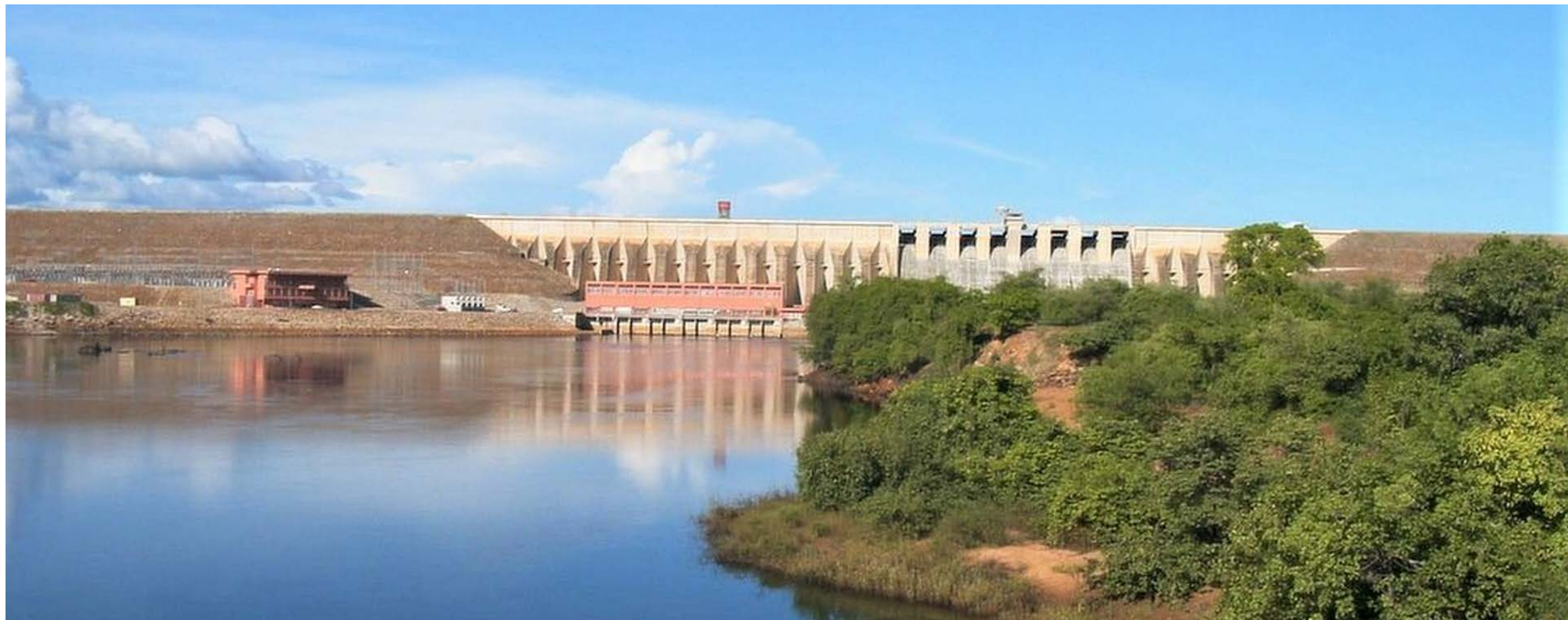




# SENELEC

ELECTRICITY FOR AN EMERGING SENEGAL





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Electricity for an Emerging Senegal

RESEARCH BY MAME COUMBA GAYE





Over the past quarter century, the population of West African nation Senegal has more than doubled from slightly under 9 million to just under 18 million. While this population growth has several positive side effects, including one of the world’s youngest workforces, it creates challenges on several levels. And with doubling the population, all things being equal, doubles the aggregate demand for vital services.

The responsibility to provide energy to the Senegalese people falls to Senelec the public-owned utility company led by the inspiring leadership of Papa Mademba Biteyem, Managing Director. Senegal’s government has prioritized the development of the country’s electricity sector as part of its Emerging Senegal Plan, which plans to make the country an emerging market by 2025. If anything, this has made the work of Senelec even more pivotal to the country’s success, as the following paragraph will outline.

**Historical Background**

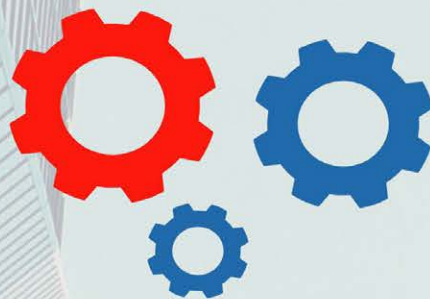
Senelec’s origins go back to 1889 with the foundation of Société d’Éclairage Electrique du Sénégal (SEES). Having gone through a series of corporate transformations, the company that we know as Senelec first emerged forty years

**West African nation Senegal has more than doubled from slightly under 9 million to just under 18 million**



**Nos secteurs d'activites:**

- Batiments & Travaux publics
- Datacenters & TIC
- Villes & Mobilites
- Logistiques
- Industries



**Nos implantations:**

- Royaume Uni
- Cote d'Ivoire
- Cameroun
- Senegal
- Guinee
- France
- Benin



ago, in 1983 after the merger of Électricité du Sénégal and Société sénégalaise de distribution d'électricité. It had its work cut out: The network it inherited was primarily aimed at serving the colonial class, and not Senegal's burgeoning population, the vast majority of which lived rurally.

2019, 53% of rural citizens had access to electricity - up from 11% the year before.

**Recent Developments**

Despite its progress, pressure remains on Senelec to continue delivering, both in terms of energy supply and doing so while making the green energy transition. A recent example of this was provided by the Kahone and Kael solar plants, developed under the IFC's Scaling Solar Program, which commenced commercial operations in 2021. With a combined capacity of 60MW, these facilities provide electricity to more than 300,000 Senegalese households.

It was a mandate that it took on with zeal. Evidence of this can be seen in its electricity sales, which increased from 604 Gigawatt hours (GWH) in 1983 to 1540 GWH in 2005. This kind of growth arguably made Senelec the most important driver of economic and social progress in the country. By 2021, this figure had grown nearly three-fold to 4191 GWH, an 8.2% increase over the same figure for 2020. In rural electrification, too, huge strides have been made in a short period. In



**Nos prestations:**

- ✓ Assistance a la Maitrise d'Ouvrage "AMO A"
- ✓ Burea d'ingenieries Conseils
- ✓ Maritrise d'oeuvre
- ✓ Financements
- ✓ Cle en main
- ✓ Formation
- ✓ Expertise
- ✓ Audit







# Bring Energy to All to Shine !

## ✓ Who are we ?

3MD Energy is an African engineering company specializing in the design and provision of energy solutions. Given the challenge of accessing quality electrical energy in sufficient quantity at the most optimal cost in Africa, 3MD Energy, with proven expertise in the field, develops products and solutions. These enable its partners to have the most advantageous solutions for the development of their activities. As a primary partner for electricity boards in West Africa and professionals in the Energy, Construction, Extractive Industry, and Transformation sectors, as well as in Construction (BTP), we continuously innovate to provide solutions with high added value, ensuring increased performance and profitability.

Having launched in Senegal in 2015, 3MD Energy rapidly and successfully expanded into other countries in the sub-region, including Gambia, Benin, Togo, Côte d'Ivoire, Burkina Faso, and Mali.

## Reference Framework

### MISSION

Design and provide optimal energy solutions

### VISION

Being a global leader in energy solutions

### VALUES

Excellence - Nobility - Commitment - Responsibility - Generosity - Innovation - Ethics



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## 3DM ENERGY

### Empowering Progress with 3MD Energy

In the ever-evolving landscape of energy solutions, 3MD Energy emerges as a beacon of innovation and reliability. Since its inception in 2015, the company has not only distinguished itself through a commitment to excellence but has also significantly contributed to the sustainable development of the West African region.

### A Glimpse into 3MD Energy's Operations

At the heart of 3MD Energy's operations is a dedication to providing reliable and sustainable energy solutions. Specializing in the design and distribution of high-quality products, the company has positioned itself as a trailblazer in the industry. Notably, 3MD Energy is the exclusive producer of prefabricated electrical substations within the West African Economic and Monetary Union (WAEMU) territory.

The company's collaborative efforts with national entities holding mandates for electricity production, distribution, and marketing in West Africa underscore its commitment to advancing policies dedicated to sustainable electricity access for the population.

### Comprehensive Energy Services Across Diverse Markets

3MD Energy doesn't just provide energy solutions; it crafts tailored services that cater to a diverse range of markets. From energy and industry to construction, telecommunications, and utilities, the company offers comprehensive services that align with the unique needs of each client. This commitment extends to the burgeoning markets of Africa, emphasizing the company's dedication to fostering sustainable energy development across the continent.

### Empowering SENELEC: A Tailored Approach

The collaboration between 3MD Energy and Senelec (Senegal's national electricity company) showcases the company's prowess in delivering customized solutions. From prefabricated substations to various electrical equipment, 3MD Energy caters to Senelec's specific requirements for electricity distribution. This collaborative effort goes beyond product delivery, encompassing technical support and training tailored

to enhance the skills of the Senelec team, ensuring optimal use of the solutions provided.

### What Sets 3MD Energy Apart?

**Commitment to Excellence:** 3MD Energy stands out through an unwavering commitment to excellence, sustainability, and innovation. The company prioritizes the development of the highest quality energy solutions, adhering to stringent manufacturing practices and quality control measures.

**Local Industrialization:** By prioritizing local production, 3MD Energy contributes significantly to the economic development of the regions it operates in, actively participating in the industrial growth of the communities served.

**Innovation and Expertise:** The modern nature of 3MD Energy's production facility reflects a commitment to innovation, allowing the company to stay at the forefront of technology in delivering leading energy solutions. The highly skilled team demonstrates expertise in addressing the complex challenges of the energy sector.

**Customer-Centric Approach:** Physical proximity, a diverse product range, and product availability strengthen 3MD Energy's relationship with clients. The company understands the importance of responsiveness and flexibility, ensuring clients have energy solutions tailored to their specific needs.

**Competitive Pricing:** The competitiveness of 3MD Energy's prices underscores its commitment to offering quality energy solutions at rates that ensure both competitiveness and profitability for its clients.

### A Future Powered by 3MD Energy

In summary, 3MD Energy's journey exemplifies a commitment to empowering progress through innovative and sustainable energy solutions. As the company continues to pioneer excellence in the energy sector, it remains dedicated to driving economic development and fostering sustainable energy solutions for a brighter future. 3MD Energy stands as a testament to the transformative power of energy when coupled with a vision for excellence and sustainability.



# PETROSEN, ENERGY FOR SUSTAINABLE DEVELOPMENT



## Objectives

- Improve the energy supply for the whole country
- Launch industrial initiatives
- Curtail deforestation and reduce greenhouse gas emissions by using natural gas
- Create direct and indirect jobs and help develop the national economy



**SENELEC's existing 2,000km fiber-optic infrastructure, is set to provide network capacity to telecom operators, government entities, and public and private companies starting from December 2023**

But the country's electricity is ramping up quickly on all fronts. The Cap de Biches project, nearing completion, will be Senegal's largest power plant, capable of generating around a quarter of the country's electricity needs and powering up to half a million homes. The 300 MW Cap de Biches project, in partnership with GE, will be an LNG power plant, reducing the country's dependence on heavier fuels.

In 2022, the company also announced an innovative waste-to-energy project in Kaolack, in partnership with the National Integrated Waste Management Company (SONAGED). Located a little over 200

kilometers from Dakar, Senegal's capital, the project will enable the recycling of plastic, glass and paper, and toxic materials, which are deemed harmful to public health and the environment.

SENELEC, is also making significant strides in its digital transformation through a partnership with Chinese technology firm Huawei. The ongoing deployment of a nationwide 100/200G DWDM backbone network, based on SENELEC's existing 2,000km fiber-optic infrastructure, is set to provide network capacity to telecom operators, government entities, and public and private companies starting



## A noteworthy 30 percent of the nation's power mix is now derived from renewable sources

from December 2023. The extensive mostly aerial network, spanning 53 backbone sites and covering all 14 regions of the country, is a crucial step in SENELEC's commitment to innovation, cost control, and revenue growth. Papa Mademba Biteye, SENELEC's managing director, highlighted the company's focus on developing telecommunication infrastructure to meet future connectivity needs. Huawei Senegal Managing Director Lionel Liu emphasized that the DWDM transmission network would enhance SENELEC's network capacity, ensuring reliable and highly available connectivity.

### Placing Sustainability First

Senegal's commitment to a sustainable and diversified energy future is underscored by its significant strides in renewable energy. A noteworthy 30 percent of the nation's power mix is now derived from renewable sources. President Sall marked a historic moment in February 2020 with the official inauguration of the first phase of the Taiba Ndiaye Wind Park, Senegal's pioneering utility-scale wind project, boasting the title of the largest in West Africa.

Initiating its operations in December 2019, Phase I of the Taiba Ndiaye Wind Park, featuring 16 turbines, injected 50 MW of electricity into Senegal's grid. Subsequently, the project's Phase II, launched in July 2021, added a substantial 108 MW, augmenting the country's electricity supply by an impressive 15 percent.

Beyond its renewable energy endeavors, Senelec, the national electricity company, exemplifies its commitment to sustainability through various extracurricular initiatives. Each of Senelec's facilities undergoes a comprehensive Environmental and Social Management Plan (ESMP). This meticulous analysis evaluates all aspects of a project's sustainability, encompassing community integration, environmental impact, and various metrics crucial for ongoing improvement.

In a tangible demonstration of its dedication to sustainability, Senelec, under the leadership of its CEO, took a decisive step in December 2019. The company abandoned plans for a coal-fired power plant project in the coastal town of Bargny. This strategic decision, made in collaboration with the government, aligns with Senegal's commitments under the Paris Climate Agreement. By prioritizing environmentally responsible choices, Senelec has positioned itself as a key



stakeholder in shaping the sustainability of Senegal's future.

These initiatives collectively highlight Senegal's proactive stance in achieving a robust and sustainable energy sector, with Senelec playing a pivotal role in driving positive change. The integration of renewable energy sources and the conscientious approach to environmental and social considerations underscore a forward-looking and responsible energy strategy that positions Senegal as a beacon of sustainability in the region.

### Partners and Suppliers

As mentioned earlier in the article, Senelec has worked closely with GE on the Cap de Biches project, but the American conglomerate is just one of a host of partners and suppliers, Senegalese and international, that Senelec regularly works with. For example, on the construction side, its suppliers include Groupe Corex an international engineering firm with roots in Senegal, Gie Touba Taif Ballodji, and Les Ciments Du Sahel SA.

As a large electricity provider, it also benefits from being at the centre of an electricity ecosystem. Partners here include 3MD Energy SA stands as an engineering firm distinguished for its expertise in crafting prefabricated substations and distributing electrical equipment tailored for installers, industrial professionals, and construction contractors. And others include, Top Energie Sénégal, and Eiffage Énergie Systèmes. Technical services and equipment, ranging from IT to air conditioning are provided by Joke Cool SA - Air Conditioning, SIDI Group SPA, Air Liquide Senegal, and Cassis Equipment. Finally, Groupe Fuchs Petrolub supplies Senelec with industrial lubricants,



lubricating greases, and metal processing lubricants.

### A Brighter Future

In envisioning Senegal's future, the collaborative efforts of the government and SENELEC take centre stage in the ambitious transformation of the nation's energy landscape. Entrusted with key priorities outlined in the Emerging Senegal Plan, SENELEC plays a pivotal role in shaping a forward-looking energy agenda that aligns with the nation's vision of diversification and modernization.

A primary focus of SENELEC's responsibilities is the strategic diversification of energy sources. Tasked with reducing reliance on expensive liquid





fuels that currently constitute 90 percent of power generation, SENELEC is at the forefront of exploring and implementing alternative, sustainable energy solutions. This bold move not only aims to decrease energy costs but positions Senegal as a trailblazer in adopting a varied and eco-friendly energy mix.



Simultaneously, SENELEC is actively engaged in expanding generation capacities to meet the escalating demand for power. Through a proactive approach to enhancing the country's energy infrastructure, SENELEC ensures a robust and consistent power supply, propelling economic growth and development.

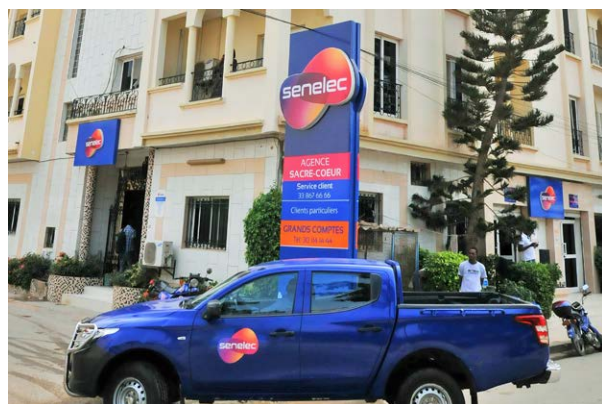
transformation reach every corner of the nation.

Despite the proactive role played by SENELEC in executing these transformative initiatives, challenges persist. Senegal grapples with some of the highest electricity generation costs in Africa. The government's subsidies, which alleviate the impact on consumers,

In fostering regional collaboration, SENELEC plays a key role in integrating Senegal's energy infrastructure with an emerging regional energy network. By facilitating interconnectedness, the national electricity company not only contributes to bolstering energy security but also positions Senegal as a pivotal player in the broader regional energy landscape.

**A primary focus of SENELEC's responsibilities is the strategic diversification of energy sources**

A critical responsibility assigned to SENELEC involves overseeing the transition from heavy fuel oil to domestic natural gas. This strategic shift, aimed at enhancing energy efficiency and environmental sustainability, places SENELEC at the forefront of steering Senegal toward a cleaner and more sustainable energy future.



Concurrently, SENELEC is charged with extending electrification benefits to rural areas, aligning with the government's commitment to inclusive development. By focusing on increasing energy access for underserved communities, SENELEC ensures that the benefits of the energy



underscore the commitment to ensuring equitable access.

Looking ahead, SENELEC's contributions are instrumental in Senegal's trajectory towards becoming an emerging economy. Anticipated to achieve a remarkable 90% electrification rate by 2024, with full electrification on the horizon, Senegal is poised to join an exclusive group of

nations. SENELEC's commitment to sustainability and the imminent launch of its digitization network further solidify its role in Senegal's digital transformation, showcasing the company's profound value to the nation. In the intersection of electrification and digitalization, SENELEC emerges as a key player, shaping Senegal's future in accordance with broader national objectives.



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