



Top-Down Framework for Renewable Energy Investment: A Path to Sustainable and Responsible Decision-Making

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Abstract: This study presents a comprehensive framework for renewable energy investment using a top-down analysis grounded in sustainability principles. With the growing imperative to transition to clean energy, this approach integrates environmental, social, and governance (ESG) factors to provide holistic guidance in investment decision-making. The methodology encompasses macroeconomic trends, sectoral dynamics, and company-level performance, leveraging both qualitative and quantitative data from financial reports and sustainability indicators. Findings reveal that this framework improves investment decision quality by identifying and addressing sustainability-related risks and opportunities, while fostering positive societal and environmental outcomes. The study also offers significant contributions to the development of educational modules in sustainability and investment, promoting the global practice of responsible investment.

Keywords: Top-down analysis, renewable energy, sustainable investing, ESG, sustainability framework.

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1. Introduction

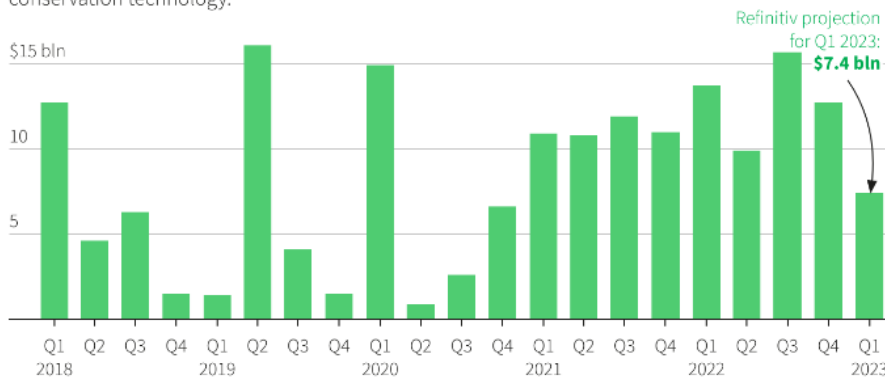
The Emergence of Renewable Energy Investments

Since the late 20th century, the renewable energy sector has been pivotal in global efforts to reduce greenhouse gas emissions and improve environmental sustainability. The increasing focus on

transitioning to clean energy sources has driven significant investments in renewable energy projects. These investments are crucial for addressing climate change, advancing energy sustainability, and achieving long-term environmental goals.

Renewable energy investments

Quarterly private equity investments in alternative energy companies including battery and energy conservation technology.



Source: Refinitiv, Reuters, 2023

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The Role of Top-Down Analysis

In technological advancements, policy shifts, and evolving market dynamics post-2022, top-down fundamental analysis has become indispensable for evaluating renewable energy investments. This approach enables stakeholders to integrate environmental, social, and governance (ESG) factors into their decision-making processes, emphasizing the importance of sustainability and social impact in investment strategies (Lee & Zhong, 2014). The systematic structure of top-down analysis allows for assessments from macro to micro levels, beginning with global trends and narrowing down to sector-specific evaluations and asset selection (Jones et al., 2020).

Challenges in Implementation

Despite its effectiveness, implementing the top-down analysis framework in renewable energy investments is challenging. These include the lack of standardized data for sustainability performance assessments, regulatory complexities across jurisdictions, and the need to align stakeholder interests (Patel et al., 2021). Addressing these challenges is essential for refining the framework and ensuring its practical application in driving sustainable investments.

The Importance of Sustainable Investing

Investments in renewable energy go beyond financial returns, aiming to ensure the long-term sustainability of energy resources. By aligning investments with frameworks such as the Global Reporting Initiative (GRI) and the United Nations Sustainable Development Goals (SDGs), such as SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action), stakeholders can simultaneously achieve financial viability and address critical environmental and social challenges. Prioritizing innovation, effective policies, and sustainability metrics further supports transitioning to low-carbon economies while tackling pressing global issues (Greenberg, 2020; Brown, 2023).

Research Contribution

While the significance of top-down analysis has been acknowledged in previous studies (Lee & Zhong, 2014; Jones et al., 2020), further research is needed to develop a more detailed and practical framework tailored to renewable energy investments. This study aims to provide deeper insights into how top-down analysis can guide stakeholders in planning and executing sustainable investments. By contributing to the refinement of this framework, the research seeks to accelerate the global transition to sustainable investment practices and mitigate the adverse effects of climate change.

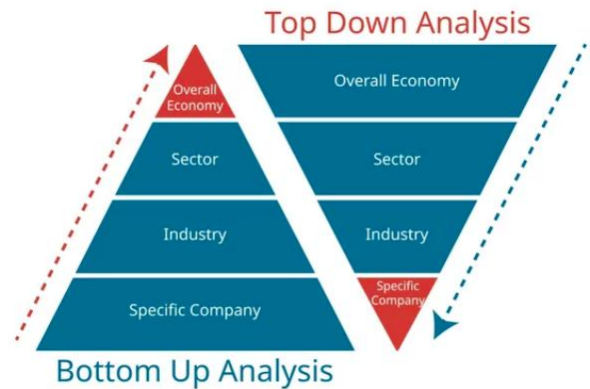
2. Materials and Methods

This research employs a top-down analysis strategy to develop a framework for sustainable investing in the renewable energy sector. The following outlines the methods used in this study:

1. Data Collection:

The study collects both qualitative and quantitative data. Qualitative data is derived from existing literature on sustainable investing, renewable energy markets, and top-down analysis approaches. Quantitative data is obtained from financial reports, market trends, and economic indicators related to renewable energy investments.

2. Research Approach:



Source: bmoney.id

The top-down analysis will examine the macroeconomic environment, sectoral trends, and company-level financial performance in the renewable energy sector.

- 1) The macro-level analysis evaluates economic conditions, regulatory changes, and global energy demand directly affecting the renewable energy market. Macroeconomics examines an economy's behavior, structure, and performance, encompassing key variables like economic growth, inflation, unemployment, international trade, and fiscal and monetary policies (Ahuja 2022). Common macroeconomic indicators include GDP, inflation rate, unemployment rate, labor force participation, international trade metrics, and interest rates.

Key Research Insights:

- Global Economic Growth & Renewable Energy Demand: Smith et al. (2023) highlighted the link between rapid global economic growth and increased demand for renewable energy. Sustainability awareness and the need to reduce greenhouse gas emissions have encouraged transitions to cleaner energy sources.
 - Policy & Investment Comparisons: Johnson (2024) analyzed government policies supporting renewable energy investments, identifying factors that enhance policy effectiveness and showcasing best practices for fostering growth in renewable energy sectors.
- 2) The sectoral analysis focuses on the trends, technological advancements, and innovations that drive growth in the renewable energy sector while also considering policy support and ESG criteria. Renewable energy is vital in improving corporate ESG (Environmental, Social, and Governance) performance.

Technological Innovations:

- Innovation's Role: Greenberg (2023) explored how innovations like efficient solar panels, advanced wind turbines, and improved energy storage systems drive renewable energy sector growth. Continuous R&D investment is essential for lowering costs and boosting adoption rates.
 - Production Costs and Profitability: Brown (2023) discussed how declining renewable energy production costs, facilitated by technological advancements, enhance company profitability and competitiveness.
- 3) The company-level analysis examines financial reports, investment performance, and ESG ratings of individual

companies within the renewable energy sector listed on the Indonesia Stock Exchange (IDX). Qualitative Analysis:

- Organizational Culture: Schein (2010) emphasized the importance of leadership in shaping organizational values and decision-making.
 - Risk Management: Lam (2014) underscored the need for appropriate incentives to promote effective risk management.
 - CSR Analysis: Dahlsrud (2020) synthesized definitions of Corporate Social Responsibility (CSR), identifying shared elements like social, environmental, and economic accountability.
- Quantitative Analysis:

- Financial Metrics: Analysis tools like DCF, NPV, and IRR assess renewable energy project viability, while statistical techniques evaluate investment performance and risk factors (Zvi Bodie et al. 2021).
- Stock Valuation: Methods such as relative and absolute valuation gauge whether companies are undervalued or overvalued (Martia et al. 2018, 2020, 2021).

3. Sampling and Population:

The study targets renewable energy companies listed on the IDX. A purposive sampling technique will select companies based on their involvement in renewable energy generation and adherence to sustainability principles. The final sample will be determined by analyzing companies aligning with the top-down analysis

3. Result and Discussion

Macroeconomics Analysis

THN	INDONESIA				VIETNAM				KENYA				TIMOR LESTE			
	GDP	INFLS	IR	KURS	GDP	INFLS	IR	KURS	GDP	INFLS	IR	KURS	GDP	INFLS	IR	KURS
2019	4135,2	3%	8,62%	14.147,6	3425,1	2,8%	5,7%	23.050,24	1909,3	5,2%	7,8%	101,99	1583,7	8,2%	6,7%	1
2020	3870,6	1,9%	10,02%	14.582,2	3526,3	3,2%	5,9%	23.208,37	1872,1	5,4%	6,7%	106,45	1442,7	-15,8%	35,6%	1
2021	4291,8	1,6%	2,74%	14.308,14	3694	1,8%	4,9%	23.159,78	2006,8	6,1%	6,7%	109,64	1457,8	-1,3%	12,7%	1

1) GDP (Gross Domestic Product)

Gross Domestic Product (GDP) is a primary indicator of a country's economic strength. It measures the value of goods and services produced within a country's borders, irrespective of the company's nationality, as long as the production occurs within the country. As prospective investors, we conducted a preliminary analysis of macroeconomic indicators, focusing on GDP, in four developing countries before making investment decisions. The selected countries for analysis are Indonesia, Kenya, Timor-Leste, and Vietnam. The study utilized GDP Per Capita (Current US\$) as a key metric to evaluate economic performance.

The GDP and GDP Per Capita of these countries have shown fluctuating trends. A negative GDP growth rate is termed a "recession" in macroeconomic terms. Sudden or unforeseen economic shocks, such as the COVID-19 pandemic, often trigger recessions. According to the International Monetary Fund (IMF), the COVID-19 pandemic caused a global recession characterized by rising unemployment and poverty worldwide. Nearly all sectors, including economics, politics, society, and culture, were significantly affected (Fernandes, 2020). The economic sector, however, was one of the most severely impacted (Abdi, 2020; Maital & Barzani, 2020). This was primarily due to restrictions on

business activities and daily life, which reduced consumer purchasing power and widespread layoffs.

4. Data Analysis Tools:

Data will be processed using Microsoft Excel for quantitative financial analysis, including tools such as Discounted Cash Flow (DCF), Net Present Value (NPV), and Internal Rate of Return (IRR) to assess the financial viability of renewable energy projects. For qualitative analysis, content analysis will evaluate selected companies' sustainability frameworks and ESG performance.

5. Framework Development:

Based on the data analysis, a top-down analysis framework will be developed to guide sustainable investment decisions in the renewable energy sector. The framework will integrate macroeconomic indicators, sectoral developments, and company-specific financials to provide a comprehensive view of the renewable energy investment landscape.

6. Validation and Implementation:

Data validation will involve cross-checking the results using secondary data sources and expert interviews in renewable energy investment. The study will conclude by assessing the practical implementation of the top-down analysis framework for sustainable investing in renewable energy and its potential impact on reducing global greenhouse gas emissions.

business activities and daily life, which reduced consumer purchasing power and widespread layoffs.

All four countries in this study—Indonesia, Kenya, Timor-Leste, and Vietnam—experienced the economic repercussions of the pandemic. The GDP Per Capita (Current US\$) data for these countries illustrates the impact during the 2019–2020 period:

Indonesia: \$4,135.2 to \$3,870.6

Kenya: \$1,909.3 to \$1,872.1

Timor-Leste: \$1,583.7 to \$1,442.7

Vietnam: \$3,525.1 to \$3,526.3

This decline reflects the recession induced by the pandemic. The pandemic also led to mass layoffs as numerous industries faced revenue declines due to limited consumer activity. Additionally, disruptions in international trade severely impacted industries reliant on imported raw materials or exported finished goods, exacerbating unemployment and deepening the recession. In 2020–2021, as the pandemic stabilized and countries adapted to the "new normal," economic recovery efforts gained momentum. This gradual return to normalcy allowed the selected countries to

rebuild and recover from the economic setbacks caused by COVID-19.

2) Inflation

Inflation measures the rate at which the prices of goods and services consumers purchase over time. High inflation, characterized by rising prices, often prompts Bank Indonesia (BI) to increase interest rates. In turn, banks usually follow suit by raising loan interest rates. This creates an additional financial burden for businesses, especially those reliant on bank loans for operational costs and expansion. The increased costs reduce corporate profitability, which can lead to a decline in stock prices. Consequently, high inflation becomes a concern for investors, as efforts by BI to curb inflation through higher interest rates often result in falling stock prices.

However, inflation is not always detrimental. Moderate inflation can drive economic growth by increasing national income and encouraging people to work, save, and invest. On the other hand, uncontrolled inflation (hyperinflation) leads to a devaluation of money, declining purchasing power, and diminished motivation to work or conduct business due to its negligible returns.

Based on its intensity, inflation can be categorized into four levels:

Mild Inflation: Less than 10% per year.

Moderate Inflation: Between 10% and 30% per year.

Severe Inflation: Between 30% and 100% per year.

Hyperinflation: More than 100% per year.

From the inflation data presented: In 2019, Vietnam recorded the lowest inflation rate at 2.8%, followed by Indonesia at 3%. In 2020 and 2021, Indonesia consistently recorded the lowest inflation rates among the analyzed countries. Indonesia's inflation remained mild (below 10%) and steadily declined yearly. According to the theory above, a country with low inflation indicates a stable economy, making it an attractive destination for investment. Consequently, Indonesia emerges as the best investment choice compared to Vietnam, Kenya, and Timor-Leste.

3) Interest Rate

The interest rate is a key economic variable closely monitored due to its far-reaching effects. It directly influences everyday life and plays a critical role in the health of an economy. Interest rates represent the cost of borrowing money to utilize its purchasing power (Puspoprano 2004:70).

Interest rates are the cost charged by surplus economic units to deficit units for loans provided from their savings. It is the price borrowers (debtors) pay to lenders (creditors) for using funds over a specific period. The loan amount is referred to as the principal, and the cost of borrowing is typically expressed as a percentage of the principal per unit of time (generally per year) (Fabozzi et al. 2003:204).

From an economic perspective, the interest rate is the price of using money or funds for a specific period. It is often viewed as a rental cost for using money during that period. Thus, interest rates are closely tied to time in daily economic activities (Kasmir 2003:39).

In summary, interest rates are the compensation lenders receive for providing funds or loans for a specified period, expressed as a percentage (%). For customers, interest rates on deposits are the most appealing aspect, as deposits offer the highest interest rates compared to other savings instruments, such as savings and checking accounts. Banks view deposits as products that provide flexibility to optimize fund investments through various activities, such as loans and securities. Below is an analysis of interest rates in four countries: Indonesia, Timor-Leste, Vietnam, and Kenya.

- 2019: Indonesia had the highest interest rate (8.62%), followed by Kenya (7.8%), Timor-Leste (6.7%), and Vietnam (5.7%).
- 2020: Timor-Leste recorded the highest interest rate (35.6%), followed by Indonesia (10.2%), Kenya (6.7%), and Vietnam (5.9%).
- 2021: Timor-Leste again had the highest rate (12.7%), followed by Kenya (6.7%), Vietnam (4.9%), and Indonesia (2.74%).

High interest rates in a country can attract foreign investors as they offer higher returns on investment. From the data:

- In 2019, Indonesia was the most attractive country for investors due to its high interest rates.
- In 2020, Timor-Leste surpassed Indonesia with an interest rate of 35.6%.
- In 2021, Indonesia recorded the lowest interest rate, making it less appealing to foreign investors.

Thus, it can be concluded that Indonesia's declining interest rates reduced its attractiveness to foreign investors in recent years.

4) Exchange Rate

Indonesia: In 2020, the Indonesian rupiah depreciated by 3.07% compared to 2019, but it saw a nominal increase in value. This suggests that while the currency weakened against other currencies, the nominal value showed positive growth during that period. In 2021, the rupiah appreciated 1.87% from 2020, although its nominal value decreased. This indicates a recovery in the currency's strength despite a decrease in its absolute value.

Timor-Leste: The exchange rate of Timor-Leste remained unchanged due to the adoption of the US dollar as the country's official currency. Since the value of the US dollar is determined by global markets, Timor-Leste's exchange rate is directly linked to the fluctuations in the dollar value rather than being influenced by domestic economic conditions.

Vietnam: In 2020, the Vietnamese dong depreciated by 0.68% compared to 2019. However, in 2021, the dong appreciated slightly by 0.2% from 2020. These movements indicate relatively stable currency fluctuations, with only minor changes observed during the two years.

Kenya: The Kenyan shilling depreciated by 4.37% in 2020 from 2019. In 2021, the shilling continued its decline, falling by 3% from 2020. The ongoing depreciation suggests that the Kenyan economy faced challenges that impacted the stability of its currency.

The data shows Indonesia's exchange rate was relatively more substantial than the other countries analyzed. Several factors contributed to this strength. First, Indonesia had the lowest

inflation rate among the countries reviewed, which helped maintain a more stable exchange rate. Second, Indonesia's higher consumption levels led to increased demand for goods and services and foreign currency. Lastly, while Indonesia had lower interest rates—typically a factor that weakens a currency—its overall economic conditions, including low inflation and strong domestic demand, helped keep the rupiah relatively stable. In conclusion, Indonesia's exchange rate was primarily supported by low inflation and strong consumer demand, though slightly weakened by low interest rates that limited returns on investments.

Sectoral Analysis

The Energy Sector includes companies involved in extracting and providing energy products and services, such as fossil fuels, which directly impact revenue based on global commodity prices. These companies include those involved in oil, natural gas, and coal mining and those providing services that support these industries. This sector also encompasses companies that deal with alternative energy products and services.

According to recent news, the energy sector index experienced a notable increase, as stated in the following excerpt:

"PT Samuel Sekuritas Indonesia's research team noted that when the Jakarta Composite Index (IHSG) strengthened and returned to the green zone, the energy sector index (IDXENERGY) led with the highest gain, increasing by 2.05%. It was followed by the industrial sector index (IDXINDUST), which grew by 1.54%, and the transportation sector index (IDXTRANS) rising by 1.41%."

As a maritime country, Indonesia has vast coastlines that can be used for offshore wind power generation and the construction of offshore hydropower plants. Indonesia, the largest energy consumer in ASEAN, accounts for 40% of the region's energy consumption. The demand for energy in this archipelagic country has increased by 80%, and electricity demand is expected to triple between 2015 and 2030. Renewable energy solutions have gained traction in Indonesia due to growing dependency on imported petroleum and domestic coal. The Indonesian government plans to achieve 23% renewable energy usage by 2025 and 31% by 2050.

Indonesia has a significant potential for a renewable energy mix. Indonesia controls around 40% of the world's geothermal reserves. Total private sector investment from Independent Power Producers (IPPs) is expected to reach IDR 155.4 trillion (USD 11.11 billion). Renewable energy could help Indonesia save up to IDR 741.5 billion (USD 53 billion) annually by 2030. The government aims to increase the share of renewable energy to 17% of the national energy mix by 2025.

1) Current Renewable Energy Potential

In addition to having some of the world's largest hydropower and geothermal potential, Indonesia possesses abundant resources for solar, ocean, wind, and bioenergy development, such as biomass and bio-residues, due to its large agricultural areas. Another advantage is that Indonesia enjoys year-round sunlight, which allows for photovoltaic and solar thermal power development. These energy resources can generate electricity and support heating, cooling systems, and transportation. Indonesia controls about 40% of the world's geothermal reserves and is one of the top three geothermal energy producers globally. Due to Indonesia's

volcanic geology, geothermal energy is another potential renewable energy source. According to the Indonesian Ministry of Energy and Mineral Resources, only 10.3% of Indonesia's geothermal potential has been utilized for renewable energy. As a result, in 2018, the Indonesian government planned to add 250 MW to the geothermal plant capacity and aims to increase the geothermal production capacity to 5,000 MW by 2025.

2) Economic Aspects of Renewable Energy

Unlike conventional sources, renewable energy does not cause air pollution, such as carbon dioxide emissions, and can significantly reduce costs. This cost reduction could help Indonesia save up to IDR 741.5 billion (USD 53 billion) annually by 2030, representing 1.7% of Indonesia's GDP by 2030. To realize this, an investment of IDR 223.8 trillion (USD 16 billion) is needed to harness Indonesia's renewable energy potential.

3) Renewable Energy for Sustainability

Each year, around 8.5 million motor vehicles add to the traffic on Indonesia's roads, exacerbating the already concerning pollution levels. Industrial energy use has also increased with the country's economic growth. Large industries, particularly cement, aluminum, paper, and ceramics, are major contributors to rising energy consumption. Therefore, energy sustainability is a pressing concern for this rapidly developing nation. As energy demand increases, coal use rises to meet domestic needs, even as domestic oil and natural gas production stagnates. According to the Reference Case, coal usage is projected to more than double by 2030, which means more greenhouse gas emissions from coal burning, worsening air pollution, water contamination, and resource depletion.

4) Investment in Renewable Energy in Indonesia

Private sector investments from Independent Power Producers (IPPs) are expected to reach IDR 155.4 trillion (USD 11.11 billion). The Indonesian government is also committed to reducing carbon dioxide emissions. In line with the National Energy Policy, 17% of the nation's energy will consist of new and renewable energy sources by 2025. This energy mix will include biofuels, geothermal energy, biomass, nuclear energy, hydro, wind, and liquid coal. Investments in renewable energy have proliferated in Indonesia. According to the Reference Case, annual investment in renewable energy capacity in Indonesia ranged from IDR 131.5 trillion (USD 9.4 billion) between 2015 and 2030, potentially rising to IDR 226.6 trillion (USD 16.2 billion).

Company Analysis

1) Qualitative Analysis

PT ADARO ENERGY

WHAT: PT Adaro Energy Tbk is a leading mining company and the second-largest coal producer in Indonesia. The company has developed into a vertically integrated organization with subsidiaries focusing on energy, including mining, transportation via large ships, loading on ships, dredging, port services, marketing, and power generation. Adaro Energy operates the largest single coal mine in Indonesia, South Kalimantan, and aims to become Southeast Asia's primary mining and energy group.

WHERE: Adaro Energy is well-positioned in the energy industry, particularly as a major coal producer.

ADRO IDR 2.590 +80 (+3,00%)

Pembaharuan Terakhir: 18 December 2024, 03:00 PM

Pembukaan	IDR 2.590	Penutupan Sebelumnya	IDR 2.510
Penawaran (Offer)	IDR 2.590	Penawaran (Bid)	IDR 2.580
Harga Terendah	IDR 2.540	Harga Tertinggi	IDR 2.630
Volume	729.081 (<i>Saham</i>)	Nilai Transaksi	IDR 188.400.000.000
Frekuensi	17.573 (<i>Kali</i>)	EPS	IDR 0
PE Ratio	0 (<i>Kali</i>)	Kapitalisasi Pasar	IDR 79.357.440 Jt
Peringkat kapitalisasi pasar industri terkait	4 dari 45	Peringkat kapitalisasi pasar semua perusahaan	24 dari 942

WHY: Adaro Energy's coal is considered more environmentally friendly due to its low sulfur, nitrogen, and dust content. This coal is marketed globally under the name Envirocoal. About 25% of its production is consumed domestically, primarily by coal-fired power plants, while significant export markets include India, Spain, Japan, South Korea, and China. Adaro Energy also owns substantial assets supporting its operations, such as a 75-kilometer transportation road linking its mining sites to the Kelanis crushing facility in Kalimantan and a coal terminal on Pulau Laut. Through a subsidiary, Adaro also operates an entire fleet of mining ships.

WHEN: Adaro Energy adheres to a Code of Ethics that guides interactions with all stakeholders, including employees, shareholders, and investors. The company is committed to transparency, accountability, and high integrity in providing information, ensuring shareholder satisfaction, and protecting the company's interests. It also prioritizes anti-corruption and anti-fraud policies and compliance with legal regulations. The company works towards ensuring safe working conditions, fair treatment of employees, and meeting the needs of customers and suppliers while empowering local communities.

WHO: The management team of PT Adaro Energy includes:

- President Commissioner: Edwin Soeryadjaya

- Vice President Commissioner: Theodore Permadi Rachmat
- Commissioner: Arini Saraswaty Subianto
- Independent Commissioner: Budi Bowoleksono
- Independent Commissioner: Mohammad Effendi
- President Director: Garibaldi Thohir
- Vice President Director: Christian Ariano Rachmat
- Directors: Chia Ah Hoo, Michael William P Soeryadjaya, Mohammad Syah Indra Aman
- Independent Director: Julius Aslan
- President of the Audit Committee: Mohammad Effendi
- Audit Committee Members: Ignatius Robby Sani, Lindawati Gani

HOW: Due to the low coal prices in the late 2000s, Adaro Energy increasingly focused on the power generation sector by developing coal-fired power plants. With substantial access to coal reserves and rising electricity demand in Indonesia, the power generation segment is expected to be a valuable asset for Adaro Energy, providing stable revenue and cash flow. As Indonesia's economy grows, electricity demand is projected to nearly triple, reaching 17 quadrillion BTUs by 2030, which bodes well for Adaro's future operations.

1) Quantitative Analysis

DATA RASIO	ADRO			PGAS			SURE		
	2019	2020	2021	2019	2020	2021	2019	2020	2021
Profitability									
NPM	20,40%	7,46%	0,18%	6,12%	3,3%	-0,01%	2,71%	0,27%	-0,24%
ROA	7,48%	2,25%	0,06%	2,35%	0,95%	-0,004%	1,06%	0,13%	-0,06%
ROE	12,00%	3,75%	0,10%	5,25%	2,19	-0,009%	4,81%	0,54%	-0,11%
Liquidity									
Current Ratio	1,71%	1,51%	2,08%	1,96%	1,70%	2,49%	49,36%	7,02%	7,27%
Activity									
Assets Turnover (kali)	0,48	0,4	0,53	39,55	11,25	11,28	0,33	0,3	0,34
Debt Ratio									
DER (kali)	0,60	0,66	0,65	1,23	1,31	1,29	3,53	3,17	0,85
Market Ratio									
EPS (IDR)	239,9	68	202,2	100,7	43,7	-17,8	3,84	0,45	-40,4
PER (kali)	6,48	21,00	11	22	38	-77	768	5,578	-49

Stock Valuation

The discussion in this study uses the dividend discounted model method. So get the following calculations:

Year	Dividend	EPS	g	DPR (%)	D1	ROE (%)	Rs	P0
2019	56.16	239.9		0.23		12	0.77	
2020	44.13	68	-0.21	0.65		3.75	0.35	
2021	66.28	202.2	0.5	0.33		0.1	0.67	
2022	141.39	1215.29	1.13	0.12		0.38	0.34	
2023	240.78	899.04	0.70	0.27		25.06	18.35	
average	109.75	524.89	0.53	0.32		8.26	4.09	
2024					168.08			47.17

The results show that a top-down framework helps identify investments that support sustainability and consider ESG aspects. This approach also improves investors' ability to evaluate the risks and opportunities of renewable energy investments. Examples of applications to the energy sector in Indonesia show great potential for reducing carbon emissions and improving energy efficiency.

4. Conclusion

A top-down framework for renewable energy investment has proven effective in improving the quality of sustainable investment decisions. Considering environmental, social, and governance aspects, this approach provides valuable guidance for stakeholders in supporting the clean energy transition.

Based on analysis using the Gordon Growth Model, ADRO shares on December 27, 2024 with a market price of IDR 2,540 are considered to be undervalued, as the intrinsic value is recorded at IDR 47.17 (in thousands). Positive EPS and dividend growth trends, with an average growth rate (g) of 53% and ROE of 8.26%, support the company's performance prospects. The company balances dividend distribution and profit reinvestment with an

average DPR policy of 32%. Therefore, ADRO stock is recommended as a long-term investment opportunity.

References

- Ahuja, H. L. (2022). Principles of Macroeconomics. S. Chand Publishing.
- Alviyanil'Izzah, N., Martia, D. Y., Imaculata, M., Hidayatullah, M. I., Pradana, A. B., Setiyani, D. A., & Sapuri, E. (2021). ANALISIS TEKNIKAL PERGERAKAN HARGA SAHAM DENGAN MENGGUNAKAN INDIKATOR STOCHASTIC OSCILLATOR DAN WEIGHTED MOVING AVERAGE. KEUNIS, 9(1), 36-53.
- ARIANTO, B. (2020). Dampak Pandemi COVID-19 terhadap Perekonomian Dunia. Jurnal Ekonomi Perjuangan (JUMPER), 106-108.
- Bodie, Z., Kane, A., & Marcus, A. J. (2021). "Investments." New York: McGraw-Hill Education.
- Brown, M. (2023). "Declining Production Costs of Renewable Energy and its Impact on Company Profitability." Sustainable Energy Journal, 8(1), 75-88.

6. Dahlsrud, A. (2020). "How Corporate Social Responsibility is Defined: An Analysis of 37 Definitions." *Corporate Social Responsibility and Environmental Management*, 15(1), 1-13.
7. GDP per capita (current US\$). (n.d.). Retrieved from THE WORLD BANK: <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>
8. Greenberg, R. (2020). "Implications of Renewable Energy Investments on Carbon Emission Reduction: A Literature Review." *Journal of Environmental Sustainability*, 5(4), 180-195.
9. Greenberg, R. (2023). "Role of Technological Innovation in Driving Growth in the Renewable Energy Sector." *International Journal of Clean Energy Research*, 5(4), 201-215.
10. Inflation, consumer prices (annual %). (n.d.). Retrieved from THE WORLD BANK: <https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG>
11. Johnson, A. (2024). "Government Policies and Investment in Renewable Energy: A Comparative Analysis." *Energy Policy Review*, 15(3), 112-126.
12. Jones, Adam, & Smith, Emily. (2020). Assessing the effectiveness of top-down analysis in renewable energy investment: A case study of wind power projects in the United States. *Journal of Renewable Energy Finance*, 5(2), 87-102. doi:10.1080/23796397.2020.1768359
13. Lam, J. (2014). "Enterprise Risk Management: From Incentives to Controls." Hoboken, NJ: Wiley.
14. Lee, C. W., & Zhong, J. (2014). Top-down strategy for renewable energy investment: Conceptual framework and implementation. *Renewable Energy*, 68(), 761-773.
15. Marseto "Dosen Progdil Ekonomi Pembangunan FEB - UPNV Jatim". (n.d.). PENGARUH SUKU BUNGA INDONESIA (SBI) TERHADAP INFLASI., PENGARUH SUKU BUNGA INDONESIA (SBI) TERHADAP INFLASI., 2-3.
16. Martia, D. Y., & Yasmine, N. I. (2021). Indikator simple moving average dan relative strenght index untuk menentukan sinyal beli dan jual saham pada sektor infrastruktur. *Jurnal Pasar Modal dan Bisnis*, 3(1), 27-38.
17. Martia, D. Y., Setyawati, W., & Hastuti, Y. (2018). Analisis Valuasi Saham PT. Semen Indonesia (Persero) Tbk Dengan Metode Discounted Cash Flow (DCF). *Jurnal Aktual Akuntansi Keuangan Bisnis Terapan (AKUNBISNIS)*, 1(2).
18. Martia, D. Y., Wati, R., Wahyuni, M., & Pinandhito, K. (2020). Penilaian Kewajaran Dan Pengambilan Keputusan Investasi Saham Pt Industri Jamu Dan Farmasi Sido Muncul Tbk. *Jurnal Aktual Akuntansi Keuangan Bisnis Terapan (AKUNBISNIS)*, 3(2), 137-144.
19. Official exchange rate (LCU per US\$, period average) - Indonesia, Kenya, Timor-Leste, Vietnam. (n.d.). Retrieved from THE WORLD BANK: <https://data.worldbank.org/indicator/PA.NUS.FCRF?locations=ID-KE-TL-VN>
20. Patel, Rahul, & Gupta, Neha. (2021). Integrating sustainability criteria into top-down investment analysis for renewable energy projects: A case study of solar power in India. *Sustainable Development Journal*, 28(4), 582-597. doi:10.1002/sd.2176
21. PBB. (2015). "Transforming our World: The 2030 Agenda for Sustainable Development." Resolution adopted by the General Assembly on 25 September 2015.
22. Real interest rate (%) - Indonesia, Timor-Leste, Kenya, Vietnam. (n.d.). Retrieved from THE WORLD BANK: <https://data.worldbank.org/indicator/FR.INR.RINR?locations=ID-TL-KE-VN>
23. Schein, E. H. (2010). "Organizational Culture and Leadership." San Francisco: Jossey-Bass.
24. Smith, J. et al. (2023). "Global Demand for Renewable Energy: Trends and Projections." *Journal of Renewable Energy Economics*, 10(2), 45-58.
25. Susanto "Dosen STIE Bisnis Indonesia, Jakarta". (2018). PENGARUH INFLASI, TINGKAT SUKU BUNGA, DAN NILAI TUKAR. PENGARUH INFLASI, TINGKAT SUKU BUNGA, DAN NILAI TUKAR, 5-6.
26. Wira, D. (2015). ANALISIS FUNDAMENTAL SAHAM, Edisi Kedua. Exceed.