

| | |
|-------------------------|--|
| 1. Record Nr. | UNINA9910865295503321 |
| Autore | Henni Abdellah |
| Titolo | Alternative Energy Resources in the MENA Region |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing AG , , 2024 ©2024 |
| ISBN | 9783031607509 9783031607493 |
| Edizione | [1st ed.] |
| Descrizione fisica | 1 online resource (483 pages) |
| Collana | The Handbook of Environmental Chemistry Series ; ; v.131 |
| Altri autori (Persone) | NegmAbdelazim ZerroukiDjamal |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di contenuto | Intro -- Preface -- Contents -- Introduction to ``Energy Resources in the MENA Region'' -- 1 Introduction -- 2 Summaries of the Book Chapters -- 2.1 Solar Energy -- 2.2 Wind Energy -- 2.3 Geothermal and Biomass Energy -- 2.4 The Experiences from Developed Countries -- References -- Part I: Solar Energy -- An Analysis of Hydrogen Production from Renewable and Sustainable Energy Resources in Algeria -- 1 Introduction -- 2 Production of Hydrogen -- 3 Algeria and Its Energy Situation -- 4 Status of Renewable Energy Potential in Algeria -- 5 Renewable Energy Projects in Algeria -- 6 Hydrogen Potential from Renewable Energy -- 6.1 Solar Energy -- 6.2 Wind Energy -- 7 Conclusion -- 8 Recommendations -- References -- High Penetration of Solar Energy to the Algerian Electricity System in the Context of an Energy Roadmap Toward a Sustainable E... -- 1 Introduction -- 2 History and Inventory of Renewable Energies and Energy Efficiency (EE) in Algeria -- 3 National Program for the Development of RE and EE (NPREEE) from 2011 -- 3.1 Renewable Energies -- 3.2 Renewable Electricity Production -- 4 Renewable Energy Development Program Connection -- 4.1 Energetic Efficiency -- 4.2 Regulatory Aspects Related to NPREEE -- 5 Promotion and Encouragement of the Algeria RE Program -- 6 Electricity Sector Overviews -- 7 The Solar Potential of Algeria, Key to a Sustainable Civilization -- 8 Solar Energy and |

Evolution Forecasts -- 9 Research and Development Aspects Related to NPREEE -- 10 Development of Electrical Networks -- 11 Conclusion -- References -- Alternative Energy Resources in MENA Regions with a Focus on the Thermal Energy Storage (TES) -- 1 Introduction -- 2 Traditional Electricity Systems -- 3 Electrical's Wide-Range Interconnection -- 4 Grid Inertia -- 5 Demand Curve ...Vision from Different Angles -- 6 Demand Curves vs. Technologies, Sources, and Cost.

7 Storing Energy Best Way to Reduce Cost -- 8 Heat Accounts for One Third of Global Energy Demand -- 9 Thermal Batteries -- 10 Combined Heat and Power (CHP) -- 11 Conclusions -- References -- Solar Energy in the United Arab Emirates -- 1 Introduction -- 2 Energy Transition in the UAE: Goals, Strategy, and Achievements -- 2.1 UAE Energy Situation: Domestic -- 2.2 UAE Energy Exports -- 2.3 Masdar Initiative -- 2.4 UAE Energy Strategy 2050 -- 3 Solar Energy Projects and Programs in the UAE -- 3.1 Utility-Scale Projects -- 3.1.1 Shams 1 -- 3.1.2 Mohammed bin Rashid Al Maktoum Solar Park -- 3.1.3 Noor Abu Dhabi -- 3.1.4 Al Dhafra Solar Project -- 3.2 Northern Emirates -- 3.3 Off-Grid, Commercial, and Rooftop Solar Projects -- 4 Technical and Operational Considerations for Solar Energy Generation -- 4.1 PV Technology Evolution -- 4.2 CSP Technology Evolution -- 4.3 Optical and Environmental Considerations -- 4.4 Solar Energy Storage -- 4.5 Solar Energy for Industry and Water Production -- 5 The Business of Solar: Institutional Players and Cash Flows in the UAE Solar Industry -- 5.1 Solar Project Development and Ownership in the UAE -- 5.2 Project Costs -- 5.3 Financing of Solar Projects in the UAE -- 6 Toward a Solar Energy Export Industry -- 7 Outlook for Solar Energy in the UAE -- References -- Promotion of Solar Energies in Southern Algeria Strategies and Perspectives -- 1 Introduction -- 2 Energy Profile in Algeria -- 2.1 Energy Production -- 2.2 Energy Consumption -- 2.3 Electricity Consumption -- 2.4 CO2 Emissions -- 3 Algerian Energy Strategy in the Context of Sustainable Development -- 3.1 Participation of Renewable Energy -- 3.1.1 Renewable Energy and Energy Efficiency Development Program (REEEDP) -- 3.1.2 Commission for Renewable Energies and Energy Efficiency in Algeria (CREEA).

4 Promotion of Solar Energies in the Context of Sustainable Development -- 4.1 Photovoltaic Potential in Algeria -- 4.2 Installed PV Systems in Algeria -- 4.3 Solar Thermal Potential in Algeria -- 4.3.1 Applications of Solar Energy in Algeria -- 5 Projects in Progress and Future -- 5.1 Algeria Solar Energy Project 1,000 MW -- 5.2 For More Energy Efficiency, It Is Planned -- 6 Conclusion -- 7 Recommendations -- References -- Part II: Wind Energy -- An Assessment of Wind Energy Potential as an Electricity Generation Source in Iran -- 1 Introduction -- 2 Wind Power -- 2.1 Wind Farms -- 3 Wind Energy in Iran -- 4 Wind Energy Potential in Iran -- 5 Wind Energy Perspective in Iran -- 6 Discussion and Conclusion -- 7 Recommendations -- References -- Wind and Solar Energy Resources in Morocco: Current Status and Assessment up to 2050 -- 1 Introduction -- 2 Current State of Renewable Energy in Morocco -- 3 Wind Energy Resources in Morocco -- 3.1 Current Status -- 3.2 Near-Future Conditions -- 3.2.1 Climate Modeling -- 3.2.2 Wind Speed in 2021-2050 -- 3.2.3 Wind Power Density in 2021-2050 -- 4 Solar Energy Resources in Morocco -- 4.1 Current Status -- 4.2 Downwelling Shortwave Radiation in 2021-2050 -- 5 Conclusion -- References -- Status and Future Prospects of Wind Energy in Oman -- 1 Introduction -- 2 Onshore Wind Speed Data Analysis -- 3 Geospatial Analysis of Onshore Wind Energy Potential -- 3.1 Spatial Distribution of Wind Speed and Wind Power Density -- 3.2 Wind Frequency Distribution and Turbulence Intensity -- 3.3 Wind

Farmland Suitability Index -- 4 Offshore Wind Potential -- 5 Status of Wind Power Application and Future Planning -- 6 Conclusion -- 7 Recommendations -- References -- Contribution of Renewable Energy in Algeria -- 1 Introduction -- 2 Geological Framework and Geography of Algeria -- 3 Review of Geothermal Energy Resources in Algeria.

3.1 Hydrology of Algeria -- 3.2 Water Chemistry -- 4 Geothermal Energy Utilization in Algeria -- 4.1 Aquaculture Pond -- 4.2 Greenhouse -- 4.3 Generation of Electricity -- 4.4 Heat Pumps -- 5 Energy Demand and Supply -- 6 Solar Energy Source -- 7 Wind Power -- 8 Concluding Remarks -- 9 Recommendations -- References -- Evaluation of the Wind Energy Potential in Morocco -- 1 Introduction -- 2 Literature Review -- 3 Renewables Energy in Morocco -- 3.1 Geographical Characteristics of Morocco -- 3.2 Moroccan Energy Context -- 3.3 Renewable Energies in Morocco -- 4 Wind Energy in Morocco -- 5 Conclusion -- 6 Recommendations -- References -- Part III: Geothermal and Biomass Energy -- Biomass Electricity Generation in a Fully Renewable Power Sector of Africa: Viable Technologies, Opportunities, Barriers, and ... -- 1 Introduction -- 1.1 Research Novelty -- 2 Literature Review on the Role of Biomass in 100% Renewable Energy System Analyses for Africa -- 3 Status Quo of Biomass in Africa -- 3.1 Negative Impacts of Traditional Biomass -- 4 Biomass Electricity and Technologies -- 4.1 Direct Combustion Technologies -- 4.2 Indirect Combustion Technologies -- 5 Methods and Approach -- 5.1 Biomass Potential Estimation Approach -- 5.2 LUT Energy System Transition Model for the Power Sector -- 5.3 LUT Energy System Transition Model Representation -- 5.4 Applied Technologies in a Fully Renewable Power Sector -- 5.5 Applied Bioenergy Technologies in the LUT-ESTM -- 5.6 Prospects of Renewable Energy Resources in the Region -- 5.7 Financial and Technical Assumptions of Renewable Energy Technologies -- 5.8 Financial and Technical Assumptions of Bioenergy Technologies -- 5.9 Biomass Feedstock Cost Assumptions -- 5.10 Applied Scenarios -- 6 Results -- 6.1 Sustainable Bioenergy Potential of Africa -- 6.2 Total Renewable Energy Installed Capacity. 6.3 Biomass Installed Power Capacity -- 6.4 Total Renewable Electricity Generation -- 6.5 Biomass Electricity Generation -- 6.6 Levelised Cost of Electricity Generation from Different Biomass Power Generation Technologies -- 6.7 Power Deficit Regions of Africa Show Increased Generation from Bioenergy -- 6.8 Flexible Generation from Bioenergy Satisfies System Residual Load -- 6.9 Bioenergy Induced Reduction of Transmission Line Capacity -- 6.10 Bioenergy-Induced Reduction of Electricity Output from Storage Units -- 6.11 Bioenergy Suitability for Fossil Technologies Enhances Fuel Switching -- 6.12 Bioenergy-Induced Reduction in Levelised Cost of Electricity -- 6.13 Fast GHG Emissions Reduction During the Transition Aided by Bioenergy -- 6.14 Energy Flow -- 7 Discussion -- 7.1 Bioenergy-Aided Off-Grid Mini-Grids -- 7.2 Biofuel Development in Africa -- 7.3 Barriers of Sustainable Bioenergy Implementation -- 7.3.1 Technical Barriers -- 7.3.2 Political and Institutional Barriers -- 7.3.3 Financial and Economic Barriers -- 7.3.4 Socio-cultural Barriers -- 7.3.5 Geographical and Environmental Barriers -- 7.4 Policy Implementations -- 7.4.1 The Relevance of Financing and Access to Capital -- 7.5 General Overview on 100% Renewable Energy System -- 8 Conclusions -- Appendix -- References -- Solar Photovoltaic Thermal Collector as a Cogeneration Energy System: Conception and Recent Development in the Mediterranean R... -- 1 Introduction -- 2 Designing a PVT Hybrid Collector -- 2.1 Energy Analysis -- 2.1.1 Conventional Photovoltaic/Thermal Collector (PV/T-I) -- 2.1.2 Glazed Photovoltaic/Thermal Collector (PV/T-II) -- 2.1.3 Glazed Double-Pass

