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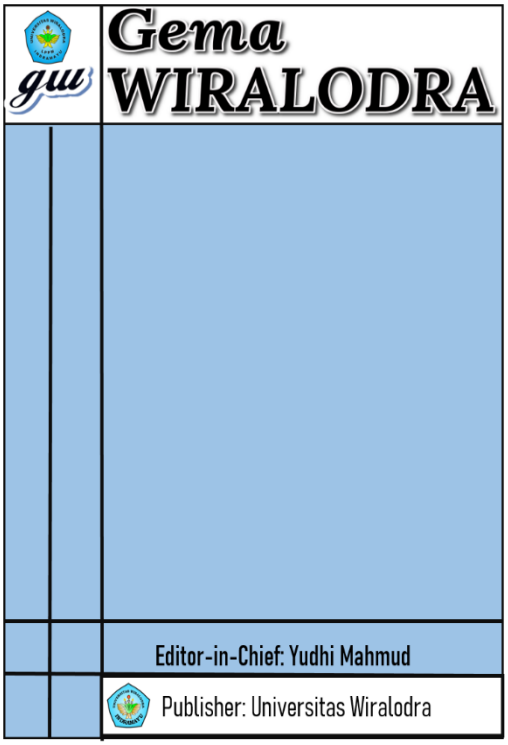

Implementation of the Rooftop Solar Power Plant (PLTS Atap) Policy Based on the Regulation of the Minister of Energy and Mineral Resources (ESDM)

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Implementation of the Rooftop Solar Power Plant (PLTS Atap) Policy Based on the Regulation of the Minister of Energy and Mineral Resources (ESDM)

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Abstract
This study examines the implementation of the Rooftop Solar Power Plant (PLTS Atap) policy as regulated under the Minister of Energy and Mineral Resources (ESDM) Regulation Number 26 of 2021 and its amendment, Regulation Number 2 of 2024, with a focus on the industrial sector, particularly PT Uni-Charm Indonesia Tbk. The purpose of this study is to analyze how the PLTS Atap policy has been interpreted and executed by private industries, the challenges encountered in its implementation, and its contribution to improving corporate environmental performance. The study also seeks to explore how corporate actors respond to state-led energy transition initiatives and adapt their business strategies to comply with renewable energy regulations. Using a qualitative descriptive approach, this research relies on primary and secondary data collected through interviews, field observations, and document studies. The research applies the policy implementation model by Van Meter and Van Horn as its analytical framework, combined with the principles of Good Environmental Governance (GEG) and the concept of sustainable energy transition. This combination allows for a comprehensive understanding of the institutional, technical, and behavioral factors influencing the adoption of rooftop solar power systems in industrial settings. The findings indicate that the implementation of PLTS Atap policy at PT Uni-Charm Indonesia Tbk has generally been successful, supported by managerial commitment, adequate resources, and cooperation between government agencies and private actors. The company's adoption of rooftop solar power has resulted in tangible improvements in energy efficiency, cost reduction, and carbon emission mitigation, contributing to national and global climate action goals. However, the implementation process has also faced obstacles, including regulatory changes, administrative complexity, and the absence of consistent financial incentives. Despite these challenges, the PLTS Atap initiative represents a progressive step toward realizing Indonesia's clean energy transition and enhancing private sector involvement in environmental governance.
Keywords: Policy Implementation, Renewable Energy, Rooftop Solar PV, Environmental Performance, Energy Efficiency

1. Introduction

The global energy transition has become one of the most significant policy challenges of the twenty-first century. Governments around the world are working to reduce dependence on fossil fuels while ensuring sustainable economic growth. The transition from conventional to renewable energy sources is not only an environmental necessity but also an economic and political imperative. For developing countries such as Indonesia, energy transition policies must address the dual challenge of providing affordable energy access while reducing the nation's greenhouse gas emissions in accordance with global commitments such as the Paris Agreement and the Sustainable Development Goals (SDGs).

p – ISSN: **1693 - 7945**
e – ISSN: **2622 - 1969**

Orginal Article

Indonesia's National Energy Policy (KEN) and the National Energy Plan (RUEN) set an ambitious target to achieve a renewable energy mix of 23% by 2025. However, as of 2023, renewable energy still accounts for less than 15% of the total national energy mix, dominated by hydropower and geothermal sources. Solar energy, particularly rooftop solar photovoltaic (PLTS Atap), is considered one of the most promising solutions for expanding renewable energy use due to its modular technology, decreasing installation cost, and scalability across residential, commercial, and industrial sectors. The rooftop solar scheme allows industries to generate clean electricity for their own operational use, thus reducing dependency on grid-supplied electricity from PT PLN (Persero).

To accelerate solar adoption, the Ministry of Energy and Mineral Resources (ESDM) issued Regulation Number 26 of 2021, which provides a legal framework for the use of rooftop solar systems connected to the PLN grid. The regulation was designed to facilitate licensing, ensure technical safety, and encourage industries and households to contribute to national renewable energy goals. However, challenges soon emerged, particularly concerning the mechanism of net-metering, which allowed consumers to export excess electricity back to the grid for credits. As implementation proceeded, various stakeholders—including industries and PLN—raised concerns about technical limits, grid stability, and financial implications. Consequently, ESDM issued Regulation Number 2 of 2024 to revise and improve the earlier policy. The new regulation simplified administrative procedures but removed the export credit mechanism, marking a shift in the policy's incentive structure.

The revision created both opportunities and challenges for industries. On one hand, it provided a more streamlined and transparent process for installing rooftop solar systems. On the other hand, it reduced the economic attractiveness of PLTS Atap by removing one of its key financial incentives. For companies with long-term sustainability commitments, such as PT Uni-Charm Indonesia Tbk, the decision to invest in PLTS Atap was driven less by short-term financial benefits and more by strategic environmental and social considerations. This case provides a unique insight into how corporate actors internalize state-led renewable energy policies and integrate them into broader Environmental, Social, and Governance (ESG) strategies.

PT Uni-Charm Indonesia Tbk, a leading manufacturer of hygiene products, has demonstrated its commitment to sustainability by implementing the PLTS Atap program across its production facilities in Karawang, West Java, and Mojokerto, East Java. The company's renewable energy initiative aligns with its corporate philosophy of "Nurturing a Gentle World," emphasizing environmental responsibility, innovation, and social contribution. The decision to adopt rooftop solar energy was also influenced by global trends in corporate sustainability reporting, where multinational firms are expected to disclose their carbon footprint and demonstrate tangible actions toward carbon neutrality.

The implementation of PLTS Atap at PT Uni-Charm is not merely a technical endeavor but a policy process involving multiple stakeholders—government institutions, local authorities, the state-owned electricity company (PLN), private solar energy providers, and civil society observers. The coordination between these actors reflects the broader dynamics of Indonesia's energy governance system, which seeks to balance public policy objectives with market realities and environmental imperatives.

This study, therefore, seeks to analyze how the PLTS Atap policy has been implemented in practice within the industrial context, focusing on PT Uni-Charm Indonesia Tbk as a case study. Specifically, it aims to answer three main questions:

1. How is the PLTS Atap policy understood and operationalized by private industries under the ESDM Regulations Number 26 of 2021 and 2 of 2024?
2. What are the key factors supporting or constraining its implementation?

p – ISSN: **1693 - 7945**
e – ISSN: **2622 - 1969**

3. How does the policy contribute to corporate environmental performance and the broader energy transition agenda?

2. Methods

This research adopts a qualitative descriptive approach, which is appropriate for exploring policy implementation processes that involve complex social, institutional, and behavioral interactions. Unlike quantitative approaches that emphasize measurement and statistical relationships, the qualitative descriptive method allows for an in-depth understanding of how actors interpret and operationalize policies in real contexts. It is particularly suitable for examining how a renewable energy policy such as PLTS Atap is implemented within an industrial organization, where compliance, adaptation, and innovation occur simultaneously.

1. Research Design and Approach

The research design follows an interpretive paradigm, emphasizing meaning, process, and context. The study does not aim to test hypotheses but rather to describe and analyze the implementation of the PLTS Atap policy as a dynamic process involving multiple stakeholders. This design is consistent with public policy and governance studies that examine real-world administrative practices.

The approach is also case-based, focusing on PT Uni-Charm Indonesia Tbk as a single case study. The company was selected purposively because it represents a pioneering industrial actor implementing the PLTS Atap initiative under ESDM Regulations No. 26/2021 and No. 2/2024. Its proactive stance on environmental governance makes it a relevant example for understanding corporate responses to renewable energy policy. Beside that, the company selected because has a strength point in affordability and accessibility by the researcher.

2. Research Site

The study was conducted at PT Uni-Charm's production facilities located in Karawang, West Java and Mojokerto, East Java. Both sites are major contributors to the company's manufacturing capacity and have adopted solar rooftop systems in collaboration with PT Xurya Daya Indonesia as the EPC (Engineering, Procurement, and Construction) partner. The Karawang site, in particular, serves as a benchmark for industrial renewable energy adoption in the region.

3. Data Collection Techniques

Data were collected from both primary and secondary sources using triangulated methods to enhance the validity of findings.

1. In-depth Interviews

Semi-structured interviews were conducted with key informants, including:

- The General Manager of ESG-QMS, PT Uni-Charm Indonesia Tbk
- Energy Supervisors from PT PLN (Persero) UP3 Karawang
- Officials from the Regional Energy and Mineral Resources Office (Dinas ESDM)
- Representatives of PT Xurya Daya Indonesia
- Environmental officers involved in the company's ISO 14001 and ESG implementation.

The interviews explored how the PLTS Atap policy was understood, implemented, and evaluated by these actors. Questions focused on regulatory compliance, technical challenges, financial considerations, and perceived benefits.

p – ISSN: **1693 - 7945**
e – ISSN: **2622 - 1969**

Orginal Article

2. Observation

Field observations were carried out at both factory locations to understand the actual operation of the solar rooftop systems. Observations included visual inspection of installation layouts, inverters, monitoring systems, and safety procedures. The researcher also observed coordination meetings and internal discussions concerning energy management and environmental reporting.

3. Document Analysis

Secondary data were obtained through the analysis of policy documents (ESDM Regulations 26/2021 and 2/2024), company sustainability reports, internal memos, technical feasibility studies, and relevant literature on renewable energy policy implementation. These documents provided contextual understanding and empirical support for interpreting the field findings.

4. Data Analysis Techniques

The analysis followed the framework proposed by Miles and Huberman (1994), consisting of three interrelated steps:

1. Data Reduction

All interview transcripts, observation notes, and documents were organized and coded to identify recurring themes related to policy implementation variables such as communication, resources, and organizational disposition.

2. Data Display

Information was systematically presented through descriptive summaries, thematic charts, and interpretive tables that highlight the relationships among factors influencing PLTS Atap implementation.

3. Conclusion Drawing and Verification

Patterns and causal connections were drawn from the data to interpret the success and limitations of PLTS Atap implementation. Conclusions were verified by cross-checking with multiple data sources to ensure reliability.

Triangulation was employed as a core analytical strategy to ensure consistency between primary and secondary data. By comparing interview statements, field observations, and document findings, the study minimized researcher bias and strengthened the validity of interpretations.

5. Research Ethics

This study was conducted with full respect for research ethics. Informed consent was obtained from all participants, and confidentiality was maintained for sensitive company information. The researcher also adhered to academic integrity principles by accurately citing data sources and ensuring objectivity in analysis.

6. Limitations of the Study

The research is limited to a single case study, which may not fully represent the diversity of experiences among other industries implementing PLTS Atap. However, the depth of analysis provides valuable insights and lessons that can inform future studies and policy development. Further research could include comparative cases across different industrial sectors or regions to provide a more comprehensive understanding of renewable energy policy implementation in Indonesia.

3. Results and Discussion

The implementation of the Rooftop Solar Power Plant (PLTS Atap) policy at PT Uni-Charm Indonesia Tbk represents a tangible manifestation of the government's renewable energy agenda at the corporate level. As one of the first large-scale industrial players to adopt this system under ESDM Regulation No. 26/2021, the company has contributed significantly to promoting energy

p – ISSN: **1693 - 7945**
e – ISSN: **2622 - 1969**

diversification and sustainable manufacturing. This section presents the findings of the study, organized around three major themes: (1) implementation process and institutional coordination, (2) impacts on corporate environmental performance, and (3) challenges and adaptation strategies.

1. Implementation Process and Institutional Coordination

The implementation of PLTS Atap at PT Uni-Charm Indonesia Tbk began in 2023 following an internal feasibility study conducted in collaboration with PT Xurya Daya Indonesia. The company decided to install rooftop solar systems on its factory buildings in Karawang and Mojokerto. The initiative was motivated by three main drivers: environmental responsibility, long-term cost efficiency, and compliance with sustainability reporting requirements under the company's ESG framework.

Institutional coordination was a key determinant of success. The process involved four major stakeholders:

1. PT Uni-Charm Indonesia Tbk, as the investor and operator of the PLTS Atap system;
2. PT Xurya Daya Indonesia, as the EPC contractor responsible for design, installation, and maintenance;
3. PT PLN (Persero), as the state electricity provider managing grid connection and system integration; and
4. The Ministry of Energy and Mineral Resources (ESDM) and its regional offices, as regulators providing licensing and policy oversight.

The coordination process took place in multiple stages: administrative approval, technical assessment, grid connection, and post-installation monitoring. Field data revealed that the company's success was largely due to early and proactive communication among these actors. A dedicated cross-functional team within PT Uni-Charm coordinated with PLN and ESDM officials to ensure compliance with safety and grid standards. This communication minimized delays often experienced by other companies attempting similar installations.

An official from the Regional Energy Office noted:
"PT Uni-Charm was among the few companies that approached the process systematically. Their understanding of regulatory procedures and commitment to follow technical standards made coordination much smoother." Its Official Statement from Chief of ESDM Regional Office of West Java Province that the company has good coordination and made good implementation of government policy.

This case illustrates the effectiveness of collaborative governance, where mutual trust, openness, and shared objectives among stakeholders produce positive implementation outcomes. It reflects Van Meter and Van Horn's emphasis on communication and disposition as crucial factors in policy implementation.

2. Quantitative Summary of PLTS Atap Implementation Outcomes

The implementation produced measurable environmental and operational outcomes, summarized below:

Table 1.
Indicators of The Results of Implementing Rooftop Solar Power Plants and Their Explanations

Indicator	Description	Impact on Company
Energy Consumption	Reduction in dependency on PLN grid electricity	Increased energy independence and operational savings
Carbon Emissions	Lower CO_2-equivalent emissions from production processes	Enhanced environmental performance and GHG compliance
Renewable Energy Share	Increase in renewable portion of total energy consumption	Alignment with corporate ESG and global climate goals
Cost Efficiency	Reduced electricity expenditure due to self-generation	Improved long-term financial sustainability

p – ISSN: **1693 - 7945**
e – ISSN: **2622 - 1969**

Environmental Reputation	Recognition in sustainability awards and media coverage	Strengthened public image and investor confidence
Compliance with Standards	Fulfillment of ISO 14001, SDGs, and national climate targets	Reinforced regulatory and reputational compliance
Employee Awareness and Engagement	Increased environmental awareness among employees	Strengthened organizational culture of sustainability

From the table above, we can see environmental indicators related to the installation of rooftop solar power plants and their impact on the company.

The first indicator, **Energy Consumption**, emphasizes efforts to reduce dependency on electricity supplied by the PLN grid. Lower grid consumption not only enables the company to become more energy independent but also contributes to operational savings. This improvement enhances the company's strategic capability in managing energy resources more effectively, minimizes vulnerability to external energy fluctuations, and supports cost reduction initiatives.

The second indicator, **Carbon Emissions**, focuses on decreasing CO_2-equivalent emissions originating from production activities. Reducing carbon emissions plays a critical role in improving environmental performance and ensuring alignment with greenhouse gas (GHG) compliance requirements. For the company, this aligns strongly with global environmental targets and national regulations, which consequently enhances the organization's corporate sustainability profile and demonstrates climate responsibility.

The third indicator, **Renewable Energy Share**, refers to the increased utilization of renewable energy in the company's total energy mix. A higher proportion of renewable energy supports the company's commitment to clean energy transition and contributes to achieving corporate ESG (Environmental, Social, and Governance) goals as well as global climate targets. This transition strengthens the company's environmental standing and increases its competitiveness in environmentally conscious markets.

The fourth indicator, **Cost Efficiency**, captures the reduced operational expenditure related to electricity consumption as a result of self-generated power. Energy self-generation aids in lowering long-term electricity costs and enhances the financial sustainability of the company. This improvement contributes directly to operational profitability and long-term economic resilience.

The fifth indicator, **Environmental Reputation**, measures recognition received by the company through sustainability awards and positive media exposure. A stronger reputation in environmental performance significantly enhances the company's public image and builds trust among stakeholders. This contributes to higher investor confidence and strengthens the company's corporate positioning in the market.

The sixth indicator, **Compliance with Standards**, involves the fulfillment of global and national sustainability frameworks such as ISO 14001, SDGs, and climate-related regulatory standards. Meeting these standards reinforces regulatory compliance and improves organizational reliability in the eyes of external stakeholders. This not only minimizes legal and environmental risks but also enhances the company's reputation as a responsible business entity.

The final indicator, **Employee Awareness and Engagement**, underscores the role of employees in sustainability initiatives. Higher employee awareness promotes the development of internal environmental responsibility, leading to greater participation in sustainability programs and innovation. This ultimately contributes to strengthening the organizational culture of sustainability and enhances collective commitment towards long-term environmental goals.

These results show that the benefits of PLTS Atap implementation extend beyond technical and economic domains to include social and institutional dimensions. The initiative fostered an internal culture of energy awareness and environmental responsibility among employees. For example, the company held regular energy conservation workshops and installed real-time monitoring dashboards accessible to staff, encouraging participation in energy-saving practices.

p – ISSN: **1693 - 7945**
e – ISSN: **2622 - 1969**

Orginal Article

3. Environmental and Financial Impact

From an environmental perspective, the company achieved a significant reduction in its carbon footprint. Based on the estimated capacity of the solar system, the company was able to offset thousands of kilograms of CO_2 annually. This aligns with Indonesia's broader target of reducing greenhouse gas emissions by 31.89% by 2030, as outlined in the Enhanced Nationally Determined Contributions (ENDC).

Financially, the PLTS Atap installation reduced operational electricity costs by a measurable percentage. Although the payback period remains longer than initially expected due to the removal of net-metering incentives in the 2024 regulation, the overall financial outlook remains positive. The company perceives the investment as part of a long-term sustainability portfolio rather than a short-term profit mechanism.

An ESG report from PT Uni-Charm noted:
"The rooftop solar project demonstrates that sustainable business practices are not a cost burden but an investment in resilience and competitiveness."

4. Comparison with Other Industrial Implementations

Comparative data from interviews and secondary sources suggest that other industries—such as the food and beverage sector, automotive manufacturing, and electronics—face similar implementation barriers. Companies with strong financial capacity and corporate governance structures, such as PT Toyota Motor Manufacturing Indonesia and PT Indofood CBP, have also initiated solar rooftop projects but often cite regulatory uncertainty as a deterrent to scaling up.

PT Uni-Charm's advantage lies in its integrated ESG framework and Japanese management culture emphasizing environmental quality. This organizational ethos supports a smoother implementation process compared to firms treating renewable energy adoption solely as a compliance obligation.

Moreover, the company's partnership with PT Xurya Daya Indonesia reflects a successful model of public–private collaboration. The EPC partner provided not only technical expertise but also financial flexibility through lease-based installation schemes, which reduced the company's upfront capital burden. This arrangement could serve as a replicable best practice for other medium and large-scale manufacturers.

5. Policy Dynamics and Implementation Challenges

The implementation process was not without obstacles. Field interviews and document reviews revealed several challenges:

1. Regulatory Instability – The shift from ESDM Regulation No. 26/2021 to No. 2/2024 altered economic assumptions, particularly regarding electricity export credits. Companies had to revise financial projections, causing hesitation in further investments.
2. Licensing Complexity – Although the new regulation simplified administrative steps, coordination between central and regional ESDM offices remained inconsistent. Variations in local interpretations of national guidelines created uncertainty for implementers.
3. Technical Integration – Integrating rooftop solar systems with factory energy management systems required extensive coordination with PLN engineers. Load balancing and safety certification took longer than expected.
4. Limited Access to Green Financing – Industries often struggle to obtain low-interest loans or tax incentives for renewable projects, reducing investment attractiveness.
5. Information Gaps and Capacity – Smaller industries lack sufficient technical knowledge to design and maintain PLTS systems, highlighting the need for government-supported capacity building.

Despite these challenges, the adaptability and persistence of PT Uni-Charm's management ensured successful project delivery. The company's proactive stance mirrors what scholars of Good

p – ISSN: **1693 - 7945**
e – ISSN: **2622 - 1969**

Orginal Article

Environmental Governance describe as voluntary compliance behavior—an attitude where actors go beyond minimal regulatory requirements to achieve broader social and environmental goals.

6. Discussion: Policy Implications

The experience of PT Uni-Charm Indonesia Tbk demonstrates that renewable energy policy implementation at the industrial level is influenced by both institutional design and corporate agency. The company's success underscores the importance of synergy between public regulations and private commitment.

From a theoretical perspective, this case validates Van Meter and Van Horn's emphasis on clear communication, adequate resources, and implementers' disposition as key determinants of success. It also exemplifies collaborative governance, where multiple actors—public and private—work together toward shared sustainability goals.

At the same time, the findings reveal gaps in Indonesia's renewable energy policy framework. The frequent revisions of ESDM regulations, inconsistent coordination across levels of government, and the lack of long-term financial incentives could undermine investor confidence. Strengthening regulatory stability and providing fiscal support would be crucial for sustaining industrial participation in the energy transition.

In the broader context of Energy Transition Theory, the PLTS Atap policy serves as a "niche innovation" capable of transforming industrial energy practices. If replicated widely, such initiatives could accelerate Indonesia's path toward a decentralized, low-carbon energy system. However, achieving this transformation requires coherent governance, consistent regulations, and stronger public–private collaboration mechanisms.

Overall, PT Uni-Charm's implementation of the PLTS Atap system demonstrates that policy success in the renewable energy sector depends not only on the quality of regulations but also on leadership, organizational culture, and cross-sectoral coordination. The company's experience highlights the need for adaptive governance—a framework that allows continuous learning, feedback, and adjustment as technology and policy evolve

4. Conclusion

The implementation of the Rooftop Solar Power Plant (PLTS Atap) policy, as stipulated in the Minister of Energy and Mineral Resources (ESDM) Regulation Number 26 of 2021 and its amendment Number 2 of 2024, reflects Indonesia's continuing efforts to advance energy transition and industrial sustainability. The case of PT Uni-Charm Indonesia Tbk demonstrates that the success of renewable energy policy implementation depends on more than regulatory design—it also hinges on organizational leadership, cross-sector collaboration, and the willingness of private actors to align business strategies with national environmental objectives.

1. Conclusion

The findings of this study lead to several key conclusions:

First, the implementation of PLTS Atap at PT Uni-Charm Indonesia Tbk was successful because of strong managerial commitment, adequate technical and financial resources, and effective inter-organizational communication. The company's proactive engagement with PT PLN, PT Xurya Daya Indonesia, and ESDM offices ensured that regulatory and technical requirements were met. This collaborative approach validates Van Meter and Van Horn's policy implementation model, particularly the importance of implementers' disposition and communication networks.

Second, the initiative demonstrates the applicability of Good Environmental Governance (GEG) principles in the industrial renewable energy sector. The company's transparency, accountability, and continuous reporting of environmental performance strengthened institutional trust and stakeholder

p – ISSN: **1693 - 7945**
e – ISSN: **2622 - 1969**

participation. By embedding renewable energy into its ESG framework, PT Uni-Charm not only improved its environmental footprint but also enhanced its corporate reputation and competitiveness.

Third, the results highlight the tangible benefits of PLTS Atap in reducing operational electricity costs and carbon emissions. Although regulatory changes—especially the elimination of the net-metering mechanism in Regulation No. 2/2024—affected the economic calculation of returns, the company maintained the project as part of its long-term sustainability investment. This attitude reflects a paradigm shift from short-term profit orientation to long-term environmental stewardship.

Fourth, the study identifies structural challenges in Indonesia's renewable energy policy environment, including regulatory instability, limited access to green financing, and inconsistent coordination between central and regional authorities. These issues underscore the need for policy coherence and institutional reform to enhance the effectiveness of future energy transition programs.

Finally, the experience of PT Uni-Charm reveals that successful renewable energy implementation in the industrial sector depends on aligning policy incentives with corporate motivations. When industries perceive renewable energy not only as a compliance obligation but also as a strategic opportunity, they become key partners in achieving national sustainability goals.

2. Policy and Managerial Recommendations

Based on the above conclusions, several recommendations are proposed for policymakers, industrial practitioners, and stakeholders:

a. For Government and Regulators

1. Ensure Regulatory Consistency

The frequent revision of PLTS Atap regulations creates uncertainty and deters investment. ESDM should maintain policy stability and avoid sudden changes that disrupt ongoing projects. Clear and consistent guidelines will strengthen investor confidence.

2. Enhance Coordination and Institutional Capacity

Strengthening coordination between central and regional energy offices is crucial. Establishing a digital one-stop service system for licensing, technical approval, and monitoring would reduce bureaucracy and speed up implementation.

3. Provide Fiscal and Financial Incentives

The government should introduce tax deductions, low-interest green loans, or carbon credit mechanisms to increase the economic attractiveness of rooftop solar projects. Such incentives would complement regulatory enforcement with positive motivation.

4. Support Capacity Building

Training programs for industries and local governments on renewable energy planning, monitoring, and maintenance should be developed. Technical assistance would empower more companies to adopt PLTS Atap systems effectively.

b. For the Industrial Sector

1. Integrate Renewable Energy into Corporate Strategy

Companies should treat renewable energy as a long-term strategic asset, not a compliance cost. Integrating PLTS Atap into ESG reporting enhances brand image and meets global supply chain requirements for sustainability.

p – ISSN: **1693 - 7945**
e – ISSN: **2622 - 1969**

2. Foster Public–Private Partnerships

Collaboration with EPC providers, financial institutions, and research organizations can help industries overcome technical and financial constraints. Joint pilot projects can also serve as learning platforms for best practices.

3. Adopt Adaptive Management Approaches

As renewable energy technologies evolve, industries should continuously assess system performance, financial outcomes, and environmental impacts. Regular evaluation ensures the sustainability and efficiency of energy transition initiatives.

4. Promote Employee Engagement in Sustainability Programs

Building internal awareness and participation strengthens the cultural foundation of sustainability. Workshops, internal campaigns, and incentive systems can encourage behavioral changes that complement technological adoption.

c. For Academia and Researchers

The study encourages further academic exploration into comparative cases of renewable energy policy implementation. Future research could analyze how different industrial sectors respond to varying regulatory conditions, financing models, and governance frameworks. Expanding research beyond Java to other provinces would provide a more representative understanding of Indonesia's renewable energy transition.

Implications for Energy Transition Policy

The experience of PT Uni-Charm Indonesia Tbk shows that industrial engagement is a cornerstone of Indonesia's energy transition. While the government sets the policy direction, industries play a decisive role in realizing implementation on the ground. Thus, fostering a supportive ecosystem that includes regulatory clarity, institutional coordination, and private-sector incentives will be key to achieving Indonesia's 23% renewable energy mix target and broader net-zero ambitions by 2060.

In the long run, the PLTS Atap initiative symbolizes the gradual shift from a centralized, fossil-based energy regime toward a decentralized, renewable, and participatory energy governance model. This transformation requires adaptive policies, responsive institutions, and an enabling environment where innovation and collaboration thrive. The success of PT Uni-Charm serves as an encouraging example for other industries to follow, demonstrating that sustainability and profitability can indeed coexist in the pursuit of national energy resilience and global environmental responsibility.

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