

Assessing Community Concerns and Expectations Regarding the Introduction of Torrent Gas Pipelines in North Coimbatore City

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Article Type: Research Article

Article Citation: Dr. K. Deepa and R. Jeevika, Assessing Community Concerns and Expectations Regarding the Introduction of Torrent Gas Pipelines in North Coimbatore City, 2023; 8(02), 1-17. DOI: 10.52184/isbrmj.v8i02.000

Received date: October 19, 2023

Accepted date: November 29, 2023

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Abstract

The perceived advantages of transitioning to gas pipelines include the prospect of a more reliable and efficient energy supply, which has garnered support among those frustrated with existing energy infrastructures. On the other hand, citizens are seeking clarity on the regulatory framework governing the project, emphasizing the importance of transparent communication from authorities. Traffic disruptions and construction-related inconveniences also feature prominently in community discussions, prompting a demand for comprehensive plans to minimize disruptions during the implementation phase. Local businesses are expressing both optimism and trepidation, anticipating potential growth opportunities alongside apprehensions about the short-term disruptions the project might cause. Engaging with community stakeholders through well-structured dialogues and information sessions will be crucial in addressing these concerns and aligning expectations. In summary, the introduction of Torrent Gas pipelines in Coimbatore is met with a blend of anticipation and skepticism, necessitating a strategic approach to communication and collaboration to ensure the successful integration of this transformative. This study looks at the expectations and worries of the locals about the proposed installation of Torrent gas pipelines in North Coimbatore City. This study aims to evaluate users', local businesses, and citizens' views on the possible effects of the pipeline project through surveys. The effects on the environment, safety

precautions, financial advantages, and community involvement are significant areas of study. Through the process of data analysis, this study aims to shed light on the community's dominant attitudes and identify points of agreement and disagreement. Furthermore, there is a keen interest in understanding the economic benefits that may arise from this development, with expectations of job creation and potential cost savings for consumers. However, a prevailing concern is whether these benefits will be equitably distributed across different socioeconomic groups within the community.

Keywords: Torrent Gas Pipelines, Safety Precautions, Community Involvement, Financial Advantages

1. Introduction

Coimbatore stands on the brink of a significant shift in its energy landscape with the proposed implementation of torrent gas pipelines. This ambitious initiative is set to redefine the city's energy infrastructure, offering potential advantages in terms of accessibility, affordability, and environmental sustainability. As the city considers this transition to a more diverse energy portfolio, a comprehensive examination of community concerns surrounding the introduction of gas pipelines becomes crucial. While the deployment of torrent gas pipelines presents a promising solution to meet the escalating energy needs of the city, it simultaneously sparks questions and apprehensions among the residents. This research aims to deeply explore the sentiments within the community, seeking to identify and thoroughly understand the concerns held by residents, businesses, and other stakeholders in the face of this transformative energy project. As we embark on this exploration of community sentiments, it is crucial to consider the broader context of urban development, environmental stewardship, and the evolving energy landscape. By conducting a meticulous assessment of community concerns and expectations, this research aims to contribute valuable insights that can inform policy decisions, foster community engagement, and pave the way for the successful integration of torrent gas pipelines in Coimbatore city. Through this collective understanding, we endeavor to navigate the path toward a future where energy initiatives align harmoniously with the aspirations of the community they serve. The impending introduction of torrent gas pipelines in Coimbatore marks a pivotal moment in the city's trajectory toward a more sustainable and resilient energy future. As the city positions itself at the forefront of modern energy infrastructure, it becomes essential to delve into the collective expectations that residents, businesses, and other stakeholders hold for this transformative project.

Torrent gas pipelines are usually used to carry natural gas. Natural gas pipelines serve a key role in transporting natural gas from production locations to customers, including residential, commercial, and industrial users. These pipelines are critical components of regional and national energy infrastructure, permitting the distribution of natural gas for heating, cooking, electricity generation, and a variety of industrial applications. With the

planned construction of Torrent gas pipelines, which promises accessibility, affordability, and environmental sustainability, Coimbatore is poised for a dramatic change in the energy landscape. But as the city accepts this shift, it becomes increasingly important to comprehend community concerns. This study explores stakeholders', businesses', and communities' opinions about the transformative energy initiative. The varied population of Coimbatore calls for a sophisticated strategy that addresses issues ranging from property values to health and safety. In addition, the study seeks to identify community expectations around cost-cutting, environmental stewardship, and general improvements in quality of life. Understanding the larger picture of urban development and climate consciousness, the research aims to support community involvement and provide information for policymakers. Coimbatore is looking forward to increased energy accessibility, economy, and sustainability due to the upcoming integration of gas pipelines. Residents also foresee a city whose energy infrastructure is smoothly integrated with urban life, leading to an improved quality of life. The research endeavors to comprehend these expectations to make a positive impact on the future of Coimbatore by ensuring that its energy landscape aligns with the goals of its dynamic population.

2. Scope of the Study

This study intends to thoroughly evaluate the expectations and worries of Coimbatore citizens about the planned installation of torrent gas pipelines inside the city boundaries. Analyzing community concerns about safety, interruption, and expense in addition to their aspirations for better energy access, affordability, and convenience, will explore the project's possible social, environmental, and economic effects. The study will gather a comprehensive picture of the many viewpoints within the community through in-depth surveys, focus groups, and stakeholder meetings. These analyses will yield insightful information that will help shape decision-making and guarantee the project's responsible and successful execution.

3. Statement of the Problem

The installation of Torrent Gas pipes in Coimbatore city presents relevant issues about community expectations and concerns, calling for a thorough analysis of the possible effects on different stakeholders. The concerns and goals of the community must be closely examined as the planned gas infrastructure development takes shape. To make sure that the installation of Torrent Gas pipes is in line with local values and expectations, issues about safety, urban planning, environmental effects, and community well-being must be carefully considered. The goal of this study is to provide a deeper knowledge of the issues involved in striking a balance between community welfare and economic progress.

4. Objectives of the Study

1. To explore the level of awareness within the community about the torrent gas pipeline project and its potential implications.
2. To assess residents' expectations regarding the potential benefits and drawbacks associated with the torrent gas pipeline project.
3. To examine the perceived safety risks associated with the gas pipelines and understand how these concerns influence community opinions.

5. Methodology of the Study

The Methodology employed for the study has been described under the following headings:

5.1. Research Design

This research employs a mixed methods design to assess community concerns and expectations about the introduction of torrent gas pipelines in Coimbatore. Quantitative surveys will gather numerical data on safety, economic expectations, and awareness from a randomly selected sample, ensuring representativeness. Simultaneously, qualitative methods, including in-depth interviews and focus group discussions, will capture nuanced perspectives through purposive sampling, ensuring diverse viewpoints. A literature review on similar projects will provide valuable context and support comparative analysis. The comprehensive approach aims to offer policymakers and stakeholders a holistic understanding of community sentiments, facilitating informed decisions on the multifaceted aspects of introducing torrent gas pipelines in Coimbatore.

5.2. Area of Study

NorthzoneofCoimbatoreCity(Thondamuthur,Vadavalli,AnnaNagar,Kavumdampalayam,TVSNagar,Edayarapalayam) is taken for the study. Plans to implement the system are being ideated and the process of installation has also been initiated in the above areas. Hence, the areas are found appropriate for the study.

5.3. Sampling Method

Stratified random sampling method to assess community concerns and expectations surrounding the introduction of torrent gas pipelines in Coimbatore city, a systematic approach was taken to ensure representation across various demographic strata. Stratification based on age, gender, marital status, occupation, income, educational background, and length of residency allowed for a comprehensive understanding of diverse perspectives. This method enabled the collection of nuanced data, shedding light on specific concerns and expectations within each stratum. The structured sampling approach ensures that the gathered insights are reflective of the community's diverse

composition, offering a robust foundation for addressing the multifaceted dynamics associated with the introduction of torrent gas pipelines in Coimbatore.

5.4. Sample Size

It comprises of 120 respondents among general individuals. Individuals of the age group of 18 years to 61 years are taken for the study. The respondents are from various strata of the society engaged in self-employment and also employed with Government and Private institutions.

5.5. Tools for Data Collection

Data collection is the process of gathering and measuring information on targeted variables in an established systematic fashion which then enables one to answer relevant questions and evaluate outcomes. The goal for all data collection is to capture quality evidence that then translates to rich data analysis and allows the building of a convincing and credible answer to questions that have been posted. Data collection sources are:

- Primary data
- Secondary data

5.6. Primary Data

Primary data is collected by firsthand sources. The data would be collected by surveying the respondents by a well-structured questionnaire. The questionnaire had been curated into Google forms also for easy collection of data. The researcher, being a resident of North Coimbatore could collect data, both by physically circulating the questionnaire as well as by sharing the Google form link.

5.7. Reliability Test

To check the internal consistency of the questionnaire, the researcher ran a reliability test using SPSS. According to Nunnally (1978), the minimum acceptable reliability should be 0.70 (Cronbach's Alpha). In the study, the questionnaire had an overall reliability of 0.916 (Cronbach's Alpha based on standardized items) as shown in Table 1.

TABLE 1. Reliability Analysis.

CRONBACH'S ALPHA	NUMBER OF ITEMS
0.880	16

Source: calculated data

It is clear from the Reliability Analysis Table 1 that Cronbach's alpha based on the standardized items revealed a value of 0.880 above the acceptable standard level of 0.70, thus the questionnaire is valid and reliable.

5.8. Secondary Data

Secondary data has been collected from articles published in journals, published thesis and also through the latest news printed in newspapers. The secondary data has been the base to prepare the questionnaire and also to conduct the survey.

5.9. Statistical Tools Used

The collected data has been analyzed using the SPSS Software. The tools applied through SPSS are as follows:

- Percentage Analysis
- Weighted Average Score
- Chi-square Analysis

6. Review of Related Literature

Çetinyokuş (2024)¹ **et.al.**, examine the possible outcomes of an industrial accident involving hazardous chemicals at the Trans-Anatolian natural gas pipeline's Edirne Ipsala compressor station. The seriousness of industrial accidents—which might involve fires, explosions, and the release of poisonous substances—is emphasized. These incidents can endanger public health, pollute the environment, cause property damage, and call for extensive emergency responses. Two hypothetical situations are evaluated in the study using the ALOHA software: one in which the chemical escapes from the pipe without burning, and the other in which the gas is burning (jet fire). Along with the program, the analysis considers the consequences of overpressure using TNT EM and TNO MEM. The findings show that the ALOHA program, when combined with GIS, offers extensive outputs, such as threat zones for poisonous impacts and heat radiation, in addition to overpressure effects. The paragraph's conclusion makes the case that ALOHA works well as a useful and practical instrument for emergency preparation and risk assessment research.

Yanga et. al (2023)², stated in their study that an essential component of energy transportation is the natural gas pipeline system (NGPS), which has complex systemic features requiring increased supply safety. With an emphasis on vulnerability, robustness, and recovery, this study explores the resilience of NGPS and addresses issues with pipeline integrity and reliability. The generalized idea of NGPS resilience is clarified, drawing on a thorough literature analysis and real-world engineering insights. The three categories of research methodology are complex network methods, process analysis, and indicator construction. The useful uses of NGPS resilience are discussed, with a focus on information

¹ Saliha Cetinyokus, Duran Dinc,Sila Ata,Consequences analysis of a natural gas pipeline: The case of the trans- Anatolian natural gas pipeline,(2024), DOI:10.1002/prs.12574,https://www.researchgate.net/publication/377257599_Consequences_analysis_of_a_natural_gas_pipeline_The_case_of_the_trans-_Anatolian_natural_gas_pipeline

² Zhaoming Yang,Qi Xiang Yuxuan He,Shiliang Peng,Michael Havbro Faber , Enrico Zio , Lili Zuo ,Huai Su and Jinjun Zhang, Resilience of Natural Gas Pipeline System: A Review and Outlook, (2023) Energies Volume 16 Issue 17, <https://www.mdpi.com/1996-1073/16/17/6237>

security, market stability, and operational safety. The study covers detailed measures and continuing applications as well, offering academics and engineers working on NGPS resilience studies helpful direction.

Mirzavand et. al (2022)³, stated in this study regarding the environmental issues surrounding oil and gas trunk lines are covered in this paragraph, with particular attention paid to Iran's sixth national gas trunkline, which is intended for export to nearby nations. The study carefully examines the environmental effects of the natural gas trunkline procedure using a life cycle assessment technique. It draws attention to the lack of focus on the systematic investigation of trunk lines' environmental effects by researchers, especially about the installation of energy-intensive equipment along the route. The study evaluates some variables, such as information on gas flow, emissions from turbines, electricity, and gas consumption, and the amount of black powder that enters the collection station. The environmental effects evaluation considers factors that may cause environmental issues and harm to ecosystems, resources, and human health.

Arya (2022)⁴, stated in this study regarding the cost-effectiveness and safe operations, that pipeline networks play a crucial role in the transportation of gas and oil, as this paragraph highlights. Since pipeline construction and operation require large financial outlays, the oil and gas sector has turned to cost-cutting optimization techniques. The paragraph outlines the article's goal to close this gap and emphasizes how few review articles there are on optimization in the pipeline industry. The paper offers a critical analysis of three current pipeline industry optimization projects and presents a technique for optimizing pipeline operations. Along with outlining the applications, the paper also discusses related difficulties and makes recommendations for future research areas. For pipeline engineers, it functions as a road map, providing insights into optimization strategies to increase pipeline profitability.

Zhong et al. (2022)⁵, stated in their study regarding the importance of subterranean pipes to urban infrastructure is emphasized in this paragraph, as is the growing worry over pipeline mishaps, which not only cause discomfort to individuals but also put lives and property in danger. To overcome these obstacles, the paper suggests a machine learning and situational awareness-based intelligent decision-making system for pipeline risk big data. To provide a unified model framework for understanding the effects of leakage accidents, the study entails a thorough analysis of gas leakage and diffusion models under various circumstances. The pipeline failure probability and failure consequence analysis models are integrated into the system to evaluate the possibility and consequences of any event. The accident impact region is identified and graphically represented using GIS technology for spatial analysis.

³ Hamed Mirzavand, Alireza Aslani, Rahim Zahedi, Environmental impact, and damage assessment of the natural gas pipeline: Case study of Iran, Volume 164, August 2022, Pages 794-806, <https://www.sciencedirect.com/science/article/abs/pii/S0957582022005766>

⁴ Adarsh Kumar Arya, Rishi Jain, Shreyash Yadav, Sachin Bisht, Shashank Gautam Recent trends in gas pipeline optimization 19 April 2022 volume 57 part 4 <https://www.sciencedirect.com/science/article/abs/pii/S2214785321072400>

⁵ Xiong Zhong, Xinsheng Zhang & Ping Zhang, Pipeline risk big data intelligent decision-making system based on machine learning and situation awareness (2022), Volume 34, pages 15221–15239, <https://link.springer.com/article/10.1007/s00521-021-06738-5>

7. Results and Discussion

A. Demographic Characteristics of the Sample

Percentage Analysis is the method of representing raw streams of data as a percentage, a part of 120, for a better understanding of the collected data. The gathered data is represented in the following table:

TABLE 2 Demographic Profile

S. No.	Demographic Characteristics	Category	Frequency	Percentage	
1	Age	18–28 years	34	28.3	
		29–39 years	38	31.7	
		41–50 years	42	35	
		51–60 years	6	5	
2	Gender	Female	67	55.8	
		Male	53	44.2	
3	Marital status	Single	38	31.7	
		Married	73	60.8	
		Divorced	5	4.2	
		Widowed	4	3.3	
4	Occupation	Employed	66	55	
		Unemployed	15	12.5	
		Retired	15	12.5	
		Homemaker	18	15	
		Student	5	4.2	
		Own business	1	0.8	
		(p.m)	Below ₹ 20000	20	16.7
			₹ 20001–₹40000	15	12.5
			₹40,001–₹60,000	50	41.7
			₹60,001–₹80,000	21	17.5
6	Educational Background	₹80,001–₹100,000	10	8.3	
		Above 1,00,000	4	3.3	
		Less than high school	4	3.3	
		High school	18	15	
		Diploma	21	17.5	
		Bachelor's degree	43	35.8	
		Postgraduate degree	34	28.3	
7	Length of residency in north Coimbatore	Less than 1 year	5	4.2	
		1–5 years	12	10	
		6–10 years	49	40.8	
		11–20 years	34	28.3	
		More than 20 years	20	16.7	

		Thondamuthur	15	12.5
		Vadavalli	20	16.7
8	Location	Anna Nagar	20	16.7
		Edayarapalayam	25	20.8
		Kavundampalayam	18	15
		Tvs Nagar	22	18.3
		Own home	62	51.7
9	Residential status	Rent home	41	34.2
		Lease	17	14.2
		1-3	15	12.5
10	Family Size (no. of members)	4-6	66	55
		7-9	38	31.7
		9-10	1	0.8
		Piped natural gas(png)	17	14.2
11	Alternative source of cooking gas supply	Biogas	12	10
		Electric induction cooking	14	11.7
		Solar powered cookers	13	10.8
		Methane from biomass	4	3.3
		Ethanol-based cooking fuels	5	4.2
		Torrent gas pipelines	55	45.8
		Strongly Agree	59	49.2
12	Diversifying energy sources for future of Coimbatore	Agree	36	3
		Neutral	9	7.5
		Disagree	15	12.5
		Strongly disagree	15	12.5

Source: Primary Data

The above Table indicates that most individuals in North Coimbatore City are between the ages of 40 years to 50 years, with a slightly larger percentage of females than males (55.8 percent of females, 44.2 percent of males) respondents. 60.8 percent of the respondents are married, and 50 percent of the respondents work yearly family incomes ranging from ₹40,001 to ₹60,000 (41.7 percent). 35.8 percent of respondents have at least a bachelor's degree. Most respondents (51.7 percent) are residents, and 55 percent of the respondent families consist of four to six people. 45.8 percent are willing to use torrent gas pipelines as a substitute source of LPG gas. Half of the respondents (49.2 percent) strongly agreed with the idea of diversifying energy sources for Coimbatore's future.

B. Weighted Average Score

The weighted average score is the most accurate evaluation of scores or values comparable. Weighted grade is simply the average of a group of grades, where each set carries a different value; data values with greater weights contribute more to the weighted mean, and data values with smaller weights contribute less to the weighted mean.

TABLE 3. Concerns regarding the introduction of torrent gas pipelines in the neighbourhood of respondents.

Statement	5	4	3	2	1	Total score	Weighted average score	Rank
Personal Safety concern	95	22	3	0	0	572	4.76	1
Environmental safety concern	57	56	7	0	0	530	4.41	4
Concerns during installation	64	41	9	6	0	523	4.35	6
Concern on land value	52	57	4	2	5	509	4.24	8
Health concerns	76	27	8	5	4	526	4.38	5
Concerns of grievance redressal	50	53	9	6	2	503	4.19	9
Concerns on bio-diversity in the neighbourhood	71	38	5	4	2	532	4.43	3
Concern on charges and fees	57	52	6	4	1	520	4.33	7
Concern on reliability on meter for usage	70	40	7	2	1	536	4.46	2

Source: Calculated Data

Weighted average scores were calculated to assess concerns about the Torrent Gas Pipeline Project. “Safety worries regarding gas pipelines nearby” ranked first with a score of 4.76, followed by concerns about the accuracy of “electric gas meter charges” with a score of 4.46. Environmental impacts ranked fourth at 4.41, while concerns about neighborhood aesthetics secured the third position with a score of 4.43. The study also addressed other issues like noise disruptions and home value effects, offering a comprehensive overview of community perceptions.

TABLE 4. Environmental concerns associated with torrent gas pipelines.

Statement	5	4	3	2	1	Total score	Weighted average score	Rank
Chances of Air pollution	78	38	3	0	1	552	36.8	1

Chances of Noise Pollution at the time of installation	61	50	8	1	0	531	35.4	3
Worry on potential exposure to chemicals	69	39	10	1	1	534	35.6	2
Concern on effect on quality of life	57	47	9	4	3	511	34.6	6
Worry about being prepared for the system of gas pipelines	66	43	4	4	3	525	35	4
Concern on increases in diseases	58	46	12	1	3	515	34.3	7
Concerns regarding other risks associated with the installation	57	54	4	4	1	522	34.8	5

Source: Calculated Data

The above table is on the Environmental concerns the gas pipeline project would pose on community health. The top concern is the potential effect on air quality, ranked first with a score of 36.8. Following closely behind is worried about exposure to pipeline chemicals, ranking second at 35.6. Noise disruptions from construction rank third at 35.4. Concerns about emergency preparedness rank fourth at 35.0, while mental well-being and water quality rank sixth and seventh, respectively. Overall community health is the fifth-ranked concern, scoring 34.8.

C. Determining the Relationship Among Variables

To test the relationship between age of the respondent and the health impacts of Gas Pipelines on Air Quality

TABLE 5. Cross tab for age of the respondents and the impact of gas pipelines on air quality.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.993a	9	0.009
Likelihood Ratio	21.530	9	0.010
Linear-by-Linear Association	0.003	1	0.960
N of Valid Cases	120		

Source: Calculated data

From the above analysis, it can be interpreted that the P value (0.009) is less than 0.05 at 5% level of significance. This indicates that there is a Significant Relationship between the age of the respondents and the health impact of gas pipelines that might affect the air we breathe, causing health issues. Therefore, it can be concluded that there are reservations among various age groups in installation of gas pipelines

To test the relationship between the age of the respondents and the impact of gas pipeline installation on community well-being

TABLE 6. Cross tab for age of the respondents and the impact of gas pipeline installation on community well-being.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.375a	12	0.896
Likelihood Ratio	7.735	12	0.806
Linear-by-Linear Association	0.118	1	0.732
N of Valid Cases	120		

Source: Calculated data

From the above analysis, it is inferred that $P= 0.896$. P value is more than 0.05 at 5% level of significance. This indicates that there is no Significant Relationship between the age of the respondents and the Impact of Gas Pipeline Construction and Operation on Community Well-Being. Thus it can be understood that people of different age groups are not much concerned about the impact of gas pipeline installation on community well-being.

To test the relationship between age of the respondents and the health risks associated with chemical exposed from gas pipelines

TABLE 7. Cross tab for age of the respondents and health risks associated with chemical exposed from gas pipelines.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.604a	9	0.678
Likelihood Ratio	7.443	9	0.591
Linear-by-Linear Association	1.259	1	0.262
N of Valid Cases	120		

Source: Calculated data

The above analysis states that P value (0.678) is more than 0.05 at 5% level of significance. This indicates that there is no Significant Relationship between the age of the respondents and the Health Risks Associated with Chemical Exposure from Gas Pipelines. Thus, it can be understood that people of different age groups are not much worried about the chemical exposure due to the installation of gas pipelines.

To test the relationship between the occupation of the respondents and the mental health implications due to the installation of gas pipeline projects

TABLE 8. Cross tab for occupation of the respondents and the mental health implications due to installation of gas pipeline projects.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.210a	12	0.769
Likelihood Ratio	9.208	12	0.685
Linear-by-Linear Association	0.059	1	0.808
N of Valid Cases	120		

Source: Calculated data

From the above analysis, it is interpreted that $P= 0.769$. P value is more than 0.05 at 5% level of significance. This indicates that there is no Significant Relationship between the occupation of the respondents and the mental health implications due to installation of gas pipeline projects. This explains that people of various occupations prefer gas pipelines due to the convenience and other advantages.

To test the relationship between gender of the respondents and the preparedness for health risks associated with installation of gas pipelines

TABLE 9. Cross tab for gender of the respondents and the preparedness for health risks associated with installation of gas pipelines.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.885a	12	0.713
Likelihood Ratio	10.262	12	0.593
Linear-by-Linear Association	0.133	1	0.715
N of Valid Cases	120		

Source: Calculated data

From the above analysis, it can be understood that the value $P= 0.713$. P value is more than 0.05 at 5% level of significance. This indicates that there is no Significant Relationship between the gender and the preparedness for health risks associated with installation of gas pipeline. Thus, it can be concluded that the gender of the respondents does not have any connection with the health risks associated with installation of a gas pipeline.

To Test the relationship between the length of residency of the respondents in North Coimbatore and Environmental Sustainability with gas pipeline implementation

TABLE 10. Cross tab of the length of residency of the respondents in North Coimbatore and environmental sustainability with gas pipeline implementation.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	36.354a	16	0.003
Likelihood Ratio	27.245	16	0.039
Linear-by-Linear Association	0.131	1	0.717
N of Valid Cases	120		

Source: Calculated data

From the above analysis, it can be understood that $P= 0.003$. The p-value is less than 0.05 at 5% level of significance. This indicates that there is a Significant Relationship between the length of residency of respondents in North Coimbatore and Environmental sustainability with gas pipeline implementation. Thus, it can be understood that people resident in North Coimbatore are concerned about the environmental sustainability of implementing gas pipeline.

To test the relationship between length of residency of the respondents in North Coimbatore and expanding employment opportunities through the gas pipeline project

TABLE 11. Cross tab of the relationship between length of residency of the respondents in North Coimbatore and expanding employment opportunities through the gas pipeline project.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	57.098a	16	0.001
Likelihood Ratio	24.745	16	0.074
Linear-by-Linear Association	4.445	1	0.035
N of Valid Cases	120		

Source: Calculated data

The above analysis states that the value of $P= 0.001$, which is less than 0.05 at 5% level of significance. This indicates that there is a Significant Relationship between the length of residency of respondents in North Coimbatore and expanding employment opportunities through the pipeline project. Therefore, there is an expectation of employment opportunities at the time of installing the gas pipeline project.

To test the relationship between length of residency of the residents and support to local economic growth through the gas pipeline project

TABLE 12. Cross tab of length of residency of the residents and support to local economic growth through the gas pipeline project.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	71.794a	16	0.001
Likelihood Ratio	36.809	16	0.002
Linear-by-Linear Association	1.175	1	0.278
N of Valid Cases	120		

Source: Calculated data

The above table states that the value of $P=0.001$, which is less than 0.05 at 5% level of significance. This indicates that there is a Significant Relationship between the length of residency of respondents in North Coimbatore and Local Economic Growth through Pipeline Project Support. There is an expectation that the installation of the gas pipeline would result in the economic growth of the locality.

To test the relationship between the educational qualification of the respondents and enhancing energy reliability through gas pipeline project

TABLE 13. Cross tab of educational qualification of the respondents and enhancing energy reliability through gas pipeline project.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	37.441a	16	0.002
Likelihood Ratio	28.508	16	0.027
Linear-by-Linear Association	3.351	1	0.067
N of Valid Cases	120		

Source: Calculated data

The value of $P=0.002$, which is less than 0.05 at 5% level of significance. This indicates that there is a Significant Relationship between the length of residency of respondents in North Coimbatore and enhancing energy reliability through gas pipeline project. Thus, it can be understood that the respondents with varied educational qualification in North Coimbatore feel the reliability of enhancing energy through gas pipelines.

To test the relationship between educational qualification of the respondents and upgrading infrastructure due to the gas pipeline installation

TABLE 14. Cross tab of educational qualification of the respondents and upgrading infrastructure due to the gas pipeline installation.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	33.609a	16	0.006
Likelihood Ratio	29.648	16	0.020
Linear-by-Linear Association	0.284	1	0.594
N of Valid Cases	120		

Source: Calculated data

From the above analysis states that the value of $P=0.006$. The p-value is less than 0.05. This indicates that there is a significant relationship between the educational qualification of the respondents and the upgrading of infrastructure due to the gas pipeline installation. Thus, it may be concluded that people in North Coimbatore agree that the installation of the gas pipeline would upgrade the infrastructure in the locality.

8. Recommendations of the Study

To gauge public opinion on the installation of Torrent gas pipelines in North Coimbatore City, several steps could be taken. This includes creating simple resources like pamphlets and Tamil-language videos to explain the concept. Additionally, organizing special events in crowded locations such as Edayarapalayam where individuals can directly ask questions can be beneficial. Safety information should be widely disseminated to address

concerns effectively. Offering potential discounts or free installation could incentivize early adoption. Assistance is also available for users transitioning from their current gas supplier or encountering technical issues. Educating people on how to read their gas meters to monitor usage is essential. Ultimately, demonstrating potential cost savings from using gas pipelines instead of LPG cylinders could garner more support for the initiative.

9. Conclusion

In summary, the survey highlights important demographic trends and significant concerns among North Coimbatore residents regarding the introduction of torrent gas pipelines. Safety worries and doubts about electric gas meter charges rank highest among community priorities. The study indicates that age, educational background, and residency duration correlate with these concerns to various extents. To address these issues, it is recommended to organize educational workshops, facilitate dialogues between residents and authorities, establish effective communication channels, and regularly seek community input. Encouraging collaboration for sustainable solutions and emphasizing the environmental advantages of alternative gas options are essential for cultivating a positive community outlook on the gas pipeline initiative. This alternate source of cooking gas would result in the safe use of gas. The scandals and scams associated with the LPG delivery and subsidy may be avoided to a large extent. Domestic accidents can also be avoided due to this kind of supply of cooking gas. The metered system of payment is appreciable, since “Pay for what you use” would be the tagline behind the implementation of the gas pipelines. This system would result in upgraded standard of living and also enhanced infrastructure.

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