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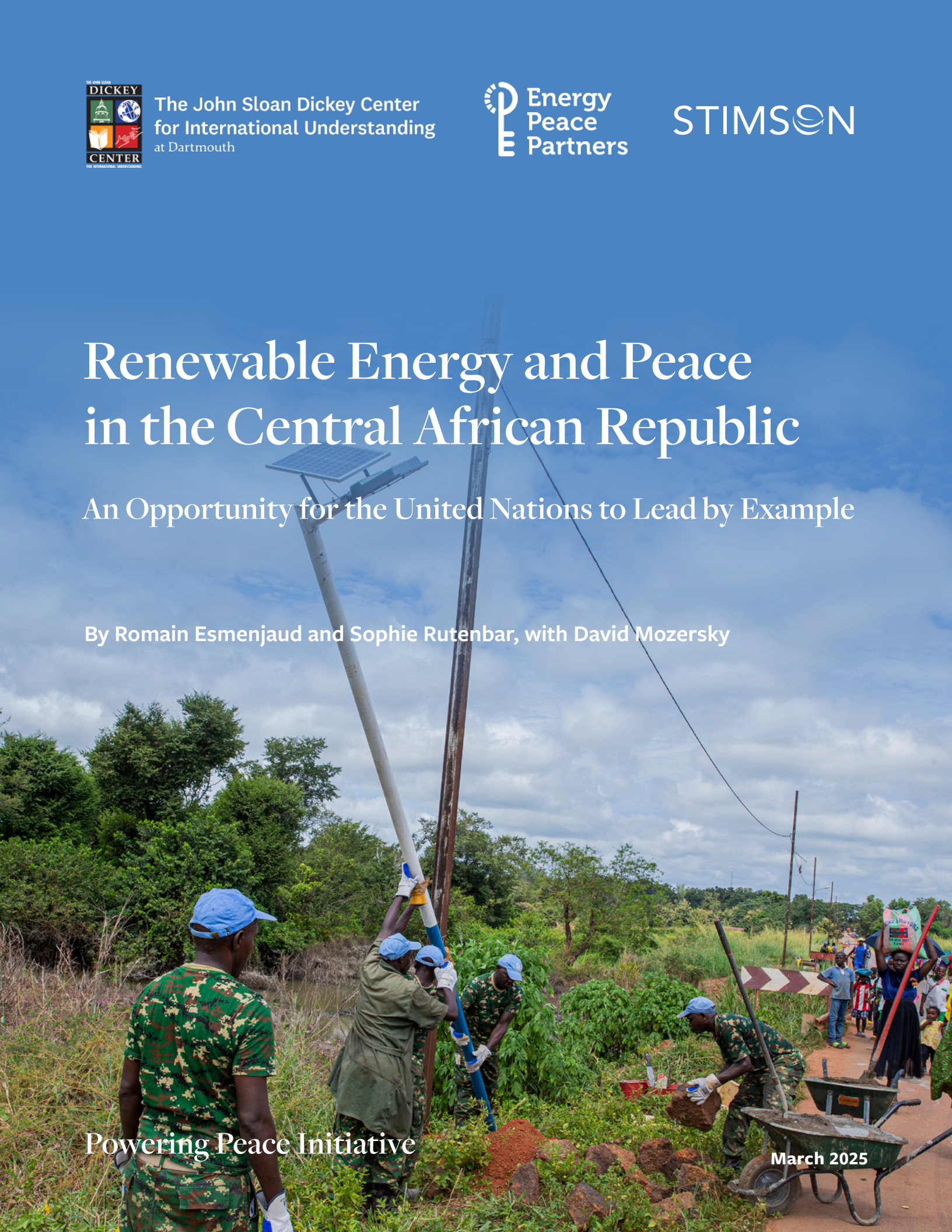
# Renewable Energy and Peace in the Central African Republic

An Opportunity for the United Nations to Lead by Example

By Romain Esmenjaud and Sophie Rutenbar, with David Mozersky

Powering Peace Initiative

March 2025



# About Powering Peace

Powering Peace is a joint initiative of the Stimson Center, Energy Peace Partners, and the Dickey Center for International Understanding at Dartmouth College, which aims to explore cleaner and more efficient energy options for multinational field operations in fragile states. The Stimson Center, a Washington, D.C.-based research and policy center, has led studies and research on peace operations since its founding 30 years ago, and works to protect people, preserve the planet, and promote security and prosperity. Energy Peace Partners is a U.S.-based organization that works to leverage climate and finance solutions to support peace in places affected by violent conflict. The John Sloan Dickey Center for International Understanding at Dartmouth College educates, convenes, and empowers students, faculty, and the community to confront significant challenges facing the world.

The Powering Peace initiative envisions a broad policy shift within the United Nations (UN) system and among its member states to adopt renewable energy in field operations for both short-term and long-term benefits. As part of a shorter-term effort, the initiative aims to help the UN embrace more efficient and cost-saving technologies, and shift to a greater use of renewable energy in support of missions. That is more urgent now within the context of the UN Secretariat's 10-year Climate Action Plan to source 80 percent of electricity from renewable energy by 2030. The initiative also seeks to identify impacts of and improvements in current practice, such as reducing the expense or insecurity associated with long fuel convoys or corruption. As part of a longer-term effort, the initiative aims to help the UN better integrate climate solutions in crisis-affected areas as part of the way it does business, an effort that can support peacebuilding and fulfill the organization's ambition to achieve universal global access to energy under the UN's Sustainable Development Goals.

Powering Peace examines the extent to which the footprints of international humanitarian and peace operations can be leveraged to introduce and extend the benefits of renewable energy to communities in fragile states. The project includes the use of reports and case studies as a research tool to identify innovative practices, incentives, and disincentives facing field missions, as well as opportunities for greater efficiency and peacebuilding. Our reports include: *Renewable Energy and UN Peacekeeping: Untapped Potential in the Democratic Republic of the Congo*, published in September 2019; *Shifting Power: Transitioning to Renewable Energy in United Nations Peace Operations*, published in January 2021; *From Renewable Energy to Peacebuilding in Mali: MINUSMA's Opportunity to Bridge the Gap*, published in June 2021; *Powering Ahead: The United Nations and Somalia's Renewable Energy Opportunity*, in March 2022; *Renewable Energy and the United Nations: A Green Spark for Peace in South Sudan*, published in February 2023; *Peacekeeping and Clean Energy: Can Climate and Development Goals Align in Fragile States?*, published in September 2024; and *A Case Study in Improving Environmental Management in UN Peacekeeping*, November 2024.

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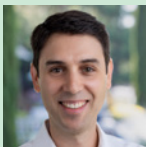
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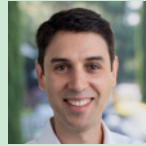
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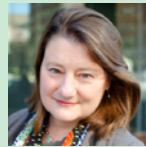
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# Contents

<b>Executive Summary</b> .....	1
Recommendations .....	4
<b>1. Introduction</b> .....	7
<b>2. Context</b> .....	9
2.1. Historical background .....	9
2.2. International interventions as a key feature of CAR’s history and political economy .....	10
2.3. Marginalization and discrimination: Key factors of the conflict.....	11
2.4. Marginalization, unequal development, and energy in peace agreements.....	12
<b>3. Electricity in CAR: Insufficient and Unequally Distributed</b> .....	13
3.1. The energy sector in CAR: Historical background .....	13
3.2. A sector (very) slowly expanding through the development of renewable energy.....	14
3.3. The unequal distribution of electricity production and access.....	16
<b>4. Focus Areas: Electricity in Bouar, Sibut, and Ndélé</b> .....	17
4.1. Bouar.....	17
4.2. Sibut .....	19
4.3. Ndélé.....	20
<b>5. The Many Advantages of Renewable Energy in the CAR Context</b> .....	21
5.1. CAR’s enormous potential in renewable energy.....	21
5.2. Co-benefit 1: An opportunity to (partly) address concerns over deforestation .....	21
5.3. Co-benefit 2: An opportunity to (partly) address fuel shortages .....	22
<b>6. MINUSCA: A Challenging Mandate in Challenging Circumstances</b> .....	24
6.1. Problematic initial assumptions and their lingering effects .....	24
6.2. Insufficient resourcing .....	25
6.3. Spread out, remote, and numerous: The deployment of MINUSCA’s camps.....	27
6.4. The challenges of powering MINUSCA camps.....	29
<b>7. The Costs and Consequences of Diesel Dependence</b> .....	30
7.1. MINUSCA’s fuel sourcing for diesel .....	30
7.2. Supply routes into the country .....	31
7.3. Distribution of fuel within the country.....	32
7.4. Fuel supply chains and the risk of waste and fraud .....	34
7.5. The relationship between MINUSCA, Tristar, and the CAR government .....	35

<b>8. MINUSCA Renewable Energy Efforts and Plans, and the Challenges</b>	
<b>Confronting Them</b> .....	36
8.1. Imperatives for MINUSCA’s shift toward increased renewable energy.....	36
8.2. Progress on MINUSCA renewable energy efforts.....	39
8.3. Challenges confronting MINUSCA’s transition to renewable energy .....	42
8.4. Pathways to scaling renewable energy .....	43
8.5. What more can be done? Leaving behind a positive mission legacy .....	46
<b>9. Leveraging the Long-Term Attention of the UNCT</b> .....	47
9.1. UNCT support for government energy priorities .....	47
9.2. Understanding UNCT energy practices in Bangui and across CAR .....	48
9.3. The challenges of a transition to renewable energy .....	51
9.4. The possibilities of the UN agency transition to renewable energy.....	53
<b>10. Conclusion</b> .....	54
<b>Endnotes</b> .....	55

## Figures

<b>Map 1.</b> CAR: Electricity infrastructure, fuel supply routes and MINUSCA sites.....	7
<b>Table 1.</b> Chronology of international interventions in CAR since 1997 .....	10
<b>Table 2.</b> Comparison of engineering staffing deployed for the four largest peacekeeping missions in the 2023–24 financial year .....	26
<b>Table 3.</b> Growth of MINUSCA authorized uniformed personnel and engineering section numbers over time .....	27
<b>Box 1.</b> MINUSCA PPA efforts .....	44
<b>Box 2.</b> Profile of UNICEF energy projects and energy practices as an example of good practices .....	52

# Executive Summary

The Central African Republic (CAR) is mired in a complex and multi-layered crisis that affects the peace and security of its population. More than 10 years after the latest crisis started in 2013, the United Nations estimates that close to half of the 6.1 million Central Africans remain in need of humanitarian support. Multiple peace agreements—such as the Accord pour la Paix et la Réconciliation (APPR) of February 2019—have recognized that political, economic, and social marginalization are key drivers of the conflict. This report looks at the role that electricity access plays in the country’s crisis, discusses how a greater use of renewable energy can help to address the root causes of the conflict, including tensions between the center and the periphery, and highlights a unique opportunity for the international community to support these efforts.

One of the least electrified countries in the world, the CAR has the potential to grow its power sector by investing in renewables, thereby reducing its reliance on imported fuel and diesel generators, and expanding energy access to historically marginalized regions. This approach aligns with the government’s priorities to increase energy production while addressing environmental concerns related to climate change and deforestation. Furthermore, increasing renewable energy resources could assist the CAR population, strengthen efforts at longer-term peace, and bolster the operations and objectives of international partners—including the UN Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA), one of the largest peacekeeping missions in the world.

A landlocked country with a limited formal economy, the CAR has historically been governed in a centralized manner by elites in Bangui, with areas beyond the capital relegated to the periphery of the country’s politics. The elites have largely counted on international actors—France in the past, and now Russia and Rwanda—to ensure security, exploit natural resources, and even build infrastructure. As a result, the country has some of the lowest development indicators in the world, particularly in remote regions. The rate of electrification is one example: only 15.7 percent of the population has access to electricity, overwhelmingly in the capital. Partly as a consequence of the lack of opportunities and basic services provided by the state, marginalized areas like northern CAR—with almost no energy access—have seen repeated armed rebellions.

National development plans call for the balanced and equitable development of all regions, including through renewable energy and increased energy infrastructure, which can drive environmental, economic, and political gains for the government and local populations. The government, with World Bank and international support, recently launched several new solar projects, with more in the works. Yet, in spite of commitments for equity, the pace of implementation has been slow, and most projects are located in the capital or South/South-West region.

MINUSCA is the largest single energy user in the CAR. As such, the mission is uniquely placed to support new renewable energy projects across the country. With a staff of 19,232, including up to 14,400 military and 3,020 police personnel, and a budget of \$1.146 billion, MINUSCA consumes close to a fifth of all fuel in the country and close to a quarter of the electricity used nationally. Only 3 percent of the mission’s power currently comes from renewable energy—lagging well behind the goal of the United Nations Secretary General’s Climate Action Plan (UNSCAP) of 80 percent renewable energy by 2030. Given its size, purchasing power, and geographic distribution, MINUSCA can play an important and catalytic role in boosting the use of renewables throughout the country.

MINUSCA's primary mandates are to protect civilians, extend state authority, support the peace process, and facilitate the delivery of humanitarian aid. The CAR poses an extremely difficult context in which to meet these goals, and the peacekeeping mission faces operational challenges as well. The mission is spread across much of the vast country, and simply resupplying and powering its remote operations is expensive, takes months of planning, and requires a significant amount of force capacity for convoys and related security. Access to electricity presents an operational challenge for the mission and other UN and humanitarian actors in the country, and 97 percent of MINUSCA's energy comes from diesel generators. As a result, the mission is dependent on long, slow, and inconsistent diesel supply chains, and faces significant challenges in electrifying its bases and field sites.

In this context, a transition to renewable energy offers MINUSCA multiple benefits—for example, improving the mission's operational resilience by reducing its dependency on diesel and related convoys, reducing operating costs, improving its environmental footprint, and supporting projects throughout the country that can help advance political and peacebuilding goals, and leave behind a positive legacy. However, several factors have combined to limit the mission's transition to clean energy in the field, including severe understaffing and resourcing in the mission's operational and engineering sectors, financial constraints, and a nascent national renewable energy sector—all within a larger global context of UN peacekeeping under pressure. As a result, MINUSCA lags behind other similar UN missions in its transition to renewable energy.

MINUSCA hopes to increase its use of renewables to 8 or 9 percent by the end of 2025, and while the mission has recently taken steps to install additional solar capacity, it has not yet begun a substantial transition to renewable energy. Opportunities do exist. For example, the mission could lean more aggressively into its renewable energy planning, including by extending plans for power purchase agreements (PPAs) beyond Bria and Bouar to new and more remote locations, such as Bossangoa, Ndélé, or Birao.

MINUSCA cannot lead this transition on its own, as it has neither the expertise nor the programmatic funding to pursue local community electrification projects. Yet its large energy footprint and purchasing power can serve as a catalyst for new projects, or project expansion, which can be supported by the government and other international partners to benefit local populations. Participating in such projects could be built into MINUSCA's positive legacy strategy. This offers the potential to better leverage three related trends: the government's efforts to expand clean energy projects; MINUSCA's clean energy transition, including in its remote field sites; and the commitment and priorities of various international partners to support clean energy in the CAR. The UN Country Team (UNCT) is well suited to contribute to this effort, both by pursuing similar renewable energy solutions and by contributing directly to government priorities on energy.

The report identifies several key findings:

**First, increasing access to electricity could support greater peace and help address some of the root causes of the crisis in CAR, particularly in peripheral areas.** Underdevelopment, as exemplified by the very low rate of electrification, is one of the key drivers of the conflict. The feelings of frustration and marginalization it generates among communities, particularly those based in regions with less infrastructure and fewer public services, have contributed to instability and the emergence of armed groups in peripheral areas. Electricity access is uneven across regions, with existing production facilities and most of the planned future energy projects located in the Bangui area, the Center, or the West/

South-West. Increasing electricity production and distribution in other regions, such as the North-East, would help address political grievances, strengthen resilience for local populations, and create economic opportunities, thereby mitigating the basis for armed groups to recruit fighters. As a significant portion of the Muslim minority lives in these marginalized regions, it could contribute to addressing some of the intercommunal and religious tensions that have fueled the crisis.

**Second, renewable energy production is a promising option for CAR.** Distributed renewable energy offers significant opportunities to increase electricity production across the country. While hydropower potential is greater in the areas with the largest existing energy infrastructure (the South and South-West), other regions including the Center and North-East benefit from particularly high solar irradiation and therefore have high potential for solar photovoltaic (PV). Renewable energy can also help address some of the concerns caused by the disproportionate use of biomass (i.e., deforestation) and fuel (i.e., regular shortage due to supply challenges).

**Third, MINUSCA's reliance on diesel fuel undermines its operational effectiveness and mandate implementation.** MINUSCA is almost entirely reliant on power from diesel generators, receiving only 3 percent of its energy from renewable sources. The country's geography and complex security situation have resulted in a uniquely challenging operating environment for MINUSCA. The mission must support the distribution of fuel and other necessities to dozens of bases and forward and temporary operating camps in the most difficult of circumstances. As a result, a substantial proportion of the mission's military resources are devoted to escorting convoys rather than carrying out mandate tasks like the protection of civilians and support for the extension of state authority.

**Fourth, MINUSCA is well placed to expand its use of renewable energy and is in a unique position to expand its impact in CAR.** The mission is taking steps to increase its use of renewable energy, aiming to almost triple it to 8 or 9 percent by the end of 2025, but more can be done. MINUSCA uses approximately 23 percent of the country's total annual electricity consumption, despite making up less than half of 1 percent of the country's population. As a result, any increase in MINUSCA's renewable energy usage will have a substantial impact on the country's energy landscape, including by reducing the use of fuel. Moreover, given its significant size, energy footprint, and presence all over the country, including in less secure areas, MINUSCA is in a unique position to contribute to the deployment of renewable energy infrastructure in peripheral areas, where it is most needed. Projects that can also extend beyond the UN's fence can benefit local communities and have knock-on political, economic, and peacebuilding benefits across the country, including by providing basic services and opening up social and economic opportunities. A more strategic approach to transitioning to renewable energy would prioritize establishing or expanding renewable energy installations in very remote and challenging locations, like Birao and Obo. These efforts could be bolstered and accelerated by increasing the mission's engineering resources to levels commensurate with other peacekeeping missions and substantially expanding initial efforts to transition contingent-owned equipment to renewable energy.

**Finally, other international partners have a key role to play.** MINUSCA could be a catalyst for new renewable energy projects. However, on its own, it is highly limited—by mandate and by financial and human resources—in its ability to initiate and develop renewable energy capacity that extends “outside the fence” to benefit local communities. Other partners, including bilateral donors, the World Bank, and multilateral development banks (MDBs), must step up to leverage the opportunities provided by the government's plans and the mission's appetite to transition to renewables, including to benefit



communities in areas that might not be as attractive from an economic or business standpoint. UNCT agencies, funds, and programs can contribute in their own way to electrification and renewable energy development in CAR, both by supporting government energy priorities and by implementing sustainable energy practices themselves, which will also help mitigate the operational and programmatic impact of fuel shortages. Moreover, these UN entities will remain in CAR for the long term, in contrast to MINUSCA, meaning that investments in renewable energy have the potential to benefit both UN agencies and the population they serve for years to come.

## Recommendations

### TO MINUSCA

**Establish a clear and measurable strategy to bolster MINUSCA’s use of renewable energy, with the initial target to be in line with other UN field operations, then move toward the UN Department of Operational Support (DOS) goal of approaching the worldwide benchmark of 29 percent renewable usage, and ultimately to reach the UNSCAP targets.**

- ▶ Prioritize the deployment of renewable energy, including through increased collaboration with the CAR government, the UNCT, and other international partners involved in supporting the installation of new solar and hydropower projects across the CAR.
- ▶ Consider measures to reduce diesel dependence and increase the resilience and sustainability of remote MINUSCA bases, like Birao and Obo, including by prioritizing these locations for the installation of renewable energy sources and considering ways to decentralize support services.
- ▶ Advocate to member states and key budget committees to expand and right-size the mission’s facilities management and engineering component to properly support the mission by bringing its staffing in line with other missions facing comparable challenges. MINUSCA had a ratio of one engineering staff member to every 142 authorized military and police personnel members during the 2023–24 fiscal year. Increasing the ratio to 1:50, in line with comparable missions like the United Nations Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO) and the United Nations Mission in South Sudan (UNMISS), would improve service provision for contingents, facilitate mandate implementation, and enable a faster transition to renewable energy.
- ▶ Consider the potential of mini- or small hydropower plants to sustainably contribute to the energy needs of MINUSCA offices, in areas where it is possible.

**Recognize renewable energy installations as one of the most tangible, enduring, and sustainable positive opportunities for MINUSCA to leave behind in the context of positive legacy planning.**

- ▶ Pursue power purchase agreements (PPAs) with private sector developers, as this project model is well suited to benefit both the mission and local communities. Potential additional locations for PPA arrangements include towns like Bossangoa, Ndélé, and Birao, which represent some of the mission’s more logistically difficult locations, and which have both a reasonably sized mission presence and local population.

- ▶ Promote electrification and renewable energy as a regular part of MINUSCA Quick Impact Project (QIP) efforts—some of which have already enabled the deployment of solar panels for street lighting or state infrastructure. Funding available for such projects (up to \$50,000) could cover the cost of connecting inside-the-fence projects to local energy grids, where applicable, as a way to deliver peace dividends and provide electricity to the local population.
- ▶ Explore partnerships with local mediation and peacebuilding organizations to better understand and address the impact of the energy sector on conflict dynamics in the CAR.

## **TO THE UN SECRETARY-GENERAL**

**The UN must significantly increase its commitment and investment in a transition to renewable energy** if the Secretary General’s Climate Action Plan (UNSCAP) goal of 80 percent renewable energy by 2030 is to be met.

## **TO MEMBER STATES**

Increase political and financial support for a transition to renewable energy in the CAR.

## **TO THE UN DOS, TROOP AND POLICE CONTRIBUTING COUNTRIES, AND DONORS**

Where other renewable energy project models are not feasible, explore opportunities for triangular partnerships between troop and police contributing countries and donors to support those countries with transitioning their contingent-owned equipment (COE) to renewable energy.

## **TO THE UN COUNTRY TEAM AND INTERNATIONAL DEVELOPMENT PARTNERS**

**Prioritize the development of energy projects in marginalized areas**, with the goal of addressing the dynamics underlying the conflict while also benefiting local communities.

**Consider how to contribute to sustainable peace by increasing energy access**, given its links with marginalization and underdevelopment.

**Enhance UNCT synergies in pursuing renewable energy**, e.g., by pooling resources to obtain renewable energy engineering expertise. The 2025 review of the UN country team’s business operations strategy (BOS) for CAR should consider ways to develop common renewable energy resources, including potentially through power purchase agreements (PPAs) that collectively benefit UNCT members. Draw on the turnkey renewable energy systems contract to help advance solar installations for shared UN premises sites.

**Work with MINUSCA to build on any private sector PPA solar project tender** regarding the possibility of extending the electricity project to the local community.

**TO THE CAR GOVERNMENT, IN COORDINATION WITH INTERNATIONAL DEVELOPMENT PARTNERS**

**Prioritize the development of renewable energy projects in marginalized areas**, with the goal of addressing the dynamics underlying the conflict while also benefiting local communities.

**Invest in local energy grids that can complement planned MINUSCA PPA projects**, such as those planned for Bria and Bouar. For example, establishing an electrical grid in Bria would complement the planned construction of commercial energy infrastructure under a PPA with MINUSCA. Bouar has an existing, if outdated, local electrical grid, which could also be renovated and expanded to extend local energy benefits.

**Strengthen measures, including through public-private partnerships, to support investments by private actors in the energy sector**, increasing competition and enhancing the provision of energy to local consumers.

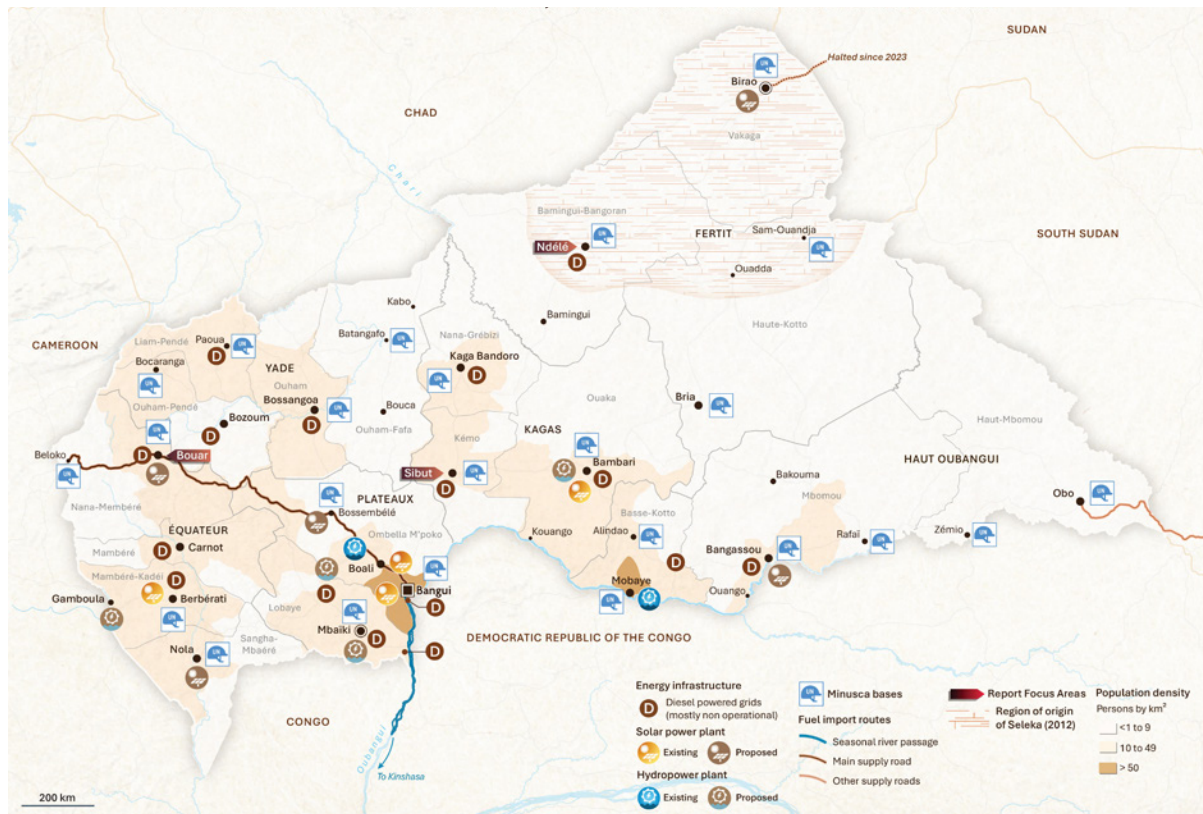
**Work with UN actors to identify renewable energy priorities** for funding by the UN Peacebuilding Fund (PBF) and other funding sources.

# 1. Introduction

Since independence in 1960, the Central African Republic (CAR) has suffered from political instability, with a succession of military coups, mutinies, and armed rebellions. The cycle of repeated crisis has justified the presence of foreign military forces, including successive peacekeeping operations. MINUSCA—the UN Multidimensional Integrated Stabilization Mission in the Central African Republic—is the most recent and the largest, with a current deployment of 17,420 military and police personnel. It was created in 2014 in the context of the intercommunal violence that followed the overthrowing of President François Bozizé by the coalition of armed groups called Séléka.

Since 2021, the CAR has experienced a relative improvement in its security situation. Following the failed efforts of a new rebel coalition—the Coalition des patriotes pour le changement (CPC)—to take Bangui that January, the national armed forces (Forces armées centrafricaines, or FACA), with support from elements from the private security company Wagner and Rwandan bilateral soldiers, have recovered control over significant parts of the territory. Though armed groups remain active in some peripheral areas, a window of opportunity has opened to create long-term stability in the country. While the United Nations estimates that close to half of the 6.1 million Central Africans remain in need of support,<sup>1</sup> humanitarian efforts are gradually giving way to development programs, with a focus on establishing the long-needed infrastructure across the country.

**Map 1. CAR: Electricity infrastructure, fuel supply routes and MINUSCA sites**





Strengthening electricity production is key to meeting the population's basic needs and represents one of the government's stated priorities. According to the World Bank, only 15.7 percent of the population has access to electricity, one of the lowest rates in the world. The government has the ambition to rapidly develop renewable energy projects—mainly hydropower and solar energy—to increase energy access. However, with limited financial resources, the government is highly dependent on international support to reach that objective.

The history of international military forces in the country has impacted the country's socioeconomic fabric, including in the energy sector. MINUSCA has a large presence across the country, including an outsized impact on national energy use in the country's energy sector; it is estimated that MINUSCA uses more than 18 percent of all fuel in the country, and consumes 23 percent of all electricity generated. This report demonstrates that with this large energy footprint and a presence across the territory, MINUSCA has outsized leverage that could be used to support the CAR's transition to renewable energy. Pursuant to the UN Security Council's calls to manage the mission's environmental footprint,<sup>2</sup> MINUSCA is beginning to prioritize its use of renewables to ensure its own energy supply. At the same time, there is an opportunity for MINUSCA to pursue clean energy project models that can also increase local populations' access to clean energy. This will require greater collaboration with other international actors, including UN agencies, and expanded use of tools like power purchase agreements (PPAs) and quick impact projects (QIPs). This approach could contribute to development and stability in the country and support a significant positive legacy for the mission.

This report is divided into two parts. Part I addresses the national context and energy landscape in the CAR, while Part II assesses the role MINUSCA and UN agencies can play in supporting CAR's transition to renewables. The report first recalls the history of the current conflict, underlining the role played by international actors and the impact of center-periphery tensions in fueling the crises (section 2). It then highlights the evolution of the energy sector, with a focus on the scarcity of electricity access, particularly outside the capital, and ongoing efforts—unprecedented but still insufficient to meet the population's needs—to boost electricity production through renewable energy projects (section 3). Section 4 illustrates the challenges facing rural populations, based on field research in three cities: Sibut, Bouar, and Ndélé. Section 5 discusses the many advantages of renewables in the CAR and the country's potential in different kinds of renewable energy across the territory—i.e., hydropower in the South and West, and solar energy in the Center and the North-East. It also discusses the co-benefits of clean energy, and its potential contribution toward addressing local concerns around deforestation and fuel supply.

The report then reviews the challenging context in which MINUSCA operates, given harsh local circumstances (e.g., insecurity, poor infrastructure, weak business sector) and insufficient resourcing, particularly in terms of support/engineering staff (section 6). Section 7 notes MINUSCA's heavy reliance on diesel generators and its impact on the mission's ability to support regional bases and implement its mandate. Section 8 addresses MINUSCA's ongoing and projected efforts to transition to renewables, and existing opportunities to ensure they also benefit local communities. It recalls the installation of solar PV panels in several bases, as well as efforts through PPAs in the context of the elaboration of MINUSCA's positive legacy strategy. Finally, the report underlines the key role and opportunity for UN agencies, funds, and programs, not only to ensure their own supply through renewables but also to increase populations' access to electricity through coordinated efforts among the “one UN” family (section 9).

## 2. Context

### 2.1. Historical background

Since the CAR obtained independence from France in 1960, the country's history has been marked by political instability. Only two leaders have been elected in the postcolonial period, through (imperfect) democratic elections: Ange-Félix Patassé (president between 1993 and 2003) and Faustin-Archange Touadéra (who took office in 2016). All other heads of state have come to power via military coups: David Dacko (1960–66 and 1979–81), Jean-Bedel Bokassa (1966–79), André Kolingba (1981–93), and François Bozizé (2003–13).

The latest cycle of crisis started in 2012–13 after armed groups from northern CAR formed the Séléka to oust President Bozizé. The coalition's first advance toward Bangui in December 2012 was halted within tens of kilometers from the capital, but the coalition eventually took power in March 2013, installing Michel Djotodia as interim president. Abuses and other acts of violence committed by Séléka combatants resulted in the emergence of local self-defense groups across the country called Anti-balaka, with some pushing for the reappointment of President Bozizé. Growing disorder in the country and an uncontrollable spiral of intercommunal violence led to global outrage, efforts at peace agreements, and the deployment of international troops, including French Operation Sangaris in December 2013, an African Union-based mission, followed by MINUSCA in April 2014.

Unable to restore order and maintain control over Séléka combatants, Djotodia was forced to resign in January 2014. He gave way to transitional authorities led by Catherine Samba-Panza, who ran the country until the presidential election of 2015–16. Though heralded as relatively peaceful and an important marker of progress, the election of Touadéra failed to end the crisis. Several peace processes, culminating with the Accord pour la Paix et la Réconciliation (APPR) of February 2019, led to the inclusion of armed group representatives in the government, but they had no real impact on the level of violence on the ground. Struggling to exert control over most of the territory outside Bangui, and in the context of the departure of the French troops from the Sangaris mission in October 2016, President Touadéra turned to Russia as a new security partner. From 2018 onward, CAR's new ally has deployed multifaceted security assistance (provision of weapons, ammunition, and military materiel, instruction and participation in combat) and economic operators, mainly in the natural resources sector.

In December 2020, a new coalition emerged—the CPC—consisting of armed groups hostile to President Touadéra and ex-Séléka components, as well as some Anti-balaka groups. In January 2021, the CPC failed to overthrow the government and was gradually pushed back to peripheral areas of the country. With support from Russian mercenaries and Rwandan troops<sup>3</sup> deployed in response to the CPC's attempt to take

power, the national army regained control over a significant part of the country in the course of 2021. The CPC insurgency disrupted the 2020–21 elections, in which only about 30 percent of voters participated, but could not prevent the re-election of President Touadéra. The government has since claimed to have restored stability in most regions, and armed groups no longer seem in a position to directly threaten the capital. However, the situation remains fragile, as various armed groups continue to be involved in attacks against locals and the FACA. A significant portion of the population is still in need of humanitarian aid, including 453,000 internally displaced persons and 656,000 refugees in neighboring countries.<sup>4</sup>

## 2.2. International interventions as a key feature of CAR’s history and political economy

Since its independence, CAR has hosted international troops on a permanent basis, except for a short period of 15 months between February 2000 and May 2001 (see chronology). Until 1998, France maintained two military bases, one in Bangui and another in Bouar, and deployed troops on several occasions, for instance to overthrow Emperor Bokassa in 1979. Following a mutiny by army soldiers in 1996–97, the former colonial power withdrew its soldiers while a succession of small-scale peacekeeping operations was deployed between 1997 and 2013, under the auspices of either regional African organizations or the United Nations. The 2013 crisis opened a new chapter with another wave of much larger interventions: French troops deployed again under the Sangaris mission in December 2013, along with African soldiers from the Mission internationale de soutien à la Centrafrique sous conduite africaine (MISCA), subsequently rehatted under UN mandate as MINUSCA in April 2014.

**Table 1. Chronology of international interventions in CAR since 1997**

<b>January 1997</b>	Creation of the Mission de surveillance des accords de Bangui (MISAB), an ad hoc mission with 800 African troops.
<b>April 1998</b>	MISAB is replaced by the Mission des Nations Unies en RCA (MINURCA) with 1,300 troops.
<b>February 1999</b>	Departure of the last French troops following the closing of France’s two military bases.
<b>February 2000</b>	MINURCA is replaced by a UN civilian political mission, the Bureau des Nations Unies pour la Consolidation de la Paix en République centrafricaine (BONUCA).
<b>August 2002</b>	Deployment of 300 soldiers by the Community of Sahel-Saharan States (CEN-SAD). They left a few months later.
<b>October 2002</b>	The Economic and Monetary Community of Central African States (CEMAC) deploys about 350 soldiers under the Force Multinationale en Centrafrique (FOMUC).
<b>September 2007</b>	In response to the Darfur crisis, UN troops are deployed in North-East CAR under the Mission des Nations Unies en Centrafrique et au Tchad (MINURCAT).
<b>July 2008</b>	FOMUC becomes the Mission de Consolidation de la Paix en RCA (MICOPAX), and its control passes to the Economic Community of Central African States (ECCAS).
<b>January 2010</b>	BONUCA becomes the Bureau Intégré des Nations Unies pour la Consolidation de la Paix en République centrafricaine (BINUCA).
<b>December 2010</b>	Withdrawal of MINURCAT.
<b>December 2012</b>	Deployment of 200 South African troops, later reinforced by 200 others. They left after Séléka took power in March 2013.
<b>July 2013</b>	Creation of MISCA by the African Union, replacing MICOPAX with an authorized strength of 6,000 soldiers.

<b>December 2013</b>	Deployment of French Operation Sangaris with more than 1,000 troops.
<b>April 2014</b>	End of BINUCA and establishment of MINUSCA, including troops rehatted from MISCA.
<b>October 2016</b>	End of Operation Sangaris.
<b>Early 2018</b>	Deployment of the first Wagner elements.
<b>December 2020</b>	Deployment of additional Wagner elements and Rwandan soldiers in the context of the elections and CPC advance toward Bangui. <sup>5</sup>

## 2.3. Marginalization and discrimination: Key factors of the conflict

There are many factors behind the instability and the recurrent crises in CAR. Academic literature and political analysis highlight several explanations, including the impact of regional politics on CAR,<sup>6</sup> the exclusionary practices of national elites,<sup>7</sup> and the peculiar nature and weakness of the State in CAR.<sup>8</sup> The latest crisis, which began in 2012–13, was marked by unprecedented violence between religious communities (Christians/Animists vs. Muslims), leading to the emergence of identity politics.<sup>9</sup>

Behind all these factors lies a consistent and important dimension of the crisis: tensions between the center and periphery.<sup>10</sup> The marginalization experienced by Central Africans living outside the capital is the result of a history of “concessionary politics” developed under French colonial rule and pursued by postcolonial governments.<sup>11</sup> Under such practices, Central African governments mostly outsourced the exploitation of natural resources to foreign actors, as well as the provision of security. On many occasions, French troops intervened to restore order, fight armed opposition groups, or, at times, depose the head of state.<sup>12</sup> Likewise, CAR authorities made no serious attempt to develop infrastructure (roads, energy, etc.) or deliver any social services (health, school, etc.) outside Bangui, leaving such tasks to international non-governmental organizations or humanitarian actors, which resulted in feelings of discrimination among populations living in peripheral regions. Underlining the lack of public governance outside the capital, a popular slogan says that the state stops at the “PK12” barrier—effectively marking Bangui’s city limits.<sup>13</sup>

Behind geographical discrepancies also lie religious tensions. The North-East, which hosts a large Muslim population, is not easy accessible, especially during the rainy season, and has been chronically under-resourced in terms of basic infrastructure and road network. Many among local populations have deeper cultural and economic connections to Chad and Sudan than to Bangui, leading the Bangui elite to often treat them as “foreigners.”<sup>14</sup>

In this context, several armed groups have emerged in CAR’s peripheries since the early 2000s. Building on the longstanding presence of *coupeurs de route* (“road blockers” or “road bandits”),<sup>15</sup> the Armée Populaire de Restauration de la Démocratie (APRD) was created in North-Western CAR in 2008. Likewise, in 2012, several armed groups claiming to represent the Muslim community gathered in the North-East to form the Séléka coalition.

The ideology and motivations of these armed groups have been hotly debated. There is widespread recognition that they have strong similarities with “bandits” or organized criminal entities. At the heart of their modus operandi lie revenue-generating activities such as taxing populations and businesses,



controlling transhumance and cattle trade, and exploiting gold and diamonds.<sup>16</sup> At the same time, they claim to promote the interests of their communities, which they consider to be forgotten and discriminated against by the government. Being an armed group member or leader is a strategy to claim various entitlements from the state and international agencies.<sup>17</sup> In areas with no access to government, resorting to violent means (or threatening to do so by creating an armed group) is often seen as the best way to trigger attention and receive some sort of compensation, be it through the development of infrastructure or the delivery of basic services (health, school, etc.). It is therefore no surprise that most armed groups have originated in areas rarely recognized—and in fact, largely unknown—by the national elite.

## 2.4. Marginalization, unequal development, and energy in peace agreements

Since 2013, several peace agreements or other efforts aimed at putting an end to the crisis have acknowledged the need to address the marginalization of peripheral areas, and the underlying feeling of discrimination among populations living there.

In May 2015, the Bangui National Forum gathered more than 600 participants from government, armed groups, political parties, and civil society. Its concluding document—the Republican Pact for Peace, National Reconciliation and Reconstruction in the CAR—is generally considered a roadmap for the stabilization of the country. Among its many recommendations, it underlines the need to (re)deploy the state and its administration across the territory based on the principles of representativeness, regional balance, and inclusion. The *Republican Pact* also calls for the implementation of an integrated strategy of reconstruction and economic development for the most disadvantaged regions of the country, including the installation of road, energy, and telecommunications infrastructure. Building on the Forum’s outcomes, the government’s National Recovery and Peacebuilding Plan (2017–2021) featured electricity and energy infrastructure as key aspects of the country’s development and stabilization efforts. In September 2024, the government issued a follow-up policy document: the *National Development Plan* (2024–28). Recognizing the lack of progress on this front, the document again featured the development of energy services and infrastructure, including renewables, as one of the country’s strategic priorities.<sup>18</sup>

The Accord Politique pour la Paix et la Réconciliation (APPR) of February 2019 represents the most comprehensive peace accord signed by the government and armed groups since 2013. It covered issues similar to those addressed during the Bangui Forum. While the APPR does not explicitly refer to specific infrastructure or energy issues, it calls for the promotion of “balanced and equitable development of all regions” as well as “affirmative action and temporary special measures in order to address the inequalities affecting communities and regions that have suffered harm in the past”.<sup>19</sup>

These recommendations have largely remained on paper so far. Though efforts have been made to expand the reach of the state and implement development projects outside Bangui, especially since the retreat of armed groups in 2021, progress has been very slow. There are limited prospects for addressing regional infrastructure disparities in the short term, particularly in the energy sector, as discussed below.

# 3. Electricity in CAR: Insufficient and Unequally Distributed

## 3.1. The energy sector in CAR: Historical background

According to the World Bank, only 15.7 percent of CAR's population had access to electricity in 2022, placing it among the five least electrified countries in the world. In this context, biomass<sup>20</sup> is by far the dominant source of energy in the CAR, with firewood and charcoal representing more than 90 percent of the energy used in the country, mostly for cooking purposes.

Until the development of the first solar photovoltaic (PV) projects in 2023 (see section 3.2), CAR had only two sources of electricity: hydropower and fossil fuels (used to power diesel generators). Under the aegis of the former national utility Energie Centrafricaine (ENERCA), created in 1967 and privatized in 2004, hydropower is mainly produced in Boali (Ombella-Mpoko Prefecture), about 70 kilometers northwest of Bangui (see the map), where two plants are using water from the Mbali river to produce about 19 megawatts (MW) of energy. The two stations started operating in 1954 and 1976; a third one was installed in 1991 but has never produced electricity. CAR therefore has several decades of experience in producing hydropower. The Boali dam is one the most important infrastructure projects functioning in the country and is a source of pride for many Central Africans. Its impact is modest, however, especially compared to larger hydro projects operating elsewhere in Africa.

In 1989, another hydropower station was established on the Oubangui River in Mobaye (Basse-Kotto), located in South-Central CAR along the river with the Democratic Republic of the Congo (DRC) (see the map). Developed as a joint project with DRC, the station produces about 11 MW of electricity for the benefit of cities located on both banks of the river. In practice only the Congolese portion of the project, managed by DRC's national utility (Société nationale d'électricité, or SNEL), has been implemented, so the project produces much less electricity than initially expected.<sup>21</sup> The CAR has thus far failed to honor its commitment to develop a station on the right bank of the river because, according to the authorities, of a lack of funding.

Until 2023, diesel generators were the only other source of electricity in the country. In Bangui, diesel is relied on to power six generators, generating 22 MW and complementing supply from the Boali dams. Between 1950 and 1999, 15 other cities<sup>22</sup> were equipped with diesel generators, producing in total about 6 MW distributed through local mini-grids. Yet even at their peak, these installations covered only part of the populations' needs and functioned only a few hours a day.<sup>23</sup> As a result of lack of maintenance and the impact of the 2012–13 crisis, most of these mini-grid projects gradually became non-operational (see section 4). Diesel is also used by individuals or businesses possessing their own generators.



Sakaï solar farm. Photo by Romain Esmenjaud, 10 August 2024.

The overall electricity production from diesel generators in CAR remains relatively modest compared to other countries. In 2021, before the completion of the above-mentioned solar projects, it still represented more than half the electricity mix. It also accounted for about 70 percent of the energy sector’s greenhouse gas emissions.<sup>24</sup> Furthermore, it is noteworthy that none of this diesel is produced or refined domestically, and therefore must all be imported, making CAR vulnerable to external shocks. Although parts of the territory have undergone oil exploration, any potential oil reserves remain as yet unexploited.

### **3.2. A sector (very) slowly expanding through the development of renewable energy**

The government has long expressed an intention to boost electricity production. The 2010 Document de Politique Énergétique Nationale (DPEN or “Energy Policy”) set an objective of increasing access to electricity to 20 percent of the population by 2025. More recent policy documents build on this ambition, in particular the 2019 Document de Politique Décentralisée (2020–30) and CAR’s 2022 Nationally Determined Contribution (NDC) submitted under the Paris Agreement. Both documents also emphasize off-grid renewables, particularly mini-hydropower and solar plants. International support has allowed this vision to be slowly implemented, with several projects inaugurated in 2023 and other installations planned for the next few years.

#### **NEWLY ESTABLISHED SOLAR PV PROJECTS**

The government of China financed a new solar farm in Sakaï (Ombella-Mpoko), located 10 kilometers north of Bangui (see [the map](#)), which was inaugurated in March 2023. The project includes more than 33,000 solar panels and added 15 MW of new generation capacity, plus 5 million watt hours (MWh)

of battery capacity, to national electricity production, mainly benefiting the populations of Bangui and a few other locations north of the capital.<sup>25</sup> In November 2023, a second solar farm was inaugurated, this time funded by the World Bank. Located in Danzi (Ombella-Mpoko), about 20 kilometers north of the capital, the 47,000 solar panels deliver about 25 MW to Bangui and surrounding areas. The site also hosts battery storage worth 30 MWh.<sup>26</sup> The World Bank supported the installation of two additional 1 MW solar projects outside Bangui in December 2023, in Bambari (Ouaka) and Berberati (Mambéré-Kadéi). All four above-mentioned solar projects were installed by foreign companies,<sup>27</sup> with operations and maintenance gradually being taken over by ENERCA.

## **PROPOSED FUTURE SOLAR ENERGY PLANS**

The World Bank has secured funding for several other solar projects in the next few years. First, the Danzi project is scheduled to expand to 40 MW of solar capacity. In addition, five new projects, which have a collective generation capacity of roughly 10 MW, are planned for the following locations: Bouar (Nana-Mambéré), Bangassou (Mbomou), Bossembélé (Bossembélé), Nola (Sangha-Mbaéré), and Birao (Vakaga). Finally, the World Bank plans to support the deployment of 5 MW across the country through solar kits equipping schools, health centers, or community centers.

## **FUTURE HYDROPOWER ENERGY PLANS**

In addition to these solar projects, the World Bank is backing CAR's hydropower sector: it will support the operationalization of the third Boali plant, which will add another 10 MW to national production. CAR's hydropower sector is also receiving support from the United Nations Development Program (UNDP). Working together with the government, it has identified four locations at which to install new mini-hydropower plants: Gamboula (Mambéré-Kadéi), Bambari (Ouaka), Boda and Mbaïki (Lobaye). The process is most advanced in Gamboula, where construction began in 2023 and the plant which will deliver 420 kW is planned to be operational in 2025. A second phase is envisaged to extend the project to additional locations, though these are yet to be determined.<sup>28</sup>

Despite the momentum of these new projects, the development of CAR's energy sector is facing significant challenges. First, the lack of domestic resources creates a strong dependence on international partners, who provide 95 percent of the funding needed for energy infrastructure.<sup>29</sup> Second, the sector suffers from the absence of private actors despite its liberalization in 2004, as in practice ENERCA is still involved in the management of all electricity projects in the country. With very few exceptions—such as the African regional solar and engineering company Aptech, which has set up an office in CAR and installs solar projects—international companies only intervene on an ad hoc basis for specific projects.<sup>30</sup> In this context, the Plan National de Développement (2024–28) aims to create incentives for renewable companies to invest in CAR through the development of new “financing mechanisms and the facilitation of innovative business models,” including public-private partnerships.

With the installation of solar plants in 2023, the country's national electricity production has reached 96 MW. That is far below actual national needs, assessed at 250 MW, but with the above-mentioned ongoing projects, the government remains confident that the positive trend will continue. It hopes to produce 163 MW by 2028, including 146 MW from renewable energy.<sup>31</sup>



### 3.3. The unequal distribution of electricity production and access

The energy sector serves as a stark example of the inequitable distribution of infrastructure in the CAR. Almost all households with access to electricity are currently in the capital, Bangui. The map shows that production capacities are mainly installed around Bangui, in the Center and in the West/South-West. There is currently no functioning energy generation infrastructure in the North-West, North, North-East, or East/South-East, i.e., areas where most armed groups have emerged in the last two decades. Only a few places outside of Bangui have generation capacity, in the form of diesel generators, but those are mostly out of service, as is the case in Ndélé (see [section 4](#)). Moreover, very few of these locations are scheduled to benefit from the existing or planned new projects listed above. Birao, which is slated for a solar station financed by the World Bank, is the main exception, while the inhabitants of the Bamingui-Bangoran prefecture will benefit from some of the solar kits deployed with the World Bank's support (see [section 3.2](#)).

Several reasons account for this regional imbalance. First, the historical practices by colonial and CAR leaders have prioritized the development of infrastructure in the center of the CAR over the more rural peripheries. Second, the decisions that support more recent and upcoming projects, taken by the government together with international funding partners, must take into account many factors—sometimes contradictory. Donors such as the World Bank and UNDP are aware of the need to address the unequal distribution of energy production capacities, but they also have other priorities, such as helping population centers, cost-effectiveness, and security. A desire to maximize the impact of the projects has, for example, led to prioritizing projects in the most populated areas, i.e., Bangui and the West. Some other factors relate to operational constraints; for instance, mini-hydropower stations are cost effective only for cities close enough to rivers suitable for such installations. Criteria for location selection also include a preference for more secure areas or those where some infrastructure already exists (which limits the costs).<sup>32</sup> In the energy sector, the existence of a local grid, for instance, constitutes an attractive variable for selecting projects, as the newly established energy generation can be connected to the grid and easily distributed.

While understandable, such operational or economic considerations tend to create a situation of lock-in, favoring new projects in the areas already better endowed and further marginalizing the most disadvantaged ones. In essence, the marginalized become further marginalized, creating a doom loop for the periphery but a positive spiral for the more populated and developed areas in the South and the West.

Breaking this cycle requires a thoughtful, intentional, and concerted effort to redress historical imbalances regarding energy production. This has been recognized in the various peace efforts referenced above, as dealing with populations' feeling of discrimination is key to successfully addressing conflict dynamics. As explained in [section 2](#), increasing energy production and exploiting the renewable energy potential that exists in all regions (see [section 5.1](#)) could support national cohesion, reconciliation, and peacebuilding efforts. Marginalization has nurtured frustrations among populations living in peripheral areas where lack of energy is a serious impediment to local development, business, and humanitarian activities (for instance, it negatively affects the functioning of hospitals and health centers), offering fertile grounds for recruitment by armed groups.

## 4. Focus Areas: Electricity in Bouar, Sibut, and Ndélé

The highly unequal distribution of electricity access and the challenges encountered by populations living outside Bangui are illustrated by the case studies below.

### 4.1. Bouar

With about 50,000 inhabitants, Bouar (in the prefecture of Nana-Mambéré; see [the map](#)) is one of the biggest cities in the country. Its strategic location along the country's main supply road, its proximity to Cameroon, and the presence of mineral resources (gold in particular) provide the city with a significant economic potential. Since 2012–13, however, Bouar has been constantly affected by insecurity, with violence and fighting between Anti-balaka militias and other groups, in particular Retour, Réclamation, Réhabilitation (3R).<sup>33</sup>

A diesel generator supplying electricity to the city through a local grid was built as early as 1952. This was the first installation of its kind in the country outside Bangui, as well as among the most powerful, along with those in Berberati and Carnot (500 kW each).<sup>34</sup> For several decades, local communities and the French military base (which closed in 1997) benefited from regular electricity access. Since then, the local power plant's production capacity has been gradually downgraded because of poor maintenance and security incidents. Damaged during the 2012–13 fighting, the plant was rehabilitated. It was damaged again in 2021, and at the time of field research in July 2024 was no longer operational. As mentioned in [section 3.2](#), CAR authorities with World Bank support are planning to install a solar PV station and connect it to this existing grid in Bouar.

In the absence of public electricity service provision, local populations, MINUSCA, and other international actors have undertaken several limited initiatives to maintain some electricity production. MINUSCA has relied on quick impact projects (QIPs), which are small projects (up to \$50,000) at the local level to increase the population's confidence in the mission's efforts. Through this tool, MINUSCA has installed solar-powered public street lighting and equipped government administration buildings with solar panels, contributing to the restoration of state authority. Such panels are also installed by a limited but growing number of private individuals, companies, and, to a larger extent, NGO and UN offices. Mini-solar systems are also increasingly used to power small electric devices such as phones and lamps.

Beyond privately operated solar energy, diesel generators remain the only other—and most widely used—option for those in need of electricity. Such devices are possessed by wealthy individuals, businesses, and NGO and civil society actors, as well as MINUSCA. Even so, they are hampered by the constant challenge



Generator at the Bouar office of the Agence pour la sécurité de la navigation aérienne (ASECNA).  
Photo by Emmanuel Singa, 30 July 2024.

of securing fuel. Bouar has only one petrol station, which is regularly closed due to fuel shortages. At the time of field research in July 2024, the station had been closed for two months. Some individuals, mainly bigger local traders, have developed illegal supply networks to acquire fuel and distribute it through small vendors (for about 1,100–1,300 FCFA per liter, or USD \$1.77–\$2.09<sup>35</sup>). The proximity of Cameroon—the border town of Garoua-Boulai is about 160 kilometers from Bouar—facilitates the establishment of these illegal cross-border trading networks. People are reluctant to buy fuel from informal vendors because that fuel is known to be of lesser quality, but they are often left with no other choice. This black market trade is supposed to be forbidden, but is usually tolerated by national defense and security forces, who levy illegal taxes on fuel transporters and vendors.

## 4.2. Sibut

Sibut is in the Kemo prefecture and has a population of around 30,000 people. Relatively close to Bangui (284 km; see [the map](#)), Sibut is located at a strategic position in the heart of the country, straddling key road axes. Among the first cities to free themselves from the ex-Séléka domination in early 2014, it has remained under threat from armed groups. Anti-balaka militias have maintained a presence, claiming to protect the area against ex-Séléka groups that continued to control cities further north and east until 2021 (Kaga-Bandoro, Bria, Bambari, Ndélé, Birao, etc.).

The population of Sibut has very limited access to electricity. Sibut is one of the 16 cities where a diesel generator-powered mini-grid was established by ENERCA, with a capacity of 88 kW, lower than that of Bouar.<sup>36</sup> Installed in 1982, it was no longer operational at the time of field research in July 2024. In fact, locals indicate that, even when it was functioning, it provided electricity only to a very limited part of the city.

As in Bouar, electricity access today only exists thanks to MINUSCA support and individual initiatives. As part of its QIPs program, MINUSCA has installed solar panels to power public street lighting and some administration buildings. Solar energy is also used by some inhabitants and businesses through mini-solar systems used to charge phones and other small electric devices. Diesel generators are used by MINUSCA, a number of NGOs and civil society organizations, and businesses, such as trading or welding shops. Bridging the gap left by the absence of a functioning public service, a group of electricians is selling electricity to many inhabitants and economic operators through a fixed subscription. This group owns the most powerful diesel generator in town, with a capacity of 40–70 kW.

Like other owners of generators, this association is facing serious challenges in acquiring fuel. There is only one petrol station in Sibut, which operates a few days per month at best. When it is resupplied, its



Informal fuel vendor in Sibut. Photo by Emmanuel Singa, 6 July 2024.



reserves are emptied very quickly, as customers flock from the entire Center region and cities further north, such as Kaga-Bandoro and Ndélé, where there are no stations. Fuel can also be bought from small vendors who acquire it through the black market in Bangui, Chad, and Cameroon. Prices on the black market fluctuate between 1300 and 2000 FCFA (USD \$2.09–\$3.21) per liter depending on availability.

### 4.3. Ndélé

Ndélé is located in the Bamingui-Bangoran prefecture (see [the map](#)). Together with the Vakaga prefecture, it constitutes what is usually called the North-East region, which is home to a large Muslim community. With 15,000 to 20,000 inhabitants, Ndélé is a relatively small city, though one of the largest in the North-East. Since the 2000s, several armed groups have emerged from this area.<sup>37</sup> In 2012 they coalesced into the Séléka, the coalition that overthrew President Bozizé in 2013. Despite the Séléka's eventual collapse, the North-East remained under the control of these armed groups.<sup>38</sup> Only in 2021–22 did the FACA and its Russian allies gradually re-establish control over the city.

Electricity is very scarce in Ndélé. The city is the only place in North-East CAR where ENERCA has established a local diesel-powered electricity grid. Installed in 1970, it had a very limited capacity of 40 kW. As in many other cities, its capacity has also declined over time because of lack of maintenance, and it has been completely out of service for at least 10 years.

As in Bouar and Sibut, there exist two sources of electricity, diesel and solar. A number of actors—NGOs, businesses, and MINUSCA—use diesel generators. Yet outside MINUSCA and other international actors with their own supply lines, access to fuel is severely limited in the local community. With Bangui being far away (about 630 km), fuel (like other commodities) mostly comes from neighboring Chad and Sudan. There is no petrol station in town, so fuel can be purchased only from informal vendors on the black market, supplied through smuggling networks controlled by local traders. Poor road conditions and insecurity in surrounding areas, as well as in Sudan and Chad, make fuel supply in Ndélé both challenging and expensive. Taxes paid at roadblocks result in prices that are generally higher than in the rest of the country, ranging from 1800 to 2500 FCFA (USD \$2.89 to \$4.02) per liter, depending on availability.<sup>39</sup>

The difficulties in obtaining fuel have led to growing interest in solar energy. Given Ndélé's strong levels of solar irradiation, local people have acquired mini-solar systems and, for the wealthiest, larger solar systems to power their homes. These are available in local markets, brought by traders from Sudan, when conditions permit. In addition, MINUSCA QIP projects have included small solar installations to power public street lighting and some administration buildings, similar to those in Bouar and Sibut.

Electricity scarcity is an issue of great concern for populations across the CAR. In Bangui, selective power cuts trigger strong discontent among citizens, and increased electricity access is among the main demands expressed during public demonstrations organized by civil society movements.<sup>40</sup> As shown by the case studies, the situation is much worse outside the capital, where facilities managed by ENERCA are few and mostly non-operational. Local initiatives have emerged to try to cope with these circumstances but are far from meeting the needs. Electricity scarcity is particularly severe in more remote areas, such as Ndélé, which has received limited attention from the national elites in terms of infrastructure and has unique challenges in terms of supply, including for fuel or solar panels.



# 5. The Many Advantages of Renewable Energy in the CAR Context

Developing renewables is a key dimension of CAR's strategy to mitigate its greenhouse gas emissions while meeting the growing domestic demand for energy.<sup>41</sup> Solar and hydropower are two key pillars of CAR's efforts as envisaged in its NDC under the Paris Agreement, and offer other advantages in the context of the CAR. Hydropower and solar PV are particularly well adapted to CAR's geography and climate, and they offer significant co-benefits beyond contributing to the fight against climate change. They also help address two other key issues of concern: deforestation and the fuel crisis.

## 5.1. CAR's enormous potential in renewable energy

The ambition of the CAR government to continue increasing its clean energy production is fed by the country's significant potential in several renewable sources of energy. A 1972 study assessed the country's hydropower potential at 2000 MW.<sup>42</sup> About 40 sites have been identified for their potential, primarily in the South and the West, with a few in the Center (Kaga-Bandoro, Nana-Grebizi) and the North-West (Lancrenon Falls, Ouham-Pendé).<sup>43</sup> High solar irradiation intensity also offers significant potential for distributed solar PV systems, particularly in the most marginalized regions, including in the North-East and other areas that do not have rivers suitable for hydropower.<sup>44</sup> Finally, geothermal and wind energy could also be developed, though no detailed study has been conducted to assess the actual potential for these technologies in the CAR.<sup>45</sup> Some areas can also host hybrid projects where solar PV and hydropower sources could be combined to ensure a permanent supply of energy, given that solar alone only generates power when the sun is out.

The CAR therefore has significant potential for renewable energy generation across its entire territory. This offers the government and its international partners the possibility to develop local mini-grids, address the current regional unbalance in energy access, and contribute to addressing frustrations in areas deprived of infrastructure.

## 5.2. Co-benefit 1: An opportunity to (partly) address concerns over deforestation

On 9 August 2024, the country celebrated its annual Fête de l'arbre ("tree celebration"), an event aimed at sensitizing populations on the needs to preserve CAR's forests. At the time, the national media was filled with articles discussing the increasing deforestation in the country and its consequences.<sup>46</sup> This worrying trend is primarily due to the widespread use of firewood and, to a lesser extent, charcoal.<sup>47</sup>

Mainly used for cooking purposes and, at times, by certain businesses (foundries, brickyards, etc.), firewood and charcoal are the main sources of energy for most people in CAR today (see [section 3.1](#)). Rising demand has led to the development of illegal logging as a flourishing economic activity.

Historically, armed groups have had a limited role in the timber business in the country. Some groups collected taxes on timber companies in the first years of the crisis,<sup>48</sup> but in general, timber, firewood, or charcoal have not been at the center of the “business model” of armed groups (who have been more interested in gold, diamonds, or cattle). Nonetheless, limiting the use of firewood is a priority for the CAR. Deforestation has multiple negative effects. It is an environmental concern, as it destroys the country’s main “carbon sinks.” Cooking with firewood and charcoal also creates serious health concerns, as it results in high mortality for users, particularly for women who cook inside their homes. To better address the issue, the CAR government is participating in regional and international efforts related to combating deforestation.<sup>49</sup> It has also taken measures to fight against illegal logging. For example, in April 2024 the government suspended all artisanal logging permits; one month later, it banned exports of firewood and charcoal.<sup>50</sup>

In the absence of other options, however, people are likely to continue using firewood and charcoal. The government and some international partners have expressed an intention to develop modern cooking methods such as improved stoves,<sup>51</sup> but there has been limited action thus far. Another option would be the development of electric or solar cooking as an alternative to the use of biomass. This is a longer-term objective, and deploying renewables does offer the most realistic avenue to power electric cooking devices in remote areas.<sup>52</sup>

### **5.3. Co-benefit 2: An opportunity to (partly) address fuel shortages**

The “fuel crisis” (“*crise du carburant*”) is another issue that triggers concerns among Central Africans, as the shortage of fuel is a long-standing problem in the country. Finding petrol stations closed because of a lack of fuel has been a regular part of life for many years. This shortage affects those requiring fuel for transportation by car, motorcycle, and even plane, as well as for power generators. As indicated in [section 3.1](#), diesel generators are one of the main sources of electricity in the country, as well as the overwhelming source of energy for MINUSCA (see [section 7](#)). CAR experienced a particularly acute fuel shortage crisis in 2022 after the increase in global oil prices.

Several factors contribute to the fuel crisis.<sup>53</sup> As a landlocked country, CAR faces logistical challenges in its supply of all types of commodities, including fuel. For years, fuel has been transported to CAR through two supply routes (not taking into account the many smuggling roads from all neighboring countries): the waterway (Oubangui River), and the road from Cameroon, representing 80 and 20 percent of the supply, respectively (see [the map](#)). River transportation is cheaper but can only happen when the waterways allow passage during and immediately after the rainy season (i.e., July to December). This explains why fuel shortages usually take place around May–June, when stocks from the prior rainy season are being exhausted. The limitation of supply options also affects CAR’s energy security, as incidents hampering traffic on the main road from Cameroon, such as attacks by armed groups, strongly impact fuel supplies. For instance, at the beginning of 2021, the CPC imposed a blockade on Bangui for several weeks as a way to pressure and weaken the government. Moreover, CAR suffers from the poor quality of its infrastructure. Beyond road conditions, the country has few petrol stations outside Bangui—with most being frequently

closed due to fuel shortages (see [section 4](#))—and insufficient storage capacity. The fuel depot in Salo (Sangha-Mbaéré) has been out of service since 2013, and the depot in Kolongo (Bangui) has a capacity of 51,900 m<sup>3</sup>, whereas the country’s annual fuel consumption is about 120,000 m<sup>3</sup>.

As a scarce commodity, fuel is highly valued and attracts the interest of many actors. Illegal networks have been established to import fuel from neighboring countries and sell it across the territory. This was particularly acute in the aftermath of the 2012–13 crisis, as state authorities had little to no presence in most regions, and roads were mostly controlled by armed groups. The gradual restoration of state authority and redeployment of the FACA has facilitated the supply of fuel (and other commodities) from Bangui to all prefectures, but smuggled goods remain an option for many, particularly in times of shortage (see [section 4](#) and [the map](#)). Armed groups have been involved in the illegal fuel economy by collecting taxes at roadblocks, as they do for any commodity.<sup>54</sup> But fuel, like wood, is not among the main sources of economic interest for armed groups.

Instead, state representatives have played a greater role in the fuel business—whether legal or illegal. The national military and security forces (police and gendarmerie) have extorted tolls from those transporting fuel at both official and non-official roadblocks.<sup>55</sup> Along with individuals close to the government, some members of these forces have also reportedly been involved in illegal fuel smuggling and trade, taking advantage of periods of shortage when fuel prices are at their highest.<sup>56</sup> Finally, the government has regularly been accused of facilitating the involvement of hand-picked companies in the formal business and supply contracts. Critiques of the government refer to the lack of transparency around the selection of companies for both transport and import of fuel<sup>57</sup> or the expropriation of petrol stations for the benefit of individuals close to high-level officials.<sup>58</sup>

These negative dynamics of the reliance on fossil fuel are among the many reasons to favor the development of alternatives to fuel dependency in CAR, including the need to fight against corruption and bad governance in the sector. While the fuel crisis is made more severe by public authorities’ mismanagement, it also results from structural factors related to the country’s geography and is therefore likely to remain an issue in the longer term. It is certainly not realistic to replace fuel for cars and motorcycles in the transportation sector, at least in the short term, but off-grid renewable energy does provide a credible alternative to diesel generators across the country.

As demonstrated in the section above, clean energy can serve multiple purposes in CAR. It can help meet the population’s energy demand, address some of the conflict’s underlying causes, and contribute to addressing deforestation and issues with fuel supply. As a weak state with limited funding capacity, the CAR needs strong support from international actors to carry out this transition. This is particularly the case for deploying renewables in remote areas, where they are both greatly needed but also more expensive due to the logistical challenges. As explained in [section 2](#), peacekeeping operations and other external military interventions have been part of Central Africans’ everyday life for decades and have strongly impacted the national socioeconomic fabric. MINUSCA, as the largest mission ever deployed in the country, has considerable leverage to help facilitate these goals.

## 6. MINUSCA: A Challenging Mandate in Challenging Circumstances

MINUSCA was established in 2014 in response to crisis provoked by the 2012–13 Séléka armed rebellion (see section 2.1) to reestablish security, protect civilians, support the political transition, and contribute to addressing the root causes of the conflict. In pursuit of these ambitious goals, the UN deployed a large peacekeeping operation, initially with 10,000 military and 1,800 police personnel, across substantial swathes of the CAR, including the country’s most remote and rural areas. Ten years later, the mission is one of the largest peacekeeping missions in the world, with 18,751 personnel as of 1 October 2024, including up to 14,400 military and 3,020 police,<sup>59</sup> and a budget of \$1.172 billion.<sup>60</sup>

To maintain and power remote mission outposts, the mission presence requires significant energy resources, especially in comparison with the relatively limited energy usage of most of the CAR population. While it is very difficult to track energy or electricity usage in CAR, one source estimates that CAR consumed approximately 349,800 liters of fuel a day of refined petroleum products in 2022, the latest year where data is available, or 127,677,000 liters in a year.<sup>61</sup> In comparison, MINUSCA used 23,687,481 liters of fuel during fiscal year 2023–24, meaning that the mission’s annual diesel usage accounted for roughly 18.6 percent of all the fuel in the country. This disparity in fuel consumption reflects the country’s substantial underdevelopment, but MINUSCA nevertheless represents an outsized presence in the country’s energy landscape, and the mission’s energy use has a disproportionate effect on the CAR energy portfolio and carbon footprint.

### 6.1. Problematic initial assumptions and their lingering effects

When MINUSCA was established in 2014 in response to the violence perpetrated by various armed groups in 2012–13, the UN Security Council handed it a wide-ranging and multidimensional mandate. The mission’s initial set of priority tasks included the protection of civilians; support for the implementation of the transition process, including the extension of state authority and preservation of territorial integrity; helping address the conflict’s root causes, including the lack of an effective government; facilitating humanitarian assistance; protecting the UN; the promotion and protection of human rights; support for national and international justice and the rule of law; and disarmament, demobilization, reintegration, and repatriation, alongside a handful of additional tasks for the mission to tackle as conditions permitted.<sup>62</sup> The breadth and complexity of the mandate created an enormous challenge for the mission and the country. Subsequent Security Council mandates have grown in size and complexity, with the latest focusing on protecting civilians, extending state authority, supporting the peace process, facilitating the delivery of humanitarian aid, and protecting the UN, but extending to a wide range of secondary mandates,<sup>63</sup> including managing the environmental impacts of its operations.<sup>64</sup> The mandate was most recently updated to include support to planned presidential and legislative elections in 2025–26.<sup>65</sup>

MINUSCA was established at a high-water mark for UN peacekeeping, following a period of growth in peacekeeping missions during the 2000s and early 2010s. The expansion of peace operations during this era led to concern about the burgeoning peacekeeping budget, as well as the lack of sufficient available resources including personnel, equipment, and medical and other specialized capacities. As a result, MINUSCA was created in the same vein as MINUSMA, the peacekeeping mission established in Mali the previous year. Both employed the same lean, light-footprint mission support model, with a focus on engaging contractors to provide services through a turnkey approach, whereby a service is provided complete and ready for immediate use by the contractor—for example, a generator turnkey contract includes installation and all maintenance and servicing requirements.<sup>66</sup>

However, a model that mostly worked in the Mali context turned out to be poorly suited to the setting of CAR. While the challenges in Mali were substantial—local armed groups hostile to the mission’s presence, extended supply lines, state failure, a weak peace agreement, and an extremely arid climate—MINUSMA had certain advantages over MINUSCA, including the presence of a well-developed business sector, relatively better-maintained infrastructure, and fewer natural hazards like seasonal flooding. In addition, MINUSMA maintained fewer deployment locations across the country, with around half of the number of permanent operating bases maintained by MINUSCA.<sup>67</sup>

## 6.2. Insufficient resourcing

Despite the ambitions of the MINUSCA mandate, the mission’s deployment faced significant logistical and operational challenges, as well as a lack of human resources. In New York, the UN Advisory Committee on Administrative and Budgetary Questions (ACABQ)<sup>68</sup> recognized the disparity in resourcing between MINUSCA and similar large peacekeeping missions. In 2022, for example, the ACABQ noted the mission’s lack of engineers, stating that, “compared with other missions with a similar size of military and formed police personnel, MINUSCA had the lowest number of civilian personnel in the Facilities and Engineering Management Section [FEMS], resulting in the highest ratio of 1 Facilities and Engineering personnel for every 153 military and formed police personnel (compared with 1:105 for MINUSMA, 1:57 for the United Nations Organization Stabilization Mission in the Democratic Republic of the Congo [MONUSCO] and 1:50 for the United Nations Mission in South Sudan [UNMISS]).”<sup>69</sup>

The understaffing of the mission’s engineering components was a shortfall from the mission’s very first deployment and early budgets. The deficit in this critical capacity—engineers are needed to plan, construct, fuel, and maintain bases across a mission—has never been corrected. When the mission was established, it was given an engineering complement of 40 staff, which was quickly increased to 70, then just over a hundred staff members. Over the subsequent eight years, though, the number has barely edged upward, despite several increases in the Security Council’s authorized ceiling for police and military personnel.

In 2017, the mission sought an increase to the size of the engineering component, requesting the reassignment of 19 posts from the Conference and Translation Unit to FEMS, a cost-neutral change, as well as the establishment or redeployment of eight other posts. But the ACABQ rejected the request for the reassignment. In response in 2018, the mission issued a *cri de coeur* regarding the mission’s initial establishment, noting:



*The context and assumptions that defined the establishment of MINUSCA continue to have an impact on the Mission’s capacities four years later. MINUSCA has been deployed to support national authorities when the State has been weak or non-existent. That resulted in often unrealistic expectations on what the Mission could achieve. In the absence of sufficient partners, MINUSCA has often been expected to substitute for others, diverting its efforts and scarce resources away from its priority mandated tasks. . . . Implementation of the Mission’s mandate has been further hampered by the challenges in ensuring that resources are aligned with the extremely difficult operational and logistics environment.<sup>70</sup>*

The under-resourcing continued even after the mission received a further substantial increase in uniformed personnel in 2021—3,690 personnel, a 27 percent increase to the mission’s overall uniformed complement—in response to the armed rebellion by the CPC.<sup>71</sup> Recognizing the substantial nature of the increase, the mission sought to plead its case for a corresponding increase in support staff. The ACABQ noted that, “In anticipation of the full deployment of the additional authorized 3,690 uniformed personnel, the Mission is in the process of: (i) constructing 15 new camps; (ii) upgrading 25 existing camps to accommodate additional personnel; and (iii) requalifying some of the Mission 52 temporary operating bases into permanent operating bases, which will entail the construction of more adequate accommodation and maintenance . . . .”<sup>72</sup> To address all of these additional requirements, the mission requested a mere 12 United Nations Volunteers (UNVs) to serve as field engineers, or an 11 percent increase to engineering staffing. The ACABQ approved the addition of the 12 UNV positions, but specified, despite the magnitude of the deficit, that five should be established as national UNVs and 7 as international UNVs, instead of all 12 being international UNVs.

**Table 2. Comparison of engineering staffing deployed for the four largest peacekeeping missions in the 2023–24 financial year**

	MINUSCA (CAR)	MINUSMA (Mali)	UNMISS (South Sudan)	MONUSCO (DRC)
Total engineering component staff	123	142	304	252
Total deployed mission personnel	19,082	17,192	21,950	18,915
Ratio of engineering staff to deployed mission personnel	1:155	1:121	1:72	1:75

**Table 3. Growth of MINUSCA authorized uniformed personnel and engineering section numbers over time**

Budget year	Total number of engineering section posts	Authorized military personnel	Authorized police personnel	Ratio of engineering staff to authorized military and police personnel levels
24–25	125			
23–24	123	14,400	3,020	1:142
22–23	122	14,400	3,020	1:143
21–22	109	14,400	3,020	1:160
20–21	108	11,650	2,080	1:127
19–20	108	11,650	2,080	1:127
18–19	108	11,650	2,080	1:127
17–18	109	11,650	2,080	1:127
16–17	109	10,750	2,080	1:118
15–16	74	10,750	2,080	1:173
14–15	40	10,000	1,800	1:295

### 6.3. Spread out, remote, and numerous: The deployment of MINUSCA’s camps

A peacekeeping mission’s operational footprint is composed of a mix of deployment sites that serve a range of mandate purposes, extending from large compounds that serve as political and administrative headquarters, to regional headquarters and offices, to smaller forward operating bases for personnel and temporary operating bases. For MINUSCA, the mission’s operational footprint, including its camp locations, has evolved over the past decade in line with evolving efforts to implement the mission mandate and shifts in conflict dynamics, as laid out in section 6.2. The changes have increased the mission’s energy demands in its most remote deployments and complicated its logistical challenges.

MINUSCA has always had a substantial presence in Bangui. In addition to being one of the few places in CAR with functional infrastructure, the city is the capital of CAR, and home to the highly centralized CAR government. For example, the government requires that all fuel imported into the country to go through government customs in Bangui, as discussed below in section 7.3. The mission’s presence in the capital includes several large bases (including MINUSCA headquarters, the MINUSCA logistics base, the UCATEX compound where the UN military and police leadership are located, and the Mpoko base near the Bangui airport), as well as a handful of smaller sites where UN contingents are housed. MINUSCA sites in and around Bangui consumed more than 8,800,000 liters of fuel between July 2023 and June 2024, or 37 percent of MINUSCA’s total fuel usage of 23,687,481 liters during the same period. However, some have questioned the initial mission’s geographical conception, as its concentration in Bangui challenges its ability to effectively serve outlying areas of the country and to address the historic issues of marginalization that have fueled the conflict—in particular the under-served, insecure, and marginalized areas of the country in the North-East and South-East.

In 2015, the mission’s initial camp deployment outside Bangui included three sector headquarters in Bria, Bouar, and Kaga Bandoro, as well as smaller offices in Bambari, Bossangoa, and Berberati and several temporary and forward operating bases. The mission’s footprint has since expanded over time, gradually increasing and becoming more permanent in the country’s more underdeveloped areas—particularly in extremely remote locations in the East and South-East, including expanded encampments established in Ndélé, Bangassou, and Batangafo.<sup>73</sup> Over the same period, the number of MINUSCA uniformed personnel increased from 11,800 to 17,420 (see [Table 2](#)).

By contrast, a more decentralized model would likely call for larger bases to be established in regional hubs like Bangassou, Bambari, and Bria, providing services to MINUSCA forward and temporary operating bases closer to the point of need.<sup>74</sup> While the mission has never undertaken a formal decentralization effort, it has implemented some decentralization measures, including increasing fuel unit staffing in the regions in response to negative audit findings by the UN Office of Internal Oversight Services (OIOS).<sup>75</sup> Further efforts could be made in this regard, including conducting a review of the MINUSCA camp presence across CAR or looking at, for example, the rebalancing of the MONUSCO presence between western and eastern DRC in recent years.



Fuel generator used by MINUSCA in Sibut (Burundian contingent). Photo by Emmanuel Singa, 7 July 2024.

## 6.4. The challenges of powering MINUSCA camps

In 2019–20, MINUSCA’s approximate yearly energy consumption was around 63 GWh, or about 23 percent of total annual energy consumption in the CAR.<sup>76</sup> Many MINUSCA bases are located in rural areas where electricity infrastructure is nonexistent or was damaged in 2013 and not rebuilt. Even in Bangui, the grid is weak, uses outdated technology, and does not provide enough capacity for local usage, much less provide for the full needs of international partners. As a result, MINUSCA is not connected to the Bangui grid because the mission’s requirements would overload it. The mission is therefore responsible for supplying all of its own power.

MINUSCA currently employs 346 UN-owned equipment generators (of which 332 are operational), with sizes ranging from 20 kVA to 750 kVA (kilo-volt-amperes).<sup>77</sup> Energy demand runs from around 150 to 200 kW for the smallest MINUSCA sites, all the way up to 3–4 MW for each of the bases in Bangui, including mission headquarters. One strong driver of demand is the hot CAR climate, which leads to high levels of air conditioning usage. This is compounded by the energy inefficiency of the prefabricated buildings that house most of the mission’s offices. Partly as a result, generators use 78 percent, or 18.3 million liters, of the mission’s total annual diesel usage, with UN-owned generators consuming 33 percent of diesel annually and contingent-owned generators consuming 45 percent.<sup>78</sup>

The energy demand determines the mix of UN-owned equipment generators employed at each site. The smallest temporary operating bases use 70 kVA generators, while larger sites use a mix of generators up to 500 kVA. Each generator can run for a maximum of only 12 hours. As part of a wider UN effort to reduce fuel consumption and increase generator efficiency, the mission has implemented generator synchronization measures in nearly all sites. These synchronization measures automatically manage generator usage and switch between generators, which has helped reduce the mission’s fuel consumption and carbon emissions. As of February 2020, the synchronization initiative was saving the mission more than 120,000 liters of diesel fuel per month.<sup>79</sup>

## 7. The Costs and Consequences of Diesel Dependence

MINUSCA's presence in CAR is overwhelmingly dependent on diesel generators, and relies on a large and steady supply of diesel fuel. The mission used 23.7 million liters of diesel fuel between July 2023 and June 2024<sup>80</sup> at an approximate cost of \$39,937,000.<sup>81</sup> Yet ensuring the continuity and sufficiency of MINUSCA's diesel fuel supply remains massively challenging for the many reasons detailed below. As a result, the mission's dependence on a single source of energy makes MINUSCA vulnerable to shocks, shortages, and supply issues, not to mention waste or fraudulent activity.

### 7.1. MINUSCA's fuel sourcing for diesel

UN peace operations obtain fuel through turnkey contracts with international distributors. In CAR, fuel is currently provided through a turnkey contract with Tristar, which is responsible for obtaining, importing, and distributing fuel to MINUSCA camps throughout CAR using its own independent supply chain. The only support MINUSCA provides Tristar is military escorts for supply convoys traveling through insecure areas.

Tristar has held the contract with MINUSCA nearly continuously since the mission was established in 2013, with the exception of one nine-month period. In October 2021, the mission awarded a three-year contract for fuel services to another contractor. Unfortunately, the new contract was shortly followed by constraints in the global fuel supply, resulting in a major fuel crisis in CAR. The contractor struggled with substantial cash flow issues and was unable to procure and transport sufficient fuel supplies and adequately distribute them to all mission locations.<sup>82</sup> The crisis was exacerbated by the late onset of the rainy season in summer 2022, which delayed fuel supplies being transported by river.<sup>83</sup> MINUSCA was forced to adopt measures including rationing fuel for vehicles and generators, working from home, restrictions on air conditioner use, and prioritizing mandated activities,<sup>84</sup> and was even forced to transport in some fuel supplies by air.<sup>85</sup> The crisis led to the early termination of the contract in June 2022 and the awarding of a new three-year contract to Tristar beginning in July 2022. The crisis also spurred the mission to adopt revised supply protocols, expanding fuel storage capacity at 17 sites to allow for up to 90 days of fuel storage in addition to increasing the mission's drive to invest in renewable energy resources.<sup>86</sup> Since July 2022, Tristar's performance has been consistently rated satisfactory, and the mission has faced relatively few risks to its fuel supplies, despite fuel shortages on the local market (see [section 5.3](#)) and occasional delays in supply due to seasonal conditions or challenges in neighboring countries.





Rwandan peacekeepers struggle through difficult road conditions between Bria and Ouadda. Photo by UN/MINUSCA, 19 July 2022.

## 7.2. Supply routes into the country

Efforts to source, acquire, and import fuel for the mission are heavily shaped by the geography and level of development of the CAR, as laid out in [section 5.3](#). MINUSCA’s reliance on Tristar largely insulates the mission from the fluctuations and shortages of the local market. The mission nonetheless still faces substantial challenges in adequately provisioning its requirements, resulting from the country’s geography. For example, approximately 80 percent of the mission’s fuel supply is brought in via river during the rainy season, between July and November/December. Any disruptions during this short period can have an outsized effect on the mission’s diesel availability throughout the year.

The remaining approximately 20 percent of the fuel supply for the mission comes in overland, nearly all from Cameroon. However, the Cameroon route is also subject to disruptions, both at the point of origin and along the way, as laid out in [section 5.3](#). In addition, MINUSCA imports a very small amount of fuel via a third route that specifically serves the isolated outpost of Obo in the far east of CAR. The base receives fuel from Kenya overland via South Sudan. This route, although itself quite long and inefficient, represents a more efficient option than transporting fuel 1,500 kilometers from Bangui, a trip that would take about a month without any vehicle breakdowns, road issues, or other delays.<sup>87</sup>

MINUSCA similarly used to supply the remote northeastern base of Birao from Sudan, but the outbreak of civil war in that country in April 2023 has halted the practice. Birao, which is only accessible from Bangui during the dry season between January and May, has been provided with extra fuel storage capacity, but the internal transportation challenges remain enormous.

### 7.3. Distribution of fuel within the country

Distributing fuel within CAR presents an even greater challenge than acquiring and importing it. All fuel imports from both the river and overland routes are received into the government customs-bonded warehouses in Bangui before being distributed to UN mission operating bases across the country. MINUSCA maintains a substantial fuel depot in Bangui as well as at each regional headquarters, with distribution points and storage facilities at 20 locations across CAR.<sup>88</sup>

The distribution of fuel beyond these regional headquarters, or sometimes even to them, is a thorny and complicated logistical challenge. According to Tristar’s turnkey contract, the company brings in and delivers fuel throughout the country using its own equipment and security. This is not an easy task—even in the dry season, most roads are little more than dirt tracks, with limited cellphone coverage and few maintenance options along the way in case of breakdown. Outside of the height of the dry season, travel can be excruciatingly slow due to rains bogging down roads. For example, in 2020, a MINUSCA convoy spent seven days going only 12 kilometers, trying to move heavy equipment through a swamp between Bambari and Alindao.<sup>89</sup>

The CAR also continues to confront insecurity, even with the moderate improvements in recent years. MINUSCA provides protection for Tristar convoys on all roads given a red security classification—the internal UN security rating that denotes a dangerous or no-go area—which is in practice in most of the country. The only green (i.e., safe) roads lie between Bouar and Bangui and in the area to the west of the two population centers. Even the road from the Cameroon border to Bouar is classified as red (though the presence of a battalion focused on escorts along the road has prevented any recent security incidents).

As a result, more than 90 percent of convoys need an escort of some sort. While convoys on the handful of orange roads—which present moderate security risks—require only a light escort of one or two vehicles, escorts on red roads require a much more significant presence, including a full complement of security and corresponding support services in 10 or more vehicles. For the longest and most difficult trips, the convoy needs to travel with water and fuel trucks, in addition to a maintenance team and a recovery vehicle, in case of vehicle breakdown. However, for multiple reasons, convoys can number no more than 30 vehicles, meaning that once security and logistical requirements are considered in the manifest, space for fuel and cargo in the convoy is at a premium.

MINUSCA’s elaborate convoys are required in part because of the lack of local economic activity in rural CAR. No locally run petrol stations are found east of Sibut, and it is nearly impossible to find food, water, or spare parts in local communities during journeys, much less construction materials like cement needed for bridge repairs.

Critically, the country’s short dry season limits the window possible for road transportation to January–May, or June at the latest. As a result, some sites, for example Obo and Birao, may receive only one MINUSCA convoy per year, although regular MINUSCA helicopter flights keep the sites supplied with smaller or lighter items. For example, in 2024, a convoy to Birao was able to deliver its cargo ahead of the rainy season, but was unable to depart Birao before the roads became impassable. As a result, twenty vehicles were forced to wait in the town until the roads reopened in early 2025.<sup>90</sup>

The Route Nationale 2 road, which links Bangui to the South Sudanese border at Bambouti, as seen in [the map](#), is an effective illustration of the challenges facing MINUSCA overland transportation. MINUSCA



has six field offices along the RN2, which parallels the Oubangui River from Bangassou to Bambouti. The road passes across 52 bridges, all but five of which are made of wood and usually need to be repaired or completely reconstructed after each rainy season. In addition, rebels along the road sometimes burn the wooden bridges. While there are some ferries, most were built in the 1950s, if not earlier, and they are insufficient for MINUSCA needs. Moreover, the number of MINUSCA engineers and amount of engineering capacity is not sufficient to do more than make minimal fixes each dry season. For example, a broken five-meter-long bridge in 2023 required at least four helicopter flights to bring the engineers, equipment, material, tents, and other necessities, and security to establish a temporary operating base to sustain the engineers for the several days required to repair the bridge.

During the worst periods of fuel disruptions and shortages, MINUSCA has occasionally flown fuel to mission bases to keep them supplied. This approach is very expensive and highly inefficient, in addition to substantially increasing the mission's carbon footprint. As one example, Birao, which is close to the Sudanese border, was supplied from Sudan until the outbreak of civil war in 2023. The sudden closure of its supply line put Birao in a concerning situation. At one point the office, which consumes 1,000 liters of fuel a day, had only five days of fuel left. By delivering 2,000 liters of fuel daily using a fixed-wing aircraft, the mission gradually rebuilt reserves in Birao, but the office remains one of the mission's most remote outposts



Pakistani peacekeepers work on repairing a bridge destroyed by armed groups on the Bangassou-Bakouma road. Photo by MINUSCA, 31 March 2021.

and continues to be especially vulnerable to fuel shortages and disruptions.<sup>91</sup> Birao, like many other remote and marginalized communities where MINUSCA operates, does not have any local electricity capacity.

MINUSCA's air resources are limited, however, and air supply of fuel is not a viable long-term option for bases or offices in locations like Birao. The mission is exploring ways to diversify its supply lines regionally, but must confront challenging questions, including whether the fuel market is viable in neighboring countries, border crossings are open, and neighboring governments are willing to allow exports to MINUSCA, particularly of fuel. Seeking to facilitate greater trade movement from South Sudan to Obo and potentially Zemio, another eastern outpost, MINUSCA recently helped open a border post in Bambouti, directly on the South Sudan border, consisting of MINUSCA troops, government security, and national customs and immigration officials. But there is no water for 30 kilometers around Bambouti, meaning that the mission must airlift supplies for drinking and the occasional shower. Efforts are underway to drill a borehole at the site, which would reduce its logistical demands and carbon footprint.<sup>92</sup> MINUSCA has also launched a project for constructing a border post with Chad at Bémberé, expected to be completed by early 2025.<sup>93</sup>

## 7.4. Fuel supply chains and the risk of waste and fraud

The mission's heavy reliance on diesel opens up opportunities for overconsumption, waste, and potentially fraud. UN Board of Auditors reports from 2021,<sup>94</sup> 2022,<sup>95</sup> and 2024<sup>96</sup> documented irregularities in MINUSCA fuel consumption, including "fuel consumption exceeding tank capacity, fuel consumption exceeding energy produced and fuel consumption exceeding standard fuel consumption unit, as well as refueling with no odometer records" in 2019–20.<sup>97</sup> In one example, the Board found elevated fuel consumption rates in 1,452 vehicles, producing a total overconsumption of 1,112,395 liters of diesel,<sup>98</sup> or 6 percent of planned diesel usage for the financial year 2019/20.<sup>99</sup> The Board highlighted that "the data indicated significant overconsumption in several missions," including MINUSCA, which may indicate an elevated risk of fraud.<sup>100</sup>

An audit by the OIOS in 2023 called for stronger action to counter these problems. The audit noted that while MINUSCA had established a Fuel Over-Consumption/Fraud and Rations Fraud Task Force, the task force had only met twice in a year and only conducted one training to raise awareness of fuel fraud. Moreover, oversight of fuel usage and investigations into potential fraud cases were identified as lacking. For example, MINUSCA's Conduct and Discipline Team deemed there was insufficient evidence to move forward with six cases of alleged fuel fraud amounting to 297,000 liters worth over \$576,000; the alleged fraud was connected to vehicles assigned to four different military contingents. The OIOS audit, as well as the Board of Auditors audits, identified under-staffing of the Fuel Unit as a key factor preventing more robust oversight, as well as a lack of training, monitoring, and systems to flag and trigger an investigation of abnormal consumption.<sup>101</sup>

MINUSCA has presented numerous different explanations for the irregularities documented in the various audits. The issues represented "data irregularities" due to a lack of training on the electronic fuel management system, resulting in misalignment between the mission's fuel management and mileage tracking systems, as well as insufficient staff capacity to review system data resulting from understaffing.<sup>102</sup> Subsequently, MINUSCA argued that the over consumption "related mostly to generator overconsumption, due to the installation of metering units that were incompatible with the fuel management system, and, to a lesser degree, to vehicle overconsumption," which it blamed on

technical issues as well as “isolated cases” of inadequate oversight in locations where military and police personnel are deployed. MINUSCA noted that it was in the process of replacing its generator metering units. Nevertheless, problems with fuel management—and likely with fraud—continue to persist. The Board of Auditor’s report in 2024 noted that MINUSCA identified nearly 13,000 instances of abnormal fuel consumption, equal to a total of 2.4 million liters, in the electronic fuel management system for financial year 2022–23.<sup>103</sup>

## **7.5. The relationship between MINUSCA, Tristar, and the CAR government**

While MINUSCA’s fuel supply has been relatively stable compared to the local market, thanks to its independent supply chain through Tristar, interlocutors privately expressed concerns that the situation might change. To address the fuel shortage across the country, the CAR government recently concluded an exclusive agreement with a Cameroonian company called Neptune Oil for national provision and distribution of fuel. Although fuel availability in Bangui has improved somewhat, this change has complicated fuel availability for MINUSCA. The government has made it clear that it intends for Neptune to provide all fuel in the country, including to MINUSCA, regardless of the mission’s existing contract with Tristar. If MINUSCA is forced to compete with national consumers for Neptune fuel supplies, the mission risks undermining the availability of local supply, given the scale of its demands compared to national consumption.

The new Neptune fuel contract has created uncertainty in the supply of fuel both to the national market and to MINUSCA, as there is no diversification of suppliers. In August 2024, MINUSCA instituted exceptional energy savings measures at its bases, in addition to tapping strategic reserves,<sup>104</sup> while it waited to receive planned fuel shipments held up by the negotiations, including 4.9 million liters sitting in Cameroon and 5 million liters in barges en route from the DRC (a total equivalent to 42 percent of the mission’s fuel supply in the previous fiscal year).<sup>105</sup> The government granted exceptional permission for both these shipments to be received by MINUSCA, but at an additional cost from the formal transfer of the shipments to Neptune and back to the mission. Given the impact of past fuel supply constraints on mission capabilities, the reform of the fuel sector and the diversification of suppliers would improve the mission’s operational environment and thereby help create a more conducive environment for mandate implementation.



## 8. MINUSCA Renewable Energy Efforts and Plans, and the Challenges Confronting Them

MINUSCA currently receives only 3 percent of its energy requirements from renewable sources, mainly solar installations in Bangui and elsewhere around the country. The mission is seeking to increase this to 8 or 9 percent by the end of 2025, as discussed further below, which would come closer to matching the average of about 10 percent for UN field missions worldwide.<sup>106</sup>

### 8.1. Imperatives for MINUSCA’s shift toward increased renewable energy

MINUSCA’s interest in increasing its use of renewable energy stems from three main sources: requests by UN legislative and oversight bodies, UN and national policy frameworks, and the practical realities of working in CAR.



MINUSCA messaging to reduce fuel usage and carbon emissions, MINUSCA Headquarters, Bangui. Photo by Sophie Rutenbar, August 8, 2024.

### **8.1.1. REQUESTS BY UN LEGISLATIVE AND OVERSIGHT BODIES**

The Security Council has increased its recognition of and engagement on the environmental aspects of security over the years since the Council held its first open debate in 2007 on the linkages between climate change and international security.<sup>107</sup> The first MINUSCA mandate in 2014, Security Council resolution 2149, did not mention climate, the environment, or energy. However, beginning in 2017, the Security Council requested MINUSCA to “consider the environmental impacts of its operations when fulfilling its mandated tasks and, in this context, to manage them as appropriate and in accordance with applicable and relevant General Assembly resolutions and United Nations rules and regulations.”<sup>108</sup> In 2022, the Security Council added an operational paragraph to resolution 2659, which has continued to be included in subsequent resolutions, that refers to phase II of the DOS’s Environment Strategy for Peace Operations, noting in particular the strategy’s emphasis on “good stewardship of resources and a positive legacy of the mission,” and acknowledging the goal of “expanded renewable energy use in missions to enhance safety and security, save costs, offer efficiencies and benefit the mission.”<sup>109</sup> The most recent Security Council resolution expands on this by referring to the DOS’s “The Way Forward: Environment Strategy for Peace Operations 2030,” and noting that the strategy “identifies the goal of expanded renewable energy use in missions to enhance safety and security, save costs, offer efficiencies and benefit the mission.”<sup>110</sup>

The Security Council has also acknowledged the impact of climate change on the situation in CAR. Security Council resolution 2448 in 2018, which renewed the MINUSCA mandate for an additional year, recognized “the adverse effects of climate change, ecological changes and natural disasters, among other factors, on the stability of the Central African Region, including through drought, desertification, land degradation, and food insecurity,” and called for the development of “long-term strategies by governments of the Central African Region and the United Nations to support stabilization and build resilience.”<sup>111</sup> Similar phrasing has been retained in subsequent resolutions, and in 2023 the Security Council added a reference to “energy access” to the recognized impacts of climate change and instability.<sup>112</sup>

The General Assembly, in accepting the findings of the ACABQ budget advisory body, has also emphasized the need to transition to renewable energy. Most recently, the ACABQ encouraged MINUSCA to “increase its sustainable energy production and reduce its overreliance on generators.”<sup>113</sup> The ACABQ has also asked the mission to develop a positive legacy strategy in the near future, as discussed below in section 8.3.2.<sup>114</sup> In its consideration of cross-cutting issues for peacekeeping missions, the ACABQ continues to monitor efforts to acquire hybrid generators and reduce fuel consumption.<sup>115</sup>

### **8.1.2. OBJECTIVES ESTABLISHED BY UN STRATEGIC FRAMEWORKS AND POLICIES**

Another incentive for the mission’s switch to renewable energy comes from UN strategic frameworks and policies. The UNSCAP 2020–2030, launched in September 2019, sets ambitious climate goals in eight distinct areas. In particular, the Action Plan calls for renewable energy to provide 40 percent of consumed electricity by 2025 and 80 percent by 2030. Peacekeeping is a particularly important target for efforts to achieve the ambitious UNSCAP targets, given that UN field missions account for an overwhelming majority of UN Secretariat emissions and an estimated 42 percent of the total UN system’s carbon footprint.<sup>116</sup> But while UNSCAP officially remains a priority of the Secretary-General, in practice the UN system as a whole has made little progress toward the goals.

The UN DOS, which is responsible for providing support services to all UN field presences, has made strides in some areas, but remains far from achieving the UNSCAP target for renewable energy. UN field operations as a whole currently receive around 10 percent of requirements from renewable energy—still far behind the UNSCAP target of 40 percent renewable energy by 2025.<sup>117</sup> “The Way Forward: Environment Strategy for Peace Operations 2030” sets a more modest renewable energy target: moving somewhat closer to 29 percent, which is currently the share of renewables in power generation globally. The strategy focuses on applying a “do no harm” approach to environmental impact, increasing ambition in the efficient use of resources, and leaving a positive legacy. Under the goal of increasing ambition, DOS is focusing on tailoring efforts to the local context, using options that include “(1) connecting to local grids with a share of renewable energy, where available; (2) installing renewable energy systems through on-site UN- and contingent owned renewable energy systems; and (3) anchoring new private sector or local utility investment by outsourcing renewable energy supply.”<sup>118</sup>

The UN Sustainable Development Goals (SDGs) also serve as a framework for energy initiatives in CAR. Goal 7.1 calls for ensuring universal access to affordable, reliable, and modern energy services, whereas the CAR population’s access to electricity currently stands at 15.7 percent and the share of the population with access to clean fuels and technology for cooking is currently less than 1 percent. SDG 13 on climate action calls for reducing CO<sub>2</sub> emissions from fossil fuel combustion and reducing greenhouse gas emissions from imports; CAR, largely as a result of its low level of development, fares comparatively well on these indicators.<sup>119</sup>

### **8.1.3. THE LOGISTICAL REALITIES OF THE CAR**

Given the many challenges related to transportation and logistics in the country, and its dependence on diesel generators for power, MINUSCA mission leadership is aware of the likely logistical, administrative, and substantive benefits of an increase in renewables. The mission’s budget proposal for 2024–25 notes that the mission’s planned solar projects (discussed below) are expected to reduce fuel consumption by 690,631 liters, equivalent to \$1,164,404,<sup>120</sup> and to reduce operational maintenance by \$168,675,<sup>121</sup> in addition to eliminating approximately 1,726 tons of CO<sub>2</sub> emissions during the 2024/25 period.<sup>122</sup>

Increased use of renewable energy could also significantly reduce the mission’s huge logistical challenge of distributing fuel around the country. By reducing the amount of fuel that needs to be shipped, and therefore the mission’s vulnerability to insecurity along key roads, increased renewable energy use would free up MINUSCA uniformed personnel for other mandated duties besides escorting convoys. Once renewable energy systems have been installed, the mission’s logistical and engineering capacities would also be better able to focus on priorities like more durable development of bridges along key supply routes, as well as developing other infrastructure. In addition, increased renewable energy generation would better protect the mission from potential fuel shortages.

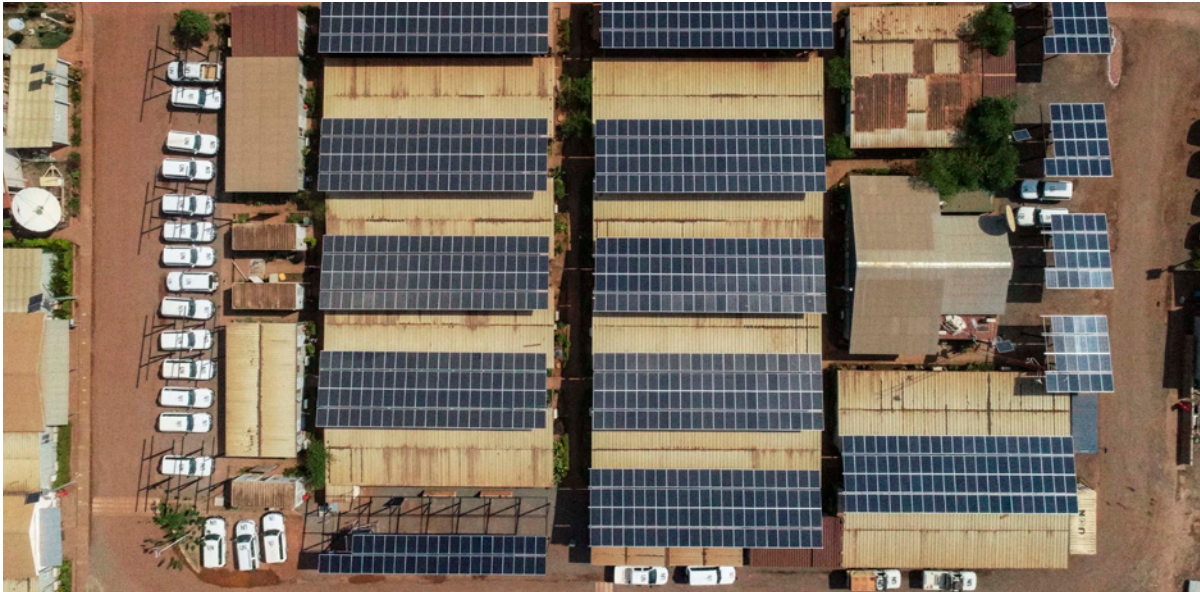
Furthermore, renewable projects that are also able to provide power to local communities—particularly in marginalized parts of the country—would deliver significant economic and development benefits, as local citizens would have access to a longer-term, sustainable energy solution, helping to advance MINUSCA’s efforts to support the peace process and rule of law.



## 8.2. Progress on MINUSCA renewable energy efforts

MINUSCA currently receives about 3 percent of its energy from renewable energy plants in Bangui and around the country. Given the benefits of a transition to renewables and the legislative imperatives, MINUSCA has plans to increase its share of renewable energy to 8 or 9 percent of total energy usage by the end of 2025. The mission is in the planning or implementation phase of adding additional solar installations to its energy generation portfolio. These initiatives face some challenges, however, and significantly greater efforts are needed to substantially scale up the mission's use of renewable energy. A number of opportunities for this are open to the mission, including through its effort to formulate a positive legacy strategy ahead of a possible mission transition.

A UN mission relies on different categories of equipment to provide for general UN energy purposes and for the energy requirements of UN military and police contingents. The first category, UN-owned equipment (UNOE), is directly procured, operated, and managed by the UN and provides power for UN-managed offices and compounds. The second category, contingent-owned equipment (COE), is provided by individual troop- and police-contributing countries in alignment with a Memorandum of Understanding (MOU) with the UN that lays out power and self-sustainment capacity requirements governed by the UN Contingent-Owned Equipment Manual.<sup>123</sup>



Solar panel array at the MINUSCA logistics base. Photo by MINUSCA, 5 June 2021.

### 8.2.1. UNOE RENEWABLE TRANSITION EFFORTS UNDERWAY

UNOE provides for the needs of MINUSCA offices and civilian infrastructure, as well as civilian housing in MINUSCA sites outside Bangui. During the last budget year, UN-owned generators consumed 33 percent of total mission diesel usage, or 7.8 million liters. However, the installation of diesel and solar hybrid power systems led to an estimated savings of more than \$601,440 in the 2023–24 annual budget, or 300,720 liters of fuel, equivalent to 752 tons of carbon emissions.<sup>124</sup>



As of October 2024, MINUSCA had completed 10 solar projects using UN-owned equipment intended to provide power for mission requirements in Bangui and across the country.<sup>125</sup> In Bangui, six solar installations currently provide a peak installed capacity of around 800 kWp, while two additional projects totaling 514 kWp are awaiting commissioning. Projects in Bossangoa (115 kWp), Bambari (100 kWp), and Sibut (82 kWp) have also been completed, while additional projects are underway in Birao and Obo (both 164 kWp once completed).<sup>126</sup> But none of these projects is large enough to cover the full needs of the sites, which have peak power demands ranging from around 150–200 kW to 1 MW or more. In addition, some of the initial solar installations in Bangui were directly attached to the diesel-based grids of their respective compounds, so additional battery storage was not necessary. However, all recent projects, including all the projects outside Bangui, include an energy storage system component.<sup>127</sup>

MINUSCA's environmental efforts overall are guided by the mission's environmental action plan, which includes energy among the plan's five pillars.<sup>128</sup> Under its environmental action plan, MINUSCA has a wide number of goals that it tracks through e-App, the online Environmental Action Planning & Performance platform, including goals for renewable energy. MINUSCA is also beginning to pilot an effort to introduce performance targets for the mission's multi-year waste, wastewater, and energy management plans.<sup>129</sup> The mission has also implemented a range of other initiatives to reduce its environmental footprint. For example, it upgraded existing security lights to LED lighting at the various MINUSCA sites in Bangui.<sup>130</sup> The mission has also installed meters to help monitor its power consumption,<sup>131</sup> as well as a remote power consumption monitoring system at the MINUSCA logistics base.<sup>132</sup> Other efforts include posting signs discouraging vehicle idling, asking personnel to turn off air conditioners in offices outside working hours and in accommodation units during daytime hours, and increasing the temperature threshold for when air conditioners should be used.

### **8.2.2. COE EFFORTS UNDERWAY**

COE generators consume an even larger share of mission diesel: 45 percent of total mission diesel used between July 2023 and July 2024, or 10.6 million liters. COE generators thus used 58 percent of total mission generator fuel usage.<sup>133</sup>

UN military and police peacekeeping contingents typically deploy with their own equipment, including generators, and receive reimbursements for it according to the UN COE manual, which sets out standards and reimbursement rates for all equipment. The large size of MINUSCA's military and police deployment, with an authorized ceiling of 17,420 personnel, means that COE represents a major part of the mission's fuel usage. Because contingents bring and maintain their own equipment, the UN has less ability to monitor, control, and reduce emissions from COE than from its own UNOE, although the MINUSCA Environmental Team carries out regular inspections of contingent premises and COE.<sup>134</sup> The UN still has some tools, though, including establishing and enforcing standards for generator efficiency and capacity, enhancing monitoring and oversight of fuel disbursements to contingents, and responding promptly to potential cases of fuel fraud and concluding them quickly.

Some efforts are underway to work with deployed contingents to voluntarily increase their use of renewable energy and decrease their carbon footprint. On their own initiative, contingents from Bhutan and Pakistan installed solar panels in their compounds in recent years. The Bhutanese Quick Reaction Force in Bangui

installed solar lighting to illuminate its outdoor spaces, while the Pakistani Infantry Battalion in Kaga Bando has installed a small solar plant to supplement the contingent's generator power.

MINUSCA is seeking to increase the number and scale of contingent renewable energy efforts. Expanding on these individual initiatives, efforts are underway to trial the use of renewable solar energy by various MINUSCA contingents. Of the mission's 54 total contingents, nine units have agreed to explore and implement solar solutions for their contingent compounds. One unit, from Morocco, has adopted a proposal and is preparing shipment of solar components to its compound in Bangassou. Eight units in Bangui, Kaga-Bando, and Bangassou are still assessing options with their capitals.<sup>135</sup>

### **8.2.3. THE POTENTIAL AND PRACTICE OF MINUSCA PEACEBUILDING AND QIPS EFFORTS**

MINUSCA also has the potential to positively impact conflict dynamics by supporting renewable energy projects in local communities using mission programmatic resources and funding pools. For example, MINUSCA has used QIPs funding to implement several electrification and solar projects in different sites around CAR, including the QIPs projects discussed above in section 4.1 on Bouar. Although QIPs projects are small, with a funding ceiling of \$50,000 per project, MINUSCA has spent over a million dollars since its establishment on more than two dozen projects that have included electrification of a variety of public infrastructure, including administration buildings, hospitals, court buildings, police stations, and youth centers, in addition to public street lighting.<sup>136</sup>

Given the relationship between the lack of electricity infrastructure, marginalization and underdevelopment, and conflict, as discussed in section 3, MINUSCA and other international actors should consider how to integrate clean energy projects into peacebuilding efforts. For its part, MINUSCA could explore partnerships to improve conflict dynamics by addressing energy poverty in peripheral regions.

For example, the EU's current program prioritizes the green transition, sustainable development, peace and security, and human development. Among other efforts, the EU is aiming to strengthen rural electrification, conduct studies on rural electrification in peripheral parts of protected areas, and promote feasibility studies and data collection for micro power plants. Until January 2025, the priorities of the US Agency for International Development include security and climate change, but the agency did not explicitly prioritize renewable energy. Depending on the priorities of the new US administration, collaboration in promoting investment in local energy enterprises could be envisaged.<sup>137</sup>

UN actors could also work with the CAR government to identify renewable energy priorities for funding by the UN Peacebuilding Fund (PBF). The PBF covers four priority areas: implementation of peace agreements, dialogue and coexistence, peace dividends and socioeconomic recovery, and re-establishment of basic services. In its most recent five-year funding portfolio (2019–24), though, most of the PBF's projects focused on dialogue and youth and women engagement. The PBF did not fund any peacebuilding projects relating to energy accessibility and electrification or renewable energy, which arguably could represent a missed opportunity to catalyze momentum in this critical contributor to underdevelopment and marginalization.

### 8.3. Challenges confronting MINUSCA’s transition to renewable energy

While the mission’s interest in transitioning to renewable energy is sincere, and some mission investment is underway, the challenges are significant.

As discussed, the poor infrastructure and underdevelopment in CAR make it difficult to transport anything by road, including solar panels and equipment for solar power installation. While this is a surmountable challenge, it does necessitate additional logistical planning and attention. Moreover, the mission’s limited convoy and air transport capacities are often consumed by providing for the immediate needs of remote outposts—food, water, and fuel—meaning that an intentional commitment to identify ways to prioritize the deployment of solar equipment is needed.

In addition, local capacity in CAR’s energy sector is extremely limited (see section 3.1). For example, while an expression of interest for generator servicing and maintenance identified close to 40 local companies, some were not capable of registering on the UN’s system-wide procurement platform, the UN Global Marketplace (UNGM), and had to be assisted with the process, meaning that it will likely be difficult or impossible for them to respond to requests for proposals issued through the UNGM. Furthermore, while Security Council resolution 2759 has called for expanded use of national vendors, MINUSCA and the UN agencies have experienced serious issues with local vendors—for example, a vendor unable to progress beyond 30 percent of the construction of a warehouse after two years.<sup>138</sup>

Finally, the shortfalls in engineering staffing previously documented in section 6.2 limit the ability of the mission’s engineering complement to focus on longer-term efforts, like speeding up the transition to renewable energy. The small size of the engineering team, when coupled with the limits of local contracting capacity, means that mission engineers often find it difficult to move beyond daily triage, addressing power outages or wiring issues, to make substantial progress toward the renewable energy transition. In addition, MINUSCA staff members receive frequent rest and recuperation (R&R) breaks (one week of leave every six weeks), an entitlement given to staff because CAR is not only a non-family duty station, but also a hardship duty station.<sup>139</sup> This makes it difficult to advance projects given the constant rotation of staff members in and out of the mission. As a result, MINUSCA does not have sufficient and consistent internal engineering staffing to significantly scale up its renewable energy, so other mechanisms are needed if greater progress is to be made.<sup>140</sup>

An additional concern for the mission is that solar electricity generation will be reduced during the country’s rainy season, as access to the sun is reduced. As a result, other means, like diesel generators or hydropower, may be necessary to cover the dip in supply during this period. All of the ongoing and planned UNDP and World Bank local energy projects discussed in section 3.2 involve hybrid power systems—i.e., integrating two or more sources of energy—to make up for any gaps in provision, maximize the strengths of different systems, and ensure around-the-clock power generation. Where available, hybridization of solar and hydropower is particularly impactful, given that capacity for one rises seasonally as the other falls.

However, the UN has not to date seriously considered hydroelectric power as a solution for UN peace operation energy requirements. The construction of dams and other large hydroelectric power projects is seen as a long-term development project, which UN budget committees view as unsuited for the short-term focus of UN peacekeeping. Moreover, the 2023 UN Energy Category Strategy, developed by DOS, did not include the option of mini-hydroelectric generators like the 420 kW solutions being built

by UNDP, or even much smaller systems.<sup>141</sup> The idea of mini- or micro-hydropower generators seems promising, and the UN reportedly remains open to considering them as a solution for field operations,<sup>142</sup> although some UN staff have highlighted reservations.<sup>143</sup> To address these reservations and consider all potential options, the UN should undertake a process to research and identify potential mini- and micro-hydroelectric options. In the near term, the organization will need to continue to rely on power generation by diesel generators to supplement solar power generation.

## 8.4. Pathways to scaling renewable energy

As noted, MINUSCA is seeking to increase its use of renewable energy from 3 percent to 8 or 9 percent of total energy usage by the end of 2025.<sup>144</sup> It intends to expand upon existing solar projects in the coming months using three mechanisms: PPAs, solar installations through a turnkey contract, and COE improvements.

First, the mission is in the process of reviewing bids received in response to a request for proposals (RFP) for a PPA to establish solar farms to service the mission's bases in Bouar and Bria (see [Box 1](#) for more information on PPA efforts in CAR). The winner of the MINUSCA RFP will be expected to develop and run for five years a solar array providing a "minimum guaranteed electricity generation" of 5.75 GWh and 4.6 GWh per year for Bria and Bouar, respectively.<sup>145</sup> The size of the plant is intended to provide sufficient renewable energy to each camp so that the current diesel generator systems only operate on standby in case of outages or shortages. The land identified for both solar farms is an area adjacent to the camp, just beyond its perimeter fence. While the RFP does not specify that the successful company would also need to provide energy to the local community, it leaves open the possibility that the company could connect to the local grid to provide power. Mission interlocutors proposed that QIPs funding could help provide the necessary equipment to make this connection to the grid in Bouar, while international funding would be required to develop a municipal electrical grid for Bria, which does not currently have any grid infrastructure.

Secondly, DOS recently finalized a global systems contract for renewable energy, which opens up additional options for renewable energy contracting. This turnkey contract is meant to help UN system actors across the globe to source, install, and maintain renewable energy systems. The contract represents a novel development for the UN, as it represents only the second DOS global contract ever established with multiple vendors. Interested UN entities must request an expression of interest from the six contracted companies, and then choose the vendor and solution that best fits their requirements. Together, the six companies under the contract have a total not-to-exceed limit for the contract of around \$25 million over three years. But the entire UN system can draw from the contract, which raises concerns that smaller, nimbler UN agencies may use most of the space under the contract before large UN peacekeeping operations like MINUSCA are able to act. Nevertheless, MINUSCA is assessing 10 potential sites, with the goal of identifying between one and three sites for turnkey site installations in 2025 under the renewable energy system contract.

Finally, expanding uniformed contingent-led renewable energy efforts is an important step toward bolstering the mission's use of renewable energy. Efforts underway with nine troop and police contributors represent a start, but these nine contingents represent less than a fifth of the contingents deployed in MINUSCA, and the planned efforts would not cover more than part of each contingent's energy requirements. Partnerships between MINUSCA, troop and police contributing countries, and donors should be explored to help support renewable energy transitions by additional contingents.<sup>146</sup>



## **BOX 1. MINUSCA PPA EFFORTS**

Solar PPAs are an emerging option for expanding solar energy use by the UN while reducing the organization’s logistical, administrative, and financial burdens. In a PPA, the UN contracts with a commercial energy company to provide a set amount of energy at a set price. The company undertakes all steps in the development process, including financing, design, construction, and maintenance, while the UN acts as a guaranteed customer or anchor client, which provides contracted energy demand and payment to help make the project economically and operationally feasible for the developer.

PPAs are common in the private sector, and the UN has taken initial steps to employ the model. The UN DOS’s “The Way Forward: Environment Strategy for Peace Operations 2030” recognizes anchoring new private sector or local utility investment by outsourcing renewable energy supply as a key approach to increasing UN mission use of renewables.<sup>147</sup> From the point of view of the UN, a PPA solve a few problems. First, it allows the UN to purchase a guaranteed amount of electricity from a vendor at a cheaper rate than the status quo, once the costs of diesel, fuel transportation, and generator purchase and maintenance are included. The UN therefore becomes an energy consumer, outsourcing its energy production and most of the associated logistical challenges to the private sector. Second, the agreement places the up-front costs and logistical burdens on the developer; the UN maintains its generator capacity and a reserve fuel supply in case of PPA supply disruptions. Third, the PPA leverages the UN’s substantial purchasing power to make projects economically viable and financing feasible for the private sector entity. In theory, the UN power purchasing commitment also creates a foundation for the PPA developer to potentially extend energy access beyond the mission to the local community, which would support efforts to reduce marginalization and contribute to peace and development.<sup>148</sup> However, this will likely need to be supported by the government or other international partners, as it may not be a priority, or economically compelling, for the developer. Moreover, partnering with a UN peacekeeping mission does carry some risk, given that UN peacekeeping mandates may be terminated abruptly by the UN Security Council, meaning that all PPA contracts must contain a clause for forced early termination. But on the whole, the PPA model offers a promising path to rapidly scale up the UN’s use of renewable energy across CAR, while leveraging the UN’s substantial and more assured purchasing power to unlock new clean energy projects, which can be expanded to also support local communities and governments.

The first example of a PPA project for a peacekeeping mission was in Baidoa, Somalia, with an United Nations Support Office in Somalia base serving as an anchor client for a solar power project built outside the base in coordination with regional and national government and a Norwegian solar energy company, Kube Energy. The project, which began development in 2018 and came online in early 2024, also provides energy to local partners. Building on this successful example, Kube began looking at options to develop and provide commercial solar power to UN installations in similarly challenging settings.

Starting in 2020, Kube began working with the CAR Ministry of Energy and Environment to develop proposals for a PPA arrangement in the country. Kube identified Bria and Bouar as likely candidates for solar power projects, given that both cities are provincial capitals hosting MINUSCA sector headquarters. As outlined in section 4.1, Bouar represents an important economic hub for trade with Cameroon, with pre-existing, if unmaintained, energy infrastructure; however, Bria, in the less developed eastern part of the country, does not have a grid or any existing municipal energy capacity. Kube coordinated across the Ministries of Energy and Environment, Land and Urbanism, and Defense, as well as with ENERCA, to identify land for potential PPA sites and to conduct on-site feasibility studies and environmental and social impact studies. Kube also organized three workshops to inform the government about PPAs and build the ministries' regulatory capacity. In 2022, Kube signed an MOU with the Ministry of Energy and Environment to move forward with the Bria and Bouar PPA projects. In the subsequent two years, however, the Ministry still had not granted final permission, reportedly in part out of concern that the Kube project in Bouar might overlap with planned World Bank energy projects in the city.

In August 2024, MINUSCA issued a request for proposals for a project to install and supply renewable power to the MINUSCA camps in Bria and Bouar. The solicitation closed in September 2024, having received several bids. The MINUSCA solicitation seems to build on Kube's efforts to develop the national and local government frameworks for PPA arrangements in Bria and Bouar. But rather than relying on the Kube initiative already underway, MINUSCA chose to issue an open solicitation to vendors, reportedly to accord with UN procurement rules that discourage sole source procurement.

However, there is concern that the mission's decision may undermine private sector investment in energy infrastructure in CAR. Since the government's promulgation of its decentralized energy policy nearly 20 years ago, in 2005, not a single private operator has received a license to develop energy projects in CAR; Kube sought to be the first. Notably, the Kube effort sought explicitly to provide power both "inside and outside the fence"—to the UN camp but also to the local population—yet the MINUSCA RFP, in line with UN procurement rules and regulations, is only for powering the UN.

In any case, the RFP received several bids, and given the high private sector interest in the project, it is to be hoped that the mission will consider other sites for potential PPA arrangements, such as Kaga Bandoro, the sector headquarters for the third of MINUSCA's three sectors, or towns like Bossangoa, Ndélé, Birao, or Bangassou, which are some of the mission's more logistically difficult offices, and have both a reasonably sized mission presence and local population.

## 8.5. What more can be done? Leaving behind a positive mission legacy

In response to the strong encouragement of the ACABQ in April 2024, MINUSCA is in the process of developing an “integrated comprehensive positive legacy strategy” for the entire mission.<sup>149</sup> MINUSCA’s proposed positive legacy<sup>150</sup> efforts incorporate a number of elements, including decreasing MINUSCA’s environmental footprint and supporting national renewable energy systems, in addition to nationalizing MINUSCA personnel and transferring knowledge to national stakeholders; improving national roads, infrastructure, and waste management systems; and leaving behind an effective political framework for resolving disagreements.

The process to develop a positive legacy strategy has helped bolster the mission’s efforts to transition to renewable energy. The mission has laid out a series of steps to increase its renewable usage over the next year, including through additional installations, the use of the turnkey contract, and PPAs, as discussed above. The mission is also changing its renewable energy footprint planning, causing it to move away from installing solar systems on rented sites, like many sites in Bangui, including the mission headquarters. MINUSCA is instead focusing on installations at sites where the land has been granted by and will return to the government once the mission departs, which includes bases in the regions as well as the Mpoko base and some smaller sites in Bangui. This measure both ensures the future utility of solar system installations and prevents the mission from having to remove, clean, and dispose of solar installations upon its departure, which would effectively double the cost of the deployment.<sup>151</sup>

The mission should consider additional measures to continue to increase its renewable usage, prioritizing the most remote mission outposts, like Birao, Ndélé, and Obo. In these distant and isolated sites, a transition to renewable energy has the potential to have an outsize impact by reducing the mission’s diesel dependence and its associated negative operational impacts.<sup>152</sup>

## 9. Leveraging the Long-Term Attention of the UNCT

The UNCT in CAR consists of all UN agencies, funds, and programs (AFPs) in the country,<sup>153</sup> as well as MINUSCA. Led by the Resident Coordinator, who in CAR is also a Deputy Special Representative of the Secretary-General for MINUSCA, the UNCT works together with the CAR government to consolidate peace and development in the country.<sup>154</sup>

The energy-related efforts of the UNCT in CAR are worth special attention, for several reasons. First, the AFPs have an important role in supporting the CAR government in achieving its development priorities and advancing the SDGs nationally, including in relation to energy. In the current moment, when the Security Council is largely unable to agree on action in many situations, the national- and local-level roles of the UNCT are even more critical, allowing continued progress on national priorities despite gaps in international support. Second, while they are not as large or well resourced as the peacekeeping mission, the UNCT also has an important presence in Bangui and in the CAR provinces. Moreover, with no new peacekeeping missions authorized since the establishment of MINUSCA a decade ago, the role of UNCTs continues to grow in importance. Finally, while UN peacekeeping missions like MINUSCA are intended to be deployed for a limited period of time, the UNCT is present in the country for the long term, often for decades. As a result, any agency investments in renewable energy use are likely to have a long-term impact on the UNCT footprint, while the UNCT will continue to have an important role in supporting the transition to renewable energy long after the peacekeeping mission departs.

### 9.1. UNCT support for government energy priorities

The CAR government's National Recovery and Peacebuilding Plan (2017–2021) and subsequent National Development Plan (2024–2028) have served as key frameworks for UNCT actions. As outlined in section 1.3, those documents lay out measures for protecting the environment and transitioning to a green economy, including through renewable energy.<sup>155</sup>

These priorities are largely reflected in the UN Sustainable Development Cooperation Framework 2023–2027 (UN SDCF), which was signed in December 2022. The UN SDCF represents the medium-term strategic plan for the UN system in CAR and is developed and implemented jointly by all the members of the UNCT. It has four priorities: peace, population, prosperity, and planet.<sup>156</sup> The public SDCF document links these priorities to SDG 7, “Ensure access to affordable, reliable, sustainable and modern energy for all,” but provides little detail about how SDG 7 will be implemented by the UNCT in CAR. However, implementation efforts reportedly include objectives relating to environmental sustainability, resilience to climate change, peace, security, access to basic social services, and sustainable economic growth, as well as UN plans to build five micro solar power



stations and four micro hydropower stations by 2027, as discussed above in [section 3.2](#).<sup>157</sup> It is worth noting that the CAR national development plan is out ahead of the SDCF in its explicit focus on developing resilient and sustainable national energy infrastructure, as well as promoting renewable energy resources.<sup>158</sup>

UN agencies are also seeking to integrate renewable energy into projects focused on advancing other SDGs. For example, in addition to the solar and hydro projects previously discussed, UNDP's Country Program for 2023–27 calls for the organization to support policy and institutional changes to improve access to energy; prioritize environmental, energy, climate change, and peacebuilding; accelerate the transition to renewable energy; and seek innovative climate financing opportunities.<sup>159</sup> And as discussed in [Box 2](#), UNICEF is installing solar power at some of the health clinics it supports and is developing a solar-powered cold chain for vaccination campaigns. It has also solarized water distribution systems for displaced populations. Other agencies are providing solar panels to help support effective functioning at administrative centers, schools, and hospitals.

## 9.2. Understanding UNCT energy practices in Bangui and across CAR

As they work to advance sustainable development, UN agencies are forced to deal with the same contextual challenges as MINUSCA, but with fewer financial and staff resources. Because they are smaller, UN agencies are better able to integrate into local settings, but this also makes them more vulnerable to local energy challenges. In Bangui, most UN agencies use power from the ENERCA grid, unlike MINUSCA. Even in Bangui, though, the grid provides power for only a few hours a day. When grid power is offline, most agencies rely on diesel generators, which can be challenging given that agencies often have to rely on the local market for diesel fuel, as discussed below.

The situation is even more challenging outside Bangui, where the presence of UN agencies is somewhat limited, with agencies concentrated in a handful of locations. Most UN AFPs and NGOs operate from their own premises and are not co-located with MINUSCA, although MINUSCA bases may occasionally host visitors from various affiliations, especially in very remote settings.

The UN system continues to encourage greater cooperation between UN agencies to maximize synergies. The UN calls on all UNCT entities to participate in creating and implementing a joint BOS that identifies and seeks to maximize potential shared capacities. Under the BOS for the CAR, UN agencies employ a common premises model in most places outside Bangui, whereby camps host two or more agencies, with one agency in the lead in terms of operating, managing, and maintaining the location. For example, the World Food Programme (WFP) is the lead agency for the UN agency common premises in Bria, where they also host the World Health Organization (WHO), the International Organization for Migration, and UNICEF. The smaller agencies, for example UNAIDS, operate mainly in Bangui, with occasional travel as required. The BOS for the CAR will undergo a review in 2025, and this review is likely to consider the development of joint renewable energy projects.

Most of these camps rely on diesel generators for power, and very few offices have solar panels, although agencies are increasingly seeking to enhance their use of renewable energy. For example, WFP has six offices outside Bangui, three of which receive some level of power from installed solar panels. WFP is also preparing to install solar panels at the UN common premises office in Bouar, where it hosts a large number of agencies including WHO, UNICEF, and the United Nations Population Fund, and is also boosting its existing solar capacity in Paoua and Bria.

### **9.2.1. THE DIFFICULTY OF ACQUIRING AND DISTRIBUTING FUEL**

UN agencies are motivated to embrace renewable energy in part because of the substantial challenges of reliably obtaining sufficient fuel supplies. Unlike MINUSCA, UN agencies rely on local vendors and sources of fuel, which has made them more vulnerable to fuel shortages. The UNCT purchased fuel from Total until July 2023, when the company ceased operations in CAR. Since August 2023, the UNCT has been purchasing fuel from Tristar and Tradex. These purchases are done through coordinated contracts, whereby UN agencies can piggyback on each other's contracts. For example, the Office of the United Nations High Commissioner for Refugees and UNICEF have contracts with Tradex as their main supplier of fuel. UN agencies are able to purchase fuel through these contracts, although some UN agencies also have their own arrangements. For example, when WFP encountered supply disruptions, the agency expanded its existing Tristar contract for jet fuel to include diesel fuel.<sup>160</sup>

Distribution of fuel throughout the country varies according to agency and circumstances. In the case of WFP, the agency typically uses its own fuel tanker to carry fuel to field locations, but if there is significant demand or an emergency, it will hire local transportation companies to transport supplies. The UNCT operates according to the same definitions of red and green zones as MINUSCA does, as discussed above in section 7.3. If the field location is in the UN green zone, WFP security will manage coordination of the transportation. However, if fuel needs to be transported within the red zone, the fuel must be transported by MINUSCA convoy, subjecting UN agency fuel supplies to all the challenges that these convoys face, as discussed above (see [section 7.3](#)).

MINUSCA sometimes provides fuel to agencies on a case-by-case and cost recovery basis. This arrangement is meant to provide fuel on an emergency basis, rather than as a regular source of supply, due to issues with timely payment by UN agencies. For example, in the year between July 2023 and June 2024, MINUSCA provided small amounts of fuel to several agencies including the United Nations Office for the Coordination of Humanitarian Affairs and the United Nations Office for Project Services, as well as the CAR government and EU Training Mission. Among UN agencies, WFP received the largest amount of fuel on a cost-recoverable basis during this period, just under 80,000 liters, less than a month's supply of fuel for the small MINUSCA base in Paoua, Ouham-Pendé prefecture.<sup>161</sup>

### **9.2.2. SUPPLY DISRUPTIONS AND THEIR IMPACT**

In the past, the UNCT has experienced small fuel shortages on a regular basis, for example early in the rainy season, when fuel barges must wait for river levels to rise enough to travel upriver. UN agencies were particularly impacted by the 2022 crisis discussed in [sections 5.3](#) and [7.1](#).

During this and other periods of shortage, limitations in the availability of diesel have significantly impacted UN agency implementation. Fuel restrictions have forced UN agencies to curtail field missions, which has affected monitoring and quality assurance for project progress. Shortages have hit the local partners of UN agencies even harder, affecting the implementation of most activities. Vendors are unable to transport items, construction of schools is delayed, and vaccination campaigns have to be put on hold.



MINUSCA distributing fuel to local hospitals and health centers to support operations. Photo by MINUSCA/Herve Cyriaque Serefio, 21 July 2022.

Overcoming the major 2022 shortage required substantial effort by agencies. Efforts to conserve fuel were put in place, including better planning field missions and organizing joint missions between agencies. In some cases, the agencies changed working hours, ending their day earlier and eliminating sending staff home for lunch. The UNCT also worked closely with Total—which at the time was importing around 80 percent of all fuel in CAR—to ensure that whatever supplies were available could be given to the UNCT as a whole to apportion among agencies. MINUSCA also provided some fuel to agencies during this period.<sup>162</sup>

While the fuel supply has been more consistent in recent months, UNCT interlocutors expressed concern about fuel availability in the future, given the government’s decision to implement a centralized fuel procurement and distribution plan through a single company, Neptune. They noted that it is unclear whether the company will be able to provide sufficient quantities of fuel to cover the needs of the population, much less the requirements of UN agencies and implementing partners.

### **9.2.3. CONCERNS ABOUT LOCAL PERCEPTIONS RELATED TO THE LOCAL POLITICAL ECONOMY OF FUEL**

Several interlocutors spoke about the negative impact on popular perceptions when UN vehicles continue circulating despite the impact of fuel shortages on the rest of the population. One expressed unease that, during the fuel shortages the previous year, UN vehicles were the only ones moving around. They reported hearing comments from beneficiaries such as “You pretend to help us, but we aren’t able to move.”<sup>163</sup>

While no reports were shared of security or protest incidents related to local perceptions about the UN's use of fuel, interlocutors expressed concern that negative perceptions might feed into popular resentment. UNCT members are taking steps to reduce visibility and therefore the potential for local grievances. For example, UN police have reportedly patrolled local restaurants in the evening to check that there is not a large presence of UN vehicles. Other steps have included combining trips to the airport to reduce visibility on the roads.<sup>164</sup>

### 9.3. The challenges of a transition to renewable energy

Despite recognizing the environmental and practical importance of shifting to renewable energy, interlocutors estimated that UN AFPs currently receive an even smaller share of their energy from renewables than MINUSCA's 3 percent. It is difficult to accurately assess the percentage of renewable energy used by UN agencies, since they draw on ENERCA power in Bangui, which comes largely from the Boali Dam and other hydroelectric sources. In fact, most UN agencies in Bangui are fully dependent on ENERCA's grid, with diesel generators available as backup. Outside of Bangui, where ENERCA energy provision is limited or non-existent, agencies rely mainly on diesel generators, in addition to some solar and hydroelectric energy. WFP, for example, is the largest agency on the ground in CAR, and three of their four offices outside of Bangui have solar panels installed, although energy provision is limited.<sup>165</sup>

Interlocutors noted that activities in CAR are seen as taking place in an emergency context, but UN agencies have been engaging in many parts of CAR for more than 10 years, necessitating a conversation about a transition from emergency modes of operation to more sustainable approaches. Taking that into consideration, transitioning to renewable energy is a UNCT priority. At a retreat of the UNCT operations team in October 2023, the Deputy Special Representative of the Secretary-General/Resident Coordinator/Humanitarian Coordinator explicitly requested the team to support a transition to green energy,<sup>166</sup> and renewable energy is expected to be an important element of the 2025 review of the UNCT BOS plan. But achieving the transition will be a challenge. The UN agencies in CAR do not have the necessary expertise in country to facilitate the transition. While the various agency headquarters have experts in renewable energy, they are not familiar with the CAR context. MINUSCA does have some expertise in solar power and has a track record of successful solar panel installations, but as noted above, MINUSCA's human resources are insufficient for even the mission's needs, let alone the requirements of 17 UN agencies.<sup>167</sup>

Furthermore, agency efforts face difficulties with funding. Many agencies are experiencing serious budgetary issues, and large-scale investment is a challenge. Where funding for solar panels has been found, it has often come from agency core funding—for example, WFP headquarters, through its energy efficiency program, recently provided the country office with resources to install solar panels in its Bouar office.<sup>168</sup> However, UN budget rules focus on a year-by-year assessment of costs and therefore have difficulty accounting for savings over multiple years from lower diesel fuel, transportation, and generator requirements, making it hard for UN entities to allocate funding for renewable energy as part of regular annual budgets. Even where funding is available, installation is a challenge. Solar panels are expensive, since the local market is not strong enough to support competitive and cost-effective pricing.



## **BOX 2. PROFILE OF UNICEF ENERGY PROJECTS AND ENERGY PRACTICES AS AN EXAMPLE OF GOOD PRACTICES**

UNICEF is prioritizing the use of renewable energy in its humanitarian and development projects, while also investing in reducing its own carbon footprint by transitioning to solar energy.

In Bangui, the UNICEF offices are attached to the ENERCA grid, supplemented by generator usage during blackouts. UNICEF has four field offices in CAR, three of which possess solar capacity, including their compound in Kaga Bandoro, where UNICEF hosts the other UN agencies in a One UN arrangement. In Bossangoa, roughly 30 percent of the office's energy requirements are provided by solar. UNICEF is currently working on the reinforcement and extension of existing solar energy systems in Bambari and Kaga Bandoro zone offices by installing an additional 15 kVA of solar power at each site.

Funding is a challenge for UN agencies' solar power development. UNICEF's existing solar installations have been funded from UNICEF corporate engagement (core) funding, meaning only a limited amount of resourcing is available each year for upgrades. In addition, the instability of the context in CAR has undermined UNICEF's efforts. The UNICEF Greening & Accessibility Fund<sup>169</sup> had previously installed solar panels in Bossangoa and Kaga Bandoro, but these were looted sometime around 2012 and had to be replaced. Moreover, investment in infrastructure is challenging in a constantly changing context. Currently, UNICEF is undergoing a mid-term review and is waiting to see whether its footprint might change before investing in additional infrastructure.

UNICEF is also integrating solar into its projects in CAR. For example, the agency is seeking to solarize the cold chain for vaccinations. It has created four regional depots for vaccines and is working on transitioning 14 of 35 district health clinics to solar. In these 14 clinics, 90 percent of refrigerators have been transitioned to solar, while solar is also being used to provide light inside the clinics. Vaccines are moved between Bangui, the regional depots, and field vaccination campaign sites by cold truck.

In addition, UNICEF is working to use solar to more sustainably provide water to vulnerable populations. In the South-West, UNICEF built and handed over to the Ministry of Water six solar-powered mini-water systems, serving 11,000 people. In the Pladama camp for internally displaced people near Bambari (Ouaka), UNICEF installed solar panels, replacing a generator, to run a bladder water storage and distribution system attached to a borehole. The system provides water to more than 3,000 people. Initially, UNICEF faced a challenge of the solar-powered pumps not working efficiently in the early mornings and evenings because of low sunlight levels. UNICEF then increased the water storage capacity of the tanks, ensuring a sufficient supply to meet the needs of individuals who collect water in the early mornings.

## 9.4. The possibilities of the UN agency transition to renewable energy

UN agencies have an important role to play in renewable energy development, even at a smaller scale than MINUSCA. Unlike UN peacekeeping missions, which are deployed to address short-term challenges and are usually only present in a country for several years, UN agencies may establish and maintain a country presence over decades. Any investment in renewable energy is therefore likely to pay even greater dividends over time. Given their significant potential impact, UN agencies should identify ways of pooling resources to support energy transition at shared premises. Smaller-scale versions of PPAs, drawing on aggregated UN AFP energy demands, could help develop private sector renewable energy investment, which could also be extended to local communities. The UNCT should consider ways to develop PPAs in its review of the BOS for the CAR in 2025.

Moreover, UN agencies have an important opportunity to contribute to electrification and renewable energy development in CAR by supporting government energy priorities, particularly in marginalized areas. This is most visible in the case of ongoing UNDP and World Bank investment in hydroelectric and solar energy installations, but also extends to smaller-scale electrification and solar energy projects. UN agencies can also contribute to enhancing the catalytic impact of MINUSCA investments in renewables, given that MINUSCA's mandate and limited financial and human resources hamper its ability to develop renewable energy projects for local communities. UN agencies can pick up the slack, building on and extending the mission's impact—for example, by constructing local electrical grids or helping connect MINUSCA PPA installations to existing local grid networks, where applicable. By aligning efforts and maximizing joint impact, UN agencies, together with MINUSCA and the CAR government, can ensure that local communities benefit from the significant socioeconomic impacts of expanded energy access, helping bolster development and address some of the conflict in CAR.

## 10. Conclusion

Political and economic marginalization—including limited and uneven access to electricity—have played a central role in cycles of conflict in the CAR over many decades. This report looked first at the history and evolution of the energy sector in the CAR, and examined the links between energy and conflict dynamics past and present. A lack of electricity access is a visible and important element of this marginalization, with the bulk of the electricity infrastructure located in the more densely populated Bangui region and, to some extent, in the West/South-West. The study also explored the possibility for renewable energy as a solution to bridge this gap and help support peace and development in the country. New clean energy projects are emerging: The country's first solar farms were inaugurated in 2023; several other solar plants and small-scale hydropower stations should be operational in the next few years with the support of international partners. Yet much more needs to be done—even when operational, energy production will remain well below needs.

The study then explored the role of MINUSCA, the latest in a long line of international interventions in the CAR. MINUSCA represents the primary international response to the crisis in CAR, yet it is spread throughout the country and under-resourced, notably its engineering capacity. Providing power to its operations, particularly its remote field sites, is among the many challenges facing MINUSCA. The mission is overwhelmingly dependent on diesel generators for its power, which creates a constant struggle, due to a limited supply of fuel and a challenging supply chain, and the remote locations of many of its field sites. MINUSCA recognizes the benefits of renewable energy, but has struggled to implement projects—as demonstrated by only 3 percent of the mission's energy coming from renewable sources. While some of this can be explained by the lack of engineering capacity and challenging overall environment, procurement rules have also slowed down efforts to work with the private sector on new projects. Nevertheless, MINUSCA represents the largest player in CAR's energy sector, and one of the few actors with a national presence and budget to initiate new projects. As such, it is uniquely placed to help advance renewable energy projects around the country. Yet it is limited in terms of mandate and capacity. For such efforts to also benefit local populations, other partners must step up, including the government, the UNCT, and bilateral and multilateral donors.

The deployment of renewable energy is a stated priority of the government of CAR. In addition to the political benefits, renewables are environmentally friendly: They can reduce emissions and can help address concerns over growing deforestation by offering a clean energy and cooking solution, thereby limiting the use of firewood, which is currently the most common source of energy in the country. In addition, while the country has experienced regular fuel shortages—particularly since 2022—renewables can help limit the need for diesel to power diesel generators.

Given its significant size, energy footprint, and presence all over the country, including in less secure areas, MINUSCA is in a unique position to contribute to the deployment of renewable energy in peripheral areas where it is most needed. MINUSCA is looking to establish its positive legacy by increasing its use of renewable energy, but more must be done. International partners can invest in increasing the capacity of MINUSCA, while also partnering on specific projects to maximize the contributions to local energy access, including advancing peace and stability around the country.

# Endnotes

- <sup>1</sup> United Nations Office for the Coordination of Humanitarian Affairs (OCHA), Central African Republic: Situation Report, 11 September 2024, <https://www.unocha.org/publications/report/central-african-republic/central-african-republic-situation-report-11-sep-2024>.
- <sup>2</sup> United Nations Security Council resolution 2387, OP 48, S/RES/2387, 2017.
- <sup>3</sup> Those Rwandan bilateral troops were deployed in addition to those already present under MINUSCA.
- <sup>4</sup> OCHA, Central African Republic: Situation Report. According to OCHA, 2.8 million Central Africans (out of 6.1 million) are in need of humanitarian aid.
- <sup>5</sup> Since the death of Wagner’s founder, Yevgeny Prigozhin, in August 2023, Wagner’s activities have been partly taken over by the “Africa Corps” under the control of Russia’s Ministry of Defense. Russian armed actors, however, continue to operate under structures put in place by Wagner.
- <sup>6</sup> Roland Marchal, *Aux Marges Du Monde, En Afrique Centrale . . .* (Paris: SciencesPo CERI, 2009), [https://www.sciencespo.fr/ceri/sites/sciencespo.fr.ceri/files/etude153\\_154.pdf](https://www.sciencespo.fr/ceri/sites/sciencespo.fr.ceri/files/etude153_154.pdf).
- <sup>7</sup> Lotje de Vries and Tim Glawion, *Speculating on Crisis: The Progressive Disintegration of the Central African Republic’s Political Economy* (Clingendael, 2015), [https://www.clingendael.org/pub/2015/speculating\\_on\\_crisis/](https://www.clingendael.org/pub/2015/speculating_on_crisis/).
- <sup>8</sup> Louisa Lombard, *State of Rebellion: Violence and Intervention in the Central African Republic* (London: Bloomsbury Academic & Professional, 2016), <http://ebookcentral.proquest.com/lib/soas-ebooks/detail.action?docID=4748965>.
- <sup>9</sup> Gino Vlavonou, *Belonging, Identity, and Conflict in the Central African Republic* (University of Wisconsin Press, 2023).
- <sup>10</sup> Andreas Mehler and Lotje de Vries, *Les Conditions Marginales du Néopatrimonialisme Performant: Pourquoi l’Afrique ne marche pas dans la République Centrafricaine*, ABI Working Paper no. 8, 2018.
- <sup>11</sup> Stephen Smith, “The Elite’s Road to Riches in a Poor Country,” in Tatiana Carayannis and Louisa Lombard (eds.), *Making Sense of the Central African Republic* (London: Zed Books, 2015), 102–122.
- <sup>12</sup> That was the case when Jean-Bedel Bokassa was overthrown through “Operation Barracuda” in 1979.
- <sup>13</sup> PK12 is located 12 kilometers away from downtown Bangui.
- <sup>14</sup> Vlavonou, *Belonging*.
- <sup>15</sup> Also called *zaraguinas* in CAR; Emmanuel Chauvin and Christian Seignobos, “L’imbroglio Centrafricain: État, Rebelles et Bandits,” *Afrique contemporaine* 248 (2013): 119–148.
- <sup>16</sup> See *Reports of the United Nations Panel of Experts on the Central African Republic*; e.g., S/2019/1119, paras. 105–140 (on transhumance); S/2018/729, paras. 82–86 and annex 6.4 (on tax systems and gold/diamond); available at <https://main.un.org/securitycouncil/en/sanctions/2127/panel-of-experts/reports>.
- <sup>17</sup> Louisa Lombard, “The Threat of Rebellion: Claiming Entitled Personhood in Central Africa,” *Journal of the Royal Anthropological Institute* 22, no. 3 (2016): 552–569, doi:10.1111/1467-9655.12446.
- <sup>18</sup> Plan National de Développement 2024–2028, September 2024; available at <https://fscluster.org/central-african-republic/document/plan-national-de-developpement-de-la>
- <sup>19</sup> The APPR is available in United Nations, S/2019/145, February 15, 2019, <https://docs.un.org/en/S/2019/145>.
- <sup>20</sup> Biomass is renewable organic material that comes from plants and animals. In CAR, it is burned directly for heat; in other contexts, it is converted to liquid and gaseous fuels through various processes.
- <sup>21</sup> Charles Nzango, *Le Syndrome Énergétique Centrafricain: Pourquoi Tant de Délestage à Bangui?*, Centre d’Etudes pour le Développement des Territoires et l’Environnement, 2019, 16, <https://hal.science/hal-01971335v1>.



- <sup>22</sup> The 15 cities were Bambari, Bangassou, Berberati, Boda, Bouar, Bossangoa, Bozoum, Carnot, Kaga-Bandoro, Kembé, M’Baïki, Mongoumba, Ndélé, Paoua, and Sibut.
- <sup>23</sup> *Document de Politique Énergétique Nationale*, 2010, Ministère des mines, de l’énergie et de l’hydraulique.
- <sup>24</sup> IRENA and AfDB, *Renewable Energy Market Analysis: Africa and Its Regions*, 2022, 77, [https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Jan/IRENA\\_Market\\_Africa\\_2022.pdf](https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Jan/IRENA_Market_Africa_2022.pdf); Plan National de Développement 2024–2028, September 2024, 68.
- <sup>25</sup> Authors’ visit to Sakaï station, 9 August 2024.
- <sup>26</sup> Authors’ visit to Danzi station, 9 August 2024.
- <sup>27</sup> Installation was made by CCG (Sakaï), Shanxi (Danzi), and JGH Solar (Bambari and Berberati).
- <sup>28</sup> Interviews in Bangui, August 2024.
- <sup>29</sup> Plan National de Développement 2024–2028, September 2024, 45.
- <sup>30</sup> “Building an African Multinational,” *The Economist*, 26 September 2024.
- <sup>31</sup> Plan National de Développement 2024–2028, September 2024, 203.
- <sup>32</sup> Interviews in Bangui, August 2024.
- <sup>33</sup> Other groups having operated in the area include Révolution et Justice, Front Démocratique pour le Peuple Centrafricain, and Mouvement Patriotique pour la Centrafrique.
- <sup>34</sup> Nzango, *Le Syndrome Énergétique Centrafricain*, 18.
- <sup>35</sup> Prices on the legal market are fixed by law. They were increased in January 2023: Premium petrol went from 865 to 1,300 FCFA per liter, diesel from 855 to 1,450 FCFA, and oil from 645 to 1,150 FCFA. As of November 2024, 1 USD was 622 FCFA, meaning that the price of diesel, for example, went from \$1.37 per liter to \$2.33 per liter, an increase of 59 percent.
- <sup>36</sup> Nzango, *Le Syndrome Énergétique Centrafricain*, 18.
- <sup>37</sup> International Crisis Group, *Keeping the Dialogue Alive*, *Africa Briefing* No. 69, 12 January 2010, <https://www.crisisgroup.org/sites/default/files/b69-central-african-republic-keeping-the-dialogue-alive.pdf>.
- <sup>38</sup> Tim Glawion and Anne-Clémence Le Noan, “Rebel Governance or Governance in Rebel Territory? Extraction and Services in Ndélé, Central African Republic,” *Small Wars & Insurgencies* 34, no. 1 (2023): 24–51.
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- <sup>158</sup> Section 3.2. discusses ongoing projects supported by UNDP and World Bank to increase electricity production through renewable energy, in line with the NRPP and NDP.
- <sup>159</sup> Holt and Boucher-Browning, “Peacekeeping and Clean Energy.”
- <sup>160</sup> Interviews in Bangui, August 2024.
- <sup>161</sup> Data from MINUSCA Fuel Unit, August 2024.
- <sup>162</sup> Interviews in Bangui, August 2024.
- <sup>163</sup> Interviews in Bangui, August 2024.
- <sup>164</sup> Interviews in Bangui, August 2024.
- <sup>165</sup> Virtual interview with WFP staff member, September 4, 2024.
- <sup>166</sup> Interviews in Bangui, August 2024.
- <sup>167</sup> United Nations, Central African Republic, “Organismes de l’ONU en République centrafricaine,” accessed 8 October 2024, <https://republiquecentrafricaine.un.org/fr/about/un-entities-in-country>.
- <sup>168</sup> Interviews in Bangui, August 2024.
- <sup>169</sup> The purpose of the UNICEF Greening & Accessibility Fund is to support UNICEF offices in implementing greening and accessibility projects that contribute both to reducing environmental impact and improving accessibility. The disbursements depend on funding availability, the number of projects, and the alignment of projects to the goals of the fund.

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