solar resources and significant strategic mineral deposits.

Oil development and green industrialisation are unfolding simultaneously.

Key Takeaway

Uganda does not lack energy resources. It faces the challenge of turning resource abundance into broad-based prosperity



A Clean Grid That Leaves Many Behind

Uganda's power system appears strong on paper. Installed capacity has expanded significantly, and renewable energy dominates the electricity mix. Yet access remains unequal. Rural electrification rates remain low and electricity prices are among the highest on the continent. For many households, the problem is not the absence of electricity generation it is affordability.

Communities frequently report that transmission lines pass near villages while homes remain unconnected. For others, grid electricity exists but is simply too expensive to use consistently.

Communities Describe:

High electricity bills;

Unreliable service;

Dependence on charcoal and firewood;

Uneven infrastructure development.

The Contradiction

Uganda has enough electricity generation to support growth, but millions remain excluded from its benefits.

Key Takeaway

Energy poverty in Uganda is increasingly an affordability challenge rather than a generation challenge.

The Hidden Energy Crisis: Cooking

Electricity often dominates energy debates, but for most Ugandans the real energy challenge begins in the kitchen.

More than 90% of households still rely on charcoal and firewood for cooking. This dependence creates a cycle of poor health, environmental degradation and lost economic opportunities. Women and girls bear a disproportionate share of the burden, spending countless hours gathering fuel and suffering the health effects of indoor air pollution.

Why Clean Cooking Matters Health

Indoor smoke contributes to respiratory disease and premature deaths.

Gender Equality

Women and girls spend time collecting fuel instead of pursuing education or income-generating activities.

Environment

Heavy reliance on biomass places enormous pressure on forests.

Productivity

Hours spent gathering fuel represent lost economic opportunity.

Big Idea

Clean cooking should not be treated as only a welfare issue. It is essential energy infrastructure



Solar: Uganda's Superpower

Few countries possess solar resources as favourable as Uganda. High irradiation levels throughout the year create an enormous opportunity for affordable and decentralised electricity generation.

Unlike large infrastructure projects that require years to complete, solar technologies can be deployed rapidly and close to where people live.

Interviewees already report improvements in:

Children's education;

Household security;

Business productivity;

Quality of life.

Yet barriers remain. Upfront costs continue to exclude poorer households, counterfeit products undermine trust, and technical skills remain scarce.

Big Idea

Solar is not merely another technology.

It offers Uganda the opportunity to expand electricity access quickly while reducing dependence on imported fuels and strengthening local economies.

Solar is not Uganda's future. It is already part of Uganda's present.



Building A Resilient Energy System

Hydropower has been the backbone of Uganda's electricity system for decades. Recent investments have increased generating capacity and created substantial surplus power. Yet climate variability means hydropower cannot remain the country's only pillar.

Solar, geothermal and regional electricity trade all have important roles to play.

Uganda's Energy Strengths Hydropower

Reliable baseload electricity

Solar

Rapid, modular and increasingly affordable.

Geothermal

Potential of up to 1,500 MW.

Regional Integration

Opportunities to export electricity across East Africa.

Big Idea

A resilient energy system is built on diversity.

Energy security depends not on one resource but on many.

The Oily Shadow

The East African Crude Oil Pipeline represents one of the most significant and controversial developments in Uganda's modern history.

Supporters argue that oil revenues will finance development and strengthen public finances. Critics point to displacement, environmental risks and the danger of locking Uganda into a carbon-intensive pathway.

The deeper issue is not simply emissions. It is opportunity cost.

Every dollar, institution and political effort devoted to oil is one that cannot be devoted elsewhere.

The Central Question

Can Uganda simultaneously pursue fossil fuel expansion and build a credible green industrial future powered by clean energy?

The answer will shape the country's development trajectory for decades.



From Energy To Industry

Energy alone does not create prosperity. Industries do.

Uganda's economy still relies heavily on the export of raw materials and agricultural commodities. The challenge is to use affordable renewable energy to support processing, manufacturing and value addition.

Agriculture

Renewable energy can support:

- Irrigation;
- Cold storage;
- Dairy processing;
- Agro-processing;
- Reduced post-harvest losses.

Minerals

Uganda possesses deposits of:

- Cobalt;
- Copper;
- Gold;
- Iron ore;
- Rare earth elements.

The opportunity lies not in extraction alone, but in moving further up the value chain.

Big Idea

Move from: **Dig and export** to **Process, manufacture and prosper**.



East Africa's Clean Energy Hub?

Uganda's future market extends beyond its own borders.

Membership in the Eastern Africa Power Pool gives the country an opportunity to become a regional exporter of renewable electricity.

Regional integration could:

Generate foreign exchange;

Reduce energy costs;

Attract investment;

Strengthen energy security;

Accelerate electrification across east africa.

Big Idea

Uganda's greatest opportunity may lie not only in powering itself, but in helping power the region.





The Real Bottleneck: Finance

Technology is not the main obstacle. Money is.

High borrowing costs make renewable projects far more expensive in Africa than in developed economies. Weak institutions and limited planning capacity further slow progress.

What Is Needed?

- Concessional finance;
- Blended finance;
- Stronger public institutions;
- Mission-oriented industrial policy;
- Long-term investment strategies.

Key Takeaway

Finance determines whether resources become development

What Communities Want

Despite challenges, Ugandans remain optimistic about the future. Across communities, people consistently express aspirations for:

- ⚡ Reliable electricity
- 🏠 Better jobs
- 🌱 Cleaner environments
- 🎓 Education opportunities
- 🏥 Improved health
- 💡 Affordable energy

Final Message

Uganda possesses nearly everything required to become one of Africa's clean energy success stories.

The question is not whether the country has enough resources.

The question is whether those resources will be used to build industries, expand opportunity and improve lives or whether they will continue to leave prosperity just beyond reach.



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