

An applied project towards sustainable productivity development in Makawi- Zagazig city- Sharkia governorate

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Abstract

The natural environment in Kafr Mekkawi, in the city of Zagazig in the Sharkia governorate, is being eroded, with its land and natural resources, during the unplanned urban growth that will negatively affect the resident population and their future generations. This local experiment aims to shift from random consumer growth to sustainable productive development through housing development as a mechanism to activate productive development activities during the optimal use of land while preserving its natural resources.

Keywords

Sustainable, Productivity, Development, Zagazig City

Introduction

This applied project is based on three axes of comprehensive planning:

1. The place and its natural environment.
2. Population characteristics.
3. Productive activities and their economic return. This is through a survey, inventory and evaluation of the current situation in infidelity to identify deficiencies and how to address them through development housing as a mechanism for sustainable productive development, and the possibilities of implementation on the ground.

First: the current situation:

The first axis: the site and its natural environment

Izbat Fatima Hanim Sabri represents the nucleus of the emergence of Kafr Makkawi and a point of convergence for Azab: (Izbat Ibrahim Sultan, Izbat al-Jawish, Izbat Salama Awad and Izbat Basyuni Al-Hattab), and Kafr Makawy is located on the east bank of the Bahr Mashtoul canal and some of its new service elements extend on the west bank of the Bahr Stream Mashtol

1- Climate:

Kafr Mekkawi is located in the cold, humid areas in winter and hot humid in summer, and it helps to work all year long except for the summer months (May, June, July and August) in which the temperature and humidity are high and from areas with little rain annually and is not affected by the heavy rains.

2- wind:

Most of the prevailing winds from northeast to northwest during most of the year, especially in the summer months, and southeast winds increase in the fall and winter seasons, and the Khamasin winds blow in the spring, where the average wind speed is at its highest in April at 11.9 m / s and is the lowest. Its average velocity in September \bar{v} m / s.

3- The development of urban growth:

- Early 1950s, the area of Al-Kufr reached 12 acres, representing the nucleus of the village, from traditional mud houses using locally available building materials.
- During the sixties and seventies until the early eighties - this period witnessed random urban growth.
- Concrete installations on the land of others. These urban extensions were not restricted during this stage, nor were they specified for them an urban space.
- Since the early 1980s, random urban growth has extended as the annual rate of erosion of agricultural lands at this stage reached 0,21 feddans / annually, so that urbanization extends randomly on the land of others around Dyer sub-district to the north and south along the Mashtul Sea, until its urban area reached about (55, 12) An acre (interspersed with the area of roads, corridors, spaces, squares, groves and private gardens) and space lands (private properties) amounting to about (8, 3 feddans). In this, the urban development of Kafr Makkawi differs from the typical urban growth of the Egyptian village.

Land use:

The total area of the agricultural reins in Kafr Makawy is (3 acres) and represents (96%) of the total area of Kafr Mekkawi, according to the strategic plan for the year 2005 AD, and it is noticed that the unplanned urban growth gradually extends to its agricultural surroundings.

1- Infrastructure:

-Traffic and Corridors Network:

There are a number of roads linking the infidels with the neighboring villages, and they are considered basic roads in communication between villages. There are also a group of internal roads with narrow widths and unsuitable for their use, as well as some narrow roads and corridors that do not allow automatic movement on them.

Water feeding Kafr Makawi is fed with water through a 6-inch diameter feeding line from the Mashtool Al-Artwazi water station. The water network is in good condition and serves all parts of the infidels, but there are no fire taps in addition to the small number of lock cocks and the difficulty of controlling the network, and a feeding station And water purification in the seventies for general use. According to the principles and criteria that have been set for the Egyptian Code, the current water consumption rate for Kafr Makawi is (40 liters / person per day).

- **Irrigation sources for agricultural lands:**

A main canal was dug from Bahr Mashtoul in the year 18AD, and the irrigation process is done through drains, and it is rare to use pumps to irrigate agricultural lands.

- **Sewage:**

There is a system to dispose of sewage water from the buildings of disbelief using septic tanks or trenches, and it is swept by self-efforts, and a private sanitation network was allocated in the year 18 AD and a piece of land was allocated for the establishment of a sewage station on it, and it has not been built yet. There are no scavenging trailers belonging to the local unit designated for Kafr Makawi; The sweeping is done by self-efforts and the drainage is done on the main drains in the village, which results in pollution of the water environment and soil and the spread Diseases.

- **Solid waste:**

Among them, garbage and solid waste constitute an environmental problem in Kafr Mekkawy due to the presence of some deficiencies in disposal and dumping them in open lands and waterways.

- **Energy and Electricity:**

Kafr Makawi is fed with electrical energy directly from the Al-Musalamiyyah feeder from the village's distribution panel, with a medium voltage of 11 kV. The per capita consumption rate in blasphemy is not proportional to the general average per capita of most villages in the republic. Low pressure wires pass in front of the housing block and are dangerous for residents.

1- Environmental status:

- The accumulation of the building mass and the increase in the density of the occupation of the lands led to a decrease in the quality of the residential environment. - The fragmentation of agricultural lands led to a decrease in agricultural productivity and weak production.
- The decline in the average per capita share of agricultural lands, with the encroachment of others' lands, which led to a decrease in its productivity.
- The intersecting roads are random and interspersed with obstacles, from random concrete structures impeding the uses and violating the principles of urban planning.
- Waste constitutes environmental pollution and an extended obstacle to disbelief, and is disposed of in waterways, causing organic pollution.
- The shift from a rural housing pattern and a balanced life to a low, random housing and urban growth pattern.

Demographic characteristics of the residents of Kafr Makkawi:

- 1-** The expansion of the base of the pyramid, which represents the population of less than 15 years (40.3% of the total population of Kafr Makawi).

2- The able-bodied population represents the middle of the pyramid, and their percentage (0.2%) of the total population of the village, and this percentage is expected to increase in the future as a result of the movement of the population at the base of the pyramid to it.

3- At the top of the pyramid, the population of 60 years and over represents only (6%) of the total population of the village. - The dependent population represents two segments of the population, namely, the segment of the population less than 15 years old (the base of the pyramid) and the segment of the population aged sixty or over (the top of the pyramid), and their percentage together (46%) of the total population is infidel.

4- Immigration: The unemployment rate among the infidel population increased to about (20%), which led to the movement of (60%) of farmers to work in the civilian sectors in the center of Zagazig and neighboring centers, and this led to an imbalance in the geographical distribution of the population.

- **Service elements:**

1- Education:

There is a joint primary education school in Kafr Makawy that was established in 1995 and serves about 200 male and female students.

There is a preparatory school established in the year 18 AD that serves 200 students. - There is an Azharite religious institute that was established in 2009 for elementary, preparatory and secondary schools, and it serves 400 male and female students at the primary level. And 20 middle school and high school students.

Kafr Makawy suffers from illiteracy and needs literacy programs, especially among females.

- Education in schools located in Kufr provides basic and religious education, and there is no environmental, productive, vocational and agricultural education.

2- Health: A health unit (the family hospital was established in the year 18 AD) - aveterinary unit in the services complex.

3- Religious services: There are 4 mosques in infidelity, including: **1-** Great Mosque. **2.** Abu Bakr Al-Siddiq Mosque. **3.** Al-Tawhid Mosque. **4.** Abdul Aziz Al-Qadi Mosque.

Services complex: a building consisting of four floors and contains: (a conference room, an event house - an office for the memorization of a noble marriage. - a nursery a post office - a sub-civil registry office - a warehouse for butane gas pipes that feed the disbelief and the estates of the subordinates and the surrounding villages.

4- Demographic situation: - Kafr Makawi residents suffer from illiteracy, unemployment and lack of training in modern production. - The limited investment produced for its natural environment.

- The third axis: productive activities and their economic returns

1- Agricultural production:

Agricultural production processes are characterized by the use of elementary methods, which depend on the human element in most of its stages. This led to a decrease in employment to (14%) of the total workforce in Kafr Mekkawi, and the production process depends on crops with limited economic returns (wheat, corn and seasonal rice "and alfalfa for livestock and poultry) There is a tendency to group holdings and every basin within an area of 5 acres to facilitate irrigation operations and agricultural service towards maximizing the value of agricultural productivity as a trend towards sustainable productivity development.

2- Animal and poultry production:

Kafr Mekkawi lacks animal and poultry production, which limits the economic return and leads to an increase in the consumption rate over the production rate.

3- Crafts and commercial activity:

Kafr Makawi is very rare in the artisanal and commercial activity, and its workers represent (2.4%) of the total infidel workers, so there is only some craft activities and the shrinkage of local products with an increase in dependence on foreign products. (Source: Preliminary estimates of economic activities for the population, the Central Agency for Mobilization and Statistics).

4- Contribution of women in economic activity:

The contribution of females from (10 years or more) to economic activities in Kafr Makkawi, and environmental productive activities can be introduced and trained to increase sustainable productive development in disbelief.

Production Mode:

The limited use of agricultural mechanization to increase crop productivity.

- The scarcity of craft and commercial activities with infidelity, which reduces their economic return.

Lack of animal and poultry production in blasphemy, which leads to poor productivity of food products.

Urban growth, population growth, and reduced productivity and its impact on the economic return led to random consumer development.

- **First: Sustainability Criteria for Developmental Housing:**

Arrangement and orientation of buildings to provide shade and block inappropriate winds; And reduce the temperature in summer. Designing housing that consumes the least amount of electrical energy and working on making use of renewable natural energy sources, using good thermal insulators, provisions and directing housing units to conform to natural environmental systems and utilizing them in lighting and ventilation. - The use of internal enclosures and building roofs for environmental and productive use, such as: planting roofs and internal spaces to provide crops, to achieve a balance between the initial cost, functional relations and energy consumption. Using water conservation methods in taps. - gray-water recycling and local treatment; And using it for irrigation, with the suggestion of appropriate alternatives to sanitation according to the nature of the land and the level of surface water at the site, and the merging of productive service activities with developmental housing.

- **Second: Building materials and construction methods:**

Balancing cost and quality when choosing building materials. - Choose resistance to fire and external factors. The importance of availability of materials in the local market. Selection of natural materials extracted from the local environment. - Choose materials with appropriate colors for the local environment.

Choosing appropriate building techniques and construction systems for housing development projects based on the following considerations and principles:

- Environmental considerations, health considerations, lower costs, ease of implementation, common use and handling, portability Adjustment.

- Third: Infrastructure systems:

1- Integration of methods of utilizing traditional energy sources of renewable energies and natural sources:

The design principle of developmental housing through reducing dependence on fossil fuels for energy by providing systems for rationalizing energy consumption in buildings and encouraging access to energy from various alternative sources.

• Generating clean energy with solar cells:

The electric current is generated by modules of photovoltaic solar cells mounted on the surface of the rotor and connected to a current regulating device, depending on its purpose.

- Utilization of biogas energy:

Utilizing solid waste from animals in generating biogas, which contains a high percentage of methane (about 20-30%), which is used as fuel for many domestic and industrial uses. The gas is compressed in cylinders for easy storage and the possibility of distribution to housing development and various services.

- Water sources and their extension and reuse systems:

Running water is used and a group of wells are dug to provide the housing development needs of water, which require some treatment or sterilization operations before it is raised to a high water tank and connected through a private feeding network.

- Sewage treatment:

Gray water treatment units are used so as not to represent a source of odors or water pollution, and to help obtain treated water suitable for irrigation of agricultural lands. 5- Waste disposal and recycling through the creation of a waste disposal system and the establishment of a management program and training for the population on how to dispose of solid waste and encouraging its recycling through small projects.

- Organic agriculture with high productivity:

Encouraging high-value productive crops (medicinal plants, fruits, vegetables and ornamental plants) and providing possibilities for preservation, processing, packaging and mass marketing.

7- Animal and poultry production

Encouraging animal and poultry production activities among the population, especially women as a source of income, encouraging agricultural products and their waste and their uses in animal and poultry production, and using animal production residues in fertilizing agricultural soil.

- **Fourth : The site, its urban surroundings, and future extensions:**

The roundabout and its extension to the elements of developmental housing is located as a focal point and a tool to stop the random urban sprawl on agricultural lands and to provide housing and sustainable development and productive activities in Kafr Mekkawi.

- **Fifth: Management and Operation Potential:**

Management and operation take place through self-efforts and community participation from the residents of Kafr Mekkawi, the Local Community Development Association, technical support from local and international technical research agencies, and executive support from the local development agencies, which are currently coordinated and with them in management, financing and operation.

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