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Evaluating the Effectiveness of Modern Industrial Sites in Egypt and the Extent of its Impact on Existing Industries "Case Study of Beni Suef Governorate"

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ABSTRACT: Since 2018, Egypt has adopted the form of industrial parks as effective spatial sites for industrial localization after the pattern or form of Emiratization was industrial zones that are considered business incubators.

The research deals with the study of the spatial locations of the industrial parks in Beni Suef governorate and the extent of their integration with the objectives of the strategic plan of Beni Suef governorate and the study of the quality of the industry actually allocated to the industrial complex and its relationship with the existing industries in the governorate through a questionnaire for investors of industrial zones to maintain a regular sample of 32 investors in all industrial sectors to identify their needs, and the extent of its compatibility with the industrial complex Bayad al-Arab in Beni Suef governorate.

The research found that first at the level of the site there is no integration between the urban objectives of the strategic plan of Beni Suef Governorate and the modern industrial sites chosen by the Ministry of Commerce and Industry in Beni Suef Governorate and secondly at the level of industry there is no leading industry in the Bayad al-Arab industrial complex, it is similar to the industrial zones in industrial localization, and the survey of investors showed that there is compatibility between some industries actually allocated in the industrial complex and required of investors by 18.7%.

The research recommends that a leading industry is required for the industrial complex and the selection of sites for its localization in line with the urban, economic, social and environmental objectives of the strategic plan of Beni Suef governorate as well as the restructuring of the industries offered in the industrial complex Bayad al-Arab in accordance with the industries required in the industrial zones of Beni Suef governorate as well as promising and targeted industries for export.

This research is directed to decision makers in order to restructure industries and choose the best spatial sites for the localization of industrial parks in line with the strategic plan of Beni Suef Governorate so that the strategy of the Ministry of Commerce and Industry is integrated with the strategy of the Ministry of Housing and Utilities.

KEYWORDS “Bayad Al Arab Industrial Park - Strategic Plan for Beni Suef Governorate - Promising and Targeted Industries for Export ”

I. INTRODUCTION

Industrial parks are working on regional development as they appeal to the theory of growth poles, which led to its adoption by decision makers in industry in Egypt to replace industrial zones.

Industrial parks differ in that they contain a leading industry on which to base themselves and rally around them complementary industries as well as the establishment of industrial complex facilities other than industrial zones, they divide the land into actual sectors, for example the food sector - chemical - textile The plots of land are allocated to investors to start building their factories in accordance with the requirements of the industrial zone.

The research deals with a case study of the industrial complex in Beni Suef governorate to evaluate the extent to which it achieves its objectives in terms of the effectiveness of the site selection

According to its leading industry and integration with the strategic plan of Beni Suef Governorate as well as the suitability of the industries allocated to it with the needs of the industrial zones in the governorate.



II. METHODOLOGY

The research aims to study the new industrial sites of adopted by the state by studying the location of the industrial complex Bayad al-Arab and the extent of its impact on endemic industries in Beni Suf governorate, where the required to be included in the governorate is studied through the work of a questionnaire with a regular sample of investors to reach those industries, using the inductive approach, then follows the analytical, deductive and comparative approach

III. RELATED WORK

2- Industrial Complexes

In Isard's opinion, an industrial complex is "one or more activities that occur in a particular location and belong to a group of activities that are subject to important production, marketing, or other interrelationships. It is a set of interdependence of activities associated with a matrix of structural relations."¹

It consists of one or a few large payment companies so the industrial parks have both functional and regional significance, as they carry some basic similarities with the growth poles.²

He also defined it as "a set of activities in a particular location that are linked together" by artistic and productive relationships. These relationships may be so intertwined that the spatial similarity of activities in the complex leads to significant savings.¹

In all cases, Isard stressed the crucial role played by the glue of locational interdependence. Therefore, an industrial park can produce two or more goods from one final product or service, or two or more goods that may or may not enter into the production of an intermediate commodity, but may combine to form two or more final products.³

2.1 Types of industrial complexes

Industrial complexes are classified based on function and links and the following is a presentation of each of them:⁴

A. **Classification according to the function of the complex:** Industrial complexes are classified according to their function into two types, the first the second is

- mono- complex Special for a specific type of activity such as an oil refinery complex, a fertilizer complex, an iron and steel complex.
- multi –complex Combines multiple into a single geographic unit.

B. **Classification based on links:** Industrial complexes are classified according to industrial links into two types vertical complex Horizontal complex.

- **vertical complex:** It is a complex with industrial units vertically integrated to produce type One or multiple types of products. The Iron and Steel Industries Complex is the best example of this
- **Horizontal complex:** In the horizontal complex multiple units operate independently but their final product is one.

2.2 Objectives of the Industrial complexes Strategy:

The aim of the establishment of industrial complexes is regional development in application of the theory of growth poles by supporting the industrialization of localities, provided that the industrial complexes focus on a few key activities determined by both local resources and market needs.²

2.3 Determinants of the application of industrial complexes

There are several determinants of the implementation of the industrial complexes strategy, as follows:⁵

A location where the basic factors of industrial localization are available - comparative advantage - government participation of the private sector in implementation, management and operation - , the presence of a leading activity of the industrial park and with it complementary industries - research and development

3- Evaluate the effectiveness of choosing the location of the Bayad Al-Arab Industrial complexes

This section deals with the study of the location of the Bayad al-Arab industrial complex in Beni Suf governorate, the effectiveness of its location in relation to the industrial zones located in the governorate and the effectiveness of the industries allocated to it for the endemic industries in the governorate.

3.1 Location of the Bayad al-Arab Industrial Park for the industrial zones in the governorate

Beni Suef Governorate contains 8 industrial zones, most of which are located on the eastern axis of the governorate, except for the industrial zone of Kom Abu Radhi, which is located on the western axis, and the industrial complex of Bayad al-Arab in the governorate of Beni Suef is located in the expansions of the industrial zone of Bayad al-Arab in the eastern axis also on an area of 70 acres and includes 266 industrial units, Figure 1 shows the location of the Bayad al-Arab industrial complex with the expansion of the Bayad al-Arab industrial zone and its location in relation to the industrial zones in Beni Suef governorate and Figure 2 shows the detailed plan of the industrial complex

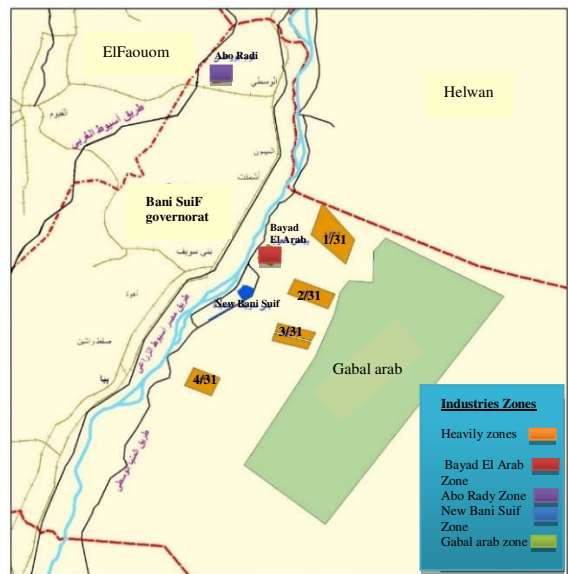


Figure No. (1) shows the location of the Bayad al-Arab industrial complex with the expansion of the Bayad al-Arab industrial zone and its location in relation to the industrial zones in Beni Suef governorate

Source / Industrial Development Authority, 2022

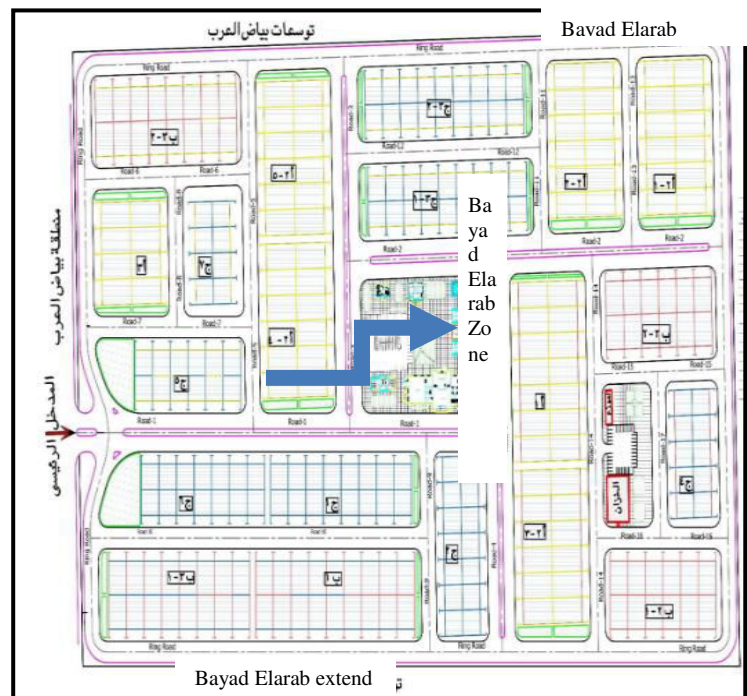


Figure No. (2) shows the detailed plan of Bayad El Arab industrial complex



Source / Industrial Development Authority, 2022

IV. EXPERIMENTAL RESULTS

3.2 Study the effectiveness of the industries allocated in the Bayad al-Arab industrial complex for endemic industries in the governorate of Beni Suef.

To study the effectiveness of the industries allocated in the industrial complex for endemic industries in the governorate of Beni Suef, this is done by studying the current situation and the target of Emiratization in the industrial complex through the preparation of a study according to the following four axes:

- Study of the industries offered in the Bayad al-Arab industrial complex
- Study of projects that have already been localized in the industrial complex
- Study the needs of investors from industries that are nutritious and complementary to their industries
- Study promising and targeted industries for export as well as their own markets.

3.2.1 Study of the industries offered in the Bayad al-Arab Industrial complex

The industries offered in the Bayad al-Arab industrial complex are studied through the brochure of the conditions and specifications of it and by studying these industries it turns out that they are the industries of supply chains, value-added industries and some small industries and table No. 1 shows the industries offered in the industrial complex Bayad al-Arab

Table No. 1
Industries offered in the Bayad al-Arab Industrial complex

Sector	Industries Offered in Bayad Al Arab Industrial complex
Food	Filling legumes or rice oskar - pastries and baked goods - table salt - pickles - tahini and tahini sweetness - sauces - sorting and packaging of medicinal and aromatic plants - dry dessert - packaging of honey bees - dried vegetables - fruit jams - tomato sauce.
Engineering	Wood/metal furniture – paper packaging – virgin and plastic strips – cardboard products (dishes – cups – boxes) – printing and packaging supplies – complementary products such as packaging for existing factories – searchlights / LED bulbs – smoke lamps – medical chair for the transport of patients / medical bed for patients – household or hotel electrical appliances (fans – kettles – stove – hair dryer) – desert air conditioning – water coolers.
Metal	Metal screws - metal covers - wooden furniture accessories (handles - qualene - hinges...)
Chemical	Products complementary to existing factories such as production supplies accessories and packaging - packaging - packaging - toys - liquid soap - plastic hair (brushes and brooms) - plastic cutlery - plastic drums - household items - simple chemicals (plastic paints - plastic paste - doco ...) - elbow joints - plastic pipes and hoses for irrigation - virgin and plastic strips

Source/researcher based on the brochure of the conditions and specifications of the complex 2020

3.2.2 Study of projects already endemic to the Bayad al-Arab industrial complex

Projects that are already endemic to the industrial complex are studied through a meeting with the Director of the Industrial Development Authority branch to identify the projects that have proven serious by obtaining the operating license and table No. 2 shows the projects already endemic to the Bayad al-Arab industrial complex.

table No. 2
shows the projects already endemic to the Bavad al-Arab industrial complex.

Sector	Industries already allocated to the complex have been extracted (operating license 36 units)
Food	Production of breakfast foods consisting of grain grains - Production of powder or tahini - Pastries and baked goods - Packaging of various foodstuffs - Making varieties of pies and preserved cakes - Making oils and basic pastes natural and aromatic - Packaged legumes - Packaged rice - Sugar - Production of ready-made foods from fruits and vegetables - Preparation of crops, cereals and agricultural crops -
Engineering	Panels counter - Making sterile medical supplies - Carton - Cups and paper bags
Metal	Making various medical furniture (surgical tables, hospital beds, detection tables, ...) - Making paper table supplies, dishes and cups from cartons by forming - Making wooden boxes and cages - Making welded and pulled steel pipes and accessories (without galvanizing) -



Chemical	Soap making - Making printed and unprinted rolls, bags, plastic packs and boxes - Making composite, chelated and paper fertilizers (mixing and packaging)- Industrial stretch from P.E. - Engine oils, gears and toilet soap
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Source: Industrial Development Authority 2022

3.2.3 Study the needs of investors in Beni Suf Governorate of nutritious and complementary industries to their industries.

The needs of investors of nutritious and complementary industries are studied through the work of a questionnaire for 32

investors in the industrial zones in the governorate in different industrial sectors and different industries. Table No. 3 shows the nourishing and complementary industries of some of the existing industries in Beni Suf Governorate

Table No. 3
Feeder and complementary industries for some of the existing industries in Beni Suf Governorate

Sector	Industries required according to the needs of factories
Food	Sauces - extracts of oils and herbs
Engineering	Cardboard for wrapping thread on them cons - cardboard making - paper bags - production of motherboards for computers - production of power feeders for the motherboard of the computer - motors for ordinary washing machines and children - electronic circuits - pumps for washing machines ejection and pulling - aluminum accessories and shoes .
Metal	Manufacture of household foil rolls - Wooden furniture accessories (handles - qualene - hinges) - Advanced electrostatic cab and furnace - Metal operating unit (advanced finish, large scissors', dervil) - Modern CNC lathe - Compressor maintenance workshop and air conditioning units - Pin wire - Screws and nuts - Roman Wear - Hearts of faucets - Hand valve - Turning workshops - Injection molds - Compression machine 350:800 tons .
Chemical	Packaging - Printing presses - Stretch Packaging - Adhesives such as glue of all kinds - Factories of plastic bags for packaging - Aluminium accessories and shoes - Chemical plant for the production of raw materials such as potassium and calcium chloride - Factory for the production of plastic jerrycans 20 liters - Printing inks Flexo - Industrial starch - Foam dish industry - Manufacture of plastic packaging cans - Manufacture of hanging and fork and knife plastic - Factory for glass and mirrors - Plastic injection-PVC Paper - Electric Motor Insulators - Varnish - Joan Doors Washing Machines - Junat Sealant - Plastic Pallets - Transparent Plastic Bags HDPE - Foam Bag Rolls .
Radar	Spinning Bulbs - Ginges Quarrying Washbasins & Clothing Softening - A - Bread Puller in Various Sizes - Cotton Cleaning - Cotton Rolls - Sponge Factory - Fabric Factory - Lycra Factory, Stick Factory and Bamboo Yarn Factories.
wooden	Wood panels, counters and plaques factory - wooden pallets .

Source/researcher based on investor survey in 2022

3.2.4 Study of promising and targeted industries for export according to the Global Demand Index as well as their own markets.

Promising and targeted industries for export are studied according to the Global Demand Index as well as their own markets are identified and Table 4 shows the promising and targeted industries for export and their markets.

Table 4
shows the promising and targeted industries for export and their markets.

Sector	Industries Targeted for Export	Markets
Food	Agro-industries and industries based on natural products (sorting and packaging of medicinal and aromatic plants - packaging of honey bees - dried vegetables - fruit jams - sauces - tomato sauce)	Euro-Asian Markets - East Asian Countries - Arab Free Trade Area - European Market - Africa
Engineering	Furniture Industries - Home Electrical Appliances - Medical Industries	(Classic-style furniture industries) Euro-Asian Markets - Arab Free Trade Area - European



		Market - USA - Africa (Household Electrical Appliances) Arab Free Trade Area and Africa - (Medical Industries) Euro-Asian Markets
Metal	There isn't any	There isn't any
Chemical	Paints, varnishes, soaps and detergents - Plastic Industries	(Paints, varnishes, soaps and detergents) East Asian countries and the European market - (Plastic Industries) Arab Free Trade Area, Africa and Europe

Source/ General Authority for Export Development 2020

4- Results

- 1- The industrial complex works the same function as the industrial zones with the difference that the complex delivers existing industrial units while the industrial zones hand over land that is started to be built, in this case it is a departure from the free in a stylized way
- 2- The industrial complex does not achieve its main function, which is to be based on a leading industry and rally around it complementary and nourishing industries and by studying the industries actually allocated to investors in the industrial complex it turns out that they are separate industries that are not interrelated and there is no leading industry in the complex according to its concept and the determinants of its application.
- 3- There is a consensus in some industries between the offerings in the industrial complex and required of investors, especially in the packaging industries, whether packaging and cardboard bags or paper.
- 4- A number of 89 industrial units were allocated in the Bayad al-Arab industrial complex out of 266 units, where a number of 36 of them extracted operating licenses and studied these projects that obtained operating licenses and found that:
 - There are new activities that are not put forward in the brochure of conditions and specifications allocated in the complex such as counter panel industries as well as the manufacture of sterile medical supplies - the manufacture of welded and withdrawn steel pipes and their accessories (without galvanization) - engine oils and gears - the manufacture of composite, chelated and paper fertilizers (mixing and packaging).
 - There are activities compatible with the needs of factories in the areas of Bayad al-Arab and Kom Abu Radhi, such as the packaging industries, which are in high demand and the number of 6 projects that have obtained operating licenses.
- 5- There are some industries to be added to the Bayad al-Arab industrial complex according to the needs and requirements of the industry in the areas of Bayad al-Arab and Kom Abu Radhi, whether they are nourishing industries or complementary to their industries, and there are also some new industries belonging to the textile and wood sector must be taken into account when the future expansions of the complex or by allocating them to the industrial zones with available pieces and table No. 5 shows those industries.

Table No. 5:
Industry to be localized in the Bayad al-Arab Industrial Park

Sector	The industry to be localized in the Bayad Al-Arab industrial complex
Food	Extracts of oils and herbs.
Engineering	Cardboard for thread wrap on them cons - Production of motherboards for computers and production of power feeders for motherboard for computers - Motors for ordinary washing machines and children - Electronic circuits - pumps for washing machines Ejection and towing - Aluminium accessories and shoes.
Metal	Homemade foil rolls - Metal operating unit (advanced turbone, large scissors', roller) - Modern CNC lathe - Compressor maintenance workshop and air conditioning units - Pin wire - Roman Wear - Hearts of faucets - Hand locked - Turning workshops - Injection molds - Compression machine 800:350 tons
Chemical	Presses - Adhesives such as glue of all kinds - Chemical plant for the production of raw materials such as potassium calcium chloride - Flexo printing inks - Industrial starch - Manufacture of foam dishes - Factory for glass and mirrors - Plastic injection - PVC paper - Insulators for electric motors - Varnish - Joan Doors of washing machines - Junat sealant - Plastic pallets - Cab and oven Advanced electrostatic paint - Rollers of foam bags

Source/ Researcher from analysis data



8- Recommendations

- 1- The need for the industrial complex to achieve the desired goal and in accordance with the parameters of the application
- 2- The need for a leading industry within the complex around which complementary and nutritious industries rally
- 3 - The need to identify the needs of the governorate of industries in accordance with the wave of innovation that it is going through to settle in the industrial complex
- 4 - The need to identify the needs of investors from industries complementary to their industries to settle them in the industrial complex
- 5 - Making an industrial map with a database for the possibility of linking all industries to each other and ease of integration between industries ones.

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