

Evaluate the Socio-Economic Impact of the International Coastal Road (ICR) on Burg Elburullus City

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1 ABSTRACT

Communities are grappling with environmental, social, and economic challenges due to rapid urbanization and physical changes, with coastal slums bearing the brunt of the impact. Unplanned urban development worsens pollution, inequality, and disaster risk for low-income households. Specific sustainable development plans are vital for tailored solutions based on each community's distinct needs and views. This study examines the socio-economic impacts of the establishment of the International Coastal Road (ICR) in the city of BURJ AL-BURULLUS in Northern Egypt, which marked the beginning of major urbanization efforts in the region in 2002. The physical landscape of the city has undergone significant changes due to urban expansion, with the extension of the city having grown to almost twice the size of the original city. The expansion of the city due to the ICR has caused significant changes to the area's environment, communities, and economies. In particular, the separation of the city from the nearby lake, which was its primary source of income, has had diverse impacts on various aspects of people's lives. This study employed a narrative method to assess ICR's impacts on the area's environments, communities, and economies. Nine villagers with diverse incomes were selected and encouraged to freely share their detailed views. The study focused on the socioeconomic impacts of the changes on the city, but it had significant impacts on all economic, social, and environmental levels. Community participation enhances research outcomes regarding the challenges experienced by impoverished communities due to urbanization. It also assists in the creation of improvement strategies responsive to the distinct requirements of each community by incorporating important perspectives and first-hand experiences of those affected by urbanization.

Keywords: narrative method, Nile delta, physical changes, coastal cities, socio-economic impacts

2 INTRODUCTION

In 2008, half of the global population was located in urban areas, and this trend is expected to continue in the future. Projections indicate that the gradual shift of people from rural to urban areas, combined with population growth, could result in an additional 2.5 billion urban dwellers by the year 2050. This change is likely to accelerate in the coming years (Nations 2018). Urbanization has important implications for demographic changes and the physical landscape, but unplanned, unsystematic, and rapid urbanization can have profound impacts on social, economic, and environmental components. In Thailand, for example, population growth and increased migration have led to challenges experienced across various domains of life, while climate change and urbanization have affected urban governance. The usage of new technologies can also have worrying implications for the labor market and social welfare (United Nations 2020). Addressing the impacts of unplanned urbanization is crucial, as it violates children's rights and has negative effects on cultural diversity, environmental conservation, and urban greening. Effective land policies can play an important role in shaping society and controlling urbanization's character. (Patra et al. 2018).

Constructing new transportation routes is often viewed as the initial stage of urban development and progress. However, developing infrastructure without considering sustainability and environmental concerns can cause harm to natural ecosystems and lead to social and economic inequities (Singer 2018). Therefore, it is critical to adopt alternative approaches that take into account potential negative impacts and address them during the development of infrastructure and urban areas. Rapid and inadequate planning can generate harmful long-term effects, emphasizing the need to ensure positive outcomes for society and the natural world by achieving a balance between growth, sustainability, and environmental concerns (Song et al. 2016).

In response to rapid global urbanization, the Nile Delta Coast has been identified by Egyptian decision makers as a key region for substantial investment in various industries and the growth of existing projects. This coastal area spans approximately 240 km between Abu-Quir city in the west and Port-Said city in the east, situated along the central Mediterranean coast of Egypt ,as shown in Figure 1 (Masria et al. 2014). Thus, in recent years, the Nile Delta has undergone significant physical changes. Some of these are natural

and others human in origin (Future Earth Coasts 2009). These physical changes increase the vulnerability of the coastal zone regard to environmental, social and economic aspects (Iskander and Water 2017).

The state has focused on developing infrastructure along the central coast (delta region) to support mega-projects, including the creation of new cities, private universities, tourist beaches, various ports, and commercial and industrial areas. One of the most notable infrastructure projects is the ICR, established in 2002. Plans for a new train project to transport passengers and goods, with a line running parallel to the ICR, have been announced by Eng. Ashraf Raslan, who serves as the head of the Egyptian National Railways. Phase one of the project will involve an electric train that runs for a distance of 240 km, passing through the new cities of Damietta and Mansoura, and linking the West Port Said Port and Abu Qir Port in Alexandria. Due to the significant effects these developments may have on the environment, economy, and society of the region, responsible planning and management will be necessary to ensure positive outcomes.



Figure 1: The North coast of Egypt extended on the Mediterranean Sea as well as The Central Coast Region (Delta Region) is highlighted.

The northern coast of Egypt boasts several natural lakes, with three located in the Nile Delta region, which have become significant due to their crucial environmental, economic, and social functions (Chu and Karr 2017). These coastal lakes host a thriving ecosystem and possess a unique environmental status owing to their ability to connect saline and freshwater. However, the increase in development and human activities in the area has had a negative impact on the lakes, leading to their deterioration, as reported by Abayazid (Abayazid 2012). In 2018, Egypt achieved a total fish production of 373.3 tons from natural fisheries such as lakes, freshwater, and marine water. Elrazi (Elrazi 2020) reveals that the fish production from BURULLUS, MANZALA, and EDKO lakes and the Mediterranean Sea in Delta cities accounted for 54% of the state's production, with BURULLUS being the most productive lake.

Commercial fishing is a global activity that encompasses various social, economic, and environmental factors that are unique to different regions. In the ELBURULLUS area, for instance, the local population, including 17,000 licensed fishermen and their families, depend on these resources for their livelihoods. As such, fisheries are a crucial support system for the people in the area (Shaltout 2010). The livelihoods of artisanal fishermen depend on coastal environments, which can be greatly impacted by anthropogenic activities such as rapid urbanization (Andrews et al. 2021). This can pose a serious threat to this traditional fishing method. In addition, the primary and secondary buyers in the production chain result in low profit margins for the fishermen, sometimes forcing them to increase their fishing efforts to maintain their income (Charvet-Almeida, Góes de Araújo, and de Almeida 2005). Having fisheries located near their homes can help them save time and involve family members in fishing activities, making their livelihood more sustainable (Diegues 2008) (Granzotto et al. 2004). Fishing not only provides food but also employment opportunities for local communities (Hacohen-Domené et al. 2020).

The research problem arises from the need to understand the social and economic impacts experienced by fishermen in the northern delta region due to the establishment of the International Coastal Road (ICR). The cities located along the ICR route have been affected differently, particularly those that depend on fishing in the sea or lake as their source of income. With proposals to build a railway parallel to the ICR, the issue becomes even more significant, especially given the lack of research in addressing it and the complexity of problems that fishermen's villages may face in the absence of solutions to counteract the effects of the ICR.

3 STUDY AREA

The construction of the International Coastal Road (ICR) in northern Egypt in 1995 was completed in 2002 with the aim of improving connectivity between Mediterranean countries of northern Africa and southern Europe (Eldeeb and Elkady 2022). Its route spans from Libya in the west to Palestine in the east. The coastal area, including six administrative units and four lagoons, is a crucial source of income for the region; it is renowned for its biodiversity, natural plant life, wetlands, and bird species. However, the region has faced multiple environmental challenges such as erosion, subsidence, water pollution, poor management, land encroachment, and sea-level rise. Tracking these changes and ensuring sustainable development is essential for the region's well-being (Dewidar 2004).



Figure 2: Burg elburllus city region is highlighted as well as the International Coastal Road also coloured (ICR), author.

The Burullus region is located on the eastern side of the Rosetta branch of the Nile River in the central zone of the Mediterranean Nile delta coast of Egypt. Burg Alburullus is a coastal city situated along the Mediterranean shore, bordered by the Alburullus lake to the south and connected to the sea via El Boghaz, v ICR had established creating a triangular area that separates Burg ALBURULLUS city and lake called EL GOUNA its area is about 50% of the old city, so this extension of ELBURRULUS city was a big physical change as shown in Figure 3 (Eldeeb and Elkady 2022). During the period of 2005 to 2021, EL GOUNA underwent construction in four stages, which were solely dedicated to residential plots. Unfortunately, urban design elements and foundations were neglected during construction. These residential plots were sold via public auction, leading to a significant increase in land prices due to the limited availability and high demand. Although the first three phases have been entirely sold, the fourth stage is yet to be sold, and some plot owners are not yet to build on their land due to various administrative and financial reasons. Currently, only 55% of EL GOUNA's land area has been built on, presenting a sizeable opportunity for further development.



Figure 3: EL GOUNA area is highlighted, (Eldeeb and Elkady 2022)

4 RESEARCH QUESTION

- What is the impact of the International Coastal Road (ICR) on the socio-economic aspects of the community?
- How effective is community participation in solving problems related to the ICR's impact on the region's socio-economic conditions?

5 MATERIALS AND METHODS.

Conducting a socioeconomic impact (SEI) assessment can help understand the potential effects of physical changes and the reactions of those affected by the changes. Due to marginalization and lack of research on the subject, a case study of Elburullus, a city in Egypt that has undergone major physical changes, was selected to analyze the impacts of these changes on various socioeconomic aspects. The study aimed to provide an overview of all affected socioeconomic factors, rather than focusing on a single aspect. The study included in-depth interviews with nine residents, and thematic narrative analysis was used to obtain as much information as possible about the different socioeconomic effects of the changes. Based on the Socio-economic Impact Assessment Toolkit (Program 2005), seven categories with multiple topics were identified to cover socioeconomic indicators. Organizing these topics with narrators' stories provided insights into the type and magnitude of each impact. Each topic was then analyzed separately to assess the positive and negative views of the narrators.

based on Socio-economic Impact Assessment Toolkit(Program 2005), there are seven categories including many topics as subtitles to cover socio-economic indicators. scheduling these topics with narrators' stories led to knowing the weight and type of effect on every topic. After that, analyze each topic separately to discuss the positive and negative views of the narrators

5.1 Why Why and how narrative method

Narrative inquiry has developed as a research methodology over the last thirty years. It provides a way to collect, examine and analyse stories of experiences and events. (Riessman 2003) assert that storytelling is the most common form of human communication and that it is used to convey the elements of experiences that have influenced an individual or a larger group. Andrews, Squire, and Tamboukou (2008) also argue that storytelling is the universal way in which people make sense of their experiences. People communicate and reinterpret their life experiences through stories (Kohler Riessman 2002). (Hatchell and Aveling 2010) also believe that stories can be used to demonstrate the ways in which people make sense of their experiences through narratives, while illuminating common threads of understanding. They offer "a way of gaining insight into this complex relationship between individuals' particular experiences, meanings and strategies for action and their social and societal contexts" (Stroobants, 2005, p.49, cited in(Hatchell and Aveling 2010)).

The following table presents in a structured way the process of obtaining narrative interviews:

Phases of the Narrative interview	Rules for the interview Exploring
Preparation	Exploring the field Formulating exmanent questions.
Initialization	Formulation of the initial topic for narration. Use visual aids
Main narration	No interruptions. Only non-verbal or paralinguistic encouragement to continue telling the story Wait for signals the end of the ("coda").
Questioning phase	only question: What happened then? no opinion or attitude questions no arguing on contradictions do not ask: Why? Go from exmanent into immanent questions
Small talk	Stop recording. Only question allowed is why? Make note immediately after the interview.

Table 1: main phases of narrative interviews, JovCHElovich E BauEr (2002)

Narrative development criteria should follow the following guidelines (Muylaert et al. 2014)

- Need to be an experiential part of the interviewee. This ensures his or her interest and lead to a richly detailed narrative.
- It should be personal, social or communal significance.
- The interest and investment in the topic of the informant should not be mentioned, in order to avoid taking positions or taking on roles from the beginning.
- The topic should be wide enough to allow the in- formant to develop a long history, from initial situations, going through past events, leading to the current situation.
- Avoid indexical formulations, ie by not referring explicitly to dates, names or places, which should be brought only by the informant, as part of his/ her relevant structure.
- Shutze(Bauer and Gaskell 2017) , outlines a form of analysis of narrative inter- view quite didactically:

- After transcription, we separate the indexed from the non-indexed material:
 - The first corresponds to the rational, scientific, concrete content of who does what, when, where, and why, ie, it is ordained (consequently, it is consensual order, collective)
 - The second, the non-indexed information goes beyond the events and expresses values, judgments, refers to the wisdom of life and therefore is subjective.
- In the next step, using the indexed content, events are ordered for each subject what is called trajectories.
- The next step is to investigate the dimensions that are not indexed in the text.
- Then, we group and compare individual trajectories.
- The last step is to compare and establish similarities among individual cases thus allowing the identification of collective trajectories.

5.2 The sample selecting

To gain a comprehensive understanding of the impact of a phenomenon, it's important to choose a diverse sample that includes all relevant variables. For the city of Burullus, two essential variables to consider are job and place of residence. Historically, fishing in the lake or sea, boat making, and fish trade have been the primary sources of income for families in the area. However, with the construction of the International Coastal Road, fishing has declined, leading to the rise of new income sources such as offshore fishing, furniture making, other types of trade, technical jobs, and higher education opportunities (Eldeeb and Elkady 2022). The residents' place of residence is closely linked to their income level and to how much they have benefitted from the new road. Wealthier residents tend to live in El Gouna, while another group resides in the Old City. Poorer individuals migrated out of the city to live in villages close by where they can continue to practice fishing.

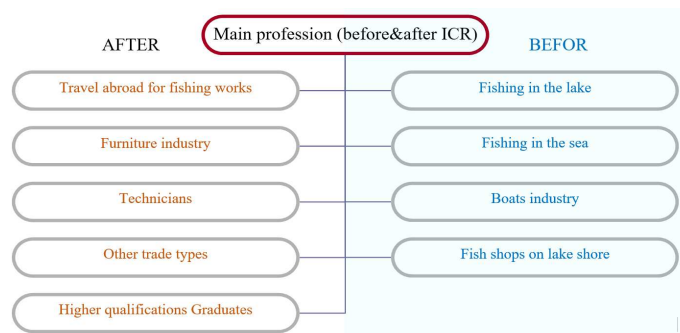


Figure 4: residents' profession after and before the ICR construction

Figure 4 shows the diversification in the professions of the sample's narrators. Additionally, Figure 4 displays how the sample is distributed across the various regions of the city. This diversity is necessary to ensure that the study produces more comprehensive and realistic results.

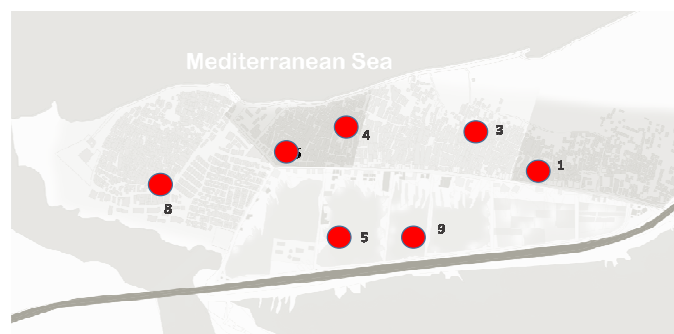


Figure 5: Accommodation distribution of the nine narrators in the city, author

Although it's important to consider the full range of impacts, including environmental and socioeconomic changes, studying specific socioeconomic changes in depth can be highly useful. For this reason, the study will focus solely on the impact of establishing EL GOUNA on socioeconomic aspects. The information

gathered from interviews will be analyzed to identify the main effects and any associated side effects, and to evaluate whether each effect is positive or negative depending on the group affected. Ultimately, the study aims to determine the advantages and disadvantages of establishing the international coastal road and building EL GOUNA in terms of their socioeconomic impacts.

6 DATA AND ANALYSIS

Based on the research program titled "A guide to assessing the socio-economic impacts of Marine Protected Areas in Australia" (Program 2005) from 2005, the topics covered in the residents' stories were categorized into seven main categories. The author added an eighth additional category for other topics that could not be subtitled under these seven categories. The main categories of socio-economic indicators were income, population, society, education, employment, main profession, industry structure, and firm performance as shown in Figure 6.

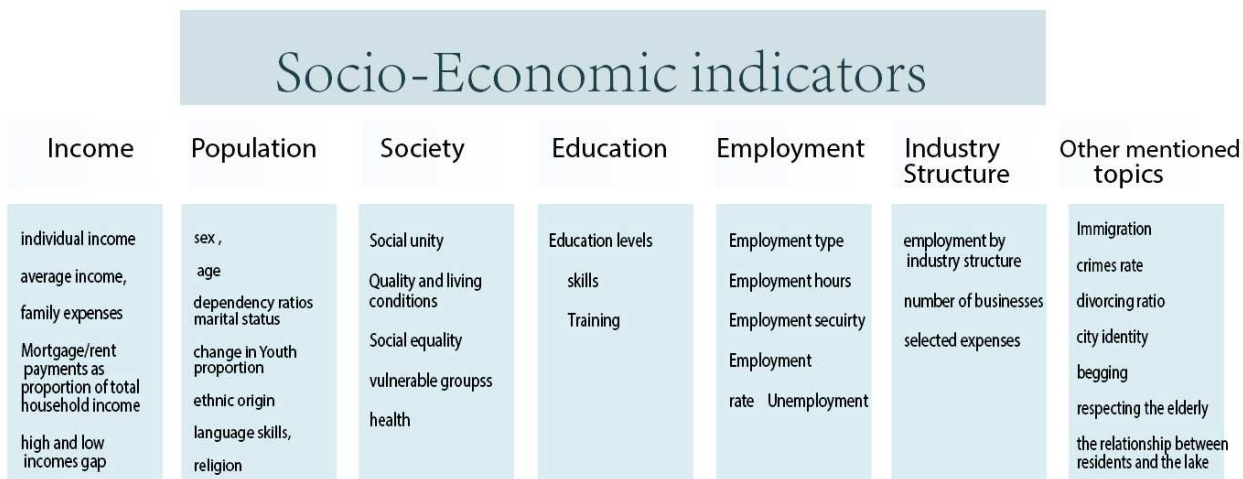


Figure 6: main categories of socio-economic impacts assessing according the mentioned research program, author

Residents		Socio-Economic indicators																																				
		income				Population				Society				Education				Employment				Industry Structure				other mentioned topics												
		individual income	average income,	family expenses	Mortgage/rent payments	high and low incomes gap	sex , age	dependency ratios	marital status	change in Youth proportion	ethnic origin	language skills,	religion	Social unity	Quality and living conditions	Social equality	vulnerable groupss	health	Education levels	skills	Training	Employment type	Employment hours	Employment security	Employment rate	Unemployment	employment by industry structure	number of businesses	selected expenses	Immigration	crimes rate	divorcing ratio	city identity	begging	respecting the elderly	relationship lake		
1 th	N	P	N	P	N			N				N	P	N				P	P		P	N	N	N	N				N	N	N							
2 th	N	P	N	P	N			N																					N									
3 th	N	N			N			N	N					N	N				P	P									N	N							N	
4 th	N	N	N	P	N			N		P			P	N					P	P	P					N	P	P	P									N
5 th			N	P	N			P					N	N																N								
6 th	P	P	N	P				P					P	P												P	P	P	N									
7 th	N	P			N								N	N	N													P		N	N							N
8 th	N	N	N	N	N														P																			N
9 th	N	P	N	P	N			N					N	P					N								P	N	N									
N	7	3	7	1	8	2	1	5	1	0			3	2	3	2	3	1	0	0	1	2	4	1	4	0	0	0	5	5	2	1	1	2	3			
P	1	5	0	6	0	2	0	0	0	1			2	2	1	0	0	1	3	2	4	0	1	0	0	1	3	2	1	0	0	1	0	0	0	0		
sum of mentions	8	8	7	7	8	0	4	1	5	1	1	0	5	4	4	2	3	3	2	3	2	5	2	5	1	4	1	3	2	6	5	2	2	1	2	3		

Table 2: scheduling data and analysis for residents' stories.

These topics, along with other issues mentioned, were analyzed based on the stories of nine narrators. A symbol was used to depict a narrator's opinion on the type of effect of the physical change, which could be either negative or positive. A table 2 was also provided to assist in scheduling various data.

The chart (Figure 7) illustrates the results of interviews conducted with nine individuals regarding the topics they discussed, including the percentage of positive and negative mentions. The findings highlight income disparities, immigration, high crime rates, and living expenses as the most commonly cited negative issues. Conversely, access to housing, job quality, average per capita income, and multiple sources of income were the topics with the most positive feedback. Furthermore, the number of times a topic was mentioned serves as an indication of its importance to the population. Therefore, issues surrounding income, living expenses, migration, and social inequality were among the most pressing concerns for the residents.

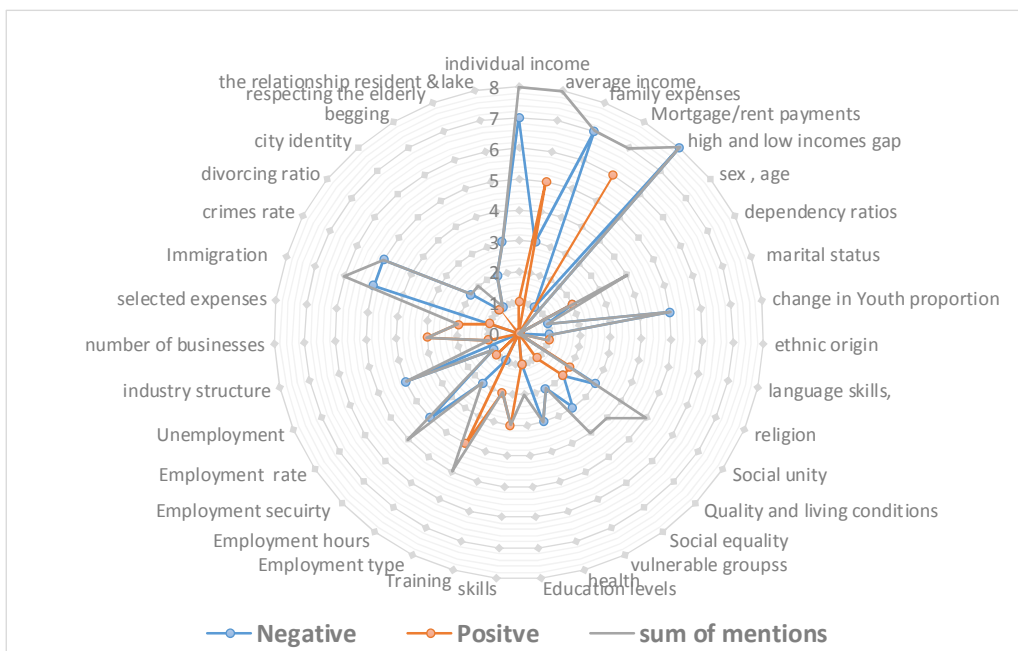


Figure 7: positive and negative opinions of resident about socio economic topics

6.1 Income

The issue of individual income was deemed significant by eight out of nine interviewees. Specifically, seven of them expressed negative sentiments toward the decline of basic professions, particularly fishing in the lake. This decline is attributed to various factors such as the increased distance between houses and boats, which range from 300 to 1500 meters once boats were anchored close to residences as shown in Figure 8 . Additionally, women's assistance in carrying fishing equipment became more difficult, as leaving them on the boat overnight made them vulnerable to theft. Some fishermen migrated to nearby villages along the lake's shore, while illegal fishing of small fish in AL-BAGHAZ became rampant, affecting profitability as criminals caught and sold them at high prices to fish farm owners.

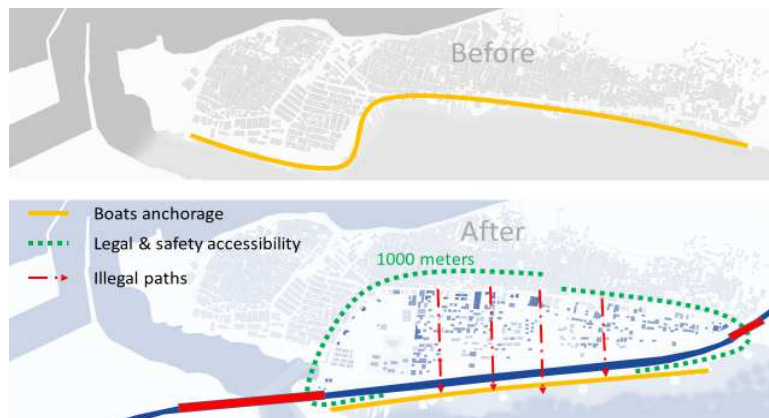


Figure 8: the distance between boats anchorage and homes. after and before the road costrucion

Fish merchants faced challenges after the construction of the road as they had to move their operations to shops on the shore of the old city. To transport fishermen from the new docks to the store premises, they used cars, which proved to be expensive, particularly since the fishermen's return dates varied. As a result, some rich merchants purchased shops in the east of the city, while others went to other villages in BARBAHRI. However, the majority of fishmongers abandoned the trade and started working in different professions or went travelling. Due to the decline in sea fishermen employment, individuals began travelling to other Egyptian cities or even outside the country to find work. Five out of the nine interviewees stated that travelling increased average income despite being expensive and requiring procedures, physical ability, and suitable dates for children. In contrast, the seven individuals who talked about family expenses noted that it had become an enormous burden, unlike in the past when fish were readily available daily, and houses on the lake shore allowed for raising birds and storing rice annually as shown in Figure 9. Almost all of the speakers mentioned the widening income disparity as a significant issue. For instance, some residents owned multiple plots in EL GOUNA, which cost more than 30,000 EGP per square meter, compared to 4,000 EGP in the old city. In contrast, several families still reside in their father's house in the old city and face difficulties finding affordable housing, forcing many to consider emigration.

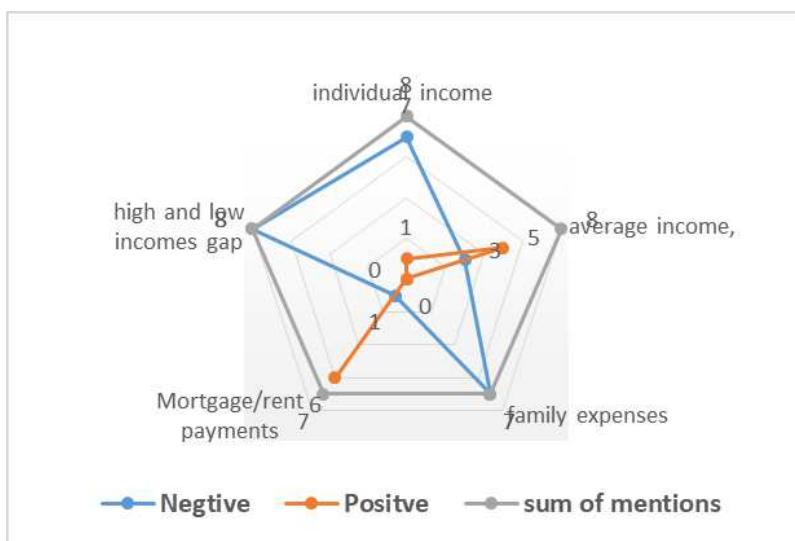


Figure 9: the percentage of negative and positive mentions to income topics

6.2 Population

The dependency ratios, which indicate the proportion of working-age individuals to the total population, have changed as the average family size has decreased from eight to four people. Some people view this positively as it has reduced household expenses, but others feel the opposite as having many children used to be an advantage for working in fishing and helping parents as shown Figure 10.



Figure 10: children help their fathers, film of behar elatash,19980

One resident mentions that young people are finding it difficult to marry early due to the high requirements, especially the cost of housing and construction in soft clay soil in ELGOUNA as shown Figure 11 , as well as the lack of funded housing for youth. This has led to a decrease in the percentage of young people in the city, and some have even migrated due to the lack of suitable job opportunities . The researcher notes that the number of elderly people and females dominates the city, with some residents stating that the city is no

longer attractive to young people. Fishing used to be an easy and fast way to earn a living, but now, due to changes such as the increase in land prices, many have turned to migration or other forms of work. Furthermore, the travel of residents abroad has led to the appearance of people from diverse ethnic backgrounds in the city. There has been an exchange of cultures, which has resulted in the learning of new languages and has had a positive impact on society.



Figure 11: long-term stages of building because of high cost, taken by author

6.3 Society

According to some residents, social unity between families has not strengthened due to various factors, including the exodus of fishermen and college graduates, as well as the widening income gap. However, others have a different perspective and argue that there are still some large families that remain socially and financially intact, even though at least one member from each family usually goes out to improve the family's income. Regarding living conditions, opinions vary as well. Some residents view it positively due to factors such as travel opportunities, good buildings, and easy accessibility by road. On the other hand, several fishermen from the lake in the old city suffer from difficult economic, environmental, and social challenges, with increasing disease rates, rising expenses, and decreasing income as shown in Figure 12. Regarding social equality, some residents in EL GOUNA have expressed concerns about the fairness of land ownership, given that it is based on an auction system that neglects the actual need for housing. Some argue that the rich tend to monopolize the land for real estate investment, leaving many undeveloped lots and unoccupied buildings. While most residents seem to share this sentiment, there are some who see the auction system as a fair way to own land.

One of the vulnerable groups in the area are the families of the lake's fishermen who are unable to travel for work and have limited employment opportunities. Unfortunately, the state has not provided sufficient support for them, especially in terms of housing. Moreover, social housing is inadequate and has been allocated illegally to undeserving individuals. Another resident has raised concerns over the lack of progress in improving services and infrastructure in the old town. Although a study by Elkady, Fikry, and Elsayad in 2018 (Elkady, Fikry, and Elsayad 2018) suggests that a minimum area of 46 m² is necessary for a family, many families are unable to obtain this amount due to the increasing number of families in the area.

Residents have noted a decline in overall health despite the presence of new hospitals and health centers. This is partially attributed to several factors, such as the city's environmental problems causing numerous diseases, the high cost of sea fish leading to increased consumption of preserved and unnatural foods, and the unhealthy habits of youth. Some residents have compared the current state of healthcare unfavorably to the past, when doctors such as MUHAMMAD GHALY and Dr. ARAFA treated all families and the general community enjoyed better health. Others have pointed out that the lake's pollution from car sewage and treatment plants has affected fish quality. Education rates have improved due to easier and safer travel opportunities after road construction, as well as the realization that a son's education and travel abroad is crucial for future financial stability. However, some residents have expressed concerns that fathers' frequent traveling may lead to some students dropping out of school. Nonetheless, the community has benefitted from technicians' transfer of skills and knowledge after traveling and training.



Figure 12: the gap between A) rich home and B) fisher home, taken by author.

6.4 Employment

The types of employment were traditional occupations and for the service of fishing, such as fish trade, boat industry, trade in boat fuel, trade in fishing tackle, manufacture and distribution of snow, spinning and trading...etc. But as people began to leave hunting and travel, they gained new experiences and were interested in education, so better and better jobs were created. However, some storytellers noted that "the working hours for travellers or technicians were not suitable for their families. Those who travelled abroad to fishing had an annual holiday that lasted no more than a month with their family. Fishing in Egypt's neighbouring cities also remains uninterrupted for twenty days a month.

According to residents, Job security has become too low for all professions saying “It is a great risk for the fisherman in the lake to cross the road, and a large number of young fishermen have already died, and also suffer constantly from the theft of their equipment. The fishermen on the sea outside the city spend a long time on the sea, which increases the risks". Although the nature of new jobs is better, the employment rate has dropped significantly, so the lake absorbs all the existing unemployment at the lowest cost, so the road is blamed for the increase in unemployment in the city as shown in

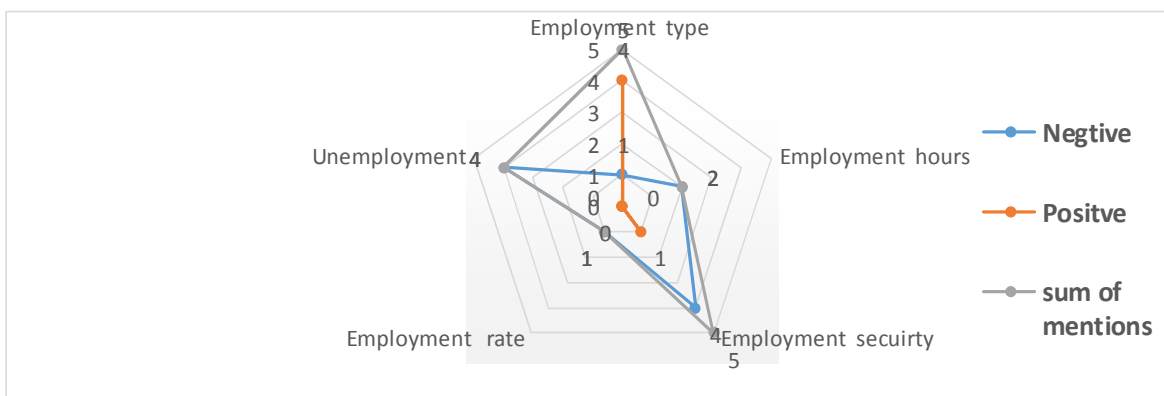


Figure 13: the percentage of negative and positive mentions to employment topics

6.5 Industry Structure and Firm Performance employment

The construction of an international road has improved mobility between cities, particularly industrial areas like DAMIETTA, GAMASA, BALTIM, MOTUBAS, EDCO and ALEXANDRIA. This has resulted in increased employment opportunities for young people in factories and companies in these areas. Moreover, families of these travelers are able to invest their money in the nearby areas, creating business opportunities. The involvement of their relatives also helps reduce labor costs.

6.6 Other mentioned topics

Immigration occurred in various locations and under different circumstances. For instance, fishermen from the city migrated to neighboring villages both east and west. College graduates also moved to other cities where they could find employment more easily. Presently, a significant number of people are migrating

because they are unable to afford daily expenses and do not own their own homes. During discussions with more than five individuals, high crime rates, particularly drug abuse, drug dealing, theft, murder, and earthquakes, were mentioned. Reasons cited for these crimes included unemployment due to the decline of the fishing industry, lack of supervision from traveling fathers, and large income disparities, which drove youth to resort to illegal activities to improve their income compared to travelers that obtained large amounts of money illegally and encouraged their children to do the same as shown in Figure 14 .

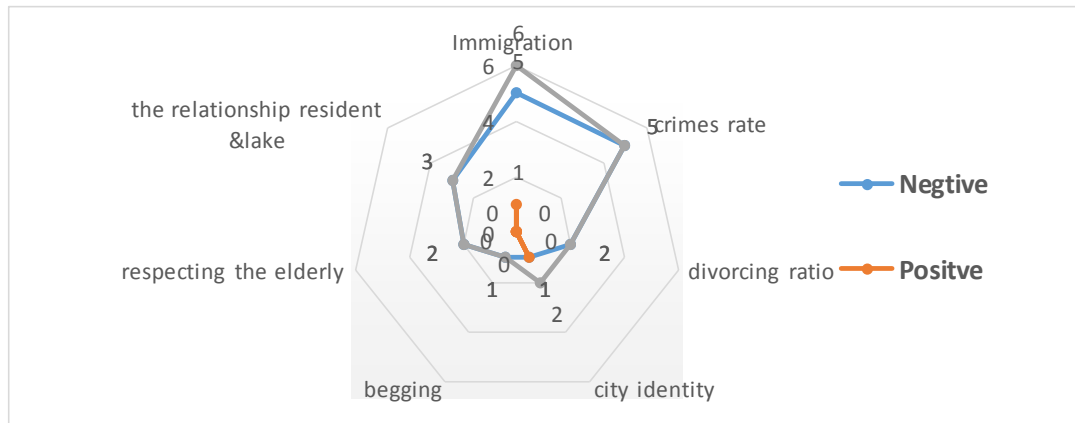


Figure 14: the percentage of negative and positive mentions to other mentioned topics.

According to some narrators, divorce rates in the city have increased significantly due to several reasons. Firstly, some women are unable to assist their husbands with fishing because boats are positioned too far away. Secondly, mothers prevent their children from fishing with their fathers due to concerns over traffic accidents. Thirdly, husbands traveling for long periods for work cause problems that lead to divorces. Fourthly, women find that their low income compared to the rich is insufficient to meet their needs. Lastly, some women refuse to migrate with their fishermen husbands. Rapid and unplanned urbanization has had a negative impact on the town's identity, although individual attempts have been made to preserve it. Due to the native population's constant migration, the identity of the town has begun to change at the people's level. Conversely, some people argue that the buildings and El GOUNA have enhanced the city's beauty in terms of urbanization.

During discussions, one person mentioned that begging, which is widespread nowadays, did not exist at all before. Additionally, the lack of respect among sons for their fathers was a frightening phenomenon in the BURULLUS community due to the distance between them while traveling.

Two individuals addressed an interesting topic in their narratives regarding the relationship between the inhabitants and the lake. According to one person, "the lake is like my daughter. Touching it, looking at it, and sitting next to it on the shore was a source of our happiness. The road blocked our view, but we protected it, and no one dared to harm it with sewage or by catching small fish." Another participant stated that the lake contributed greatly to their education and daily life. In addition to studying, they could earn money during limited hours and used the lake as the main spot for picnics with friends.

7 CONCLUSION

The research results were divided by the researcher into two distinct categories; one focused on the social and economic repercussions of these effects, while the other centered on utilizing social participation to tackle and solve these problems."

On a positive note, some of the residents in the new area (El Gouna) have the privilege of owning high-quality homes that are well-ventilated and have good lighting as well as wide roads. The existence of various industries and businesses in the city has also led to some individuals experiencing an increase in their income. Additionally, residents in El Gouna also have the benefit of having easy access to different cities, and through such exposure, they are exposed to a variety of ideas and cultures. Education is also easily accessible in the city, and there is also an increasing trend towards investment in the area. Certain types of work such as fishing away the city have also proven to be a significant source of income for some residents of El Gouna. On the flip side, there are several downsides to physical change in the city. The average income

of most individuals in the city is lower, making it difficult to meet the increasing household expenses. The income gap between different families has widened, consequently leading to unequal access to housing. As a result, a lot of fishermen have migrated from the city due to the challenges that come with fishing, as well as rising family expenses. Other issues that the city grapples with include a late marriage age and an unbalanced population of adults, which makes it difficult to maintain social bonds in families. Crime rates in El Gouna are also alarmingly high and have been linked to issues such as income inequality, unemployment rates, and travel. Finally, there is an increasing disparity in the level of services and opportunities available to different residents of the city, which makes things even more challenging.

The use of the narrative method in El Burullus city proved useful as it allowed inhabitants to speak freely and offer excellent suggestions towards resolving problems before the proposed railway project goes forward. Some of the suggestions are as follows:

- One inhabitant suggested that the fourth stage of El Gouna, which has not been sold yet, could be used differently to provide a significant opportunity. For example, the state could construct multistory towers to accommodate a large population. Then, it could improve the old city and create wider pathways and roads within it. Affected individuals could be compensated with apartments in the new towers.
- Another individual proposed creating a new village for the fishermen on the shore of the lake, to solve the issue of fishermen in the city. The new village could also protect AL-BOUGHAZ from local fishers engaging in illegal fishing. Furthermore, the establishment of this new village would help preserve the unity of families, preventing their dispersion into different areas.
- Some of the inhabitants suggested creating canals between houses in El Gouna, using the traditional method to facilitate fishing, prevent equipment theft, and overcome the danger of crossing the highway. This suggestion would also solve environmental problems, including the drainage of rainwater and its consequences.
- One narrator expressed that if the international road had passed from the north of the city, it would have been more beneficial as it could have preserved the beach from erosion. as well as It would have also protected the area from rising sea levels in the future.
- Additionally, one of the fishermen suggested that encouraging people to open fish shops on the beach could motivate most fishermen to work in the lake.

8 ACKNOWLEDGEMENTS

The work presented in this paper was supported by the DAAD (Deutscher Akademischer Austauschdienst e.V., Kennedyallee, 53175 Bonn) and the "Urban Resilience and Risk Management: Understanding Egypt's Delta Region" project, which was jointly sponsored by Kassel, Elmansoura, and Kafrelsheikh Universities. The authors are grateful to the Kassel University staff at the Faculty of Architecture, Urban Planning, and Landscape Planning for their assistance through fellowship from September 1, 2012, to December 31, 2021.

9 REFERENCES

- Abayazid, Hala. 2012. "Coastal Lake Sustainability: Threats And Opportunities With Climate Change." *IOSR Journal of Mechanical and Civil Engineering* 1(5): 33–41.
- Andrews, Nathan et al. 2021. "Oil, Fisheries and Coastal Communities: A Review of Impacts on the Environment, Livelihoods, Space and Governance." *Energy Research & Social Science* 75: 102009.
- Bauer, Martin W, and George Gaskell. 2017. *Pesquisa Qualitativa Com Texto, Imagem e Som: Um Manual Prático*. Editora Vozes Limitada.
- Charvet-Almeida, Patricia, Maria Lúcia Góes de Araújo, and Mauricio Pinto de Almeida. 2005. "Reproductive Aspects of Freshwater Stingrays (Chondrichthyes: Patamotrygonidae) in the Brazilian Amazon Basin." *Journal of Northwest Atlantic Fishery Science* 35(February): 165–71.
- Chu, E W, and J R Karr. 2017. "Environmental Impact: Concept, Consequences, Measurement." *Reference Module in Life Sciences*.
- Dewidar, KH M. 2004. "Detection of Land Use/Land Cover Changes for the Northern Part of the Nile Delta (Burullus Region), Egypt." *International Journal of Remote Sensing* 25(20): 4079–89.
- Diegues, A. C. 2008. "Marine Protected Fisheries in Brazil Areas and Icsf." *Samudra monographs*.: 1–65. www.icsf.net.
- Eldeep, Ahmed, and Ahmed Elkady. 2022. "Urbanization and Environmental Change: Local Effects of the International Coastal Road on Burg Elburullus City." *SVU-International Journal of Engineering Sciences and Applications* 3(1): 29–36.
- Elkady, A.A., M.A. Fikry, and Z.T. Elsayad. 2018. "Developing an Optimized Strategy Achieving Design Flexibility in Small-Area Units: Case Study of Egyptian Economic Housing." *Alexandria Engineering Journal* 57(4).
- Elrazi, Mohamed. 2020. "Annual Bulletin of Statistics Fish Production."

- Future Earth Coasts, I P O. 2009. R&S 35. Dynamics and Vulnerability Of Delta Systems.
- Granzotto, A et al. 2004. "Comparison between Artisanal and Industrial Fisheries Using Ecosystem Indicators." *Chemistry and Ecology* 20(sup1): 435–49. <https://doi.org/10.1080/02757540310001629224>.
- Hacohen-Domené, Ana, Francisco Polanco-Vásquez, Colombo Estupiñan-Montaño, and Rachel T. Graham. 2020. "Description and Characterization of the Artisanal Elasmobranch Fishery on Guatemala's Caribbean Coast." *PLoS ONE* 15(1): 1–19.
- Hatchell, Helen, and Nado Aveling. 2010. "Those Same Old Prejudices? Gendered Experiences in the Science Workplace." *Journal of Workplace Rights* 13(4): 355–75.
- Iskander, Moheb, and National Water. 2017. "Environmental Friendly Methods for the Egyptian." (July 2015).
- Kohler Riessman, Catherine. 2002. "Illness Narratives: Positioned Identities." *Health Communication Research Centre, Cardiff University* (May): 1–35.
- Masria, A., A. Negm, M. Iskander, and O. Saavedra. 2014. "Coastal Zone Issues: A Case Study (Egypt)." *Procedia Engineering* 70: 1102–11. <http://dx.doi.org/10.1016/j.proeng.2014.02.122>.
- Muylaert, Camila Junqueira et al. 2014. "Narrative Interviews: An Important Resource in Qualitative Research." *Revista da Escola de Enfermagem da USP* 48(spe2): 184–89.
- Nations, United. 2018. "Revision of World Urbanization Prospects." United Nations: New York, NY, USA.
- Patra, Suman, Satiprasad Sahoo, Pulak Mishra, and Subhash Chandra Mahapatra. 2018. "Impacts of Urbanization on Land Use /Cover Changes and Its Probable Implications on Local Climate and Groundwater Level." *Journal of Urban Management* 7(2): 70–84. <https://doi.org/10.1016/j.jum.2018.04.006>.
- Program, Social Sciences. 2005. "Socio-Economic Impact Assessment Toolkit." : 41.
- Riessman, Catherine Kohler. 2003. "Performing Identities in Illness Narrative: Masculinity and Multiple Sclerosis." *Qualitative Research* 3(1): 5–33.
- Shaltout, Kamal Hussien. 2010. "Towards Mainstreaming of Lake Burullus Biodiversity , North Egypt Kamal Hussien Shaltout." *Ass. Univ. Bull. Environ. Res* 13(1): 71–87.
- Singer, Merrill. 2018. "Climate Change and Social Inequality: The Health and Social Costs of Global Warming." *Climate Change and Social Inequality: The Health and Social Costs of Global Warming* (152): 1–247.
- Song, Jie et al. 2016. "Analyzing the Impact of Highways Associated with Farmland Loss under Rapid Urbanization." *ISPRS International Journal of Geo-Information* 5(6).
- United Nations. 2020. *World social report 2020 Inequality in a Rapidly Changing World*.