
IMPACT OF AGRICULTURAL PROJECTS ON ECONOMIC GROWTH IN EGYPT

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ABSTRACT

Purpose of the study: The purpose of the study was to examine the impact of agricultural projects on economic growth in Egypt

Statement of the problem: The Egyptian economy has commonly depended dramatically on agriculture as a source of growth and support for the non-agricultural sectors of the economy. Agriculture is a vital element of the Egyptian economy because it provides livelihoods for about 55% of the population, mainly in rural areas. However, agricultural production has dropped drastically in the past three years, which formed the study's motive.

Research Methodology: The study was literature-based. The inferences were made based on the verdicts from the preceding studies.

Research Findings: The study discovered that irrigation and agricultural productivity are key drivers of Egypt's economic growth. The agricultural outputs supply the industries with the raw materials. Moreover, it was found the sector employs more than 57% of the total population in the country. It was established that agriculture is key to the economy, contributing 37 percent of the Gross Domestic Product (GDP) and another 41 percent of GDP indirectly through linkages with other sectors. Moreover, it was established that agriculture is also a market for industrial goods such as machinery, equipment and fertilizers used in the farming process.

Conclusion: The study concluded that irrigation and agricultural productivity is one of critical drivers of economic growth in Egypt. The study also concluded that the major source of water for irrigation is from River Nile. The agriculture sector creates employment and contributes significantly to the country's GDP

Recommendations: The study recommended that the government should ensure there is a continuous supply of water from the River Nile for irrigation. Moreover, it was recommended that there be other water sources if the supply of water from the River Nile decreases. The suggested sources of water include digging plenty of boreholes in the country. The government and other stakeholders should put strategies that will enhance the performance of such training on the most profitable products. The government should also offer subsidies to the farmers.

Keywords: *Irrigation, Agricultural productivity, Economic growth, Egypt*

1.1 BACKGROUND OF THE STUDY

Egypt's major and practically unique resource of fresh water is the Nile River. The presence of the reputable water system from Aswan High Dam is controlled by the existing water sharing agreement, under which 55.5 billion cubic meters are assigned to Egypt (Strzepek, Yohe, Tol & Rosegrant, 2018). The majority of Egypt's water usage is within the farming industry, with 85% for farming, 95% for industry, 55% for potable water. The presence of sufficient quantity of water is the most significant aspect limiting farming manufacturing. Taking into consideration an increasing demand for food, the restricted freshwater and land sources, and boosting competitors for these resources, it is the most self-evident choice for Egypt's farming plan to attempt to boost the efficiency and application performance of the available water sources. Accomplishing a high irrigation water efficiency and performance is the utmost goal in water planning and administration in Egypt (El-Agha, Molden & Ghanem, 2019). The government of Egypt anticipates that water management will have considerable effect on water financial savings in order to liberate water sources that aid to meet the requirements of new improvement projects. Water deficiency limits farming manufacturing, broadening water sources is one of the alternative to boost or keep outcome; financial allocatios in research to increase land and water efficiency can additionally launch restraints on growth.

Egypt has an overall land area of about 1 million km² equivalent of 238 million feddans. The majority of it is desert and just 5.5% is occupied. Occupations of the land are densely populated within the Nile Delta and its valley, which narrows considerably in Upper Egypt (Negm, Sakr, Abd-Elaty & Abd-Elhamid, 2018). The total cultivated land area has to do with 8.6 million feddan 3% of the overall land and includes primarily of old and newly reclaimed locations. The environment is dry with very limited rains in a slim strip along the north coastline. The Nile River is the major and only exclusive resource of surface water in Egypt. Farming relies upon the River Nile and takes in between 80 and 85% of its yearly supply of water. Farming land base contains old lands within the Nile Valley and Delta, reclaimed lands from the desert since 1952, rainfed locations, and numerous sanctuaries where groundwater is used of for irrigation. Practically all Egyptian farming happens in some 25,000 km² of fertile land within the Nile Valley and Delta.

Water to irrigate crops is drawn from Nile River, therefore much the government has actually offered it to farmers free of charge. Nevertheless, with raising development of the agricultural locations as a result of population growth, water deficiency is most likely to grow in the near future. It is, therefore, essential to recognize reliable means of using scarcely offered irrigation water sources. Irrigation management of crops in Egypt is identified by the application of even more water than the crops require (English, Solomon & Hoffman, 2020). In fact, huge quantity of water is supplied without any estimates of the soil water material at the root zone. The rationale for doing so is that farmers assume that more irrigation water means higher yield. Eliminating unneeded watering water beyond the crop demand would conserve water, provided that this can be made with low yield losses. As production element, water can be identified by a number of attributes that make the concerns of effective utilization of this source various from those referring to other production variables.

The Egyptian economic situation has actually commonly depended mostly on farming as a source of development and cushion for the non-agricultural markets of the economic climate (Gollin, 2018). This crucial role was re-introduced by the high returns of this field in the 1960s and 1970s. Throughout 1980s and 1990s, this supremacy decreased, yet farming still accounts for a substantial portion of development, exports and jobs creation. Farming is hence still main market in the Egyptian economy. Country's residents enhanced from around 31.4 million residents in 1993 to get to concerning 38.8 million residents in 2003, which rose to about

101.48 million citizens in 2021, of Egypt's complete population. Presently, farming is the biggest source of work in local areas, though non-agricultural tasks are coming to be significantly crucial (De Janvry, Sadoulet & Zhu, 2021). These make up a very varied variety of tasks: from producing of products generally artisan to trading, to the provision of services of every nature. Regardless of diversification, few functions of country job prevail throughout industries and places.

Many people from the rural areas are working on their own farms or in extremely little ventures common for local non-agricultural tasks. According to study from the International Labor Company (ILO), casual work in Egypt got to around 24 000 000 individuals by 2021 which is 7% of women and 93% of men, whereby agricultural employment led to concerning 48.8% whereas, non-farming work added to around 51.2%. Impact of the manufacturing variables on the yield of the main plants generated in Egypt named berseem, wheat, cotton, maize and rice with special concentrate on irrigation water and its connection with nitrogen. Therefore, it is crucial to comprehend marginal items of irrigated water and inputs in the production process of these plants to develop their values and suggests taking full advantage of efficiency of watering and other inputs. The Tornqvist-Thiel index of outcome of crops, animal items and farmed fish in Egypt rose from a base worth 100 to 500, which is 400% (Fuglie, Dhehibi, El Shahat & Aw-Hassan, 2021).

Egypt has actually attained excellent progress in farming performance, projecting the improvement of straight expansion by the increase of recovered areas and upright development by raising productivity. Egypt placed third according to nutritional energy supply first 20 nations in 2015 reaching concerning 3550 kcal/cap/day and surpassing typical worldwide calorie presence of 2870 kcal/cap/day. Egypt is self-dependent in rice, veggies, fruits, milk items, poultry, eggs and fresh milk (Miniaoui, Irungu & Kaitibie, 2018). Nonetheless, high food supplies are required not only to fulfill dietary requirements but also of the population, yet likewise to boost the food self-sufficiency and safety placement. According to SPONGE (2015) the portion of residents below the poverty line in Egypt decreased from about 24.3% which is 12.9 million out of 53.0 million in 1990/1991 to concerning 19.6% which is 13.9 million out of 70.7 million in 2004/2005. Nevertheless, current boost of the portion was noted to get concerning 26.3% corresponding to 22.0 million out of 83.7 million in 2012/2013. Egypt's farming possibility is approximated at 4.42 million hectares. Overall actual eco-friendly surface water sources are estimated at 56 km³/year of which 55.5 km³/year from the River Nile and 0.5 km³/year from interior sustainable surface area water resources.

Egypt adheres to planting more crops method which allows them to growing approximately three crops a year. Growing plants alternates round the year during three irrigation periods; winter months running from November-May, summertime from May-September and Nile i.e. Nile flood, from September to November (Osman, Ferrari & McDonald, 2017). The mostly planted crops are wheat, berseem and broad-beans in the winter crop rotation; cotton and rice in the summer season crop rotation whereas maize and millet are flooding plants. This revolving farming system assists in boosting land performance. As an example, planting berseem in winter season enhances the soil high quality before soil-demanding cotton is being grown in summer. Mass of irrigated land relies upon low-efficiency surface area irrigation system. This surface watering primarily relies upon one standard resource which is Nile water. The storage tank of Nasser Lake supplies 56 billion m³ BCM per year. Nile water normally offers irrigated land in the Nile Valley and Nile Delta. These lands under farming constitute 85% out of the 8.7 million feddans of Egyptian irrigated land.

2.1 LITERATURE REVIEW

Agriculture is among the largest markets of an economy, consisting of regarding 13.3% of the GDP throughout the period 2009-2012. Factories related to agriculture, such as manufacturing, marketing, and supplies, represent an additional 20% of GDP (Horridge, Madden & Wittwer, 2018). Presently, farming is the biggest sector for job creation to those living in the local locations, though non-agricultural tasks are becoming progressively important. These consist of an extremely different range of tasks: from making normally artisan to trading, to the provision of services of any kind. Regardless of the heterogeneity, some attributes of country work prevail across industries or places. Crops returns anywhere are continually greater in irrigated than rainfed locations. Water is a required input of farming manufacturing, and in numerous developing countries water needs for crop production is covered partly or totally by watering. Using irrigation can create a variety of benefits for the farming sector. First of all, watering permits development of cultivatable areas beyond that is feasible under rainfed problems (Namara, Horowitz, Nyamadi & Barry, 2019). Second of all, irrigation results in boost in yields due to prevention of plant water anxiety and to the consolidated effect of using irrigation with high producing crop varieties, fertilizers, and chemicals.

Considering that 2000s speed of structural strategies including fiscal, monetary plans, taxation, privatization and infant company laws, assistance Egypt relocate towards an extra market-oriented economy and triggered raised international investment. The strategies and plans have enhanced macroeconomic yearly development outcomes. As Egypt's economy recovered various other important problems such as joblessness and destitution started to decrease dramatically (Nagarajan, 2020). The country gain from political security and closeness to Europe, boosted exports and appreciates a strong currency. From a financier angle, Egypt is secure and better recognized by external stakeholders. Egypt in the past and present has a relatively stable mixed economic situation with typical growth, balancing 3-5% in the last quarter century. The economy started different phases of growth throughout where the government and private sectors played important roles. Warm climate and numerous water have in the last generated numerous plants a year. Nonetheless, given that 2009 raising desertification ended up being an issue. Progressively little contemporary approaches are related to generating fruits, vegetables and blossoms, in addition to cotton for export. Additional advancement is possible; the most typical standard ranches inhabit 0.40 hectares individually, usually in a canal-irrigated area along the financial institutions of the Nile. Lots of small farmers likewise have cows, water buffalos and poultries. Between 1953 and 1971, some farms were collectivized, particularly in Upper Egypt and parts of the Nile Delta (Watts, Ksiazek, Linthicum & Hoogstraal, 2019).

The agriculture goals on the desert areas are often questioned, the desert farming lands which were offered routinely at various degrees and costs were restrained to a limited group of elites chosen really thoroughly, that later profiteered retailing the provided big desert ranch land by products. In 2010 Egypt's abundant land totaled regarding 3.6 million hectares, regarding one quarter of which has actually been redeemed from being uncultivable after the building of the Aswan High Dam (El Gamal and Zaki, 2017). The state aims to boost this figure to 4.8 million hectares by 2030 via added land improvement. Although just 3% of the area is cultivable, it is extremely efficient and can be chopped twice and even three times yearly. However, redeemed areas only add 7% to the total worth of farm manufacturing. According to 2016 data from the Food and also Agriculture Organization of the United Nations, Egypt is the globe's biggest manufacturer of dates; the second biggest manufacturer of figs; the third biggest manufacturer of onions and eggplants; the 4th biggest manufacturer of strawberries and buffalo milk in addition to the 5th producer of tomatoes and also watermelon. Citrus, dates and grapes are the major fruits by grown area. The state practices strong level of control over farming, not only

to make certain the best use irrigation water yet likewise to confine the planting of cotton for food grains. Nonetheless, the government's ability to achieve this purpose is restricted by crop rotational constraints.

Irrigation water is coming to be a progressively limited source for the agricultural field in lots of arid and semi-arid countries (Hamdy, Ragab & Scarascia-Mugnozza, 2021). Elements such as quick urbanization, population growth and environment modification are placing these resources in a constant obstacle. To battle the physical shortage of water, increasing its use effectiveness, enhancing its performance in every production market, and its appropriation to one of the most important uses stays the most efficient methods that have the highest level of proven effectiveness to achieve much more effective water usage. Egypt is the largest and most populated economy in the North African area. The quick boost of population growth and its matching economic tasks triggered a reduction of the per capita share of the already restricted fresh water sources, and degradation of the water. Although that the substantial bulk of Egyptian land is desert, with agricultural land constituting less than 5% of the complete land area, the agricultural field is very important for the nation's economy (Hanna and Osman, 2020). In 2012 farming made up 16% of GDP and also 29% of overall employment. Because of very sparse and irregular rainfall, crop manufacturing in Egypt is practically completely relied on watering.

Abu Qir Fertilizers Firm is one of the biggest manufacturers of nitrogen fertilizers in Egypt and the MENA area. It accounts for virtually 50% of all nitrogen plant food production in Egypt. The firm was developed in 1976 with an initial aim of ammonia urea manufacturing center, found in Abu Qir, which is 20 kilometers eastern of Alexandria. Many of the desert areas are being developed for farming, consisting of the questionable however ambitious Toshka job in Upper Egypt, but a few other productive areas in the Nile valley and Delta are being lost to urbanization and erosion. Bigger contemporary farms are coming to be more relevant in the desert. Farming biomass consisting of agricultural wastes and livestock manure, create roughly 30 million metric tons of dry product per year that could be enormously and decisively utilized, for generating bioenergy and boost the lifestyle in country Egypt (Chel and Kaushik, 2019). Regardless of policies to develop waste-to-energy plants, this source remains awfully underused. Because very early 2008 with the globe food prices rising particularly for cereals, requires striking a new deal on agriculture enhanced. Undoubtedly 2008, arguably marks the birth of a new national farming plan and also reform.

Agriculture in Egypt market is forecasted to grow at a CAGR of 3.2% during the projection duration of 2020-2025. Undoubtedly agricultural exports are solid and by mid May 2020 Egypt's exports were majority of the whole of 2019. New research study and development efforts will be key in educating the future generation of farmers and sector authorities improved approaches, with the hope that these innovations will in time drip to the nation's small farmers and established the market for a strong future. Execution of digital technology aids farmers' access details to much better manage crops and animals and thus help them make better agricultural decisions (Muangprathub, Boonnam, Kajornkasirat, Lekbangpong, Wanichsombat & Nillaor, 2019). Digital modern technology likewise assists to improve food safety by decreasing production prices and waste. It additionally enhances crop performance with the accessibility of precise information to compute production activities like estimating the daily needs of watering and fertilizing. The focus on producing ingenious remedies will enhance revenue for small range farmers in Upper Egypt (Shalaby, Al-Zahrani, Baig, Straquadine & Aldosari, 2019).

The nation consists primarily of desert, arid, and semi-arid rangelands covering a complete location of regarding 100.15 million hectares. Bulk of the grown land is found near the Nile

financial institutions, its main branches and canals. Egypt's inhabited area is about 3.99 million hectares, representing only 4% of Egypt's complete land. According to the Ministry of Agriculture and Land Reclamation, complete land dedicated to farming has actually raised in current years. Presently, Egypt's irrigated areas covers concerning 3.76 million hectares in 2013, as contrasted to regarding 3.69 million hectares in 2009 because of the loss of farming land to unlawful metropolitan encroachment (Sherif, Rabie, Ismaile & El-Atrash, 2019). Nevertheless owing to enhancing cropping intensification the complete cropped area enhanced from 4.7 million hectares in 1980 to reach regarding 6.51 million hectares in 2013. The chopping intensity indication revealed that most of Egypt's grown land was cropped nearly two times in 2013 greater than 173%. This would be as a result of the introduction of early maturing selections for different plants, enabling farming of the same area for approximately three yields per year.

Land tenure in Egypt takes three forms: ownership, holder and owner are the same individual; rent, money or in-kind; the holder is not the exact same individual as the proprietor and combined holding, where the holder is the proprietor of one part of the land holding and the renter possesses the various other component, in that it, both of them have the possession along with the utilization legal rights for one part of it however only the use right for its various other part. Egypt has actually achieved great progression in farming productivity, particularly throughout the past two decades (Nkamleu, 2020). Terrific initiatives are currently being made to present high produce, very early maturing wheat selections in addition to high yielding maize hybrids. Considerable progress have actually been made in determining superior lines with high yield possibility and desired qualities for Egypt with choice of setting apart populations and subsequent innovative lines under raised-bed growing. Five promising bread wheat lines have currently been encouraged for on-farm tests. In previous season, 3 Bread Wheat and 4 Durum Wheat elite lines showed superior to others. These boosted genotypes of wheat have shown yield potential of greater than 10 tons/hectare, which turned out to be 10-20% more than the most effective checks.

Rainwater harvesting is exercised on regarding 133 500 hectares in Matruh and North Sinai. All watering is full or partial control irrigation; surface area irrigation was practiced on 3 028 853 hectares in 2000, while 171 910 hectares were under sprinkler irrigation and 221 415 hectares under localized watering. Surface water was the resource for 83% of the irrigated area in 2000, while 11% which is 361 176 hectares of the area was irrigated with groundwater in the Governorates of Matruh, Sinai and New Valley. The remaining 6% which is 217 527 hectares was watered with mixed resources. The irrigation system on the old land of the Nile Valley is a consolidated gravity and water lifting system. Downstream of the High Aswan Dam, there are 7 barrages to promote abstraction (Kashef, 2017). The major canal system very first level consists of 31 200 kilometers of canals and takes its water from head regulatory authorities, found upstream of the Nile barrages. Water is disbursed along branches second level where the flow is constant. At the third stage, distributaries receive water according to a turning routine. Water is pumped from the distributaries to irrigation areas.

The irrigation system in the new areas redeemed locations is basically on a cascade of pumping terminals from the primary canals to the areas, with a total lift of up to 50 meters (Grigoryev, 2021). Surface area watering is illegal in the new recovered lands, which lie at the end of the systems, and are extra in jeopardy of water shortage. Farmers are required to use sprinkler or drip watering, which are better for the primarily sandy soil of those locations. When utilized perfectly, lawn sprinklers and drip irrigation require small amounts of water than surface area watering. New large watering plans are under advancement in the southwestern region of the nation at Al Oweinat; in 2003 regarding 4 200 hectares were under farming and also there are plans to expand the activity extensively. In the Fayoum Governorate, watering was practiced

with gravity up until recent past, without any water training system. By the year 2000, however, gravity irrigation was applied on just 1 900 hectares, or on less than 1.2% of the cultivated location in Fayoum.

Agricultural production in Egypt still plays a vital role in the nation's economy regardless of the decrease in its relative advantage in recent years (Agrawala, Moehner, El Raey, Conway, Van Aalst, Hagenstad & Smith, 2018). It adds to the total food requirements of the country, offers domestic markets with resources, and contributes to export earnings, along with producing revenue for farming labor along with other teams such as dealers, processors, exporters, transporters of farming commodities. Agricultural value added as a share of Gross Domestic Product (GDP), at regarding 11% of GDP in 2015, experienced a clear slowdown from 16% in the very early 2000s and 20% in the early 1980s. Agricultural exports were 2% of all goods exports in 2013, down from twice that share in the very early 2000s. Nevertheless, work in farming as a share of complete employment in the economic situation has not declined in the same way and still amounts to practically 29%, the exact same share it had in the very early. Agriculture in Egypt is still labor-intensive; productivity of labor in agriculture, as gauged by farming value added per worker in constant USD, only boosted by around 1% typically throughout the last years (Gelb, Vijaya, Meyer, Divyanshi & Kyle, 2020).

Egypt is geographically well positioned for trading activities, near the big markets of European, Middle East, and African nations. From ancient times, Egyptian agriculture was export-oriented, especially in standard foods. Nonetheless, in recent times, its relative importance in international farming exports has been decreasing and reducing; at the same time, the country has ended up being a growing importer of basic foods items, specifically wheat. Deficiencies in the farming balance of trade have actually been continual over the last two decades: in absolute terms, the farming trade deficit has actually boosted from USD 2.3 billion in 1994 to USD 10.8 billion in 2014 (Aksoy and Ng, 2018). The worth of Egypt's farming trade deficit in 2014 was about four times the deficit in 1994; along with the absolute boost in its farming trade deficit over the last twenty years, farming export revenues relative to farming imports costs have likewise raised during the 2000s as contrasted to the 1990s. This shows Egypt's agricultural exports rose in relative terms when contrasted to its farming imports.

3.1 RESEARCH FINDINGS

The research study discovered that Egypt plans to increase public investments in the farming and irrigation sector during the fiscal year 2020/2021. Agriculture is a considerable contributor to Egypt's economic situation. GDP from farming in Egypt rose to 106297.10 EGP million in very first quarter of 2021 from 99840 EGP million in the 4th quarter of 2020. Egypt exported 3.47 mn tons of vegetables and fruits since the beginning of 2020. Agriculture is a vital element of the Egyptian due to the fact that it provides livelihoods for concerning 55% of the population which is largely rural. The agricultural field accounts for about 17% of the country's GDP and around 20% of its foreign exchange revenues. Agriculture is additionally a source of basic materials for a number of economic sectors including the cotton sector.

Furthermore, the study found that the farming sector represent 28% of employment and over 55% of work opportunities in Upper Egypt. The nation consists primarily of desert, arid, and semi-arid rangelands covering an overall area of about 100.15 million hectares. Bulk of the grown area is found near the Nile financial institutions. Digital innovation likewise aids to boost food security by minimizing manufacturing costs and waste. Egypt's essential macroeconomic indications have improved considerably because 2016, as a result of the implementation of monetary and fiscal reforms and financial backing which is as a result of improved agricultural exports. Irrigation water is extracted from the Nile River, and so much

the government has actually supplied it to farmers free of charge which has actually promoted the farming field to grow quicker.

4.1 CONCLUSION

The research concluded that it would be financially a lot more costly to create crops based upon traditional agricultural system, which represents business as usual. For Egypt as economy real prices matter, showing the lack of natural deposits such as land, water and fertile soil. For the long-lasting calculated vision, natural agriculture techniques are much better furnished to deliver lasting and inexpensive food manufacturing systems. In organic farming systems, a rise in return annually with an input reduction as a result of soil quality improvements will gradually reduce the price per ton of manufacturing. Nonetheless, in traditional farming system the input needs to be enhanced over time to maintain the very same outcome. This will trigger higher expense per ton of production. Generally, natural farmers appreciate better costs for their items and an assured market. On top of that, the study concluded that for the future of farming in Egypt it will certainly be essential to internalize the external damage expenses right into expense computations of every farmer. Removing unnecessary irrigation water beyond the plant need would help saving water, supplied that this can be made with reduced yield losses. The government demand to give industries associated with farming with favorable working environment for the raw products originating from agriculture have a place where they can be processed right into completed products or jam-packed and exported hence gaining the country profits.

5.1 RECOMMENDATIONS

The study recommended that Egypt should have the ability to handle the possible decreases in the supply for Nile water with extra efficient watering method which safeguards more performance for Nile water, groundwater and irrigated area. More enthusiastic strategy to increase irrigation performance for summertime rice in order to obese any potential shrinkage in its result and exports. Moreover, the government can usefully focus on promoting high worth agricultural commodity trade and boost control throughout policies, institutions and sector linkages. Nevertheless, while export promotion measures need to be encouraged, it will certainly likewise be vital that the government sustains investment in research and development, training, framework, and logistics in the agricultural field. Egypt would certainly consequently require to develop education as well as training programmes to improve labor performance, and improve conformity with common standard systems so regarding open up rewarding top quality aware international markets. Agriculture requires to be promoted since it creates job opportunities, contributes to the nationwide GDP and makes other sectors to grow, thus making a country to be even more of export oriented because of the surplus items produced.

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