

MAHAMAT ADOUM ABDOULAYE

Energy Specialist

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PROFESSIONAL SUMMARY

With over a decade of international experience in energy systems, finance, and infrastructure management, I specialize in renewable energy, energy efficiency, and resource mobilization in developing economies. My expertise includes financing and investment operations, transmission network development, and the integration of clean energy solutions, including solar, wind, and hydropower. I have successfully led strategic initiatives in rural electrification, energy policy reform, and the implementation of national energy access programs. With a strong analytical background and a focus on sustainability, I provide technical assistance and capacity building to governments, development partners, and private sector stakeholders, driving collaborative efforts to achieve universal energy access. Motivated by results and committed to advancing SDG 7 and 13, I am skilled in strategy development, business administration, and the creation of impactful energy solutions. I excel in both written and oral communication, delivering complex ideas in simple terms while mentoring teams and fostering a collaborative environment to accelerate project implementation.

PROFESSIONAL EXPERIENCE

Research Scientist

11/2022 – 12/2024

Distributed Energy Team, Korea Institute of Energy Research | Jeju, South Korea

- Led the development of innovative renewable energy integration models, combining battery and hydrogen storage with sector coupling in heating, cooling, and sustainable transportation systems, contributing to clean energy solutions and carbon neutrality.
- Designed and implemented long-duration energy storage systems, enhancing energy resilience and optimizing energy efficiency in rural and urban settings.
- Conducted advanced energy modeling, simulations, and analyses to develop scalable hybrid energy systems, integrating digital tools for performance optimization and sustainability.
- Provided technical assistance in strategy development and the implementation of energy solutions, fostering cross-functional collaboration and supporting the mobilization of financing for energy transition projects.
- Supported network development and resource mobilization for clean energy access, applying analytical skills to address energy access challenges and improve infrastructure.
- Mentored junior staff and promoted knowledge transfer, ensuring effective communication of complex research and solutions to diverse stakeholders.
- Skills: Energy Modeling, Written Communication, Power Systems Analysis, Digital Energy Solutions, Data Visualization, Capacity Building, oral and written communication skills, ability to work independently, Strategy Development, Technical Support, Renewable Energy Financing.

Energy expert

06/2022 – 08/2022; 11/2021 – 01/2022

Ginger SOFRECO, Central African Power Pool (PEAC) | N'Djamena, Chad

- Analyzed regional frameworks for energy infrastructure projects, contributing to sustainable development and the integration of clean energy solutions in Chad and neighboring regions. Supported national investment plans and regional grid systems to enhance energy access and infrastructure, focusing on digital solutions and energy efficiency.
- Conducted detailed data analysis to inform the planning and operation of electricity systems, ensuring alignment with green energy objectives. Contributed to the development of national electricity master plans and regional grid systems, advancing the clean energy transition through policy and regulatory support.
- Provided strategic guidance and technical assistance, collaborating with stakeholders to develop solutions for energy access and transition in low-income regions. Supported resource mobilization and capacity building efforts to accelerate the implementation of energy projects, ensuring their sustainability and impact.

- Skills: Power Systems, Data Collection, Energy Policy, International Development, Energy Efficiency, Transmission, Resource Mobilization, Strategy Development, Technical Support, Network Development, Clean Energy, Capacity Building, Research, Investment Operations, Financial Analysis.

Chief Operating Officer

06/2020 – 01/2022

Group Business Services (GBS Group) | N'djamena, Chad

- Led the development and implementation of business strategies, driving digital transformation, renewable energy adoption, and sustainability goals while overseeing budget management and operational efficiency.
- Managed data infrastructure, cybersecurity, and risk management initiatives, ensuring compliance with HSE standards and supporting energy efficiency across operations.
- Directed project design, strategy development, and technical support in ICT, energy efficiency, and artificial intelligence, optimizing service delivery and fostering business growth.
- Spearheaded international development efforts by managing partnerships, providing technical assistance, and building capacity to enhance the company's global footprint and resource mobilization for clean energy projects.
- Skills: Renewable Energy, Energy Efficiency, ambitious, taking initiative, Strategy Development, implementation of plans, Resource Mobilization, Technical Assistance, Network Development, Business Administration, Financial Analysis, Technical Support, Capacity Building, Operations Management, Communication, Negotiation, International Development.

Lecturer (Part time)

07/2021 – 12/2021

Institut National Supérieur de Pétrole de Mao | Mao, Chad

- Delivered lectures on oil and gas production, integrating renewable energy systems with practical applications and sustainable energy solutions to address global energy transitions.
- Mentored students in research methodologies, fostering critical thinking, and equipping them with skills in energy efficiency, renewable energy, and digital technologies for real-world industry applications.
- Supported capacity building by guiding students through energy systems analysis, sustainability principles, and energy policy development, preparing them for careers in clean energy and resource management.
- Skills: Energy Systems, Sustainable Development, Renewable Energy, excellent interpersonal skills, Mentorship, Research Methodologies, active listening, provide guidance, Capacity Building, Strategy Development, Communication, Technical Support, Teaching & Mentorship.

Lecturer (Part time)

11/2020 – 12/2020

Institut National Supérieur du Sahara et du Sahel d'Iriba | Iriba, Chad

- Taught courses on electrical engineering, biomass, and biofuels, integrating renewable energy concepts and sustainable solutions with practical industry applications to address energy challenges.
- Guided students through project-based learning, enhancing their skills in energy modeling, digital technologies, and optimizing energy systems for clean energy transitions.
- Fostered critical thinking and provided mentorship, promoting an understanding of energy efficiency, renewable resources, and sustainable development in the context of global energy systems.
- Skills: Renewable Energy, Energy Modeling, Energy Efficiency, Sustainable Development, Mentorship, Teaching & Capacity Building, active listening, Technical Support, Research Methodologies, communication skills, Communication, Strategy Development.

Assistant Network Manager

10/2019 – 03/2020

TotalEnergies Marketing Chad | N'Djamena, Chad

- Developed and optimized procedures for sales processes, product returns, and reimbursement mechanisms, ensuring smooth operations and efficient energy access solutions for solar energy products.
- Identified and deployed large-scale energy access solutions, improving the affordability and availability of clean energy in rural and urban areas.
- Supported the creation of operational tools and knowledge products, ensuring alignment with TotalEnergies' sustainability goals and improving network efficiency.
- Conducted detailed financial analysis of sales revenue and product performance, providing actionable insights to optimize profitability and guide business decisions.
- Collaborated with cross-functional teams to improve product performance and station profitability, fostering a solution-driven approach to energy access challenges.

- Skills: Energy Access, Renewable Energy, Financial Analysis, Network Development, Clean Energy, Sales Process Optimization, Strategy Development, Resource Mobilization, Technical Support, Communication, Collaboration.

Electricity production and transmission engineer (intern)

07/2019 – 10/2019

National Electricity Company of Chad (SNE) | N'Djamena, Chad

- Managed optimal electricity production and transmission systems, ensuring security, efficiency, and high-quality service across the national grid, contributing to energy access and sustainability goals.
- Conducted real-time maintenance of electricity supply-demand balance and voltage control, enhancing grid resilience and optimizing energy system performance.
- Applied data-driven solutions and digital tools to improve energy system efficiency, ensuring the stability and sustainability of the national grid.
- Collaborated with cross-functional teams to address operational challenges, providing technical support and contributing to energy infrastructure optimization.
- Skills: Energy Systems, Power Systems Management, Grid Optimization, Data Analysis, Renewable Energy, Transmission, Energy Efficiency, Digital Integration, Technical Support, Collaboration.

Renewable Energy Engineer

03/2019 – 06/2019

Group Business Services (GBS) | N'Djamena, Chad

- Designed and conducted economic assessments of hybrid solar photovoltaic systems, improving electrification across 10 provinces in Chad and advancing clean energy access.
- Promoted sustainable energy practices, providing expert advice to stakeholders and ensuring affordable, scalable energy solutions for businesses and households.
- Collaborated with development partners to create synergies, drive resource mobilization, and achieve impactful results in the energy sector.
- Led feasibility studies, reviewed energy policies, and developed tailored energy solutions to support the achievement of sustainable development goals, focusing on energy efficiency and grid optimization.
- Skills: Renewable Energy, Energy Efficiency, Feasibility Studies, Clean Energy, Economic Assessment, Resource Mobilization, Collaboration, Strategy Development, Technical Assistance, Energy Access.

Renewable Energy Specialist, (Voluntary Work, Part time)

12/2018 – 02/2019

Greening Africa Together | Ziguinchor, Senegal

- Conducted demand assessments and technical evaluations for renewable energy systems, focusing on scalability, sustainability, and energy efficiency in rural and urban environments.
- Led financial feasibility studies to ensure cost-effective, impactful clean energy projects that align with economic development and sustainable growth goals.
- Collaborated with multidisciplinary teams to implement digital solutions and drive the adoption of renewable energy, enhancing energy access and climate change adaptation in underserved regions.
- Skills: Renewable Energy, Energy Modeling, Feasibility Analysis, Sustainable Energy Solutions, Project Management, Resource Mobilization, Economic Development, Climate Change Adaptation, Communication, International Development.

Project Manager Assistant Engineer

06/2018 – 11/2018

National Electricity Company of Senegal (SENELEC) | Dakar, Senegal

- Managed renewable energy projects, developing energy modeling and feasibility studies for rural and urban electrification, aligning with sustainability and clean energy goals.
- Evaluated technical, financial, and investment aspects of renewable energy projects, ensuring cost-effective and scalable solutions for energy access and infrastructure development.
- Developed model electricity license contracts and supported rural electrification efforts, ensuring alignment with green energy goals and digital integration in energy systems.
- Skills: Renewable Energy, Energy Modeling, Power Systems Analysis, Project Management, Energy Efficiency, Resource Mobilization, Sustainable Development, Technical Support, Strategy Development, Investment Operations.

Well Integrity / Well construction / Field Operations Supervisor

10/2013 – 02/2016

Schlumberger (Clients : ExxonMobil, ESSO, Glencore) | Chad

- Led well integrity operations using high-pressure testing and geochemical analysis to ensure the reliability and safety of energy infrastructure, aligning with sustainable energy practices.
- Conducted performance analysis and utilized mechanical systems to optimize operational efficiency, minimize risks, and improve risk management protocols.
- Achieved zero safety incidents over two years by implementing advanced safety protocols, driving operational excellence and ensuring safe, efficient operations.
- Skills: Energy Systems, Risk Management, Performance Analysis, Operational Optimization, Technical Support, Sustainable Practices, Communication, Team Leadership, Problem-Solving.

Petroleum Production Intern

12/2012 – 10/2013

China National Petroleum Corporation International Tchad (CNPCIC) - Rônier / Mimosa / Baobab, Chad

- Conducted inspections and verification of oil and water production and injection wells, ensuring operational efficiency and alignment with safety standards.
- Collaborated with operators to input data into the CNPCIC oilfield production database, contributing to accurate reporting and system optimization.
- Developed strong problem-solving, data analysis, and teamwork skills, effectively communicating with supervisors and responding to operational challenges.
- Skills: Natural Resources, Data Analysis, Oil Production, Problem-Solving, Communication, Technical Support, Team Collaboration, Operational Efficiency, Energy Systems.

EDUCATION AND TRAINING

University of Nairobi | Kenya

11/2021 – 09/2025

PhD in Physics (Energy Specialization, including Renewable Energy)

Quant Energy Academy (School of Software Engineering for Energy) | United Kingdom

11/2024 – 11/2025

Advanced Training in Data Science, Optimization, and Machine Learning Applications in Energy

MIT Institute for Data, Systems, and Society (IDSS) | United States of America

06/ 2022 – 10/2022

Certificate in Data Science and Machine Learning: Making Data-Driven Decisions

KALU Institute | **Center for Humanitarian Aid Studies** | Spain

10/2021 – 09/2022

Master's in International Cooperation and Humanitarian Aid

University of Cape Town – Graduate School of Business | South Africa

05/2021 – 10/2021

Florence School of Regulation | Italy

Enel Foundation | Italy

Open Africa Power Program 2021 for new generation of Clean Energy for Africa leaders

Regulation for Sustainable Development Goal 7

Gaston Berger University of Saint-Louis | Senegal

06/2016 – 12/2018

Master's in Science and Technology, Applied Physics, Specialization in Renewable Energy

Cologne Institute of Renewable Energies / TH Köln -University of Applied Sciences | Germany

09/2017

Summer School (Renewable Energies and Energy Efficiency)

Schlumberger Siberian Training Center | Tyumen, Russia

08/2015 – 10/2015

Professional Training on Service Delivery and Well Integrity Technology

Language Teaching Centre | Cape-Town, South Africa

03/2014 – 06/2014

Intensive Technical and General English Courses

University Institute of Petroleum of Mao | N'Djamena, Chad

11/2010 – 02/2014

Bachelor's degree in Hydrocarbon Exploitation, specializing in Petroleum Production

OTHER PROFESSIONAL TRAINING

- MOOC Oil & Gas 2 From Exploration to Distribution, IFP School – Rueil Malmaison, FRANCE
- Oilfield Services Operations (OFS-1) and Personal Management, Schlumberger -CHAD
- New Employee Safety Training (NEST), Schlumberger - CHAD

- Schlumberger Next Exploration and Production of oil & gas, Schlumberger - CHAD
- Oilfield Safety Leadership Instruction (SLI), Schlumberger - CHAD
- Hazard Analysis and Risk Control, Schlumberger - CHAD
- Commentary Task Assessment (SIPP), Schlumberger - CHAD
- QHSE (Quality, Health, Safety, Environment) and Safety Leadership Trainee, Schlumberger - CHAD
- Loss Prevention Team, Schlumberger – CHAD

PUBLICATION

- Mahamat Adoum Abdoulaye, et al., "**Optimal sizing of an off-grid and grid-connected hybrid photovoltaic-wind system with battery and fuel cell storage system: A techno-economic, environmental, and social assessment**," Applied Energy – Elsevier Volume 365, 1 July 2024, 123201. <https://doi.org/10.1016/j.apenergy.2024.123201>
- Mahamat Adoum Abdoulaye, et al., "**Multi-criteria optimal sizing and analysis of PV/wind/fuel cell/battery/diesel generator for rural electrification: A case study in Chad**," International Journal of Renewable Energy Development, vol. 13, no. 3, pp. 491-507, May. 2024. <https://doi.org/10.61435/ijred.2024.60169>
- Mahamat Adoum Abdoulaye (Novembre 2021) "**Intermittence des centrales solaires photovoltaïques, Impact sur la gestion de la fréquence : Cas du réseau électrique Sénégalais**", Published at Éditions Universitaires Européennes.
- Mahamat Adoum Abdoulaye, et al., (2020) "**Impact of the Intermittency of Photovoltaic Power Plants on the Frequency Management: Case of the Senegalese Electricity Grid.**" *Journal of Power and Energy Engineering*, 8, 55-70. doi: [10.4236/jpee.2020.87005](https://doi.org/10.4236/jpee.2020.87005).

TECHNICAL AND LANGUAGE SKILLS

- **Software:** PV*SOL, PVSyst, Homer Pro, Homer Grid, RETScreen, EnergyPlus, MATLAB, Python, GAM, R, Microsoft Office package, CEMENTICS*, CemCADE, CemCAT, i-District, Field Ticket Light (FTL), Pipesim, Aspen HYSYS, Aspen Plus, and Petrel.