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THE ROLE OF AGRICULTURAL SECTOR IN THE DIVERSIFICATION PROCESS OF LIBYAN ECONOMY

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Abstract. The aim of the paper is to present the role of agricultural sector in the diversification process of Libyan economy. which is very important issue taking into consideration that due to extremely high dependence on oil as a source of national income formation, Libya may face a huge problem in case of decrease in oil prices. However there are some difficulties even in quite well developing agricultural sector. The main ones are: the low growth rate of domestic agricultural product and its low percentage contribution to the Libyan GDP formation. The reasons of these problems are presented as the results of conducted analyses.

Key words: Libya, agricultural sector, GDP

INTRODUCTION

As one of the main oil producing countries Libya enjoys a high level of per-capita income and a high standards of living, where during the last three decades due to the radical increase of oil prices, the per-capita income and the standard of living of Libyans have witnessed great and tangible improvement.

However, due to the high dependence on oil as a source of GDP formation, Libya may face a huge problem, where the fluctuation of oil price from time to time may leave its negative influence on the per-capita income and consequently on the living standards of Libyan population. Moreover, in the long-run the problem will be more acute especially if the current and future energy scientific researches succeeded to find new source of energy can replace oil, or if oil reserves exhausted. In these cases, Libya may face an economic catastrophe due to the high dependence of national income formation on oil.

To avoid the negative influences of the high dependence of national income on one source, it seems necessary for Libya to start the process of national economy diversification through the development of the non-oil sectors of the Libyan economy.

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During the last three decades, great efforts were done for the development of industrial sector, however despite these efforts and good results achieved, the development of industrial sector still facing many problem such as:

- high cost of production per-unit,
- relatively low quality of industrial products compared with the imported ones,
- the idle production capacities due to the low level of local demand on the Libyan industrial goods because of it higher quality and low prices as compared with the Libyan ones.

For these reasons, efforts should be done for the development of agricultural sector. The importance of such kind of development comes from the fact that agriculture sector is seriously developed and better managed can contribute effectively to the diversification of the Libyan economy and at the same time contribute to the realization of the food security strategy of Libya.

The question now is to what extent agriculture sector can contribute in the diversification of the Libyan economy and contribute to the realization of food security strategy of Libya.

To answer this question it is necessary to investigate the following aspects:

- The efforts done by the Libyan government for the development of the rural sector through the investigation of the agricultural development strategy, agricultural investment and the agricultural development performances;
- The contribution agricultural sector to the Libyan gross domestic product formation during the period 1996–2005;
- The problems, which should be solved to accelerate the tempo of agricultural development to maximize the participation of the rural sector to the Libyan GDP formation.

AGRICULTURAL DEVELOPMENT STRATEGY IN LIBYA

The Libyan Agricultural Development Council has set a clear strategy for the development of agricultural sector. This strategy aimed and still aiming at the achievement of the following goals:

- Expanding the cultivated area through land recantation and giving a serious attention to water and soil studies;
- Protection of agricultural soil from erosion and controlling sand creeping by planting wind breakers;
- Maximization of agricultural production and raising potential crop productivity through the utilization of fertilizers, selected improved seeds and modern agricultural techniques;
- Searching for new water resources and improving the efficiency of the available water use;
- Diffusing agricultural knowledge among farmers through farmers training programmers;
- Establishing agricultural cooperative and agricultural banks to serve the farmers and provide them with leans and technical assistances and marketing their products;

– Development or animal wealth, improving range land and providing veterinary services and establishing producing stations for cows, sheep, camels and poultry in order to increase the production of meat, eggs and milk products.

AGRICULTURAL INVESTMENT DURING THE PERIOD 1996–2005

In an attempt to realize the above-mentioned goals of agricultural development strategy the Libyan government has allocated and realized certain investment found during the period 1996–2005.

As regards the realized agricultural investment, it is to be mentioned here that about 4154.7 million Libyan Dinars (LD) had been already spent on the development of the rural sector during the period 1996–2005. This means that about 15.8% of the total national investment took place in agricultural sector during that period (Table 1).

Table 1. The development of agricultural investment during the period 1996–2005
Tabela 1. Inwestowanie w rolnictwo w latach 1996–2005

Years	Total National investment (million LD)	Agricultural investment (million LD)	Agricultural investment as a percentage of the total national investment (%)
1996	1 639.7	436.4	26.6
1997	1 684.5	649.1	38.5
1998	1 396.6	345.5	24.7
1999	1 536.0	257.5	16.8
2000	2 213.9	492.3	22.2
2001	2 158.2	478.6	22.2
2002	3 579.5	498.2	13.9
2003	3 330.7	302.4	9.1
2004	3 987.5	252.3	6.3
2005	4 807.0	442.4	9.2
1996–2005 Total	26 333.6	4 154.7	15.8

Source: For the value of national investment and agricultural investment, see: The General Authority for information: 1. Statistical year book, Tripoli 2000, p. 59, 2. Statistical year book, Tripoli 2005, p. 139; Agricultural investment as a percentage of the total national investment is computed by the author.

Źródło: Wartość inwestycji narodowych i inwestycji w rolnictwie: The General Authority for information: 1. Statistical year book, Tripoli 2000, s. 59, 2. Statistical year book, Tripoli 2005, s. 139; Inwestycje w rolnictwie jako procent wszystkich inwestycji narodowych opracowanie własne.

PERFORMANCE IN AGRICULTURAL SECTOR

As a result, for the realization of the above-mentioned agricultural investment the following performances took place in agricultural sector:

– More than 1.9 million hectares of land have been reclaimed and put in use for agricultural purposes;

- More than 3035 water wells were drilled during the period under consideration what has led to the increase of the regular irrigated area;
- 28 million fruit trees have been planted;
- Land reclamation has been carried out through out the country replacing scrub lands and avid desert with modern farms. Several Large Contracts were awarded for land reclamation and irrigation, the Jebel Akhder Zone, Gefara Zone, Benghazi plain, Kufra Zone, Maknusa Zone and Fezzan Zone were the well-known Shems and fully irrigated providing for the establishment of modern farms, the building of agricultural roads, irrigation and drainage facilities were signs of the introduction of agro-industries. In addition, with the polish assistance 14853 modern farms had been prepared and transferred to private farmers in the eastern part of Libya (Al-marj);
- The realization of the first and the second stages of the great Man-Made River, in November 1983 the Korean Company (Dong Ah) was contracted to build a Man--Made River to pump 2 million cum of pure water per day through 2000 km of pipes, the diameter of each pipe is 2 meters. The long desert journey of the water starts from the natural underground reservoirs at Tazerbo and Sarir to Sirte and Benghazi via Agedabia to Tripoli and several Mediterranean Coastal towns. The second stage of the Great Man-Made River pumps 2 million cum of water per day from distance 600 km to Tripoli. Three additional stages were planned including the extension of the first phase in the South (doubling its pumping capacity to 4 million cum per day) and the const ruction of pipelines to serve eastern town of Tobruk bordering Egypt (from Agdabia) to link both the eastern and western water systems. The aim of pumping such water was to irrigate more than 300 thousand hectares on which some of 40.000 modern farms have been started to be prepared.

THE DEVELOPMENT OF AGRICULTURAL PRODUCTION IN QUANTITIVE TERM

As regards the development of agricultural production in quantities terms, the following table illustrates the production quantities and growth rates of some selected agricultural products during the period 1995–2005.

It is clear from table one that the Libyan agricultural sector has witnessed during the period 1995–2005 certain high growth rates in certain products meanwhile some other products had witnessed certain downward trend. As regards agricultural products of high growth rate, we can mention wheat production, which increased from only 23 thousand ton in 1995 to 90 thousand ton in year 2005; this means an average annual growth rate of 29.1%. The same applies to barley production, which grew at on average annual growth rate of 9.9%, and milk production, which grew at on average annual growth rate of 4.6%.

Regarding agricultural products which suffered from a downward trend in its production we can mention olive production (–0.9% as annual average), red meat (–1.6%) and eggs (–1.8%) as an annual average rate of decrease during the period 1995–2005. The decrease of egg production in the year 2005 may be explained by the bird flu, which took place in the region during the year.

Table 2. The development of agricultural and animal production quantities (selected products) during the period 1995–2005
Tabela 2. Produkcja roślinna i zwierzęca (wybrane produkty) w okresie 1995–2005

Product	Unit	1995	2000	2005	Changes through the whole period 1995–2005	Average animal change rate for the period 1995–2005 (%)
Wheat	Thousand ton	23.0	90.0	90.0	67.0	29.1
Barley	Thousand ton	117.0	200.0	233.0	116.0	9.9
Vegetables	Thousand ton	1183.0	1200.0	1201.0	18.0	0.2
Fruits	Thousand ton	599.0	660.0	662.0	63.0	1.1
Olives	Thousand ton	168.8	150.0	153.7	–15.1	–0.9
Red meat	Thousand ton	217.0	229.0	183.0	–34.0	–1.6
Milk	Million litres	213.0	250.0	310.0	97.0	4.6
Egg	Million eggs	1140.0	1200.0	932.9	–207.1	–1.8

Source: Secretariat of the general people committee for planning, "The performances of Economic and Social Development" Tripoli 2006. Also see Secretariat of the general people committee for agriculture, marine and animal wealth "Agricultural and Animal production" Tripoli 2006.
Źródło: Secretariat of the general people committee for planning, "The performances of Economic and Social Development" Tripoli 2006. Patrz także: Secretariat of the general people committee for agriculture, marine and animal wealth "Agricultural and Animal production" Tripoli 2006.

LIVE-STOCK PRODUCTION

As regards livestock production, Table 2 illustrates the development of cows, sheep, goats and camels during the period 2001–2005. From table 3 one can conclude that:

- Despite the decrease of the numbers of cows from 175 000 cows in 2001 to 150 150 cow in 2005. Cow production grew during the period 2001–2005 at on average annual growth rate of 1.45%.
- The number of sheep has increased from 4500 thousand sheep in 2001 to 5800 thousand in the year 2005. This means that the sheep production grew during the period 2001–2005 at on average annual growth rate of 6.6%.
- The goat production has grew during the period under consideration at on annual average growth rate of 7.0% where the number of goats increased from 1700 thousand goat in the year 2001 to 145 thousand in the year 2005.

THE DEVELOPMENT OF POULTRY PRODUCTION

Except for the two years 2001 and 2002, poultry production took a down-ward trend, where the number of chicken for meat production fell from 96 million chicken in the year 2002 to 94 million 93 million and 92 million in the years 2003, 2004 and 2005 respectively, and continued its decline to reach 86 million chicken in the year 2006. Such downward trend may be explained by the following factors:

Table 3. The development of live-stock production in Libya during the period 2001–2005
Tabela 3. Produkcja inwentarza żywego w Libii w latach 2001–2005

		2001	2002	2003	2004	2005	The average annual growth rate for the period 2001–2005
Cow	Numbers of cow in head	175 000	178 000	181 500	184 800	150 150	1.45%
	Growth rate (previous year = 100%)	–	1.7%	2.0%	1.8%	–0.2%	
Sheep	Numbers of sheep in thou. Heads	4500	4900	5300	5700	5800	6.6%
	Growth rate (previous year = 100%)	–	8.9%	8.2%	7.5%	1.8%	
Goat	Numbers of goats in thou. Heads	1700	1750	1775	1800	2200	7.0%
	Growth rate (previous year = 100%)	–	2.9%	1.4%	1.4%	22.2%	
Camel	Numbers of camels in thou. Heads	141	142	143	144	145	0.7%
	Growth rate (previous year = 100%)	–	0.7%	0.7%	0.7%	0.7%	

Source: 1. For the numbers of animals see: Secretariat of the general people committee for agriculture, marine and animal wealth. Agricultural and animal production during the period 2001–2005, Tripoli, 2006. Table 2.1, 2.2, 2.3 and 2.4 2. Growth rates are computed by the author.
Źródło: 1. Liczba zwierząt na podstawie Secretariat of the general people committee for agriculture, marine and animal wealth. Agricultural and animal production during the period 2001–2005, Tripoli, 2006. Stopy wzrostu – obliczenia własne.

– The problem of bird flu, which killed a considerable part of chickens and hens during that period.
– The decline of consumption demand level on poultry meat due to the bird flu what has discouraged poultry producers to expand their production.

Table 3. Poultry production during the period 2001–2006
Tabela 3. Produkcja drobiu w latach 2001–2006

Years	Numbers of chicken for meat production (in million bird)	Poultry meat production (in thousand ton)	Number of hens for egg production (in million hen)	Egg production (million eggs)
2001	92	104.0	5.1	969
2002	96	106.0	5.4	1200
2003	94	105.0	5.2	1050
2004	93	103.0	5.2	1100
2005	92	100.0	5.0	932
2006	86	93.5	5.0	932

Source: Secretariat of the general people committee for agriculture, marine and animal wealth. Agricultural and animal production op.cit. Table 2.
Źródło: Secretariat of the general people committee for agriculture, marine and animal wealth. Agricultural and animal production oraz jak w tabeli 2.

The same applies to the poultry meat (white meat) where it felt from 106 thousand ton in the year 2002 to 105 thousand, 103 thousand and 100 thousand ton in the years 2003, 2004 and 2005 respectively and continued its decline to reach 93.5 thousand ton in the year 2006. Such downward trend may be also explained by the above-mentioned factors (mainly bird flu – avian influenza).

As regards hen and egg production, the number of hen for egg production increased from 5.1 million hens in the year 2001 to 5.4 million hen in the year 2002. However, after the year 2002 the number of hen felt to reach 5.2 million in each of the two years 2003 and 2004 and continued its decrease to reach 5.0 million in 2005 and 2006 (Table 3).

THE DEVELOPMENT OF THE DOMESTIC AGRICULTURAL PRODUCT

According to the available statistic data (Table 4), the value of the Libyan domestic agricultural product at constant prices of 1997 has grew during the period 1995–2005 at a slow growth rate, except for the year 1999 which witnessed certain decrease in the domestic agricultural product (DAP) amounted to –2.9% as compared with its level in 1998, the Libyan DAP grew during the period 1995–2005 at a growth rate ranged between 0.6% and 4.1%.

Taking into consideration the whole period (1995–2005) the Libyan DAP grew at an average annual compound growth rate or 2.1 percent against 3.2% for the whole economy. This means that domestic agricultural product grew during the period 1995–2005 at a growth rate less than that of the Libyan Gross Domestic product. The following table illustrates the development of the Libyan DAP.

Table 4. The development of the Libyan domestic agricultural product during the period 1995–2005 at constant prices of 1997

Tabela 4. Produkt krajowy w sektorze rolniczym w latach 1995–2005 w cenach stałych z 1997 roku

Years	The valve of domestic agricultural product in million LD	Index number 1995 = 100	Annual growth rate yearly of proceeding year	The average annual compound rate for the whole period 1995–2005
1995	1175.0	100.0	–	
1996	1188.6	101.1	1.1%	
1997	1267.0	107.8	6.6%	
1998	1274.0	108.4	0.6%	
1999	1236.9	105.2	–2.9%	
2000	1277.3	108.7	3.3%	2.1%
2001	1330.0	113.1	4.1%	
2002	1356.6	115.4	2.0%	
2003	1383.7	117.7	2.0%	
2004	1411.1	120.0	2.0%	
2005	1446.4	123.0	2.5%	

Source: 1. For the valve of domestic agricultural product see: The Central Bank of Libya, Economic bulletin, No 45 and 46. 2. Growth rates and index numbers are computed by the author.

Źródło: 1. Wartość produktu krajowego w sektorze rolniczym na podstawie: The Central Bank of Libya, Economic bulletin, No 45 and 46. 2. Stopy wzrostu oraz indeksy – obliczenia własne.

THE CONTRIBUTION OF AGRICULTURAL SECTOR TO THE LIBYAN GDP FORMATION

As regards the relative importance of the domestic agricultural product as a percentage of the Libyan gross domestic product at constant price of 1997 it can be summarized as follows (see Table 5):

- The relative importance of the domestic agricultural product to the Libyan GDP (including oil and gas sector) ranged between 8.1% and 9.2% of the GDP during the period 1995–2005.
- The relative importance of the domestic agricultural product to the GDP reached its top level in the years 1997 and 1998 where it amounted to 9.2% of the GDP.
- The Lowest level of the relative importance of the domestic agricultural product to the Libyan GDP took place in the year 2005 where it amounted to 8.1 percent of the GDP.
- The relative importance of the domestic agricultural product to the Libyan GDP still low and far from the desired level.

The following table illustrates the relative importance of the domestic agricultural product to the Libyan GDP (including oil and gas sector) during the period 1995–2005.

Even if we excluded the oil and gas sector from the value of the Libyan GDP, the percentage contribution of agricultural sector to the GDP still low and far from the

Table 5. The percentage contribution of agricultural sector to the Libyan GDP formation (including oil and gas sector) at constant prices of 1997, during the period 1995–2005 (value in million LD)

Tabela 5. Udział procentowy sektora rolnego w tworzeniu PKB Libii (razem z sektorem paliwowym) w cenach stałych z 1997 roku, w latach 1995–2005 (miliony LD)

Years	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
The Libyan GDP	1310 6.3	1362 0.3	1380 0.5	1386 1.5	1416 9.7	1447 9.6	1492 7.6	1509 5.3	1616 0.6	1696 3.6	17940.6
Domestic agricultural product	1175.5	1188.6	1267.0	1274.0	1236.9	1274.3	1330.0	1356.6	1383.7	1411.1	1446.4
The percentage contribution of agricultural sector to the Libyan GDP formation (% of GDP)	9.0%	8.7%	9.2%	9.2%	8.7%	8.8%	8.9%	9.0%	8.6%	8.3%	8.1%

Source: The Central Bank of Libya, Research and statistical department: The Economic Bulletin Vol. 45, the second quarter 2005. Table 27, The Economic Bulletin Vol. 46, the third quarter 2006. Table 27. Percentage contribution of agricultural sector of the Libyan GDP formation is computed by the author.

Źródło: The Central Bank of Libya, Research and statistical department: The Economic Bulletin Vol. 45, drugi kwartał 2005, tabela 27, The Economic Bulletin Vol. 46, trzeci kwartał 2006, tabela 27. Udział procentowy obliczony przez autora.

desired level, where it ranged between 11.4% and 13.6% of the GDP during the period 1995–2005. The following table illustrates the percentage contribution of agricultural sector to the Libyan GDP (excluding oil and gas sector).

Table 6. The percentage contribution of agricultural sector to the Libyan GDP (excluding oil and gas sector) during the period 1995–2005
Tabela 6. Udział procentowy sektora rolnego w tworzeniu PKB w Libii (bez sektora paliwowego) w latach 1995–2005

Years	The Libyan GDP (excluding oil and gas sector)	Domestic agricultural product value in million LD	The percentage contribution of Domestic agricultural product to the Libyan GDP
1995	8 643.0	1 175.5	13.6%
1996	9 104.2	1 188.6	13.1%
1997	9 294.2	1 267.0	13.6%
1998	9 348.0	1 274.0	13.6%
1999	9 500.2	1 236.9	13.0%
2000	9 880.0	1 274.3	12.5%
2001	10 354.4	1 330.0	12.8%
2002	10 905.4	1 356.6	12.4%
2003	11 205.3	1 383.7	12.3%
2004	11 730.7	1 411.1	12.0%
2005	12 635.0	1 446.4	11.4%

Source: As in Table 5.
Źródło: Jak w tabeli 5.

CONCLUSIONS

The question now is what are the main factors responsible for the low growth rate of domestic agricultural product and its low percentage contribution to the Libyan GDP formation during the period 1995–2005? The factors responsible for the low performance in agricultural sector concerning its growth rate and its contribution to the Libyan GDP can be summarized as follows:

- The major part of agricultural movement had been concentrated in agricultural projects of long-term nature, such as the establishment of man-made river, land reclamation etc. Investment in such kind of projects usually gives its effect in the long run.
- The concentration during the period 1995–2005 on the extensive use of land, meanwhile the intensive use of land through land productivity maximization was completely neglected during that period.
- The high dependence of agricultural land on rain as a source for irrigation, where more than 75% of agricultural land area depends on its irrigation on rain.
- The low productivity of the new cultivated land, these lands still need further improvements to be qualified for agricultural production and this needs a long time.
- The low level of production technology used in agricultural sector especially in private farms where the majority of these farms still use traditional methods of production.

Even in the public sector, which uses technical machines and tools, the number of these machines per 1000 hectares took a downward trend. For example the number of tractors per 1000 hectares felt from 24.3 tractors in the year 2001 to 15, 1 tractors in the year 2003. This is due (among other factors) to the lack of an effective system for repairs and periodical conservation of agricultural machines and tools, what has left its negative influence upon the productivity of these machines.

– The lack of effective scientific agricultural research centers which can contribute to the acceleration of agricultural development.
– The insufficient level of agricultural investment during the period 1995–2005. It is true that agricultural sector has received a relatively better investment priority during that period where it occupied the third place in investment priority (among 14 places), but such investment priority within a low level of national investment was insufficient to bring the desired level of performance in agricultural sector especially if we knew that agricultural investment during that period ranged between only 0,6% and 5% of the Libyan GDP and this is extremely low.

However, it is to be mentioned here that the low contribution of agricultural sector to the Libyan GDP does not mean that agricultural sector has no possibilities to participate effectively in the diversification process of the Libyan economy. Agricultural sector has potential possibilities, but no mobilize these possibilities, the above mentioned problems should be solved first of all through the allocation of an ambitious investment fund for agricultural development, such type of investment fund represent the key factor for the mobilization of the potential possibilities of the Libyan agricultural sector.

REFERENCES

Arab Food Agriculture Organization, "Agricultural development in Arab Countries", The Annual Report for the Year 2005, Khartoum. Sudan. 2006.
The General People Committee for Planning, "The Performances of the Economic and Social Development". Tripoli, 2006.
The Central Bank of Libya.
Economic Bulletin, vol. no 45, Tripoli. 2005.
Economic Bulletin, vol. no 46, Tripoli. 2006.
The general Authority for information – Libya.
Statistical Year Book, Tripoli. 2000.
Statistical Year Book, Tripoli. 2000.
Secretariat of the General People Committee for Agricultural, Marine and Animal.
Wealth, "Agricultural and Animal Production". Tripoli. 2006.

ZNACZENIE ROLNICTWA W PROCESIE DYWERSYFIKACJI GOSPODARKI LIBIJSKIEJ

Streszczenie. Celem pracy jest prezentacja znaczenia rolnictwa w procesie dywersyfikacji gospodarki libijskiej, co jest kwestią szczególnie ważną, biorąc pod uwagę wysoką zależność dochodu narodowego od ropy naftowej w tym kraju oraz możliwe problemy, na przykład w przypadku spadku cen tego surowca. Jednakże nawet w stosunkowo dobrze rozwijającym się rolnictwie libijskim można wskazać pewne trudności. Główne z nich to

małe tempo wzrostu wytwarzanej produkcji rolniczej oraz niski udział tego sektora w tworzeniu produktu krajowego brutto. Przyczyny takiego stanu rzeczy zostały przedstawione jako wnioski z przeprowadzonych analiz.

Słowa kluczowe: Libia, sektor rolniczy, PKB

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