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Environmental, Social, and Economic Impacts of Transportation on Students and Parents in the State of Kuwait: A Qualitative Study in Light of the Sustainable Development Goals and Kuwait Vision 2035

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Abstract

This qualitative study aimed to explore the environmental, social, and economic impacts of transportation systems on students and their parents in the State of Kuwait, and to analyze the extent to which these impacts align with the Sustainable Development Goals and the "New Kuwait 2035" vision. The study adopted a case study approach and utilized semi-structured interviews as the primary data collection tool. A total of 15 participants from diverse social and professional backgrounds were selected to ensure a broad range of perspectives and experiences. The interviews focused on five main themes that correspond to the study's research questions: the integration of environmental considerations in transportation planning; the evaluation of social impacts such as safety and school commuting; the economic burden of family transportation; participants' perceptions of equity in the distribution of transportation services; and the level of awareness regarding the concept and objectives of sustainable transport. The findings revealed significant gaps in the integration between the transportation and education sectors, as well as a lack of geographic and social equity in the distribution of school transport services. Families, particularly in peripheral areas, bear a substantial economic burden. Furthermore, the study identified limited public and institutional awareness of sustainable transport and a lack of planning and assessment tools grounded in environmental and social justice principles.

Keywords: *school transportation, social equity, environmental sustainability.*

Introduction

In recent years, the transportation sector in the State of Kuwait has undergone significant developments as part of the country's efforts to achieve the objectives of the New Kuwait Vision 2035, which aspires to transform Kuwait into a regional financial and commercial hub. One of the most prominent infrastructure projects is the launch of the Sheikh Jaber Al-Ahmad Al-Sabah Bridge—one of the longest sea bridges in the world, with a length of approximately 48 kilometers—linking Kuwait City to the northern region of Subiya. This bridge serves as a strategic axis for facilitating traffic flow, reducing travel time, and paving the way for the establishment of Silk City, a cornerstone project in the national development agenda (Oxford Business Group, 2022; Kuwait Authority for Partnership Projects, 2021).

Furthermore, Kuwait is participating in a joint Gulf initiative to implement the GCC Railway Project, which aims to connect the countries of the Gulf Cooperation Council through a modern rail network. This initiative is intended to ease the movement of goods and people across borders, reduce reliance on conventional road transport, alleviate traffic congestion, and limit resulting carbon emissions. The Kuwaiti segment of the network is expected to extend from Kuwait City to the Nuwaiseeb border crossing, passing through ports and industrial zones, thereby linking the country to strategic logistical corridors across the Gulf (GCC General Secretariat, 2023; World Bank, 2022).

Additionally, Kuwait's transportation development agenda includes the modernization of the public transportation system. This involves the implementation of intelligent transportation systems (ITS), the establishment of new mass transit stations, and the expansion of Kuwait International Airport—especially Terminal 2 (T2), which is designed according to international environmental sustainability standards. Upon completion, it is expected to become one of the most energy-efficient airport terminals in the region (Limak Construction, 2023; International Transport Forum, 2020).

These developments underscore Kuwait's commitment to enhancing infrastructure and facilitating domestic mobility by linking ports to industrial and commercial zones and promoting integration among

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various modes of transport. Such projects are also part of the country's broader efforts to diversify its sources of income and reduce dependency on oil by investing in service sectors, logistics, and physical infrastructure (UNESCWA, 2023; Al-Mutairi & Alsharhan, 2021; Mohammad et al., 2025a).

Transportation is a fundamental component of daily life for students and their families, as it constitutes a critical means of access to educational institutions—especially amid increasing urban expansion and the growing distance between residential areas and schools. A significant proportion of Kuwaiti households rely on private vehicles to transport their children to school, leading to traffic congestion during peak hours, particularly around educational zones. This trend exerts considerable pressure on road infrastructure, increases travel time, and heightens the risk of accidents (Aljassar, 2001; Al-Mutairi & Alsharhan, 2021; Mohammad et al., 2024).

Although Kuwait has an existing school bus system, its usage remains limited compared to that of developed countries. Many parents still prefer private vehicles for reasons related to comfort, safety, or prevailing social norms—despite the environmental, health, and economic implications. A study conducted by the Kuwait Institute for Scientific Research (2018) revealed that over 70% of families use private cars to transport their children to school, while fewer than 20% rely on school buses. This pattern contributes significantly to elevated carbon emissions and air pollution in school vicinities.

The choice of transport mode extends its impact to the quality of air within residential neighborhoods. Heavy traffic around schools contributes to the accumulation of dust and pollutants, most notably nitrogen dioxide (NO_2) and fine particulate matter (PM2.5), which adversely affect children's health, particularly those with asthma or respiratory conditions (WHO, 2016). A recent study revealed that children regularly exposed to high levels of traffic-related emissions tend to experience cognitive impairments and reduced attention spans in classroom settings (Coley et al., 2021; Mohammad et al., 2025b).

From a road safety perspective, the overreliance on private vehicles results in severe traffic congestion around schools, increasing the likelihood of accidents during student drop-off and pick-up times. Statistics from Kuwait's General Traffic Department indicate that a significant portion of accidents during morning rush hours are linked to school transportation, highlighting the need for more effective traffic management and public awareness policies (General Traffic Department, 2022).

Moreover, private transportation poses a growing financial burden on households in terms of fuel costs, vehicle maintenance, and loss of productive time. These costs could be reduced by adopting sustainable transport options, such as electric school buses or expanding the use of public transit (ITF, 2020; Mohammad et al., 2025c). In this context, there is a pressing need for a comprehensive study to examine mobility patterns among students and their families and assess their environmental, social, and economic impacts—ultimately informing future policies in education, environment, and transportation sectors in Kuwait.

Transportation systems directly and multidimensionally affect the environment, society, and local economy. The transport sector is one of the leading contributors to environmental pollution in urban areas. Emissions from fossil fuel combustion—especially from private vehicles—substantially raise the levels of carbon dioxide (CO_2), nitrogen oxides (NO_x), and particulate matter in the atmosphere. These pollutants are associated with increased incidences of respiratory and cardiovascular diseases, thus impacting public health (World Bank, 2019). Reports from Kuwait's Environment Public Authority indicate that the transport sector accounts for more than 40% of the country's total CO_2 emissions, making it the highest polluting sector nationwide (Environment Public Authority, 2021; Mohammad et al., 2025d).

From a societal perspective, road development and transportation expansion projects can sometimes trigger significant urban transformations, such as the demolition of residential areas or the physical division of local communities. These disruptions often lead to a decline in social cohesion and a weakened sense of community belonging. Furthermore, the noise and vibrations caused by heavy traffic—especially in residential zones—negatively impact quality of life by increasing levels of stress and discomfort among residents (Kuwait Institute for Scientific Research, 2020). A recent study warned that 35% of individuals living near highways in Kuwait suffer from chronic sleep disturbances due to persistent traffic noise (Al-Awadhi & Al-Sharhan, 2022).

Economically, overdependence on private vehicles places a financial strain on households through fuel expenses, maintenance costs, and time loss. In contrast, promoting public transport, particularly eco-friendly modes such as electric buses and light rail systems, offers more sustainable and cost-

effective alternatives. Reports by the World Bank indicate that shifting to efficient public transportation systems can reduce the economic losses from traffic congestion by up to 3% of GDP in some Gulf countries (World Bank, 2019). Additionally, advancing sustainable transport helps decrease fuel imports and supports national industries related to infrastructure and smart mobility technologies (International Energy Agency, 2021).

In sum, there is an urgent need to integrate environmental, social, and economic considerations into urban transport planning to ensure a balance between urban growth, citizen well-being, and sustainable resource management.

Kuwait's transport sector also includes a comprehensive overhaul of the public transportation system, incorporating "smart mobility" technologies such as automated traffic signal control, bus tracking systems, and advanced digital services for commuters. The Ministry of Interior and the Public Authority for Roads and Land Transport have begun implementing intelligent traffic systems (ITS) at key intersections to reduce congestion and enhance road safety (Public Authority for Roads and Land Transport, 2021). In parallel, Kuwait is making significant strides in establishing modern transit hubs that integrate buses, taxis, and on-demand mobility services, in line with global trends aimed at reducing reliance on private vehicles and promoting urban sustainability (Ministry of Public Works, 2020).

In the aviation sector, the construction of the new Terminal 2 (T2) at Kuwait International Airport represents a landmark infrastructure project. Designed according to the highest standards of environmental sustainability, the terminal is expected to be one of the most energy-efficient airport buildings in the Middle East. It incorporates technologies capable of reducing energy consumption by up to 40%, including solar-powered systems that support part of the terminal's operations (Limak Construction, 2023). This initiative reflects Kuwait's broader commitment to the objectives of "New Kuwait Vision 2035" to achieve sustainable development and align national infrastructure with international benchmarks (International Transport Forum, 2020).

Transportation serves as a cornerstone of sustainable development in Kuwait, given its direct impact on the environmental, economic, and social pillars of sustainability. The sector is particularly aligned with Sustainable Development Goal (SDG) 9, which focuses on building resilient infrastructure and fostering sustainable industrialization, as well as SDG 11, which advocates for inclusive, safe, and sustainable cities and communities (United Nations, 2015). Moreover, the transportation agenda in Kuwait intersects with the fourth pillar of "New Kuwait Vision 2035," which emphasizes enhancing infrastructure and upgrading public services to support a diversified, knowledge-based economy (General Secretariat of the Supreme Council for Planning and Development, 2019). From this perspective, improving public and sustainable transport systems—while considering environmental impact and community needs—constitutes a strategic step toward achieving balanced and inclusive development goals (SDG Knowledge Hub, 2023; Alrabei et al., 2023).

The choice of this research topic stems from both a scientific and practical need to understand the multifaceted impacts of transportation systems on a vital segment of Kuwaiti society: students and their families. While Kuwait continues to expand its infrastructure projects and modernize its transportation networks, official discourse and developmental planning often emphasize technical and economic dimensions, with relatively limited focus on the social and educational implications of mobility. A review of local and international literature reveals a notable knowledge gap in this area, particularly with regard to how transportation affects school life quality, commuting time, and the environmental stressors that may influence students and their families (Al-Ghaith & Al-Kazemi, 2020; World Bank, 2021). In light of this, the current study aims to offer a comprehensive and data-driven assessment of these impacts to support evidence-based policymaking.

Given the recent transformations in Kuwait's transport sector and the growing awareness of the need to integrate environmental, social, and economic considerations into infrastructure planning, there is a pressing need to review the relevant literature. This review aims to map out prior research addressing this topic from multiple angles, both within Kuwait and in regional and international contexts. Furthermore, the rapid implementation of projects aligned with the "New Kuwait Vision 2035," amid a scarcity of localized studies that evaluate these initiatives through the lenses of environmental justice and sustainable development, underscores the necessity for rigorous academic inquiry into this contemporary phenomenon.

Accordingly, this study presents a comprehensive literature review of recent research intersecting with its core themes. It covers issues such as environmental and social assessment in transport projects, the effectiveness of global models like Strategic Environmental and Social Assessment

(SESA), and the impacts of transport systems on different population groups, especially students and parents. This foundational review supports the development of a solid conceptual framework and helps assess whether existing literature adequately addresses the environmental, social, and economic dimensions in an integrated manner—or whether significant gaps remain that warrant deeper empirical exploration.

Several recent studies have explored dimensions intersecting with the present research. For instance, the qualitative study by Al-Ajeimi (2025) aimed to analyze the extent to which principles of environmental and social justice are integrated into transportation and infrastructure projects under the "New Kuwait 2035" vision. The researcher adopted a case study approach through interviews with experts from the Public Authority for Roads and Land Transport. The findings revealed that the lack of comprehensive evaluation tools hinders the pursuit of equitable and inclusive development decisions, particularly in large-scale projects executed without adequate community consultation or long-term environmental impact assessment.

Similarly, the qualitative study by Díaz Canales et al. (2025) investigated the impact of implementing Strategic Environmental and Social Assessment (SESA) on achieving environmental and social justice in infrastructure projects. Utilizing semi-structured interviews with professionals from various institutions, the study found that, despite a theoretical understanding of SESA's importance, its practical application faces institutional, legislative, and societal challenges. These include poor inter-agency coordination and the absence of a unified regulatory framework mandating systematic evaluations.

A study conducted by the United Nations Development Programme (UNDP, 2025) sought to examine the integration mechanisms of SESA in transportation and education projects in developing countries, using case studies from the Middle East and North Africa (MENA) region. The findings indicated that social assessments remain significantly underdeveloped compared to environmental ones and emphasized the urgent need to enhance tools that measure social impacts—particularly on vulnerable groups such as children and women affected by transport projects.

Additionally, the International Transport Forum (2023) analyzed the effects of urban transport systems in Gulf cities on the environment and society, with an emphasis on evaluating current policies in line with sustainable development goals. The results revealed that cities which adopted comprehensive environmental and social assessments achieved better indicators in reducing pollution and enhancing quality of life, compared to those that focused primarily on economic aspects while neglecting environmental considerations.

The empirical study by Al-Shammari (2023) analyzed the impact of public transportation projects in Kuwait on families and urban communities. Utilizing both surveys and interviews, the study concluded that current policies prioritize economic and infrastructural dimensions, while giving insufficient attention to social and environmental impacts. Moreover, it found that students and their specific needs are largely underrepresented in transportation planning and decision-making processes.

The study by Kørnøv and Thissen (2023) aimed to evaluate the effectiveness of Strategic Environmental and Social Assessment (SESA) in energy and transport projects across Europe and the Middle East. Through a critical review of national plans in light of Sustainable Development Goals (SDGs), the study concluded that successful SESA implementation hinges on community engagement, availability of accurate demographic data, and strong political will to uphold environmental justice principles.

In a related context, Golder Associates (2021) examined the efficiency of SESA implementation in large-scale mining and transport projects in Africa. The study focused on tools for measuring environmental justice and mechanisms for community grievance redress. Findings emphasized the need for integrating evaluation tools during early planning stages—rather than post-implementation—to enable proactive adjustments rather than reactive corrections.

The research conducted by Banister (2021) evaluated the extent to which sustainable transport planning contributes to enhancing urban quality of life, using the SESA model. The study underscored that sustainable mobility can only be achieved through an integrated approach encompassing environmental, social, and economic dimensions. Fragmenting these aspects, it argued, leads to imbalanced and unsustainable outcomes over the long term.

A World Bank study (World Bank, 2020) examined the experiences of Egypt and Morocco in integrating social and environmental considerations within urban transportation projects. The study

highlighted that countries employing SESA as a guiding framework were more successful in minimizing adverse impacts of major projects on vulnerable populations, particularly those residing in informal and densely populated urban areas.

Finally, the study by O'Neill et al. (2020) evaluated environmental and social policy frameworks for infrastructure projects in Nigeria and India. It found that limited resources and bureaucratic inefficiencies hinder the effectiveness of SESA implementation. The authors recommended the establishment of independent evaluation units within government institutions and called for capacity-building programs to train national personnel in systematically applying environmental and social impact assessment tools.

Critical Commentary on the Reviewed Literature

Most of the reviewed studies—such as Díaz Canales et al. (2025) and the UNDP (2025) report—converge on the critical importance of applying Strategic Environmental and Social Assessment (SESA) in transport and infrastructure projects, considering it a pivotal tool for ensuring environmental and social justice. These studies demonstrate a growing recognition of the integrative role of SESA; however, they also highlight institutional and legislative constraints that continue to hinder its practical effectiveness. Similarly, the International Transport Forum (2023) concluded that Gulf cities that adopted comprehensive environmental and social assessments achieved measurable outcomes in reducing pollution and improving quality of life.

In the Kuwaiti context, Al-Ajeimi (2025) revealed a significant shortfall in integrating environmental justice principles within transport projects, largely due to the absence of comprehensive assessment tools. Al-Shammari (2023) focused on the socio-economic impacts of public transportation in Kuwait but did not engage in a thorough analysis of its environmental or social dimensions. Meanwhile, the World Bank (2020) report showcased the success of countries such as Morocco and Egypt in embedding environmental and social considerations within urban transport planning—a framework that remains underdeveloped in Kuwait. Banister (2021) also emphasized the necessity of adopting a holistic and integrated approach to sustainable transport planning, an aspect largely absent in studies pertaining to the Gulf region. Further, Kørnøv and Thissen (2023) stressed that the effectiveness of SESA strongly depends on community participation—a dimension that has been notably overlooked in most Kuwaiti literature.

Moreover, studies such as Golder Associates (2021) and O'Neill et al. (2020) have addressed the broader implementation challenges of SESA in developing countries, including limited financial resources and bureaucratic inertia. These challenges are reflective of similar conditions present in some sectors within Kuwait. However, these studies rarely focused on the end-user perspective—namely, students and parents—as directly affected stakeholders in transport projects.

In summary, the existing body of literature reflects a general consensus on the necessity of comprehensive assessment tools to advance sustainable development in the transport sector. However, the studies vary significantly in methodology and scope. While international research has largely concentrated on institutional frameworks and high-level policies, local studies tend to emphasize technical or economic dimensions, often neglecting community and educational impacts. This divergence reveals a clear research gap, which this study seeks to address: the absence of empirical, field-based investigations analyzing the effects of transportation systems in Kuwait through a multidimensional lens (environmental, social, and economic), and incorporating the voices of parents and students as primary, daily users of school transport systems.

Problem Statement

Despite the recent and rapid expansion of the transport sector in Kuwait—particularly under the national development plan "New Kuwait 2035"—the assessment of environmental, social, and economic impacts of such projects continues to face significant challenges in terms of comprehensiveness and integration. Most current evaluations focus primarily on technical and urban planning dimensions, often neglecting the broader environmental and social implications. For instance, the effects of transportation infrastructure on air quality, the daily burdens on students and parents, and the economic costs of private car dependency versus public transportation alternatives remain largely underexplored (World Bank, 2021; Al-Ghaith & Al-Kazemi, 2020).

National and international reports indicate that the transportation sector in Kuwait contributes approximately 25% of the country's total carbon emissions, making it one of the most environmentally impactful sectors. This is exacerbated by a sharp rise in the number of private vehicles and a lack of sustainable alternatives such as public transit or low-emission mobility systems (International Energy

Agency, 2022; Almomani et al., 2023). Urban areas in Kuwait, particularly Kuwait City, record relatively high levels of air pollution directly linked to traffic congestion, with long-term health implications for vulnerable populations such as children and the elderly.

The situation becomes even more pressing when large-scale infrastructure projects—such as the Sheikh Jaber Al-Ahmad Al-Sabah Bridge or expansions of major high-scare are implemented without prior and robust social assessments. These projects often overlook critical issues such as student mobility patterns, the impact of new transport corridors on residential communities, noise pollution levels, and the equitable distribution of benefits and burdens across neighborhoods (UN-Habitat, 2023). The absence of environmental and social justice considerations in evaluating these projects may intensify social disparities and erode long-term public acceptance.

While international studies offer valuable models for assessing transport systems within sustainable development frameworks—such as Banister's (2008) call for the integration of environmental, social, and economic pillars in urban transport planning—there remains a notable deficiency in the Kuwaiti and broader Gulf literature. Most local studies lack a holistic, multi-dimensional perspective that captures the interwoven impacts of transportation, including environmental degradation (e.g., declining air quality, noise exposure), social concerns (e.g., child safety, school commute hardship), and economic burdens (e.g., rising transportation costs, private car dependency).

This gap underscores the need for research that applies an inclusive, sustainability-oriented framework to assess transport development in Kuwait, incorporating the lived experiences of key stakeholders such as students and parents as primary users of daily school transport systems.

While Kuwait has witnessed significant growth in its transport infrastructure as part of the "New Kuwait 2035" vision, most research efforts and public policies continue to treat the impacts of transport in a fragmented and sectoral manner. Local studies often focus on single dimensions—such as environmental pollution or economic cost-efficiency—without addressing the complex interplay between environmental, social, and economic impacts of transportation. Moreover, the tools used in existing evaluations tend to be descriptive or narrowly scoped, lacking strategic, integrative frameworks that can guide evidence-based policymaking (Al-Shammari, 2020).

This gap in applied, interdisciplinary research has resulted in weakened policy responses and limited progress toward a just and sustainable transport system in the country. As environmental pressures mount and daily mobility becomes increasingly challenging for students and their families—due to traffic congestion, rising transportation costs, and a lack of public transit options—there is a growing need to move beyond technical evaluations of roads and traffic flow, toward a more people-centered and sustainability-oriented assessment framework.

Despite ongoing infrastructure investments, including large-scale projects and highway expansions, there remains a noticeable absence of studies that examine how these developments affect everyday users—especially students and parents who rely on school transport networks and are directly impacted by issues such as air quality, noise, commuting time, and safety.

Therefore, this study aims to bridge this research gap by investigating the environmental, social, and economic implications of transport in Kuwait from the perspective of end-users—namely, students and their parents. The study adopts a holistic, multi-dimensional framework that captures their perceptions, daily experiences, and levels of awareness about sustainable transport, justice in service distribution, and the goals of the New Kuwait 2035 vision.

Research Questions

To address this gap, the study seeks to answer the following questions:

1. What are the perceptions of students and parents regarding the environmental impacts of transportation systems in Kuwait?
2. How do students and parents evaluate the social effects of transport, particularly concerning safety and school commuting challenges?
3. What are their views on the economic implications of transportation for household budgets?
4. How do participants perceive fairness in the distribution of transportation services across regions and communities?

5. What is the level of awareness among students and parents about the concept of sustainable transport and its alignment with the Kuwait Vision 2035?

Study Objective

This study aims to assess the environmental, social, and economic impacts of transportation systems in the State of Kuwait by exploring how transportation networks influence the daily lives of students and their parents. It seeks to analyze the extent to which current transport practices align with the principles of sustainable development and to investigate the level of public awareness regarding sustainable mobility. The research also aims to identify behavior patterns related to the use of various modes of transport, while examining potential demographic differences in perceptions and experiences. Furthermore, the study evaluates the role of educational and community institutions in promoting green transportation concepts and highlights possible areas for improvement to support a more just and sustainable transport system within Kuwaiti society.

Significance of Study

The significance of this study lies in both its theoretical contribution and its practical implications, as outlined below:

Theoretical Significance

The theoretical significance of this study lies in its scholarly contribution to addressing a notable research gap in the Arabic—particularly Kuwaiti—literature regarding the evaluation of transportation systems from an integrated environmental, social, and economic perspective. While international studies have explored sustainable transportation planning, such investigations remain limited in the Gulf region and often focus narrowly on technical or traffic-related dimensions, neglecting broader impacts on community well-being, environmental quality, and quality of life.

This study provides a conceptual framework grounded in the principles of environmental and social justice and sustainable development. By doing so, it enriches the academic discourse and offers new pathways for researchers to explore transportation as a multidimensional issue that extends beyond infrastructure to encompass daily life patterns, education, and public health.

Practical Significance

The practical significance of this study stems from its ability to generate field-based data and actionable insights that can guide policymakers and relevant authorities—such as the Ministry of Public Works, the Environment Public Authority, and the Ministry of Education—in enhancing urban planning and developing transportation policies aligned with sustainability and quality-of-life objectives.

By amplifying the voices of key stakeholders—namely students and parents who are directly affected by daily transportation—the study promotes the inclusion of user-centered perspectives in national development plans. Furthermore, the study's findings can inform educational and community institutions about their critical role in fostering awareness of sustainable mobility and designing awareness programs that reflect the environmental and social impacts of transport on diverse population groups.

Thus, this study bridges academic inquiry and policy application, offering valuable contributions for researchers, decision-makers, implementation agencies, and educational institutions alike.

Limitations of the Study

This study is subject to several limitations that should be taken into account when interpreting its findings and assessing their generalizability:

Thematic Limitations

The study focuses exclusively on evaluating the environmental, social, and economic impacts of transportation from the perspective of students and their parents. It does not directly incorporate the viewpoints of governmental authorities, engineers, or urban planners. As such, the findings are confined to the perspectives of end users rather than those of policymakers or system designers.

Spatial Delimitation

This study was conducted in the State of Kuwait, with a specific focus on selected urban areas such as Ahmadi, Mubarak Al-Kabeer, and Farwaniya. As such, the findings are applicable primarily

within the Kuwaiti context and may not be generalizable to other countries or cities that have different transport infrastructures or urban planning systems.

Temporal Limitations

The study covers the period from January to December 2025, during which data were collected and analyzed. Accordingly, the findings presented in this research reflect the transportation conditions and stakeholder experiences within this timeframe and may not capture subsequent changes resulting from future governmental planning, economic developments, or environmental policy reforms.

Methodological Limitations

The research adopts a quantitative approach through the use of a structured questionnaire, which may limit the depth of qualitative insights into individual experiences. Moreover, the self-reported data collected represent the perceptions and opinions of the participants, rather than objective measurements of air pollution, emissions, or actual transportation costs.

Human Sample Limitations

The study sample is limited to students in general education and their parents who regularly use transportation services. As a result, it does not capture the experiences of other groups such as school transport workers, individuals with disabilities, or the elderly. This may affect the comprehensiveness of the results and limit their applicability to broader population segments.

Study Terminology

Means of Transportation

Conceptual Definition: Means of transportation refer to all modes and mechanisms used to move individuals or goods from one location to another, including land, sea, and air transport. They are considered fundamental pillars of urban and economic development (Rodrigue, 2020).

Operational Definition: In this study, transportation means refer to all modes used by students and their parents in Kuwait to reach educational institutions, including private vehicles, school buses, and public transport.

Environmental Impacts

Conceptual Definition: These are the changes occurring in the environment as a result of specific human activities, such as pollution, noise, and greenhouse gas emissions (Glasson et al., 2013; Alrabei, 2023).

Operational Definition: In this study, environmental impacts are measured by the perceived effects of transportation on air quality, noise levels, and the urban natural environment from the viewpoint of students and parents.

Social Impacts

Conceptual Definition: Social impacts refer to the consequences that projects or policies may have on individuals and communities in terms of health, safety, social cohesion, and equity (Vanclay, 2003; Jahmani et al., 2023).

Operational Definition: In this study, social impacts are assessed based on participants' perceptions of how transportation affects road safety, school commuting, and equitable access to services.

Economic Impacts

Conceptual Definition: Economic impacts denote the direct and indirect financial effects of activities or policies on individuals and society, such as costs of living, production expenses, or income levels (Pearce et al., 2006; Alrabei et al., 2022).

Operational Definition: Here, economic impacts are evaluated by examining the perceived effects of transportation on household expenditures, time lost during commuting, and costs related to fuel and vehicle maintenance.

Sustainable Development

Conceptual Definition: Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It encompasses environmental, social, and economic dimensions (Brundtland Report, 1987).

Operational Definition: In this study, sustainable development refers to the extent to which transportation systems in Kuwait contribute to the achievement of the three pillars of sustainability, as perceived by the sample population.

Students and Parents

Conceptual Definition: Students are individuals enrolled in general education institutions, while parents are their legal and caregiving guardians (UNESCO, 2019).

Operational Definition: This group refers to the participants in the study's survey who use transportation to attend school or to transport their children to school within selected regions in the State of Kuwait.

Study Methodology and Instrument

Research Method

This study adopted a qualitative exploratory approach, which is suitable for gaining in-depth insights into individuals' perspectives and lived experiences within their natural contexts. Given the complexity of the studied phenomenon and the interplay of its environmental, social, and economic dimensions, a case study strategy was selected to analyze the perceptions of students and their parents regarding the impacts of transportation in Kuwait within their actual environment. As Creswell (2013) emphasizes, this type of qualitative methodology is well-suited for understanding complex phenomena through inductive data analysis. Halling (as cited in Al-Jame', 2019) also argues that case studies enable researchers to analyze a phenomenon within its real-life context by employing a mix of qualitative tools and techniques.

Study Population and Sample

The study population consisted of parents and secondary school students residing in urban and suburban areas in the State of Kuwait. This group was selected as they are among the most affected by daily transportation realities in terms of time, cost, and safety. A purposive sampling technique was used to select a sample of 15 participants representing diverse social and geographical backgrounds, in order to ensure a wide range of experiences and perspectives related to the study's three main dimensions: environmental, social, and economic.

Interview Procedures

The semi-structured interviews were conducted during the second half of the second academic semester of the 2024–2025 academic year, following prior coordination with participants to schedule convenient times and locations that respected their familial and professional obligations. A total of 15 individual interviews were carried out with both parents and students from secondary schools and universities, selected from various geographic regions across the State of Kuwait to ensure broad demographic representation.

Interviews were held in quiet environments chosen by the participants themselves, such as community libraries, volunteer centers, or their own homes. In other cases, interviews were conducted remotely via video conferencing platforms such as Zoom and Google Meet, based on participants' preferences and availability. This flexible arrangement aimed to create a comfortable and trusting atmosphere that would encourage open and unrestricted expression.

Each interview lasted approximately 30 to 45 minutes and began with an introductory question designed to build rapport and reduce psychological barriers. This initial question typically explored participants' daily commuting experiences or their perceptions of infrastructure development in their respective areas.

The researcher used a pre-designed interview guide to pose questions aligned with the study's three primary dimensions: the environmental, social, and economic impacts of transportation, as perceived by students and parents. The same core questions were asked of all participants using consistent phrasing and sequence to ensure data collection reliability, while still allowing interviewees the freedom to elaborate without interruption.

Participants were given the space to share their experiences and opinions freely, without any interference or direction from the researcher, who maintained a neutral facilitative role rather than a directive one. Prior to each interview, the study's objectives were clearly explained, confidentiality assurances were provided, and verbal or written consent for recording the interview was obtained.

All interviews were audio-recorded using mobile or laptop devices. Transcriptions were carried out verbatim—without omissions or modifications—to preserve the accuracy of the content and enhance the reliability of the subsequent analysis. Each interview was coded with a numerical identifier, and no real names were used to maintain participant privacy in line with ethical research standards.

At the conclusion of each session, the researcher expressed sincere appreciation to the participants for their valuable contributions and offered them the option to receive a summary of the final research findings, should they wish to remain informed.

Study Instrument: Semi-Structured Interview

This study employed the semi-structured interview as a qualitative data collection tool, given its capacity to combine structured questioning with open-ended responses, allowing for both depth and flexibility in exploring participants' lived experiences. The instrument consisted of a carefully designed interview guide that included five main open-ended questions aligned with the core themes of the study:

Environmental impacts of transportation on students and their families, such as air quality, noise levels, and changes in the urban landscape.

Social implications, including road safety, school commuting patterns, and community cohesion within residential neighborhoods.

Economic burdens associated with various modes of transportation, addressing both direct and indirect costs borne by families.

Perceptions of equity in the distribution of transport services and infrastructure across different regions of Kuwait.

The relationship between transportation and sustainable development goals (SDGs), particularly in relation to quality of life and urban planning.

The development of the interview guide was informed by an extensive review of the educational literature, as well as national and international environmental and development reports. Additionally, insights were drawn from previous studies examining the interlinkages between transportation and sustainable development.

To ensure face validity and contextual relevance, the initial draft of the interview guide was reviewed by a panel of experts in research methodology, environmental planning, and social studies. Their feedback was used to refine the content, ensuring that the questions were comprehensive, culturally appropriate for the Kuwaiti context, and aligned with the research objectives.

Interview Reliability

To ensure the reliability of the interview instrument, the researcher employed the test–retest method, a widely recognized approach for validating the consistency of qualitative data collection tools. Pilot interviews were conducted with three participants outside the primary study sample, carefully selected to reflect similar demographic and social characteristics. The same interview protocol was re-administered to these participants after a two-week interval, and the responses from both rounds were compared.

The results revealed a high degree of consistency in core ideas and general trends, with only minor differences in expressive style or illustrative examples—variations that are natural and expected in qualitative research. This consistency in content reflects an acceptable level of reliability and trustworthiness, thereby reinforcing the credibility of the instrument and its appropriateness for the study context.

Qualitative Data Analysis

The data were analyzed using manual thematic analysis within the framework of the case study method, which is particularly suited for exploring complex social phenomena in their real-life contexts, as emphasized by Creswell (2013). The analytical process followed a series of structured steps:

1. Repeated Reading of Transcripts: Interview transcripts were transcribed verbatim and read multiple times with focused attention to gain a comprehensive understanding of the context and develop familiarity with the raw data.
2. Initial Coding: Key phrases and recurring concepts were identified across the transcripts and assigned preliminary codes that captured their meanings.
3. Categorization into Thematic Domains: Similar codes were grouped into broader thematic categories corresponding to the study's five primary dimensions, enabling the construction of a network of sub-themes related to one or more research questions.
4. Pattern and Variation Analysis: Patterns and divergences in participant responses were examined based on demographic background, mode of transportation, geographic location, and other relevant factors.
5. Analytical Construction of Findings: Analytical narratives were developed to reflect the diversity of perceptions among participants. These were interpreted through the lens of the theoretical framework and aligned with relevant previous studies to deepen the understanding of Kuwait's multifaceted transport experience.

This rigorous and multi-layered analytical approach facilitated the identification of indirect relationships, behavioral patterns, and contextual nuances, allowing the researcher to formulate evidence-based recommendations grounded in a well-documented and realistic understanding of the studied phenomenon.

Study Findings

First Question

To what extent are environmental and social considerations integrated into transportation systems, and how do they affect students and their families in the State of Kuwait?

The analysis of the semi-structured interviews revealed that the integration of environmental and social dimensions into transportation planning in Kuwait remains limited. Current transportation planning tends to prioritize technical and engineering aspects—such as road expansion and physical infrastructure improvements—while insufficiently accounting for the daily life impacts of transport systems on target populations, particularly students and their families.

Most participants agreed that transportation-related decisions are often made without community consultation or thorough assessments of the social and environmental consequences of such projects. This exclusion frequently leads to imbalanced outcomes that may exacerbate existing issues rather than resolve them.

Participants expressed growing concern about the lack of a holistic vision in transportation policies. They emphasized that overlooked factors—such as air quality, noise levels, public safety, and road hazards—have a direct impact on students' physical and mental health, their readiness to learn, and their overall family well-being. Morning commutes in certain neighborhoods were described as exhausting and marked by severe traffic congestion, which negatively affects school arrival times and heightens stress levels among students and parents alike.

The recurring codes that emerged from participant responses included:

- "Absence of environmental and social impact assessments": Participants noted that many road and infrastructure projects proceed without prior environmental or social evaluations, often resulting in negative and unforeseen consequences post-implementation.
- "Traffic congestion in school zones": Several accounts described severe bottlenecks around schools, compromising safety and disrupting daily routines.
- "Overreliance on private vehicles": The majority of students rely on private car transport, contributing significantly to congestion and carbon emissions.
- "Lack of environmentally friendly public transport": Participants cited a scarcity of public buses, as well as the absence of dedicated bicycle lanes or safe pedestrian pathways.

Supporting Quotations and Interpretation

One participant noted: *"Most schools in residential areas suffer from morning traffic chaos due to the absence of an organized transport system. This causes psychological pressure on both parents and students."*

Another participant stated: *"There is no genuine planning that accounts for child safety during daily commutes—there are not enough pedestrian crossings or safe drop-off zones."*

From the researcher's perspective, these findings reflect a clear shortfall in integrating environmental and social considerations into transport policies in the State of Kuwait, particularly concerning their impact on students and their families. This deficiency goes beyond the lack of environmentally friendly transportation networks or safe walking routes; it highlights a deeper issue—the absence of coordination among the sectors responsible for educational, environmental, and transport planning. This disconnect leads to a strained educational environment that burdens families and students both psychologically and financially, widening the gap in equitable and safe access to educational institutions.

This aligns with Al-Ajeimi (2025), who emphasized the lack of comprehensive assessment tools in transport projects, thereby undermining the principle of equity advocated by the Sustainable Development Goals—particularly Goal 11, which calls for making cities inclusive, safe, resilient, and sustainable.

These observations are also consistent with Banister (2021), who stressed the need to move beyond purely engineering-based thinking in transport planning and adopt an integrative approach that considers environmental, social, and economic aspects alike. The current findings echo the conclusions of UN-Habitat (2023), which noted that the absence of integration in urban transport systems exacerbates urban injustice and deepens social disparities—especially when the voices of primary users such as students and parents are ignored.

Furthermore, a report by the International Transport Forum (2023) indicated that cities that successfully integrated comprehensive environmental and social assessments into their transport projects saw notable improvements in school life quality, cleaner air, and reduced congestion.

In the Kuwaiti context, Al-Shammari (2023) highlighted that transport policies are still managed from a technical and economic lens, with insufficient consideration for the psychological and social impacts on students. Given this, there is an urgent need to rethink the philosophy of transport planning in Kuwait—where humans are not treated as a secondary variable in infrastructure design but rather repositioned as the central focus of public policy.

Adopting a holistic approach that considers the dynamics of school and community life and includes parental participation in the planning stages is not a luxury—it is a necessity. Kuwait's experience with major infrastructure projects, such as the Sheikh Jaber Bridge, reveals that the absence of social evaluation has led to intense traffic pressure in school-adjacent areas (UNDP, 2025), illustrating that an engineering-only approach produces unbalanced outcomes.

Accordingly, any future transport project must be preceded by a comprehensive Environmental and Social Assessment (e.g., SESA) that captures users' perspectives and evaluates not only economic efficiency but also distributive justice. The study also underscores the need to build educational and community capacities that understand the importance of sustainable transport in creating safe, inclusive, and supportive learning environments—an argument also reinforced by Díaz Canales et al. (2025) and Golder Associates (2021).

Second Question

How do participants assess the social impacts of transportation, such as safety and school mobility?

The social impacts of transportation represent a fundamental axis in analyzing its relationship with sustainable development—particularly in relation to public safety and school commuting. In the Kuwaiti context, this dimension assumes growing importance amid rapid urban expansion, increasing traffic congestion around schools, and the absence of safe and efficient public transportation alternatives. Accordingly, this section aimed to explore participants' perceptions regarding the daily social burdens imposed by the current transportation system, especially on children and parents, as they are among the most affected groups. The participants' responses offer valuable insight into how transportation

policies shape quality of life, social justice, and the safety of educational environments in the State of Kuwait.

Participants' answers revealed a strong awareness of the tangible social repercussions of transportation systems in Kuwait, particularly concerning school safety and students' daily mobility. The majority expressed concern over the lack of secure infrastructure surrounding schools and the near-total reliance of families on private vehicles due to the weakness of public transport networks. This situation results in severe traffic congestion and exposes students to repeated traffic hazards.

Recurrent Semantic Codes Extracted from the Interviews:

- "Risks to children's safety"
- "Traffic chaos in front of schools"
- "Lack of pedestrian crossings"
- "Morning psychological stress"
- "Absence of suitable public transport solutions"
- "Congestion of cars during drop-off and pick-up times"

These codes reflect the participants' shared perception that the current transport system not only fails to facilitate safe access to schools but actively contributes to an unsafe, stressful, and socially inequitable daily reality for many families.

Supporting Quotes and Analytical Commentary

One participant remarked: *"I feel scared every day when I drop off my children at school. There are no clear signs or traffic regulation in place, which creates daily stress for me."*

Another participant added: *"We're forced to use a private car for each child because school buses are either unavailable or unreliable. This leads to unbearable congestion, especially in residential areas."*

These perceptions reflect a deep systemic gap in the planning of school transportation in Kuwait, where children—arguably one of the most vulnerable demographic groups—are often neglected in urban policy design. The lived realities shared by participants reveal that the absence of structured, safe, and inclusive transportation solutions exposes children to safety threats and imposes both psychological and financial burdens on families. Moreover, the lack of safe pedestrian pathways and designated drop-off zones reduces children's ability to travel independently, directly undermining the principles of social equity in education.

These findings align with the International Transport Forum (2023), which highlighted that non-inclusive urban transport policies exacerbate risks in school environments. Similarly, the UN-Habitat (2023) report affirmed that neglecting the social dimension—particularly in educational districts—leads to congestion, psychological stress, and daily risks that hinder the educational process. In the Kuwaiti context, Al-Shammari (2023) emphasized that the overreliance on private vehicles has created a social burden for families, in the absence of safe and efficient alternatives for children. Likewise, Kørnøv & Thissen (2023) advocated for the integration of social impact assessments during the pre-implementation phases of transport projects to avoid such systemic failures.

Researcher's Interpretation and Policy Implications

These insights underscore the urgent need to embed social dimensions at the heart of both urban and educational planning. Transportation cannot be considered in isolation from the educational environment, particularly during childhood. Unfortunately, the transportation ecosystem in Kuwait is still predominantly shaped by hard infrastructure logic, with limited attention given to the human and familial aspects.

Traffic safety is not a luxury—it is a foundational prerequisite for ensuring children's psychological stability and educational continuity. Likewise, school-based public transport should not be treated as a secondary option, but rather as a strategic necessity for alleviating family burdens, reducing pollution, and easing congestion.

Therefore, integrating tools such as the Strategic Environmental and Social Assessment (SESA) into transport and road infrastructure projects becomes a critical step toward institutionalizing safety

and school mobility within broader public policy. Recent studies such as Díaz Canales et al. (2025) and UNDP (2025) have also recommended this integrative approach, reinforcing the need to reorient planning around the needs and voices of primary users—especially children and their caregivers.

Third Question

How Do Participants Evaluate the Economic Impacts of Transportation, Such as Cost and Financial Pressure on Families?

The economic dimension stands as a central pillar in analyzing the sustainability of transportation systems, especially due to its direct connection to daily commuting costs, household expenditures, and the financial strain arising from near-total dependence on private vehicles or inefficient transportation alternatives. In Kuwait, these pressures are further exacerbated by rising fuel and maintenance costs, in addition to the lack of reliable public transportation options. These factors not only influence parental choices regarding schooling and residential location, but also contribute to inequities in access to quality education—thus undermining principles of economic and social justice.

This question sought to explore participants' awareness of these economic dimensions and their evaluation of how current transportation policies impact families, particularly those with limited incomes. It also aimed to open a broader discussion on the interrelationship between transportation, economic equity, and sustainability—anchored in the everyday experiences of Kuwaiti households.

Key Findings from Interview Analysis

The thematic analysis of the interviews revealed widespread agreement among participants that the current transportation system imposes a growing financial burden on parents—particularly in the absence of effective and safe public alternatives. Many respondents voiced concern over the fixed monthly costs incurred from using private vehicles to transport children to and from school. These include not only fuel and maintenance expenses but also the excessive consumption of time and physical effort—factors that cumulatively increase both the economic and mental stress experienced by families. This is especially pronounced in peripheral areas of Kuwait that lack access to public transportation services.

Recurring Thematic Codes

Participants repeatedly referred to the following economic challenges:

- "Monthly transport costs are a burden on families"
- "There are no safe or free government-operated school buses"
- "School choice is now driven by location, not quality"
- "Lack of options forces families to buy additional cars"

These findings point to a pattern of economic exclusion where only families with sufficient resources can access high-quality schools without sacrificing convenience or safety. Meanwhile, families with fewer financial means are left to navigate suboptimal and costly options, reinforcing structural inequalities in educational access and urban mobility.

Supporting Quotations and Analytical Commentary

Several interviewees vividly described the financial pressures stemming from the lack of affordable and efficient school transportation. One participant stated: *"I know families who are forced to change their children's school simply because they can't afford the daily transportation cost. This inevitably affects the quality of education their child receives."*

Another participant noted*:"If you have more than one child in different schools, transportation becomes a real nightmare in terms of both time and expense."*

These testimonies reflect an economically unsustainable model of school mobility that relies almost entirely on private vehicles. This reliance results in a direct depletion of household financial resources through recurring expenses on fuel, maintenance, and the necessity for multiple vehicles within a single family. Critically, this financial burden is not equitably distributed across socioeconomic groups—it disproportionately affects middle- and low-income families, exacerbating marginalization and inadvertently reinforcing inequalities in access to education.

The broader structural issue lies in how these transportation-related economic pressures indirectly compromise educational equity. School selection is no longer based solely on academic quality or a nurturing environment—it is increasingly determined by the school's geographic proximity and transportation feasibility. This shift undermines the principle of equal opportunity enshrined in both international conventions and Kuwait's own sustainable development framework. Particularly in peripheral areas with underdeveloped infrastructure, families often enroll their children in nearby schools of lower quality to avoid high commuting costs, thereby deepening the educational divide between regions.

From an environmental perspective, heavy reliance on private cars leads to increased fuel consumption, which contributes to higher carbon emissions and elevated levels of airborne pollutants—especially in densely populated residential and school zones. These environmental externalities not only pose health risks to children but also degrade the overall quality of the urban environment, leading to chronic traffic congestion and diminished air quality.

These findings resonate with the conclusions of Banister (2021), who emphasized that the absence of equity-centered transportation planning produces disproportionate economic and social impacts, particularly in terms of access to essential services such as education and healthcare. Similarly, Al-Shammari (2023) concluded that Kuwait's current transportation policies emphasize engineering and infrastructure development while neglecting the human and social dimensions critical to achieving holistic and sustainable development outcomes.

This analysis clearly reveals a systemic shortfall in integrating educational and economic considerations into school transportation policymaking. Families are left to shoulder organizational and financial responsibilities that conflict with their primary caregiving roles. As such, there is an urgent need for the government to implement socially just school transportation policies that guarantee safe, reliable, and state-subsidized public transport, especially for underserved and lower-income communities.

Furthermore, any future transportation initiatives should incorporate comprehensive cost-benefit and social impact assessments—such as those provided by the Strategic Environmental and Social Assessment (SESA) framework—to ensure alignment with national visions like "New Kuwait 2035" and global agendas such as the UN Sustainable Development Goals (SDGs)—specifically Goal 4 (Quality Education) and Goal 11 (Sustainable Cities and Communities).

Fourth Question

What Are the Participants' Perceptions of Equity in the Distribution of Transportation Services?

Equity in the distribution of transportation services is one of the core principles for achieving sustainable development and social justice—especially within educational contexts, where access to schools significantly affects the quality of education, continuity of attendance, and equal opportunities. In the Kuwaiti context, a fundamental question arises: Are school transportation services allocated based on the actual needs of students, or are there spatial and social disparities that undermine the fairness of distribution?

This research question aimed to explore participants' perceptions of distributive justice in transportation services, and the extent to which they perceived fairness across different residential areas and social groups regarding access to safe, organized, and appropriate school transportation.

Key Findings

The interview analysis revealed that most participants believe equity in the distribution of school transportation services in Kuwait remains limited and is not systematically enforced. A general perception of geographic and social bias emerged in how services are planned and delivered. Participants observed that transportation efforts are often concentrated in centrally located, more privileged urban areas, at the expense of peripheral neighborhoods or low-density regions. This unequal focus leads to disparities in school accessibility and increases burdens on disadvantaged groups.

Common Thematic Codes Identified:

- "Lack of geographic equity in transportation service distribution"
- "Peripheral areas are not prioritized"
- "Students with disabilities are excluded from planning"

- "No clear policy for free or subsidized school transportation"

Supporting Quotes and Analytical Commentary

One participant stated: *"I see that schools in certain areas receive organized and dedicated transportation services, while other areas—where hundreds of students live—have no transportation at all. This puts parents through daily hardship."*

Another participant added: *"Children with disabilities and kindergarteners are completely disregarded! Neither the design of the vehicles nor the parking spaces consider their needs—it's as if they don't exist."*

These perceptions reflect a structural shortcoming in educational and service planning, as they reveal a clear absence of the "equity-by-need" principle, which should be foundational in both educational and sustainable transportation policies. Instead of distributing school transportation services based on pedagogical and social priorities—such as student population density or the proportion of vulnerable groups (e.g., students with disabilities, girls, kindergarten children)—decisions are often guided by logistical or urban considerations that neglect the human dimension of the right to education.

As a result, the existing school transport system reinforces class-based and geographic disparities, transforming daily commuting into a burdensome routine for families—particularly in peripheral and underserved neighborhoods. This inequity weakens students' access to quality education and undermines the educational inclusion principle embedded in the global Sustainable Development Goals (SDGs).

Policy Gaps and Structural Limitations

The findings also indicate that current school transport policies in Kuwait lack comprehensive evaluation tools capable of accurately identifying distributive gaps. The absence of updated databases and performance indicators linking school locations to population densities and need-based access points leaves distribution decisions subject to individual discretion and non-evidence-based practices.

Moreover, the exclusion of local communities—particularly parents and school councils—from the policymaking process strips school transport strategies of their participatory dimension, rendering them ineffective in addressing daily realities. In this context, the establishment of a national mechanism for community-based monitoring of school transportation policies is essential for enhancing transparency and ensuring sustainable geographic-educational justice.

These findings align with the UNDP (2025) report, which emphasized that the absence of distributive justice tools in transport projects leads to the aggravation of geographic and social gaps in school access. Similarly, the International Transport Forum (2023) concluded that Gulf cities lacking comprehensive transport needs assessments tend to develop inequitable service models that disproportionately harm marginalized groups.

Further supporting this, Díaz Canales et al. (2025) found that applying Strategic Environmental and Social Assessment (SESA) methodologies contributes to enhanced distributive justice—when implemented through participatory frameworks that prioritize the needs of vulnerable populations.

Call for Structural Reform and Policy Innovation

In light of these insights, the study calls for a fundamental shift in the planning philosophy behind school transport services in Kuwait. There is a pressing need to reassess distribution mechanisms using educational and social equity indicators. The establishment of a National Observatory for School Transportation, tasked with evaluating equity in service distribution and publishing regular, data-driven reports, is strongly recommended. This observatory should also ensure the active participation of community stakeholders in performance evaluation and policy design.

Ultimately, educational empowerment begins not in the classroom, but in the safe, equitable, and accessible pathway that leads to it.

Fifth Question

What is the Level of Participants' Awareness of the Concept and Goals of Sustainable Transport within Kuwait Vision 2035?

Sustainable transport is a cornerstone of achieving the Sustainable Development Goals (SDGs), particularly in urban environments that face interlinked environmental, economic, and social challenges. This concept holds particular importance in the context of the "New Kuwait Vision 2035", which emphasizes a national shift toward intelligent, sustainable infrastructure and the development of transportation systems that reduce dependency on private vehicles while enhancing environmental efficiency and social equity.

Within this context, a key question emerged regarding the extent to which individuals—especially those engaged in education and civil society—are aware of the concept and goals of sustainable transport, and how this awareness shapes their perceptions of current policies and practices. Accordingly, this research question aimed to explore participants' level of understanding of sustainable transport principles, its relationship to environmental and social justice, and the degree to which it is integrated into educational and community-based policies in Kuwait.

Key Findings

Interview analysis revealed that participants' awareness of the concept of sustainable transport and its strategic objectives remains at a preliminary stage. Many expressed only partial or surface-level understanding, often limited to environmental aspects such as reducing pollution or traffic congestion. There was a notable lack of comprehension of the broader social and economic dimensions of sustainable transport as outlined in Kuwait Vision 2035.

Several participants pointed to the absence of effective institutional and community awareness efforts regarding the importance of integrating environmental planning with educational transport strategies in order to foster more just and sustainable cities.

Recurring Codes and Thematic Patterns

- "There is no clear definition of sustainable transport."
- "People associate sustainability only with greenery or renewable energy."
- "No integration between education and transport in existing policies."
- "Vision 2035 needs to be explained in simpler terms to the public."

Supporting Quotes and Interpretative Analysis

One participant remarked: *"No one ever explained to us that sustainable transport is related to justice or education. We always hear about it in an environmental context only."*

Another participant stated: *"We've heard about Vision 2035, but there is no real public awareness about how we can engage with it or benefit from it—especially in the field of school transport."*

These responses reflect a fragmented and inconsistent understanding of the concept of sustainable transport. The environmental dimension—such as reducing pollution or improving road conditions—dominates participants' interpretations, while the social justice and equity aspects remain underexplored or misunderstood. This indicates that sustainable transport has yet to be translated into a holistic public awareness or embedded within institutional practices—particularly within the domains of education and school mobility.

From an educational perspective, the absence of awareness regarding the intersection of transport and education reflects a deeper policy gap, where transportation continues to be viewed as a technical service under the purview of public works or transportation ministries, rather than as a fundamental right linked to quality education and social equity. Consequently, comprehensive solutions that address the needs of students—especially in peripheral or densely populated areas—are lacking. Some participants observed that while the term "sustainability" appears frequently in official documents like Kuwait Vision 2035, it fails to materialize into tangible practices that serve end users, particularly students and their families.

These findings align with those of Díaz Canales et al. (2025), who emphasized that the gap between theoretical understanding of Strategic Environmental and Social Assessment (SESA) and its actual implementation stems from the lack of clear institutional mechanisms and effective community participation. Similarly, the UNDP (2025) report found that communities failing to integrate awareness-building into environmental and social policies struggle to achieve meaningful outcomes. Furthermore, the International Transport Forum (2023) concluded that limited public understanding of environmental

and social justice remains one of the key obstacles to implementing sustainable transport policies in Gulf countries.

Policy and Educational Implications

Based on these results, there is a critical need for a comprehensive national strategy for awareness and education around sustainable transport. Such a strategy should begin within schools and actively involve local communities in co-designing solutions. Additionally, integrating sustainable transport principles into national education and development strategies—particularly through the inclusion of school transport as a policy priority—would be a pivotal step toward transforming sustainability rhetoric into practical, inclusive actions that improve quality of life and advance social justice across Kuwait.

Recommendations

In light of the study findings and the participants' responses, the following recommendations are proposed to promote a more equitable, sustainable, and education-focused transportation system in the State of Kuwait, particularly in the context of school transport services:

At the Level of National Policy and Strategic Planning

- Adopt a holistic approach to transportation planning that integrates environmental, social, and economic dimensions in alignment with *New Kuwait Vision 2035* and the *Sustainable Development Goals (SDGs)*—particularly SDG 4 (Quality Education) and SDG 11 (Sustainable Cities and Communities).
- Recognize school transport as a national priority within educational and social strategies—not merely as a logistical service, but as a fundamental right for all students.
- Develop institutional legislative frameworks that mandate implementing agencies to adhere to principles of environmental and social justice in the design and execution of transport projects, especially in residential and educational areas.

At the Level of Service Equity and Distribution

- Establish a National Observatory for Educational Transport to monitor geographic and social disparities in transport service distribution and to propose policies based on real needs and student population density.
- Design and implement an environmentally friendly school transport system (e.g., electric or hybrid buses), supported by public funding and accessible to vulnerable groups and low-income families.
- Ensure inclusive planning for students with disabilities, girls, and kindergarteners by addressing safety, privacy, and accessibility in all school transport service designs.

At the Level of Awareness and Community Participation

- **L**aunch national awareness programs to promote the concept of sustainable transport among families, students, and educational personnel, clarifying its connection to quality of life, environmental justice, and social equity.
- Enhance community and parental involvement in designing and evaluating school transport services through regular surveys and community councils that connect stakeholders with policymakers.
- Integrate concepts of sustainable transport and environmental justice into school curricula and university courses, fostering a culture of conscious and responsible consumption among future generations.

At the Level of Future Research

- Expand research scope to include direct experiences of students and parents using qualitative methods and comparative analysis across regions.
- Conduct applied experimental studies on the impact of introducing sustainable transport systems on educational quality, family well-being, and environmental outcomes.

Develop standardized assessment tools to measure indicators of justice, accessibility, and sustainability in the educational transport sector across Kuwait and the broader Gulf region.

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