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Kurdistan Region Economic Research Report Series

A Macroeconomic Research on the Development of Agricultural Economy in the Kurdistan Region within the Scope of 2030-2050 Sustainable Development Goals (SDGs)

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Abstract

This study will discuss the development of the Kurdistan Region in terms of agriculture and agri-food economy. The emergence of climate change due to global warming has caused concern about worldwide famine. Research by macroeconomists and agricultural economists shows that world resources are becoming increasingly scarce. With the Kurdistan Regional Government's (KRG) decision, there seems to be more focus on agricultural activities in the Kurdistan Region. Stable and sustainable agricultural policies to be implemented following the 2030-2050 Sustainable Development Goals (SDG's) will ensure that the Kurdistan Region It will enable it to be among the top 10 agricultural countries after the US, Canada, China, India, Australia, France, and Russia. Stable agricultural policies to be implemented in the Kurdistan Region, which has fertile lands, will also enable Gross Domestic Product (GDP) and Gross National Product (GNP) to rise and foreign investors to make significant investments in agriculture in the Kurdistan Region within the scope of Foreign Direct Investment (FDI). Studies by macroeconomists and agricultural economists show that oil currently accounts for a significant portion of the Kurdistan Region's GDP. However, the recent focus on agricultural production in the Kurdistan Region is projected to account for approximately 57.60% of Gross Domestic Product (GDP) by 2030 and approximately 72.10% by 2050.

JEL Classification: Q13, Q16, Q17, Q18

Keywords: Kurdistan Region, Sustainable Development Goals, Agricultural Development, Foreign Direct Investment, Gross Domestic Product.

Introduction

Climate change due to global warming has caused global concern. Concern about famine spread all over the world. In this situation, developed countries such as the US, Canada, the EU, the UK, Japan, and China began to turn to agriculture. There is more focus on agricultural activities, especially in Canada's provinces, such as Saskatchewan, Manitoba, and Alberta. Developed countries started implementing agricultural development policies for 2030-2050 within the scope of Sustainable Development Goals (SDG). Countries' macroeconomic growth will differ significantly from the current situation in 2030 and 2050. Macroeconomists and agricultural economists say that the world may be a prosperous planet in 2050, the concept of developed and developing or underdeveloped countries will disappear as today, and there will be only some differences between countries. Focusing now on agricultural development targets for 2030-2050 within the scope of Sustainable Development Goals (SDG) will provide significant advantages for countries.

While the Kurdistan Region was previously based on consumption other than oil, it has recently started to focus on agricultural production and exporting the agricultural products it produces. The Kurdistan Region has focused excessively on agricultural activities to eliminate the harmful effects of climate change due to global warming. The Kurdistan Regional Government's (KRG) agricultural policies have increased agricultural production in the Kurdistan Region. Many agricultural products began growing in the Kurdistan Region, with the Kurdistan Regional Government (KRG) and economic institutes encouraging farmers to produce. In the last two decades, the Kurdistan Region has experienced agricultural growth of approximately 61.87%. While the Kurdistan Region used to import Basmati rice from India, it now grows rice in the fertile wetlands of Akre and exports it to EU countries. Kurdistan Region is rice, wheat, grain, barley, apple, pomegranate, sumac, grape, tomato, etc. It produces products such as and exports some agricultural products.

The Kurdistan Region is predicted to increase agricultural production within the scope of the 2030-2050 Sustainable Development Goals (SDG). Macroeconomists and agricultural economists predict that oil production in the Kurdistan Region will increase further until 2030-2050. According to projections by macroeconomists and agricultural economists, agricultural activities could account for approximately 57.60% of the Kurdistan Region's GDP by 2030 and approximately 72.10% by 2050.

With the stable and sustainable implementation of the 2030-2050 targets in the Kurdistan Region, Akrê, Halabja, and Barwary regions will rapidly progress towards becoming like the provinces of Saskatchewan, Manitoba, and Alberta, which play a significant role in Canada's agriculture, and will become the "World Agriculture and Agri-Food Center". Therefore, Kurdistan will be among the top ten countries with agricultural activities worldwide after the US, Canada, India, Australia, France, and Russia.

2. General Economic Status

Iraq's agricultural sector was negatively affected by the COVID-19 pandemic, which flourished in 2020. According to the World Health Organization (2023) data, approximately 2,465,545 cases and 25,375 people died. According to the report prepared by the International Labor Organization (2022), according to the Ministry of Health of the Kurdistan Regional Government data, approximately 387,363 people were affected by the COVID-19 epidemic from March 1, 2020, to January 1, 2021. The imposition of restrictions due to the worldwide COVID-19 pandemic caused the Kurdistan Region to be negatively affected economically.

According to the report jointly prepared by the International Trade Center and Food and Agriculture Organization of the United Nations and IOM UN Immigration (2021), the COVID-19 pandemic caused agricultural production to decrease and unemployment to rise in Iraq. According to IOM research on Small and Medium-sized Enterprises (SMEs) in Iraq, 2Q2022 agricultural production decreased by approximately 23%. Therefore, there is a decrease of approximately 58% in the earnings of SMEs operating in the agricultural sector in Iraq. When these problems are examined in the long term, it is predicted that people employed in rural areas may be negatively affected because they lack security.

The COVID-19 pandemic has had a very negative impact on Iraq's agricultural economy. Therefore, Iraq has been even more negatively affected by the negative impact of agricultural activities, the continuation of conflicts, migration from villages to cities, limited water access, loss of soil fertility, and the collapse of the economy. According to the report jointly prepared by United Nations Development Programme (UNDP) and KRG Ministry of Agriculture and Water Resources (2019), the Kurdistan Region receives more rainfall than many Iraq regions. However, access to clean water resources is an ongoing and essential problem in Kurdistan. The arable land in the Kurdistan Region is approximately 1,535,794 hectares. However, it was estimated that only approximately 22% (337,874.68) of these areas could be irrigated in 2019.

Agriculture is the field that provides the most significant employment in the Kurdistan Region. This is because the Kurdistan Region has fertile agricultural lands and is the most important source of income for the rural population. Grown in the Kurdistan Region; wheat, grain, barley, rice, apple, pomegranate, grapes, figs, etc. The production of crops shows that the employment rate has increased by approximately 80%, including animal husbandry. By implementing agricultural policies following the 2030-2050 targets within the scope of the Sustainable Development (SDG), it is predicted that agricultural products will increase the GDP of the Kurdistan Region by 57.60% in 2030 and 72.10% in 2050.

3. Agricultural and Agri-Food Sector in Kurdistan Region

Since the Kurdistan Region has a temperate climate, it has fertile agricultural lands and water resources. The fact that the Kurdistan Region has fertile lands plays a vital role in growing various agricultural products. Currently, the products grown in the Kurdistan Region are exported worldwide. While the Kurdistan Region was based on consumption about 20 or 25 years ago, it has recently started to grow macroeconomically by producing its own agricultural and agri-food products. Kurdistan Region continues to progress not only in agriculture but also in the livestock sector. To put it more clearly, the Kurdistan Region is rapidly progressing towards becoming the “World Agriculture and Agri-Food Center” by implementing agricultural policies in line with the 2030-2050 Sustainable Development Goals (SDGs). With the encouragement of Kurdistan Region President Nechirwan Idris Barzani and Prime Minister Masrour Barzani, agricultural activities have been focused more on the Kurdistan Region.

As the Kurdistan Region has fertile lands, silos began to be built for the wheat produced in the Kurdistan Region. According to research by Mohammad (2021) from Kurdistan 24, the silos built in Kalar will enable farmers in the Kurdistan Region to increase their production further. Kurdistan Regional Government (KRG) Ministry of Commerce has allocated a budget of approximately IQD21 billion (approximately \$16.032,74) for the silo project. The silo built has a storage capacity of approximately 40,000 tons of wheat. Therefore, the silos are built on land of approximately 20 decares in Kalar, and Italian companies provide the materials for the silos. The silos consist of 16 silos, each with a capacity of approximately 2,500 tons. It is planned to build silos in the Kurdistan Region in the future to store not only wheat but also corn, grain, and many other grains.



Figure 1. Kalar Silos.

Source: Kurdistan 24, 2021

3.1. Exports of Agriculture and Agri-Food Products in the Kurdistan Region

3.1.1. Potatoes Exports

According to Kurdistan 24 (2023), in the ninth cabinet, which was established in the Kurdistan Region in 2023 to ensure food security to develop the agricultural and agri-food sector further and to market the goods produced by farmers in the world markets, the production of potatoes has increased approximately in the last four years. There was an increase of around 200,000 tons. In this case, the amount of potatoes produced in the Kurdistan Region in 2023 reached approximately 600,000 tons, approximately \$500 million. Currently, 30 types of potatoes are produced in the Kurdistan Region, and one-third of the potatoes produced are used in the potatoes produced are used in the production of chips and fries.



Figure 2. A Chips Factory in Erbil.

Source: Ministerie van Landbouw, Natuur en Voedselkwaliteit, 2023

Potatoes are also among the most critically exported agricultural products of the Kurdistan Region. Approximately 90% of the potatoes produced in the Kurdistan Region will be exported to the United Arab Emirates (UAE). Exporting potatoes grown in the Kurdistan Region to the UAE is essential in further developing commercial relations between the two countries and increasing the Kurdistan Region's GDP. The demand for Kurdistan potatoes is not only by the UAE but also by many GCC countries. Therefore, KRG started to take measures to restrict imports from surrounding countries completely. These steps restricting imports in the Kurdistan Region show that domestic and worldwide demand for agricultural and agri-food products can be met.



Figure 3. Potato Exports From Kurdistan Region to the UAE.

Source: Erbil Governorate, 2023

The most fertile land for growing potatoes in the Kurdistan Region is in the Bardarash district of Duhok. Farmers from Bardarash state that potato production has become easier than in previous years due to using first-class seeds with modern agricultural vehicles. Accordingly, according to the data of Potato Business (2023), Kurdistan Regional Government's Ministry of Agriculture and Water Resources, 700,000 tons of potatoes were produced in the Kurdistan Region in 2023, and only 500,000 tons of these were produced in the Bardarash district of Duhok. McDonald's, KFC, and Hardee's, located in the GCC, are among the restaurant chains that demand the most potatoes in the Kurdistan Region.



Figure 4. Strengthening the Potato Value Chain in the Kurdistan Region of Iraq.

Source: CABI, 2021



Figure 5. Gulf KFC and Hardee's Restaurants Seek Kurdistan Region Potatoes.

Source: Kurdistan 24, 2023

At the end of 2022, the Kurdistan Region exported Halabja pomegranates to the GCC market, making it its first non-oil product export. Exports started with pomegranates, potatoes, rice, sumac, apples, etc., and continued with agricultural and agri-food products. This situation played an essential role in the annual macroeconomic growth of the Kurdistan Region. Accordingly, agricultural economists predict that potato production within the scope of the 2030-2050 Sustainable Development Goals (SDGs) may be around 5,000,000 tons.

3.1.2. Pomegranate Exports

According to Kurdistan Chronicle (2023), the production of various economically beneficial products in the Kurdistan Region, including pomegranates, which means (ههناار) in Kurdish, started exporting to the GCC. This is the second product that the Kurdistan Region exports, other than oil. Therefore, Hanar, which provides economic development in the Kurdistan Region, is also among the most demanded products globally, as it is organic and delicious. Hanar, produced in the Kurdistan Region in December 2022, started to be exported to GCC countries.

Following Prime Minister Masrour Barzani's visit to the GCC in early 2022, the Kurdistan Agricultural Export Initiative (KAEI) was launched in March 2023 to ensure that pomegranates produced in the Kurdistan Region are included in the world markets. The fact that pomegranates grown in KAEI's Kurdistan Region are the most demanded agricultural and agri-food products in the world markets will play a critical role in the macroeconomic development of Kurdistan. KAEI is an essential revolution in the macroeconomic development of the Kurdistan Region and the rise of GDP and GNP, as it will diversify the economy of the Kurdistan Region and contribute more to the development of the agricultural and agri-food sectors.

Pomegranates to be exported from the Kurdistan Region began with the selection of two enterprises from the Zakho and Halabja provinces of the Kurdistan Region in the first phase, collecting up to approximately 2,000 tons of pomegranates from approximately 100 farms typical in the Kurdistan Region. In order to export pomegranates following GCC countries and world standards, networks have been established in the Kurdistan Region to provide quality control management up to GCC delivery ports. Therefore, export networks can be transformed into an important Global Value Chain (GVC) for Kurdish farmers producing pomegranate and other agricultural products.



Figure 6. From Kurdistan to UAE Pomegranate Export.

Source: Rûdaw, 2022

Considering the equal quality of agricultural products produced in the Kurdistan Region, the increase in demand due to market needs, and purchasing power, 6 GCC countries were the most critical locations to start exports. Commercial cooperation between the two countries is crucial in protecting regional food security. Pomegranates exported from the Kurdistan Region to the GCC are sold in the UAE market for approximately \$10.00-\$11.00 per kilogram.



Figure 7. Kurdish Pomegranates in the UAE Supermarkets.

Source: Kurdistan Chronicle, 2023

Focusing more on agricultural production, the Kurdistan Regional Government (KRG) decided to establish the Export Promotion Bureau for the export of agricultural products in order to promote the agricultural products grown in the Kurdistan Region, which has more fertile lands and intense agricultural activities. Due to its dense mountainous terrain, the Kurdistan Region has more fertile lands than many Middle Eastern countries.

Fresh Plaza (2022) states that first-class pomegranates produced in the Kurdistan Region are sold in large-scale supermarkets such as Carrefour and Lulu in GCC countries. Currently, more than 500,000 tons of pomegranates have been exported from the Kurdistan Region. Exports from the Kurdistan Region to the UAE are estimated to be worth approximately \$1.000.000 and reach approximately \$4.000.000 by 2023. Agricultural economists predict that within the scope of the 2030-2050 Sustainable Development Goals (SDGs), the Kurdistan Region's pomegranate production will be approximately 3,000,000 tons and can generate an income of around \$200.000.000.

3.1.3. Tomato Paste Export

It was stated by Kurdistan 24 (2023) that The Department of Media and Information of the Kurdistan Regional Government (KRG) announced that 25 tons of tomato paste was exported to the US from the Harir town of Erbil's Shaqlawa district. The steps taken towards the export of tomato paste are described as a strategic move by the 9th Cabinet of the KRG to market the products of the farmers of the Kurdistan Region in the world.



Figure 8. Tomato Paste Exported to the USA Produced in the Kurdistan Region.

Source: +964 Media

Kurdistan 24 (2022) stated that in 2022, approximately 200 tons of tomato paste produced in the Sharazoor district of Halabja will be exported, and approximately 120 of these pastes have been exported to many countries with the implementation of KRG's stable agricultural strategy. Approximately 14 tons of tomato paste were exported to Sweden. According to the data from the Kurdistan Region Trade Directorate, only around 200 tons of tomato paste from the tomatoes produced in the Kurdistan Region can be produced and exported. Therefore, tomato paste export amounted to approximately 120 tons in 2022. Tomato paste exports from the Kurdistan Region in 2022; after the UK, Belgium, Netherlands, and Sweden, it was made to the US in 2023. This situation means that agricultural products grown in the Kurdistan Region are processed and placed in the markets of developed countries, providing both the macroeconomic development of the Kurdistan Region and a new job opportunity for Kurdish farmers.

The economic reforms recently made by Prime Minister Masrour Barzani to develop the agriculture of the Kurdistan Region will increase agricultural production in the entire Kurdistan Region. This is essential to ensure agricultural production in underdeveloped agricultural regions in the Kurdistan Region and contribute to the Kurdistan Region's economic development. Therefore, KRG is developing strategies that will increase the export of agricultural products, aiming to enable Kurdish farmers to export the agricultural products they grow, to ensure the development of the agriculture and agri-food sector in the Kurdistan Region, and to reduce dependence on revenues obtained only from oil and natural gas.

Although there is an intense demand for agricultural products grown in the Kurdistan Region in economically developed countries such as GCC, EU, and the US, KRG continues to contact leading enterprises and governments in the market.

3.1.4. Rice Export

According to Kurdistan 24 (2023), the Kurdistan Regional Government (KRG) announced that rice cultivation will be carried out on approximately 5,200 acres of Duhok land in 2023. Therefore, it is anticipated that approximately 23,000 tons of rice will be produced in Duhok by the end of 2023. Since the KRG ninth cabinet focused particularly on agricultural development, agricultural economists have noted increased domestic and international Kurdish rice demand. In this case, the Kurdistan Region must produce approximately 500,000 tons of rice to meet domestic and international demand. It is stated that the quality of rice produced in the Kurdistan Region is superior to Basmati and other rice types previously imported.

The support given by the KRG to agriculture in the Kurdistan Region is significant for Kurdish farmers' products at home and abroad, the GDP and GDP of the Kurdistan Region, and for farmers to maximize their earnings. According to rice growers, rice prices will be affordable in 2023 because of exports. In this case, the KRG ninth cabinet continues to take steps to enable farmers to produce and export more.

Rice is a significant agri-food product, especially for sub-regions of the Middle East and the entire Asian continent. Agricultural economists estimate that rice consumption could be approximately 517,000,000 tonnes worldwide.

Agricultural economists predict that rice production in the Kurdistan Region within the scope of the 2030-2050 Sustainable Development Goals (SDGs) could be between approximately 600,000 and 1,000,000 tons. The quality of the rice grown in the Kurdistan Region and Diyabekr (Amêd) Karacadag is first-class and superior to other types of rice. However, since Karacadag rice is produced in limited quantities in Amêd, it is produced only to meet domestic demand. Therefore, rice production in the Kurdistan Region is produced more since it can meet domestic and international demand. In this case, Kurdish rice is a very effective agri-food product in increasing GDP.



Figure 9. Rice Harvest in Duhok.

Source: Kurdistan 24, 2023

3.1.5. Apple Export

Apples grown in the mountainous areas of Duhok’s Berwary region will first be exported to the UAE. According to the news of Rûdaw (2023), with the commercial agreement signed between the Kurdistan Region and the UAE, farmers in the Kurdistan Region will be able to offer the products they grow to the UAE markets. This will play an essential role in increasing both the export volume and GDP of the Kurdistan Region. Apples grown in Berwary are the most demanded product in the UAE markets due to their first-class quality, and approximately 350,000 to 400,000 tons of apples are produced.

The ninth cabinet of the Kurdistan Regional Government (KRG) focused on agricultural production for the macroeconomic development of the Kurdistan Region. The main goal of Prime Minister Masrour Barzani and his cabinet is to diversify agricultural products in the Kurdistan Region further and export agri-food products instead of importing them from neighboring countries.

According to agricultural economists, it is estimated that Berwary apples could be around 600,000 tonnes to 800,000 tonnes under the 2030-2050 Sustainable Development Goals (SDGs). In this case, it is predicted that a significant portion of Berwary apples may be demanded by developed countries such as the US, Canada, the EU, the UK, and Japan.



Figure 9. Berwary Apples.

Source: Rûdaw, 2023

4. Wheat Production in the Kurdistan Region

According to the data of the United States Department of Agriculture (USDA) (2023), it is estimated that wheat production in Iraq in the 2023-2024 season may be approximately 4.3 million tons, depending on increasing rainfall and wheat harvest areas. Therefore, wheat production harvest areas are seen. Therefore, wheat production decreased by approximately 3.9 million tons in the 2022-2023 season. In contrast, wheat production decreased by approximately 3.9 million tons in the 2022-2023 season. While wheat production in Central and South Iraq was approximately 2.765 million tons, approximately 1.170 million tons were produced in the Kurdistan Region. In total, around 3.935 million tons were produced.

Salahuddin ranks first in Central and South Iraq with wheat production of approximately 540.000 million tons (19.5%), while Wasit ranks second with approximately 352 million tons (12.7%). Although rainfall is abundant in Ninawa, it ranks third with approximately 326 million tons (11.8%) due to the decrease in rainfall. In contrast, 56% of wheat production is produced in the Kurdistan Region and the rest of Iraq. While the production in regions where wheat is grown using irrigation methods is approximately 2.739 million tons (99.1%), wheat production is around 26 million tons (0.9%) in rainfed areas. The exact opposite was the case for 2022-2023 when it enabled high amounts of wheat to be produced in rain-fed regions. Due to the lack of rainfall, irrigated areas contributed to wheat production in the Central and South regions.

Wheat has strategic importance in the Kurdistan Region and Iraq. Therefore, it accounts for approximately 70% of grain production in the Kurdistan Region. The ninth cabinet of the Kurdistan Regional Government (KRG) encourages agricultural production more as it focuses on agricultural production in the Kurdistan Region. With the recent increase in rainfall, there has been an increase in wheat production in the Kurdistan Region. Artificial irrigation is generally done in the Central and Southern regions of Iraq. Chart 1 shows the wheat produced in the Kurdistan Region in 2022-2023.

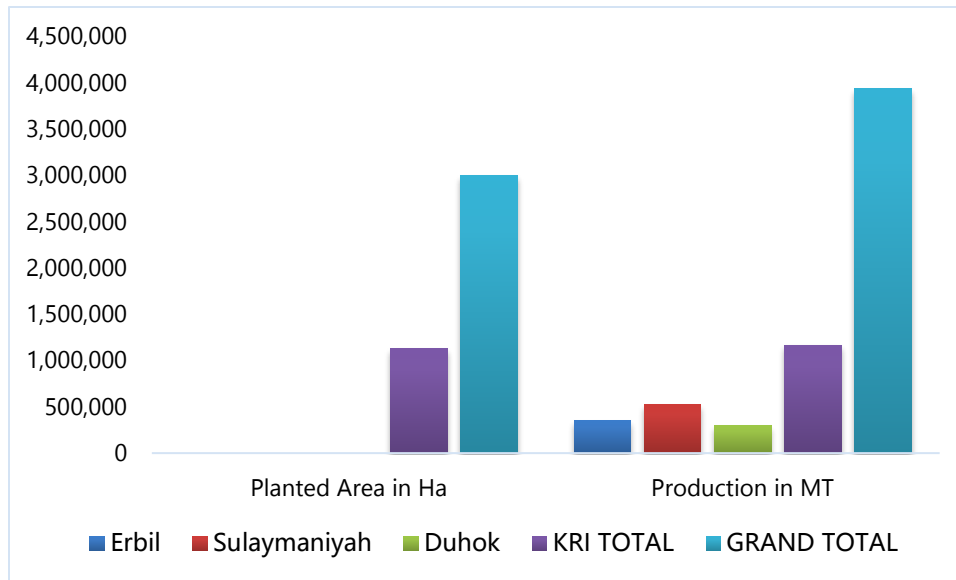


Chart 1. The amount of Wheat Produced in the Kurdistan Region in the 2022-2023 Period.

Source: United States Department of Agriculture (USDA), 2023

4.1. Wheat Production by Region in the Kurdistan Region

It is estimated that approximately 3.4 million tons of wheat can be harvested in the Kurdistan Region and Iraq for 2023-2024, depending on the increase in rainfall. It is estimated that the harvest to be made in the harvested areas in the Kurdistan Region and the Central and South regions of Iraq could be approximately 3.4 million hectares. Table 1 shows the harvest amounts by governorates in the Kurdistan Region.

Table 1. The Harvest Amounts by Governorates in the Kurdistan Region.

Governorates				Surface water		Groundwater				
	Secured rainfall	Semi secured rainfall	Not secured rainfall							
				Flood	Sprinkler	Flood	Sprinkler	Irrigated	Rain-Fed	Total
Erbil	63,520	127,559		2,607	4,621	168,5	70,282	77,678	191,079	268,757
Duhok	187,503			1,900	5,875	2,175	25,913	35,863	187,503	223,366
Sulaymaniyah	191,151	105,273	20,350	49,328	2,125	3,500	1,475	56,428	314,524	370,952
Halabja	9,525			4,250		1,250		5,500	9,525	15,025
Total	451,699	232,832	20,350	58,092	12,621	7,093.5	97,670	175,469	702,631	878,100

Source: USDA, 2023

According to Dri (2023), farmers expected the wheat harvest to be abundant due to the lack of rainfall in the Kurdistan Region for the past two years. However, rather than benefiting from the wheat harvest, Kurdish farmers sell their products at cheaper prices than farmers in Iraq. This situation puts Kurdish farmers under economic pressure. For example, 1,000 tons of wheat were produced in Duhok's Semel district, but the Iraqi Government purchased approximately 200 tons. 630 tons of wheat were sold to enterprises, and the remaining 170 tons increased. In this case, those who buy wheat from Kurdish farmers at a low price sell it to the Iraqi Government at a high price. Farmers state that they can receive money if the Federal Iraqi Government pays the buyers, and this puts further economic strain on Kurdish farmers.

While the Baghdad Government purchases a significant portion of the wheat grown in various regions in Iraq, it purchases only a small portion of the wheat grown in the Kurdistan Region. So, while the Iraqi Government pays Kurdish farmers around IQD850.000 (\$654.50) per tonne, enterprises pay Kurdish farmers around IQD500.000 (\$385). In this case, farmers in Duhok spend approximately IQD100.000.000 (\$77.000,06) on irrigation for growing wheat. Iraqi Government agreed to buy approximately 500.000 tons of wheat from the Kurdistan Region.

Since farmers in the Kurdistan Region produced wheat in different amounts, if approximately 2.000 tons were produced, approximately 600 tons of wheat was sold to the Iraqi Government, and the remaining wheat was sold in the markets. Kurdish farmers had to sell for half of what the Iraqi Government paid them. According to Kurdish farmers, 2023 is a bumper year in terms of harvest, and due to insufficient payments in wheat sales, they could not benefit from the superior harvest. Approximately 425.000 tons of wheat were produced in Duhok, but the Baghdad Government purchased only around 125.000 tons. Therefore, many farmers started to make losses.

There are some disputes regarding wheat production in the Kurdistan Region. However, the Kurdistan Region started to produce while previously dependent on consumption. With the wheat produced, wheat imports have been wholly reduced and contribute more to the Kurdistan Region's agricultural production. While around 1.170 million tons of wheat is produced in the Kurdistan Region, according to agricultural economists, it is predicted that it may increase to around 3 or 4 million within the scope of the 2030-2050 Sustainable Development Government (SDGs).

As known, wheat is the most essential agri-food product that will reduce famine, and wheat silos should be increased further in the Kurdistan Region. The most important reason is that it can be stored for years against the effects of famine that may arise due to global warming. For example, thousands of years ago, Prophet Yusuf's idea of producing wheat against the famine that the world occurred due to the lack of rainfall for seven years thousand years ago and of building silos and storing produced wheat in silos enabled Egypt to avoid famine for seven years. The ninth cabinet of the KRG focused on agricultural production and plans to produce essential agri-food products such as wheat and store them in silos against the climate problem that may arise due to global warming, and to prevent the people of the Kurdistan Region from facing the problem of hunger, have begun to be implemented steadily.

5. Sectoral Distribution Estimates of Kurdistan Region GDP within the Scope of 2030-2050 Sustainable Development Goals (SDGs)

While the Kurdistan Region was a consumption-based society in recent years, it has recently started producing other than oil. This production is generally agricultural and will meet domestic and worldwide demand. While the economy of the Kurdistan Region is generally dependent on oil, it has begun to focus more on agricultural production. The ninth cabinet of the Kurdistan Regional Government (KRG) encourages production to increase agricultural production. The most agricultural activities occur in the Kurdistan Region, Akrê, Berwary, Bardarash, and Halabja. The increase in agricultural activities is carried out.

The increase in agricultural activities in the Kurdistan region will play a significant role in increasing the GDP of the Kurdistan Region. Macroeconomists predict that within the scope of the 2030-2050 Sustainable Development Goals (SDGs), agricultural activities will constitute a large part of the GDP of the Kurdistan Region. Chart 2 shows the sectors that will play an essential role in increasing the GDP of the Kurdistan Region in 2030, and Chart 3 shows the sectors that will play an essential role in increasing the GDP of the Kurdistan Region in 2050.

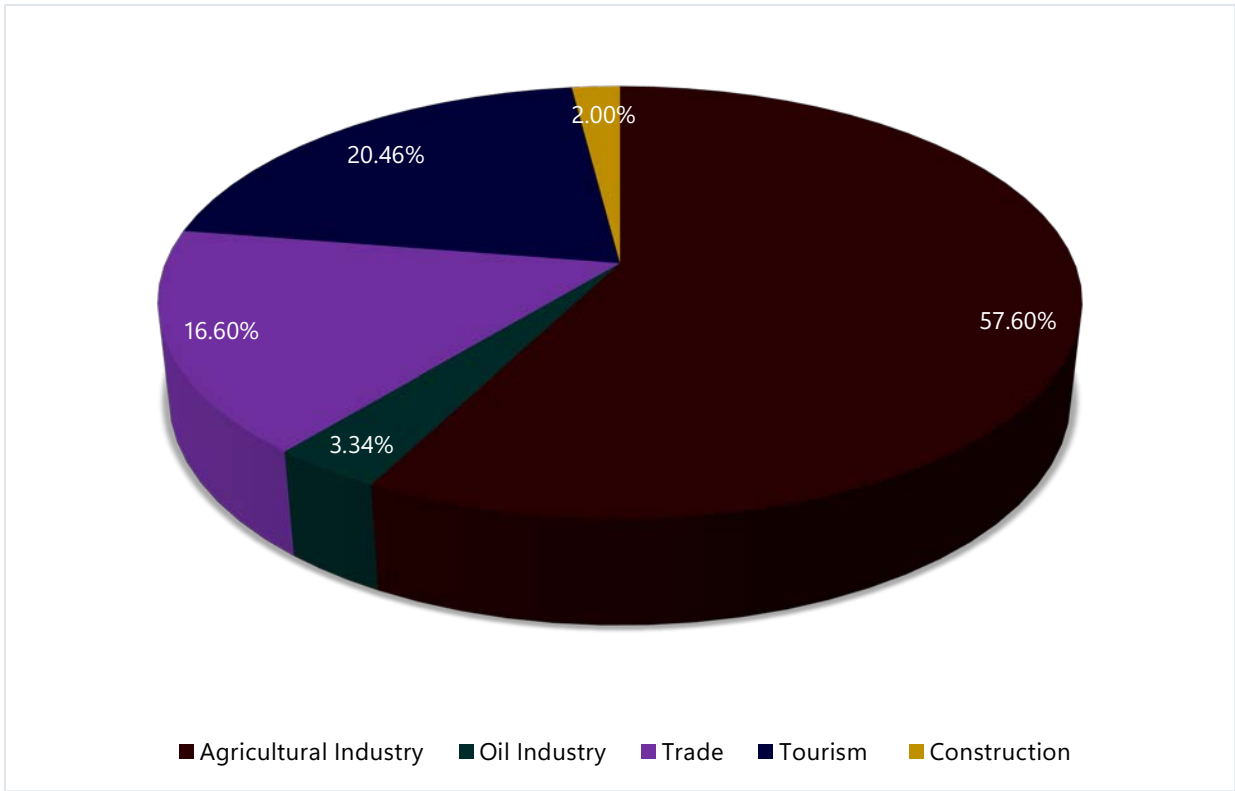


Chart 2. The Sectors that will Play an Important Role in Increasing the GDP of the Kurdistan Region in 2030.

Source: Created by Author

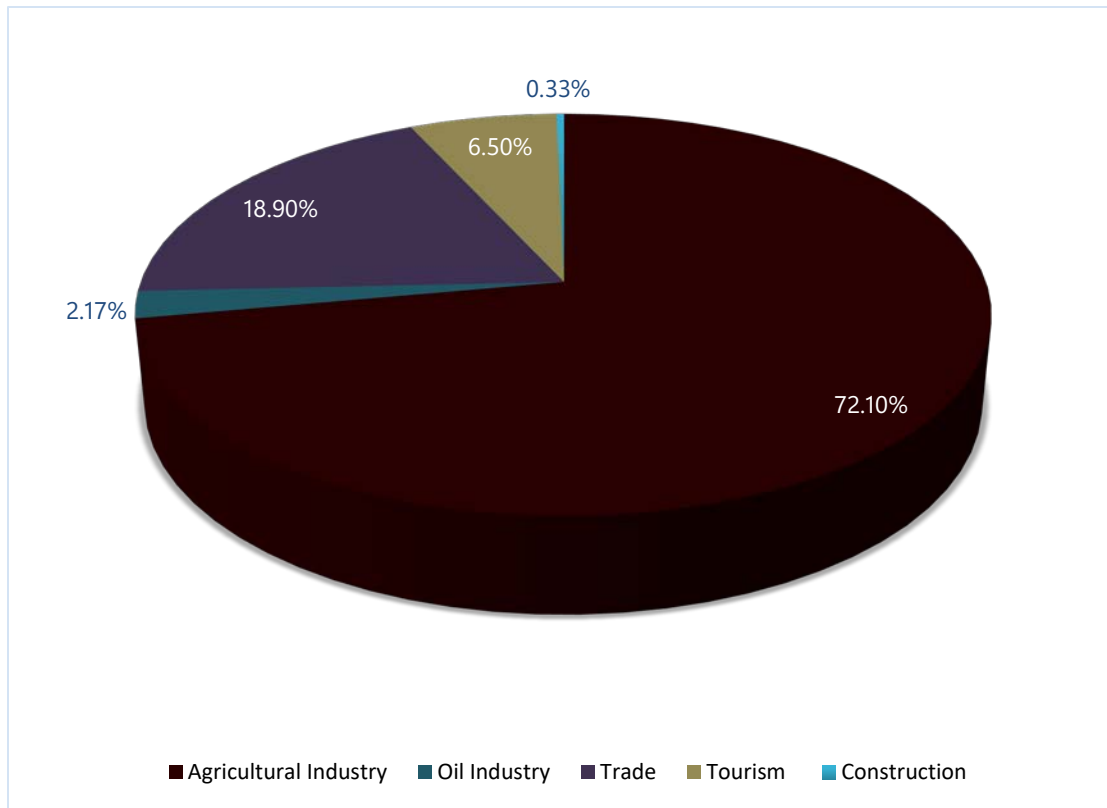


Chart 3. The Sectors that will Play an Important Role in Increasing the GDP of the Kurdistan Region in 2050.

Source: Created by Author

Chart 2 and Chart 3 include predictions made by sector between 2030 and 2050. Estimates show that the agricultural sector plays a critical role in increasing the GDP of the Kurdistan Region. It is seen that the oil industry, which plays an essential role in increasing the GDP of the Kurdistan Region, is gradually decreasing. The most important reason is to increase agricultural production against climate change caused by global warming. The ninth cabinet of the Kurdistan Regional Government (KRG) started to take measures to increase agricultural production against climate change.

Until now, oil has played a significant role in increasing the GDP of the Kurdistan Region. Increasing agricultural activities in the Kurdistan Region has become an essential measure against the climate crisis that will occur due to global warming. The climate crisis continues to cause concern about famine worldwide. Today, many large investors have started to invest in agricultural lands as a precaution against famine. Investors in the US, Canada, the EU, the UK, Japan, and China have begun researching to cultivate agricultural lands that may be more valuable than money and gold. The research will be an essential measure against famine and suitable for growing many agricultural products.

It is predicted that the Kurdistan Region will become one of the most critical countries in the world in terms of agricultural production, with the agricultural policies to be implemented within the scope of the 2030-2050 Sustainable Development Goals (SDGs). Because, in the Kurdistan Region, the government greatly encourages agricultural production. Recently, the export of products produced in the Kurdistan Region plays a vital role in increasing the GDP in the Kurdistan Region. This situation shows that the impact of oil on GDP in the Kurdistan Region will decrease further in 2030 and 2050, and agricultural production may become even more effective.

6. Conclusion

The study examined the Kurdistan Region from both macroeconomic and agricultural perspectives. Therefore, the results show that the Kurdistan Region may be more important in terms of agricultural economy due to the implementation of 2030-2050 Sustainable Development Goals (SDGs) policies. According to estimates, the agricultural sector in the Kurdistan Region will play a critical role in the macroeconomic development of the Kurdistan Region will play a more important role in the macroeconomic development of the Kurdistan Region than the oil sector because the ninth cabinet of the Kurdistan Regional Government (KRG) focused more on agricultural activities in the Kurdistan Region. While the Kurdistan Region was based on consumption long ago, it has recently started focusing on production. Therefore, agricultural products grown in the Kurdistan Region began to be produced to meet domestic and international demand.

In the study, if the Kurdistan Region's 2030-2050 Sustainable Development Goals (SDGs) policies are implemented consistently in Akrê, Berwary, and Halabja in Canada, it has been discussed that it will be like provinces with intense agricultural activities, such as Saskatchewan, Manitoba, and Alberta. The Kurdistan Region will become the "World Agriculture Center" by implementing stable agricultural policies. Due to its fertile lands, many agricultural products are grown in the Kurdistan Region.

Climate change due to global warming has caused concern about worldwide famine; countries such as the US, Canada, the EU, the UK, and Japan have started implementing policies to increase agricultural production and investments. The ninth cabinet of the Kurdistan Regional Government (KRG) is among the first governments to implement policies to increase agricultural production against climate change due to global warming. The Kurdistan Region also appears to be the first country to take precautions against the famine that may arise due to climate change, compared to other Middle Eastern countries.

Agricultural production plays a significant role in the macroeconomic development of the Kurdistan Region and increasing GDP. This situation shows that the economy of the Kurdistan Region does not depend only on oil. Estimates show that agricultural production in the Kurdistan Region could account for approximately 57.60% of GDP in 2030 and 72.10% in 2050. It seems that the share of oil may decrease further. It is predicted that oil could account for approximately 3.34% of the Kurdistan Region's GDP in 2030 and approximately 2.17% in 2050. This shows that agricultural activities may play a critical role in the GDP of the Kurdistan Region in 2030-2050. The Kurdistan Region attracts the attention of many developed countries because it has fertile lands. Stable agricultural policies in the Kurdistan Region will enable many foreign countries to make agricultural investments within the scope of FDI in the Kurdistan Region.

Products grown in the Kurdistan Region are especially agri-food products such as pomegranate, potato, apple, rice, sumac, tomato paste, and tahini; they started being exported to the US, EU, the UK, and the GCC countries. The export of produced agricultural products is significant for the macroeconomic development of the Kurdistan Region and will ensure higher agricultural production in the Kurdistan Region. Especially in the Kurdistan Region, more silos should be installed where wheat, barley, grain, and various cereals can be stored. It should be increased by establishing silos in every city of the Kurdistan Region and the districts and villages of the cities. Enough wheat, grain, barley, and various cereals to last seven or ten years in the short term and twenty to fifty years in the long term should be produced and stored in silos. Thus, the Kurdistan Region will take necessary precautions to prevent famine that may arise due to climate change.

Due to the increase in agricultural production in the Kurdistan Region, an "Agricultural Exchange" should be established, and the prices of agricultural products should be determined in the planned Agricultural Exchange. The said "Agricultural Exchange" should be planned to be established under the Ministry of Agriculture and Water Resources and the Ministry of Trade and Industry. In this case, the agricultural products grown will be priced more fairly.

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