Gender, Institutional Trust, and Spatial Resistance to Nuclear Power Plants: A National NIMBY Study from Türkiye

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Abstract

This study examines local resistance to nuclear power plants (NPPs), specifically the NIMBY (Not in My Backyard) phenomenon, in the context of Türkiye's nuclear energy policy, with particular attention to gender. The study employed a correlational survey design. Data were collected from 703 respondents selected from a multistage random sample drawn by TurkStat to represent the national population. The data were analyzed using hierarchical logistic regression, multivariate analysis of variance (MANOVA), McNemar test, and serial mediation analysis. Education and self-reported knowledge of nuclear safety were not significantly associated with local NPP acceptance, providing no support for the Knowledge Deficit Model in the Turkish sample. Female respondents reported substantially higher local opposition (77.6%), and this pattern did not vary by parental status. The findings suggest that the gender gap in nuclear attitudes is more closely associated with heightened risk perception and lower institutional trust than with parental status. In the relocation-intention model, perceived macro-level benefits and demographic variables were no longer statistically significant. Overall, the results indicate that public acceptance of nuclear energy projects in Türkiye is shaped less by knowledge or anticipated economic benefits than by institutional trust in decision-making bodies.

Keywords: NIMBY, gender, nuclear power plant, institutional trust, risk perception

1. Introduction

Rising global energy demand, climate change mitigation targets, and energy supply security concerns arising from recent geopolitical crises have returned nuclear energy to the forefront of governments' strategic planning. In the context of reducing dependence on fossil fuels and meeting greenhouse gas emission commitments, nuclear energy is considered a sustainable alternative at the macro level. The European Union's inclusion of nuclear energy in its green investment

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taxonomy in 2022 and the international recognition of nuclear energy's role in reducing carbon emissions at the 28th Conference of the Parties (COP28) in 2023 reflect this trend in energy policy [1,2].

In line with global strategies, Türkiye is taking steps to incorporate nuclear energy into its national portfolio to meet rising electricity demand, diversify its energy supply, and limit the macroeconomic risks associated with dependence on energy imports. With the Akkuyu Nuclear Power Plant (NPP) (in Mersin province) nearing completion, Türkiye is approaching its first operational experience with nuclear power. Under the National Energy Plan, Türkiye aims to increase the installed capacity share of nuclear energy within primary energy sources to 5.9% by 2035, a target supported by new NPP projects planned for the provinces of Sinop and Kırklareli [3].

The long-term sustainability of nuclear energy policies depends not only on technological, legal, and economic infrastructure, but also on public acceptance of and consent for these projects. Past nuclear accidents, concerns over radioactive waste management, and anxieties surrounding the physical safety of facilities can generate strong societal resistance to nuclear energy investments and may disrupt macro-level energy policy when social consensus cannot be achieved.

Comparative research has not reached a consensus on whether nuclear-related risk perception and resistance are shaped primarily by national institutional contexts or by more general psychological mechanisms. Survey evidence has linked public support to whether a country operates NPPs [4,5]. Nuclear-energy discourses also differ across otherwise comparable countries, including Finland, France, and the United Kingdom [6]. Longitudinal evidence from Switzerland shows that acceptance, perceived benefits, and trust became more negative following the Fukushima accident in 2011, although the relationships among the principal determinants of acceptance remained broadly stable [7]. Cross-national evidence further indicates that acceptance depends on more than a country's reliance on nuclear power alone: some heavily nuclear-dependent countries show comparatively low support, while some countries without nuclear power show comparatively high support, pointing to a role for broader institutional and sociocultural context [8]. Comparative evidence from the United States and France also suggests that differences in institutional trust may be more important than differences in risk perception itself [9,10]. Together, these findings motivate an examination of whether gendered nuclear resistance reflects a broadly recurring risk–trust mechanism, a country-specific institutional context, or both.

A review of the literature specific to Türkiye reveals that empirical studies on nuclear energy perception have largely been confined to particular provinces and conducted with narrowly defined subsamples, such as pre-service teachers or students [11–16]. The absence, over the past 17 years, of a nationwide study examining risk perception, institutional trust, and the Not in My Backyard (NIMBY) phenomenon using a comprehensive sociodemographic dataset representative of the entire country [17] represents a gap in the literature.

Beyond this national gap, the study addresses a methodological limitation in the broader gender–NIMBY literature. Although gender is consistently identified as a determinant of resistance to unwanted facilities, previous research has generally examined the parental-role/care-ethic explanation and the institutional-trust/power-asymmetry explanation as separate or parallel predictors rather than as sequential mechanisms. Gustafson [18] reviews both explanations theoretically but does not test them empirically within a single model. Flynn, Slovic, and Mertz [19] provide empirical support for the power-asymmetry explanation but do not address parental status. Freudenburg's recreancy framework [20] includes institutional-distrust variables and demographic controls, such as gender and the presence of children, within the same regression model but does not connect them through a mediating pathway. Recent large-scale evidence from China likewise shows that women report stronger resistance intentions and that trust in local government is associated with weaker resistance intentions; however, these variables are

treated as parallel predictors rather than as a sequential pathway [21]. The present study extends this literature by testing whether the association between gender and local nuclear acceptance operates through a sequential pathway—from gender to risk perception and then to institutional trust—within a single serial mediation model. This approach allows the two explanations to be assessed within a common analytical framework rather than inferred from separate studies.

This study aims to identify the sociological and psychological determinants of the NIMBY phenomenon within Türkiye's nuclear energy policy context, focusing on regions surrounding NPP sites that are under construction or planned. A distinctive feature of the study is its use of a probability sample drawn from the official Address-Based Population Registration System in collaboration with the Turkish Statistical Institute (TurkStat). This sampling framework provides current evidence on the social acceptance of nuclear power in NPP-adjacent regions as Türkiye approaches its first operational experience with nuclear energy. The findings are expected to provide an evidence base for nuclear-risk communication strategies in Türkiye.

2. Conceptual Framework: Gender, Institutional Trust, and the NIMBY Phenomenon in Nuclear Energy

Before turning to the NIMBY concept itself, it is useful to clarify the meaning of spatial resistance in this study, as the term anchors the three-level attitudinal design: national support, local acceptance, and relocation intention. Devine-Wright [22] argues that opposition to locally sited technologies is better understood as a form of place-protective action rooted in the disruption of pre-existing emotional bonds to a location and perceived threats to place-based identity, rather than as a simple rejection of a technology on technical grounds. In this framework, place attachment denotes the positive emotional bond that individuals form with familiar settings, such as their home, neighborhood, or region, whereas place identity concerns the incorporation of such settings into an individual's sense of self. Hermansson [23] similarly emphasizes the identity dimension of siting conflicts, drawing on Wester-Herber's argument that place identity is central to how individuals form and sustain a sense of self in relation to a specific geographical area and therefore warrants greater attention in facility-siting research. Drawing on this literature, the present study defines spatial resistance as opposition to a technological facility conditioned by its physical proximity to one's living environment. Such resistance can be expressed at different levels of intensity—from an unwillingness to accept local construction to an intention to relocate away from the site. This definition distinguishes spatial resistance from opposition to the technology itself and provides the conceptual basis for treating national support, local acceptance, and relocation intention as distinct but related manifestations of the same underlying construct. In this study, the construct is applied to NPPs and examined through national-level support, local NPP acceptance, and relocation intention.

The NIMBY phenomenon refers to local opposition to projects that provide macro-level societal benefits, such as energy supply security and low carbon emissions, but pose potential health and environmental risks at the micro-level, such as radiation exposure and accident risk [24]. In the context of NPP construction, the NIMBY phenomenon is examined through factors such as risk perception, institutional trust, perceived societal benefit, and knowledge level. The literature indicates that gender is one of the most consistent predictors of spatial resistance. Studies consistently show that women perceive higher risks associated with nuclear energy than men and exhibit stronger NIMBY intentions regarding local NPP construction [4,25,26].

The literature primarily focuses on value attributions and social roles to explain gender differences in risk perception and local acceptance. Mainstream approaches attribute this divergence to differing preferences between economic growth on the one hand, and safety and health on the

other. Men tend to evaluate the issue through a utilitarian lens emphasizing economic benefits, employment, and technological progress, whereas women, due to their historical association with caregiving roles and responsibility for family well-being (the parental-role hypothesis), approach the issue through the prism of health, safety, and the protection of future generations [25, 27]. Research on knowledge levels further shows that women report lower self-assessed knowledge of nuclear technology than men and are more likely to respond "I don't know" [4, 5]. However, the literature emphasizes that this greater resistance is not merely a knowledge-deficit issue; rather, when familiarity with nuclear technology is low, emotional identification and intuitive perceptions may play a more important role in public assessments of risks and benefits, particularly among women [10, 28].

Theories explaining gender differences show a clear shift, moving away from essentialist approaches rooted in biological or maternal instinct toward structural sociological arguments focused on systemic power asymmetries and institutional trust mechanisms. A pivotal point in this debate is the "White Male Effect" conceptualized by Flynn et al. [19], which demonstrated that white men report substantially lower risk perceptions than members of all other groups, including white women, non-white men, and non-white women. If women's resistance to nuclear energy were attributable solely to biological or universal maternal instincts, non-white men would also be expected to exhibit low risk perception; yet the study found that non-white men's risk perception closely resembled that of women.

This finding suggests that women's heightened resistance to nuclear facilities may be related less to biological explanations than to exclusion from decision-making mechanisms, socio-political status, and institutional distrust [18, 19]. Technocratic elites who establish, manage, and oversee such systems, and who derive substantial economic and status benefits from these technologies, consist overwhelmingly of men. Women, who receive fewer benefits from the system's advantages yet are directly exposed to its potential environmental and health costs, may have lower institutional trust in the nuclear industry and regulatory agencies [18, 19].

The existing literature therefore suggests that the gender dynamics of spatial resistance in nuclear energy do not reflect an irrational or uninformed fear of technology, but rather the intersection of a care ethic associated with parental roles and institutional distrust directed at technocratic structures that impose risks. In other words, women's NIMBY tendencies may be understood as an effort to defend local living spaces against externally imposed technological intervention in response to systemic power asymmetries [18, 19, 25].

Whether women's greater spatial resistance to nuclear facilities is associated primarily with parental status or instead reflects an indirect process involving risk perception and lower institutional trust remains an open empirical question. The Turkish sample is used to test this conceptual distinction between nuclear opposition as a demographic pattern and as a risk–trust process.

3. Research Objective

This study examines the role of gender in local resistance to NPPs within the NIMBY framework. The NIMBY phenomenon refers to the gap between support for nuclear energy at the national level and opposition to a nuclear power plant in one's own region. Accordingly, the study analyzes gender differences across three related attitudes: national-level support, local NPP acceptance, and relocation intention. It also examines whether women's stronger local resistance is associated with risk perception, institutional trust, and perceived benefit rather than with demographic variables or knowledge level.

4. Hypotheses

H1: Women are expected to exhibit significantly greater spatial resistance than men, as reflected in lower local acceptance and lower national support for NPPs.

H2: Subjective knowledge level regarding nuclear energy and safety is expected to be negatively associated with risk perception and positively associated with approval of both local and national NPP construction.

H3: Local resistance to nuclear energy and relocation intention if an NPP were constructed locally are expected to be more pronounced among female respondents with children than among female respondents without children.

H4: Institutional trust is expected to be a primary predictor of local NPP acceptance and relocation intention; as institutional trust increases, the gender-based divergence in nuclear resistance is expected to decrease.

H5: The effect of gender on local NPP acceptance, national support, and relocation intention is expected to operate indirectly through mechanisms involving risk perception, institutional trust, and perceived benefit.

5. Method

5.1. Research Model

The study employed a correlational survey design, which is used to examine the existence, direction, and strength of covariation between two or more variables and to assess predictive relationships [29]. Accordingly, the study examined the direct, indirect (mediating), and interactive associations of sociodemographic factors and psychometric variables—including knowledge level, risk perception, perceived benefit, and institutional trust—with local NPP acceptance.

5.2. Population and Sample

The sample was determined within a 100-kilometer radius around NPP sites to measure spatial resistance toward nuclear facilities. If a district center fell within the boundaries of an emergency planning zone, the entire district was included in the study area. Accordingly, the provinces of Mersin (Akkuyu), where NPP construction is ongoing, and Sinop (İnceburun) and Kırklareli (İğneada), where construction is planned, defined the study population. A total of 37 districts across the provinces of Mersin, Karaman, Sinop, Kastamonu, Samsun, Kırklareli, Tekirdağ, Edirne, and Istanbul, located within the defined 100-kilometer radius, were included in the study.

The required sample size was calculated for the population aged 18 and older using rural-urban and gender quotas, taking into account a 95% confidence interval, a 50% prevalence rate, a 3.5% margin of error, and a 30% non-response rate. The final sample and fieldwork response rates are presented in Table S1 in the Supplementary Material. A total of 1,120 households were contacted, and analyses were conducted with 703 valid respondents, corresponding to a response rate of 62.8%.

5.3. Data Collection Instrument, Validity, and Reliability

Data were collected using a structured questionnaire adapted from the European Commission's Eurobarometer 324 and 327 'Europeans and Nuclear Safety' questionnaires. The original instrument covered risk perception, institutional trust, perceived benefit, and subjective knowledge of nuclear safety. Eight items tailored to the objectives of the present study—primarily local NPP acceptance and relocation intention—were added, bringing the total to 32 items. The questionnaire includes sections on sociodemographic characteristics and NIMBY-related constructs, including social acceptance, risk perception, institutional trust, and knowledge level.

The Turkish adaptation of the original forms was carried out using the back-translation method, and translation equivalence was evaluated by four independent language experts. To establish the conceptual appropriateness of the instrument within the nuclear energy context, an expert review process was conducted with the participation of specialists in statistics, measurement and evaluation, the energy sector, environmental engineering, sociology, and public administration. Content Validity Ratio (CVR) indices calculated from the experts' ratings exceeded the critical threshold, thereby establishing the content validity of the questionnaire.

5.4. Field Application and Data Quality

Data were collected between September 15 and 26, 2025, under a protocol with TurkStat, Türkiye's national statistical institute. TurkStat drew the sample directly from the Address-Based Population Registration System using multistage random sampling. Trained TurkStat interviewers conducted the interviews using computer-assisted telephone interviewing (CATI). The research team and TurkStat experts jointly prepared a Survey Interviewer Manual and metadata document for interviewer training, thereby standardizing data collection and reducing potential interviewer bias.

5.5. Data Preparation and Variable Construction

The analyses were conducted using SPSS version 31.0. During the data cleaning phase, "Don't Know" (DK) responses were retained in descriptive analyses because they reflect the distribution of public knowledge and attitudes. However, in predictive models (logistic regression, MANOVA, mediation analysis), these responses were treated as missing values and excluded from analysis. Differences in sample sizes across analyses reflect the exclusion of these missing values.

The Institutional Trust scale ($\alpha = 0.894$), consisting of eight items, and the Perceived Benefit scale ($\alpha = 0.760$), consisting of three items, were scored by calculating mean item scores after confirming satisfactory internal consistency. This approach allowed respondents to remain in the analysis when a single item was missing, because the mean was calculated from the available items, thereby minimizing sample loss. The Subjective Knowledge Level and Risk Perception variables were measured using individual survey items, consistent with common practice in nuclear-energy research.

Assumption Checks: Normality and Multicollinearity

The suitability of continuous variables (Trust and Benefit scores) for parametric tests was assessed using skewness and kurtosis values. All coefficients fell within the threshold range of -1.5 to +1.5 (e.g., Trust Score skewness: -0.185, kurtosis: -0.825), indicating distributions consistent with the assumptions used for the parametric analyses (see Table S2 in the Supplementary Material).

Prior to logistic regression estimation, multicollinearity among independent variables was assessed using variance inflation factor (VIF) values. VIF values ranged from 1.05 to 1.68, remaining well below 2.0, indicating no problematic multicollinearity. The Hosmer-Lemeshow test yielded a significance level of $p > .05$, suggesting adequate model fit (see Table S3 in the Supplementary Material for detailed VIF values).

5.6. Statistical Analysis Techniques

A multistage analysis strategy was used to examine the social and psychological dimensions of attitudes toward nuclear energy:

Frequency and Categorical Relationship Analyses: Frequency and percentage analyses were conducted to describe the respondent profile and outline respondents' general perspectives on nuclear energy and safety. Relationships between demographic variables and "Yes/No" responses regarding nuclear energy were examined using chi-square tests.

Attitude Consistency Analyses: The McNemar test was used to identify potential discrepancies between respondents' support at the national level and their support for local NPP construction, to capture the NIMBY effect.

Predictive Models (Logistic Regression and Moderation): Hierarchical logistic regression analysis was used to test the factors determining local NPP acceptance. The dependent variables (support for NPP expansion, local NPP construction, and relocation intention) were coded as binary outcomes using "Yes" and "No" options. In this process, "Don't Know" responses, which did not indicate any specific attitude, were treated as missing values for the regression analyses and excluded from the analysis [30,31]. This treatment explains why the total sample size (N) in the regression models differs from the total number of respondents in the descriptive statistics. The local acceptance model tested the extent to which demographic, socio-economic, perceptual, and knowledge-based variables were associated with the odds of acceptance. A Gender $\times$ Institutional Trust interaction term was also included to examine gender differences in nuclear opposition in the local acceptance model.

Mediation Analysis: Serial mediation analysis was conducted to test whether gender was associated with local NPP acceptance through a hypothesized sequence involving risk perception and institutional trust. Gender (female = 1) was entered as the antecedent; risk perception and institutional trust were specified as serial mediators (gender $\rightarrow$ risk perception $\rightarrow$ institutional trust), with perceived benefit included as an additional parallel mediator. Because local NPP acceptance was dichotomous, outcome and mediator paths were estimated using logistic regression and ordinary least squares, respectively. Indirect effects were evaluated using 5,000 bootstrap resamples and 95% percentile confidence intervals.

Multivariate Analysis of Variance (MANOVA): MANOVA was conducted to examine whether institutional-trust and perceived-benefit scores differed jointly across demographic groups. In the analyses, gender, education level, parental status, and age were entered as factors, and both main effects and interaction effects were reported based on Wilks' Lambda. The Gender $\times$ Education and Gender $\times$ Parental Status interactions were also examined at the univariate level to determine whether they were associated with significant differences in both perception dimensions.

6. Findings

6.1. Demographic and Socioeconomic Profile of the Sample Group

The research sample consisted of 703 respondents who met the analysis criteria. The mean age of the respondents was 45 ($SD = 15.22$; min = 18, max = 94). In terms of gender distribution, 55.6% ($n = 391$) were male and 44.4% ($n = 312$) were female. Of the respondents, 69.8% were married, 17.1% had never been married, 7.5% were divorced, and 5.5% were widowed (Table 1). A large majority of the sample (75.5%) were parents.

Table 1: *Sociodemographic and Economic Profile of the Sample Group ($N = 703$)*

Variable	Category	*n*	%
Gender	Male	391	55.6
	Female	312	44.4
Age Group	18–24	49	7.0
	25–34	130	18.5
	35–44	154	21.9
	45–54	166	23.6
	55–64	107	15.2
	65–74	68	9.7
	75 and older	29	4.1
Marital Status	Never married	120	17.1
	Married	491	69.8
	Divorced	53	7.5
	Widowed	39	5.5
Parental Status	Yes	531	75.5
	No	172	24.5
Number of Children*	1	127	23.9
	2	239	45.0
	3	102	19.2
	4	35	6.6
	5	17	3.2
	6	5	0.9
	7	3	0.6
	8	1	0.2
	9	2	0.4
Education Level	Did not complete any level of schooling	29	4.1
	Elementary school	226	32.1
	Elementary/Middle School	74	10.5
	High School/Vocational High School	198	28.2
	Higher Education	176	25.0
Employment Status	Employed	327	46.5
	Unemployed/Job seeker	52	7.4

Variable	Category	*n*	%
	Currently in education/training	15	2.1
	Retired or having left the workforce due to age-related reasons	133	18.9
	Unable to work due to disability or chronic health issues	3	0.4
	Engaged in household chores and/or caring for children, the elderly, the sick, etc., within the family	162	23.0
	Elderly (Not retired but considers themselves too old to work, 65+)	11	1.6
Occupational Status**	Occupations related to the armed forces	7	2.1
	Managers	15	4.6
	Professionals	46	14.1
	Technicians, technical staff, and associate professionals	41	12.5
	Office support staff	32	9.8
	Service and sales staff	64	19.6
	Skilled agricultural, forestry, and fisheries workers	9	2.8
	Artisans and workers in related fields	5	1.5
	Plant, machine operators, and assemblers	14	4.3
	Workers in unskilled jobs	94	28.7
Income Group	0 – 22,104 TL	223	31.7
	22,105 – 44,200 TL	236	33.6
	44,201 – 88,400 TL	172	24.5
	88,401 – 132,600 TL	54	7.7
	132,601 TL and above	18	2.6
Homeownership	Homeowner	427	60.7
	Tenant	179	25.5
	Dormitory	11	1.6
	Not a homeowner, does not pay rent	85	12.1
	Unknown	1	0.1

Note. * The number of children was calculated based only on respondents with children ($n = 531$). Percentages represent valid percentages for this subgroup. ** Occupational status was calculated based solely on employed respondents ($n = 327$). Percentages represent valid percentages for this subgroup.

By educational level, elementary school graduates constituted the largest group at 32.1%, followed by high school/vocational school graduates (28.2%) and university graduates (25.0%). By employment status, 46.5% of respondents ($n = 327$) were employed, 23.0% were engaged in household/family care, and 18.9% were retired. Analysis of the occupational status of employed respondents revealed that 28.7% worked in unskilled jobs, while 19.6% were employed in the service and sales sectors. Based on monthly household income, 33.6% of the sample fell within the 22,105–44,200 TL income range, while 31.7% fell within the 0–22,104 TL range. Because income was

measured categorically, the distribution was summarized using category frequencies. Accordingly, 65.3% of the sample fell into the low and lower-middle income groups. Finally, 60.7% of the respondents owned the residence in which they lived (see Table 1).

6.2. Attitudes Toward Nuclear Energy and the NIMBY Effect

Respondents' attitudes toward nuclear energy were examined across three dimensions: national support (increasing the number of NPPs across Türkiye), local NPP acceptance (approval of NPP construction in the respondent's own area), and relocation intention. The results are presented in Table 2. The results indicated a spatial shift in respondents' nuclear attitudes. While opinions on increasing the number of NPPs nationwide showed a nearly equal distribution (43.0% "Yes"; 43.7% "No"), local NPP acceptance dropped to 30.6% when NPP construction was proposed for the respondent's own living area. In addition, 33.6% of respondents reported that they would relocate from the region if an NPP were constructed there. The relationship between respondents'

Table 2: *Attitudes Toward NPPs ($N = 703$)*

Variable	Category	*n*	%
NPP Expansion	Yes	302	43.0
	No	307	43.7
	I don't know	94	13.4
Local NPP Construction	Yes	215	30.6
	No	402	57.2
	I don't know	86	12.2
Relocation Intention	Yes	236	33.6
	No	358	50.9
	I don't know	109	15.5

national-level nuclear energy preferences and their local NPP acceptance was tested using a chi-square test. A statistically significant association was found between support for increasing the share of nuclear energy in Türkiye and local NPP acceptance ($\chi^2(2, N = 530) = 136.689$; $p < .001$) (see Table S4 in the Supplementary Material).

A statistically significant association was found between support for increasing the number of NPPs nationwide and local NPP acceptance ($\chi^2(1, N = 595) = 290.324$; $p < .001$) (see Tables S4–S5 in the Supplementary Material). These findings provide evidence of the NIMBY phenomenon: while 29.7% of respondents who supported increasing the number of NPPs nationally opposed a plant in their own region, 96.7% of those who opposed national expansion also opposed local construction.

The relationship between local NPP acceptance and relocation intention was also analyzed using a chi-square test, which showed a statistically significant association ($\chi^2(1, N = 578) = 90.558$; $p < .001$). Of those who stated they would relocate if an NPP were constructed in their area ($n = 230$), 87.8% ($n = 202$) opposed local construction. In contrast, only 13.7% ($n = 28$) of those who approved local construction reported an intention to relocate (see Table S6 in the Supplementary Material).

The McNemar test was used to examine the relationship between local NPP acceptance and relocation intention. The results showed no statistically significant difference between support for local NPP construction and relocation intention ($\chi^2(1) = 1.65$, $p = .199$). The finding that

the vast majority (86.3%) of those supporting local NPP construction did not intend to relocate indicates consistency between local acceptance and relocation intention. Conversely, the finding that approximately half (45.8%) of respondents opposed to construction did not intend to relocate even if the plant were built suggests that local resistance does not always result in spatial relocation and that individuals may remain despite perceived local risks (see Table S7 in the Supplementary Material).

The McNemar test also revealed a statistically significant contrast between national support for NPP expansion and local NPP acceptance ($\chi^2(1) = 60.2$, $p < .001$). Approximately one-third (29.7%, $n = 86$) of the 290 respondents who supported increasing the number of NPPs nationwide responded "I do not support" when asked about local construction (see Table S8 in the Supplementary Material). This finding is consistent with the NIMBY phenomenon: while individuals acknowledge the macro-level benefits of nuclear energy such as national energy security, they avoid bearing the potential micro-level costs such as local risks and environmental concerns. In contrast, the finding that 96.7% of those opposed to national NPP expansion also opposed local construction indicates that opposition to nuclear energy reflects a more consistent and deeply held stance, independent of spatial distance.

The McNemar test revealed a statistically significant difference between attitude and relocation intention ($\chi^2(1) = 7.91$, $p = .005$) (see Table S9 in the Supplementary Material). The finding that 27.4% ($n = 77$) of respondents who supported the policy of increasing the number of NPPs reported an intention to relocate if the plant were to be constructed locally is consistent with action-oriented NIMBY, indicating that national-level support may shift toward relocation intention when individual living spaces and physical safety are threatened.

6.3. Gender and Parental Status in Local NPP Acceptance

The effect of gender on local NPP acceptance was examined using a chi-square test, which revealed a statistically significant relationship between gender and approval of local NPP construction ($\chi^2(1, N = 617) = 33.049$; $p < .001$). While 44.6% of male respondents ($n = 154$) approved of local NPP construction, the corresponding rate was 22.4% ($n = 61$) among female respondents. A total of 77.6% of women opposed local NPP construction, indicating greater opposition than among men (55.4%) (see Table S10 in the Supplementary Material).

The relationship between parental status and attitudes toward local NPP construction was analyzed using a chi-square test. No statistically significant relationship was found between parental status and local NPP acceptance ($\chi^2(1, N = 617) = 0.070$; $p = .792$). Of respondents with children, 64.9% ($n = 299$) opposed local construction, while 66.0% ($n = 103$) of those without children opposed it. The difference in approval rates between the two groups (35.1% and 34.0%, respectively) was statistically negligible, suggesting that parental status was not associated with local acceptance (see Table S11 in the Supplementary Material).

Other Analyses of Sociodemographic and Perceptual Variables

Additional univariate analyses examined the associations of education level, income group, age, home ownership, employment status, occupational status, risk perception, and subjective safety knowledge with local NPP acceptance; none was statistically significant ($p > .05$) (see Tables S13–S21 in the Supplementary Material).

6.4. Factors Determining Local NPP Acceptance and Relocation Intention

A two-stage hierarchical logistic regression analysis was conducted to identify the factors influencing local NPP acceptance ($N = 529$). Model 1, which included only demographic variables, accounted for 12.2% of the variation in local acceptance (Nagelkerke $R^2 = .122$); Model 2, which added institutional trust and perceived benefit, increased the Nagelkerke R^2 to .415. This difference between the two models was statistically significant ($\Delta\chi^2(2) = 142$, $p < .001$). Model 2 results revealed that a one-unit increase in institutional trust reduced the likelihood of NPP opposition by 75% ($OR = 0.25$, $p < .001$), while a one-unit increase in perceived benefit reduced it by 40% ($OR = 0.60$, $p = .002$). Among sociodemographic variables, only gender remained significant across both models. Even after controlling for trust and benefit perceptions, female respondents had 2.66 times the odds of opposing local NPP construction compared with male respondents ($OR = 2.66$, $p < .001$) (see Table 3).

Table 3: *Logistic Regression Analysis of Factors Affecting Local NPP Acceptance*

Predictor	*B*	*SE*	*p*	*OR*	95% CI Lower	95% CI Upper
Intercept	**5.448**	**1.406**	**< .001**	**232.40**	**14.79**	**3652.90**
Age (Continuous Variable)						
Age	−0.004	0.010	.702	0.996	0.977	1.016
Gender (Ref: Male)						
Female	**0.979**	**0.246**	**< .001**	**2.661**	**1.644**	**4.306**
Education Level (Ref: Did not complete any level of schooling)						
Elementary school	1.058	0.981	.281	2.882	0.421	19.715
Elementary/Middle School	0.937	1.030	.363	2.553	0.339	19.217
High School/Vocational High School	1.451	1.007	.150	4.266	0.593	30.691
Higher Education	0.904	1.009	.370	2.469	0.342	17.847
Marital Status (Ref: Never married)						
Married	0.035	0.478	.941	1.036	0.406	2.641
Divorced	−0.633	0.614	.302	0.531	0.159	1.769
Widowed	0.399	0.936	.670	1.491	0.238	9.338

Predictor	*B*	*SE*	*p*	*OR*	95% CI Lower	95% CI Upper
Parental Status (Ref: Yes)						
No	0.308	0.413	.455	1.361	0.606	3.058
Income Group (Ref: 0–22,104 TL)						
22,105–44,200 TL	0.068	0.292	.817	1.070	0.604	1.896
44,201–88,400 TL	0.179	0.335	.593	1.196	0.621	2.305
88,401–132,600 TL	−0.156	0.478	.744	0.856	0.335	2.185
132,601 TL and above	0.020	0.649	.975	1.020	0.286	3.641
Home Ownership Status (Ref: Homeowner)						
Renter	−0.534	0.278	.055	0.586	0.340	1.011
Dormitory	−0.784	0.820	.339	0.456	0.092	2.275
Not a homeowner, does not pay rent	−0.074	0.340	.828	0.929	0.477	1.809
Continuous Attitude Variables						
Trust Score	**−1.370**	**0.186**	**< .001**	**0.254**	**0.177**	**0.366**
Benefit Score	**−0.504**	**0.159**	**.002**	**0.604**	**0.443**	**0.825**

Note. $N = 529$. Reference category for dependent variable is "Yes." Model 1 (Sociodemographic): Nagelkerke $R^2 = 0.122$, AIC = 683. Model 2 (Perceptual): Nagelkerke $R^2 = 0.415$, AIC = 545. Model Comparison: $\Delta\chi^2(2) = 142$, $p < .001$. VIF < 1.65. Bold coefficients are significant at $p < .05$.

Factors associated with relocation intention were examined using hierarchical logistic regression ($N = 519$). Model 1, which included demographic variables, accounted for 4.7% of the variation; Model 2, which added institutional trust and perceived benefit, increased the Nagelkerke R^2 to .147. The addition of the perceptual variables significantly improved model fit ($\Delta\chi^2(2) = 41.4$, $p < .001$).

In the relocation-intention model, the Benefit Score, which was significant in the local-acceptance model, was no longer statistically significant ($p = .205$, $OR = 1.176$). The Trust Score was the strongest perceptual predictor of respondents' intention to remain rather than relocate ($B = 0.634$, $p < .001$, $OR = 1.88$). Gender, which was significant in the local-acceptance model, was not statistically significant in the relocation-intention model ($p = .364$, $OR = 0.831$) (see Table 4). These findings indicate that the predictors of local acceptance and relocation intention differ.

Table 4: *Logistic Regression Analysis of Factors Affecting Relocation Intention*

Predictor	*B*	*SE*	*p*	*OR*	95% CI Lower	95% CI Upper
Intercept	−2.160	1.106	.051	0.115	0.013	1.008
Age (Continuous Variable)						
Age	−0.005	0.009	.528	0.995	0.978	1.011
Gender (Ref: Male)						
Female	−0.186	0.204	.364	0.831	0.557	1.240
Education Level (Ref: Did not complete any level of schooling)						
Elementary school	0.455	0.760	.549	1.576	0.355	6.991
Elementary/Middle School	0.727	0.812	.371	2.069	0.421	10.159
High School/Vocational High School	0.812	0.779	.297	2.251	0.489	10.357
Higher Education	1.166	0.785	.138	3.209	0.688	14.958
Marital Status (Ref: Never married)						
Married	0.159	0.392	.684	1.173	0.544	2.527
Divorced	−0.242	0.503	.631	0.785	0.293	2.107
Widowed	0.245	0.721	.734	1.278	0.311	5.247
Parental Status (Ref: Yes)						
No	−0.375	0.343	.274	0.687	0.351	1.346
Income Group (Ref: 0–22,104 TL)						
22,105–44,200 TL	−0.421	0.263	.109	0.656	0.392	1.099
44,201–88,400 TL	**−0.709**	**0.302**	**.019**	**0.492**	**0.272**	**0.889**
88,401–132,600 TL	−0.548	0.408	.179	0.578	0.260	1.285
132,601 TL and above	−1.153	0.592	.051	0.316	0.099	1.007
Home Ownership Status (Ref: Homeowner)						
Renter	−0.024	0.237	.920	0.977	0.614	1.554
Dormitory	0.410	0.744	.581	1.508	0.351	6.483
Not a homeowner, does not pay rent	0.304	0.301	.314	1.355	0.750	2.446
Continuous Attitude Variables						
Trust Score	**0.634**	**0.146**	**< .001**	**1.885**	**1.416**	**2.509**
Benefit Score	0.162	0.128	.205	1.176	0.915	1.512

Note. $N = 519$. The reference category for the dependent variable is "Yes" (I will relocate). The coefficients (*B*) correspond to the "No" (I will not relocate) response. Model 1: Nagelkerke $R^2 = 0.047$. Model 2: Nagelkerke $R^2 = 0.147$. Model Comparison: $\Delta\chi^2(2) = 41.4$, $p < .001$. All VIF values < 1.63. Coefficients in bold are statistically significant at $p < .05$.

The predictive power of the logistic models was evaluated using classification tables (see Table S12 in the Supplementary Material). The local NPP acceptance model achieved a total correct

classification rate of 78.3%; the NPP expansion model achieved 78.6%; and the relocation intention model achieved 64.9% (see Table S12 in the Supplementary Material). The high correct prediction rate for respondents opposed to local NPP construction (85.0%) in the local acceptance model indicates the predictive performance of the hierarchical models.

6.5. The Interaction Effect of Gender and Institutional Trust

Results from the interaction model show a statistically significant interaction between institutional trust and gender on local NPP acceptance ($B = -1.31$, $p < .001$). This finding indicates that the effect of institutional trust in reducing NPP opposition varies by gender. The Nagelkerke R^2 value of 0.354 indicates that this interaction contributes to the model's explanatory power (see Table 5).

Table 5: *Interaction Model for Local NPP Construction (Trust Score × Gender)*

Predictor	*B*	*SE*	*p*	*OR*	95% CI Lower	95% CI Upper
Intercept	5.330	0.500	$< .001$	207.244	77.838	551.785
Trust Score × Female	−1.310	0.150	$< .001$	0.269	0.201	0.361

Note. Dependent Variable: Local NPP Construction Support (Yes). Coefficients represent log-odds values for the "No" response. Model Fit: $N = 580$; Deviance = 585; AIC = 591; Nagelkerke $R^2 = 0.354$; McFadden $R^2 = 0.228$. The model is fully significant ($\chi^2 = 173$, $p < .001$).

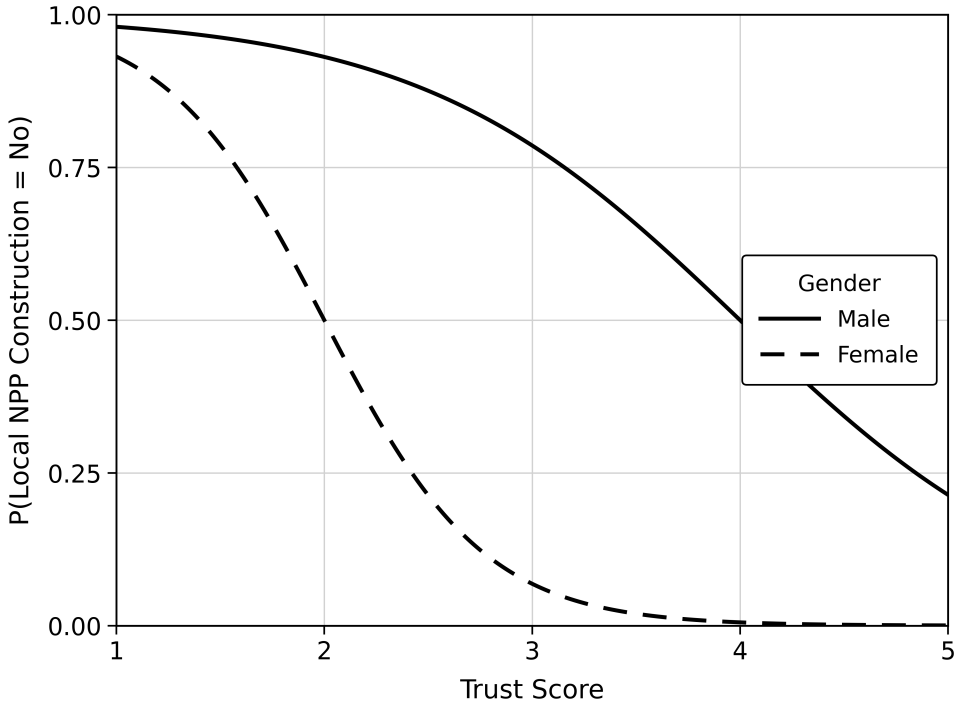


Figure 1: *Predicted Probability of Local NPP Opposition by Trust Score and Gender*

Taken together, the graph and coefficients indicate that the association between institutional

trust and local NPP opposition differs by gender. Opposition was high at low levels of trust for both groups and declined as trust increased, although at different rates. The results therefore suggest that institutional trust is associated with local NPP acceptance in a gender-differentiated manner.

6.6. Demographic Roots of Nuclear Perception

MANOVA was used to examine differences in institutional trust and perceived benefit by gender, education level, and age. The multivariate test results revealed that, among the variables examined, only gender was significantly associated with the combined outcomes (Wilks' $\Lambda = 0.959, F(2, 558) = 11.92, p < .001$). No significant effect was found for age ($p = .338$) or education level (p = .558) (see Table 6).

Table 6: *MANOVA Results for Nuclear Perception Dimensions by Gender, Education Level, and Age (Multivariate Tests) ($N = 580$)*

Variable / Test	Value	*F*	*df1*	*df2*	*p*
Gender					
Pillai's Trace	0.041	**11.922**	2	558	< **.001**
Wilks' Lambda	0.959	**11.922**	2	558	< **.001**
Hotelling's Trace	0.043	**11.922**	2	558	< **.001**
Roy's Largest Root	0.043	**11.922**	1	558	< **.001**
Education Level					
Pillai's Trace	0.012	0.851	8	1118	.557
Wilks' Lambda	0.988	0.850	8	1116	.558
Hotelling's Trace	0.012	0.850	8	1114	.559
Roy's Largest Root	0.009	1.284	4	559	.277
Gender × Education Level					
Pillai's Trace	0.030	**2.117**	8	1118	**.032**
Wilks' Lambda	0.970	**2.117**	8	1116	**.032**
Hotelling's Trace	0.030	**2.117**	8	1114	**.032**
Roy's Largest Root	0.022	**3.134**	4	559	**.014**
Age					
Pillai's Trace	0.004	1.087	2	558	.338
Wilks' Lambda	0.996	1.087	2	558	.338
Hotelling's Trace	0.004	1.087	2	558	.338
Roy's Largest Root	0.004	1.092	1	558	.338

Note. Values statistically significant at $p < .05$ are shown in bold.

Subsequent univariate analyses showed that the gender difference was particularly pronounced in the Benefit Score dimension ($F(1, 559) = 23.81, p < .001$), indicating that women rated the benefits of nuclear energy significantly lower than men (see Table 7).

Although educational level alone had no significant main effect, the Gender × Education Level interaction was statistically significant (Wilks' $\Lambda = 0.970, p = .032$). This finding indicates that the effect of education level on nuclear perception differs between female and male respondents, and that women's resistance to NPP construction is not explained solely by a lack of information or education (see Tables 6 and 7).

Table 7: *MANOVA Results for Nuclear Perception Dimensions by Gender, Education Level, and Age (Univariate Tests) ($N = 580$)*

Variable / Dependent Variable	SS	df	MS	*F*	*p*
Gender					
Trust Score	6.127	1	6.127	**9.004**	**.003**
Benefit Score	18.946	1	18.946	**23.811**	**< .001**
Education Level					
Trust Score	2.559	4	0.640	0.940	.440
Benefit Score	3.858	4	0.964	1.212	.305
Gender × Education Level					
Trust Score	7.845	4	1.961	**2.882**	**.022**
Benefit Score	7.896	4	1.974	**2.481**	**.043**
Age					
Trust Score	0.331	1	0.331	0.487	.486
Benefit Score	0.361	1	0.361	0.454	.501
Residuals					
Trust Score	380.401	559	0.681	–	–
Benefit Score	444.776	559	0.796	–	–

Note. Values statistically significant at $p < .05$ are shown in bold.

A separate MANOVA was conducted to test the effects of gender and parental status on institutional trust and perceived benefit levels. The results revealed that neither institutional trust nor perceived benefit regarding nuclear energy differed significantly by parental status (Wilks' $\Lambda = 0.993, F(2, 564) = 2.06, p = .128$). No statistically significant Gender × Parental Status interaction was found ($p = .247$) (see Table 8). These findings suggest that gender-based socialization processes, rather than personal parenting roles, may be more important in shaping nuclear attitudes.

Table 8: *MANOVA Results for Nuclear Perception Dimensions by Gender, Parental Status, and Age (Multivariate Tests) ($N = 570$)*

Variable / Test	Value	*F*	*df1*	*df2*	*p*
Gender					
Pillai's Trace	0.040	**11.782**	2	564	< **.001**
Wilks' Lambda	0.960	**11.782**	2	564	< **.001**
Hotelling's Trace	0.042	**11.782**	2	564	< **.001**
Roy's Largest Root	0.042	**11.782**	1	564	< **.001**
Parental Status					
Pillai's Trace	0.007	2.062	2	564	.128
Wilks' Lambda	0.993	2.062	2	564	.128
Hotelling's Trace	0.007	2.062	2	564	.128
Roy's Largest Root	0.007	2.062	1	564	.128
Gender × Parental Status					
Pillai's Trace	0.005	1.402	2	564	.247
Wilks' Lambda	0.995	1.402	2	564	.247
Hotelling's Trace	0.005	1.402	2	564	.247
Roy's Largest Root	0.005	1.402	1	564	.247
Age					
Pillai's Trace	0.006	1.562	2	564	.210
Wilks' Lambda	0.994	1.562	2	564	.210
Hotelling's Trace	0.006	1.562	2	564	.210
Roy's Largest Root	0.006	1.562	1	564	.210

Note. Values statistically significant at $p < .05$ are shown in bold.

Consistent with the multivariate results, univariate analyses confirmed that parental status had no statistically significant main effect on either institutional trust ($F(1, 565) = 3.21, p = .074$) or perceived benefit ($F(1, 565) = 0.06, p = .807$) (see Table 9).

Table 9: *MANOVA Results for Nuclear Perception Dimensions by Gender, Parental Status, and Age (Univariate Tests) ($N = 570$)*

Variable / Dependent Variable	*SS*	*df*	*MS*	*F*	*p*
Gender					
Trust Score	6.127	1	6.127	**8.930**	**.003**
Benefit Score	18.946	1	18.946	**23.549**	**< .001**
Parental Status					
Trust Score	2.202	1	2.202	3.209	.074
Benefit Score	0.048	1	0.048	0.060	.807
Gender × Parental Status					
Trust Score	0.301	1	0.301	0.438	.508
Benefit Score	2.161	1	2.161	2.686	.102
Age					
Trust Score	0.964	1	0.964	1.405	.236
Benefit Score	0.124	1	0.124	0.154	.695
Residuals					
Trust Score	387.670	565	0.686	–	–
Benefit Score	454.558	565	0.805	–	–

Note. Values statistically significant at $p < .05$ are shown in bold.

Perceptual Factors in Social Acceptance of NPPs

A serial mediation model was specified to test whether gender shapes local NPP acceptance through a sequence involving risk perception followed by institutional trust (Figure 2; see Table 10). Gender (female = 1) served as the antecedent, risk perception and institutional trust were entered as serial mediators, and perceived benefit was included as a parallel mediator; indirect effects were estimated using 5,000 bootstrap resamples.

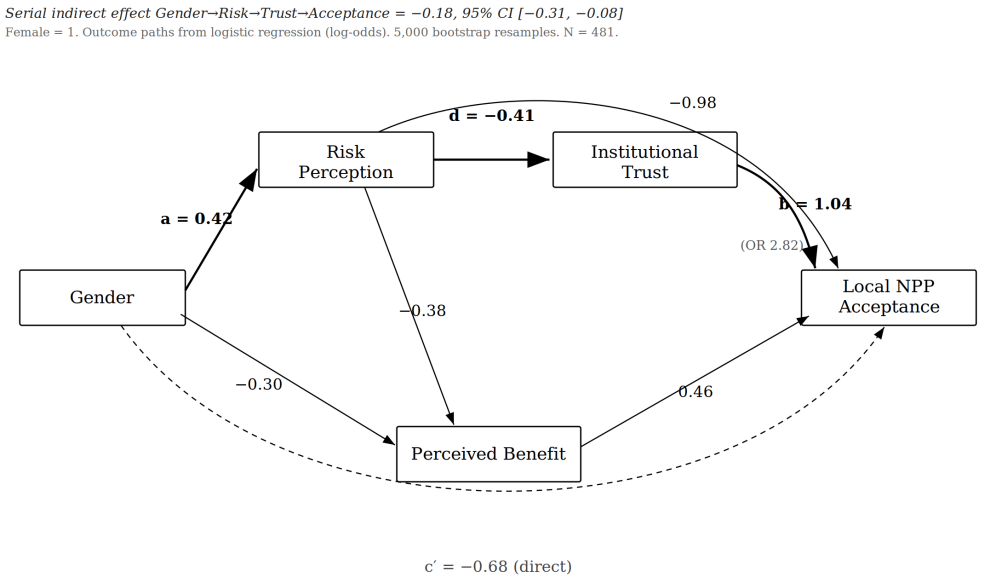


Figure 2: *Serial Mediation Model of Local NPP Acceptance (Conceptual Diagram)*

The analysis showed that the total effect of gender on local acceptance was significant ($B = -1.56$, $p < .001$). The hypothesized serial pathway Gender $\rightarrow$ Risk Perception $\rightarrow$ Institutional Trust $\rightarrow$ Acceptance was significant ($B = -0.18$, 95% CI $[-0.31, -0.08]$): women reported higher risk perception ($a = 0.42$), higher risk perception was associated with lower institutional trust ($d = -0.41$), and greater trust was associated with acceptance ($b = 1.04$, OR $= 2.82$). Risk perception was also directly associated with lower acceptance (Gender $\rightarrow$ Risk $\rightarrow$ Acceptance, $B = -0.41$, 95% CI $[-0.68, -0.21]$) and, more weakly, via perceived benefit ($B = -0.07$, 95% CI $[-0.16, -0.01]$). By contrast, the direct Gender $\rightarrow$ Institutional Trust $\rightarrow$ Acceptance path—independent of risk perception—was not significant ($B = -0.08$, 95% CI $[-0.23, 0.05]$), indicating that gender's link with institutional trust operated primarily through risk perception. A significant direct effect of gender remained ($c' = -0.68$, 95% CI $[-1.23, -0.16]$), indicating partial mediation; the mediated pathways carried roughly 56% of gender's total effect on local acceptance.

Table 10: *Serial Mediation of Local NPP Acceptance: Path Coefficients and Bootstrapped Indirect Effects ($N = 481$)*

Path	*B*	95% CI
Path coefficients		
Gender → Risk perception (a)	0.42	–
Risk perception → Institutional trust (d)	−0.41	–
Risk perception → Acceptance	−0.98	–
Institutional trust → Acceptance	1.04	–
Perceived benefit → Acceptance	0.46	–
Gender → Acceptance (direct, c')	−0.68	[−1.23, −0.16]
Gender → Institutional trust (direct, n.s.)	−0.07	–
Gender → Perceived benefit	−0.30	–
Risk perception → Perceived benefit	−0.38	–
Indirect effects (bootstrap)		
Gender → Risk → Trust → Acceptance (serial)	−0.18	[−0.31, −0.08]
Gender → Risk → Acceptance	−0.41	[−0.68, −0.21]
Gender → Risk → Benefit → Acceptance	−0.07	[−0.16, −0.01]
Gender → Trust → Acceptance (n.s.)	−0.08	[−0.23, 0.05]
Gender → Benefit → Acceptance	−0.14	[−0.30, −0.02]
Total indirect	−0.88	[−1.33, −0.51]

Note. Female coded 1. Mediator paths estimated by OLS; outcome (acceptance) paths by logistic regression, so those coefficients are on the log-odds scale. Indirect effects derived from 5,000 bootstrap resamples with 95% percentile confidence intervals. CI = confidence interval; OR = odds ratio; n.s. = not significant.

7. Discussion

The findings reveal a clear divergence between national-level support for nuclear energy and local opposition within the Turkish sample. The McNemar test showed that 29.7% of respondents who supported NPP expansion nationally opposed construction when the proposed facility was located in their own area. This pattern is consistent with the YNIMBY (Yes, but Not in My Backyard) dynamic, in which individuals support the broader benefits of nuclear energy while resisting its local costs. The shift is consistent with the spatial-resistance patterns reported by Guo and Ren [28] and suggests that nuclear resistance in Türkiye is also shaped by a perceived mismatch between national benefits and local costs.

In the hierarchical logistic regression analysis, demographic variables such as age, education, income, and home ownership (Model 1) accounted for 12.2% of the variation in local acceptance, whereas the addition of institutional trust and perceived benefit (Model 2) increased the Nagelkerke R^2 to 41.5% (Table 3). This pattern suggests that perceptual variables are more closely associated with nuclear resistance than socioeconomic characteristics. Home ownership and tenancy were not significantly associated with either local acceptance or relocation intention, suggesting that the NIMBY response in Türkiye is not explained solely by economic self-interest, such as the protection of property values. A one-unit increase in institutional trust was associated with a 75% reduction in the odds of local opposition ($OR = 0.25$), consistent with Freudenburg's [20] concept

of institutional recreancy.

The distinction between attitude and intended action is also evident in the finding that 33.6% of respondents reported an intention to relocate if an NPP were constructed locally. This result suggests that nuclear resistance may extend beyond attitudinal opposition to an action-oriented avoidance intention, as described by the Protective Action Decision Model [32]. However, 45.8% of those who opposed local construction stated that they would remain in the region. This pattern may reflect the complex relationship between local resistance and place attachment: respondents may perceive an NPP as a risky and unwanted intervention while remaining reluctant to leave their existing social and spatial environment. Thus, local opposition does not necessarily translate into an intention to relocate.

The findings show that gender is among the strongest and most consistent predictors of spatial resistance to nuclear facilities. Whereas 44.6% of male respondents approved potential local NPP construction, the approval rate among female respondents was 22.4%; 77.6% of women opposed local construction, supporting H1. In the hierarchical logistic regression model (Table 3), female respondents had 2.66 times the odds of opposing local NPP construction compared with male respondents, even after adjustment for demographic and perceptual variables ($OR = 2.66$). This finding is consistent with previous research [4,25].

Previous studies have interpreted women's greater resistance to nuclear technology through the sociological frameworks of the Parental Role Hypothesis and the Ethics of Care. According to these approaches, women's socialization as primary caregivers may lead them to evaluate nuclear energy in terms of family safety and the well-being of future generations rather than economic growth [25,27]. However, this explanation was not supported in the Turkish sample. Chi-square analysis showed no significant association between parental status and local NPP acceptance ($p = .792$), thereby rejecting H3. The MANOVA results (Tables 8 and 9) likewise showed no significant parental-status differences in institutional trust or perceived benefit, either as a main effect ($p = .128$) or in interaction with gender ($p = .247$). These findings indicate that parental status does not account for the observed gender difference in local nuclear opposition.

The absence of a significant parental-status effect suggests that the gender gap in nuclear resistance may be more closely related to social power relations and institutional exclusion [18,19]. The interaction model (Table 5) further indicated that the association between institutional trust and local acceptance varied significantly by gender ($B = -1.31, p < .001$), supporting H4 (see Figure 1). In addition, the significant Gender × Education interaction in the MANOVA ($p = .032$; see Tables 6 and 7) indicates that women's resistance cannot be attributed solely to differences in educational attainment.

This finding relates to the literature on the "White Male Effect" [19]. According to this perspective, the predominantly male composition of the technocratic elites who establish and manage science, government, and industry may lead men who benefit disproportionately from the system to place greater trust in institutions and perceive lower risks. The NIMBY tendency among women, who have historically been excluded from decision-making mechanisms, may be interpreted not as an irrational parental fear but as a manifestation of institutional distrust directed against top-down technocratic structures.

The findings also challenge the traditional Knowledge Deficit Model, which attributes public opposition to NPPs to insufficient knowledge. Education had no statistically significant main effect on local acceptance in the hierarchical logistic regression model (Table 3), and the MANOVA showed no significant main effect of education on risk and benefit perceptions ($p = .558$; Table 6). Self-reported knowledge of NPP safety did not show a linear association with local acceptance in the cross-tabulations (Table S21), and educational attainment was likewise unrelated to acceptance. These results do not support the assumption that addressing an information or education deficit

necessarily increases acceptance and are consistent with Wynne's structural critiques [33,34]. They also recall the "inverted U" pattern discussed by Zeng et al. [32], in which technical information may increase awareness of risk rather than uniformly increasing acceptance. In the present sample, neither educational attainment nor self-reported knowledge was significantly associated with local NPP acceptance, a pattern also reported by Guo and Ren [28] in the Chinese context.

The lack of support for the Knowledge Deficit Model suggests that institutional trust may be more important for nuclear acceptance than self-reported knowledge alone [35]. The serial mediation model (Figure 2 and Table 10) partially supported H5: the pathway Risk Perception $\rightarrow$ Institutional Trust $\rightarrow$ Local Acceptance significantly mediated the association between gender and local acceptance (serial indirect effect $= -0.18$, 95% CI $[-0.31, -0.08]$), with each constituent path significant ($p < .001$). When members of the public lack the expertise needed to evaluate a complex technology such as nuclear energy, they may rely on trust in the institutions responsible for managing its risks. In the model, higher risk perception was associated with lower institutional trust, which in turn was associated with lower local acceptance. Gender's association with institutional trust operated primarily through risk perception, as the direct Gender $\rightarrow$ Trust path was not significant. A significant direct association between gender and acceptance nevertheless remained ($c' = -0.68$), indicating partial rather than full mediation.

These findings speak to the tension outlined at the outset between institutional-context and universal-mechanism explanations of nuclear resistance. The serial pathway through risk perception and institutional trust suggests that the psychological mechanism linking gender to resistance operates in a manner consistent with patterns reported elsewhere, while the persistence of a significant direct effect of gender indicates that context-specific factors, such as Türkiye's particular institutional landscape, also remain relevant. The Turkish case thus cannot resolve the tension identified in the comparative literature so much as illustrate that both mechanisms can operate simultaneously within a single national setting.

Combined with Slovic's [10] principle of asymmetric trust, this mediation pattern provides insight into the relationship between gender and nuclear resistance. Although the total association between gender and local acceptance was significant ($p < .001$), the results are consistent with an asymmetric risk–trust mechanism rather than a purely rational cost–benefit calculation. Perceived benefit also formed a significant pathway (Gender $\rightarrow$ Benefit $\rightarrow$ Acceptance, $B = -0.14$, 95% CI $[-0.30, -0.02]$), but the pathway through risk perception and institutional trust was stronger ($p < .001$ for the risk–trust path). Trust is difficult to build but can be lost rapidly following a breach of transparency [10]. Accordingly, scientific information may be perceived as top-down communication and may have limited effects on acceptance when institutional trust is low [33]. From this perspective, the NIMBY response can be understood not simply as an uninformed fear of technology but as a response to institutions and decision-making processes perceived to distribute risks unequally.

The relationships among perceived benefit, risk, and institutional trust also reveal a distinction between local attitudes and relocation intentions. In the hierarchical logistic regression model (Table 3), the Benefit Score was significantly associated with greater local acceptance ($p = .002$, $OR = 0.60$). In the relocation-intention model (Table 4), however, the Benefit Score was no longer statistically significant ($p = .205$). This difference suggests that perceived benefit may play a more limited role when respondents consider relocation rather than local construction in the abstract.

The weaker role of perceived benefit in the relocation-intention model is consistent with the principle of loss aversion formulated by Kahneman and Tversky [36]. Potential gains associated with an NPP, such as employment or lower electricity costs, may carry less psychological weight when individuals consider nuclear risk, displacement, and the possible loss of social ties. This interpretation is also consistent with the Protective Action Decision Model, which emphasizes the

importance of perceived physical threats in decisions about protective action [37]. Respondents who opposed construction but did not intend to relocate may have been balancing perceived nuclear risk against the costs of leaving their current living environment. Under such conditions, perceived benefit may become less relevant to relocation intentions [32].

Gender showed a similar change across the two outcomes. Although it was the strongest demographic predictor of local opposition, with female respondents having 2.66 times the odds of opposition compared with male respondents (Table 3), gender was not statistically significant in the relocation-intention model ($p = .364, OR = 0.831$). Thus, the gender difference observed in local attitudes did not extend to relocation intentions.

When perceived benefit and gender were no longer significant in the relocation-intention model, institutional trust remained the strongest perceptual predictor ($p < .001$; Table 4) [35]. Together with Slovic's [10] asymmetric-trust principle, this finding suggests that policy incentives such as regional development or employment may have limited effects when institutional trust is low. Building transparent and accountable institutions may therefore be important for addressing both local opposition and relocation intentions.

8. Conclusion

As energy-security concerns and geopolitical pressures prompt governments to reconsider nuclear-energy investments, this study indicates that local resistance to nuclear facilities cannot be explained by spatial distance or economic self-interest alone. Using a broad sociodemographic dataset, the study identified gender, risk perception, and institutional trust as important correlates of social acceptance in the Turkish context. The Knowledge Deficit Model was not supported: neither educational attainment nor self-reported knowledge was significantly associated with local acceptance. This pattern suggests that opposition to nuclear energy is more closely associated with trust in the institutions responsible for managing risk than with knowledge alone.

By modeling risk perception and institutional trust as sequential mediators of the association between gender and local acceptance, rather than as separate predictors, this study clarifies a potential pathway through which gender may be related to nuclear attitudes. It also challenges explanations that attribute women's resistance primarily to parental roles. The higher level of opposition among female respondents (77.6%) did not vary by parental status, suggesting that parental status does not account for the observed gender difference. The findings underscore the value of framing nuclear-risk communication not only in terms of technical information but also through a gender-sensitive approach that emphasizes institutional trust. In the relocation-intention model, both gender and perceived benefit were no longer statistically significant, indicating that the predictors of local attitudes and relocation intentions differ.

Local resistance to nuclear energy in Türkiye appears to reflect concerns about risk management and the institutions responsible for overseeing nuclear technology. Respondents' attitudes were associated with their trust in the state, scientific committees, operating companies, and other bodies responsible for managing nuclear risks. Treating spatial resistance as a construct spanning national support, local acceptance, and relocation intention was analytically useful: the clearest distinction emerged between attitudinal opposition and relocation intention, as gender and perceived benefit were significant in the local-acceptance model but not in the relocation-intention model. Overall, the findings indicate that transparency, accountability, and deliberative decision-making are central to building institutional trust and public acceptance in Türkiye's nuclear-energy policy.

9. Limitations

Several methodological limitations should be acknowledged. First, the correlational survey design precludes causal inference; the relationships identified through the serial mediation model are associational rather than directional. Longitudinal designs would be needed to establish the temporal ordering of the identified mechanisms. Second, data collection via CATI may have introduced social desirability effects, particularly in responses concerning institutional trust. Third, the findings reflect the specific institutional and political context of Türkiye and should be generalized to other national contexts with caution, although the consistency of core findings with the international literature suggests that the underlying mechanisms are not context-specific. Fourth, the key constructs were measured through self-report scales, which is standard practice in nuclear public opinion research; nonetheless, future research employing complementary measurement strategies would further strengthen construct validity. Fifth, gender was operationalized as a binary variable, which does not capture gender identity or role orientation; future research employing more detailed operationalizations would strengthen research in this area.

References

[1] European Parliament. Taxonomy: MEPs do not object to inclusion of gas and nuclear activities. 2022. Available at: https://www.europarl.europa.eu/news/en/press-room/20220701IPR34365/taxonomy-meps-do-not-object-to-inclusion-of-gas-and-nuclear-activities

[2] United Nations. COP28 agreement signals "beginning of the end" of the fossil fuel era. 2023. Available at: https://unfccc.int/news/cop28-agreement-signals-beginning-of-the-end-of-the-fossil-fuel-era

[3] Ministry of Energy and Natural Resources. Türkiye ulusal enerji planı [Türkiye national energy plan]. 2022.

[4] European Commission. Attitudes towards radioactive waste (Special Eurobarometer 297). 2008. Available at: https://europa.eu/eurobarometer/surveys/detail/693

[5] European Commission. Europeans and nuclear safety (Special Eurobarometer 271). 2007. Available at: https://europa.eu/eurobarometer/surveys/detail/560

[6] Teräväinen T, Lehtonen M, Martiskainen M. Climate change, energy security, and risk—debating nuclear new build in Finland, France and the UK. *Energy Policy* 2011;39(6):3434–3442. Available at: https://doi.org/10.1016/j.enpol.2011.03.041

[7] Visschers VHM, Siegrist M. How a nuclear power plant accident influences acceptance of nuclear power: Results of a longitudinal study before and after the Fukushima disaster. *Risk Analysis* 2013;33(2):333–347. Available at: https://doi.org/10.1111/j.1539-6924.2012.01861.x

[8] Wang J, Kim S. Comparative analysis of public attitudes toward nuclear power energy across 27 European countries by applying the multilevel model. *Sustainability* 2018;10(5):1518. Available at: https://doi.org/10.3390/su10051518

[9] Flynn J. Nuclear stigma. In: Pidgeon N, Kasperson RE, Slovic P, editors. *The social amplification of risk*. Cambridge University Press; 2003. p. 326–354.

[10] Slovic P. Perceived risk, trust, and democracy. *Risk Analysis* 1993;13(6):675–682. Available at: https://doi.org/10.1111/j.1539-6924.1993.tb01329.x

[11] Eş H, Işık Mercan S, Ayas C. Türkiye için yeni bir sosyo-bilimsel tartışma: Nükleer ile yaşam. *Turkish Journal of Education* 2016;5(2):47–59. Available at: https://doi.org/10.19128/turje.92919

[12] Gökmen A, Atik AD, Ekici G, Çimen O, Altunsoy S. Analysis of high school students' opinions on the benefits and harms of nuclear energy in terms of environmental values. *Procedia - Social and Behavioral Sciences* 2010;2(2):2350–2356. Available at: https://doi.org/10.1016/j.sbspro.2010.03.335

[13] Kılınç A, Boyes E, Stanisstreet M. Exploring students' ideas about risks and benefits of nuclear power using risk perception theories. *Journal of Science Education and Technology* 2013;22(3):252–266. Available at: https://doi.org/10.1007/s10956-012-9390-z

[14] Özdemir N, Çobanoğlu OE. Türkiye'de nükleer santrallerin kurulması ve nükleer enerji kullanımı konusundaki öğretmen adaylarının tutumları. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi* 2008;34(34):218–232. Available at: https://izlik.org/JA98AJ55LP

[15] Sezgin S. Üniversite öğrencilerinin nükleer santrale yönelik tutumları: Kırklareli Üniversitesi İktisadi ve İdari Bilimler Fakültesi öğrencileri örneği. *Yönetim Bilimleri Dergisi* 2024;22(53):1157–1185. Available at: https://doi.org/10.35408/comuybd.1445006

[16] Sürmeli H, Duru N, Duru R. Investigating teachers' attitudes towards nuclear energy and nuclear power plants in terms of different variables. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi* 2017;11(1):293–319. Available at: https://doi.org/10.17522/balikesirnef.356156

[17] Ertör-Akyazı P, Adaman F, Özkaynak B, Zenginobuz Ü. Citizens' preferences on nuclear and renewable energy sources: Evidence from Turkey. *Energy Policy* 2012;47:309–320. Available at: https://doi.org/10.1016/j.enpol.2012.04.072

[18] Gustafson PE. Gender differences in risk perception: Theoretical and methodological perspectives. *Risk Analysis* 1998;18(6):805–811. Available at: https://doi.org/10.1111/j.1539-6924.1998.tb01123.x

[19] Flynn J, Slovic P, Mertz CK. Gender, race, and perception of environmental health risks. *Risk Analysis* 1994;14(6):1101–1108. Available at: https://doi.org/10.1111/j.1539-6924.1994.tb00082.x

[20] Freudenburg WR. Risk and recreancy: Weber, the division of labor, and the rationality of risk perceptions. *Social Forces* 1993;71(4):909–932. Available at: https://doi.org/10.1093/sf/71.4.909

[21] Zhou Y, Chen S, Cui Q. Is NIMBY inevitable? An empirical exploration of determinants of public attitudes towards unwanted facilities using nationally representative data in China. *Applied Economics* 2024;56(60):9339–9355. Available at: https://doi.org/10.1080/00036846.2024.2302329

[22] Devine-Wright P. Rethinking NIMBYism: The role of place attachment and place identity in explaining place-protective action. *Journal of Community & Applied Social Psychology* 2009;19(6):426–441. Available at: https://doi.org/10.1002/casp.1004

[23] Hermansson H. The ethics of NIMBY conflicts. *Ethical Theory and Moral Practice* 2007;10(1):23–34. Available at: https://doi.org/10.1007/s10677-006-9038-2

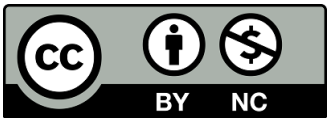
[24] Kraft ME, Clary BB. Citizen participation and the nimby syndrome: Public response to radioactive waste disposal. *The Western Political Quarterly* 1991;44(2):299–328. Available at: https://doi.org/10.1177/106591299104400204

[25] Brody CJ. Differences by sex in support for nuclear power. *Social Forces* 1984;63(1):209–228. Available at: https://doi.org/10.1093/sf/63.1.209

[26] Palabıyık H, Yavaş H, Aydın M. Nükleer enerji ve sosyal kabul sorunu: NIMBY sendromu üzerine kritik bir literatür incelemesi. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi* 2010;15(1):45–66. Available at: https://izlik.org/JA98HY82TW

[27] Davidson DJ, Freudenburg WR. Gender and environmental risk concerns: A review and analysis of available research. *Environment and Behavior* 1996;28(3):302–339. Available at: https://doi.org/10.1177/0013916596283003

[28] Guo Y, Ren T. When it is unfamiliar to me: Local acceptance of planned nuclear power plants in China in the post-Fukushima era. *Energy Policy* 2017;100:113–125. Available at: https://doi.org/10.1016/j.enpol.2016.10.002
[29] Creswell JW, Creswell JD. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications; 2017.
[30] Little RJA, Rubin DB. *Statistical analysis with missing data*. 3rd ed. John Wiley & Sons; 2019.
[31] Tabachnick BG, Fidell LS. *Using multivariate statistics*. 7th ed. Pearson; 2019.
[32] Zeng J, Wei J, Zhu W, Zhao D, Lin X. Residents' behavioural intentions to resist the nuclear power plants in the vicinity: an application of the protective action decision model. *Journal of Risk Research* 2019;22(3):382–400. Available at: https://doi.org/10.1080/13669877.2017.1391316
[33] Wynne B. Knowledges in context. *Science, Technology, & Human Values* 1991;16(1):111–121. Available at: https://doi.org/10.1177/016224399101600108
[34] Wynne B. Misunderstood misunderstanding: Social identities and public uptake of science. *Public Understanding of Science* 1992;1:281–304. Available at: https://doi.org/10.1088/0963-6625/1/3/004
[35] Siegrist M, Cvetkovich G. Perception of hazards: The role of social trust and knowledge. *Risk Analysis* 2000;20(5):713–720. Available at: https://doi.org/10.1111/0272-4332.205064
[36] Kahneman D, Tversky A. Prospect theory: An analysis of decision under risk. *Econometrica* 1979;47(2):263–292. Available at: https://doi.org/10.2307/1914185
[37] Lindell MK, Perry RW. The protective action decision model: Theoretical modifications and additional evidence. *Risk Analysis* 2012;32(4):616–632. Available at: https://doi.org/10.1111/j.1539-6924.2011.01647.x



Supplementary Material

Table S1. *Survey Response Rates*

Category	Frequency (*n*)	Percentage (%)
Completed Questionnaires	703	62.8
Non-completed Questionnaires	417	37.2
Total	**1,120**	**100.0**

Table S2. *Descriptive Statistics and Normality Tests for Continuous Variables*

						Skewness		Kurtosis	
Variable	***N***	**Min**	**Max**	**Mean**	**SD**	**Stat.**	**SE**	**Stat.**	**SE**
Trust Score	626	1.00	5.00	3.072	0.866	−0.185	0.098	−0.825	0.195
Benefit Score	587	1.00	5.00	3.278	0.922	−0.484	0.101	−0.615	0.201

Note. SD = Standard Deviation; SE = Standard Error; Stat. = Statistic. Skewness and kurtosis values were used to assess the normality assumption.

Table S3. *Multicollinearity Statistics (VIF Values)*

	Local NPP Construction		NPP Expansion		Relocation Intention	
Predictor	**VIF**	**Tolerance**	**VIF**	**Tolerance**	**VIF**	**Tolerance**
Age	1.33	0.754	1.34	0.744	1.30	0.769
Gender	1.07	0.937	1.07	0.932	1.06	0.944
Education Level	1.07	0.931	1.08	0.926	1.08	0.927
Marital Status	1.21	0.824	1.21	0.829	1.20	0.830
Parental Status	1.65	0.606	1.68	0.594	1.63	0.615
Income Group	1.06	0.942	1.06	0.941	1.07	0.937
Home Ownership Status	1.05	0.954	1.05	0.953	1.04	0.961
Trust Score	1.12	0.893	1.08	0.924	1.25	0.803
Benefit Score	1.10	0.905	1.09	0.921	1.23	0.812

Note. VIF = Variance Inflation Factor. All VIF values below 2.0 indicate no multicollinearity concern.

Table S4. *Relationship Between Nuclear Energy Share and Support for Local NPP Construction (N = 530)*

			Local NPP Construction		Total
			Yes	**No**	
The ratio of NPP	Should be reduced	*n*	8	152	160
		%	5.0%	95.0%	100.0%
	The same ratio must be maintained	*n*	54	121	175
		%	30.9%	69.1%	100.0%
	Should be increased	*n*	125	70	195
		%	64.1%	35.9%	100.0%
Total		*n*	187	343	**530**
		%	35.3%	64.7%	**100.0%**

Table S5. *Relationship Between NPP Expansion at the National Level and Support for Local NPP Construction (N = 595)*

			Local NPP Construction		Total
NPP Expansion			**Yes**	**No**	
	Yes	*n*	204	86	290
		%	70.3%	29.7%	100.0%
	No	*n*	10	295	305
		%	3.3%	96.7%	100.0%
Total		*n*	214	381	**595**
		%	36.0%	64.0%	**100.0%**

Table S6. *Relationship Between Support for Local NPP Construction and Relocation Intention (N = 578)*

			Local NPP Construction		Total
Relocation Intention			**Yes**	**No**	
	Yes	*n*	28	202	230
		%	12.2%	87.8%	100.0%
	No	*n*	177	171	348
		%	50.9%	49.1%	100.0%
Total		*n*	205	373	**578**
		%	35.5%	64.5%	**100.0%**

Table S7. *Comparison of Support for Local NPP Construction and Relocation Intention ($N = 578$)*

Local NPP Construction		**Relocation Intention**		**Total**
		Yes	**No**	
Yes	*n*	28	177	205
	%	13.7%	86.3%	
No	*n*	202	171	373
	%	54.2%	45.8%	
Total	*n*	230	348	**578**
	%	39.8%	60.2%	

Note. McNemar's $\chi^2(1) = 1.65$, $p = .199$. Percentages are row-based.

Table S8. *Comparison of Support for NPP Expansion at the National Level and Support for Local NPP Construction ($N = 595$)*

NPP Expansion at National Level		**Local NPP Construction**		**Total**
		Yes	**No**	
Yes	*n*	204	86	290
	%	70.3%	29.7%	
No	*n*	10	295	305
	%	3.3%	96.7%	
Total	*n*	214	381	**595**
	%	36.0%	64.0%	

Note. McNemar's $\chi^2(1) = 60.2$, $p < .001$. Percentages are row-based.

Table S9. *Comparison of Support for NPP Expansion at the National Level and Relocation Intention ($N = 567$)*

Support for NPP Expansion at National Level		**Relocation Intention**		**Total**
		Yes	**No**	
Yes	*n*	77	204	281
	%	27.4%	72.6%	
No	*n*	151	135	286
	%	52.8%	47.2%	
Total	*n*	228	339	**567**
	%	40.2%	59.8%	

Note. McNemar's $\chi^2(1) = 7.91$, $p = .005$. Percentages are row-based.

Table S10. *Crosstabulation of Gender and Local NPP Construction Approval (N = 617)*

			Local NPP Construction		Total
Gender			**Yes**	**No**	
	Male	*n*	154	191	345
		%	44.6%	55.4%	100.0%
	Female	*n*	61	211	272
		%	22.4%	77.6%	100.0%
Total		*n*	215	402	**617**
		%	34.8%	65.2%	100.0%

Table S11. *Crosstabulation of Parental Status and Local NPP Construction Approval (N = 617)*

			Local NPP Construction		Total
Parental Status			**Yes**	**No**	
	Yes	*n*	162	299	461
		%	35.1%	64.9%	100.0%
	No	*n*	53	103	156
		%	34.0%	66.0%	100.0%
Total		*n*	215	402	**617**
		%	34.8%	65.2%	100.0%

Table S12. *Classification Tables*

Local NPP Construction			
Observed	**Yes**	**No**	
Yes	130	65	66.7%
No	50	284	85.0%
NPP Expansion			
Observed	**Yes**	**No**	
Yes	220	54	80.3%
No	59	196	76.9%
Relocation Intention			
Observed	**Yes**	**No**	
Yes	81	128	38.8%
No	54	256	82.6%

Note. The cutoff point is set at 0.5.

Table S13. *Relationship Between Education Level and Local NPP Construction Approval (Chi-Square Analysis)*

			Local NPP Construction		Total
Education Level			**Yes**	**No**	
	Did not complete any level of schooling	*n*	5	13	18
		%	27.8%	72.2%	100.0%
	Elementary school	*n*	66	122	188
		%	35.1%	64.9%	100.0%
	Elementary/Middle School	*n*	24	41	65
		%	36.9%	63.1%	100.0%
	High School/Vocational High School	*n*	55	127	182
		%	30.2%	69.8%	100.0%
	Higher Education	*n*	65	99	164
		%	39.6%	60.4%	100.0%
Total		*n*	215	402	**617**
		%	34.8%	65.2%	100.0%

Table S14. *Distribution of Attitudes Toward Local NPP Construction by Income Group*

			Local NPP Construction		Total
Income Group			**Yes**	**No**	
	0–22,104 TL	*n*	62	117	179
		%	34.6%	65.4%	100.0%
	22,105–44,200 TL	*n*	68	143	211
		%	32.2%	67.8%	100.0%
	44,201–88,400 TL	*n*	58	101	159
		%	36.5%	63.5%	100.0%
	88,401–132,600 TL	*n*	17	34	51
		%	33.3%	66.7%	100.0%
	132,601 TL and above	*n*	10	7	17
		%	58.8%	41.2%	100.0%
Total		*n*	215	402	**617**
		%	34.8%	65.2%	100.0%

Table S15. *Descriptive Statistics for Age by Local NPP Construction Approval*

Variable	Local NPP Construction	*N*	*Mean*	*SD*	*SE*
Age	Yes	215	45.75	14.760	1.007
	No	402	45.52	14.874	0.742

Table S16. *Independent Samples T-Test for Age by Local NPP Construction Approval*

		Levene's		t-test for Equality of Means					
		F	*Sig.*	*t*	*df*	Sig. (2-tail)	Mean Diff.	SE Diff.	95% CI
Age	Equal variances assumed	0.043	.835	.185	615	.854	.231	1.253	[−2.230, 2.693]
	Equal variances not assumed			.185	440.258	.853	.231	1.250	[−2.226, 2.689]

Table S17. *Relationship Between Home Ownership Status and Local NPP Construction Approval*

			Local NPP Construction		Total
Home Ownership Status			Yes	No	
	Homeowner	*n*	122	252	374
		%	32.6%	67.4%	100.0%
	Tenant	*n*	60	91	151
		%	39.7%	60.3%	100.0%
	Dormitory	*n*	5	5	10
		%	50.0%	50.0%	100.0%
	Not a homeowner, does not pay rent	*n*	28	53	81
		%	34.6%	65.4%	100.0%
Total		*n*	215	401	**616**
		%	34.9%	65.1%	100.0%

Table S18. *Relationship Between Home Ownership Status and Relocation Intention*

Home Ownership Status			Relocation Intention		Total
			Yes	**No**	
	Homeowner	*n*	142	216	358
		%	39.7%	60.3%	100.0%
	Tenant	*n*	64	83	147
		%	43.5%	56.5%	100.0%
	Dormitory	*n*	3	7	10
		%	30.0%	70.0%	100.0%
	Not a homeowner, does not pay rent	*n*	26	52	78
		%	33.3%	66.7%	100.0%
Total		*n*	235	358	**593**
		%	39.6%	60.4%	100.0%

Table S19. *Relationship Between Employment Status and Local NPP Construction Approval*

			Local NPP Construction		Total
Employment Status			**Yes**	**No**	
	Employed	*n*	115	180	295
		%	39.0%	61.0%	100.0%
	Job seekers	*n*	18	28	46
		%	39.1%	60.9%	100.0%
	Currently enrolled in education/training	*n*	3	10	13
		%	23.1%	76.9%	100.0%
	Retired or having left the workforce due to age-related reasons	*n*	46	68	114
		%	40.4%	59.6%	100.0%
	Unable to work due to disability or chronic health issues	*n*	3	0	3
		%	100.0%	0.0%	100.0%
	Engaged in household chores and/or caring for family	*n*	29	107	136
		%	21.3%	78.7%	100.0%
	Elderly (Not retired, considers self too old to work, 65+)	*n*	1	9	10
		%	10.0%	90.0%	100.0%
Total		*n*	215	402	**617**
		%	34.8%	65.2%	100.0%

Table S20. *Local NPP Construction Approval Rates by Occupational Status*

Occupational Status			Local NPP Construction		Total
			Yes	No	
	Occupations related to armed forces	*n*	2	3	5
		%	40.0%	60.0%	100.0%
	Managers	*n*	8	6	14
		%	57.1%	42.9%	100.0%
	Professionals	*n*	19	26	45
		%	42.2%	57.8%	100.0%
	Technicians, technical staff, associate professionals	*n*	12	25	37
		%	32.4%	67.6%	100.0%
	Office support staff	*n*	12	19	31
		%	38.7%	61.3%	100.0%
	Service and sales staff	*n*	17	37	54
		%	31.5%	68.5%	100.0%
	Skilled agricultural, forestry, fisheries workers	*n*	3	6	9
		%	33.3%	66.7%	100.0%
	Artisans and workers in related fields	*n*	1	4	5
		%	20.0%	80.0%	100.0%
	Plant, machine operators, assemblers	*n*	4	9	13
		%	30.8%	69.2%	100.0%
	Workers in unskilled jobs	*n*	37	45	82
		%	45.1%	54.9%	100.0%
Total		*n*	115	180	**295**
		%	39.0%	61.0%	100.0%

Table S21. *Relationship Between NPP Safety Knowledge Level and Local NPP Construction Approval*

NPP Safety Knowledge Level			Local NPP Construction		Total
			Yes	No	
	Very good	*n*	11	11	22
		%	50.0%	50.0%	100.0%
	Good	*n*	47	60	107
		%	43.9%	56.1%	100.0%
	I don't know	*n*	20	39	59
		%	33.9%	66.1%	100.0%
	Little	*n*	97	198	295
		%	32.9%	67.1%	100.0%
	Not at all	*n*	40	94	134
		%	29.9%	70.1%	100.0%
Total		*n*	215	402	**617**
		%	34.8%	65.2%	100.0%