

PAPER • OPEN ACCESS

National projects as development poles and their impact on urban development`

To cite this article: Asmaa Gabr *et al* 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **974** 012030

View the [article online](#) for updates and enhancements.

You may also like

- [Transport hubs as experimental ground for new construction materials](#)
S Guzhov and A Korchagin
- [Modern approaches to assessing the efficiency of urban development projects in the context of the formation of a comfortable urban environment](#)
Maria Bovsunovskaya
- [Evaluation of urban development quality of the coastal cities around the Bohai Rim](#)
Yan Liu, Enping Cheng, Meng Li et al.



245th ECS Meeting
San Francisco, CA
May 26–30, 2024

PRiME 2024
Honolulu, Hawaii
October 6–11, 2024

Bringing together industry, researchers, and government across 50 symposia in electrochemistry and solid state science and technology

Learn more about ECS Meetings at
<http://www.electrochem.org/upcoming-meetings>

 **Save the Dates for future ECS Meetings!**

**Military Technical College
Kobry El-Kobbah,
Cairo, Egypt**



**13th International Conference
on Civil and Architecture
Engineering
ICCAE-13-2020**

National projects as development poles and their impact on urban development`

Asmaa Gabr¹, Kamal Khalaf², Gamal Helewa³

¹Assistant Lecturer, Al-Azhar University, Urban Planning Department, Cairo, Egypt.

²Prof. Dr. Professor of Planning, Al-Azhar University, Urban Planning Department, Cairo, Egypt.

³Lecturer of planning, Al-Azhar University, Urban Planning Department, Cairo, Egypt.

Corresponding author: Assmaa.gabr2015@yahoo.com

The Egyptian state is witnessing a strong impetus and development boom in national projects because of its effective role in spreading development in the lagging regions and attracting the population, and in this context the research aims to shed light on national projects in Egypt and measure the impact of these projects in terms of their development returns from being development poles that help in the achievement of urban development , so as to measure the extent of the ability of projects to polarization actual Imran , by identifying factors affecting the national projects , the ability of the urban polarization, and then determine the shape of the relationship between these factors and the ability polar metric urban and exit mathematical equation from which the ability to measure Urban polarization of any existing national project .

Key words: national projects, urban development, development poles, polarization, common strategies for development.

1. Introduction: National projects consider Egypt's vision to invest its various resources and one of the most important means used to create urban development on all development sectors, starting from the local level through the regional level to the national level, which takes place in a significant development in its urban environment, especially in the scope of those projects, which is represented in its role in terms of being the poles of development Help in spread urban development. From this standpoint, the research seeks to answer the following question:

Do national projects have the impact of the yield in the achievement of urban development? How can this effect be measured?



This question can be answered by identifying the factors affecting the ability of national projects to attract and reach the relationship between them and urban polarization ability through a statistical mathematical scale based on comparative theoretical studies, and through this scale, the urban polarization ability can be measured for any existing national project or any An urban gathering in the light of the number and size of national projects , and predicting the potential population of the project to determine development and investment priorities, which in turn reflects on spreading urban development throughout the republic.

2. Methodology

The research deals with a set of the following axes: -

The first converter: clarifying the concept of national projects and their classifications. The axis second bass review of some local experiences and analysis for to identify the elements of success of national projects in urban development. The third axis is concerned with studying the developmental role of the new city of El Alamein in the axis of the northwestern coast: as an application model for a national project, and the fourth axis ends. By presenting some results to clarify the relationship between national projects and their polarizing capacity, so that their urban returns on urban development can be evaluated.

2.1. *The first axis: the basic concepts and their classifications*

The concept of national projects, their classifications, and concepts for achieving urban development is addressed, as well as identifying the major projects currently underway.

2.1.1. *The concept of national projects*

Major projects with national goals, which work to achieve some of the sectorial development goals, and that are based on addressing national and regional issues and exploiting competitive capabilities and opportunities, with a national developmental return (economic - social - service - strategic - security) , in the context of broad community participation⁽¹⁾, Under real political and administrative will. One of its characteristics is that it consists of national projects that constitute it, during a time schedule of up to twenty years ⁽²⁾. Like the project (developing the axis of the Suez Canal - the axis of the northwestern coast).The geographical scope of these projects extends to more than one governorate, Projects that have a direct return on the national product, and that these projects should have an impact on drawing the urban map, as it includes more than one national project

2.1.2. *Classification of national projects*

To get to know the levels of national urban development projects, we find that they are graded under three levels related to the administrative division of Egypt (administrative economic rather than development), differ from each of them in terms of (project size, beneficiaries, investment return, geographical scope and level of development),⁽¹⁾ national projects have been classified for several Categories are as follows:

- **According to the planning level:** (national projects - regional projects - regional projects).
- **Depending on the type of project:** National projects usually appear through them, which are three patterns as follows ⁽¹⁾:
 - Pattern of national projects in the form of points (Spots): The new administrative capital.
 - Pattern of national projects in the form of perimeter regions (Zones): The West Bay of Suez.
 - The pattern of national projects in the form of development hubs (Corridors): The axis of the Suez Canal.

- **Depending on the function of the project and activity leader :** has been classified as follows: (projects with dye agricultural project one and a half acres - projects with a dye industrial project west of the Gulf of Suez development - projects with a character of urban project new administrative capital - with dye tourists projects J of As a project for the new city of El Alamein - projects supporting development such as (axes - energy projects - food projects,) , which had a clear impact and a noticeable return on urban development through the establishment of a group of urban communities to serve these projects, their success and continuity .

2.1.3. Basic concepts related to urban development:

include the concepts of a group (pole Development- growth point- Growth Point- Polarization - common strategies for development) ^{(4) (5) (6)}, which include more detailed meanings that integrate with them in order to reach the desired urban development⁽³⁾through the settlement of a set of activities related to technical and economic relations in a homogeneous space and extend its development impacts to the surrounding areas so that these areas grow and grow It contributes to advancing economic development and achieving national goals in light of urban development strategies.

2.1.4. The major national projects currently underway

The major projects that were proposed in the previous periods, of which part has come into effect and the rest under study through the regions in which these projects are located, have been handled, and according to the National Plan for Egypt 2050 CE, there are promising development regions figure(1) that were covered by the national plan⁽⁷⁾ . They are as follows:

1- Developing the Suez Canal Region as a global logistics and industrial center 2- Sinai Development.3- Development of the northwestern coast and its desert back . 4- Development of North Upper Egypt governorates. 5- Development of southern Egypt, Nubia, the region of Halayeb and Shalateen. 6- New projects on the national level. 7- National, regional and local transportation projects.

According to the approved national plan 2050 2012, these previously monitored regions are the most promising development regions / areas on the Egyptian map with the ingredients and development opportunities that have the potential to lead development in Heliopolis in the next stage. ⁽¹¹⁾

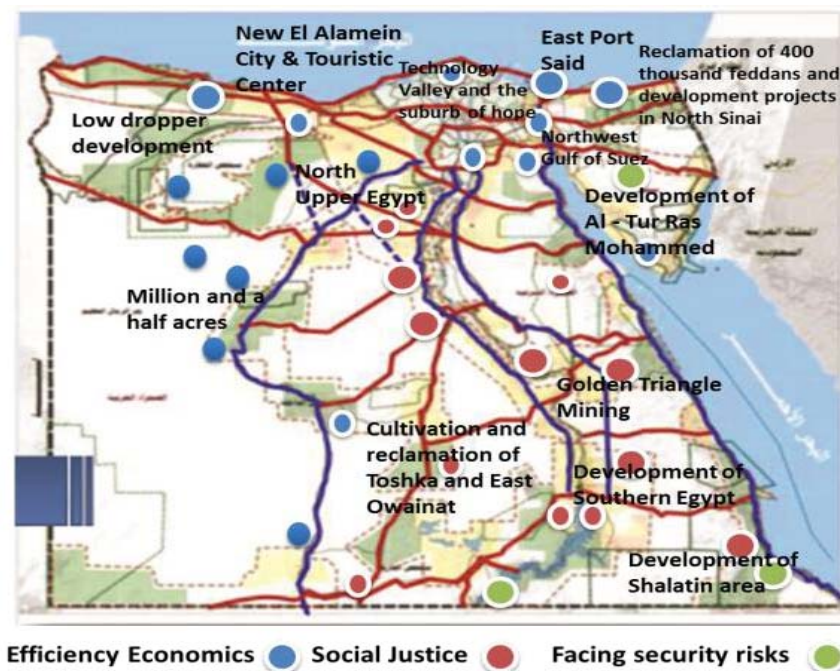


Figure1:Major national projects proposed during the first phase 2012-20120⁽⁸⁾

2.2. The second axis: a review of some local experiences

National projects in Egypt represent development poles to serve as a launching pad for creating new urban nuclei that attract promising population density with a broad national trend in which national efforts come together and this is evident in the Suez Canal axis project, which is a driving project for growth in all sectors.

2.2.1. Northwest Gulf Development Project Industrial

The Gulf of Suez region was chosen to create a special economic zone to correct the path of industrial zones and advance them towards production and export.

Project location:

The North West Bay development project is considered as a development pole and the project is located 35 km south of the city of Suez on the western coast of Suez Bay near the location of AinSokhna at the intersection point between each of the Cairo / AinSokhna and Suez roads /Quick Saffron⁽⁹⁾.

2.2.2. The project's development potential and its impact on urban development

Where the settlement features are available in the region in terms of raw materials, labor and goods needed to establish a pivotal port and a distinctive industrial back that depends on the economic forces required to be established. Looking at the site of the project, we find that it has several components, which are considered a growth pole that attracts Imran as follows:

- The possibility of establishing a distinctive axial port at Ataqa, whether it is a commercial port or an advanced fishing port with all necessary services⁽¹¹⁾.
- The possibility of establishing an industrial zone that leads to the development and advancement of the local economy.
- Availability of an advanced infrastructure network in the area, which serves the industrial area and the port.
- The presence of natural resources and resources such as limestone, dolomite, coal, petroleum, and fish resources, which creates a huge economic base to attract and settle the work force .
- The region 's ability to absorb the population increase to the establishment of a residential city by expanding the horizontal and vertical as a result of the availability of basic infrastructure also provides the opportunity to establish urban communities based on those distinctive economic activities the land site , and thus moving the number of manpower to the area of the project as a result of the availability of jobs up to 25,000 opportunities , and is expected to reach 360,000 opportunities, Figure (2) .



Figure 2: Proposed Master Plan for the Northwest Gulf of Suez ⁽¹²⁾

- The availability of various economic activities in the relative importance, which provides an opportunity for the leading activity factor to appear and its impact on the rest of the activities through front and back relations.

Therefore, the role of the Suez Canal region becomes clear and considered a development pole with multiple components capable of polarizing the population and achieving urban development and disseminating it at the axis of the Suez Canal.

2.2.3. Elements for the success of national projects in urban development from previous experiences

From studying the experiments, we will draw several elements for the success of the national project according to the project type, whether it is a project in the form of axes, regions, or points as follows:

1- Contacting the international hubs. 2- The efficiency of the road network. 3- Contacting the ports. 4- The availability of the rail network. 5- Creating developmental poles. 6- Proximity to arable areas. 7- Traffic in the

industrial areas. 8- Proximity to the tourist and archeological sites. 9 - Proximity to new urban communities. 10- To correspond with natural factors. 11- Avoidance of environmental risks and having a national strategy. 12- Enhancing practical aspects of research and studies. 13- Efficiency of the institutional framework for axis management.

2.3. The developmental return of national projects on urban development

2.3.1. Case Study (El Alamein City New in the framework of the North West Coast hub)

It is called the Alexandria-Matrouh axis and was chosen as a pattern of development hubs, where the northwestern coast occupies an important location on the map of Egypt, and represents the link between Egypt and the Arab Maghreb, and Egypt's hope is to absorb the population increase. Therefore, the state took care during the previous period to give a development boost to this axis, and the region as a whole which can be invested by putting it at the forefront of the tourist map of Egypt. The developmental outcome of the centers located on the axis is studied, and the axis includes the following centers⁽¹⁵⁾ 7 centers: (Salloum - SidiBarani – Al Nejeila - MarsaMatrouh - AlDabaa – El Alamein – Al Hamam) . As shown in Figure (3) in order to measure the impact of the new city of El Alamein and its developmental role in achieving development on the axis of the northwestern coast as a growth pole and an important model for national projects.

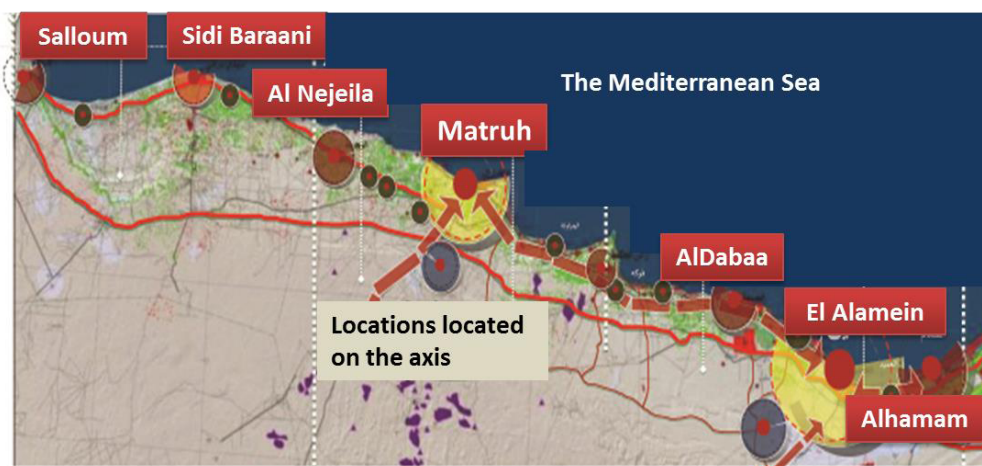


Figure3: Gatherings located on the axis⁽¹⁶⁾

2.3.2. Measuring the developmental returns in the centers located on the axis of the northwestern coast.

It is worth noting that the study and research have set several standards for the evaluation of national projects and their impact on urban development, where a set of indicators that have been measured to measure the development returns of the centers of the axis are exposed .

2.3.2.1. Standards for measuring the urban polarized capacity for national projects:

- The use of a set of independent variables due to a standard set of criteria , some of the views of planners and others to choose the researcher of a mole all aspects and variables of economic, social and urban⁽⁴⁾ to serve as a standard for evaluation of projects to the nation in terms of being the poles of development. They are as follows: Growth potential standard⁽¹⁷⁾ Capacity absorption standard⁽¹⁸⁾ Regional multiplier standard⁽¹⁹⁾ the extent of the region's contribution to achieving development goals.

- Based on the previous criteria and the variables it contained to formulate them in a standard way to show the extent of their impact on the urban polarizing ability, the variables for each urban gathering (7 clusters) in the Northwest Coast axis have been defined within the framework of a specific time period starting from 1996 through 2006 and 2017, and a year 2030 according to what was expected by urban development strategies based on the data of the Central Agency for Public Mobilization and Statistics of the Population Censuses for the years 1986-1996-2006-2017 and the expected census of 2030, the strategic plan - Matrouh Governorate - Final Report - 2015-2030 - November 2017 and those variables were classified (as independent variables) (Independent Variables (As follows:)) Population numbers. Immigration rates for centers. Employment opportunities. Number of tourist rooms. Average per capita income in pounds. National projects numbers. National projects areas. Cultivated areas. Population inhabited area. Desert back area. Distance between the community and the mother governorate. Distance between the community and Alexandria. The distance between the assembly and Cairo targeted investments). Considering population numbers (dependent variable) expresses the polarization capacity of the population.

2.3.2.2. Applying development standards

By applying the development criteria according to the parameters of the standard model on these groupings in the academic axis through the program SPSS (The statistic Statistical Package For The Social Sciences) Use of linear regression battery (Linear Regression) And factor analysis Factor Analysis ""⁽¹⁷⁾ and analyzed in order to obtain Athletic scale can be invoked to gain access to measure polar metric capability of the urban communities of urban. Using the mathematical expression of regression:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + \dots + b_n X_n$$

Where Y = the value of the dependent variable that we predict (population). X₁, X₂, X₃, X_n represent the values of the different independent variables from (1 - n, ..., b_n, b₁, b₂, b₃ ,. The regression coefficients for the independent variables are either negative or positive. a = (Constant), was reached following:

First: The urban polarization ability of each of the groupings located on the axis has been reached, and the form of the relationship between each of the variables and the polarizing power has been determined as follows:

- Increasing the polarizing power factor during the specified periods for the city of El Alamein, then Matrouh, followed by Dabaa. This increases the population of these communities, as shown in Figure (4) .

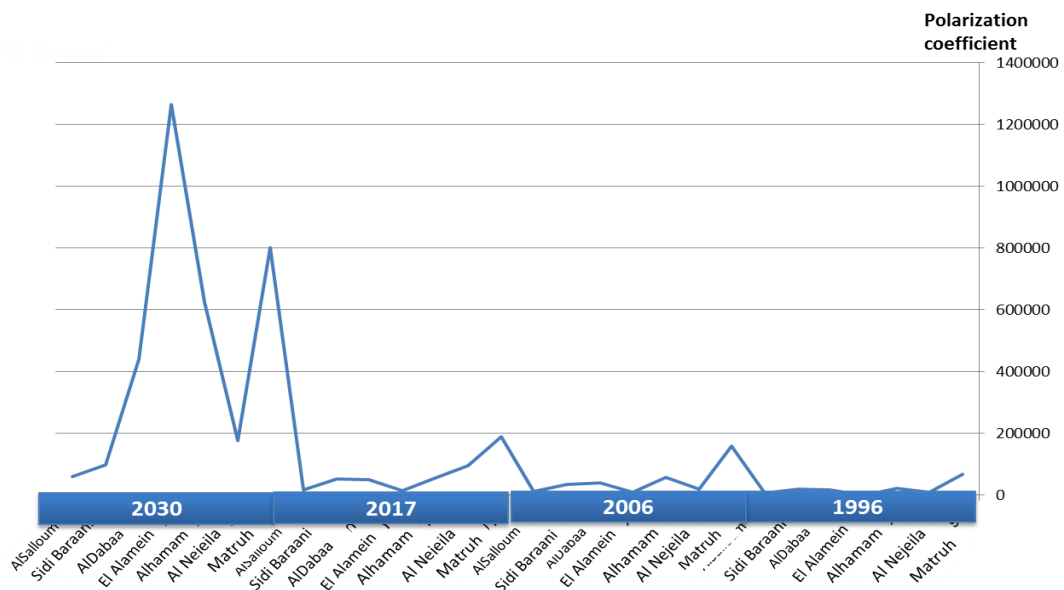


Figure 4: shows the illustrative relationship between population and polarization factor for each cluster in the years of study

Second: A statistical formula has been concluded that determines the form of the relationship between each of the specified variables according to the specified criteria and the urban polarization ability. And through it, the polarizing power can be measured

By applying this statistical experiment to urban gatherings in the academic axis, it was possible to know the standard parameters for the statistical model, which gives us the opportunity to apply it to any national project in Egypt or any urban gathering in the light of the proposed national projects, and on this the inferred equation is:

$$Y_{MPA} = -102680.00 + (-4.0974 X_1 - 36.554 X_2 + 23.416 X_3 + 469.4 X_4 - 36912 X_5 + 1024.1 X_6 - 488.2 X_7 - 278.44 X_8 + 2.1018 X_9 + 424.18 X_{10} - 2,462.8 X_{11} + 2589.8 X_{12} + 3671.6 X_{13})$$

Whereas:-

Y_{MPA} the number of the population (urban polarization capacity) of the urban gathering is one thousand people.

X_1 numbers of immigrants. X_2 employment numbers. X_3 preparations of tourist rooms. X_4 average per capita income in pounds. X_5 numbers of national projects in each grouping. X_6 areas of national projects in km^2 . X_7 area cultivated in km^2 and it can be compensated by the area of the activity that leads to this gathering whose physical polarization capacity is measured. X_8 the Populated space in km^2 . X_9 area of the desert hinterland, in km^2 . X_{10} the distance of assembly from the governorate affiliated in km^2 . X_{11} the distance of assembly from Alexandria, in km^2 . X_{12} the distance of assembly from Cairo, in km^2 . X_{13} pool investments.

These numbers in the equation are constants that were derived as a result of the statistical analysis of each of the variables included in the study

2.3.2.3. Apply the inferred equation to the new city of El Alamein

By applying the inferred equation to the new city of El Alamein to forecast population according to 2030 and to assess its developmental role in achieving development as a national project that represents a development pole, it is clear that:

$$Y_{MPA} = -102680.00 + (-4.0974 * 120 - 36.554 * 313.2 + 23.416 * 49500 + 2.469 * 30438 - 36912 * 36 + 1024.1 * 612.7 - 488.2 * 49.36 - 278.44 * 130 + 2.1018 * 24370 + 424.18 * 175 - 2462.8 * 62 + 2589.8 * 236 + 3671.6 * 90) = 1272336.69$$

We find that the prediction of the population represents from the calculation of the equation an amount of (**1272336.69**), while the population calculated on the nature is (**1265491**), and by applying the equation to the rest of the urban gatherings of the coastal axis we find that the result has been interpreted with a very high percentage that is almost original, and from here we can pass The equation, and therefore we can start applying it to any city or urban cluster in the light of national projects in this community in Egypt to predict the number of population (measuring the urban polarization ability) as an indicator of the impact of national projects on the polarization of development in the urban map.

2.4 Results

There is a strong direct relationship between the urban polarization ability of any city or grouping and the national projects that make up this grouping. The more the number of national projects for a grouping or city increases, its greater polarization capacity and thus increases the population numbers as shown in Figure (5) .

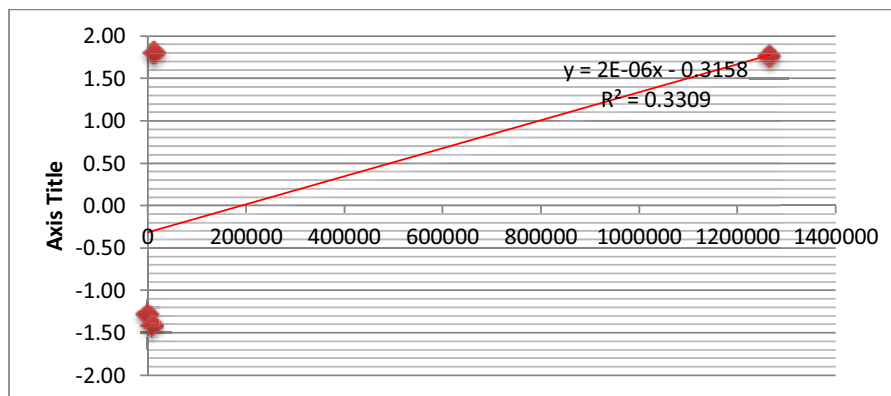


Figure 5: shows the linear regression relationship between the population and the polarization factor for the city of El Alamein during the study years

- The polarization capacity of the new city of El Alamein is suddenly increasing from 2017 to 2030, although it decreased completely in 2006 due to the increasing numbers and areas of national projects, and therefore it is considered a major development pole that attracts the population. The following figures illustrate the evolution of the population numbers of school groups, as shown in Figures (6), (7) and (8). The evolution of the numbers of the population of the urban communities during the age of Watt study

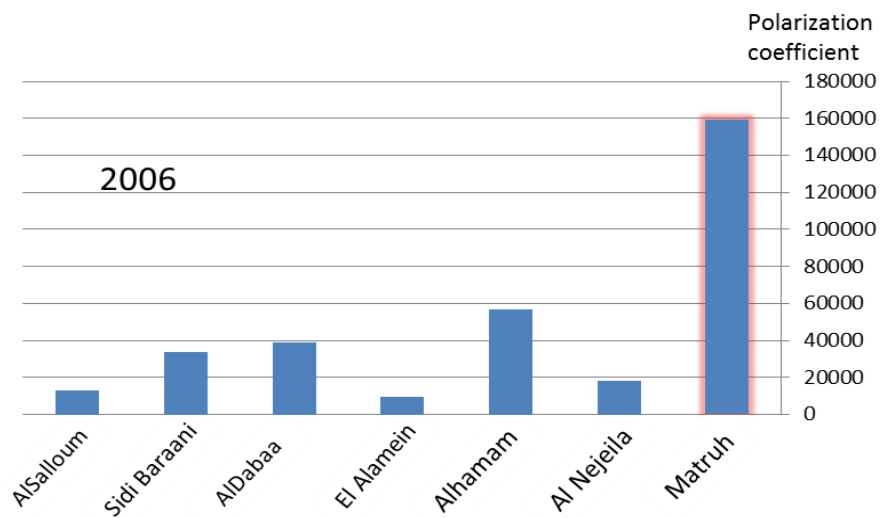


Figure 6: the evolution of population numbers for urban communities during the year 2006

- The increase in the developmental return of the axis of the northwestern coast increases with the settlement of the new city of El Alamein as a result of achieving the highest rate of polarization of the city compared to other clusters located on it according to the target year 2030. Figure (8).
- The new city of El Alamein is considered a successful national project, as the city has achieved, from the inferred application formula, the number of potential population to occur by no less than 98,000. In this way, investment can be directed to it according to the state's investment plan to push the wheel of urban, economic and social development to the scope of national projects and achieve the desired benefit from them. The following figures (6), (7) and (8) show the evolution of population numbers for urban communities during the school years.

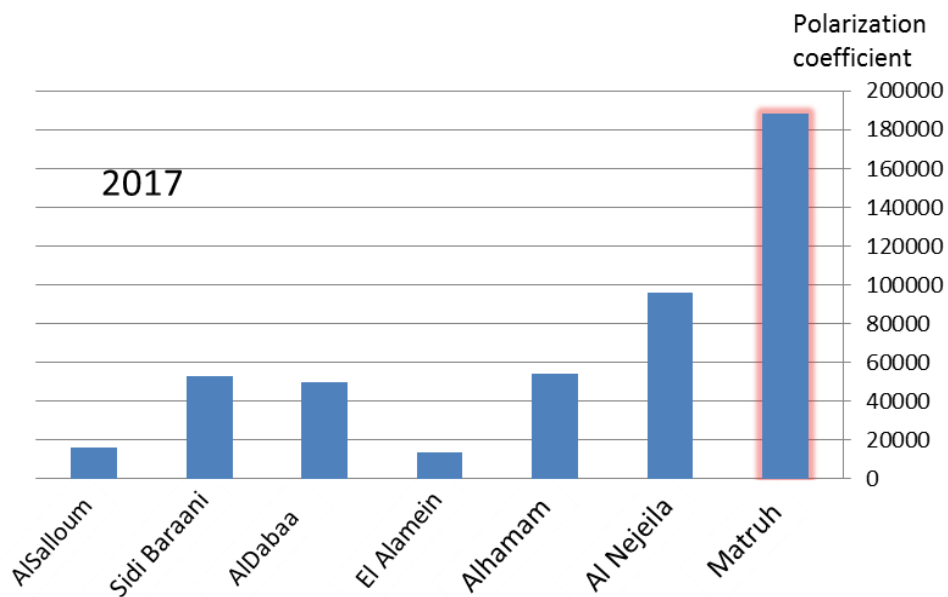


Figure 7: The evolution of population numbers for urban settlements during the year 2017

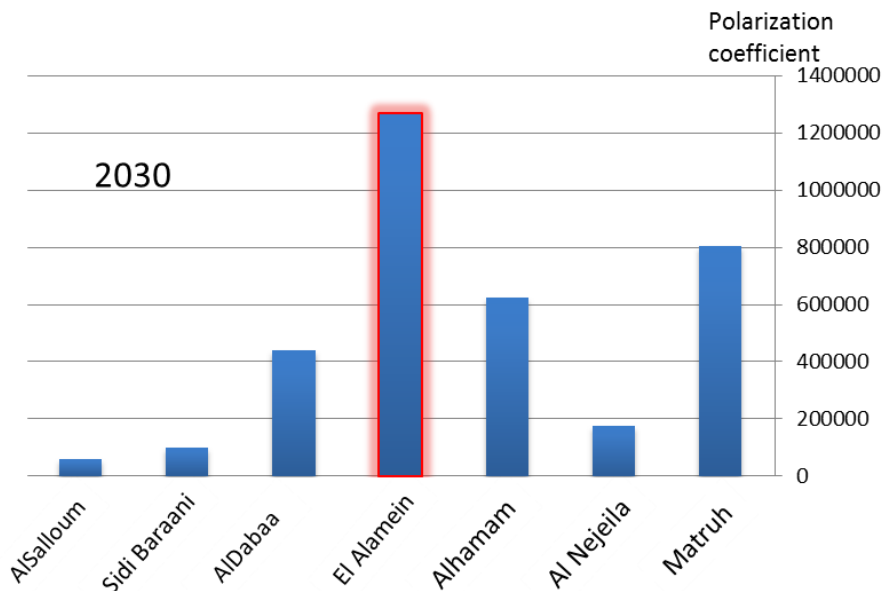


Figure 8: development of population numbers for urban communities during the year 2030

- The sizes of clusters increase in the axis of the northwestern coast by increasing the number of national projects in each gathering as a result of attracting the population, and reaching the maximum of El-Alamein, Matrouh and Dabaa.
- The need to evaluate national projects or urban agglomerations in light of the proposed projects through the inferred equation, so that the problems of incomplete project and achieve the desired urban attraction is not eliminated.
- Addressing the issues of the country's regions: through applying the equation to the various national projects in the regions of Egypt, so that the results can be evaluated and based on this, reallocating the investments, which works to achieve the regional balance of urban development on the map.

3. Conclusion

Is the national various projects levels, patterns and Their rankings need for urgent and inevitable, which is the hope of Egypt in the reconstruction of the abandoned space, and re - exploitation of its resources and potential and attracting new urban communities, and to find out the role developmental national projects must measure the ability of these projects to Polarization urban so that we can advancement of these projects and evaluate the true resolution Direct investment to it, and to measure the impact of the new city of El Alamein on development , a set of standard criteria was used, and each standard includes a set of variables that have been statistically analyzed for clusters located on the axis of the northwestern coast according to the years (1996-2006-2017-2030), and the polarizing capacity was concluded For every urban gathering and the relationship of polarizing ability to increase the population numbers for each population and come up with the statistical equation to measure the polarization capacity of any urban gathering in light of the numbers of national projects and their area in this grouping or any national project.

4. References

1. Mohamed Abou El Hassan. Developmental effect of major projects on regional development - master thesis, Cairo University, 2015.
2. Institute of National Planning - giant national projects, Cairo, 2001.
3. Ahmed Allam and others. Regional Planning - Anglo Egyptian Library, 1995.
4. Marwa Mustafa. Measuring the polarization of urban development poles as an indicator of implications for development and investment - Ph.D. unpublished - Cairo University, 2003.
5. Mamdouh Mohamed Moustafa. Strategy for the Settlement of Industrial Projects in Egypt, Case Study of Upper Egypt Region - Unpublished PhD Thesis - Faculty of Engineering - Department of Urban Planning - Ain Shams University - 2224 p. and growth Centers in regional planning " paris , 1972, p. 70.
6. Nadia Anas Mohamed Kenawy. Spatial Dimension in National Development Plans in Egypt - PhD Thesis - National Planning Institute, 1995.
7. General Authority for Urban Planning - National Strategic Plan for Urban Development and Priority Development Zones, 2014.
8. General Authority for Urban Planning - National Strategic Plan for Urban Development, 2017.
9. Report - the project of economic and social planning for spatial development - Ministry of Planning, 2002.
10. The Potential of North West Gulf of Suez Project Source: Report - Council of Ministers, June 2013.
11. Suez Canal Regional Development Project, 2016.
12. El-Bailey, A. The Future of Coastal Urban Development Axes in Egypt, Unpublished Doctorate Thesis - Al-Azhar University, 2011.
13. Geographic Information Systems database for the Urban Planning Authority 2017 project.
14. Jeffrey G. Williamson: "Regional Inequality and The Process of national Development, 1975, 159-170.
15. Emerson M. JarinandF. Charles. Urban and Regional Economics Structure And Change. 1975.
16. Muhammad SarmFath al-Nur "Regional planning areas and explanatory methods" note no. 01040 National Planning Institute Cairo, 1973.
17. Richard Johnson, Dean and Chern, Abdul-MardhaAzzam - Statistical Analysis of Variables in Multiple Applications - King Saud University - QassimBranch - Saudi Arabia, 1998 AD.