

Indexing and Abstracting in Following Databases

1. Bowker: A ProQuest Affiliate



2. Crossref



Published by
AkiNik Publications,
169, C-11, Sector - 3, Rohini,
Delhi - 110085, India
Toll Free (India): 18001234070



**Attribution-NonCommercial-ShareAlike
4.0 International (CC BY-NC-SA 4.0)**

Peer Reviewed & Refereed

Chief Editor

Dr. R. Jayakumar

Co-Editor

Dr. Raja Reddy. Duvvuru

Dr. Arun Kumar and Dr. Madan Mohan Laddunuri

Research Trends in

MULTIDISCIPLINARY RESEARCH

VOLUME - 44



**AkiNik Publications
New Delhi**

Research Trends in MULTIDISCIPLINARY RESEARCH

Volume - 44

Chief Editor

Dr. R. Jayakumar

Associate Professor, Siga College of Education, Villupuram, Tamil Nadu,
India

Co-Editor

Dr. Raja Reddy. Duvvuru

Associate Professor, Department of Electrical & Electronics Engineering,
Malla Reddy Engineering College (A), Hyderabad, Telangana, India

Dr. Arun Kumar

Associate Professor and H.O.D, Department of History, Mahila College,
Patliputra University, Khagaul, Patna, Bihar, India

Dr. Madan Mohan Laddunuri

Assistant Professor, Department of Physiotherapy, School of Allied Health
Sciences, Malla Reddy University, Hyderabad, Telangana, India

**AkiNik Publications®
New Delhi**

Published By: AkiNik Publications

AkiNik Publications
169, C-11, Sector - 3,
Rohini, Delhi-110085, India
Toll Free (India) – 18001234070
Phone No.: 9711224068, 9911215212
Website: www.akinik.com
Email: akinikbooks@gmail.com

Chief Editor: Dr. R. Jayakumar

Co-Editor: Dr. Raja Reddy. Duvvuru, Dr. Arun Kumar and Dr. Madan Mohan Laddunuri

The author/publisher has attempted to trace and acknowledge the materials reproduced in this publication and apologize if permission and acknowledgements to publish in this form have not been given. If any material has not been acknowledged please write and let us know so that we may rectify it.

The responsibility for facts stated, opinion expressed or conclusions reached and plagiarism, if any, in this book is entirely that of the author. So, the views and research findings provided in this publication are those of the author/s only. The Editor & Publishers are in no way responsible for its contents.

© AkiNik Publications™

Publication Year: 2023

Pages: 176

ISBN: 978-93-5570-685-0

Book DOI: <https://doi.org/10.22271/ed.book.2208>

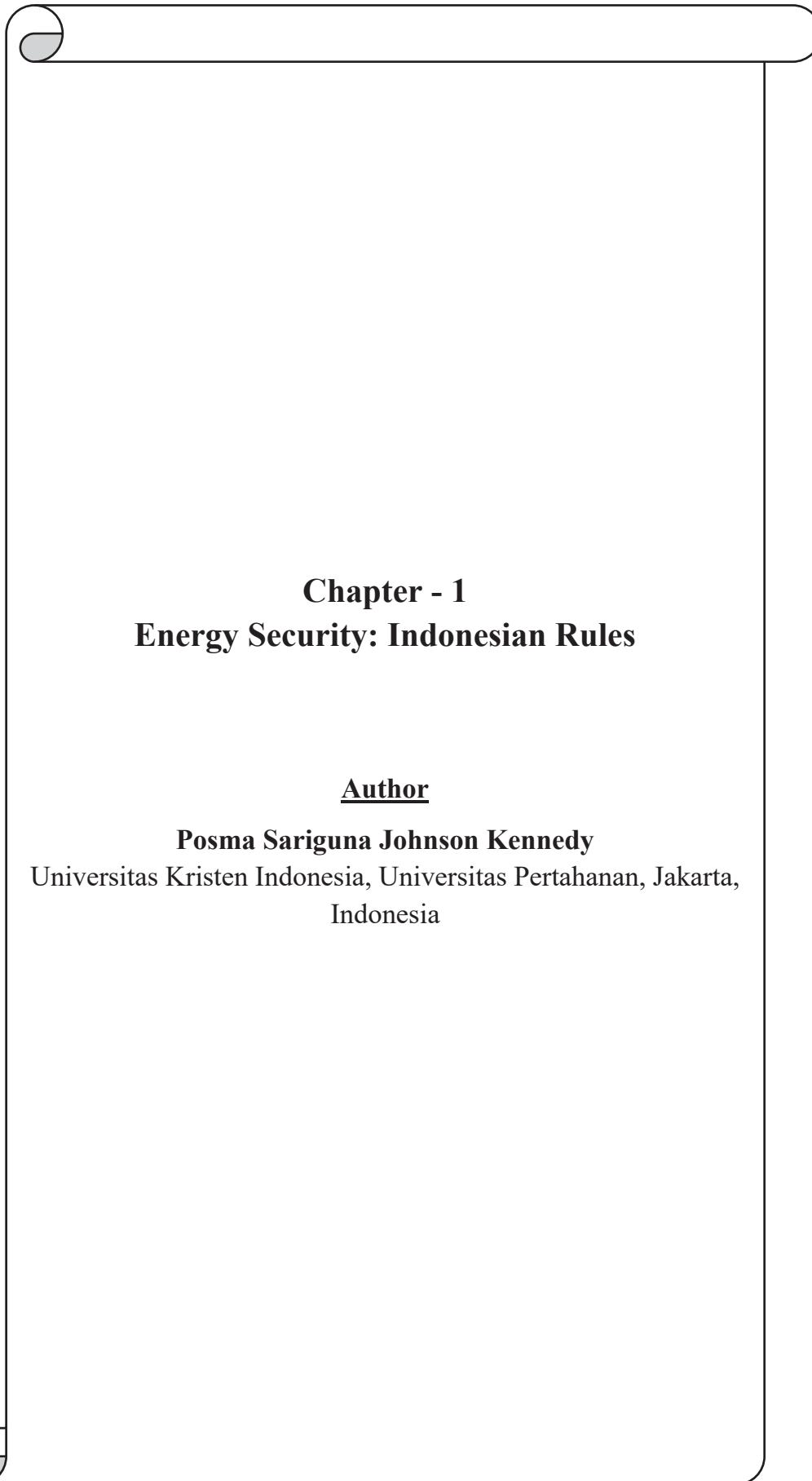
Price: ₹ 786/-

Registration Details

- Printing Press License No.: F.1 (A-4) press 2016
- Trade Mark Registered Under
 - Class 16 (Regd. No.: 5070429)
 - Class 35 (Regd. No.: 5070426)
 - Class 41 (Regd. No.: 5070427)
 - Class 42 (Regd. No.: 5070428)

Contents

S. No.	Chapters	Page No.
1.	Energy Security: Indonesian Rules <i>(Posma Sariguna Johnson Kennedy)</i>	01-11
2.	The Study on the Perception of Female Employees towards Safety at Workplace <i>(Priya Keshri, Ashish Samaddar, Vandana Verma and Tanya Nagpal)</i>	13-29
3.	Silver Nanoparticle Synthesized <i>Citrus maxima</i> Peel Extract using XRD and FTIR via Machine Learning Techniques <i>(G. Lalitha, Dr. S. Kavitha and MP Karthikeyan)</i>	31-43
4.	Next Generation Sequencing <i>(Suparna Deepak, Farzeena Firoj Kondkari and Liza Rajan)</i>	45-62
5.	Authentic Leadership and Its Impact upon Burnout among University Teachers <i>(Mahima Manikpuri, Akashdeep Joshi and Shrinivethika B)</i>	63-77
6.	Cosmetic Revolution: Where Beauty is Beyond Gender <i>(Sayali Chavan, Nibha Bajpai and Deepak Wasule)</i>	79-91
7.	Fundamental Evidence based Homoeopathic Research in Today's Era <i>(Dr. Amandeep Kaur, Dr. Ishita Ganjoo and Dr. Deeksha Garg)</i>	93-112
8.	Role of Plant Pigments on Human Health and Environment <i>(Pranabesh Ghosh, Abhishek Konar, Sirshendu Chatterjee, Abhishek Roy and Dip Das Dalal)</i>	113-138
9.	A Review of Safe City Concept <i>(Gunjan, Jimmy Gupta and Jaspreet Singh)</i>	139-158
10.	Fuel Cells Applications, Materials and Power Management Circuits <i>(Nurettin Çek and Selman Sezer)</i>	159-176



Chapter - 1

Energy Security: Indonesian Rules

Author

Posma Sariguna Johnson Kennedy

Universitas Kristen Indonesia, Universitas Pertahanan, Jakarta,
Indonesia

Chapter - 1

Energy Security: Indonesian Rules

Posma Sariguna Johnson Kennedy

Abstract

This study aims to examine Indonesia's energy provisions in resilience to the energy regarding projections of energy supply. The method used in this research is qualitative with descriptive type. It is normative research with the main source of laws and regulations and other applicable provisions. The studies carried out in this research are mainly on Presidential Regulation Number 22/2017 concerning the National Energy General Plan (RUEN) and other regulations. The National Energy General Plan is a guideline for energy management in Indonesia, both in supply and utilization and as an effort to develop national energy potential and energy utilization in other sectors. Management and studies on energy and its various aspects are urgently needed in improving resilience energy, so cooperation with all societal stakeholders is needed. It must put the principle of minimizing the use of petroleum and optimizing the use of natural gas and new and renewable energy forward.

Keywords: Energy, energy security, national energy general plan

1. Introduction

In line with energy consumption growth, Indonesia is always facing various fulfillment problems. From the mixed side of energy, a challenge especially appears with the high level of fossil fuels, where the use of renewable energy is still very low. Excessive dependence on fossil fuels also calls into question the sustainability of energy systems that can provide in the future. Thus, Indonesia's energy security condition is still not very healthy and tends to decline in a few years, as seen from the 4-A indicator (availability, accessibility, affordability, acceptance). The wide gap between Indonesia's Energy Security and ideal conditions by developing an energy strategy to overcome this problem. Appropriate energy technologies, such as solar energy, can be harnessed for energy use. [Kennedy *et al.*, 2019; Nugroho, 2001].

The National Energy Policy, referred to as KEN, is a prepared means for mandated priority utilization of national energy resources in meeting energy

needs. "The priority is determined based on several factors, including the availability of types/sources of energy, economy, environmental sustainability, adequacy of sustainable development, and geographical conditions as an archipelagic country. The priority for utilizing energy resources leads to energy independence and national security. The National Energy General Plan, or RUEN, is the Government's policy regarding the national-level energy management plan, which is the elaboration and implementation plan of the National Energy Policy that is cross-sectoral to achieve the targets of the National Energy Policy" [Perpres-RI, 2017].

As an embodiment of energy management that pays attention to the balance of economic energy, security of energy supply, and preservation of environmental functions, the priority for energy management is based on the principle of ensuring the availability and access to energy equitably and fairly. Furthermore, optimizing the utilization of energy resources owned for energy independence; conducting energy diversification to increase energy security; Optimizing the utilization of environmentally friendly energy resources; and performing efficiency in energy utilization.

Management of national energy also must be supported by the government area. Local governments have enormous opportunities and advantages in projecting regional energy needs and supplies. Local Government excellence is urgently needed, especially in developing new and renewable energy (or EBT). The price of EBT must be pressed towards economies of scale so that it can be sought after by investors and accepted by the local community by reducing the burden on the Government in providing subsidies [Perda-Jabar, 2019].

The National Energy General Plan (RUEN) is a guideline for energy management in Indonesia, both in supply and utilization, and an effort to develop national energy potential. And energy utilization in other sectors. This paper aims to study the provision plan general Indonesia's energy regarding the projected need for energy supply to meet the needs of energy national sufficient until the future. It must prioritize the principle of minimizing the use of petroleum and optimizing the use of natural gas, new energy, and Renewables must be prioritized.

2. Literature review

Energy is one of the basic needs of modern human life, industry, transportation, etc. "Energy security is defined as 'reliable and affordable access to all fuels and energy sources [Russell, 2020]. Public intervention in energy is justified because of the importance of energy in economic

development, the distribution of wealth within and between countries, the balance of global power and national security, and changing social processes. Therefore, energy resistance is very related to the socio-economic development of the welfare state. Energy situations vary greatly in each country, or even from one region to another within a country, because Actual policies in risk management vary widely, namely: diversification of supply, sources, and demand stockpiling of increased security, controlling demand (energy efficiency), pricing, and vertical integration" [Energy Charter, 2015].

Components or factors that affect energy security, "namely [Boedoyo, 2012]:

- a) **Availability:** Availability consists of several components, including using new and renewable energy (or EBT) in electricity generation. It is important because the use of fossil energy is relatively expensive, while EBT is a local energy resource.
- b) **Affordability:** Affordability is how the community or energy users can provide and utilize their energy, including per capita electricity consumption.
- c) **Accessibility:** The ability to supply energy is emphasized by the government's ability to increase people's ability to access energy, including refinery capacity that illustrates the existence of a guarantee to meet the community's oil needs.
- d) **Acceptability:** Community acceptance is a factor that encourages or inhibits the implementation of certain programs and types of energy that affect the quality of life, health, environmental pollution, and climate change adaptation."

Energy security has been an energy policy issue for the last 100 years. Winston Churchill (1923) saw the security of oil supplies as critical to fueling their armies in World War I. Yergin (1991, 2020), mentions that, "Controlling the oil supply was a primary goal of Germany and Japan for the invasion of the Soviet Union and Indonesia during World War II. In the 1950s and 1960s, world energy demand more than doubled, driven by North America, Western Europe, the Soviet Union, and Northeast Asia. International energy trade, most of which is oil, has more than quadrupled over the same period".

The oil-exporting countries formed "the Organization of the Petroleum Exporting Countries (OPEC) in 1960. The 1970s was the beginning of an era of energy insecurity. The first oil crisis occurred in 1973, with exists an oil embargo by the Organization of the Arab Petroleum States (OAPEC) that rattled oil-importing countries. Many OPEC countries have gradually

nationalized their oil assets throughout the decades. The second oil crisis *viz* an increase in international oil prices above \$30/bbl, or around \$100/bbl. Importing countries are starting to implement various countermeasures under energy security policies, such as energy efficiency, diversification, stockpiling, and energy investment at home and abroad. In the second half of the 1980s, demand was lower, due to high energy prices from the oil crisis. Global oil imports decreased by 25% during the first half of this decade. Oil is significantly replaced by nuclear and natural gas, especially for electricity generation. Several oil-exporting countries started to enter downstream markets in importing countries, the first sign of efforts to manage the security of international demand [Ibrahim, 2021]" [Energy Charter, 2015].

Yergin (2006) explained, "The 1990s began with the Gulf War and the fall of the Soviet Union, which grew optimism regarding energy security." Stern (2009) mentions, "The collapse of the Soviet Union resulted in devastating economic and social consequences in the countries of the former Soviet Union. At the end of the Cold War, there was a need to overcome economic divisions, especially in the energy sector. Oil companies, especially in the Middle East, continue to expand their integration into importing countries through asset acquisitions and other business deals".

3. Methods

The method used in this research is qualitative with descriptive type. Research is normative with source main laws and regulations and other applicable provisions. The studies carried out in this research are mainly on Presidential Regulation Number 22 of 2017 concerning the National Energy General Plan [Perpres-RI, 2017] and other regulations. Secondary data sources other are various related literature through documents, journals, or reports relating to the subject or object under study.

4. Discussion

The National Energy Policy (or KEN) is "an energy management policy based on justice, sustainability, and environmental insight principles. The National Energy Policy formulated by the National Energy Council (or DEN) is stipulated by the Government after obtaining Council approval Representative People Republic of Indonesia (DPR-RI)". The National Energy Policy is stipulated through Government Regulation Number 70/2009 [PP-RI, 2014] and which are regulated in more detail in the National Energy General Plan (RUEN) prepared by the Government and stipulated through a Presidential Regulation (Perpres) in 2017 [Perpres-RI, 2017].

The National Energy Council is "a national, independent, and permanent institution that is responsible for national energy policy. The National Energy

Council is a mandate of Law no. 30 of 2007[UU-RI, 2007] concerning Energy in charge of designing and formulating a national energy policy to be stipulated by the Government with the approval of the DPR-RI. It consists of a national energy general plan, guarantees measures to overcome crisis conditions and emergency energy, and supervises the implementation of cross-sectoral policies in the energy sector. [Perpres-RI, 2017].

The National Energy General Plan contains current and future national energy conditions, the national energy vision, mission, goals, and objectives in the form of targets set. And also targets to be achieved, and national energy management policies and strategies that outline policies, strategies, institutions, policy instruments, and energy development programs. It contains the results of modeling energy needs and contains policies, strategies, programs, and activities planned to be carried out to achieve this target.

In addition, RUEN "is a guideline for directing energy management to realize national energy independence and security in supporting sustainable development. By Government Regulation Number 79 of 2014 [PP-RI, 2014], DEN and the Government facilitate the Regional Government in preparing the General Regional Energy Plan (RUED) based on local energy utilization. Provincial General Energy Plan, abbreviated as RUED-P, is a provincial government policy regarding provincial-level energy management plans, which is an elaboration and implementation plan of RUEN that is cross-sectoral to achieve RUEN targets" [Perpres-RI, 2017].

The National Energy General Plan (RUEN) and the Regional Energy General Plan (RUED) are based on aspects of regulations and laws and regulations related to energy and planning at the center as well as laws and regulations in the regions, including "Law Number 22 of 2001[UU-RI, 2001], Law Number 26 of 2007[UU-RI, 2007], Law Number 30 of 2009[UU-RI, 2009], Law Number 21 of 2014[UU-RI, 2014], Law Number 9 of 2015[UU-RI, 2015], and other relevant regulations" [Perpres-RI, 2017].

Energy independence and security in Indonesia are still facing problems. It is caused by energy consumption still dominated by fossil energy, namely oil, gas, and coal. Based on the General National Energy Plan (RUEN), the primary energy supply in Indonesia has increased, and the final energy consumption has also increased. In addition, there are several other things, such as uneven access to energy, lack of energy infrastructure, lack of use of new and renewable energy, and so on.

Energy problems, according to the National Energy General Plan described "as follows [Perpres-RI, 2017]:

- a) Energy resources are still treated as a commodity, not as development capital.
- b) Declining Production and Volatile Oil and Gas Prices.
- c) Limited Energy Access and Infrastructure.
- d) Dependence on imported fuel and LPG.
- e) The utilization of New Energy and Renewable Energy is still low.
- f) Energy utilization is not yet efficient.
- g) Research, Development and Mastery of Science and Technology are Still Limited.
- h) World Geopolitical Conditions and Global Environmental Issues".

Based on these problems, draw up a National Energy General Plan (RUEN) to become a national and regional guideline for energy management to create national energy independence and security to support Indonesia's development. The target of RUEN is the availability and utilization of primary energy with an optimal proportion of new and renewable energy. "Achievement of the RUEN targets is in accordance with the National Energy Policy, in which the targets for the supply and use of Primary Energy and Final Energy are as follows[Perpres-RI, 2017]:

- a) Fulfillment of Primary Energy supply in 2025 of around 400 MTOE (million tons of oil equivalent) and 2050 of around 1,000 MTOE.
- b) Achievement of primary energy utilization per capita in 2025 of around 1.4 TOE (tons of oil equivalent) and 2050 of around 3.2 TOE.
- c) Fulfillment of electricity generation capacity provision in 2025 of around 1.15 GW (Giga Watts) and 2050 around 430 GW.
- d) The Achievement of electricity utilization per capita in 2025 is around 2,500 kWh (Kilo Watt hours), and in 2050 it will be around 7,000 kWh.

For the fulfillment of Energy Supply and Energy Utilization, it is necessary to request the following "national energy policy targets [Perpres-RI, 2017]:

- a) Realization of a new paradigm that Energy Sources are national development capital.
- b) Achieve Energy Elasticity of less than 1 (one) in 2025, which is aligned with the economic growth target.
- c) Achieving a reduction in final Energy Intensity of 1% (one) percent per year until 2025.

- d) Achieve an Electrification Ratio of 85% in 2015 and close to 100% in 2020.
- e) Achievement of household gas usage ratio in 2015 of 85% (eighty-five percent).
- f) Achieving an optimal Primary Energy Mix:
 - i). In 2025, the New Energy and Renewable Energy role will be at least 23% and in 2050, at least 31% as long as the economy is proven.
 - ii). In 2025, the role of oil will be less than 25%, and in 2050, it will be less than 20%.
 - iii). In 2025, the role of coal will be at least 30% and in 2050, at least 25%.
 - iv). In 2025 the role of natural gas will be at least 22% and in 2050 it will be at least 24%.

To achieve these goals and targets can be realized, the National Energy Council (DEN) is tasked with overseeing the implementation of cross-sectoral policies in the energy sector in each region, both Provinces and Cities/Regencies. In collaboration with Regional Governments, Business Partners, and other Stakeholders based on The Regional Energy General Plan that has been established based on Regional Regulations. The Regional Energy General Plan (RUED) is intended as a commitment and guide for local governments in carrying out various energy-related activities in the regions. As regional and national development capital and regional contributions in pressing energy targets as set out in the National Energy Policy (KEN) and is an elaboration and RUEN implementation plans that are cross-sectoral to achieve RUEN goals.

5. Closing

Energy is one of the basic needs of modern human life, industry, and transportation. Energy security is reliable and affordable access to all fuels and energy sources. Indonesia's energy security condition is still not very healthy and tends to decline in a few years, as seen from the 4-A indicator (availability, accessibility, affordability, acceptance). The wide gap between Indonesia's Energy Security and ideal conditions by developing an energy strategy to overcome this problem.

The National Energy Policy was formulated "by the National Energy Council (DEN). The National Energy Policy (KEN) is an energy management policy based on justice, sustainability, and environmental insight principles.

The National Energy Policy is regulated in more detail in the National Energy General Plan (RUEN). RUEN is a guideline for directing energy management to realize national energy independence and security in supporting sustainable development". Studies on energy and its various aspects are urgently needed in collaboration with various community, national and regional stakeholders. Changes can happen, especially as a result of the crisis due to the COVID-19 Pandemic.

References

1. Kennedy PSJ, Tobing SJL, Toruan RL, Tampubolon E. Analisa Kondisi Ketahanan Energi di Perbatasan Provinsi Nusa Tenggara Timur dengan Negara Timor Leste, Jurnal IKRA-ITH Ekonomika, 2019, 2(30).
2. Nugroho Hanan. Ketahanan Energi Indonesia: Gambaran Permasalahan dan Strategi Memperbaikinya, Perencanaan Pembangunan Edisi 02 Tahun XX, September 2014.UU-RI, Undang-Undang Nomor 22 Tahun 2001 tentang Minyak dan Gas Bumi, 2001.
3. Perpres-RI. Presidential Regulation Number 22 of 2017 concerning the National Energy General Plan, 2017.
4. Perda-Jabar. Regional Regulation of West Java Province Number 2 of 2019 concerning the General Energy Plan for the Regional Energy of West Java Province, 2019.
5. Russell, Martin. Energy security in the EU's external policy. In-depth analysis European Parliamentary Research Service, PE, 2020, 649, 334.
6. Energy Charter. International Energy Security: Common Concept for Energy Producing, Consuming and Transit Countries, Energy Charter Secretariat, 2015.
7. Boedoyo MS. Analisis Ketahanan Energi di Indonesia, Prosiding Seminar dan Peluncuran Buku Outlook Energi Indonesia, 2012.
8. Churchill WS. The World Crisis, The Macmillan Company of Canada, 1923.
9. Yergin D. The Prize: The Epic Quest for Oil, Money, and Power, New York: Simon & Schuster, 1991.
10. Yergin D. The New Map: Energy, Climate, and the Clash of Nations, Penguin Books Limited, 2020.
11. Ibrahim Norazana. Energy Security, UKPU2112, UTM MY, 2021.
12. Yergin D. Ensuring Energy Security, Foreign Affairs, 2006, 85(2).

13. Stern JP. Continental European Long-Term Gas Contracts: Is a Transition Away from Oil Product-linked Pricing Inevitable and Imminent? Oxford Institute for Energy Studies, Oxford, 2009.
14. PP-RI. Government Regulation Number 79 of 2009 concerning Energy Conservation, 2014.
15. UU-RI. Law Number 30 of 2007 concerning Energy, 2007.
16. UU-RI. Law Number 22 of 2001 concerning Oil and Gas, 2001.
17. UU-RI. Law Number 26 of 2007 concerning Spatial Planning, 2007.
18. UU-RI. Law Number 30 of 2009 concerning Electricity, 2009.
19. UU-RI. Law Number 21 of 2014 concerning Geothermal, 2014.
20. UU-RI. Law Number 9 of 2015 concerning Regional Government, 2015.

