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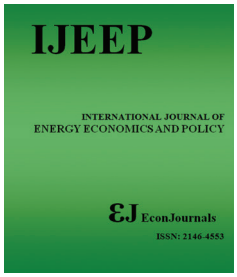

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Policy and Behavioral Gaps in Achieving Indonesia's Renewable Energy Mix Target

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ABSTRACT

The target of achieving 23% renewable energy in the energy mix by 2025 remains distant, as the actual figure in 2024 stands at only 13.1%. This study attempts to review the issue through the lens of the extended Theory of Planned Behaviour (TPB), aiming to understand the core reasons behind the failure to meet this target from the perspective of public behaviour. The focus is on assessing the impact of policy support on public behaviour regarding the adoption of new and renewable energy (NRE). The research employs a quantitative approach, involving 402 respondents from across Indonesia. Data were collected via an online survey and processed using structural equation modelling based on analysis of moment structures (SEM-AMOS). Empirical results demonstrate that all the hypotheses tested were supported. It was shown that policy support has a direct effect on attitude, subjective norms, perceived behavioural control (PBC), and the intention to use NRE. Notably, the hypothesis positing that attitude, subjective norms, and PBC mediate the relationship between policy support and the intention to use NRE was also supported. Furthermore, the public's evaluation of incentive policies designed to encourage community engagement with NRE received high scores, ranging from 7 to 8.3 on a 10-point scale. Overall, the findings reveal that the low level of NRE utilisation in the energy mix is attributable to limited public awareness of the policy, with 63% of the population unaware of its existence. Therefore, to achieve the target, the government must promptly develop an effective campaign strategy to raise public awareness and understanding of the NRE incentive policy over the long term. As a practical recommendation, the government should immediately implement such a campaign to enhance public knowledge and support for NRE incentives.

Keywords: Policy support, TPB, SEM-AMOS, NRE, Indonesia
JEL Classifications: Q58, Z13, C38, Q42

1. INTRODUCTION

The shift towards the use of NRE is a strategic issue at the global level in addressing climate change and promoting sustainable development. Indonesia aims to achieve 23% NRE utilisation by 2025. However, by 2024, NRE usage had only reached 13.1%, indicating a significant gap between the target and actual progress (Ministry of Energy and Mineral Resources–Republic of Indonesia, 2024). This situation suggests that NRE policies in Indonesia remain insufficiently effective in altering the behaviour of households and industries (Suparjo et al., 2021).

The Indonesian government's vision, known as 'Asta Cita' during the presidency of Prabowo Subianto, is designed to guide Indonesia's short-term development from 2024 to 2029. It emphasises the importance of energy sovereignty and environmental sustainability through a green energy transformation. This aligns with Sustainable Development Goal/SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action), which prioritise affordable and sustainable energy for all (United Nations, 2023). Consequently, in implementing policies to realise this vision, it is essential to balance the effectiveness of public policy with the dynamics of social behaviour.

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Referring to the TPB, behavioural intention is the primary predictor of actual behaviour (Ajzen, 2020). The three main components of behavioural intention are PBC, attitude, and subjective norms. PBC refers to a sense of competence and access to technology, while subjective norms relate to the influence of the social environment on individuals, and attitude reflects people's positive evaluation of NRE. External factors, such as government support, also play a significant role in reinforcing these three structures, especially in developing countries like Indonesia (Bößner et al., 2025; Liu et al., 2024). Fiscal incentives, regulatory clarity, and supporting infrastructure are examples of closely related policies. Observations in East Asia indicate that unstable regulations diminish behavioural intentions and erode public trust, whereas consistent policies foster positive public attitudes towards green energy (Di Giusto, et al., 2024). The main barriers to the implementation of clean technology in Indonesia include policy inconsistency, fossil fuel subsidies, and delays in NRE projects (Institute for Essential Services Reform, 2022; Loy et al., 2024; Wong and Dewayanti, 2024).

Perceptions of financial benefits and environmental awareness shape attitudes towards NRE. Individuals who are environmentally conscious are more likely to intend to adopt renewable energy. Subjective norms play a determining factor in collectivist countries such as Indonesia, where participation rates increase markedly when NRE adoption is perceived as behaviour valued by the social group. PBC helps bridge the gap between intention and behaviour. Individuals who believe they have control, resources, and technical capabilities are more likely to utilise renewable energy (Rana et al., 2025; Tran et al., 2025). Governments can strengthen PBC by providing access to technology, environmentally friendly financing, and green energy training programmes.

This study examines how policy support influences public behaviour in the adoption of NRE in Indonesia. Theoretically, it expands TPB by incorporating policy support as an exogenous variable that affects attitudes, subjective norms, and PBC in relation to behavioural intention. Such integrative approaches remain rare, particularly in developing countries, including Indonesia, which face complex behavioural and institutional challenges. The unique contribution of this study lies in its synthesis of public policy factors and social psychology to understand behavioural intentions towards adopting renewable energy technologies. Practically, the study aims to provide empirical insights into the causal reasons why, despite increased policy support, public acceptance of renewable energy remains low. The findings are significant for the implementation of government programmes and the achievement of the SDGs, confirming that the success of green energy transformation depends on patterns of behavioural change in society and the establishment of long-term policies.

2. THEORETICAL BACKGROUND AND HYPOTHESIS

2.1. TPB

The TPB, developed by Ajzen (1991), is one of the most fundamental models for explaining how human intentions and behaviours arise. Within this framework, three main components—attitude, subjective norms, and PBC—form the foundation influencing a person's intention to perform a particular action. This model has been widely employed to investigate pro-environmental behaviour and the adoption of new technologies, such as the use of NRE sources in households. In this scenario, TPB is particularly fundamental because the decision to adopt technologies such as solar panels is influenced not only by personal attitudes but also by social factors and individuals' perceptions of technical or financial barriers (Jun et al., 2025; Rana et al., 2025).

According to the findings of the latest study, the TPB is the most commonly used theoretical framework for understanding public intentions regarding the adoption of renewable energy. For example, a study by Tran and Vu (2025) on young consumers in Vietnam, investigating intentions to purchase renewable energy products, found that the three main constructs of TPB had a significant effect. Moreover, knowledge of sustainability issues and policy uncertainty also played a crucial role. A systematic review of photovoltaic adoption in developing countries found that social norms and PBC are highly determining factors, particularly in societies with strong collectivist values or limited energy infrastructure (Oliva and Atehortua Santamaria, 2025).

In the TPB, attitude refers to an individual's assessment of the benefits or drawbacks of a particular action. In the case of adopting NRE technologies, a positive attitude emerges when individuals recognise that technologies such as solar panels can help reduce electricity bills, optimise energy efficiency, and benefit the environment. Nevertheless, a positive attitude alone is insufficient, as household decisions are often influenced by external factors. A paper by Schulte et al. (2022) shows that cost constraints, access to technology, and other technical factors can diminish the impact of attitude on adoption intentions, especially in countries where renewable energy infrastructure support remains limited.

Subjective norms emphasise the function of social pressure or expectations. In many Asian societies, these norms can serve as a major catalyst, as essential decisions are often made with consideration of the opinions of family or community. Suntornsan et al. (2022) investigated energy-saving behaviour in Thailand, where social pressure was the strongest predictor of pro-environmental behaviour. This demonstrates that social influence can be a key strategy for encouraging the adoption of NRE technologies, particularly in cohesive community environments. Conversely, PBC refers to individuals' perceptions of their ability to perform an action. In the context of solar panels, PBC is often the most crucial pillar, as many potential users perceive financial barriers, complex installation processes, or a lack of technical support. In South Asia, even when attitudes and social pressure are favourable, adoption intentions remain low if PBC is poor, because structural barriers have not been addressed (Rana et al., 2025).

Although the TPB has proven to be highly useful, several studies have identified its limitations. Many investigations measure intentions without tracking actual behaviour. In addition, most studies employ cross-sectional designs, which are inadequate for capturing the dynamics of long-term behavioural change.

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Consequently, numerous experts have proposed an expanded TPB model that incorporates contextual factors such as cost perceptions, clarity of government regulations, moral values, and levels of awareness regarding renewable energy, thereby rendering the model more comprehensive (Tran and Vu, 2025). Rizaldy et al. (2025) reveal that TPB provides an excellent analytical framework for evaluating public perceptions of renewable energy use. Nonetheless, the application of TPB in technological fields, such as solar panels, would be more effective if it also considered factors representing the social, economic, and policy contexts of the community. With a more comprehensive approach, initiatives to promote sustainable energy adoption can be more effective, inclusive, and responsive to local needs.

2.2. Extended TPB with Policy Support

Integrating policy support as an exogenous variable within the extended TPB model offers a more comprehensive framework for understanding how communities make decisions regarding the implementation and adoption of renewable energy (Batool et al., 2024; Daiyabu et al., 2023; Sahu et al., 2026). Oliva and Atehortua Santamaria (2025) emphasise that policy support—whether in the form of financial incentives, regulatory simplification, financing programmes, or educational campaigns—creates structural conditions that influence how individuals evaluate technology, respond to social pressure, and assess their PBC. Thus, policy functions as an upstream factor that shapes attitudes, subjective norms, and PBC before these three elements form the basis for behavioural intention.

Literally, policy functions as an upstream factor that shapes attitudes, subjective norms, and PBC before these three pillars form the foundation for behavioural intention (Wang et al., 2021). Firstly, consistent and beneficial public policy can strengthen public attitudes towards renewable energy technologies. For example, when individuals understand that the adoption of solar energy is supported by government incentives or transparent net-metering procedures, their perception of the financial and environmental benefits increases. Such policies foster a sense of benefit, which contributes to greater interest and willingness to apply the technology. Secondly, policy support can reinforce subjective norms. Community-based programmes or campaigns often create social signals that adopting renewable energy aligns with collective values and expectations. When the community observes that their surroundings—whether neighbours, community leaders, or local institutions—also support or practise the use of clean energy, positive social pressure is generated. These social norms have proven to be a vital component of a cultural environment that prioritises social relationships and group harmony. Thirdly, policy support directly enhances PBC. Barriers that have previously posed obstacles—such as high initial costs, lack of technical access, or installation complexity—can be mitigated when policies offer subsidies, accessible credit, or readily available technical services. When individuals perceive these barriers as surmountable, their sense of agency increases, thereby narrowing the gap between intention and action.

Policy support influences not only the three dimensions of the TPB, but also behavioural intentions. Individuals are more likely to perceive renewable energy as a practical, safe, and low-risk option when government policies are supportive, transparent, and consistent. Strong policy support often reduces uncertainty, fosters confidence in the sustainability of the programme, and creates the perception that the action aligns with the direction of national development. This effect operates directly. Indeed, even before an individual evaluates their attitude or considers social pressure, clear policies can foster the belief that adoption is a rational and beneficial decision. Rizaldy et al. (2025) and Wacławik et al. (2025) emphasise that, in many studies, policies have been shown to accelerate the formation of intentions because they provide an institutional foundation that maximises security, trust, and certainty in decision-making.

Comprehensively updating the TPB to include policy support as both an initial factor and a direct predictor of behavioural intention offers a more complete understanding of how decisions regarding renewable energy adoption are made (Wang et al., 2021). This approach views public policy not as an external force but as an integral component of psychological and social processes that tangibly influence individuals' intentions and behaviours towards clean energy consumption.

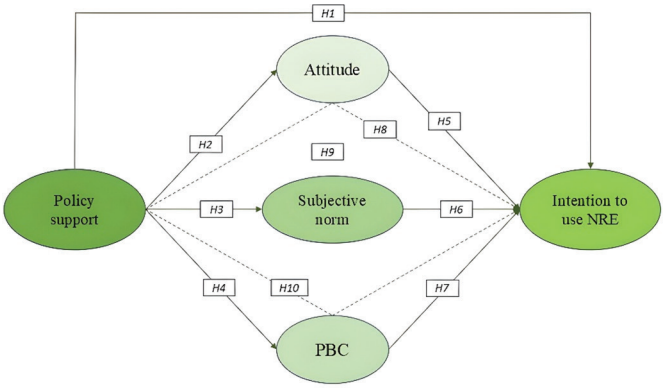
2.3. Conceptual Framework and Hypotheses

On the scale of this study, the TPB is extended by incorporating the variable of policy support, thereby providing a comprehensive model for understanding community behaviour in the adoption of renewable energy technology. This aims to accelerate the achievement of the 23% NRE usage target set by the Indonesian government. Figure 1 below presents ten hypotheses developed within the conceptual framework.

Referring to the existing literature and previous empirical papers, the following research hypotheses are proposed:

H_1: Policy support positively influences the intention to use NRE.
H_2: Policy support has a positive effect on attitudes.
H_3: Policy support has a positive effect on subjective norms.
H_4: Policy support has a positive effect on PBC.
H_5: Attitude has a positive effect on the intention to use NRE.
H_6: Subjective norms have a positive effect on the intention to use NRE.
H_7: PBC has a positive effect on the intention to use NRE.
H_8: Attitude mediates the effect of policy support on the intention to use NRE.

Figure 1: Conceptual framework



H_9: Subjective norm mediates the effect of policy support on the intention to use NRE.

H_{10}: PBC mediates the effect of policy support on the intention to use NRE.

3. METHODOLOGY AND MATERIALS

3.1. Approach and Instruments

This study aims to test hypotheses and examine the relationships between the variables under investigation, following the conceptual framework that has been developed. Consequently, a quantitative approach was selected for empirical application. The collected data will be processed using SEM-AMOS statistical tools, supported by descriptive statistics. This method will comprehensively test the model and hypotheses, supplemented by descriptive explanations to provide a holistic understanding of the phenomenon. In addition to testing hypotheses by exploring a series of causal relationships between variables, the study will also assess the effectiveness of several government policies designed to encourage public use of NRE. The study involves exogenous variables, namely policy support, attitude, subjective norms, and PBC as intervening or mediating variables, as well as endogenous behavioural variables in the form of intention to use NRE.

3.2. Sample Size and Data Collection

Technically, this study aims to generalise its results to the entirety of Indonesia; thus, the population comprises all households within the country. The sample of respondents was drawn from the major islands of Indonesia, namely: (1) Kalimantan, (2) Sumatra, (3) Java, (4) Sulawesi, (5) Bali and Nusa Tenggara, and (6) Maluku and Papua. Although Indonesia consists of more than six islands, these six are representative due to their large populations. The population size is in the tens of millions; to simplify the process, the sample size was estimated using a calculator from www.surveymonkey.com, resulting in 423 respondents. The sample was determined with a confidence level of 95% and a margin of error of 5%, yielding a total of 402 respondents. This sample size represents the minimum required.

The primary data source was obtained through observation, specifically via questionnaires completed by respondents. The information required for this study concerned the perceptions of decision-makers regarding family financial decisions. The criteria for selecting respondents were as follows: (1) Indonesian citizens aged between 21 and 65 years; (2) heads of household members knowledgeable about family finances; and (3) individuals capable of making or influencing family financial decisions. Based on these criteria, a stratified purposive sampling technique was employed. Data were collected through an online survey by distributing the questionnaire via WhatsApp, in accordance with the research location.

Data were collected over a period of 22 days, from 18 October 2025 to 9 November 2025. The online survey was conducted with 423 respondents, of whom 15 did not meet the requirements to complete the questionnaire, and a further 6 met the criteria but did not complete the questionnaire in full. As these individuals were excluded from the survey process, the final sample size for this study was 402 respondents. Data concerning the demographic profiles of respondents and their questionnaire responses, which included statement items, were tabulated quantitatively to test the causal relationships based on the constructed hypotheses.

3.3. Measurements and Data Analysis

The questionnaire comprises three sections. The first section gathers the demographic identity of the respondents. The second section includes items relating to the respondents' perceptions of the variables and their respective indicators. The third section reflects respondents' evaluations of the effectiveness of policies incentivising the use of NRE. The questionnaire items were compiled based on the operational definitions of the five variables explored, as summarised in Table 1.

Data analysis was conducted using SEM, which was performed using the software AMOS. The assessment and testing comprised two stages. The first stage involved measuring construct variables through confirmatory factor analysis (CFA). The CFA model is considered acceptable if it meets established validity and reliability criteria (Oktawiranti et al., 2025; Rahmawati et al., 2025). The second stage involved evaluating the overall feasibility of the research model using SEM; the model is deemed fit if it satisfies the specified fit criteria, resulting in an acceptable full model.

4. RESULTS

4.1. Respondent Demographics

Survey respondents were selected from the age range of 21-65 years, as they were considered to possess the cognitive capacity to comprehend the questionnaire content and provide accurate responses. Table 2 shows that respondents aged 21-25 years accounted for 31.1%, those aged 36-45 years 27.9%, 46-55 years 17.7%, and 56-65 years 17.7%. The majority of respondents were male (63.4%), with the remainder female (36.6%). Respondents' occupations varied considerably, with 26.1% employed in the private sector, 14.4% engineers, 14.2% entrepreneurs, 10.2% lecturers, and 10.2% PNS, while the rest were engaged in other fields and professions. Respondents were distributed across the major islands of Indonesia, based on their place of residence. The majority came from Java (21.1%), Sulawesi (17.7%), Kalimantan (17.4%), Bali and Nusa Tenggara (16.2%), Sumatra (16.2%), and the remainder from Maluku and Papua (11.4%). Given this distribution, the study meets the requirements for generalisation across Indonesia. Regarding educational background, 83.5% held formal academic qualifications as university graduates (diploma, bachelor's, master's, and doctorate degrees), while 16.4% had completed high school education.

Referring to the survey based on verified home or residence status, respondents owned their homes (71.4%), rented (13.9%), lived in other types of accommodation (13.4%), or resided in government-provided housing (1.2%). Regarding economic class, most respondents belonged to the upper-middle class, with monthly salaries (in national currency, converted to Indonesian Rupiah/IDR) of 2,000,000-5,000,000 (35.3%), 5,000,001-10,000,000 (31.3%), and 10,000,001-15,000,000 (14.2%). Respondents with higher salaries fell within the 15,000,001-25,000,000 (7%) and above

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Table 1: Measurement of variables

Variables name	Classification	Interpretation	Indicators	Adopted from
Policy support	Exogenous	The extent to which individuals perceive the government as providing regulations, incentives, facilities, and guidance that facilitate public adoption of NRE.	1. Clarity of regulations regarding the installation and use of NRE. 2. Availability of financial incentives, such as subsidies, tax breaks, and financing options. 3. Simplicity of administrative procedures, including permits, registration, and integration with the State Electricity Company (PLN). 4. Government infrastructure support (technical access and installation standards). 5. Government education and awareness campaigns highlighting the benefits of NRE.	Agupugo et al. (2024), Ma et al. (2025), Oduro et al. (2024), and Wojtaszek (2025)
Attitude	Mediation	A person's positive or negative assessment of renewable energy technology, encompassing perceptions of its benefits, risks, and the personal values associated with its use.	1. Perception of benefits, such as cost savings and environmental friendliness. 2. Perception of risks (damage and performance uncertainty). 3. Overall assessment: NRE is a suitable choice. 4. A desire to support clean energy as part of one's personal values.	Gârdan et al. (2023), Kurniawan et al. (2025), Rahmani et al. (2026), Wacławik et al. (2025), and Wall et al. (2021)
Subjective norms	Mediation	Social pressure or support experienced by individuals concerning the decision to use NRE.	1. Family support for adopting NRE. 2. Support from friends and relatives who encourage the use of NRE. 3. The influence of the community and neighbours who regard NRE as a positive practice. 4. Social expectations that individuals should switch to clean energy.	Batool et al. (2024), Muwanga et al. (2024), and Rana et al. (2025)
PBC	Mediation	The extent to which an individual feels capable of, or in control when, using NRE, including the availability of resources, technical capabilities, and minimal barriers.	1. Financial capacity to purchase and install an NRE system. 2. Ease of obtaining installation services and technical assistance. 3. Availability of information on how NRE works and its benefits. 4. The perception that NRE can be easily utilised. 5. Level of external barriers, such as cost, bureaucracy, and access to technology.	Vu et al. (2023) and Wong et al. (2024)
Intention to use NRE	Endogenous	How willing individuals are to use or install NRE in the near future.	1. A strong desire to begin using NRE. 2. A concrete plan to install solar panels within a specified timeframe. 3. A willingness to invest in renewable energy technologies. 4. A personal commitment to switch to clean energy.	Burgos Espinoza et al. (2024), Jaber et al. (2025), Rana et al. (2025), and Wong et al. (2024)

25,000,000 (1%) brackets. Meanwhile, 11.2% of respondents were in the lower-middle salary group, earning <2,000,000. The government has introduced several incentive programmes aimed at encouraging public use of NRE; yet, 94% of respondents were unaware of these initiatives, with only 6% aware. Despite this, awareness of the importance of NRE remains significant, with 50.7% considering its empowerment vital, while 59.3% expressed the opposite view. In practice, although the government provides subsidies for electric vehicle ownership as part of its policy to promote NRE in Indonesia, surveys show that only 6.7% of respondents own electric vehicles, while the remaining 93.3% do not use them.

4.2. Empirical Findings

4.2.1. Variable measurement model

The variable measurement model serves as a stage for testing the validity and reliability of a construct, involving the evaluation of both aspects. A variable is considered to have good validity for its construct or latent variable if its standardised factor loading (SFL) value exceeds 0.7 (Hair et al., 2024). Similarly, a construct is deemed to have good reliability if its construct reliability value is >0.7 and its average variance extracted (AVE) value exceeds 0.5. Following a series of data processing steps, all indicators exhibited an SFL value >0.7. Basically, all indicators used to measure the proposed model variables are regarded as valid. Besides, the reliability test results indicate that all variables have a construct reliability value above 0.7 and an AVE value above 0.5. In other words, it can be concluded that all variables demonstrate good validity and reliability.

4.2.2. Structural model

Structural model analysis must satisfy normality tests and goodness-of-fit (GoF) criteria. Normality tests are conducted to determine whether the data distribution follows a normal pattern. In this study, the normality assumption was assessed using Skewness and Kurtosis values. According to Hair et al. (2019), data are considered normally distributed if all indicators have Skewness values between −2 and +2 and Kurtosis values between −7 and +7. Since all indicators met these Skewness and Kurtosis criteria, it can be concluded that the questionnaire data

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Table 2: Respondent profile

Demographics	Categories	Frequency	%
Age	21-25	125	31.1
	36-45	112	27.9
	46-55	94	23.4
	56-65	71	17.7
Gender	Male	255	63.4
	Female	147	36.6
Educational qualifications	High school	66	16.4
	Diploma	33	8.2
	Bachelor's	185	46
	Master's	72	17.9
	Doctorate	46	11.4
Occupation	Engineer	58	14.4
	Lecturer	41	10.2
	Freelance	11	2.7
	Teacher	13	3.2
	Housewife	31	7.7
	Private employee	105	26.1
	Attending school/not working	25	6.2
	Retirees	12	3
	Civil servant	41	10.2
	Professional	8	2
	Entrepreneurs	57	14.2
Place of origin (island)	Bali and Nusa Tenggara	65	16.2
	Java	85	21.1
	Kalimantan	70	17.4
	Maluku and Papua	46	11.4
	Sulawesi	71	17.7
	Sumatra	65	16.2
Status of residence/place	Contract/rent	56	13.9
	Others	54	13.4
	Own property	287	71.4
	Official residence	5	1.2
Monthly salary (gross income)	<2,000,000	45	11.2
	2,000,000-5,000,000	142	35.3
	5,000,001-10,000,000	126	31.3
	10,000,001-15,000,000	57	14.2
	15,000,001-25,000,000	28	7
	>25,000,000	4	1
Use of NRE	No	378	94
	Yes	24	6
NRE usage incentive awareness programme	No	204	50.7
	Yes	198	49.3
Ownership of electric vehicles	No	375	93.3
	Yes	27	6.7

are normally distributed. Having met the normality requirements, the data were then tested for GoF. The estimation results for this model, obtained through a one-step approach to SEM produced GoF variations with fit measures, reference values, and findings as presented in Table 3.

A measurement model can be considered acceptable if it meets three or four of the indices outlined above, with a minimum requirement for each incremental and absolute index (Hair et al., 2019). As shown in Table 3, testing using a one-step approach to SEM implies that the current model does not adequately satisfy these criteria. Similarly, none of the absolute fit measures exceed the GoF threshold, necessitating error modification through modification indices applied to the correlations between errors. The post-modification GoF calculation is visualised in Figure 2.

Table 4 highlights that, after error modification, all GoF assumptions are met, allowing the subsequent testing process to proceed. Next, hypothesis testing is conducted to examine whether the exogenous variables have an effect on the endogenous variables. The testing criteria specify that if the critical ratio (CR) exceeds the t-table value of 1.96, or if the P-value is below the 5% significance level, the effect is considered statistically significant. Under these conditions, a significant effect between the variables analysed is established, and the hypothesis is accepted.

Testing of seven hypotheses concerning the direct effects between exogenous and endogenous variables showed that all hypotheses were deemed acceptable. This was because they met the criteria of a critical ratio (CR) value >1.96, with a probability below 5%, except for the hypothesis testing the effect of subjective norms on the intention to use NRE, which had a CR value and probability close to the threshold. The estimations of the specific hypothesis tests on the direct relationships between variables are contained in Table 5.

Testing for indirect effects, or the use of mediation analysis, also led to the acceptance of all hypotheses. As shown in Table 6, where the effect of policy support on the intention to use NRE is mediated by attitude, subjective norms, and PBC, all hypotheses were supported. Specifically, Hypotheses 8, 9, and 10 were all accepted.

4.2.3. Descriptive statistics

In addition to hypothesis testing, descriptive statistics—including minimum, maximum, and mean values—are also presented (Table 7). The five value ranges in the descriptive statistics and their corresponding categories are as follows: (1) 1-2.8 = very low, (2) 2.81-4.6 = low, (3) 4.61-6.4 = moderate, (4) 6.41-8.2 = high, and (5) 8.21-10 = very high. These descriptive statistics illustrate respondents' reactions to the government's policy initiatives aimed at encouraging the public to use NRE. The nine government policies include: (1) Direct financial incentives, (2) tax and fiscal incentives, (3) electricity tariff schemes, (4) ease of licensing and regulation, (5) green credit financing support, (6) education, training and socialisation, (7) non-monetary incentives and awards, (8) infrastructure support and technology access, and (9) policy consistency and transparency.

The maximum value for all policies is 10, while the minimum is 1. Interestingly, the mean values vary considerably. Among the nine policies, the mean value for the electricity tariff policy is categorised as very high (8.23), whereas the majority of the others are classified as high, ranging from 7.17 to 8.19. These nine existing policies have been approved by the government with the aim of encouraging the public to transition to renewable energy, which, in the long term, will help protect the environment from damage. This data will provide crucial information to inform and sharpen the discussion.

5. DISCUSSION

5.1. Policy Support for Intention to Use

Public policy support, in the form of clear regulations, financial incentives, simplified licensing procedures, and accessible

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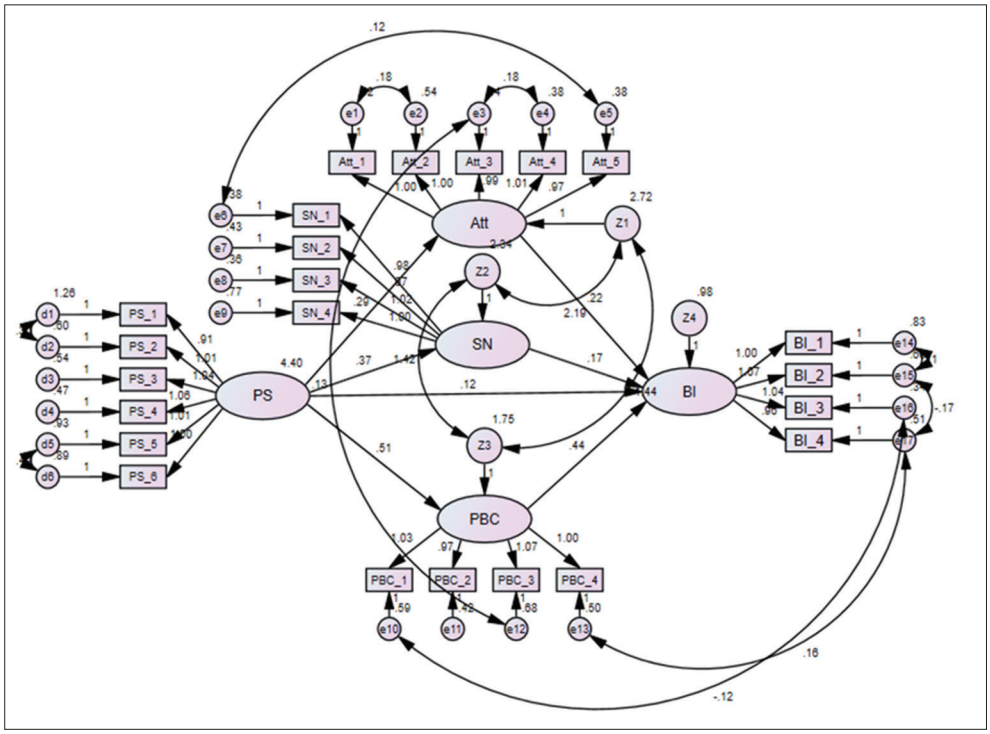
Table 3: Modelling parameters based on GoF

GoF	Size compatibility	Reference value	Results	Remarks
Absolut fit measure	Goodness of fit index (GFI)	GFI≥0.9	0.751	Bad fit
	Root mean square error of approximation (RMSEA)	RMSEA≤0.08	0.122	Bad fit
	Satndardized root mean square residual (SRMR)	SRMR≤0.08	0.237	Bad fit
	Normed Chi-square (NCS)	CMIN/DF≤2	6.988	Bad fit
Incremental fit measure	Normed fit index (NFI)	NFI≥0.9	0.887	Marginal fit
	Non-normed fit index (NNFI)	TLI≥0.9	0.888	Marginal fit
	Comparative fit index (CFI)	CFI≥0.9	0.901	Good fit
	Incremental fit index (IFI)	IFI≥0.9	0.902	Good fit
	Relative fit index (RFI)	RFI≥0.9	0.872	Marginal fit
Parsimonious fit measure	Parsimonious normed fit index (PNFI)	PNFI≥0.5	0.782	Good fit
	Adjusted goodness of fit index (AGFI)	AGFI>0.9	0.692	Bad fit

Figure 2: GoF post-modification error



information on NRE plays a crucial role in increasing public willingness to utilise it. Such policies are considered external elements that facilitate implementation, leading the public to perceive that adopting NRE is not only environmentally beneficial but also straightforward and affordable. When the government provides subsidies or financial assistance for the installation of solar panels, clarifies legal and administrative procedures, and appoints easily accessible vendors and services, the public believes that technical and financial barriers can be overcome. These favourable conditions inspire confidence in their ability to switch to NRE, resulting in an increased behavioural intention—namely, the intention to install solar panels or use energy from renewable sources.

Empirical findings support this mechanism. A cross-country study examining the determinants of renewable energy technology adoption by households shows that government policies, particularly incentives and licensing facilities, are positively and significantly correlated with adoption intentions (Guta, 2020; Li et al., 2024). Similarly, examples from Indonesia show that policy interventions such as subsidies and simplified administrative procedures influence households' interest in installing photovoltaic (PV) systems on their roofs (Afifi et al., 2025; Eliva et al., 2025; Bekti et al., 2022; Hidayatno et al., 2020). This academic evidence clearly indicates that policy support can act as a catalyst, transforming mere interest into concrete intentions to switch to NRE.

In Indonesia, the rise in demand for solar power installations following the introduction of incentives or special programmes by local or central government provides a clear illustration of how policy can stimulate adoption intentions. Individuals who were previously hesitant due to cost or procedural barriers now feel empowered and motivated to install solar panels, particularly when vendors are accessible and regulations are transparent. In other words, it is evident that policy support is not an abstract concept; rather, it is a tangible and decisive factor in shaping the public's intention to use NRE. Policies addressing economic, technological,

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Table 4: Modelling parameters based on modified GoF

GoF	Size compatibility	Reference value	Results	Remarks
Absolut fit measure	Goodness of fit index (GFI)	GFI≥0.9	0.902	Good fit
	Root mean square error of approximation (RMSEA)	RMSEA≤0.08	0.06	Good fit
	Satndardized root mean square residual (SRMR)	SRMR≤0.08	0.036	Good fit
	Normed Chi-square (NCS)	CMIN/DF≤2	2.429	Marginal fit
Incremental fit measure	Normed fit index (NFI)	NFI≥0.9	0.963	Good fit
	Non-normed fit index (NNFI)	TLI≥0.9	0.973	Good fit
	Comparative fit index (CFI)	CFI≥0.9	0.978	Goof fit
	Incremental fit index (IFI)	IFI≥0.9	0.979	Good fit
	Relative fit index (RFI)	RFI≥0.9	0.955	Good fit
Parsimonious fit measure	Parsimonious normed fit index (PNFI)	PNFI≥0.5	0.799	Good fit
	Adjusted goodness of fit index (AGFI)	AGFI>0.9	0.871	Marginal fit

Table 5: Partial effect test

Hypotheses and lingkages	Estimate	Standard error	Critical ratio	P-Value	Decisions
H_1: Policy support→intention to use NRE	0.115	0.035	3.303	0.000	Acceptable
H_2: Policy support→attitude	0.290	0.041	6.973	0.000	Acceptable
H_3: Policy support→subjective norms	0.369	0.04	9.282	0.000	Acceptable
H_4: Policy support→PBC	0.511	0.036	14.032	0.000	Acceptable
H_5: Attitude→intention to use NRE	0.218	0.075	2.922	0.003	Acceptable
H_6: Subjective norms→intention to use NRE	0.170	0.086	1.99	0.048	Acceptable
H_7: PBC→intention to use NRE	0.437	0.064	6.884	0.000	Acceptable

Table 6: Mediation effect test

Hypotheses and lingkages	Estimate	Standard error	Critical ratio	P-Value	Decisions
H_8: Policy support→attitude→intention to use NRE	0.033	0.011	2.985	0.003	Acceptable
H_9: Policy support→subjective norms→intention to use NRE	0.043	0.014	3.112	0.002	Acceptable
H_{10}: Policy support→PBC→intention to use NRE	0.059	0.018	3.216	0.001	Acceptable

Table 7: Descriptive statistics on government policy

Policies	n	Minimum	Maximum	Mean	Remarks
Direct financial incentives	402	1	10	8.1	High
Tax and fiscal incentives	402	1	10	7.99	High
Electricity tariff schemes	402	1	10	8.23	Very high
Ease of licensing and regulation	402	1	10	8.19	High
Green credit financing support	402	1	10	7.07	High
Education, training, and socialisation	402	1	10	7.89	High
Non-monetary incentives and awards	402	1	10	7.84	High
Infrastructure support and technology access	402	1	10	8.05	High
Policy consistency and transparency	402	1	10	7.17	High

regulatory, and informational aspects simultaneously enhance perceptions of feasibility and capability, leading to a significant increase in behavioural intentions towards renewable energy.

5.2. Policy Support for Attitudes

Policy support significantly influences public attitudes, implying that public policy plays a vital role in shaping both the cognitive and affective perceptions of NRE. Strong policy support—including clear regulations, economic incentives, public awareness initiatives, transparency, and opportunities for citizen participation—has a markedly positive impact on public attitudes. Current research also demonstrates that informative and consistent policies enhance public knowledge and awareness of the environmental and economic benefits of low-carbon technologies. Feinnudin et al. (2024) found that policy clarity, public awareness, and economic barriers are the most significant determinants of attitudes towards NRE among Indonesian households. In practice, this underscores that when policies provide comprehensive information and access to reliable knowledge, the public perceives NRE as a valuable solution, thereby fostering a positive attitude.

In addition, economic incentives such as subsidies for solar panel installation, special green energy tariffs, or low-interest financing, if effectively communicated, lead to a more favourable utilitarian assessment of NRE. Scheller et al. (2024) found that perceptions or impressions of benefits—both environmental and financial—are the most valuable predictors of attitudes towards clean energy technologies, and that government policy incentives reinforce these perceptions. Similar findings were reported by Ali et al. (2022), who confirmed that policy designs combining incentives and information significantly influence public acceptance of renewable energy.

Another very useful component is trust in institutions and perceptions of policy legitimacy. In a study on public acceptance of energy restructuring, Raghu et al. (2023) asserted that socio-

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political control—specifically, the perception that citizens have a voice in the formulation and implementation of energy policy—substantially strengthens positive attitudes towards NRE. This aligns with global findings from multi-country papers by Chen et al. (2025), Gu et al. (2024), and Radtke and Renn (2024), which emphasise that policy legitimacy and government transparency are critical aspects in shaping attitudes and intentions to adopt renewable energy within communities in developing markets.

The evidence from Indonesia reveals a consistent pattern. In communal rooftop projects involving Solar Power Companies (PLTS), Village-Owned Enterprises (BUMDes), local governments, and communities engaged through training, socialisation, and participation in management, there is a stronger pro-NRE attitude. The rationale for this is that participants experience direct benefits and have confidence in the programme's sustainability. Conversely, some large-scale NRE projects, such as geothermal initiatives, have encountered resistance. For instance, Avicenna et al. (2023) explain that such opposition typically arises when policies are perceived as lacking transparency or failing to allow for participation. This highlights that the quality of policy support, rather than the mere existence of policies, determines the development of attitudes.

Overall, the influence of policy support on attitudes is acceptable in terms of both theoretical premise and empirical evidence. Clear, credible policies that provide tangible benefits and actively involve the community form the primary foundation for fostering positive attitudes towards NRE. Based on this quantitative fact, to enhance public acceptance of NRE in Indonesia, the government should develop policy designs that simultaneously integrate the dimensions of information, incentives, institutional trust, and public participation.

5.3. Policy Support for Subjective Norms

Other findings detect that policy support has a significant effect on subjective norms regarding the use of NRE. This can be explained by the function of public policy in shaping individuals' perceptions of what is considered useful, appropriate, and expected within their social environment. Subjective norms here refer to a person's beliefs about social support or pressure from family, friends, neighbours, and the wider community concerning the use of renewable energy. The latest manuscript represents that government assistance—whether in the form of legislation, incentives, or information—has the potential to influence public opinion on renewable energy. When the government shows a strong commitment to NRE, the public perceives its use as socially valued behaviour. Muwanga et al. (2024) confirm that social norms, including encouragement or support from family and social networks, play a crucial role in household decision-making to adopt solar energy technology. This evidence confirms that supportive policies can increase the social legitimacy of NRE, making individuals feel obliged to participate.

Furthermore, a meta-analysis by Milani et al. (2024) concluded that the social acceptance of renewable energy is greatly influenced by social factors such as trust in institutions, a sense of community, and public narratives shaped by government policies. When policies are perceived as credible and consistent, the public tends to accept the use of NRE as a normal and expected practice. This finding aligns with the views of Batool et al. (2024), He and Qian (2023), and Muwanga et al. (2024), who suggest that household-level adoption of NRE increases when people observe its successful implementation firsthand. This effect occurs when there is a growing perception that the surrounding community supports this behaviour, thereby reinforcing subjective norms.

To date, communal rooftop PV schemes, energy-independent villages, and community-based micro-hydro projects in Indonesia often show a trend whereby residents begin to perceive NRE as commonplace and socially endorsed when local governments actively provide legislative and promotional support. For example, in many villages in East Nusa Tenggara (NTT), the use of NRE has surged following government incentives and assistance, with residents reporting that they adopt solar power because others are already using it and the government encourages the practice. Conversely, despite enormous potential, NRE adoption remains low in places with poor outreach, suggesting that policy has less influence on behaviour when strong social norms are absent. Therefore, policy support significantly affects subjective norms, as robust, clear, and well-promoted policies can shape collective perceptions of what is considered appropriate and expected within the community, thereby reinforcing public subjective norms about NRE use.

5.4. Policy Support for PBC

The results of hypothesis testing showing that policy support has a significant effect on PBC in the use of NRE. This suggests that government policy not only shapes social norms and attitudes but also enhances individuals' perceptions of their ability to utilize NRE. In the TPB framework, PBC refers to individuals' perceptions of their capability, access, and the absence of technical and financial barriers when adopting specific technologies. Policy support plays a critical role in reinforcing these perceptions because regulations, incentives, infrastructure provision, and educational programs can reduce perceived barriers and increase the public's sense of control. Sitaraman et al. (2025) and Tibebu et al. (2024) revealed that policies offering financial incentives, technical assistance, and procedural conveniences significantly influence the public's willingness to adopt renewable energy technologies in metropolitan areas. Similarly, Afifi et al. (2025) and Eliva et al. (2025) found that Indonesian government policies are closely correlated with perceptions of resource availability, enhancing the public's confidence in acquiring and operating NRE installations, particularly rooftop PV.

Scientific works conducted across international boundaries support the results of testing the above hypothesis. Substantively, Prokopenko et al. (2025) and Štreimikienė et al. (2022) state that targeted and measured public regulation creates an environment that reduces risk and uncertainty, thereby increasing individuals' confidence in their technical and financial capacity to engage in NRE. Policy acts as an external factor that tangibly lowers perceived barriers while enhancing perceived facilitators, both of which are key components of PBC.

A similar trend is observed in Indonesia, particularly in household rooftop PV programs. In several cities, including Surabaya and Denpasar, the public reported feeling more capable of adopting rooftop PV due to local government outreach, clear installation procedures, and easy access to certified vendors (Institute for Essential Services Reform, 2022). Conversely, in areas with minimal regulations and limited outreach, the public perceives NRE as complex, expensive, and difficult to access, resulting in low PBC despite its significant energy potential. This phenomenon shows that government support provides a structure that enables the public to feel capable of adopting NRE technology, thereby significantly influencing PBC.

5.5. Attitude towards Intention to Use

Other hypothesis testing results detected that attitude has a substantial impact on the intention to use NRE. This finding aligns with the literature based on the theory of planned behavior (TPB), which identifies attitude as a direct predictor of behavioral intention. According to TPB, attitudes are shaped by cognitive and emotional evaluations of the benefits and consequences of an activity. When individuals perceive that using NRE offers environmental benefits, long-term financial savings, and positive social value, their attitudes tend to be more favorable. This positive mindset strengthens the intention to adopt NRE.

Several previous empirical studies support this synthesis. A study by Ghosh and Prasad (2024) shows that perceptions of environmental and economic benefits play a systematic role in shaping attitudes toward household solar panel systems, which in turn influence the intention to install them. Similarly, Eppe et al. (2025) and Wong et al. (2024) report comparable findings, showing that under low-carbon technology conditions, attitudes are the most consistent predictor of intention compared to other TPB variables, especially when structural barriers are minimal. This research aligns with the concept that developing positive attitudes is a crucial step in promoting the adoption of clean energy technologies.

In a country like Indonesia, a similar pattern can be observed. Communities that care about the environment and understand the benefits of NRE are more likely to adopt this technology. According to Burgos Espinoza et al. (2024), awareness of environmental implications and the potential for reducing electricity costs greatly helps to forming a positive attitude, which in turn supports the intention to switch to NRE in urban households. Even so, external constraints such as initial installation costs, access to technology, and government legislation often influence the realization of these intentions. This indicates that, although positive attitudes are essential determinants, their effectiveness depends on adequate government support. Broadly speaking, consistent with the theoretical foundations of the TPB and recent empirical evidence, reinforcing positive attitudes toward NRE through public education, environmental campaigns, and the dissemination of economically based information is a strategic phase in building public behavioral intentions. A combination of psychological interventions aimed at attitude transformation and supportive structural policies can accelerate the transition toward greater renewable energy use.

5.6. Subjective Norms towards Intention to Use

According to the results of hypothesis testing, the use of NRE is significantly influenced by subjective norms in relation to behavioral intentions. This finding aligns with the fundamental principles of the TPB. Specifically, subjective norms—defined as individuals' perceptions of support, expectations, or social pressure from specific groups—are a key factor influencing the formation of behavioral intentions. People are more likely to intend to adopt NRE when they believe that important individuals in their lives, such as family members, neighbors, co-workers, or public leaders, approve of its use.

This correlation has been reinforced by recent empirical findings. Wall et al. (2021) emphasize the critical role of social norms in shaping families' intentions to adopt clean energy technologies, particularly when these norms are supported by credible and reputable social circles. Personal attitudes toward the technology are not always the strongest predictors of solar energy adoption intentions; rather, the influence of family and local community often serves as a catalyst. Explicitly, individuals respond more strongly to social pressure when the observed behaviors are public and visible, such as the installation of solar panels (Johnson and Reimer, 2023; Yoo et al., 2025).

This trend is also evident in Indonesia. The spillover effect resulting from the increase in solar panel installations reinforces the social norm that the use of NRE is common and expected in many large cities. Social expectations that using clean energy reflects ecologically responsible behavior are further amplified by government initiatives, such as the 'Kampung Iklim' (Climate Village) program (Fatkhullah et al., 2023; Niu et al., 2023). Adopting NRE is viewed as more than a personal choice; it gains social validation when supported by community leaders and environmental groups. Hence, the findings of this study support the idea that subjective norms play a significant role in shaping behavioral intentions as a social mechanism. The implications for accelerating the transition to clean energy in Indonesia are substantial, as individuals' intentions to adopt NRE tend to increase when community examples reinforce social expectations and encouragement.

5.7. PBC on Intention to Use NRE

Hypothesis testing indicates that PBC significantly influences behavioral intentions regarding the use of NRE. According to Corvello et al. (2024) and Nguyen (2017), perceived ability to carry out (PACO) is a construct within, or at least closely related to, the TPB. It refers to individuals' perceptions of their capability to perform an activity, considering factors such as available resources, technical skills, and the ease of the procedure. People are more likely to implement NRE when they believe they can overcome obstacles and possess the necessary skills to do so.

These findings are consistent with various recent scientific studies. Jaber et al. (2025) found that perceptions of ease of installation, technical support, and affordability are strong predictors of households' intentions to adopt solar technology. Rana et al. (2025) also reported that regulatory clarity, access to information, and the provision of technical services directly strengthen perceptions of

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control, particularly in developing countries with energy systems undergoing transition. Meanwhile, Fazal et al. (2023) emphasise that PBC is a key element in technology frameworks requiring large initial investments or specific technical knowledge, such that perceptions of personal capability play a fundamental role in shaping intention.

In the Indonesian context, dynamics consistent with these findings have emerged. In cities such as Bandung, Denpasar, and Surabaya, an increasing number of people are interested in using rooftop solar power systems (Afifi et al., 2025). This trend is largely due to the growing number of official vendors, enhanced technical guidance, and local governments facilitating the installation process. As people become more familiar with the technology and perceive the installation process as manageable, they feel a greater sense of control (Gayan Nayanajith and Damunupola, 2021; Pan, 2020). There is a prevailing belief that adopting renewable energy is both a worthwhile and achievable endeavour, supported by policies such as incentives and streamlined licensing procedures. Existing evidence suggests that PBC not only reflects how capable individuals believe themselves to be but also functions as a psychological mechanism linking structural factors and behavioural intentions. People are more likely to commit to switching to clean energy if they feel they have greater control over the renewable energy adoption process (Gobel et al., 2024). The theoretical and practical implications of these empirical facts underscore the need for policy interventions aimed at improving technical literacy, reducing administrative barriers, and enhancing access to support services to accelerate renewable energy adoption in Indonesia.

5.8. Policy Support for Intention to Use through Attitude, Subjective Norms, and PBC

The test results indicate that attitude, subjective norms, and PBC serve as significant mediators in facilitating the influence of policy support on behavioural intentions to adopt NRE. This academic evidence reinforces the extended TPB, which posits that policy acts as a structural determinant influencing psychological processes prior to the formation of behavioural intentions. Theoretically, policy support does not inherently generate intentions; it must first affect individuals' assessments, social norms, and perceived competence. Ajzen (1991; 2020) argues that external factors can influence intentions only through the beliefs that shape attitudes, norms, and behavioural control.

Policy support has been shown to encourage positive attitudes by offering incentives, clarifying regulations, and communicating more frequently with the public. This helps communities to view the benefits of renewable energy more favourably. Nguyen and Ponomarenko (2025) demonstrate that government education initiatives and subsidy programmes can enhance public perception of the economic and environmental benefits of using solar panels. In Indonesia, this trend is evident in the growing interest among urban households in installing solar panels on their roofs. This is largely due to the government's introduction of a net-metering scheme and a clean energy education programme, which have increased public confidence that renewable energy is an effective solution to future challenges.

Policy support also reinforces subjective norms by presenting early adopters as social role models through public campaigns, community engagement, and communication. Chan et al. (2022) emphasise that policy changes can influence perceptions of social norms, leading individuals to believe that the use of renewable energy is both expected and regarded as exemplary by families and communities. This condition is evident in Indonesian society, exemplified by green community initiatives in major cities that promote the adoption of rooftop solar power through collaborative educational activities. In addition to policy support, PBC is enhanced by reducing cost, technical, and administrative barriers. The perception that renewable energy use is easier and more affordable is fostered by simplified installation procedures, the availability of technical services, and financial assistance. In Indonesia, the government has established guidelines for rooftop solar panel installation and integrated service platforms (Redaputri et al., 2024). This increases public confidence in their ability to use this technology, as they have access to the necessary skills and support.

These three mediators operate simultaneously. Attitudes convert policy support into positive beliefs, subjective norms confer social legitimacy, and PBC enhances individuals' sense of capability. In reality, the effectiveness of policies in increasing the intention to use renewable energy depends not only on the content of the regulations but primarily on their ability to engage the psychological mechanisms outlined in the TPB. Indeed, this aligns with La Barbera and Ajzen's (2020) statement that public policies are effective when they influence the fundamental beliefs underpinning the TPB construct.

5.9. The Gap between Policy Effectiveness and Public Behaviour regarding NRE Use

Quantitative findings indicate that policy support significantly influences attitudes, subjective norms, PBC, and directly affects the public's intention to utilise NRE. However, empirical evidence reveals a discrepancy between policy effectiveness and the actual level of national NRE utilisation. In 2024, Indonesia's NRE mix was approximately 13.1%, which remains well below the 23% target set for 2025. This shortfall is not attributable to the quality of the policies, as the seven policy types reviewed received favourable ratings from the public. Rather, it stems from low levels of public awareness, with 63% of respondents unaware of the existence of these policies.

Within the extended TPB framework, this condition indicates that substantively effective policies have not yet fully taken effect because they have not activated psychological mechanisms across a broader population. New policies can influence attitudes, social norms, and perceptions of control when they are initially recognised and understood by the community. With low levels of awareness, only a small proportion of the population forms a favourable evaluation of NRE policies, perceives social support for their use, or feels technically and financially capable of adopting them. Hence, although concrete policy support influences informed respondents, this impact is not uniformly reflected across the general population.

Limited public awareness significantly influences behavioural intentions. Such intentions require stimuli, including clear

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information, exposure to campaigns, and an understanding of the benefits and technical procedures involved. When the majority of the public is unfamiliar with incentive policies, simplified procedures, and other government programmes, they lack the internal motivation to form the intention to use NRE, despite the policy being structurally designed to facilitate the adoption process. For this reason, the slow increase in the NRE mix is more attributable to issues concerning how information is disseminated and how policies are communicated than to weaknesses in the policy instruments themselves. Evidence on the ground confirms that public awareness strategies are a crucial part of effective energy policies work. The government needs to make policy communication more accessible to all in order to engage a broader audience and accelerate progress towards national goals. This will support the psychological mechanisms central to the TPB model, enabling them to function optimally across all sections of society.

6. CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

The results of research using SEM-AMOS, supported by online survey data from 402 respondents, show that all tested hypotheses were empirically accepted. In the context of NRE, policy support has a significant impact on intention to use, attitude, subjective norms, and PBC. Regarding mediation effects, the findings indicate that policy support influences intention to use through attitude, subjective norms, and PBC. In addition to the incentive policies formulated by the Indonesian government being effective in encouraging the use of NRE, they also received favourable assessments from the community, as reflected in the respondents' opinions. The essence of the policy content appears to be optimal. Unfortunately, 63% of respondents were not yet aware of the existence of the NRE enforcement policy. This lack of awareness could be the root cause of future obstacles to the implementation of the NRE policy.

Although empirical data contribute to and have implications for academic insights, this study has evident limitations. One such limitation is that the distribution of respondents remains heavily skewed towards the highly educated, predominantly within the middle-income group. Additionally, the use of an online survey method may lead to misunderstandings or misinterpretations of the items developed based on the variables. To enhance the generalisability of the modelling results, the study should consider two main points. First, stratification should be applied when determining the sampling, ensuring that the information produced is more measurable, valid, and reflective of the actual conditions within Indonesian society. Second, the survey could be conducted using a hybrid approach, combining online and offline methods, to achieve a more balanced stratification. Policies will be effective in driving the actual behaviour of individuals implementing NRE only if the policy exposure is accepted and directly experienced by the majority, or ideally all, levels of society. Therefore, it is understandable that the use of NRE remains low, as it is known only to a small segment of the community and is highly dependent on their level of awareness.

The information generated by current research is highly valuable to the government. Alternative steps for advancing the government's strategy include developing programmes such as effective socialisation and campaigns to ensure that policies are widely known and understood by the community. This approach could potentially increase the public's intention to switch to using household products based on NRE or, at the very least, clinically tested, environmentally friendly certified products. Although the future direction and focus should be on translating this awareness into actions and behaviours, the government must also provide adequate, accessible, and affordable infrastructure. Ultimately, the target of 23% NRE usage can be achieved in the near future and will prove beneficial in the long term.

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