

# Social impacts and public participation in transportation projects: a review of the Third Bridge Project in Istanbul

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## Abstract

Transportation systems affect our lives directly by providing accessibility to food, healthcare, employment and recreation facilities; and indirectly by creating changes in urban areas and the transportation conditions. It is crucial to define how transportation projects shape people's daily lives and to identify the extension of these effects, in individual and societal context. Analyzing the impacts in a comprehensive way provides precautions to mitigate the negative effects and promote a higher life quality for society. The aim of this study is to observe the social impact assessment and participation techniques in transportation projects through the exemplary case of the Third Bridge Project in Istanbul. Phenomenological meetings, ethnographic observation and Stakeholder Analysis (N=65), were conducted in the vicinity of Garipçe and Poyrazköy, where the piers of the Third Bridge stand. This study revealed that the public has not been informed about the social risks and access to alternative resources (especially for disadvantaged groups) and that participation was not integrated in the project planning and implementation phase. These deficient studies create uncertainties about the benefits of the project and complicate the solutions of the problems; adequate measures can create positive outcomes for future projects.

*Keywords: sustainable transportation, participation, social effects, impact assessment, Third Bridge Project, Istanbul, quality of life, livability.*

## 1 Introduction

The British Medical Association [1] defines sustainability as providing the basic needs of populations in assurance with quality of life without compromising needs



and life qualities of future generations. Litman [2] considers sustainability as not just a long-term planning model and claims there is a relation between sustainability, livability and quality of life. Litman states that quality of life is not only about our personal lives but also our relations with acquaintances and their quality of life. Litman integrates the notion of quality of life with space and time, thus bringing other dimensions into this notion such as long distances and time. In this way, the concepts of quality of life and transportation are linked. OECD [3] describes environmentally sustainable transport as a transportation system that provides mobility needs with a reasonable amount of renewable resource usage without risking public health and ecosystems. Litman [2] recommends providing balance between *Economic* (efficient mobility, local economic development, operational efficiency), *Social* (social equity-justice, personal safety and health, affordability, community cohesion, cultural preservation) and *Environmental* (air, noise and water pollution reductions, climate change emissions, resource conservation, open-space preservation, biodiversity protection) issues [2].

There is no common definition of livability and quality of life, yet these notions represent meeting basic personal needs in an individual and a societal context. VanZerr and Seskin [4] define quality of life as the general welfare of individuals and communities and consider *livability* as the comfort and quality of the surrounding environment; *quality of life* as the impacts of the surrounding environment on human experience and health. Raphael *et al.* [5], suppose that the community quality of life concept is related to the community members' perception of life and can be evaluated through observing the degree to which their basic personal requirements have been met.

The relation between sustainable transportation and quality of life brings out the importance of impact assessment studies in transportation projects. Transportation has significant effects on both individuals and the society due to the link it creates between production, storage and consumption and to its contributions to commerce. Costs and rates of transportation investments affect the density and location of economic activities and, thus, geographical production and settlement patterns [6, 7]. Transportation and land use planning create impacts on quality of life directly and indirectly at different levels and fields [8]. The relationship between transportation and quality of life has been frequently emphasized in the literature, such as the function of integrating the economic and social structures of communities; preventing accessibility to education, health and social services, thus, constraining freedom of movement regarding deficiencies in the transportation system [4, 8–11]. The impacts of transportation projects have diverse effects on different groups, hence, the accurate identification of driving forces acquires a great significance [11–13] and, consequently, this paper emphasizes these issues. Among multiple studies in the field of the social impacts of transportation projects, the Florida Department of Transportation (FDOT) [10] highlights the importance of public participation in community impact assessments. According to FDOT reports, public participation provides the identification of stakeholders and their understandings of the severity of the impacts and, accordingly, alternative solutions and mitigation techniques, such as the integration of community objectives into the project decision phases.



In this paper, social impact assessment phases and involvement degrees of public participation in transportation projects in Turkey were explained through the exemplary case of Istanbul's Third Bridge Project. Istanbul is located in Turkey, on the junction of Europe and Asia [14], and has a population of 14,160,467 people (address-based population registration system, 2013). Due to the dense population in Istanbul, transportation-related problems have arisen, such as insufficient infrastructure, extensive motorized vehicle usage, high car ownership rates, deficiencies in railway systems, and inadequate public transportation conditions for the disadvantaged groups such as the elderly and disabled. The effects of transportation projects differ within the classes with various income levels and, especially in Istanbul, this becomes an important issue because of the high proximity of these different income-level groups. The aim of this paper is to measure the public involvement degree to the location decisions and social assessment studies. In this concept, in the introduction of the paper, the importance of impact assessment studies in transportation projects and the relation between sustainable transportation and quality of life were observed and the methodological approaches that are carried out within this paper are explained. In the second part of the paper, a theoretical background of the factors that must be considered as the transportation planning process is reviewed. In the third part, the applied participation techniques in the decision and implementation phases of the Third Bridge Project are analyzed. In the final part, comprehensive transportation planning processes, which were explained in the second section of the paper, and the Third Bridge social assessment and participation processes are compared and evaluated. In this paper, to provide public participation in the study, *phenomenological meetings* and *ethnographic observations* were conducted in Garipçe and Poyrazköy where the pillars of the bridge stood in a 6 month period. As a part of the phenomenological meeting process, stakeholder surveys with the locals (N=65) and interviews with local governors were carried out. The questions used in the surveys were created with the *indicators analysis technique*. Throughout the field work, changes in Garipçe and Poyrazköy and complaints, expectations and demands of the locals were studied. In the final part, all the information gathered is integrated and findings are evaluated.

## 2 Theoretical background

NCHRP [15] has separated the transportation impacts into direct and indirect impacts and revealed the steps that should be applied in indirect effects analysis. In the study, an inclusive indicator set has been formed to monitor any foreseeable impacts. Methods for indirect effects analysis have been suggested from the project preparation phase to the proceeding implementation and operation phases iteratively. Litman [16] underlined some transportation-related impacts such as uneven effects, mobility disadvantages, human health effects, community interactions, community livability and aesthetics. Markovich and Lucas [12] improved the classification of transportation-related social impacts by Geurs *et al.* [13] with two broad categories; provider based and user based. Provider-based impacts are created by *infrastructure* (as visual quality, historical/cultural



resources, severance/social cohesion, noise nuisance, barriers and diversions, uncertainty of construction, forced relocation); *parked vehicles* (as visual quality and use of space) and *transport facilities, services and activities* (as availability and physical access, level of service provided, transportation choice/option values, cultural diversity, access to spatially distributed services and activities). User-based impacts are created by *traffic* (as accidents, averting behavior, safety perceptions, public safety, noise levels, nuisance, soil, air and water quality) and *travel* (as intrinsic value, journey quality, physical fitness, security). The World Bank [11] explained the purpose and the importance of social analysis in transportation projects, hence, the importance of a criteria for the social analysis implementation phases. In the study, social analysis appliance methods and factors, which should be taken into account in transportation projects, have been explained; the significance of participation and an iterative analysis process have been underlined. Marko [17] reviewed factors that affect transportation and factors affected by transportation, and formed a classification system for the effects of transportation. Within this classification, factors that could be related to livability and quality of life are; time use, income, freedom and privacy, community cohesion, equity value, historical sites, gender, air pollution health effects, access to people, goods and services, fitness levels, collisions, noise levels, emergency vehicle access, communicable diseases and stress level. Risser *et al.* [8] have reviewed the connection between quality of life and transportation; transportation indicators related with the quality of life. As a result, an environment meeting quality of life standards should be accessible, clean, comfortable, secure, safe, appealing, busy and lively. VanZerr and Seskin [4] have depicted that the impacts of transportation should be analyzed in the scope of quality of life and livability factors such as: affordability/disposable income; property values; noise impacts; air quality; community cohesion/severance; landscape; heritage/historic resources; physical activity; safety; transportation choice/option value; security; accessibility; travel time; streetscape/journey ambiance; distribution of impacts/amenities among vulnerable populations.

The FDOT group [10] considers community impact assessment as a dynamic iterative process throughout the project steps from the beginning to the latter monitoring and implementation phases. FDOT has stressed the importance of developing a community profile and public participation mechanisms at the stage of community impact assessments. Social effects of transportation projects are stated as community cohesion, community facilities and services, mobility and safety [10]. To minimize these effects, FDOT has proposed to include general community impact assessment techniques. Baedeker and Lindenau [9] have discussed procedures of involving participation into sustainable urban mobility planning. Participation has been defined as an active inclusion of citizens and local stakeholders into the urban mobility planning process [9]. Baedeker and Lindenau [9] have used Sturm's [18] figure of "Chances and potential of participation for better transport planning" (Figure 1) as a guideline to include participation in transportation projects. According to Sturm's figure, participation steps are information, consultation, dialogue (open), influence, co-decision and decision.



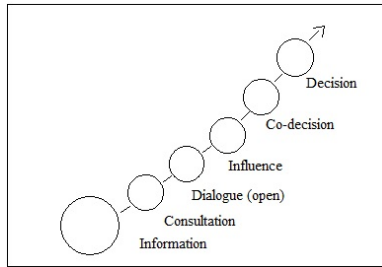


Figure 1: Involvement of participation for better transport planning [18].

Arnstein [19] has defined participation as the redistribution of power to provide citizens, especially those who cannot be involved in political and economic decision making processes, to be able to take part in future projects. Arnstein represented participation with a simple symbolic ladder figure. This eight stepped ladder figure symbolizes participation levels from down to top as manipulation, therapy, informing, consultation, placation, partnership, delegated power, citizen control. In this context, manipulation and therapy steps show *non-participation*; informing, consultation, placation steps *degrees of tokenism* and partnership, delegated power and citizen control steps show *degrees of citizen power*.

General outputs from the background of literature extrapolate that transportation projects create impacts on the quality of life of communities and the livability of the area. According to the references discussed in the literature background, impacts such as the expropriations of private land; forced relocation; construction impacts such as dust, mud, noise, vibrations, visual pollution, changes in daily routes due to construction vehicle blockings, create disturbance for humans. These studies have stressed that transportation projects do not only create short-term impacts, but also significant long-term impacts that can emerge after the construction completions. Long-term impacts can be seen as: involuntary resettlement; visual pollution; noise and vibration; pollution effects on human health; light and shadow; increases/decreases in waiting times; crowdedness; changes in daily routes, safety and security perceptions, distributional population and neighborhood perceptions; economic changes. In the references, one of the most frequently emphasized issues is the varying impacts of different groups and distances, and to understand the distributional effects accurately, participation techniques should be incorporated with the impact assessment studies.

### 3 Case study: Third Bridge impact zones – towns of Poyrazköy and Garipçe

The city of Istanbul shows a development pattern in the east–west direction. Residential areas are mainly located in the south of the city, whereas the northern part is covered with forests, water basins and other areas that have ecological and biological significance [14].



### 3.1 Methodological approach

In the paper, phenomenological meetings and ethnographic observations were conducted. During the ethnographic observations and phenomenological interviews in 2013, the population of Garipçe was 403 and Poyrazköy 896. Stakeholder surveys (Table 1) and the interviews with the governors of the study areas (Table 2) are made to acquire community opinions. Surveys with 65 participants have been conducted in Garipçe (24) and Poyrazköy (41).

Table 1: Measurement parameters adopted for the study (residents).

Topic	Parameter	
Demographical and socio-economic data	Age, gender, place of birth, level of education, occupation, social security, monthly income, monthly transportation expenses	
Information about the residence	Building permits	
Information about the neighborhood and society	The length of time living in the neighborhood and Istanbul, intention of moving out of the neighborhood	
	Equal right to speak (women, disabled, elderly, vulnerable groups in the neighborhood) Public transportation usage by disadvantaged groups [11]	
Information about the natural and cultural values	The acknowledgement of the community about the natural-cultural areas that will be affected by the Project due to its location/positioning	
	Current and future changes in air quality, water systems, noise pollution and vibrations, open and green spaces/rare and endangered species in the neighborhood, Effects of daily human activities on the habitat [15]	
Information about the utilization of public services	The level of satisfaction from the current transportation system	
	The adequacy of the current transportation system for the disadvantaged groups. The adequacy of the current public services for the disadvantaged groups [11]	
	Type, length, frequency and cost of transportation to access healthcare facilities, nutrition, work and education related social spaces, for social visits, festivals, ceremonies, and religious events and gatherings [26]	
	Changes in infrastructure, transportation systems and access to healthcare and cultural facilities [15]	
Participation information	Whether the residents been consulted/informed about the project	
Information about perceptions	Beneficiaries/victims of the Project. The existence of concerning issues/problems. The level of approval of the project	
Information about expectations	Concerns	Changes in the neighborhood [15]
	Positive-negative expectations	Expectations of change
	Environmental, economic, social risks	Ranking of impacts Short term impacts – Long term impacts

Table 2: Measurement parameters adopted for the study (local governors).

Subject	Parameter	
Physical status of the residences	Type of building, number of floors, date of construction	
Information about the community	Division of labor; the existence of cooperation, unions, NGOs, interdependence and trust among the locals. Natural/Socio-cultural values of the neighborhood. Economical strengths and weaknesses of the neighborhood. Current value of real estate, value expectation for real-estate (Table 3).Recreational tourists (Table 3). Disadvantaged groups (Table 3)	
	The ratio of the working women to the total workforce in the neighborhood [11] (Table 3)	
Information about the natural and cultural values	The animal-vegetation types that will be extinct due to the project. Percentage of land use (Table 4)	
Information about the utilization of public services	The condition of the roads, closing of the roads due to flood, safety and comfort of the public and private transportation services [26]	
Participation information	Whether the local community been informed about the potential effects of the project	
	Presence of a risk assessment study. Information board. Consultation to the women, elderly and disabled. Mitigation Techniques. Women's participation in impact assessment [11]	
Information about expectations	Risk expectations	The effects of the Project on the disadvantaged groups [11]
	Environmental, economic, social risks	Current and potential changes in the economic status, social relations and neighborhood, natural structure and local community life [15]

## 4 Findings

### 4.1 Results of the stakeholder surveys

49.2% of the participants live in Poyrazköy (bridge pier on the Asian side), 33.8% Garipçe (bridge pier on the European side), 13.8% Beykoz (the higher district of Poyrazköy) 3.1% Rumeli Feneri (the neighboring district of Garipçe). Females make up 22% of the participants; 78% are male. The ages of the participants range between 22 and 72; the average age is 46.4. 10.8% of the participants do not have social security. A large percentage of the participants are elementary school graduates, followed by middle school and high school graduates. The most common occupations among men are fisherman and local tradesman; the most common occupation among women is housewife. The monthly income of the participants range between the minimum wage (850 TL) and 9000 TL. The majority gets paid the minimum wage; therefore, the average wage is 2243 TL. The average transportation expense of the participants is 262 TL. 63.1% of the participants do not have building permits for their residences and more than 70% have resided in Garipçe/Poyrazköy for more than 20 years.



80% of the participants feel that the women, disabled, elderly and some vulnerable groups in the neighborhood have the equal right to speak; 72.3% believe that the women, disabled and elderly can use the public transportation services safe and comfortably in the neighborhood; 52.3% have experienced that the women – and 70.8% have experienced that the disabled and elderly – need to ask for help from family or relatives for transportation.

The majority of the participants did not know that the project route is going through bird migration routes, wildlife conservation areas and water basins as well as the existence of the national parks in the vicinity that would be affected by the project.

60% of the participants are concerned about the changes that occurred in the open and green spaces; and 50.8% are concerned with the effects of the human activities on the habitat. 64.4% believe that the air quality will deteriorate; 60% believe that there will be an increase in noise pollution and vibrations; 67.7% believe that the open and green spaces will decrease; and 66.2% believe that the increased daily human activities will have negative effects in the community in the near future.

30.8% of the participants are satisfied with the current transportation services; 67.7% feel that the current transportation services are not adequate for the disadvantaged groups such as the disabled, elderly and diseased; 56.9% feel that the current public services offered by the municipality are not adequate for the disadvantaged groups.

Participants feel that the public services are ranked average in general and believe that access to transportation and health facilities will improve after the construction of the bridge.

83.1% of the participants state that they were not asked for their opinions before the realization of the Third Bridge Project. Even though 58.5% state that they were informed about the Third Bridge Project, 73.8% cannot list the main actors and institutions in the Project.

19% of the participants believe that the project will be beneficial to the rich, 17% to the residents, 15% to the residents with land deeds, whereas, 55% believe that the residents of the neighborhood and the poor community will be affected negatively.

46.2% of participants have noticed problems that concern them after the construction started. The major concerns are environmental; some participants also mention the degradation of roads, dust, mud and noise.

73.8% approve the Third Bridge Project and 24.6% do not approve, whereas, 1.5% state that they are not interested. Of the participants that approve the project, 55% approve because they believe it will ease traffic problems, and 25% approve of it for economic reasons. Of those who do not approve, 71% raise environmental concerns; and the rest give reasons such as the lack of substructure and concerns about the confiscation of their houses.

50.8% believe that the changes in the neighborhood structure will have a negative effect on their close relationships, quality of life and privacy; 64.6% state that they do not want to be surrounded by big malls, high residences and large roads.



The importance ranking of the short-term consequences relating to the construction and management of the Third Bridge Project, according to the participants, are as follows: An increase in the land prices, improvements in fishing due to the renewal of the marina, increase in trade activities, loss of green space and forests, loss of wildlife conservation areas, degradation of the natural environment, new employment opportunities, decrease in the quality of air, increase in noise pollution and dust/air pollution, relief of the traffic temporarily, degradation of the visual appeal and aesthetics, and having to move from the area. The importance ranking of the long-term consequences are as follows: Increased immigration to Istanbul, increased density for Istanbul due to new constructions and developments, conversion of green areas into new developments, traffic noise and noise pollution, air pollution, loss of vegetation and animal habitats, lack of substructure, deterioration of the texture of the city, contamination of the Istanbul water basins, traffic and congestion, degradation of the visual appeal and aesthetics, and a decrease in the number of fish due to increased water pollution caused by the bridge construction.

64.6% of the participants think that the Third Bridge Project will create changes in their lives. 35% of these people say there will be an increase in the deficiencies of the substructure, in environmental problems and in the number of people. 20% believe there will be economic improvements; 20% believe that there will be a revival in their social life; 11% believe there will be a relief in the transportation systems; 8% believe they will have to move out of their houses due to the expropriation of the areas; 2% expect that the conservatory status of the natural and cultural sites will be removed.

#### 4.2 Report on the surveys conducted with the local governors of Garipçe and Poyrazköy

60% of the buildings in Garipçe were built between 1950 and 1980, and 40% were built before 1950; in Poyrazköy 80% of the buildings were built between 1950 and 1980 and 20% before 1950. At both sites, the floor numbers of the buildings range from 1 to 3; the majority of the buildings have concrete constructions. There are two cooperations and NGOs in Garipçe and three in Poyrazköy. Garipçe and Poyrazköy have important natural values, such as their vegetation, forests, wildlife, types of fish and recreational spaces. Both neighborhoods' livelihood is fishing; both locales have tourism facilities.

Table 3: Community information.

Community information	Garipçe	Poyrazköy
Disabled people	3%	2%
Current value of real estate, value expectation for real estate	No sales currently (due to building permits), positive expectations for the future	No sales currently (due to building permits), positive expectations for the future
The change in the number of recreational tourists	No change so far	No change so far
Working women in the towns	2%	5%

The type of animals and vegetation that face the risk of extinction in Garipçe due to the project, are pigs and some species of birds, scrubs and pine trees; whereas, there are no types of animals and vegetation under risk according to the governor of Poyrazköy.

Table 4: Land use.

Land use	Garipçe	Poyrazköy
Forest	85%	80%
Cultivated land	-	-
Residences	10%	10%
Roads	5%	5%
Public buildings		-
Recreational areas		2%

The status of the roads, closing of the roads due to floods, reliability, security and comfort of the public and private transportation services are generally in good condition in both towns, although, there are some deficiencies concerning the comfort and security of the public transportation system in Poyrazköy.

The local communities of Garipçe and Poyrazköy have not been informed of the potential effects of the project by any NGO, union or members of a chamber of architects/engineers/urban planners after the project had started. Risk assessment studies involving the local community, used to identify the potential risks of the project to the communities, have not been carried out for the areas. There is no unit formed that would acknowledge the needs of the elderly/disabled/non-internet users. The women, elderly and disabled have not been consulted about their needs before the project had started. There are no mitigation projects prepared for the project that will identify ways to mitigate the negative effects of the project on the communities. The Governor of Garipçe feels that the disadvantaged groups will be negatively affected by the project; whereas, the Governor of Poyrazköy does not believe so, due to the strong bonds of the community.

The Governor of Garipçe thinks that the social relations, neighborhood, natural environment and community life was in a better state before the constructions of the Third Bridge Project started. He believes that the natural environment has been negatively affected since the project started, but that these negative impacts will be improved and eliminated after the completion of the project. He states that the economy of Garipçe depends on fishing and if the project were to have a negative impact on the fishing industry, then the local economy would weaken and it would be very difficult to recover from that recession. The Governor of Poyrazköy states that the locals have strong social relationships and a strong neighborhood bond in the community; he believes this will stay unchanged after the project. He has realized that the economy of Poyrazköy has weakened since the start of the project but he believes it will improve and be in a better situation after the project. He also accepts that the natural environment has deteriorated because of the project but believes that it will revert back to the state it was in before the project had started when it is complete.



## 5 Discussion and conclusion

The community was not included in the decision-making process for the location of the Third Bridge Project due to the fact that the impact assessment study by AECOM was prepared after the construction had already started. In the report, the sample size is small to be able to interpret the community opinions. Some essential factors, which are recommended for impact assessment studies in literature, have not been found in AECOM reports, such as community cohesion/severance; physical activity; safety; transportation choice/option value; security; accessibility; travel time; streetscape/journey ambiance; distribution of impacts/amenities among vulnerable populations [4, 10, 12, 15, 17]. The Environmental and Social Action Plan report [25] focuses on the silvicultural action plans, but does not involve a resettlement action plan. These deficiencies raise question marks about the primary goal and costs/benefits of the project.

According to the findings of the stakeholder surveys, women, disabled and the elderly, in particular, do not have freedom of movement and the public has not been informed about the project risks. Even though most of the participants consent to the project, they have some negative expectations about the natural environment and some concerns like forced relocation. The livelihood of both towns is fishing, the women are housewives, and most of the participants' residences do not have building permits; it is reasonable to make the assumption that the local community would be at high economical risk if they have to move out from their houses. The expectations of the local community range from economic benefits to another extreme – having to move out and relocate; therefore, it can be seen that a lack of communication and participation created ambiguities for the future of the project in the local community. According to the findings of the interviews with the governors of Garipçe and Poyrazköy, the public has not been informed and consulted adequately. A participative comprehensive risk assessment study has not been carried out for the areas. A unit that would acknowledge the needs of the elderly/disabled/non-internet users has not been formed. These inadequate studies complicate the prediction of any forthcoming impacts of the project and create uncertainties about the future of Istanbul.

As mentioned in the literature background of the paper, Arnstein's [19] symbolic ladder represents the participation steps from down to top as manipulation, therapy, informing, consultation, placation, partnership, delegated power, citizen control. In the scope of the data gathered in the paper, the participation process of the Third Bridge Project comes to an end in the informing-consultation section. According to Arnstein, these steps represent *degrees of tokenism*. Baedeker and Lindenau [9] have used Sturm's [18] participation scheme, which shows the participation steps in transportation planning (Figure 1). According to the findings of the paper, the public has not been informed about the project details and potential impacts of the project. The impact assessment studies were prepared by AECOM after the construction of the bridge had already started. This means that the consultation mechanisms are inadequate for being able to evaluate the opinions of the public. In light of all the findings in the paper, the

other methods for providing participation as dialogue (open), influence, co-decision and decision, have not been applied in the Third Bridge Project.

The findings in the paper show some deficiencies in the social impact assessment process of the Third Bridge Project. Due to the fact that the project is still ongoing, some techniques can be applied to identify and mitigate the potential social impacts. Techniques such as focus groups, the Delphi technique, and the nominal group method allow participation in the social analysis process. Istanbul has a dense population with rich ecosystems, important vegetation and natural lands. Due to Istanbul's vulnerability, the impact assessment studies should include comprehensive analysis and public participation to identify and to prevent/mitigate the negative effects on different groups of people in Istanbul.

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