

الأمن الغذائي العربي وسياسات التنمية الزراعية:

تجربة العراق والجزائر

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مستخلص البحث

تعاني البلدان العربية، بعامّة منذ عقود من تبعية غذائية خطيرة ومن اعتماد متفاقم على الاستيرادات رغم وفرة الموارد المادية والمالية والمائية اللازمة لتحقيق الإكتفاء الذاتي. تهدف هذه الدراسة إلى تحديد حالات العناصر الرئيسة لفجوة الأمن الغذائي العربي وتحليل المؤشرات الكمية للمعالجة التي يعاد التركيز عليها مراراً في التنمية الزراعية وفي السياسات ذات الصلة. يفترض التحليل أن المشكلة الرئيسة هي مؤسساتية أكثر منها تنموية أو حقيقية. وتقرّح أن الإنطلاق في المعالجة يكمن في جذور المشكلة. تستنبط الدراسة المؤشرات الرئيسة لسياسة الزراعة التنموية اللازمة من العلاقات التي يمكن تقديرها من نموذج رياضي للاستثمار في: القطاعات التقانية للإرواء؛ والإنتاج الواسع؛ واستخدام الأراضي الزراعية. وإعادة النظر بخصخصة كلية الزراعة وتعويم السوق الزراعية عربياً بدل الدعم الزراعي المفترق للكفاءة لعقود. وتركز على أسس عملية تطوير القدرات الزراعية العربية، بالإفادة من تجربتي العراق والجزائر، كونها من الاقتصادات الغنية بالموارد ولكنها فقيرة في الانتاج الغذائي وتستورد نسباً مرتفعة من الأغذية سنوياً.

الكلمات المفتاحية: فجوة الغذاء؛ النمو الزراعي؛ التنمية؛ الناتج الزراعي.
الترميز حسب مجلة الأدب الاقتصادي الأميركية: Q18؛ O11؛ O1؛ O38.



Arab Food Security and Agricultural Development Policies Experience of Iraq and Algeria*

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Abstract

In general, Arab countries have suffered, for decades, from serious and worsening food dependency on imports, despite the abundance of material, financial, and water resources needed to achieve self-sufficiency. The study aims to identify the main elements of the Arab food security gap and analyze quantitative indicators of treatment that are frequently re-emphasized in agricultural development and related policies.

The analysis assumes that the main problem is institutional rather than developmental or veritable. It suggests that the start of processing lies at the root of the problem. The study infers the main indicators of the agricultural development policy necessary for the relationships that can be estimated from a mathematical model for investment in technical sectors for irrigation; mass production; and agricultural land use; reconsidering the privatization of the Faculty of Agriculture; the floating of the Arab agricultural market rather than the inefficient agricultural support for decades.

It is based on the foundations of the process of developing Arab agricultural capabilities, taking advantage of the experiences of Iraq and Algeria, as they are resource-rich economies but poor in food production, importing high proportions of food annually.

Keywords: Food Gap, Agricultural Growth, Development, Agricultural Output.

JEL Code: Q18, O11, O1, O38

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1. Introduction

Arab economies had occupied detectable levels of low agricultural productivity and performance for ten years ago, compared with AGRO global averages, up to the 1st report on Arab Human Development 2002¹. The only region organized after, i.e. with lower level includes the economies of sub-Saharan Africa. On the other hand, global food markets do not bode well, and then their history involved previous crises. So, the current general foresight might predict an impending crisis.

Overall features display: global policies which may tend to increase the production of bio-fuel source as a renewable energy is increasing with the price of food; pressure of global population growth does not lead to the goals of the third millennium of the United Nations for 2015 in the eradication of half poverty; the growing global demand for food, and most of that increase is from developing countries.

An increasing basically dependence on food imports in the Arab districts has been continued for decades. A growing phenomenon has deeply contributed in Arab food insecurity, no way led to political insecurity besides risks on society and future. Less than one third of the Arab agricultural lands, counts about 160 million hectares are neglected and unused. In both, Algeria and Iraq it amount a half of the total national land. The agricultural sector contributes about 10% of GDP, and uses 25% of the whole local workforce.

There is an internal dependency regarding the Arab food Security. However, there is a local resource abundant, but a serious and unfortunate reliance on the imports increasingly. So, the question is where does the problem potent? Is it in: the agricultural land property? Is it inside the water sector? Is it on the finance aspect? Is it in the regulation of the market? Is it in the awareness of the agricultural knowledge? Is it in basic type of the scientific Research and Development? Or is it in the rural development?

The study aims at analyzing main factors of “the Arab food gap and drop of the most important indicators of agricultural development and the policies to be adopted, in focus on the Iraqi and Algerian experiments, as examples of resource-rich economies, still suffering and intimately seeking development and Growth”.

The options are always to confirm the need for development of Arab agricultural capacity. How? This is, what the paper to discuss, proposing many fundamental solutions. The study postulates that these often to suggest: water sufficiency, land uses, and recent technologies of production an integrated rural agricultural development strategy, and way to adopt the responsibility.

On the problematic core the research considers the availability of financial resources to hypothesize that ‘the problem is an institutional, scientific, and systematic one rather than a real developmental, in nature’. With the case it is well suggested the possibility of providing support and cooperation to other economies as an experiment, not to resolve it as a chronic problem in some difficult of nature.

The nature of the problem: the food gap of the Arab States has been evaluated and amounted \$12 billion in 2000², population 260 million; vary, but constantly growing with current range between 30 to 40 billion dollars a year in 2010, population 310 million³.

The value of the Arab agricultural output was (\$80.3) billions in 2001, less than that before two years. The dimensions of the Arab food gap at that year amounted: for grain flour (49.9%), for sugar (66.1%), and for oils and fats (45.3%). This means that the average food gap for these three strategic commodities only is (50.4%). This also means that the domestic production covers only half -or less- of the total Arab needs. The situation has become a massive concern since it has begun worsen in the mid-nineties of the past century⁴. In order to fill the food gap it is

supposed that the Arab agricultural output for 2010 to amount twice of the value for 2001, plus the needs of fifty million persons of population growth that equivalent to $(260 \times 2 + 50 = 570)$ five million dollars. This is well fit for Iraq, specifically at Nineveh Governorate⁵, which has been called the breadbasket of Iraq (a second larger district of population beyond Baghdad). The food gap where up to 75-80% of the overall needs⁶ of the Iraqi population, in a relative sense⁷.

The same matter fits for other Arab economies, i.e. for Syria, Algeria, Sudan, Yemen etc. The situation for Egypt is likely most pressing⁸. One of the dramatic factors the Arab economies face in the era of globalization⁹. The problem is not new stretch; it is of ten years ago¹⁰. The problem is still of adverse effects when developed countries asked developing ones to drop their support to the agricultural sector, while they themselves didn't commit with. It is expected to have negative impacts, will be doubled more and more for the Arab countries in case the developed countries reduce their supports to the agricultural products¹¹. The problem becomes more serious, than it can let the Arab agricultural policies with a positive step (in case of agricultural reforms take place). It may benefit from the higher world prices and transition to cover the entire food needs locally, by encouraging the Arab agricultural investments¹².

In Algeria, the fall of the oil and gas production 2.6% resulted in a trend to impede the GDP growth by 3.4% in 2007 versus only 1.8% in 2006. The Algeria's economic growth is still driven by the growth of hydrocarbon revenues. However, activities associated with the production has expanded to about 6% in 2006, introducing what supports the hypothesis of the potential for growth, particularly the agricultural sector growth without the petroleum sector.

The new initiative of Algerian public investment has determined to spend more than \$ 22 billion on housing, transport and agriculture in later years, hoping to raise employment growth in

the construction sector and other related sectors by supporting household spending and improve investment conditions in the agricultural sector. This is the case on the assumption of that the most vital for food security¹³, but it remains an indirect policy.

2. Agricultural Cost, Openness, and Competition

It is well known, the Arab agricultural sector is of undergoing extensive climatic changes for adoption, by a large rain-delayed as well as in sustainable irrigation surface systems. It is not a coherent sector in comparison with other economic sectors. Basically the crisis of water has been increasingly being more and more severe¹⁴. This is to weak the ability of openness to international markets. Agriculture will be hit by negative effects which have been always transmitted to the agricultural trade balance. The criteria of the involved cost in the agricultural production economies are an essential core of agricultural policies, particularly in focusing on the policies and remedies of AFS gap. This criterion would be subject of the next section. Prior to that, the study focuses on the elements of treatment the gap.

In order to meet the growing domestic needs in the markets, the goal of the agricultural development is mainly to increase the agricultural production, while the latter come from the increased productivity and other factors. The quantitative margin between the need of basic foods -levels or amount- which mainly include grain, sugar and oils, and the aggregate demand is the difference called food gap. Food gap starts with the import and stay the reason for the imbalance in food security and in its limitations. The decisive factor in the continued existence of the gap and in its danger as well is the cost, the responsible factor for the relative

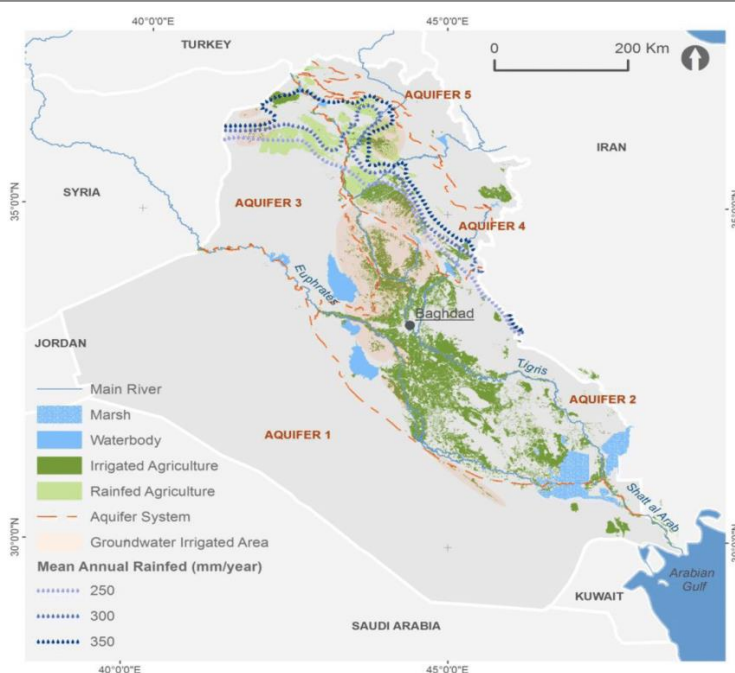
competitive advantage necessary to open up to global markets. It's deliberately ability to respond to the agreements of the WTO and the stages of implementation after accession.

In the eighties of the past century the value of the Arab food gap amounted \$ 21 billion. It has been reduced in 2002 to \$ 12 billion, and then rebounded to more than \$ 13 billion in 2003. Since that year it has sustained the increase in indicators, more features, and risks besides continued failure of Arab agricultural policies for decades that attempt to overcome the limitations. Now, the Arab countries had swept by the globalization wave since the nineties. It added so restricted determinants. The problem would become compound, of the fragility of the agricultural sector, the growing gap of food security, chronic failure in agricultural policies, and globalization of the agricultural sector.

3. The Elements of the Food Gap

In Iraq, as an agricultural country the rainwater land basically depend on rainfall. In Iraq the matter has become more and more critic¹⁵. Mostly locates in Nineveh Province by major, ideals of the Levant. It is classified basing on the rates of the annual rainfall as: high rainfall; almost guaranteed rained; limited rainfall; and natural pastures areas, as shown in (map 1).

More than two thirds of the agricultural areas of Nineveh compound of limited rainfall areas and natural pastures. It doesn't conducive to ensure a sustainability capacity of agricultural output, between latitudes 36 and 37 only. In this case it has to rely on the supplementary irrigation techniques in the east and South Island draft irrigation. Although the area of Nineveh constitutes about 10% of the total area of Iraq it provides 70% of the total output of wheat in Iraq.



Map 1: The agricultural Areas Distribution in Iraq

Source: [[FollowLink](#)]

For the overall Arab world, the total area of the Arab countries occupies more than 1400 million hectares (14 million square kilometres) equivalent to 10% of land area in the world, the estimated area of the agricultural land is about 26% of the total, while the exploited area does not exceed one third of that rate. It is half in Algeria and Iraq, for instance at best, and it is a noticeable essential restricting factor.

In 2000 the Arab cultivated area was 70 out of 197 million hectares, and it is still by a very naïf adding. That's about one-third and this issue is one of the most diagnosed causes of food shortages that's non-farmed land to be used as required, as well as the prevailing reality of exploitation of cultivated land.

What was a reform in the fifties and sixties of the last century, now become in need for reform steps totally in the opposite direction, just on new basis, to be built on the state's strategy in constructing modern agricultural sector with sophisticated

technology and a balance of urban and rural growth. This requires the distribution of agricultural land by wide areas to large farmers and those peasants who are able to adopt Mass Production, adopting programs and procedures for re-development of rural resettlement and agricultural support to this distribution. If area of the Arab world one tenth of the world the population size is of less than 5% of the world's, but has the 0.5 per cent of global renewable water resources, so that the share of the Arab per capita is one-seventh of the world rate for the adequate average. Maghreb countries, i.e. Libya, Tunisia, Algeria, Morocco and Mauritania capturing one fifth of the available surface resources water, in front of more than one third for the Middle East district for Syria, Iraq, Lebanon, Jordan and Palestine, and the Mediterranean Territory: Egypt, Sudan, Djibouti and Somalia. The remaining is up to 5% of the territory of the Arab semi-island. There is a relative scarcity of water in Algeria as well as the rest of the Maghreb countries and a lack of use in Iraq while the scarcity of strong in Jordan, Kuwait, Saudi Arabia. This sector alone, consumes 87% of available water resources in the relative scarcity in the world, letting the rest for the industrial use, residential, service and others uses, while still less than 10% of the total Arab population working in.

Arab food gap has quantitatively determined by the proportional difference between what is really produced and the overall need, e.g. the self-sufficiency sealing, which cover the society needs. Its dimensions are: 50% for cereals, especially wheat, worth six billion dollars, and a same ratio -and value- of oil about two-thirds of requirement of sugar¹⁶.

There are: (1) a relatively high rate of population growth, which a given exogenous variable being dealt with, as a reality for granted; (2) the relative improvement in the overall levels of incomes, by developments of contemporary life and water consumption style, besides, the nature of nutrition in the Arab

region; and (3) a high extensively rate of consuming cereals, sugar and oils. These three aspects -demography, incomes, and the evolution of tastes- are external variables for the demand elasticity for food, and therefore cannot considered an influential sources for use in the economic policies to some extent.

The low levels of the Arab agricultural production for the three strategic goods I.e. cereals, oils and sugars, to see to two factors, (I): the lack of production volume; and (II): the deterioration of agricultural productivity. The first is due to a lower contribution of cultivated land and to actual production techniques followed. The second is due to the non-correct large dependence on rain-fed agriculture associated with climate change and the absent expansion of novelist -of gravity- agriculture to achieve levels of necessary production to reduce the food gap. A trial step for model building and assessment will be next in section 5.

4. Iraqi Agricultural Experiment

Demonstrating the likelihood of self-reliance for each Arab economy instead of joint teamwork, can stand at the Iraqi situation in a time of economic blockade, where required self-reliance on local agriculture coverage of the needs from basic food crops. It has achieved highest rates of self-sufficiency in cereals, oils and re-cultivation of beet and sugar production besides operating plants associated with this crop as producing yeasts, which was parked off work for years. In Al Najaf Province, at the mid and south of the Iraqi land, the farming of Umber Rice was famous production in the past decades, until the nineties of the twenty century. But now there is nothing, but the imported types (Figure 1). Throughout that decade efforts were also doing well in the other agricultural programs. Those were being stimulated the growth of the agricultural sector and of productivity, in spite of the continuing low proportion of the people working in agriculture.

Agricultural efficiency has recorded metrics numbers, evolved Iraq in the years 1980, 1989, 2000 from (0.15) to (0.62), and then to (2.54)¹⁷, despite the low agricultural labour proportional of total employment from 30.44% to 21.92% then decreased to 12.61% respectively. Note that these numbers have been recorded while the Arab agricultural rates of efficiency being estimated at (0.55). The reason beyond the Iraqi numbers was the increasing contribution of agricultural output in GDP from 5.69% to 13.71%, then to 32.1% respectively as well¹⁸. “Per capita share of the Iraqi agricultural GDP equalized more than four times the other for Tunisian and Syrian, and eight times for Moroccan, while the three mentioned countries were not experiencing lack of nutrition such as Iraq, never the less they were respectively occupying the three first ranks in Arab agricultural exports”¹⁹. Arabs could not assist Iraq in those circumstances, some economists has considered it as an economic miracle, suggesting causes due to the use of modern scientific techniques and appropriate materials for production stages as well as improving the agricultural work productivity in the light of limited financial resources intimately.



Figure 1: Umber Rice Farming

Note: Produced along past decades in mid the of Iraq land, Al Najaf Province

The experiment remembers with the Saudi experience in achieving self-sufficiency in cereals production, especially

wheat. It clearly demonstrates the potential to bridge the AFS gap despite the large support by government that provided to fertilizer and the incentive prices for crops, not to make them compete global production but enough to solve the dilemma and overcome the gap, under the Arab will to abroad²⁰.

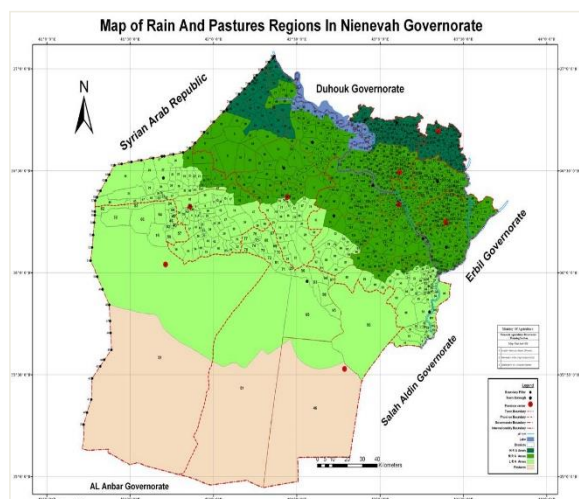
5. Agricultural Experience of Algeria

Development Reports call for a renewed focus on agriculture that to increase investments in agriculture for transition economies to a market system, stresses a great importance in improving welfare and reducing the numbers of millions of poor people living in rural areas²¹. At the same time warns that the reduction of their numbers by the year 2015 cannot be met unless it is overridden low investments in agriculture and rural areas infrastructures during the next two decades.

According to conditions of poverty in Algeria, specifically the proportion of people living on less than one dollar per day, about 2% of the population counted 25.3 million in 1990. They were almost representing 506 thousand people. The third millennium goals has identified the need to reduce the ratio of poor to half by 2015 in general, which will lift 253 thousand people plus, 160 thousand more, representing half of the resulting increase from population growth at the end of 2006 of \$ 8 million. What is needed today is to reduce poverty from 0.8 to 0.4 million people. In late 2006 Algerian population exceeded 33 million, with Gross National Income exceeding a hundred billion dollars, while Gross Domestic Product had recorded about 114.7 billion dollars, growing at a rate of 3%, lower than the rate for a year before, at (5.3%), despite the decline in the inflation rate from 15.6% to 9.1%.

The agricultural land percentage didn't exceed 17% of the total Algerian area -compared with 26% for Iraq- and \$ 2.4 million km², (Map 2). But the contribution of agriculture, represented by

the value added to GDP, 8.5% for 2005. For comparison, the Arab agricultural output was 6.4%, compared with 61.5% for industry and 30.1% for the services sector. Agricultural efficiency in Algeria Amounted, 0.37 which is equals $8.5/23$, according to the definition been explained previously, and the coupling of 1.13 for Iraq ($= -8.9/7.9$) for the same year, 2005. This, necessarily requires doubling the contribution of the agricultural sector more than twice at least. This increase can be achieved to intensify the using modern and introducing advanced technology in agriculture as long as Algeria, as well as Morocco and Egypt spending between 20% through 30% of their budgets on the water²².



Map 2: Rainfall Distribution Lines in the Province of Nineveh
Areas: ■ of high rainfall ■ almost guaranteed rain ■ of limited rainfall ■ natural pastures

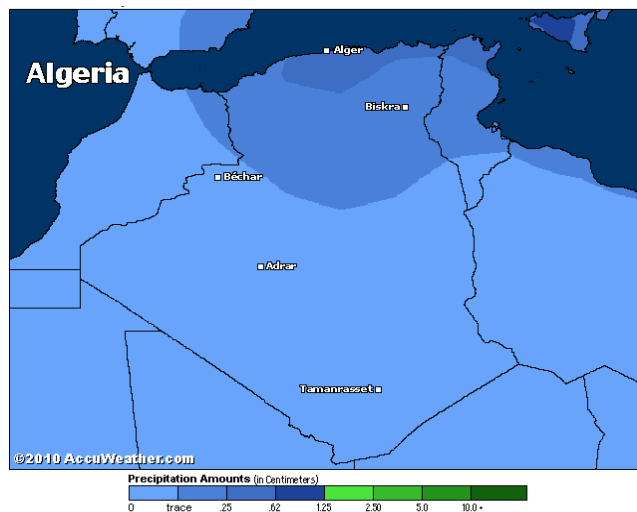
For as long as weak public sectors associated with the weak departments there, therefore the balance don't tend to the interests of efficiency for the private sector than do for other developing societies. The development of domestic agricultural market in each Arab country requires recreating the way for private sector participation to impose export to the world markets with stages of self-sufficiency.

The current conduction considers that expansion of public agricultural sector to be limit on development of government investment in infrastructure and irrigation, fertilizers, agricultural machines, land reclamation and expansion, as well as its role in the reforms and appropriate transformations that represent the foundations of: agriculture investment climate, development of local and international private competitiveness.

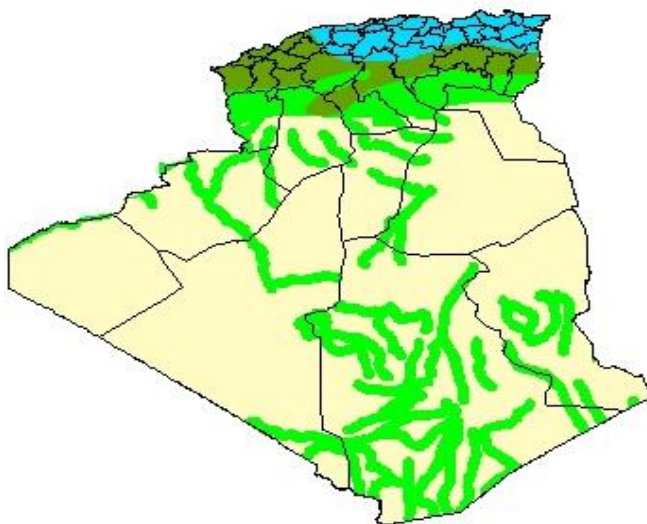
Table-1: Index of Per Capita agriculture production in most Arab Countries and Turkey

Country	1994-1996	1999-2001	2003	2004	2005	2006	2007
Algeria	99	100	119	128	127	130	122
Bahrain	101	100	114	107	110	105	101
Comoros	104	100	96	94	86	87	88
Egypt	89	100	104	106	105	107	101
Iraq	112	100	89	88	96	98	81
Jordan	120	100	111	119	124	121	109
Kuwait	74	100	108	113	100	103	101
Lebanon	123	100	95	102	96	96	95
Libyan A. J.	100	100	99	94	94	89	88
Mauritania	103	100	98	97	98	95	93
Morocco	105	100	125	126	117	136	110
Oman	77	100	83	100	113	99	99
Qatar	115	100	75	80	52	47	56
Saudi Arabia	101	100	108	121	103	98	96
Sudan	95	100	109	104	105	111	107
Syrian A. R.	98	100	105	108	104	113	98
Tunisia	92	100	125	106	111	108	108
Turkey	100	100	99	98	103	102	92
UAE	51	100	44	47	45	41	40
Yemen	92	100	104	102	101	104	105

Source: FAO Statistical Yearbook2009.



Map 3: Rainfall distribution lines in Algeria
Source: [FollowLink](#)



Map 4: Farming System Area (Sq Km) Largely Uninhabited
Source: [FollowLink](#)

In oil countries, such as Iraq, Algeria and Libya, there is a need to establish a stock exchange, especially for grain, and the raising of product markets of crops, agricultural infrastructure, particularly grains and oils, produced by the private agricultural

sector on grounds of technical sophisticated communications, and offer incentive prices for farmers in front of the received amounts above the level of world prices.

There is a great need to raise the sailings of individual ownership of agricultural land, rehabilitation and reform agricultural production on the basis of mass production which to be controlled by systems of tax revenues and adapted to the realities of each Arab country²³.

6. Core Model for Food Security

More efficient land uses and better consuming for surface & groundwater's as well as the adoption of advanced agricultural technology-you-go (for the agricultural equipment, pesticides and natural organic) are the real concern of urgent agricultural policies.

Consequently, Arab agricultural production, must meets the self-sufficiency and eliminates chronic and worsening food gap in an opened word markets. The production is a function of the needy to: doubling the already exploited agricultural land; upgrading irrigation agricultural techniques; and catching up all fields of agricultural technology, serving mass production. This relationship can be expressed as follows with a mathematic module.

$$Y = f (L, S, W, T)$$

As: Y: Agriculture Production, L: labour, S: Land space, use, W: Water usage, T: Embodied Technology.

It has suggested that production value is the product of global technology for the three explanatory factors.

$$Y = F(L, 2S, WI, MT)$$

I: stands for investment, M: method of mass production. Supposing that production function with Cobb-Douglas one:

$$Y = Ae^{rt} \cdot L^{\alpha} \cdot S^{\lambda} \cdot WI^{\beta} \cdot MT^{\Omega}$$

As, A: stand to Exogenous disembodied Technology; e: natural base; r: rate of growth with the time; I: gross Investment in the water irrigation improvement; M: net embedded Investment in agricultural production techniques. Then the linear interpretation for it postulate:

$$\log Y = r \cdot \log A + \alpha \cdot \log L + \lambda \cdot \log S + \beta \cdot \log WI + \Omega \cdot \log MT$$

The current production function relation (i.e. in period 1):

$$\log Y_1 = r \cdot \log A + \alpha \cdot \log L_1 + \lambda \cdot I \cdot \log S + \beta \cdot I \cdot \log WI_1 + \Omega \cdot I \cdot \log MT_1$$

After achieving three agricultural Investments, production relation:

$$Y = r \cdot \Delta A + \Delta \alpha \cdot I \cdot L + \lambda \cdot I \cdot S + \Delta \beta \cdot I \cdot WI + \Delta \Omega \cdot I \cdot MT$$

$\log A$: log of constant, I: new net investments.

$$Y = r \cdot \Delta A + \alpha L + I (\lambda \cdot S + \beta \cdot WI + \Omega \cdot MT)$$

Empirical Findings

Using MATLAB Programming for solve possible steps of the state alternative policies, investing in three main factors: X1, X2, and X3 establishing Agricultural measures in the agriculture sector, getting the estimated relations.

X =

1	23	34	43
1	42	54	55
1	65	56	47
1	25	65	65
1	13	37	54
1	67	24	86

A =

6	235	270	350
235	11801	10404	14443
270	10404	13378	15351
350	14443	15351	21620

C =

360
15515
16600
21970

B =

-29.1412
0.3615
0.6346
0.7958

Values of x and take a virtual matrix of 6 lines, the values would be a great store in excel and import them, while here the procedure took in principle:

$$Y = -29.1412 + 0.3615x_1 + 0.6346x_2 + 0.7958x_3$$

These elements pose three basis reservoirs to address the AFS gap with avoidance of competing with less expense foreign imports at any stage of openness-up to the global markets. The only one subscript factor between land reform, irrigation improvements, and production techniques is the investments in the new and recent technologies. It would be in shapes of machines, equipment, tools, and professional skills for training and agricultural guidance in the use and maintenance as well as protection of agricultural products. The later will benefit from knowledge including investments in mankind and human capital. The pace of introducing new technologies would be considered

the rate of technological change, in the case. The process with this view may take double dimensions: finance, i.e. the abundance of the essential factor of the natural wealth revenues; and the investments climate with which rules and legislative infrastructures relating lands use and the introducing of new technology besides using.

However, all of the investment types would depend on the public policy that deals with the state investment in the sophisticated technology at the beginning and the investment climate that has to be for private investments to deal with, in later stages. The model would be up to the promotion of the approach for experimental data estimation within due course of analytical debates.

At the same time the Arab agriculture to be stand upon urgent fact, long been overtaken by the literature and policies concerned with the problem of the agricultural sector. It can be summarised by thoughts of the direct Arabic jump to the economic integration and cooperation policies between Arab countries, when coming to held workshop sessions, passing all the already mentioned properties, those obstacles all unique and assemble works. This omission has continued for more than two generations in Iraq as well as many other Arab counties, while policies were working on placing hopes on the Arab common treatments.

In other words, all concepts of the gaps caused in food and agricultural output, the policies and strategies for the agricultural sector do not portrayed, but only the common denominators and the great distinctive aspects, but not solutions. Those policies cannot accept the division into joint solutions, neither close nor far, or supports it. What reveal with this fact is that exacerbate of the problem of food security, as well as the Arab economic reality, useless developments in various aspects for the past three decades or more.

Hereby, each country must have self-reliance with endogenous development and there is nothing wrong for a later benefit from

some of the successful experiences and excellent for others. This does not include the diagnosis, relevance with this fact areas of financial and technical cooperation, financial and employment potential among Arab countries, but stressed the necessity of any idea of the direction of integration in any field is a form of dependence and reliability and is a well establishing for all existing Arab gaps, particularly the gap of AFS.

7. Conclusion

The public agricultural policies in both of Iraq and Algeria couldn't succeed to overcome natural constrains and to reduce food gap during the eighties of the last century. Same thing is for Syria, Egypt, and Sudan²⁴. The objectives have been studied and examined in-depth many decades ago while researches focused on policy attention²⁵ but did not produce something or success in raising the economic efficiency to ensure verification inadequate production or modernization of the agriculture sector on the basis of modern technology. It is obvious for reasons related the government departments and state farms besides cooperatives, while the administrative policies were political rather than economic, or agricultural²⁶.

Half of the agricultural land in Iraq were not exploited while more than half in Algeria as well. The policies of distribution have to stimulate the exploitation of unused land and to be effective up to doubling the levels of agricultural production for each types of the staple crops, particularly grains.

The following options are possible and plausible, particularly for wealthy countries with abundance of finance natural resources such as Iraq and Algeria, whereas the necessity refers to doubling the production levels to much more than twice with²⁷:

Intensive use of advanced agricultural technology, such as modern irrigation systems;

Developed sensor equipment that reaching irrigation water to areas by symmetric and equal distribution;

Least expensive techniques and most efficient Technologies such as desalination of sea water and groundwater substitute for the watering of land near the rain.

With the following factors as certain essential technologies in doubling output:

Provision of organic fertilizers policies (non-chemical) with tax exceptions and seeds subsidies in the early stages of agricultural investment;

Supported prices of energy products involved in the extraction, transfer, and pumping of groundwater; and

Terrestrial distribution stations.

It is essential for the investors to be encouraged by new agricultural lending for ease farming, tax-deductible in land reclamation and ownership of modern equipment machines in achieving mass production.

ASAP the outlet of the above strategy, Arab food deficit remains a voluntarily one but not imposed. It can get benefit from several past experiences to focus on the productive efficiency, on the other hand to keep development to access external competitiveness as soon as possible. The main remedy view includes the following:

The state has to encourage agricultural investment to exploit all the available agricultural land.

Development of agricultural technology in the foundations of modern and sophisticated natural fertilizers uses, mechanization, equipment, and irrigation methods, "which included raising the economic efficiency and increase agricultural productivity.

Increasing of banks branches for agricultural lending by ease policies stand soft with zero interest rates, Consistent with the purposes of Islamic Sharee'a and the general orientations of an Islamic resource rich country.

Doubling the agricultural credit with the possible extent of expanding credits by the peasants and farmers, especially large farmers.

Providing customs exemptions as possible for procurement of technical equipment, land reclamation, and stations & equipment of extraction, desalination, and irrigation distribution, of groundwater.

Expansion of infrastructure networks and basic services for rural development that enable the resettlement of the intensive farming families in the new lands that can be added and distributed to the new investors.

If the case of integration of these policies with each other and coordinate the functions of financial, commercial and industrial sectors with the agricultural & irrigational activity sector by responsible, the optimistic beginnings to be confirmed the possibility of final eliminating on AFS gap. With the reduction in the cost of the product and the achievement of agricultural surplus, country to be eligible to enter the abroad market competitiveness with efficiency of the ripe conditions for the other economic sectors and desired stages of development.

Annex A

_ Matlab as an interactive system for numeric computations

```

clc;
clear;
X=[ 1 23 34 43; 1 42 54 55;1 65 56 47;1 25 65 65;1 13 37 54;1 67 24 86]
Y = [35;93;54;64;36;78];
A = X'*X
C = X'*Y
B = inv(A)*C
% Plot the data, the fit, and the confidence bounds
plot(X(1:6,1),Y,'r-',X(1:6,2),Y,'g-',X(1:6,3),Y,'b-',X(1:6,4),Y,'m-');
% Annotate the plot
xlabel('space & rains');
ylabel('output');
title('Factors affecting the agricultural output')
grid on
X =
    1    23    34    43
    1    42    54    55
    1    65    56    47
    1    25    65    65
    1    13    37    54
    1    67    24    86
A =
     6     235     270     350
    235    11801    10404    14443
     270    10404    13378    15351
     350    14443    15351    21620
C =
    360
   15515
   16600
   21970
B =
  -29.1412
    0.3615
    0.6346
    0.7958
Y=b0+b1x1+b2x2+b3x3
Y=α+βS+□L+ΩW+€T
b0=α
b1=β
x1=S

```

Notes & References

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 - ² Arab Monetary Fund, The Unified Arab Economic Report, 2001, <https://www.amf.org.ae/ar/content/٢٠٠١-الموحد-العربي-الاقتصادي-التقرير>
 - ³ AL Sharhan, Ali bin Saied (December 2010), The First Arab Conference for Agricultural and diet Investment, 8-9, Cairo. Al Sharhan is the president of the Arab Authority for Agricultural Investment and Development (Dubai) had discussed how to strengthen the strategic relationship between the private sector and funding institutions to invest in agriculture and food security. He stressed that the agricultural potential and human capacities of Arab countries that qualify to wipe out the food gap and is now moving to private sector investment and it need to titled efforts at the level of heads of Arab states to encourage such investment climates: http://www.moheet.com/show_news.aspx?nid=429463&pg=3
 - ⁴ Arab Monetary Fund- AMF, (2001), Unified Arab Economic Report, September, 283: <http://www.amf.org.ae/amf/website/pages/page.aspx?Type=8&ID=455&forceLanguage=ar>
- (80.3×2=160.6 billion dollars) plus what satisfy the needs for additional fifty million population increase (50/300=1/6) of 160.6, i.e. about 27 billion dollars.
- ⁵ Located in the north of Iraq, Mosul city, the capital
 - ⁶ Agriculture is deteriorated because of the wars that went on Iraq (Gulf War I, 1980-1988 and the second in 1990 and the economic blockade, which lasted until the invasion of Iraq in 2003.
 - ⁷ Ould Abdel Dayem, Mohamed (2003), Basic Concepts of Food Security, Knowledge, An Electronic Newspaper, Al Jazeera Settled Channel, Special Report on: <http://www.aljazeera.net/NR/exeres/9C5C4F51-74D4-40B9-A119-AD6F4EB44AAB.htm>. About increasing reliance of its food in the developing world markets look to the writer himself: the morning paper - Food Security Strategic Programs, on: <http://www.alsabaah.com/paper.php?source=akbar&mlf=copy&sid=34345>

⁸ Food Security and the associated concepts have expanded implications can be summarized as follows:

Self-sufficiency, it means the ability to complete reliance on self to cover the needs of the food product resources and potential self. The food security is the insurance of the community needs of food from within the geographical area of society. It will be absolute secure if the volume of production exceeded demand, and be relatively secure if to be almost as well. Food security refers to a safe food of all aspects of production starting from the organic compost instead of chemicals ending with storage and delivery to the consumer's hand. All of these concepts fall under criteria and specific conditions. Author

⁹ About Arabs options in the era of globalization, explained in a recent poll revealed the outcome for the possibility of designing Arabian strategy for an era of globalization, that 38% of the respondents counted globalization a cultural, 29% counted it an inevitable matter, and 33 % of them went to consider it a U.S. plot to dominate. If it was civilization it does not distinct of Arabs contribution in the foreseeable future, and so on with a remaining percentages (63%) reality of imposed situation on Arabs, and this is not inevitable, but only prevention of risks, at least to themselves by adopting upon their the adequacy of food needs in the first place. See:

- Arabs Dialogue program, Al Arabia satellite on 04.01 2008

¹⁰ Houari, Maaradj (2007), the Greater Arab Free Trade zone, a step to activate the Arab economic integration, *regional studies* (Journal of the Centre for Regional Studies / University of Mosul - Iraq), Volume 4, Issue 8, October 2007, 97-122. The paper has showed that since 1994, 121 countries had signed in Marrakesh on the Convention, which emerged from the rounds of Uruguay to the WTO, and committed in one of the items on the gradual reduction extends ten years to support the agricultural products exporting. It was directly reflected a gradually increase in prices in importing Arab countries with the starting of the following year.

¹¹ Ali, Nawfal Kasim (April 2007), Davos Conference and the Prospects for Success of Global Trade Rounds, The Observer Regional Bulletin (Centre for Regional Studies/ University of Mosul in Iraq), Year 1, Issue 11, 7.

¹² Abdel-Dayem, Mohamed, The Impact of International Economic Changes in Food Security, word editing, on:

<http://students.washington.edu/jamali/hatar136.htm>

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- ¹⁸ Na'osh, Sabah, The Crisis of Agriculture in Iraq.
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