



FUTURE VISION FOR AGRICULTURAL INVESTMENT IN EGYPT

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Abstract

The agricultural sector suffers from a decline in the investments that directed at it, which amounted to 3.6% of the national investments for the average period (2007-2017). Rate of decline was reach about 32.6%, Although it contributes about 11.7% of the value of GDP, 12.5% of the value of Egyptian exports and 25% of the total workforce in the national economy in 2017, As well as it is provide the food and raw materials for the national industry, As well as the low self-sufficiency of many of the strategy crops that need more investments to achieve self-sufficiency of it, such as wheat, Maize, and Oil crops, These crops are considered the food crisis triangle in Egypt.

The percentage of wheat self-sufficiency was reach about 42%, maize was about 52%, and vegetable oil was 5% in 2017. The quantity imports of these crops (wheat, maize, oils) accounted 27%, 19% and 17% of the value of the trade balance deficit, So the proportion of these crops accounted about 63% of the total value of the trade balance deficit, which amounted about 430 billion pounds in 2017.

Therefore, the study aims to study the efficiency of agricultural investment, and its importance for the national economy in Egypt, in light of the economic and political conditions, and the low domestic production which are facing the state, Through, studying the evolution of national and agricultural investments.

The study showed that the percentage of agricultural investment decreased from about 5% in 2007 to about 3.37% in 2017 with an average of 3.62%, and a decrease rate was 32.6%. The study of the stability of agricultural investment during the study period was showed that the average indicator of instability was 27.5%, which Indicates instability.

The results of the study also showed that the indicators of agricultural investment efficiency confirm its efficiency through the increase in return on investment, and the investment multiplier more than one, And the low of endemism coefficient of agricultural investment, this indicator shows the contribution of the agriculture sector in generating the GDP, this indicator is less than one, this means that the sector does not obtain investments commensurate with its contribution to the GDP.

The results also indicated that the most important factors influencing agricultural investment are national investment, agricultural loans, and confirmed its positive effect, and the factor of interest rate on agricultural loans adversely affect, and 83% of the changes that occur for agricultural investment due to these factors.

Consequently, the study suggested increasing the percentage of agricultural investment of the total national investment, which reached about 514.3 billion pounds in 2017, from 3.5% to 10%. This increase in the plant production is estimated at 10.6 billion pounds, which is directed towards investing in reclaiming new lands or investing in agricultural greenhouse, Thus, it is possible to reclaim an estimated area about 212 thousand feddans on the basis that the cost of reclamation of the feddan is about 50 thousand pounds, or the construction of 35.33 thousand feddans of Agricultural greenhouse, considering the cost of feddan 300 thousand pounds, or the establishment of 424 thousand of Agricultural greenhouse.

Or directing the amount of increase in the value of investment to the plant production to cultivate the target crops as (Wheat, maize, soybeans, sunflower, sesame), not only for reclamation, but also for cultivation.

The expected cultivation area of these crops was (179.7, 187.15, 191.9, 195.29, 191.59) thousand feddans, the value of the produced quantity is representing about (4%, 10.1%, 13.1%, 62% and 90.5%) respectively of the value of imports of these crops, which reduces the trade balance deficit by these percentages, also increases the self-sufficiency ratio of these crops, which constitute a large percentage of the value of the trade deficit, So the study recommends adopting this proposal.

Keywords : Agricultural investment, investment stability, return, Economy, Investment multiplier.

Introduction

Agricultural investment is one of the basic means for the success of the agricultural development process, as it is considered the main pillar for increasing production, income and creating new job opportunities. The success of the agricultural development process depends on its ability to increase the volume of available agricultural investments and distribute it among the various programs to achieve the highest possible efficiency of use it, which required necessary to direct economic policies to increase the volume of total investments, especially agricultural investment, so that the agricultural sector can achieve the highest possible productivity that leads to an increase in the percentage of self-sufficiency in agricultural commodity products, through the establishment of Agricultural development projects, including animal production projects, projects to reclaim new lands, or create greenhouses. (Al-Qala and Sherbiny, 2016), such as the project to create 100 thousand greenhouses that the state recently went to meet the community's needs for

agricultural commodities from vegetable crops, in addition to increasing opportunities for export and agricultural.

The research problem is the low volume of investments directed to the agricultural sector, although it contributes about 11.7% of the value of the gross domestic product, about 12.5% of the value of Egyptian exports, and 25% of the total workforce in the national economy in 2017, in addition to providing food and raw materials necessary for the national industry, also the agricultural sector suffers from low self-sufficiency ratio of strategic crops, which need increased investments to achieve self-sufficiency, such as wheat, corn and some oil crops.

Where wheat, corn, and vegetable oil are the ribs of the food crisis triangle in Egypt, where the percentage of self-sufficiency in wheat reached 42%, corn reached about 52%, and from vegetable oils 5% in 2017, and the proportion of imports (wheat - corn - vegetable oils) About 27%, 19%, and 17%, respectively, of the value of the trade balance deficit, so the percentage of these crops constitutes about 63% of the

total value of the deficit in the trade balance, which amounted to about 430 billion pounds in 2017 (the Central Agency for Public Mobilization and Statistics).

A study of the efficiency of agricultural investment, and its importance for the national economy in Egypt, in light of the current economic and political conditions facing the country, by studying the evolution of national and agricultural investments, and the gross domestic product, the agricultural output and agricultural income, also the evolution of the proportion of the agricultural sector's contribution to the gross product, the annual growth rate of the agricultural sector, and the per capita of agricultural output to explain the importance of the agricultural sector ,and the importance of increasing investment directed to this sector, also measuring the efficiency of agricultural investment using economic criteria during the period (2007-2017).

Materials and Methods

The research relied on achieving the objective of the study on the two methods of economic descriptive and quantitative analysis, By using some mathematical and statistical methods, Such as percentages, the relative importance of agricultural, local output in relation to national and agricultural investment, the calculation of the stability factor, and economic criteria for assessing the efficiency of agricultural investment, also the determinants of agricultural investment, and the research relied on data published on the international information network of the United Nations, the Food and Agriculture Organization (FAO), the foreign trade database of the Central Agency for Public Mobilization and Statistics, the data of Arab Organization for Agricultural Development during the period (2007-2017), also data of the website of the Central Bank of Egypt, the economic bulletin of 2017, and the website data of the Ministry of Planning, Follow-up and Administrative Reform 2017.

The definition of agricultural investment: It is the addition of new production projects and the allocation of capital for investment in developing existing means with the aim of increasing production capacity, providing job opportunities, solving the problem of unemployment and increasing production, which contributes to reduce the amount of imports and increasing exports, consequently improving the trade balance, This is reflected in raising the level of welfare for the members of society as a result of increasing their income (Ekram El-Sayed, Amal Abdel-Mutaal, 2015)

Results and Discussion

The current state of national and agricultural investment

Investment is the backbone of the national economy, and agricultural investment is part of the national economy, also it is the main driver of the agricultural sector ,and the main component of the gross domestic product, by studying the evolution of both national investment, agricultural investment, agricultural output, and gross domestic product during the period (2007-2017), where it is clear from table no. (1) that the average of gross national investment is estimated at about 273.26 billion pounds, The value of agricultural investment ranged between a minimum of about

5.37 billion pounds in 2012, and a higher limit of about 17.34 billion pounds in 2017, an increase is about 222.9%, and an annual increase is 0.34 billion pounds, representing 4% of the average agricultural investment, which amounted to 9.9 billion Pounds in the study period, The average agricultural output is estimated about 212 billion pounds, and the average gross domestic product is about 1765 billion pounds.

The relative importance of agricultural investment from national investment and gross domestic product during the period (2007-2017)

Despite the importance of the agricultural sector in relation to the gross domestic product and the national income of the state, Where the gross domestic product is a mirror that reflects the standard of living of the members of society, and the agricultural sector is responsible for providing food for both humans ,animals and providing raw materials for industry, but the low percentage of agricultural investment and thus the low contribution of available agricultural resources and high prices of production requirements, led to higher prices for agricultural products, especially food, in light of the low proportion of agricultural investment from national investments compared to other sectors, that increase annually.(Mohamed Sayed et al. 2016), where the percentage of agricultural investment decreased from about 5% in 2007 to about 3.37% in 2017, with an average of about 3.62% and a decrease of about 32.6% during the study period (2007-2017), while the proportion of other economic sectors investments increases such as the industrial sector, the petroleum sector and the electricity sector, where the increase rate reached about (53.89%, 117.3%, 85.9%), respectively, during the study period, as well as the decrease in the agricultural investment percentage of the gross domestic product from 1.1% to 0.5%, with an average of 0.62% and by a percentage a decrease of about 54.54% during the study period ,as shown in table no.(1), which negatively affected the performance of the agricultural sector, and Consequently, the low rates of agricultural development in Egypt, which necessitates directing economic policies towards increasing investments in the agricultural sector to achieve the desired development goals, and achieving the highest possible self-sufficiency rate of strategic food and non-food commodities produced by this sector.

The extent of agricultural investment stability during the period (2007-2017)

Instability Factor: It is the engineering average of the percentage deviations of the estimated values from the original values and ranges between (zero-100) (Ahlam Hassan *et al.*, 2016). By studying the instability factor for agricultural investment during the study period, the results showed that the average of this indicator during the study period amounted to about 27.5%, which indicates to instability during the study period, and that the year 2007 was the most stable as the instability factor reached about 8.9%, the lowest percentage in the study period, While the highest rate was about 48.7% in 2012, it is the lowest stability year for agricultural investments, as shown in table no. 1.

Table 1 : National investments and ratios of the impact of the agricultural sector on the national economy during the period (2007-2017) (The value per billion pounds)

Year	Gross National Investment	Total Agricultural Investment	Gross Agricultural Output	Gross Domestic Product	Ratio of Agricultural Investments of Gross Domestic Product	ratio of Agricultural Investments of Gross National Investments	ratio of Agricultural Investments of Gross Domestic Product	ratio of Agricultural Gross Domestic Product of Gross Domestic Product	Instability Factor for Agricultural Investment
2007	155.342	7.79	99.95	710.39	1.1	5.02	7.79	14.1	8.94
2008	199.535	8.1	113.1	855.3	0.95	4.05	7.16	13.22	9.69
2009	197.137	6.86	135.47	994.1	0.69	3.48	5.1	13.63	26.39
2010	231.827	6.74	160.97	1150.6	0.59	2.91	4.19	13.99	30.52
2011	229.066	6.83	190.16	1309.9	0.52	2.98	3.59	14.52	32.26
2012	246.15	5.37	188.79	1695	0.32	2.18	2.84	11.14	48.71
2013	241.612	8.38	209.75	1980.3	0.42	3.47	4	10.99	22.76
2014	265.09	11.63	241.49	2177.8	0.53	4.39	4.82	11.1	30.47
2015	333.71	13.41	274.96	2459	0.55	4.02	4.88	11.18	15.44
2016	392.13	16.49	318.88	2673.3	0.62	4.21	5.17	11.93	37.39
2017	514.31	17.34	398.54	3409.5	0.51	3.37	4.35	11.69	39.99
The average	273.26	9.9	212.01	1765.2	0.62	3.62	4.67	12.01	27.51

Source: 1-The website of the Central Agency for Public Mobilization and Statistics (annual statistical book, various volumes)

2- The website of the Ministry of Planning, Follow-up and Administrative Reform.

Calculation of the instability factor = the sum of the difference between the actual values of the phenomenon being studied and the Directivity values /Directivity values * 100.

Comparison among the agricultural sector and other sectors

By studying the distribution of national investments to various economic sectors, it became clear that the agricultural sector gets the lowest percentage of national investments, where it reached about 3.62% compared to other

sectors (industry - Petroleum - electricity), which reached about (12.94%, 17.97%, 4.8%). respectively of the total national investments, amounting to about 273.26 billion pounds during the period (2007-2017). As shown in table no. (2).

Table 2 : National investments distributed among the economic sectors during the period (2007-2017) (The value in billion pounds)

Year	Total National Investments	Total Investment for the Agricultural Sector	Total Investment for the Industrial and Mining Sector	Total Investment for the Petroleum Sector and Its Products	Total Investment for the Electricity Sector
2007	155.342	7.79	38.34	24.33	7.95
2008	199.535	8.1	35.35	31.33	6.64
2009	197.137	6.86	23.7	30.6	7.61
2010	231.827	6.74	22.43	43.5	10.73
2011	229.066	6.83	20.88	44.19	15.58
2012	246.15	5.37	12.61	64.41	15.86
2013	241.612	8.38	16.5	476*	16.888
2014	265.09	11.63	49.44	72.64	18.4
2015	333.71	13.41	56.2	77.1	15.66
2016	392.13	16.49	54.6	50	13.64
2017	514.31	17.34	59	52.87	14.78
The average	273.26	9.9	35.37	49.1	13.07
% of the total national investment	-	3.62	12.94	17.97	4.78

Source: Central Agency for Public Mobilization and Statistics website - Annual Statistical Book - Various Issues (2007-2017).

Economic criteria for evaluating the efficiency of agricultural investment during the period (2007-2017)

Investment is one of the most important factors that can lead to structural change in the national economy. Also, investments contribute to increase new job opportunities, and achieving high rates of growth, so the success of agricultural development policy depends on the size of available investments, and the efficiency of use it (Mona, Atallah 2015)

The return on agricultural investment = agricultural domestic product / agricultural investment, The return on agricultural investment shows the value of output generated from one unit of agricultural investment ,and the high value of this indicator for the one expresses the existence of efficiency in investment, where table (3) shows that the average of the return on agricultural investment during the study period amounted to about 21.42%, and the lowest return was in 2007, which amounted to about 12.83%, and

the highest return achieved in 2012 was about 35.16%. Therefore, it is clear the efficiency of investment in the agricultural sector due to the high value of the productivity of the agricultural investment unit.

Investment rate

It indicates the amount of investment spending needed to spend on the sector to increase the value of the sector's production by one unit, and the decrease in the value of this parameter from the one is considered to be efficient in investment and vice versa in case of an increase in this parameter indicates a decrease in efficiency to increase the value of investment spending necessary to obtain one unit of the value of agricultural output, and the rate of agricultural investment = $1 / \text{return on agricultural investment} = \text{agricultural investment} / \text{agricultural domestic product}$, where Table (3) shows that the average rate of agricultural investment for that period is about 0.05 and that this rate ranged between 0.03 - 0.08 during the study period, This rate indicates an increase in the efficiency of the agricultural sector due to the lower rate than the correct one during the study period. It indicates the efficiency of agricultural investment because of the low investment value needed to produce one unit of agricultural output.

Investment multiplier

the investment multiplier is the amount of change in the value of the output generated by the change in investment in one unit or the final increase in output as a result of increased investment, where every investment spending must generate greater income than it, just as the resulting investment results in an increase in consumer spending according to the marginal propensity to consume, and thus leads to an increase in output (Manal Al-Khushen, Izzat, 2016), which means that the investment multiplier exceeds the one on the existence of investment efficiency, and a negative value means that investments in the current year are less than the previous year or the current agricultural output is less than the product in last year. The agricultural investment multiplier = $\text{the change in the agricultural domestic product} / \text{the change in agricultural investment}$, where table (3) shows that the average agricultural investment multiplier during the

study period was about 18.85 higher than the one, evidence of the efficiency of agricultural investment.

The endemism coefficient of agricultural investment = $\text{agricultural investment} / \text{total investment} / \text{agricultural GDP} / \text{gross domestic product}$, and this indicator shows the contribution of the agricultural sector to generating domestic output, and the decrease of this indicator from the one indicates that the sector obtained investments less than its contribution to the gross domestic product, and when it exceeds the one, it indicates that the sector got more investments than its GDP. As Table (3) shows that the average endemism factor during the study period was about 0.29 and the highest achieved in 2014 was about 0.40, while the lowest in 2012 was 0.20. And the decrease of this indicator from the one indicates that the agricultural sector gets less investment than its contribution to the gross domestic product, meaning that its efficiency is higher in contributing to local production, and the investments directed to it must be increased.

Employment or capital intensification factor

Refers to the volume of investments in the sector divided by the total employment in the agricultural sector, which pertains to one worker of the investments in this sector, and whenever this factor indicates that the number of employment increases by a greater percentage than the increase in the volume of investments, then, this factor reflects a contribution the sector is to reduce unemployment. Table No. (3) shows that the average capital intensification factor during the study period amounted to about 1.85 thousand pounds per worker, and the highest value of the factor was achieved in 2017, as it reached about 3.77 thousand pounds per worker, meaning that the investment directed to the sector is greater than the number of workers in the sector, while the lowest value In 2012, it reached 0.99 thousand pounds per worker, which means that the number of workers is greater than the investment directed to the agricultural sector.

Excess of this parameter over one is denotes the agricultural sector is an intensive activity of capital use and the number of workers in the agricultural sector is constantly declining.

Table 3 : Agricultural Investment Efficiency Criteria during the period (2007-2017)

Year	Return on agricultural investment	The endemic factor	The agricultural investment multiplier	The investment rate	The capital intensification factor for the agricultural sector
2007	12.83	0.36	-71.89*	0.08	1.56
2008	13.96	0.31	46.63	0.07	1.62
2009	19.75	0.26	-18.46*	0.05	1.29
2010	23.88	0.21	-214.33*	0.04	1.27
2011	27.84	0.21	320.76	0.04	1.29
2012	35.16	0.2	0.94	0.03	0.99
2013	25.03	0.32	6.96	0.04	1.52
2014	20.76	0.4	9.79	0.05	2.04
2015	20.5	0.36	18.73	0.05	2.27
2016	19.34	0.35	14.27	0.05	2.79
2017	22.98	0.29	93.94	0.04	3.77
The average	21.42	0.29	18.85	0.05	1.85

Source: Compiled and computed from Table No. 1

* The negative value in the investment multiplier means that the investment in the current year is less than the previous one, or that the agricultural GDP in the current year is less than the previous one (change in agricultural output / change in agricultural investment)

The determinants of agricultural investment in Egypt during the period (2007-2017)

By studying the most important factors affecting the size of agricultural investments in Egypt during the study period, where economic assumptions indicate that agricultural investments are determined by many factors that lead to an increase or decrease in agricultural investments such as (total national investments X1, agricultural loans X2, agricultural savings X3, Interest rate on agricultural loans X4%, agricultural income X5 as influential independent factors), and agricultural investment as a dependent factor Y as shown in Table No. (4). It is clear from the use of the multiple linear model in the analysis, also conducting the multi-stage regression analysis.

In order to identify the most influencing factors on agricultural investment, the analysis showed that the total national investment factor X1, and agricultural loans X2 are the most influential factors, and explain their positive impact, but the interest rate factor on agricultural loans X4 affects a negative impact by increasing it leading to a decrease in agricultural investment as shown in the table no (5).

The analysis shows that an increase in national investments by one unit leads to an increase in agricultural investment of 0.02 billion pounds, and also an increase in agricultural loans by one unit that leads to an increase in agricultural investment of 0.6 billion pounds, an increase in the interest rate of one unit that leads to a decrease in agricultural investment of 0.1 billion pounds, and that the value of F Greater than the calculated F indicates the validity of the model used in the analysis and is consistent with statistical logic, The analysis also shows that the value of the adjusted identification coefficient (R^2) equals 83% indicating that 83% of the changes in the value of agricultural investment are due to the national investment factor, agricultural loans, and the interest rate on agricultural loans ,as shown in the following equation that shows the direct impact for agricultural loans on agricultural investment, noting the importance of agricultural loans in financing agricultural investments, as well as the positive impact of national investments on agricultural investment, and that these two factors explain 83% of the changes that occur to agricultural investment.

Table 4 : The most important economic factors specified for agricultural investment during the period (2007-2017) per billion pounds.

Year	Agricultural Investment Y	Total National Investment X1	Agricultural Loans X2	Agricultural Savings X3	Loan Interest Rate X4	Agricultural Income X5
2007	7.79	155.342	10.8	1.3	12.2	83.4
2008	8.1	199.535	11	71.9	12.6	96.9
2009	6.9	197.137	6.5	116.2	11	113.9
2010	6.7	231.827	6	140.5	10.7	129.6
2011	6.8	229.066	8.6	161.5	11.8	159
2012	5.4	246.15	8.2	163	12.2	164.9
2013	8.4	241.612	7.2	187.4	11.9	173
2014	11.6	265.09	8.9	188.5	11.8	181
2015	13	333.71	11.1	188.9	13.8	189.5
2016	16.5	392.13	11.5	172.3	16.3	196.8
2017	17.3	514.31	12.12	171.5	18	179.9
The average	9.9	273.26	9.27	142.09	12.94	151.63

Source: Central Agency for Public Mobilization and Statistics website (annual book, various publications)

Table 5 : Equation of factors affecting agricultural investment

The equation	R^2	R^2	F
$\text{Log}_{yt} = -3.6028 + 0.0285 X1 + 0.6114 X2 - 0.103 X4$	0.83	0.86	25.59**
$(-1.52) (4.58)^{**} (2.04)^* (-2.97)^*$			

Source: compiled and computed from Table No. 1

* meaning significant at 5%, ** significant at 1%,

The basic components of the agricultural sector (plant production - animal production - fish production)

By comparison among the components of the agricultural sector in terms of their contribution to agricultural income in order to determine which sectors should be directed investments to it, It became clear that the

plant production sector is the most contributing sector to agricultural income during the period from (2007-2017), where the average percentage of the contribution of plant production to the total income Agricultural is about 66.8%, then animal production is 23.61%, then fish production is about 9.58% of total agricultural income, as shown in Table No. (6).

Table 6 : The value of production, the value of production requirements and the net income for the agricultural sector during (2007-2017) (The value per million pounds).

Year	The Plant production			The animal production			The Fish production		
	The value of plant production	The value of the requirements of plant production	Net plant income	The value of animal production	The value of supplies of animal production	Net animal income	The value of fish production	The value of fish production requirements	Net fish income
2007	89858	13677	76181	55260	25038	30222	10827	92.3	9904
2008	109792	17052	92740	65060	30888	34172	10814	971	9843
2009	108657	16736	91921	69120	33607	35513	11661	1041	10620
2010	117477	18157	99320	77382	39194	38188	14495	1290	13205
20011	148500	19848	128652	84669	48965	35703	16819	1498	15320
2012	160801	22509	138292	88970	52527	36442	17651	1571	16080
2013	165027	23101	141926	97781	53755	44025	19626	1753	17872
2014	170953	24663	146290	112181	55065	57116	22280	1982	20298
2015	175517	24400	151117	119406	68001	51405	23409	2230	21179
2016	179735	26265	153470	133912	75598	58314	32308	2518	29789
2017	197578	29809	167769	152799	83512	69287	37601	2709	34892
The average	147626.8	21474.27	126152.5	96049.09	51468.18	44580.64	19771.91	1605.027	18091.09
% of the agricultural sector income	56.04	28.81	66.81	36.46	69.04	23.61	7.51	2.15	9.58

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Income Bulletin, various issues (2007-2017).

Therefore, it is better to direct the largest percentage of the value of agricultural investments, which averaged about 9.9 billion during the average period (2007-2017) to plant production.

Plant production consists of (agricultural production from old lands - production from new lands - production from greenhouses), and given the inability to add any additional land units to the old lands due to the limited area, and the hope for it only to use high-yielding varieties to increase production from it by only vertical expansion.

It is better to direct investments to new lands and greenhouses from which land units can be increased by reclaiming new lands and using modern technologies in production from greenhouses, and high-quality varieties.

Indeed, the state tended to implement this policy, which is the trend to reclaim new lands to increase land units.

The state's plan for Egypt's development included reclamation of one million feddans (420, 150, 96, 120, 142, 100, 10, 30, 50) feddan in the regions (West Minya, Al-Maghafra, Al-Farafra Al-Qadima, Al-Farafra Al Jadida, Toshka behind the High Dam lake, east of Al-Owainat extension, Toshka wells, East Siwa, east of the low)

The average value per feddan reclamation ranges from 20-25 thousand pounds if the irrigation method is by flooding through canals or wells or any other means of traditional irrigation, and up to 50 thousand pounds per feddan according to the available irrigation method by sprinkling or dotting due to the high cost of these machines and equipment, and given the scarcity Water the trend will be towards the use of modern irrigation methods such as spraying and dotting to rationalize the use of water in agriculture in the new lands. Therefore, the cost of reclamation of feddan will be 50 thousand pounds, in addition to the value of feddan production requirements. The average value of agricultural production in the new lands amounted to about 40.8 million

pounds, and the net income amounted to about 36.8 million pounds. But in the old lands amounted to 106 million pounds, and the net income was about 89 million pounds.

As for greenhouses, the average value of agricultural production from greenhouses amounted to about 463 million pounds, and net income amounted to about 84.9 million pounds. The cost of establishing greenhouses is about 25 thousand pounds at the prices of 2017, and the feddan is divided into 10-12 greenhouses (9 * 40 m). Therefore, it is better to direct a greater percentage of the value of agricultural investment to reclaim new lands and greenhouses, as shown in table No. (7).

The future vision for agricultural investment in Egypt

Increase in the percentage of national investments directed to the agricultural sector from 3.37% in 2017, which amounted to about 514.3 billion pounds, to 10% of the total national investment in 2017, similar to other sectors that reached 12.9%, 17.97% for each of the industrial sector and petroleum, respectively. The percentage of plant production from agricultural investment was 33.6%, animal production was 35.99%, and fish production was 30.37% in 2017, and the average during the study period was about (33.5%, 35.78%, 30.68%), respectively, as shown in table no. (8).

Thus, the value of new agricultural investment becomes about 51.4 billion pounds, and the new value of (plant, animal, and fish production) with the same proportions in 2017 becomes about (17.2, 18.37, 15.77) billion pounds, respectively, with an increase of (160.61%, 166.23%, 202.11%) According to its value in 2017, its value in 2017 amounted to about (6.6, 6.9, 5.22) billion pounds, respectively.

The amount of the increase amounted to (10.6, 11.47, 10.55) billion pounds, respectively. This increase in plant production (10.6 billion pounds) is directed to investing in the reclamation of new lands or investing in greenhouses.

Hence, the area expected to be reclaimed is estimated at about 212 thousand feddans, on the basis that the cost of reclaiming feddan is about 50 thousand pounds, or establishing 35.33 thousand feddan of greenhouse, Given the cost of the feddan , 300 thousand pounds, or the establishing of 424 thousand greenhouses, and the cost of one greenhouse is 25 thousand pounds, as shown in table no. (9).

Table 7 : The value of plant production and requirements for plant production, net plant income in old lands, new lands and greenhouses. (The value per million pounds)

year	The old lands			The new lands			The greenhouses		
	The value of plant production	The value of plant production requirements	Net plant income	The value of plant production	The value of plant production requirements	Net plant income	The value of plant production	The value of plant production requirements	Net plant income
2007	72227	11589	60638	17631	2088	15543	378.1	299.25	78.86
2008	87631	14551	73080	22161	2501	19660	461.3	397.09	64.24
2009	78319	13847	64472	30338	2889	27449	289.1	234.14	54.94
2010	85593	14879	70714	31884	3278	28606	378.8	306.15	72.68
20011	107279	16102	91177	41222	3747	37475	398.9	307.19	91.76
2012	116027	17910	98117	44775	4599	40176	538.9	455.07	83.84
2013	120491	18390	102101	44536	4711	39825	476.3	385.78	90.49
2014	121906	19284	102676	48993	5379	43614	438.3	346.16	92.18
2015	123136	19514	103622	52381	4886	47495	539.9	450.5	89.39
2016	125748	19881	105867	55482	5213	50269	555.8	459.38	96.46
2017	127750	20568	107182	59679	5428	54251	644.3	525.08	119.21
The average	106009.7	16956	89059	40826	4065.4	36760	463.6	378.71	84.91

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Income Bulletin, various issues (2007-2017).

Table 8 : Percentage of distribution of agricultural investments among the basic components of the agricultural sector during the period (2011-2017)

Year	% Plant production of total agricultural investment	% animal production of total agricultural investment	% Fish production of total agricultural investment
2011	43.9	35.7	20.4
2012	38	35.3	26.7
2013	32	34.5	33.5
2014	30.2	35.5	34.3
2015	30	36	34
2016	27	37.5	35.5
2017	33.64	35.99	30.37
The average	33.53	35.78	30.68

Source: Collected and calculated from the data of the annual book of Arab agricultural statistics - Arab Organization for Agricultural Development - Khartoum, various publications (2011-2017).

Table 9 : Agricultural investment, the cost of feddan reclamation, the cost of constructing greenhouses, the area reclaimed and greenhouses expected to be established.

The proposed agricultural investment is 10% of the national investment in 2017, (per billion pounds)	The cost of feddan reclaiming (Thousand pounds)	The cost of building greenhouse (thousand pounds)	The cost of the feddan of greenhouse (10-12) greenhouses (thousand pounds)	The Current value of plant production of agricultural investment (33.6%) of the total value of agricultural investment in 2017 (17.34 billion)	The proposed value of plant production from the new agricultural investment (33.6%)	The amount of the increase in the value of plant production (billion pounds)	The number of feddans reclaimed per thousand feddan	The number of feddans of greenhouses in a thousand feddan	(The number of greenhouses that will be established (a thousand greenhouses)
51.43	50	25	300	6.61 billion pounds	17.2 billion pounds	10.6	212	35.33	424

Source: 1-Compiled and calculated from the questionnaire with investors in agriculture in greenhouses.

2- Ministry of Agriculture and Land Reclamation, General Authority for Reconstruction and Agricultural Development Projects, Central Administration for Ownership and Management.

The production costs of the most important strategic crops targeted

(wheat - maize - soybeans - sunflower - sesame) at prices in 2017 amounted to (8991 - 6638 - 5228 - 4277 - 5326) pounds, respectively, as shown in table no. (10)

The costs include items: (seeds, irrigation, fertilization, agricultural service, pest resistance, harvesting, crop transportation, incidental expenses, rent).

- Directing the amount of the increase in the value of the investment directed to plant production to cultivate the target crops, not just reclamation or building greenhouses,

means reclamation and cultivation, as the expected area which will be cultivate from these crops is about (179.7, 187.15, 191.9, 195.29, 191.59) thousand feddans, respectively, and the produced quantity reached about (522.89, 655, 261, 210.92, 136) thousand tons, respectively, representing about (4.8%, 11.1%, 27.98%, 83.58%, 75.43%) respectively of the total quantity of imports of these crops, and it represent about (4%, 10.1%, 13.1%, 62.3%, 90.5%) respectively, from the value of the imports of these crops, thus reducing the deficit in the trade balance by these percentages. As shown in table no. (10).

Table 10 : The cost of feddan production of strategic crops, the total cost of reclamation and agriculture, the area expected to be grown from these crops, the amount of production, and its percentage of the total quantity and value of imports of these crops.

The crop	The cost of feddan production of strategic crops at prices 2017 (value per pounds)	Total costs needed to reclaim and cultivate feddan (per thousands pounds)	The expected area which will be cultivate from these crops as a result of an increase in the value of plant production for the year 2017 by a value (10.6 billion pounds) (per thousand feddan)	Feddan productivity per ton	The produced quantity per thousand tons	The amount of imports (2017) per thousand tons	% Of the amount of imports	The value of imports per billion dollars	The import price per dollars / ton	The value of the quantity produced per million dollars	% of the value of imports
Wheat	8991	58991	179.69	2.91	522.89	10900	4.8	2.61	200	104.6	4.01
Maize	6638	56638	187.15	3.5	655.04	5932	11.1	1.51	250	163.8	10.1
soybean	5228	55228	191.93	1.36	261.03	933.9	27.98	0.855	430	112.2	13.1
sunflower	4277	54277	195.29	1.08	210.92	252.35	83.58	0.728	1560	329.3	62.3
Sesame	5326	55326	191.59	0.84	160.93	213.36	75.43	0.249	1400	225.3	90.5

Source: 1- Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Cost Bulletin and Net Income and Agricultural Income, 2017.

2- The FAO website - faostat.org.

Expected values of the national and agricultural investments, and the proportion of agricultural from the national

Table no. (11) shows the expected values of the national and agricultural investments, the ratio of the agricultural from

the national, the expected interest rate on the agricultural loans, and the expected exchange rate of the pound / dollar during the period (2020-2025).

Table 11 : The expected values of national and agricultural investments during the period (2020-2025), and a future plan (the value per billion pounds).

Year	National investment	Agricultural investment	% agricultural investment of the national investment	Directing 25% of national investments to the agricultural sector	% of increase In agricultural investment	% The expected interest rate on agricultural loans	expected exchange rate (Pound / dollar)
2020	347.81	19.98	5.74	86.95	335.2	19.51	18.6
2021	454.49	20.81	4.58	113.62	446	19.22	18.87
2022	561.17	24.63	4.39	140.29	376.83	18.43	19.29
2023	667.86	28.47	4.26	166.96	486.46	18.44	19.8
2024	774.54	32.3	4.17	193.63	499.49	18.8	19
2025	881.22	36.13	4.1	220.31	570.2	18.1	19.08
The average	614.52	27.05	4.54	153.63	452.36	18.75	19.11

Source: 1- Collected and calculated from the time trend equations calculated from the data presented in Table No. (4).

2- The Central Bank of Egypt website, the economic bulletin, 2017.

Conclusion

From the above, it is clear that the increase in the proportion of agricultural investment of the total national investment, which amounted to about (514.3 billion pounds in 2017) from 3.5% to 10%.

The value of the new agricultural investment will become about 51.4 billion pounds.

Accordingly, the new value (plant, animal, and fish production) with the same proportions in 2017 will be about (17.2, 18.37, 15.77) billion pounds respectively, with an increase of (160.61%, 166.23%, 202.11%), respectively, over its value in 2017, where its value in 2017 was about 6.6, 6.9, 5.22 billion pounds, respectively. The amount of the increase amounted to (10.6, 11.47, 10.55) billion pounds, respectively.

This increase for plant production (10.6 billion pounds), it is directed to invest in reclaiming new lands or investing in greenhouses. Therefore, an estimated area of about 212 thousand feddans can be reclaimed on the basis that the cost of reclaiming feddan is about 50 thousand pounds, or establishing 35.33 thousand feddans towards agricultural lands, with the cost of feddan of greenhouse 300 thousand pounds, or create 424 thousand greenhouses, or direct the amount of the increase in the value of the investment to plant production for reclamation and the cultivation of the target crops (wheat - maize - soybeans - sunflower - sesame), not only for reclamation or building greenhouses, but also reclamation and cultivation,

where the expected area will cultivate from these crops amounted to (179.7, 187.15, 191.9, 195.29, 191.59) thousand feddan, respectively, and the produced quantity amounted to (522.89, 655, 261, 210.92, 136) tons, respectively, representing approximately (4.8%, 11.1%, 27.98%, 83.58%, 75.43%) respectively of the total quantity of imports of these crops, representing about (4%, 10.1%, 13.1%, 62%, 90.5%) respectively, from the value of imports of these crops, The balance of trade deficit will be reduced by these percentages. (4%, 10.1%, 13.1%, 62%, 90.5%)

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