

## THEORY IN PRACTICE

*Research article*

### **THE ENERGY SECTOR OF THE CENTRAL AFRICAN REPUBLIC: STATUS, CHALLENGES, AND PROSPECTS**

© 2025 A.V. Fedorov, T.N. Kirikova

FEDOROV Andrey Vladimirovich, DSc (Economics), Leading Research Fellow, Centre for Sub-Saharan Africa, Institute for African Studies, Russian Academy of Sciences, Moscow, Russian Federation. ORCID: 0009-0005-7533-8190. E-mail: avfedorov@inbox.ru

KIRIKOVA Tatiana Nikolaevna, PhD Candidate, Institute for African Studies, Russian Academy of Sciences, Moscow, Russian Federation. ORCID: 0009-0002-5853-1229. E-mail: kirikova.tn7@gmail.com

**Abstract.** Ensuring reliable access to electricity is a critical issue for economic development and national security across Sub-Saharan Africa, and it is especially acute in the least-developed countries with high poverty rates. Energy deficits not only constrain industrial growth and limit access to basic social services such as healthcare and education but also deter foreign investment. The energy sector of the Central African Republic exemplifies the combination of structural challenges and unrealized opportunities found in Central Africa. International financial assistance is typically confined to isolated projects that neither address systemic bottlenecks nor reduce dependence on external suppliers of fuel and equipment. This article examines the current state of CAR's energy sector, analyzes its key problems, and outlines potential development trajectories. It considers short- and long-term applied strategies for endogenous, exogenous, and integrative development of CAR's energy sector based on building out energy network infrastructure, mobilizing domestic and collective capacities, and attracting strategic investors into CAR's power industry. The paper substantiates the need for and proposes approaches to an Intersectoral Energy Strategy for CAR that would factor in the level of state agency and the use of appropriate technologies. As a priority integrative pathway, it advances an economic concept for establishing an energy hub on CAR's territory that would generate and transmit electricity to neighboring countries.

**Keywords:** energy strategy, Central African Republic, energy infrastructure, agency, energy hub, Rosatom, African energy, mobile nuclear power plants, SMR, hydroelectric power plant (HPP), thermal power plant (TPP)

**Conflict of interest:** The authors declare that there is no conflict of interest.

**Authors' contribution:** joint research.

DOI: 10.31132/2412-5717-2025-73-4-156-175

**For citation:** Fedorov A.V., Kirikova T.N. (2025). The Energy Sector of the Central African Republic: Status, Challenges, and Prospects. *Journal of the Institute for African Studies*. Vol. 11. № 4. Pp. 156–175. <https://doi.org/10.31132/2412-5717-2025-73-4-156-175>

## INTRODUCTION

The development of the energy sector of the countries of Sub-Saharan Africa (SSA) is a strategic issue for the socio-economic growth of the African continent. African states, due to their high vulnerability to the volatility of global energy and food prices, exacerbated by the direct dependence of national currencies on reserve currencies, face a complex systemic problem of attracting additional external and internal financing for the development of energy infrastructure, including modernization and expansion of generating and transmission capacities.

According to a study by the African Development Bank, the financing gap of African energy in order to achieve the goals of sustainable growth amounts to \$35–50 billion per year, of which \$3–4 billion is needed for the development of grid infrastructure. The Africa Finance Corporation believes that the annual increase in generation added to the grid should be at least 16 GW in order to ensure economic development. According to data from PricewaterhouseCoopers (PwC), over the last five years this increase has amounted to 4–7 GW per year<sup>1</sup>. The growth of GDP and population in African countries outpaces that of the continent's energy sector. If financing remains at its current level, access to electricity and the industrialization of Africa by 2050 will remain at the same level as today [Sharova 2020b].

The problem of energy deficit in the countries of SSA is primarily structural in its nature. It is necessary to distinguish between supplying electricity to the population and to the service sector closely connected with it and businesses that generate added value. The growth of consumer demand not backed by payment capacity suppresses investment activity on the one hand, while on the other hand, the low level of industrialization and the absence or insufficient number of energy-intensive production projects do not stimulate the inflow of foreign direct investment into the energy sector [Dos Santos 2023]. In the opinion of the Director General of the Association of Power Utilities of Africa, Abel Didier Tella, "...The key is to align the needs of the energy sector with the needs of the industry. The presence of major buyers provides investments and covers development costs. If you only produce electricity for daily needs, it's impossible to cover the project costs"<sup>2</sup>.

The most problematic African region in energy terms is Central Africa, where the Central African Republic (CAR) epitomizes all the challenges faced by the countries of this region in the energy sector [Kulaev, Affouet 2023]. Despite possessing significant energy resources, including hydropower potential and a high level of solar insolation, CAR demonstrates one of the lowest levels of electrification in Central Africa.

According to data from the African Development Bank, in 2024, there was a significant imbalance in the supply of electricity between the urban and rural population

---

<sup>1</sup> Africa Energy Review 2024. *Strategy&. Part of the PwC network*. 2024. <https://www.strategyand.pwc.com/a1/en/insights/africa-energy-review.html> (accessed: 01.09.2025)

<sup>2</sup> Core issue of Africa's energy sector: lack of major industrial consumers. *Global Energy Association*. 01.03.2023. <https://globalenergyprize.org/en/2023/03/01/core-issue-of-africas-energy-sector-lack-of-major-industrial-consumers/> (accessed: 01.09.2025)

in the CAR. The level of access to electricity in cities amounted to 34.7%, while in rural areas it only reached 1.6%. At the same time, the overall level of access to electricity in the country as a whole was only 15.7%<sup>3</sup>. As a result, a significant part of the population continues to rely on traditional sources of energy such as firewood and charcoal to meet basic needs, including cooking.

The Government of the Central African Republic is pursuing a course towards the restoration and modernization of critically important sectors of the economy and industry. Within this agenda, the energy sector occupies a priority place. Given the limited nature of domestic resources, the search for breakthrough solutions and for strategic, technological, and financial partners becomes particularly urgent. The Russian Federation is regarded as one of the main candidates for this role due to its possession of the relevant competences, comprehensive technical capabilities, ready-made solutions, and experience in implementing projects in developing countries.

The purpose of this study is a comprehensive analysis of the energy potential of the Central African Republic and the identification of promising economic and technological solutions, including within the framework of a strategic partnership between the Russian Federation and the Central African Republic in the energy sector.

The methodological basis of the study is a comprehensive interdisciplinary approach that combines qualitative analysis, field research, and analytical methods. The core of the methodology is an in-depth case study of the energy sector of the Central African Republic, considered here as a representative example of a systemic crisis in the countries of Central Africa [Kulaev, Affouet 2023]. Comparative analysis is used to compare the effectiveness and strategic feasibility of various technological solutions, such as diesel and hybrid generation, solar power plants (SPP), small hydropower plants, and small modular nuclear power plants (SMR) [Abramova, Sharova 2023: 439–440; Agoundedemba, Kim, Kim 2023: 9–11; Sharova 2024], as well as the approaches of key external actors to the development of the African energy sector [Kalinchenko 2017; Saenko 2022a; Saenko 2022b].

Statistical data obtained from current reports of international organizations (African Development Bank, World Bank), as well as the technical parameters of existing energy facilities, provide the empirical basis for the analysis carried out.

Content analysis of the strategic documents of the Central African Republic, intergovernmental agreements, and statements by officials made it possible to identify political priorities and institutional frameworks. The study also takes into account expert assessments by leading specialists in the field of energy, geopolitics, and technology transfer in African countries, presented in scholarly publications and analytical reports [Morozenskaya 2022; Pospelov 2018; Gitelman, Kozhevnikov, Visotskaya 2023: 13; Sharova 2022; Esmenjaud, Rutenbar, Mozersky 2025]. This approach makes it possible to develop robust solutions that contribute to the practical implementation of the energy transition, adapting the process to the specifics of the Central African Republic.

## STATE OF THE ENERGY SYSTEM OF THE CAR

The energy sector of the Central African Republic, as in most African countries, is a state monopoly. The state-owned corporation ENERCA<sup>4</sup> (Énergie Centrafricaine)

---

<sup>3</sup> Central African Republic. *Open data for Africa*. 2024. <https://car.opendataforafrica.org/> (accessed: 01.09.2025)

<sup>4</sup> *Energie Centrafricaine*. 2025. <http://enerca-rca.com/> (accessed: 01.09.2025)

manages electricity generation and distribution. There is no direct participation of private capital in generating capacities, and commercial interaction is limited to contract services for design, construction, equipment supplies, and technical maintenance, without equity participation in assets.

There is no unified national transmission grid in the Central African Republic; the only centralized power generation system is concentrated in the capital region and is represented by a cascade of three hydropower plants (HPPs) in the Boali area, as well as two large solar power plants (SPPs), Danzi and Sakai. All power plants and transmission lines (TLs) are operated by the state-owned company ENERCA.

The cascade of hydropower plants at Boali includes three facilities built in different historical periods. The Boali I HPP was commissioned in 1955 with the assistance of the Soviet Union and the former Yugoslavia and consists of four units with a total installed capacity of 10 MW. At present, its actual output does not exceed 8.9 MW due to significant equipment wear. Boali II has been in operation since 1976; its total installed capacity is 20 MW; however, its average actual electricity generation is around 18 MW. The recently constructed Boali III HPP (April 2025<sup>5</sup>) has added another 10 MW of capacity, partially relieving the existing facilities of the cascade. All of these plants are connected to Bangui by an outdated 63 kV transmission line (TL) that has been in operation for more than forty years and requires thorough modernization.

The Sakai and Danzi solar power plants (SPPs) have become important projects in recent years in an attempt to partially compensate for the daytime generation deficit. The Sakai SPP, with a capacity of 15 MW, was built with funds received as a grant from the PRC and was commissioned in March 2023 by the Chinese company Tianjin Electric Power Construction. The plant provides an actual output of about 13 MW and is equipped with a battery system to partially cover evening loads<sup>6</sup>.

The Danzi SPP was commissioned in November 2023 with the participation of the Chinese company Shanxi Construction Investment Group Co. and financing from the World Bank under the PURCEL program<sup>7</sup>. The maximum installed capacity of the plant is 25 MW; however, its actual generation is at the level of 20–22 MW. Despite the fact that both plants are equipped with energy storage systems, they are able to only partially compensate for the capital's energy deficit during daytime and evening hours. Both stations are integrated into the ENERCA system, operate in the absence of smart load management, and function in conjunction with the Boali hydropower cascade.

At night Bangui continues to depend on hydropower plants, and in the event of temporary breakdowns of units at the Boali HPPs and scheduled outages, it relies on diesel generator sets belonging to ENERCA. However, as of today, only two out of six such generators are operational, with a total capacity of 5.76 MW, and their regular operation is constrained by the high fuel cost, which exceeds \$1.7 per liter. In addition, an hourly load-shedding schedule for electricity supply is applied across the districts of

---

<sup>5</sup> Rouaud P.-O. Neo Themis relauches the Boali 3 Dam in the Central African Republic. *Africa Business+*. 01.04.2025. <https://www.africabusinessplus.com/en/823938/neo-themis-relauches-the-boali-3-dam-in-the-central-african-republic> (accessed: 01.09.2025)

<sup>6</sup> Hakeenah N. La Chine met en ligne une centrale solaire en République centrafricaine. *Le Projet Afrique-Chine*. 03.05.2023. <https://projetafriquechine.com/2023/05/03/chine-centrale-solaire-republique-centrafricaine/> (accessed: 01.09.2025)

<sup>7</sup> Central African Republic Inaugurates Largest Solar Power Plant in Central Africa. *Africa Energy Portal*. 24.11.2023. <https://africa-energy-portal.org/news/central-african-republic-inaugurates-largest-solar-power-plant-central-africa> (accessed: 01.09.2025)

Bangui. Under these conditions, private-sector enterprises, including hotels, stores, and small manufacturing facilities, are forced to install their own diesel generators to ensure uninterrupted operation.

The energy sector of the Central African Republic has for a long time been characterized by the extremely low quality of services provided by the state-owned company ENERCA. The key problems are prolonged power outages in the capital of up to 16–18 hours per day and the very low level of electrification in the country as a whole (8%), which in the capital reaches 35% and outside it only about 2%. The financial sustainability of the sector is undermined by high technical losses (7% in transmission and 33% in distribution), incomplete cost recovery due to a low average tariff (\$0.14 per kWh), and weak payment collection at the level of 67%<sup>8</sup>. This situation forced the government of the Central African Republic to attempt liberalization of the energy sector, which, however, has not been implemented in practice.

The legal framework for the regulation of the energy market is formed by a set of applicable normative acts. Its basis is the Energy Code of 2005, which defines the rules for the production, transmission, distribution, import, export, and sale of electric power and also allows private producers to enter the market<sup>9</sup>. The institutional structure of the sector is established by Decree No. 07.276 of 1 October 2007, which approved the status of the autonomous regulator ARSEC and confirmed its administrative and financial independence<sup>10</sup>. Regulation of independent generation, including the procedure for issuing permits and grid access for private producers, is established by Decree No. 10.095 of 18 March 2010<sup>11</sup>. In addition, an Agency for the Promotion of Biofuels has been created in the CAR, and this market is regulated<sup>12</sup>. The strategic guidelines are approved in the National Energy Policy Document (DPEN)<sup>13</sup>.

An analysis of the financing of key energy projects in recent years shows the predominance of state–donor funding. However, in 2025, there is a trend towards a transition to more complex forms of partnership. With the support of the Power Africa program, a public–private partnership with Kube Energy was formalized in 2024 for the development of two regional solar power plants in Bria and Bouar with an estimated capacity of 2.75 MW and 3 MW, respectively<sup>14</sup>. At the same time, in August 2025, the company Global South Utilities from the United Arab Emirates announced the start of

<sup>8</sup> CAR Emergency Electricity Supply and Access Project. Implementation Completion and Results Report. *World Bank*. 18.12.2024. [https://documents1.worldbank.org/curated/en/099121924112038518/pdf/BO\\_SIB1dbdb1cd801919df014221470797fa.pdf](https://documents1.worldbank.org/curated/en/099121924112038518/pdf/BO_SIB1dbdb1cd801919df014221470797fa.pdf) (accessed: 01.09.2025)

<sup>9</sup> Ordonnance № 05.001 portant Code de l'électricité de la République Centrafricaine. *Ministère des Finances et du Budget RCA*. 01.01.2005. [https://www.finances.gouv.cf/sites/default/files/inline-files/Code\\_Electricite.pdf](https://www.finances.gouv.cf/sites/default/files/inline-files/Code_Electricite.pdf) (accessed: 01.09.2025)

<sup>10</sup> Décret n° 07.276 Portant approbation des statuts de l'Agence autonome de regulation du secteur de l'électricite en Republique Centrafricaine. *FAOLEX*. 2007. <https://faolex.fao.org/docs/pdf/caf107437.pdf> (accessed: 01.09.2025)

<sup>11</sup> Trade Policy Review: Central African Republic (WT/TPR/S/445). *World Trade Organization*. 2022. [https://www.wto.org/french/tratop\\_f/tpr\\_f/s445-05\\_f.pdf](https://www.wto.org/french/tratop_f/tpr_f/s445-05_f.pdf) (accessed: 01.09.2025)

<sup>12</sup> Loi № 08.018 du 6 juin 2008 Sur les biocarburants en Republique Centrafricaine. *FAOLEX*. 06.06.2008. <https://faolex.fao.org/docs/pdf/caf126420.pdf> (accessed: 01.09.2025)

<sup>13</sup> Troisième Communication Nationale de la République Centrafricaine à la CCNUCC. *UNFCCC*. 2023. <https://unfccc.int/sites/default/files/resource/TNC%20VF%20FR.pdf> (accessed: 01.09.2025)

<sup>14</sup> Power Africa Supports the First Energy Sector Public Private Partnership in the Central African Republic. *Power Africa*. 2024. <https://powerafrica.medium.com/power-africa-supports-the-first-energy-sector-public-private-partnership-in-the-central-african-de6cc0d8c310> (accessed: 01.09.2025)

construction of an independent 50 MW solar power plant with an energy storage system in Sakai (Sakai-2)<sup>15</sup>.

Outside the capital, the energy situation in the CAR is characterized by fragmentation and dependence on diesel fuel. Electricity supply is provided exclusively on a local basis: each settlement is fed from its own source, if one exists, or has no access to electricity at all. Individual enterprises outside Bangui, primarily in the mining, agro-industrial, and wood-processing sectors, are forced to provide themselves with electricity through their own diesel or gasoline generators, as well as by constructing small solar power plants and micro-HPPs.

Among the towns where power generation facilities have been installed in recent years, Berbérati and Bambari stand out. In both cases hybrid generation units have been built, combining solar panels and diesel generator sets. The plants provide up to 1.8 MW of installed capacity and are oriented towards priority facilities: administrative buildings, medical institutions, water supply points, and military installations. During the daytime the main load is borne by the solar power plant, while at night energy supply is reduced to a minimum and backup power is provided through diesel generator sets. These facilities are designed for an extremely limited circle of consumers and are not intended for the connection of the private sector or small manufacturing enterprises.

In other regional centers, such as Bouar, Boda, Mbaïki, and Béloko, small diesel power stations with capacities from 0.15 to 0.25 MW have been installed. This equipment was supplied under humanitarian programs or from extra-budgetary sources, is located within the administrative perimeter, and is managed by the local authorities. Electricity is supplied according to a schedule, subject to the availability of diesel fuel. Owing to the acute shortage of fuel in the country and the local authorities' lack of funds to purchase it, the equipment is often not actually operated or is switched on for only a few hours a day and only for strategic consumers (medical institutions, the administration, military facilities).

The only settlement that imports electricity is the town of Mobaye, located on the border with the DRC, where part of the electricity is supplied via a cross-border line from the Congolese system with a transfer volume of about 0.63 MW. However, this line is unstable, does not cover peak load, and de facto operates on the basis of an oral agreement, without a secure contractual mechanism. Any disruptions on the supplier's side lead to the immediate interruption of the power supply in the town.

Thus, the total installed generation capacity in the Central African Republic is currently declared at 80.69–82.69 MW but in practice does not exceed 70–72 MW<sup>16</sup> (*Table 1*).

At the opening of the Danzi solar power plant, the leadership of the Central African Republic stated that the target level of optimal generation capacity for electrification in the country is around 250 MW<sup>17</sup>.

---

<sup>15</sup> UAE firm begins construction of 50 MW solar project in Central African Republic. *Emirates News Agency*. 18.08.2025. <https://www.wam.ae/en/article/bl9awvr-uae-firm-begins-construction-solar-project-central> (accessed: 01.09.2025)

<sup>16</sup> Centrafrique: la capacité d'électrification passe de 60 à 70 mégawatts. *Africa24*. 01.04.2023. <https://africa24tv.com/centrafrique-la-capacite-deelectrification-passe-de-60-a-70-megawatts> (accessed: 01.09.2025)

<sup>17</sup> *Ibid.*

Table 1. **Electrification in the Central African Republic**

Locality	Type of generation	Actual capacity, MW	Comment
Bangui	HPP	8.9	Boali I hydropower plant (about 95 km from Bangui). Consists of 4 units of 2.5 MW each
	HPP	18	Boali II hydropower plant (about 95 km from Bangui). Consists of 4 units of 5 MW each
	HPP	10	Boali III hydropower plant (about 95 km from Bangui). Consists of 2 units of 5 MW each
	SPP	20–22	Danzi solar power plant (about 35 km from Bangui). Maximum output 25 MW
	SPP	13	Sakai solar power plant (located in Bangui). Maximum output 15 MW
	TPP	5.76	Two out of six diesel generator sets with a capacity of 2.88 MW each are operational
Berbérati	Hybrid (solar + diesel)	1.8	Operated by municipal authorities
Bambari	Hybrid (solar + diesel)	1.8	Operated by municipal authorities
Bouar	DGS	0.2	Operated by municipal authorities
Mbaïki	DGS	0.25	Operated by municipal authorities
Béloko	DGS	0.2	Operated by municipal authorities
Boda	DGS	0.15	Operated by municipal authorities
Mobaye	–	0.63	Receives electricity from the Democratic Republic of the Congo
<b>Total:</b>		<b>80.69 – 82.69</b>	

Source: compiled by the authors based on AfDB, ENERCA and publicly available reports. The total capacity is an estimate.

Commentary: HPP – hydropower plant; SPP – solar power plant; TPP – thermal power plant; DGS – diesel generator set.

According to various expert assessments, this figure appears insufficient; it would be enough to cover the growing household needs of Bangui and its suburbs but is clearly inadequate to launch energy-intensive industries such as cement and metallurgical plants, processing complexes, cold chains for export products, logistics infrastructure, and other needs even within the capital agglomeration. For comparison, in 2023 the installed capacity in neighboring Cameroon, the DRC, and the Republic of the Congo amounted to 1.8 GW, 3.23 GW, and 842 MW, respectively<sup>18</sup>. Without a guaranteed reserve capacity, enterprises cannot plan round-the-clock production cycles, and investors are reluctant to invest in deep processing of raw materials and the creation of value-added chains.

<sup>18</sup> Production d'électricité. *Country Economy*. 2025. <https://fr.countryeconomy.com/energie-et-environnement/electricite-production> (accessed: 01.09.2025)

### “THE VICIOUS CIRCLE” OF ENERGY POVERTY

Under the current conditions, investment in the construction of processing and manufacturing enterprises proves economically unjustified already at the stage of developing a feasibility study. The high cost of diesel generation (up to \$0.45 per kWh), the systemic dependence on irregular fuel supplies, transport constraints, and price fluctuations do not allow for reliable and large-scale use of diesel generation, especially in regions located far from the capital. This has a negative impact on the development of small and medium-sized businesses, particularly in rural areas, leading to rising prices, increasing social inequality, a decline in the overall investment attractiveness of the country, and a minimization of economic activity outside the CAR capital, Bangui.

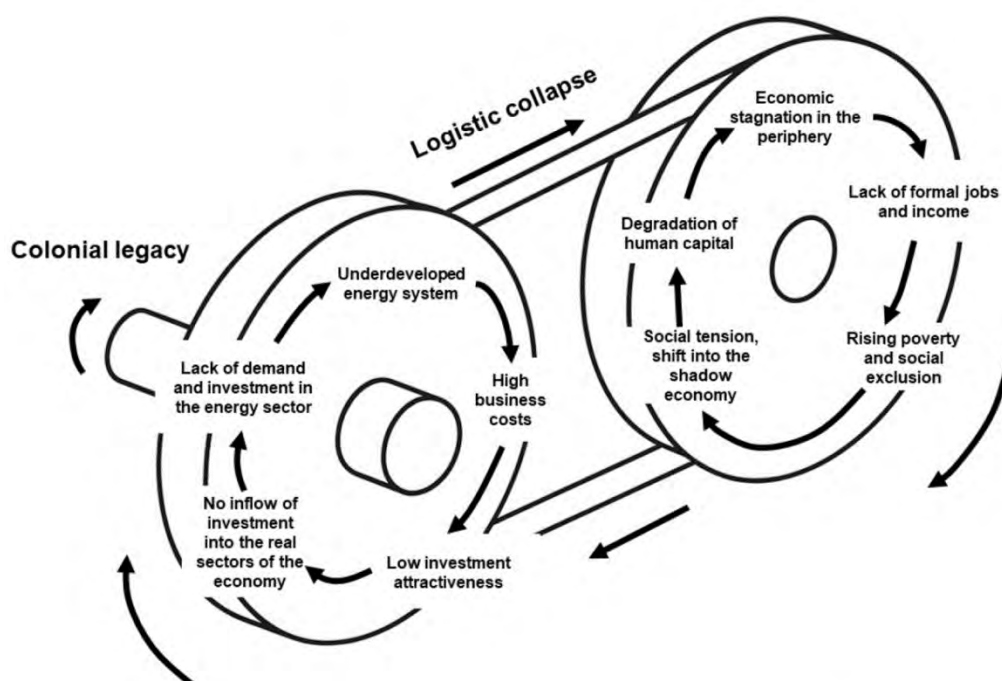


Figure 1. Systemic relationship between energy deficit, poverty and logistical collapse

Source: compiled by the authors

Thus, the development of the CAR energy sector is not so much a separate area as a necessary (*sine qua non*) condition for attracting investment into any other sphere of the Republic's economy. The underdeveloped energy system inherited from the colonial past generates high costs for businesses and reduces investment attractiveness, which hinders the inflow of capital into the real sector and leads to a lack of investment in energy. At the same time, social effects intensify: the absence of jobs increases poverty and gives rise to informal employment, leads to the degradation of human capital, and entrenches economic stagnation on the periphery. Both cycles mutually reinforce each other, forming a closed loop system that leads to a logistical collapse and undermines sustainable development. The two cycles are linked through logistical collapse, which acts not merely as a consequence but as a transmission mechanism between energy backwardness and social stagnation. Underdeveloped infrastructure limits access to energy and economic resources, complicates the transportation of goods and services, intensifies the isolation of the periphery, and prevents an exit from this dependency (*Fig. 1*).

In the current geopolitical and economic situation in the CAR, international financial institutions and donor organizations, in particular the World Bank, the African Development Bank (AfDB), and the European Union (EU), play a defining role in the implementation of energy projects. Financial support is provided both through the opening of targeted credit lines and through the provision of grants and humanitarian assistance, with a particular emphasis on the development of small and autonomous energy installations. Limited payment capacity and arrears on existing loans significantly constrain the possibilities for attracting new resources, creating a vicious circle of dependence on external financing.

In 2016, the Government of the CAR launched the reconstruction of the energy sector<sup>19</sup>, including the attraction of international financing, which made it possible in 2018 to initiate the Project for the Modernization of Water Supply and Electricity (PASEEL)<sup>20</sup>; in 2019, the Emergency Project for Electricity Supply and Access (PURACEL)<sup>21</sup>, under which the Danzi SPP was built and commissioned; and in, 2022 the currently operating Project to Strengthen the Power Sector and Improve Access in the CAR (PARSE), which provides for the installation of five mini-grids with a total capacity of 10 MW in the towns of Nola, Bouar, Bossémbélé, and Bangassou, the reconstruction of transmission networks, and the expansion of the capacity of the Danzi SPP to 40 MW<sup>22</sup>. Nevertheless, these measures are critically insufficient to overcome the systemic energy crisis.

#### CENTRAL AFRICAN POWER POOL

The Central African Republic is a member of the Central African Power Pool (Pool Energétique de l'Afrique Centrale, PEAC), one of five regional African power pools<sup>23</sup> created between 1995 and 2005 with the aim of establishing a pan-African electricity transmission infrastructure functioning as a single market. According to the Russian economist A. Sharova, "...despite the relative success of the Southern African Power Pool, the development of regional markets is proceeding at a slow pace. Their effective functioning is hampered by a number of factors, namely: (1) a shortage of generating capacities, underdeveloped energy infrastructure, and weak diversification of energy sources; (2) a deficit of investment in generation, transmission, and distribution of electricity; (3) the initial stage of liberalization of electricity markets and a lack of trust between states; (4) a preference for bilateral agreements over regional ones" [Sharova 2020a: 1157]. In this context, the Central African Power Pool demonstrates all of these limitations, being the weakest of the five African pools; and within it, the Central African Republic occupies the last place in terms of country-level electrification.

---

<sup>19</sup> Takouleu J.-M. Electrification: Central Africa remains the continent's soft spot. *Africa Energy Portal*. 28.05.2024. <https://africa-energy-portal.org/blogs/electrification-central-africa-remains-continents-soft-spot> (accessed: 01.09.2025)

<sup>20</sup> Water and Electricity Upgrading Project. *World Bank*. 2025. <https://projects.worldbank.org/en/projects-operations/project-detail/P162245> (accessed: 01.09.2025)

<sup>21</sup> CAR Emergency Electricity Supply and Access Project. *World Bank*. 2025. <https://projects.worldbank.org/en/projects-operations/project-detail/P164885> (accessed: 01.09.2025)

<sup>22</sup> Renewables Boost Sustainable Development in the Central African Republic and The Gambia. *World Bank*. 10.02.2025. <https://www.worldbank.org/en/results/2025/02/10/renewables-boost-sustainable-development-in-the-central-african-republic-and-the-gambia> (accessed: 01.09.2025)

<sup>23</sup> SAPP in Southern Africa, WAPP in West Africa, EAPP in East Africa, PEAC in Central Africa, and COMELEC in North Africa.

PEAC is a specialized agency of the Economic Community of Central African States (ECCAS/CEEAC), responsible for the implementation of energy policy, for research and the construction of energy infrastructure, and for organizing electricity exchanges among the eleven countries that are members of the pool. At present, the PEAC portfolio includes 28 integration infrastructure projects (PIP) and 13 electrification projects (PPET)<sup>24</sup>, most of which have the status of “awaiting financing” or “planned”. The CAR is involved in the implementation of eight projects (Appendix 1).

## ASPECTS OF THE DEVELOPMENT OF THE CAR ENERGY SECTOR

The development of socio-economic infrastructure, including the energy sector, is one of the key priorities of the CAR, as reflected in the National Development Plan of the Republic for 2024–2028 (NDP–CAR)<sup>25</sup>. The Plan provides for strengthening the institutional and regulatory framework of the sector; improving ENERCA’s technical and commercial performance; developing energy infrastructure; promoting decentralized systems and renewable energy sources; constructing fuel storage facilities in the regions of the country; upgrading the qualifications of specialists; implementing energy efficiency measures; conducting research and strategic planning; supporting the private sector in order to disseminate solutions in the field of autonomous and solar energy; and creating a consumer protection association.

According to the NDP–CAR, the implementation of energy policy, the Investment Plan up to 2040, and the National Energy Strategy is necessary in order to optimize the institutional environment. At the time of writing, however, Plan-2040 and the National Strategy have not been published publicly and remain under development.

The main emphases in the NDP–CAR are placed on the optimization of the legal and institutional framework of the Republic’s energy system, aimed at regulating decentralized electricity production, aligning with PEAC policy, developing tariff policy, and strengthening the role of the Ministry of Energy and Water Resources (MDERH) in regulating the energy market. This will require changes to the regulatory and legal framework and to technical standards, which will entail amendments to existing legislation and the creation of a legal basis for renewable energy sources and an energy efficiency system. At the same time, great importance is attached to improving the efficiency of ENERCA’s activities and upgrading the qualifications of its employees.

The development of energy infrastructure includes projects such as increasing the capacity of the Mobayi dam, the construction of small hydropower plants, as well as the construction of two hydropower plants, BAC and LOTEMO, on the Lobaye River. In order to improve the stability of electricity distribution, it is planned to connect local power grids with the DRC. The promotion of decentralized systems and renewable energy sources includes the launch of pilot mini-grid programs, the promotion of decentralized solar energy, and the development of subsidized programs for autonomous systems and clean cooking technologies. These measures are aimed at increasing the level of electricity access to 42% by 2028.

---

<sup>24</sup> Pool énergétique de l’Afrique Centrale. *Institution Spécialisée de la Communauté Economique des Etats de l’Afrique Centrale (CEEAC)*. <https://peac-ac.org/projets/> (accessed: 01.09.2025)

<sup>25</sup> Plan national de développement: 2024-2028. *Food Security Cluster*. 2024. <https://fscluster.org/sites/default/files/2024-10/PND%20FINAL.pdf> (accessed: 01.09.2025)

A special role in the NDP–CAR is assigned to the construction and restoration of fuel storage infrastructure for hydrocarbon-based power generation, in particular in Kolongo, which will make it possible to build up fuel reserves in order to minimize the risks of global price fluctuations, reduce shortages, and address logistical constraints. The law enforcement and fiscal authorities are tasked with combating fraud and smuggling in the energy sector.

The budget of the “NDP–CAR 2024–2028” amounts to \$12,797 million, of which a total of \$4000 million (31.3% of total expenditures) is allocated for the development of transport, social, and energy infrastructure: \$400 million in 2024, \$680 million in 2025, \$880 million in 2026, \$1,040 million in 2027, and \$1000 million in 2028<sup>26</sup>. The sources of financing for the National Development Plan budget are state funds, which account for 20% (\$2600 million), and domestic and foreign private capital, which accounts for 30% (\$3800 million). The remaining 50% (\$6400 million) constitutes a budget deficit, which is theoretically planned to be covered by development banks, international financial institutions, and foreign bilateral state investments<sup>27</sup>.

According to this plan, the strategic avenue for supplying the Central African Republic with electricity is solar and hydropower, which, according to expert estimates, has a potential of 2000 MW (less than 1% is currently utilized). For the Central African Republic, where abundant solar insolation is combined with the absence of centralized power grids, solar energy is the most obvious option for addressing the problem of electrifying remote areas of the country [Abramova, Sharova 2023: 439–440; Agoundedemba, Kim, Kim 2023: 9–11].

However, significant constraints reduce the effectiveness of solar energy as the main solution for the CAR. The principal drawback of SPPs is their fundamental inability to provide a stable baseload and their high-cost price. The absence of generation at night and the sharp drop in output during the rainy season or under heavy cloud cover creates a critical dependence on backup sources of power generation. Large-scale energy storage remains economically prohibitive, given the high cost of modern battery energy storage systems (BESS). In addition, the technical capabilities of SPPs are insufficient for the creation and development of energy-intensive industries that require round-the-clock supply of tens of megawatts of electricity. Despite high insolation, the apparent simplicity, and widespread promotion of SPPs as an effective solution, solar energy in its current form can only address local low-capacity power supply tasks and cannot serve as a strategic response to systemic challenges.

In this regard, the introduction of distributed generation systems that are not affected by meteorological factors is the main avenue of the development of the electric power sector. Such systems, in contrast to solar power generation, provide a stable energy supply regardless of weather conditions.

One of these promising solutions is the construction of small hydropower plants (HPPs) [Sharova 2024]. The Central African Republic has a developed and geographically diverse hydrological network formed by the river basins of the Ubangi, Mbomou, Kotto, Uele, Sangha, and their numerous tributaries. These rivers are characterized by a stable seasonal regime and a pronounced gradient and flow mainly in unregulated channels, which makes it possible to use their potential without the need to construct large dams and diversion canals. The combination of these characteristics

---

<sup>26</sup> Plan national de developpement: 2024–2028. *Food Security Cluster*. 2024. <https://fscluster.org/sites/default/files/2024-10/PND%20FINAL.pdf> (accessed: 01.09.2025)

<sup>27</sup> Ibid.

makes the country's territory favorable for the deployment of mini-HPPs in the capacity range from 50 kW to 3–5 MW. According to a UNIDO report, the estimated technical potential of small hydropower ( $\leq 10$  MW) in the CAR is about 41 MW. Over a 1–3-year horizon, a program consisting of four mini-HPPs with a total capacity of 2.05 MW has been confirmed for implementation<sup>28</sup>.

Small hydropower plants (HPPs) of a mobile containerized design are advantageous in that they do not require fuel and have low operating costs. According to energy studies, such units are capable of operating for decades, providing round-the-clock generation with minimal technical maintenance. With a service life of up to 25 years and a cost of electricity generation below \$0.04 per 1 kWh, these plants become an economically efficient solution. A systematically deployed network of mini-HPPs can cover up to 30–40% of the baseload in remote regions that have so far not been electrified, including the creation of new social and industrial infrastructure facilities. With a minimal number of generation points, the country gains the possibility to build a distributed power system that is not vulnerable to centralized failures.

Soviet Africanist scholars used to advance a strategy of thermal generation based on fossil fuels, relying on the intra-African energy market, and of hydropower generation in regions with high hydropower potential, particularly in Central Africa [Fedorov 1975: 81–83; Sagoyan 1989: 89–90]. The use of solar, wind, and geothermal energy, according to their forecasts, would develop not for industrial use but for meeting the needs of the population [Goncharov 1982: 139].

## PROSPECTS FOR THE DEVELOPMENT OF NUCLEAR ENERGY

The deployment of small modular nuclear power plants (or small modular reactors, SMRs) in the Central African Republic appears to be a promising technological solution. Small-capacity nuclear power plants are nuclear power plants with an installed capacity from 10 to 60 MW with the possibility of scaling, designed in the form of a modular transportable unit intended for installation in areas without centralized power grids and without access to liquid fuel. They are capable of operating under extreme climatic conditions and temperatures<sup>29</sup>.

At present, the Russian State Atomic Energy Corporation Rosatom is the world leader in the production of SMRs. The estimated service life of all plants is at least 60 years, which guarantees the long-term and reliable operation of the energy infrastructure. These units, which use innovative energy solutions, are capable of operating on a single fuel load for 7–10 years, minimizing the need for frequent maintenance and refueling. The installation of the plants takes 24–36 months.

A separate promising avenue is mobile transportable micro nuclear power plants with a capacity of 1–10 MW (scalable up to 20 MW), delivered as a turnkey ready-to-use solution and intended for remote areas. The main advantage of such nuclear power plants is the simplicity of deployment and a very high degree of autonomy. A distinctive feature of these energy facilities is their ability to operate in a fully autonomous mode without the permanent presence of personnel throughout the entire fuel cycle, which is 8 years or

---

<sup>28</sup> World Small Hydropower Development Report 2022. *UNIDO*. 2022. <https://www.unido.org/WSHPDR2022> (accessed: 01.09.2025)

<sup>29</sup> Small Nuclear Power Plants. *Rosatom*. 2025. (In Russ.). <https://rusatom-overseas.com/ru/smr/> (accessed: 01.09.2025)

more. Among the most thoroughly developed solutions on the global market, the Russian project “Shelf-M” 30 stands out: a power plant with an electric capacity of 10 MW (with a thermal capacity of 35 MW) and a refueling interval of at least 8 years. For the CAR, this class of sources can cover “targeted” loads with a minimal volume of construction and installation work and shortened commissioning periods and, if necessary, allows the relocation of the module as territories and projects develop.

In the long term, small-scale nuclear power is undoubtedly one of the priority solutions for the CAR, but in the current and short-term perspective, the construction of an SMR unit with a capacity of 55 MW solely for the needs of the CAR is an unfeasible project, since its estimated cost exceeds \$0.5 billion<sup>31</sup>. It should be noted that at present only two countries in Africa, South Africa (an operating nuclear power plant) and Egypt (a nuclear power plant under construction), are actually developing nuclear generation.

#### APPLICABLE STRATEGIES FOR THE DEVELOPMENT OF THE CAR ENERGY SECTOR

The development of the country’s energy sector must be regarded as part of state economic policy, which requires devising an energy transition strategy for the CAR that should become part of the long-term socio-economic development plan of the state. The strategy must be cross-sectoral and be based on realistic, well-grounded road maps with substantiated sources of financing. An example may be the “Energy Strategy of the Russian Federation up to 2050”<sup>32</sup>.

Taking into account the challenges and problems facing the CAR, as well as the need to use breakthrough solutions, we shall consider adapted (applicable) strategies for the development of the CAR energy sector in the current and medium-term periods. In this situation three approaches are possible: the first is an exogenous path, focused primarily on attracting external financing (this is the basis of the NDP–CAR); the second is an endogenous path, based above all on reliance on the country’s own resources (the concept of Self-Reliance, SR); and the third is an integration model (the concept of Collective Self-Reliance, CSR). In the elaboration of applicable energy strategies (AES), it is necessary to take into account the concept of adapted, or appropriate, technology [Schumacher 1973]. A fundamental issue here is the agency of the CAR.

The discourse on African agency is becoming more and more relevant today in the context of the growing role of Africa in world politics and the global economy. In this context, the development of the energy strategy and tactics of the CAR must be carried out at the country level, and foreign expert assessments should not be substituted by goal-setting on the part of international institutions. African agency should manifest itself not only in the implementation of regional development priorities but also in their

---

<sup>30</sup> Shelf-M project being developed for Sovinoe gold deposit. *World Nuclear News*. 2023. <https://www.world-nuclear-news.org/Articles/Shelf-M-project-being-developed-for-Sovinoe-gold> (accessed: 01.09.2025)

<sup>31</sup> The price parameters of the project for the construction of an SMR with a capacity of 55 MW near the settlement of Ust-Kuyga in Yakutia, approved by Rosatom, have been used, since the harsh climatic conditions of its construction and operation are similar to those of a hypothetical project in the CAR. The total cost of the project amounts to 75.4 billion rubles.

<sup>32</sup> Order of the Government of the Russian Federation of 12 April 2025 No. 908-r. *Government of the Russian Federation*. 12.04.2025. (In Russ.). <http://static.government.ru/media/files/LWYfSENa10uBrrBoyLQqAAOj5eJYIA60.pdf> (accessed: 20.10.2025)

formulation. Most often, a significant part of the analytical work is carried out with external financial support and with the involvement of extra-regional consulting agencies [Degtarev 2024a]. The country's dependence on external financing and its presence in the monetary sphere of influence of France (the CFA franc) have a substantial impact on the state economic policy of the CAR.

The concept of appropriate technology [Schumacher 1973] in this case must be taken into account when assessing how adaptive and realistic the energy strategy is in relation to the technical and the internal and external political and economic conditions in which the CAR finds itself. With a GDP of \$2,752 million in 2024, the state of the Republic's economy does not allow for the effective development of the national energy sector relying exclusively on its own resources. Nevertheless, within the framework of the endogenous path, the optimal solution, substantiated by numerous countries' practices, is the development of domestic and cross-border transmission infrastructure linked to planned and under-construction power plants, which would stimulate the growth of generation.

In developed countries, where access to electricity stands at 99.9%, the primary step is the installation of power plants, which leads to the construction of transmission infrastructure, whereas in developing countries with decentralized energy systems and limited access to electricity, the opposite is true: the creation of transmission networks stimulates the growth of generation [Pospelov 2018: 268]. According to the African Development Bank, the cost of transmission infrastructure amounts to approximately 8–10% of the cost of generating capacity, which appears to be an acceptable burden for the CAR economy and fits within the infrastructure budget of the NDP–CAR<sup>33</sup>. By making the development of a unified domestic and cross-border transmission network, linked to planned power generation sites, a priority of its energy strategy, the CAR can also make a leap forward in the development of its own energy system.

A strategic priority of the CAR's energy policy should be the modernization of existing and the construction of new fuel storage facilities for small thermal power plants with capacities of up to 20 MW, operating on diesel, coal, natural gas (LNG), and biofuels. The deployment of such power plants is essential to support the operation of solar generation facilities, industrial projects, and mineral extraction. These measures will stabilize the cost of generation amid fluctuations in global hydrocarbon prices and will stimulate the development of thermal power plants, which in Africa constitute the fundamental basis of industrialization<sup>34</sup>.

At the same time, the diversification of fuel supplies in order to eliminate dependence on French transnational corporations, which significantly reduce the level of state agency, is of particular relevance. For example, the withdrawal of *TotalEnergies SE* from the CAR market in 2022 provoked a fuel crisis in the country that could potentially have escalated into a political crisis. In addition to supplies of energy resources from extra-continental friendly non-Western countries, including Russia and India, it is advisable to diversify supplies through cooperation with the states of North Africa, Nigeria, South Africa, and Equatorial Guinea. At the same time, the use of the Pan-African Payment and Settlement System (*PAPSS*) makes it possible to carry out settlements in national

---

<sup>33</sup> State of Africa's Infrastructure Report 2025. *Africa Finance Corporation*. <https://www.africafc.org/our-impact/our-publications/state-of-africa-infrastructure-report-2025> (accessed: 20.10.2025)

<sup>34</sup> According to the International Energy Agency (IEA), out of 248.3 GW of electricity produced in Africa, 184.7 GW (74.8%) came from hydrocarbon-based generation. See: Africa. Energy mix. *IEA*. 2025. <https://www.iea.org/regions/africa/energy-mix> (accessed: 20.10.2025)

currencies with conversion into the CFA franc, bypassing the euro. This mechanism minimizes for the CAR economy the risks associated with rising world import prices and fluctuations of reserve currencies.

For most African countries, ensuring genuine national sovereignty on an individual basis is a difficult task, especially when it comes to the joint development of strategic infrastructure [Degterev 2024b]. This applies equally to the energy sector as an important component of national sovereignty. In our view, the most effective energy strategy for the CAR is an integration model oriented towards CSR.

The CAR has a favorable geographical position; its neighboring states Chad, Sudan, Cameroon, the DRC, and the Republic of the Congo have a combined GDP of about \$205 billion<sup>35</sup>, with an aggregate deficit of installed/available electric capacity of at least 1.1 GW (Sudan, 500 MW [[Al-Rikabi et al. 2025]; Cameroon, 100 MW<sup>36</sup>; Congo-Brazzaville, 151 MW<sup>37</sup>; Chad plans to import 120 MW<sup>38</sup>; DRC, 250 MW<sup>39</sup>).

A breakthrough solution for the CAR would be not only the creation of an internal and cross-border grid but also the organization of multi-megawatt generation projects, which, in turn, would make it possible to supply electricity to neighboring countries while at the same time covering its own demand.

Priority zones for the deployment of HPPs include the areas of Bambari (the Ouham River), Mbaïki (tributaries of the Lobaye), Berbérati (tributaries of the Sangha), as well as Ndélé and Kaga-Bandoro, where there are stable watercourses, proximity to zones of social and economic activity, and a critical need for round-the-clock power supply [Esmenjaud, Rutenbar, Mozersky 2025]. Border areas in the southeast, such as Obo, Gambo, and Zemio, are of particular importance, since plants there can supply strategic facilities, logistics hubs, and border crossings.

If the CAR concludes intergovernmental agreements on electricity supplies with the above-mentioned neighboring countries, the construction of small modular reactors becomes economically and politically feasible. The siting of SMRs must comply with Rosatom's technical requirements [Morozenskaya 2022], ensure transport accessibility, and provide an optimal distance to cross-border interconnection points with electricity-buying countries, subject to security measures. The three key locations that can serve as priority pilot sites are the capital region of Bangui, the town of Bambari in the central part of the country, and the border settlement of Obo in the southeast.

<sup>35</sup> IMF WEO 2025 estimate at current prices. Source: GDP, current prices, dollars. *International Monetary Fund*. April, 2025. <https://www.imf.org/external/datamapper/NGDPD@WEO/OEMDC/ADVEC/WEOWORLD> (accessed: 01.09.2025)

<sup>36</sup> Électricité: ménages et entreprises renouent avec les délestages au Cameroun, malgré les 300 MW injectés par Nachtigal. *Investir au Cameroun*. 13.01.2025. <https://www.investiraucameroun.com/energie/1301-21556-electricite-menages-et-entreprises-renouent-avec-les-delestages-au-cameroun-malgre-les-300-mw-injectes-par-nachtigal> (accessed: 01.09.2025)

<sup>37</sup> La CEC rejoint le CEIF 2025 alors que la remise en état d'une turbine à gaz touche à sa fin. *Congo Energy and Investment Forum*. 28.02.2025. <https://fr.congoenergyinvestment.com/news/cec-joins-ceif-2025-gaz-turbine-overhaul-nears-completion> (accessed: 01.09.2025)

<sup>38</sup> Pacte national de l'énergie pour la République du Tchad. *World Bank*. 2024. <https://thedocs.worldbank.org/en/doc/808746a6d507a18c7379af60ffe07da-0010012025/original/M300-AES-Compact-Chad.pdf> (accessed: 01.09.2025)

<sup>39</sup> Plan National Stratégique de Développement (PNSD) 2024–2028. *Ministère du Plan de La République Démocratique du Congo*. 2025. <https://plan.gouv.cd/wp-content/uploads/2025/04/PNSD-2024-2028-V41.pdf> (accessed: 13.09.2025)

Bangui is regarded as a priority site due to the highly concentrated energy consumption, the presence of grid infrastructure, and relatively developed transport logistics. The placement of an SMR in the vicinity of the capital would make it possible to ensure a stable power supply to the country's administrative and economic center and would also create a basis for future export lines in the direction of Cameroon, the Republic of the Congo, and the DRC.

Bambari is of interest as a major regional hub with the potential for the creation of large industrial clusters and for integration with small hydropower projects on the Ouham River or with mobile nuclear power plants. The establishment of a network of energy facilities in this area would provide electricity to future industrial enterprises and create a foundation for integrating the eastern and central prefectures of the country into a single system. In addition, this location offers opportunities for organizing exports of electricity and goods to the northern regions of the DRC.

Obo is a strategic point on the border with the DRC. The placement of an SMR there is aimed at ensuring the energy security of border areas and creating an export link to the neighboring state. This could become a catalyst for the development of transport, logistics, and extractive infrastructure in the region. As reserve and prospective sites for subsequent stages of SMR deployment, other localities may be considered, including Bangassou, Birao, Bria, and Ndélé.

In essence, a genuine energy hub for the PEAC can be created on the territory of the CAR, based on advanced modular and mobile technologies and with the participation of Russia as a strategic investor. Provided that the Russian Federation installs several small hydropower plants and 2–3 SMRs, PEAC could assume responsibility for building the domestic grid infrastructure in the CAR as well as cross-border transmission networks. With guaranteed offtake of the electricity produced and agreed tariff levels, this investment project may become attractive in terms of profitability and payback periods. By virtue of its geographical position and Russia's involvement in ensuring comprehensive security, the CAR is an optimal location for a Central African energy hub.

This project presupposes the fulfillment of at least three conditions: the existence of cross-border interconnections (inter-system transmission grids) for the integration of national power grids; a common regulatory and legal framework (including memoranda of understanding between governments and enterprises); and a multilateral organizational structure responsible for planning, harmonizing rules, and developing the commercial basis for cross-border electricity trade [Sharova 2020a: 1159]. One of the key conditions is the liberalization of the electricity market in the CAR and the opening of access for private energy companies. This will make it possible to attract direct investment into the power sector and to recoup investments in energy infrastructure relatively quickly by selling non-strategic transmission segments to private investors through open tenders, as it was done in Brazil<sup>40</sup>.

## CONCLUSION

The energy system of the CAR is in a critical condition. Actual generation does not exceed 75 MW, while the current demand of the capital, Bangui, alone is 200 MW. The system is decentralized, and the state-owned company ENERCA is ineffective. A lack of

---

<sup>40</sup> Africa Finance Corporation. State of Africa's Infrastructure Report 2025. AFC. <https://www.africafc.org/our-impact/our-publications/state-of-africa-infrastructure-report-2025> (accessed: 01.10.2025)

financing does not allow the gradual evolutionary development of the energy sector amid a rapidly growing population and the need for socio-economic growth. In the current critical situation in the CAR energy sector, it is advisable to elaborate and implement an emergency crisis plan by analogy with the GOELRO Plan<sup>41</sup>, which was adopted by Soviet Russia in 1920. This plan was directive in nature and mandatory for implementation by all ministries and agencies. It consisted of two key parts, which included the reconstruction of the old energy infrastructure and the construction of new facilities, as well as a set of urgent anti-crisis measures. In terms of its effectiveness, this project has no analogues either in historical retrospect or in recent history.

The Central African Power Pool (PEAC) is experiencing structural problems related to a lack of financing and an energy deficit and is not in a position to participate in solving the CAR's problems. The absence of significant industrial, agricultural, and mining projects with confirmed financing does not stimulate investment in the energy sector. The National Development Plan of the CAR for 2024–2028 incorporates a budget deficit of 59%.

Under these conditions, it is necessary to elaborate an effective medium- and long-term intersectoral energy strategy (IES) for the country, with clearly identified sources of financing, which takes into account both the leadership's capacity to take the necessary decisions (agency) and appropriate technologies (AT) for the local and regional electricity markets. Taking all these factors into account, and given the three main approaches to shaping the IES (exogenous, endogenous, and integration), the most effective option, in the authors' view, is their symbiosis based on Self-Reliance (SR) with further development towards Collective Self-Reliance (CSR), where the attraction of external financing should be based on the import of technologies and equipment while organizing systemic financing (portfolio investments, multilateral development institutions, *IPO*, *IBO*). The IES is aimed at building the energy sovereignty of the CAR, while the Anti-crisis Energy Plan (AEP) is aimed at ensuring energy security in the short and medium term.

One practical medium-term solution could be the creation in the CAR of an energy hub to supply electricity to the CAR and its neighboring countries (Chad, Sudan, Cameroon, the DRC, and the Congo) at a minimum, and to *PEAC* at a maximum. This requires, above all, the political will of the leadership of the states participating in the proposed consortium, the support of the African Union and Pan-African development finance institutions, and the presence of a strategic technological investor. The participants in the consortium could be national energy corporations and oil-producing companies, subject to appropriate state guarantees and co-financing. The Russian Federation, represented by the State Atomic Energy Corporation Rosatom and PJSC RusHydro, has the capacity to become a strategic partner of the CAR in the development of the energy sector at the key stages of the project [Kalinchenko 2017].

The energy history of Central Africa is not a story of deficit but of untapped potential. For long-term investors, the energy sector of Central Africa offers a share in the industrial transformation of one of the major energy systems in the not-too-distant future. The turning point has matured. Africa needs not only more energy but also greater investment ambition to match the scale of its opportunities!

---

<sup>41</sup> Gvozdetskii V.L. "GOELRO plan." *Great Russian Encyclopedia 2004-2017*. (In Russ.). [https://old.bigenc.ru/domestic\\_history/text/2374264?ysclid=mgbwv563go553163996](https://old.bigenc.ru/domestic_history/text/2374264?ysclid=mgbwv563go553163996) (accessed 3.10.2025)

**Supplementary materials to the article<sup>42</sup>: Appendix 1. PEAC projects involving the Central African Republic.**

REFERENCES

- Abramova I.O., Sharova A.Yu. (2023). Geostrategic risks in the green transition (the case of Africa). *Geology of Ore Deposits*. Vol. 65. № 5. Pp. 428–443. (In Russ.). <https://doi.org/10.31857/S0016777023050027>
- Goncharov L.V. (Ed.). (1982). *Productive forces of African countries. Energy sector*. Moscow: Nauka. (In Russ.)
- Degterev D.A. (2024a). “African Agency” in constructing “African Agency”: International studies in Africa). *International Analytics*. 2024a. Vol. 15. № 2. Pp. 57–73. (In Russ.). <https://doi.org/10.46272/2587-8476-2024-15-2-57-73>
- Degterev D.A. (2024b). Collective Self-Reliance: Restarting the Concept in the Sahel in the Context of a Multipolarizing World Order. *Journal of the Institute for African Studies*. 2024b. № 2. Pp. 60–81. <https://doi.org/10.31132/2412-5717-2024-67-2-60-81>
- Kalinichenko L.N. (2017). The Perspectives of Russian Business Involvement in Africa’s Energy Projects. *Journal of the Institute for African Studies*. № 1 (38). Pp. 45–55. (In Russ.)
- Kulaev K.B., Affouet M.O.K. (2023). Africa: energy sector. Problems of development and management. *Innovation and Investment*. № 10. Pp. 89–93. (In Russ.)
- Morozenskaya E.V. (Ed.). (2022). *Scientific and technological potential of modern Africa*. Moscow: Institute for African Studies. (In Russ.)
- Pospelov V.K. (2018). Prospects of electrification in African countries. *Fundamental Research*. 2018. № 11–2. Pp. 266–270. (In Russ.)
- Sagoyan L.Yu. (1989). *The Central African Republic. A reference book*. Moscow: Nauka. (In Russ.)
- Saenko A.N. (2022a). Green energy in Africa. *Russian Economic Bulletin*. Vol. 5. № 1. Pp. 220–229. (In Russ.)
- Saenko A.N. (2022b). Some Aspects of the West African Energy Market Development. *Modern Science: Topical Problems of Theory and Practice. Series: Economics and Law*. № 5. Pp. 83–89. (In Russ.)
- Fedorov A.V. (2025). The Main Development Trends of Sub-Saharan Africa Financial System. *Finance: Theory and Practice*. Vol. 29. № 3. Pp. 6–19. (In Russ.). <https://doi.org/10.26794/2587-5671-2025-29-3-6-19>
- Fedorov B.I. (1975). *The Central African Republic*. Moscow: Mysl’. (In Russ.)
- Sharova A.Yu. (2020a). Electricity markets in Africa: current state and development challenges. *Journal of International Economic Affairs*. Vol. 10. № 4. Pp. 1157–1174. (In Russ.)
- Sharova A.Yu. (2020b). Investment in the Electricity Sector of Africa and Its Role in Overcoming the Continent’s Energy Poverty. *Outlines of global transformations: politics, economics, law*. Vol. 13. № 6. Pp. 181–197. (In Russ.). <https://doi.org/10.23932/2542-0240-2020-13-6-10>
- Sharova A.Yu. (2022). Electricity Projects in Africa. *Journal of the Institute for African Studies*. № 2 (59). Pp. 17–34 (In Russ.). <https://doi.org/10.31132/2412-5717-2022-59-2-17-34>
- Sharova A.Yu. (2024). Prospects for the development of hydropower in Africa. *Herald of the Russian Academy of Sciences*. Vol. 94. № 6. Pp. 527–539. (In Russ.). <https://doi.org/10.31857/S0869587324060033>
- Schumacher E. (1973). *Small Is Beautiful: A Study of Economics as If People Mattered*. London: Blond and Briggs.
- Esmenjaud R., Rutenbar S., Mozersky D. (2025). *Renewable Energy and Peace in the Central African Republic. An Opportunity for the United Nations to Lead by Example*. Washington: Stimson. [https://www.stimson.org/wp-content/uploads/2025/03/Renewable-Energy-and-Peace-in-the-Central-African-Republic\\_WEB.pdf](https://www.stimson.org/wp-content/uploads/2025/03/Renewable-Energy-and-Peace-in-the-Central-African-Republic_WEB.pdf) (accessed: 15.11.2025)
- Dos Santos K.L. (2023). Forgotten territories: the uneven geography of FDI in Africa and the case studies of Burundi, Central African Republic, Comoros, the Gambia, Guinea-Bissau and São Tomé and Príncipe. *African Geographical Review*. Vol. 42. № 4. Pp. 467–482. <https://doi.org/10.1080/19376812.2022.2073241>

---

<sup>42</sup> Supplementary materials to the article are posted on the official website of the Journal of the Institute for African Studies (<https://africajournal.ru/>) on the article’s webpage.

- Gitelman L., Kozhevnikov M., Visotskaya Y. (2023). Diversification as a Method of Ensuring the Sustainability of Energy Supply within the Energy Transition. *Resources*. Vol. 12. № 2. <https://doi.org/10.3390/resources12020019>
- Okere K.I., Fasanya I.O. (2024). Technological progress in achieving environmental sustainability in Central and Southern Africa: The role of fossil fuels and institutional quality. *Energy Sources. Part B: Economics, Planning, and Policy*. Vol. 19. № 1. 2361746. <https://doi.org/10.1080/15567249.2024.2361746>

*Научная статья*

## **ЭНЕРГЕТИКА ЦЕНТРАЛЬНОАФРИКАНСКОЙ РЕСПУБЛИКИ: СОСТОЯНИЕ, ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ**

**© 2025 А.В. Федоров, Т.Н. Кирикова**

ФЕДОРОВ Андрей Владимирович, доктор экономических наук, ведущий научный сотрудник, Центр изучения стран Африки южнее Сахары, Институт Африки РАН, Москва, Российская Федерация. ORCID: 0009-0005-7533-8190. E-mail: avfedorov@inbox.ru

КИРИКОВА Татьяна Николаевна, соискатель, Институт Африки РАН, Москва, Российская Федерация. ORCID: 0009-0002-5853-1229. E-mail: kirikova.tn7@gmail.com

**Аннотация.** Обеспечение устойчивого доступа к электроэнергии представляет собой критически важную проблему экономического развития и национальной безопасности для всех государств, но для наименее развитых стран Африки к югу от Сахары с высоким уровнем бедности эта проблема стоит особенно остро. Энергетический дефицит не только сдерживает промышленный рост и ограничивает доступ населения к базовым социальным услугам, таким как здравоохранение и образование, но также препятствует притоку иностранных инвестиций. Энергетический сектор Центральноафриканской Республики (ЦАР) является одним из примеров сочетания структурных вызовов и нереализованных возможностей, существующих в странах Центральной Африки. Международная финансовая помощь, как правило, ограничивается точечными проектами, не решающими системных проблем и не устраняющих зависимость от внешних поставщиков топлива и оборудования. В данной статье исследуется текущее состояние энергетического сектора ЦАР, анализируются его проблемы и потенциальные направления развития. Рассматриваются краткосрочные и долгосрочные применительные стратегии эндогенного, экзогенного и интеграционного развития энергетического сектора ЦАР на основе строительства энергетической сетевой инфраструктуры, опоры на собственные и коллективные силы, привлечения стратегических инвесторов в энергетику ЦАР. Обосновываются необходимость и подходы к разработке межотраслевой энергетической стратегии ЦАР, учитывающей уровень агентности (*agency*) государства и адаптированные (*appropriate*) технологии. В качестве приоритетного интеграционного направления развития энергетического сектора страны в статье предлагается экономическая концепция создания на территории ЦАР энергетического хаба, генерирующего и передающего электроэнергию в соседние с республикой страны.

**Ключевые слова:** энергетическая стратегия, Центральноафриканская Республика, энергетическая инфраструктура, агентность, энергетический хаб, Росатом, энергетика Африки, мобильные АЭС, АСММ, ГЭС, ТЭС

**Персональный вклад авторов:** совместное исследование.

**Конфликт интересов:** авторы заявляют об отсутствии конфликта интересов.

DOI: 10.31132/2412-5717-2025-73-4-156-175

**Для цитирования:** Федоров А.В., Кирикова Т.Н. Энергетика Центральноафриканской Республики: состояние, проблемы и перспективы. *Ученые записки Института Африки РАН*. 2025. Т. 11. № 4. С. 156–175. <https://doi.org/10.31132/2412-5717-2025-73-4-156-175>