# Environmental Considerations in El-Gazaire Village Regeneration, in

# the South West of Alexandria, Egypt

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Abstract: Regeneration changed from engineering concepts included rehabilitation of deteriorated or functional performance inefficient infrastructure, utilities, facilities, and buildings to comprehensive and integrated visions and actions which leads to the solution of problems and seeks to bring a lasting improvement in the physical (engineering), economic, social, and environmental conditions of an area that has been subject to regeneration. It also was governmental based in the past, but has come to encompass community involvement and contributions as a mean to become more realistic and down to earth. The results of this study showed that the environmental conditions in El-Gazaire village are not so poor. Most of the essential infrastructure, utilities, and facilities are available. Two primary school and middle school take place in the village and the nearest secondary school is located in El-Amreya more than 6 kms far from the village. Sanitary drinking water supply is available at 100% of the houses but the quantity of water is not enough in only 3% of the houses. Only 0.3% of the flats lack toilets, 27% has common toilets for extended families and 73% of the flats have private toilets. In a very important finding, private wastewater collection network has been built through community sharing fund but wastewater treatment facility is not available. Illegally, raw sewage is discharged into drains resulting in higher water pollution levels. No integrated solid waste management system was found which will create severe environmental problems in the future. Several disease bearing factors are present such as overcrowding, lack of awareness as well as poor indoor housing conditions such as barn placement which result in higher probability of public health risks. Regarding participation and involvement in regeneration programs, (84.6%) showed readiness to participate and involve by money, time, and both. As other national regeneration projects El-Gazaire village regeneration needs governmental support giving priority for highway crossing facility, building secondary school, rehabilitation or replacement of wastewater collection system and establishment of an integrated solid waste management system as well as community development association and preparing an integrated long term physical planning.

Key words: Regeneration, Participation, Involvement, Infrastructure, Facilities, Utilities, Environment

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#### INTRODUCTION

All engineering interventions (planning, design execution operation and maintenance) which aim at solving the problems of deprivation and decline infrastructure, utilities, and facilities were regeneration. named Renewal, development reconstruction, and redevelopment, improvement, rehabilitation, preservation, conservation, and regeneration are some of the transformation interventions which emerged within the last two centuries. especially development, Amona them. redevelopment, and regeneration have become the most common transformation interventions over the last three decades.<sup>(1)</sup>

The term regeneration was also defined by many, but in 2000, Roberts and Skyes defined regeneration as "comprehensive and integrated visions and action which lead to solution of the problems and seek to bring lasting improvements in the economic, physical, social and environmental conditions of an area that has been subject to change. Currently, this definition is most commonly used in addressing regeneration.<sup>(1,2)</sup>

Regeneration started as а governmental based approach, instilled by governments to provide communities with services like infrastructure projects in areas that were deprived. However, this changed approach soon when the representatives realized that the communities need to be involved in the regeneration schemes set to ensure the achievement of proper regeneration. Thus regeneration strategies started to involve more sectors like the private sector, nongovernmental organizations (NGOs), and Community Development Agencies (CDAs).<sup>(3)</sup>

During that time, regeneration also started to take broader scopes, regeneration began focusing on all the aspects of the thriving and well-being of a community, not only infrastructure and services. It began to take a closer look at health, socio-economic levels, education, awareness and the most recent addition environment and sustainability.<sup>(4)</sup>

Surveys were conducted and data analyzed to reach the optimum community regeneration program, with a complete engulfing look at all the factors contributing to the alleviation of the socio, economic, and health aspects of the individuals of a determined place. In 1985, a new concept emerged to ensure the health and sustainability of cities "The Healthy Cities Approach" which focused on the main issues of health which were much more than medical care. Living in "Healthy Cities" and being healthy community require healthy environment and involving in the community life whether urban or rural.<sup>(5)</sup>

This concept offered a new view of the interactions that affect people's lives. It took into consideration the influence of the context - the place, surroundings, relationships, and opportunities. It also

began to highlight the interconnections among what seem to be diverse elements and problems in the society. And finally, it suggested that the solutions to both community and quality of life problems may also be interwoven.<sup>(6)</sup>

Whether the primary reasons are; homelessness, education, safety, environmental concerns, or other issues, the approach is always the same. Collaboration is organized among citizens, people from business, government, and other sectors of society who recognize their interconnection that can be used to improve the entire community life.<sup>(7)</sup>

Regeneration became an educational operation seeking to inform (knowledge), enable (practical involvement), and empower (sustainability) the communities to be self-reliant and entrepreneurial. It also became a new independent approach dedicated to finding practical, progressive solutions to the problems, and challenges facing different communities, specializing in designing, and delivering social, economic, and environmental project and program initiatives to help regenerate disadvantaged communities.<sup>(8)</sup>

Another important element in regeneration was the relation between regeneration and public health, health being a very important component in the progress of a regeneration scheme. The health of dwellers is largely depending upon their living conditions and lifestyles. The factors in our everyday life, which significantly influence our health status, are called "health determinants". Health determinants include water supply, sanitation, nutrition, food safety, health services. housing conditions, working conditions, education, lifestyles, population changes, income, and so on. They are physical, social economical, and environmental and they surround the dwellers everywhere.<sup>(6)</sup>

Issues like animal harboring, pesticide overdose usage, incompetent living areas,

sick building syndrome, the rise in underground water levels as well as availability of common everyday utilities like sanitary drinking water supply. integrated wastewater, and solid waste management system all contribute to the alleviation or deterioration of the health and the environment surroundings of residents. The increase of efficiency of the above, health, surroundings, and the environment will lead to a better functioning community and the decrease in their efficiency will lead to surely decrease in the quality of livina.<sup>(6)</sup>

Another major point that came into focus was the green architecture movement. Focusing on how a building or should be as earth-friendly as area possible. This movement began focusing on the use of natural resources in fear of depleting them without finding an alternative. It also began renovating new ideas such as the use of renewable and alternative energy. It began designing

houses which are self-efficient, productive, and sustainable.<sup>(9)</sup>

This has given people wider base of knowledge for thinking how to protect their environment and how to reduce their resource consumption. Gathering cattle manure and poultry excreta to produce energy, reusing household wastewater to irrigate, better ventilation and lighting systems, constructing to accommodate the building with weather change as well as heat insulation all natural became important issues. The main advantage of all of these items is that they are all cost effective and within reach. Reducing consumption of energy and water as well as natural heat insulation will lessen the need to install fans or expensive air conditioning units which in places like rural areas are out of affordable reach. Reusing household wastewater also lessens the burden of fetching water for irrigation purposes as well as the cost of fertilizers. All these solutions have been developed to help people realize that returning to earth is the optimum solution.<sup>(6)</sup>

To reach regeneration, the Millennium Development Goals (MDGs) need to be September, achieved. In the 2000, Millennium Summit (MS) adopted the United Nations Declaration (UND) which committing the nations present to a new global partnership to reduce extreme poverty and setting out a series of timebound targets, with a deadline of 2015. These have become known as the Millennium Development Goals (MDGs).<sup>(10)</sup> Accordingly, three types of regeneration projects came into view: imposed regeneration, opportunistic regeneration and preventive and prospective regeneration.<sup>(11, 12)</sup> With the main theme of all of them being to involve the local communities as they are the best indicators of what the area needs in its regeneration plan. Developing this kind of partnership between scheme setting personnel and local community representatives needs to

be implemented as soon as an area is decided on to regenerate as these people can either make the scheme succeed or fail. The steps set out for regeneration projects should follow the sequence:

- Identify the principles of regeneration.
- Identify the key agencies, promote and strengthen community organizations, and bring together in an embryonic partnership.
- Profile the area.
- Diagnose the issues to identify community needs.
- Develop strategy to address community needs in a way that links the principles of regeneration with the local circumstances, and which at its heart attempts to stabilize community and build community leadership.
- Develop partnership into formal incorporated body with proper representation and its own resources so that it is independent.
- Address the community needs and

monitor situation and review strategy and performance.<sup>(6)</sup>

#### Aim of the Work:

This study aims:

- To assess the environmental conditions in EL-Gazaier village.
- To assess the community willingness to participate in regeneration program.
- To assess an Egyptian rural regeneration experience.

#### MATERIAL AND METHODS

The methodology used in this study predesigned data collection was questionnaire and observation sheets and interviews to key persons and community leaders in the village. A set of simple worded questions were set to be asked during personal interviews with the villagers. Observation sheets were also used to document any further comments that the questionnaire did not answer. A door to door survey was designed and the village households numbered. The total number of villagers at that time (2005) was 4457 persons, divided into 956 families in 652 households.

## **RESULTS AND DSCUSSION:**

#### Geographical Location:

EL-Gazaier village located at the western side of Alexandria - Cairo desert road, 3 km south of the toll station. The village entrance is 43 km south of Alexandria on the highway. The houses of the villagers located far enough from the highway (at least 160 ms). The villagers used to walk an average distance of around 500 ms to reach the means of transport running on Alexandria-Cairo desert road. They also have to cross the highway at least twice daily because they live on the western side of the highway where their houses is located while their agricultural land and their farming area are located in the eastern side of the highway. This leads to several deaths (mostly children) that have occurred during crossing due to the lack of a pedestrian crossing, underground tunnel, or even crossing bridge. Construction of any one of the mentioned crossing facilities should be given a priority in the village regeneration. That is because the safety achievement for the residents in their daily duties is one of the public health principals and a base of regeneration.

#### The community:

Among the 4457 persons who live in EL-Gazaier village (on 2005), 28.5% of the villagers are illiterate and only 2.3% has a university degree. Illiteracy is a weak point in the community from the social point of view and may represent a huge obstacle against development and consequently regeneration.<sup>(8)</sup>

Around half of the families (53.7%) have more than five members (large size families) which lead to higher living burdens and cost. The percentage of illiteracy among women is 38.7% and 22.2% can only read and write. This may represent an additional obstacle in the way of development and regeneration.

Educated women are supposed to play very important role in rural development.<sup>(8)</sup> A very important social finding is that the crime rate is only 3 cases in 956 households. It may be due to smaller population size and higher employment rates among the residents.

The village does not follow a local villager unit in addition: nonno governmental organizations or community development association takes place to help partake in the regeneration. The residents of El-Gazaire also lack several awareness and thus need educatory seminars. lecturers and educatory programs regarding their rights, how to protect their environment and how to improve their current environmental and health conditions.

## Facilities and Utilities:

The results of the study show that three schools (two primary schools and one middle school) are available in EL-Gazaier village, secondary schools are not

available and the nearest one located in El-Amreya (more than 6 kms far from the village). The risks associated with the daily trips to El-Amreva (such as crossing of the highway) where the secondary school is located, may represent difficulties on joining secondary education and consequently university education. So that, building secondary school in EL-Gazaier village should be included in anv regeneration plan as education is considered one of the main supports of sustainable development.

An onsite camp site, a soccer field, and an agricultural society were also found. Presence of such facilities is essential for youth and social activities which resulted in an interconnected and interwoven community which is also an essential base of sustainable development. A medical care unit is present but needs some more governmental financial resources and well trained personnel to play its right role in achieving adequate health care and awareness for the villagers. Improvement of health care services was mentioned as a principal of regeneration in the WHO "Healthy Cities" programs.<sup>(5)</sup>

#### Infrastructure:

Table (1) shows that 97.1% of the total number of houses stated that drinking water is present, the remaining 2.9% (28 households) stated that they lack water inside their houses and obtain their daily demands from either neighbors (1%), street tap (0.7%), the mosque (0.5%), or from an irrigation water pump (0.7%). It also reveals that of the 97.1% that stated that water is present, 0.3% claimed that it does not cover their daily consumption.

This is probably due to poor plumbing works.

Lack of sanitary drinking water is common in most of the Egyptian villages. As shortage in quantity and quality (in terms of biological quality) are of the main problems in this field.<sup>(13)</sup> It seems that this situation does not exist in El-Gazaire village as a result of recent replacement of water distribution network and recent enlargements in the water purification plant which supplies the studied village with drinking water.<sup>(14)</sup> Availability of sanitary water supply would result in reduction of water borne diseases and improvement in the health status of the community which are of the principals of regeneration.

### Table (1): Presence and Sufficiency of Drinking Water in El-Gazaire village.

		Frequency	Percentage (%)
Presence of drinking water inside the houses	Yes	928	97.1
	No	28	2.9
Sufficiency of water present	Sufficient	925	98.8
	Insufficient	3	0.3

Around 73% of the houses (flats) have private toilets where about 27% have common toilets and only 0.3% lacks a latrine inside their homes as shown in table (2). Common toilets mean that the toilets were shared by several families of the same origin (extended families).

Toilet Availability	Frequency	Percent (%)
Present (private)	696	72.8
Present (common)	257	26.8
Absent	3	0.3
Total	956	100.0

Table (2): Presence of Toilets in Houses in El-Gazaire Village.

Wastewater collection system is available, however it is not governmental. It has been built through community sharing fund, meaning that it was not designed, implemented, or supervised by the Ministry Utilities. of Housing, and Urban Communities (HUUC). Such projects always tend to be incomplete projects (the wastewater is collected and disposed to agriculture drains without treatment) due to lack of sufficient funding and lack of enough awareness regarding the problem being dealt with. Such case existed in most of the delta region villages. This situation resulted in higher pollution levels in ground and surface waters especially little branches which carry lower flow rates compared to wastewater discharges.<sup>(15)</sup>

Untreated domestic wastewater discharged to surface water streams (drains and canals) creates several environmental and health problems such as organic and biological contaminations of surface waters and their consequences. Organic contaminations affect the physical and chemical characteristics of water and make it unsuitable for irrigation and other uses. Biological contaminations lead to spread of bacterial, viral and parasitic diseases among the farmers who are in contact with the polluted water.<sup>(15)</sup>

Much more complications in water pollution problems have been resulted in especially after the significant increase in the population size and changes in rural life style. For example, the extensive use of detergents in different domestic cleaning purposes increases the concentration of phosphates in domestic wastewater which leads to eutrophication (increase the concentrations of nutrients such as nitrate, nitrite, ammonia, organic nitrogen, and phosphates) of surface water streams and affect the biodiversity of their aquatic life.<sup>(13)</sup>

In spite of the presence of strong regulations to prevent the contamination of surface and ground water, the lack of financial resources for construction of wastewater treatment facilities leads to higher levels of surface and ground water pollution when used for the final disposal of untreated wastewater.<sup>(16,17)</sup>

Based on the above, replacement or rehabilitation of wastewater collection system is considered a priority for better performance in wastewater collection. Construction of a pumping station to lift sewage from the village to the nearest wastewater treatment facility in Burg El-Arab (which is 20 kms far from the village) is an urgent priority to stop surface water pollution. The best alternative is the construction of wastewater treatment facility for the village and the adjacent villages.

The community sharing in funding of infrastructure projects at the village could be considered a very important positive finding as it reflects strong positive behavior among the residents of the village. Such positive behaviors need to be appreciated, developed and guided to achieve sustainable development. Presence of the creative community leaders, sustainable development plans, and community participation are the main supports of rural regeneration and sustainable development.<sup>(18)</sup> In addition, Transparency and credibility are needed in developing countries.

#### Solid Waste:

There was no integrated solid waste management system in the village. In such cases, some of the villagers throw their solid waste in the empty spaces around the village, some burn it in open space and some throw it around the banks of canals The farmers and drains. mix the biodegradable organic solid waste with the animal manure and compost it to be used as soil conditioners. The food waste is usually used as animal feed. The villagers who had rural ovens at there homes used the combustible solid waste items in food cooking. They do not know that burning of plastics in such ovens generates carcinogenic compounds such as dioxins.(13,19)

The public health problems associated with poor solid waste management

systems are well known. They are: diseases, vector breading, attraction of stray animals and birds, public nuisance, bad odors, air pollution and toxic emissions from waste burning, leachate generation, and surface and ground water pollution.

Poor solid waste management systems in such small communities and such lower population density areas usually resulted in few environmental problems in the short term. Severe environmental problems resulted in from poor solid waste management systems when higher population size and higher population density exist. Accumulations of little negative environmental impacts due to absence of an integrated solid waste management system will create severe negative environment impacts in the future.<sup>(13,19,20)</sup> So that establishment of an integrated solid waste management system (collection, transfer, and final disposal) is considered an urgent priority in El-Gazaire village regeneration.

#### Physical Planning:

Around (97%) of the houses have adequate natural and artificial lighting and ventilation as a result of good planning of the village in terms of wide streets and lower height buildings. However, absence an integrated long term physical of planning for the village housing extensions will lead to vertical extension of the houses (like delta region villages) and consequently lose this existing advantage.<sup>(13)</sup> So that preparing of an integrated long term physical planning is also a priority for El-Gazaire village regeneration.

An additional environmental advantage is that the main roads are paved. However, the presence of unpaved streets in semi-arid surrounding environment, presence of animal manure, and movement of cars generates large quantities of dust which are normally carrying lots of pathogenic microorganisms which creates higher potential health risks. Pavement of all streets of El-Gazaire village should be included as an item of regeneration.

The villagers were guided to use fine screens on the windows to reduce the amount of contaminated dust streaming through their homes through windows. It was found that most of them normally used these screens to keep their houses clear from flies and mosquitoes especially in higher temperature months.

#### **Community Participation:**

In a very important finding, it was recorded that regarding participation and involvement in regeneration programs, 84.6% showed readiness, 15.4% showed total refusal as shown in table (3). The villagers are willing to participate in regeneration projects or community based projects to improve the quality and standard of living in the village. Of the projects stated that the villagers are willing to participate in, a solid waste management system came at top of the list as well as health and sanitary educatory programs. Such higher percentage of readiness to participate in regeneration program is not strange. As the community participated before in the funding of construction of wastewater collection network as mentioned before. The stranger is the reduction in actual community participation from 100% in the funding of building wastewater collection network to around 85% willing and ready to participate in regeneration program. Lack of transparency, credibility as well as lack of civil community association and the weak effective role played by community leaders may lead to such results.

# Table (3): Willingness of the villagers to participate in regenerating the environment and community participation.

Willingness to participate	Frequency	Percent (%)
Yes	809	84.6
No	147	15.4
Total	956	100.0

Table (4) identifies the reasons for refusing to participate in the regeneration projects. 6.9% denied there being problems, while 5.8% claimed that they feared being duped or conned, and 2.8% stated that they cannot, but without stating the reason for refusing. The answers of those who answered can not participate in regeneration programs may be false. As the actual reasons may case different types of troubles so that they preferred to say can not participate without mentioning of the reasons.

Reasons for refusing to participate	Frequency	Percent (%)
Cannot	26	2.7
Denial of problem	66	6.9
Fear of being duped	55	5.8
Total	147	15.4

# Table (4): Reasons for refusing to participate in the regeneration of the environment and community based programs.

Table (5) represents the different type of participation the villagers opted to take once they had agreed on being involved in community based programs and regeneration projects, fifty four point one percent (54.1%) of those willing stated that they were willing to contribute financially, while thirty nine point seven percent (39.7%) stated time and only six point two (6.2%) stated willingness to contribute both time and money.

### Table (5): Type of Participation of the Villagers.

Type of Participation	Frequency	Percent (%)
Money	438	54.1
Time	321	39.7
Both	50	6.2
Total	809	100.0

#### **Regeneration Experience:**

In 1994, the Egyptian Environmental Affairs Agency (EEAA), and Egyptian Rural Management (ERM) with support from the UK Department for International Development, (DfID) founded the Support for Environmental Assessment and Management (SEAM) Program. The program in turn developed the Governorate Environmental Action Plans (GEAP) in two governorates and planned to implement them in two more governorates according to results. The activities of the SEAM program focused on several issues amongst which 65 community-based projects came to address the priorities of the Governorate Environmental Action Plans.<sup>(21)</sup> According to the SEAM Program, environmental action planning was a participatory process that include:

- Assessment of the existing environmental conditions.
- Diagnosis of the pressures which are causing degradation of the environment (e.g., poorly planned or regulated economic development, population growth), the factors that allow the pressures to cause harm to the environment, and estimates the impacts and costs of the degradation.
- Involvement of the representatives of a wide range of stakeholders to identify

key issues of environmental improvement, to priority them and to allocate resources (financial, human, and institutional) based on the collected information.

- The continuous participatory involvement of stakeholders to develop actions which target the environmental improvement, to prepare investment and financing proposals assign and to responsibilities for implementation.
- Development monitoring mechanisms for the undertaken actions, and activates supporting programs to enhance the prospects for successful outcomes (e.g., awareness, training).<sup>(21)</sup>

The results of implementation of the above mentioned projects, activities and actions suggested that seven reasons make environmental problems different. Environmental problems have several unique characteristics:

- Delayed Impacts: Many potential environmental changes have significantly delayed impacts. This dictates long term plan for implementing appropriate prevention or mitigation measures.
- Spatial Impacts: Locations of environmental impacts are often geographically distinct, making it necessary to adopt a framework that can address stakeholder interests.
- Cumulative Impacts: Individual actions often have little environmental impacts, however the cumulative impacts of many such actions may be substantial.
- Permanent Impacts: Fundamentally a significant number of environmental impacts are permanent, and the implications of such impacts are hard to be predicted.
- Need for Government Interventions:
   Environmental problems are often a consequence of market failures.

Without government intervention to introduce regulations and create markets where they do not exist, the private sector alone cannot achieve optimal environmental outcomes.

- Multi-sector Links: Environmental problems resound across a range of sectors and through many pathways, requiring coordinated policies and concerted efforts.
- Regional and Global Implications: Many environmental impacts have broad cross-boundary and global effects that require international frameworks and agreements to manage them effectively.<sup>(11)</sup>

# CONCLUSION AND RECOMMENDATIONS:

- The environmental conditions in El-Gazaire Village are not so poor.
- Short and long term regeneration plans are required considering urgent priority for the following projects:
- Construction of a facility for safe crossing of the highway (pedestrian

crossing or underground tunnel, or crossing bridge).

- Building and running secondary school.
- Replacement or rehabilitation of wastewater collection system.
- Construction of a pumping station to lift wastewater to the nearest wastewater treatment facility or construction of wastewater treatment facility for the village and the adjacent villages.
- Establishment of an integrated solid waste management system (collection, transfer and final disposal.
- Preparing an integrated long term physical planning for housing extensions.
- These projects will cost several million
   Egyptian pounds which is not easy to
   be afforded by the community,
   therefore, financial support is needed
   as well as the community participation.
- Establishment of a community

development association to lead the literacy. Awareness and educatory programs are a priority in El-Gazaire village regeneration.

- The Villagers could be guided to use 3. lower cost environmental sanitation technologies such as biogas production units, back yard composting activities, use of solar energy ovens and sorting of recyclable materials from solid waste. Such small enterprises environmental help in sanitation improvement, self employment and sustainable development of the village.
- As other national regeneration projects El-Gazaire village regeneration needs governmental support in the proposed projects.

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