

Comparative Analysis of Food Security in Pakistan and Iran: Prospects for Improving Bilateral Trade and Cooperation

Dr Asia Mukhtar & Dua Hamid***

Abstract

As one of the central concerns of human beings for ensuring their survival, food security is a multi-faceted concept that includes regular and safe access to enough and nutritious food for an active and healthy lifestyle. Adopting a qualitative methodology, this study has focused on tracing the conditions and causes of food insecurity in Pakistan and Iran. In the case of Iran, the major constraints arise from its arid and semi-arid climate which curbs agricultural production, while the situation is aggravated due to the sanctions which not only put an end to the available subsidies but also reduce the purchasing power of the population. In Pakistan, the constraints mostly arise due to mismanagement and flawed policy-making in the agricultural sector. The lack of land reforms, ineffective water consumption methods, governmental neglect in the provision of subsidised agricultural input, and negligence in dealing with smuggling has exacerbated the food insecurity in the state. While addressing these issues can dramatically increase the food production of Pakistan, the same can be used to boost trade with Iran. As the economic sanctions on Iran have been the major impediment in the smooth trade relations between Iran and Pakistan, the alternative option is to use barter trade in goods and to engage private sector organisations. The last section of the paper provides policy recommendations for improving trade and cooperation between Iran and Pakistan that can not only enhance the food security in Iran but also the energy security in Pakistan. The recommendations include

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coordinating efforts in the research and development sector, improving border controls for preventing smuggling, and regularizing and channelizing trade, while also improving Pakistan's capacity for increasing agricultural production.

Keywords: Food Security, Bilateral Relations, Trade, Pakistan-Iran Relations

Introduction

Ensuring the availability of food has been the most central concern of human beings since the day human life existed on the face of the earth. Without food security, the survival and existence of the human race is unimaginable. As a concept, food security has evolved to reach its present multi-faceted form which includes the availability of sufficient food supplies on one hand while the adequate nutritious value on the other hand. Documented by the World Food Summit (1996), 'Food security refers to a situation in which all common masses possess economic and social access at all times to safe, sufficient, and nutritious food which not only meets food preferences but also the dietary needs for a healthy and active lifestyle.'¹ In contrast, as defined by the Food and Agricultural Organisation (FAO) of the UNO, 'food insecurity is a situation in which people lack regular access to enough safe and nutritious food for normal growth and development and an active and healthy lifestyle.'¹ The neighboring states of Iran and Pakistan, both have been facing food insecurity. While Pakistan's Global Hunger Index (GHI) score is 24.7, it is categorized as 'serious levels of hunger.'² Iran, with an index of 7.7 has a comparatively low level of food insecurity, however, its condition has been worsened with the recent droughts in 2021.³ In both states, natural environmental conditions, political issues, policy failures, and economic constraints including high levels of inflation and low levels of technological innovation have been responsible for food insecurity. Historically, the bilateral trade and cooperation between both states has remained unsteady due to the economic sanctions repeatedly imposed on Iran. Other political issues such as Pakistan's involvement in the Afghan jihad, as well as the cross-border smuggling, there have been some issues that have been the cause of frost in the relations. However, by increasing

¹ "Policy Brief- Food Security," Food and Agriculture Organization, accessed November 15, 2021, https://www.fao.org/fileadmin/templates/faoitally/documents/pdf/pdf_Food_Security_Cocept_Note.pdf.

² "Global Hunger Index, 'Pakistan,'" GHI, Accessed July 20, 2022, <https://www.globalhungerindex.org/pakistan.html>.

³ Global Hunger Index. 'Iran,' GHI, accessed July 20, 2022, <https://www.globalhungerindex.org/iran.html>.

bilateral trade and cooperation, both states can not only improve their food security, but can also enhance their coordination for better bilateral and regional relations. The first two sections of the article highlight the situation and factors responsible for food insecurity in Iran and Pakistan. The second section sheds light upon the prospects of improving trade relations and cooperation in the agricultural sector which can improve the food security of both states. The last section provides policy recommendations for both Iran and Pakistan to enhance cooperation in the food and agriculture sector.

Occupying a prominent position in the global food market by being an important exporter of agricultural products, Pakistan still struggles with food insecurity. Despite possessing one of the world's largest irrigation systems,⁴ being amongst the top ten producers of cotton,⁵ wheat,⁶ mango,⁷ sugarcane, oranges and dates; and occupying the top 10th position of rice producers in the world,⁸ Pakistan still faces food insecurity. The food insecurity that Pakistan inherited at the time of its inception persists at exacerbated levels as the International Food Security Assessment (2021-2031) by the US Department of Agriculture reported that 38 per cent of population in Pakistan is food insecure, making it 90.7 million people facing the crisis.⁹ According to the World Food Program Report of Pakistan, in 2020-2021, 20.5 per cent of the population in Pakistan was undernourished and 44 per cent of the children under the age of 5

⁴ Muhammad Basharat, "Water Management in the Indus Basin in Pakistan: Challenges and Opportunities," In *Indus River Basin: Water Security and Sustainability*, ed. Thomas Adams and Sadiq Khan (Amsterdam: Elsevier, 2019), 375-388.

⁵ Elke Hortmeyer, "Top 10 Cotton Producing Countries in the World," Discover Natural Fibres Initiative, accessed July 01, 2022, https://dnfi.org/cotton/top-10-cotton-producing-countries-in-the-world_4785/.

⁶ "Wheat Production by Country 2021," World Population Review, January 10, 2022, <https://worldpopulationreview.com/country-rankings/wheat-production-by-country>.

⁷ "Top 15 Biggest Mango Producers." Ranking Royals, accessed January 10, 2022, [https:// rankingroyals.com/top-15-biggest-mango-producers/](https://rankingroyals.com/top-15-biggest-mango-producers/).

⁸ "Pakistan Ranking in the World," Ayub Agriculture Research Institute, accessed December 15, 2021, https://aari.punjab.gov.pk/pak_ranking.

⁹ Farrukh Saleem, "Food Insecurity," *The News International*, August 15, 2021, <https://www.thenews.com.pk/print/878304-food-insecurity>.

continued surviving with stunted growth.¹⁰ Additionally, in the statistics of Food Security Index, the position of Pakistan is yet again not laudable. In 2020, Pakistan was ranked on 80th position out of 113 countries in the Global Food Security Index.¹¹

The official statistics of the Pakistani government regarding agricultural production and food availability in Pakistan portray a partially promising picture. The table below depicts the food availability in Pakistan from the year 2019-2022.

Food Items	2019-20	2020-21	2021-22 (P)**
Cereals	139.9	170.8	164.7
Pulses	7.8	7.6	7.3
Sugar	23.3	28.5	28.3
Milk (Liter)	168.7	171.8	168.8
Meat (Beef, Mutton, Chicken)	22.0	22.9	22.5
Fish	2.9	2.9	2.9
Eggs (Dozen)	7.9	8.2	8.1
Edible Oil/ Ghee	14.8	15.1	14.5
Fruits & Vegetables	53.6	52.4	68.3
Calories/day	2457	2786	2735

Source: M/o PD&SI (Nutrition Section)

Source: Ministry-of-Finance. 2022. 'Health and Nutrition', Pakistan Economic Survey 2021-2022. Islamabad: Pakistan Bureau of Statistics

Presenting these statistics, the government of Pakistan has claimed that Pakistan produces enough food for domestic consumption. While an average person requires between 1800 to 2500 calories per day, the data reveals that the calories available per person per day were sufficient in 2019 and have been in surplus since 2020.

¹⁰ "Country Brief- Pakistan," World Food Program, accessed October 2022, <https://docs.wfp.org/api/documents/WFP0000133985/download/?ga=2.203646997.402553185.1638789858-123792941.1638008043>.

¹¹ "Food-insecure nation," Dawn, accessed July 31, 2021, <https://www.dawn.com/news/1633265/food-insecure-nation>.

Similarly, the agricultural statistics are presented with the claim that the agricultural growth of 4.40 per cent against the target of 3.5 per cent has been highly encouraging.¹² As the graph below depicts, keeping aside a slight decline in the productivity of categories, ‘fishing’ and ‘other crops,’ almost all sectors of agricultural production have shown commendable growth.

Table 2.1: Agriculture Growth (Base=2015-16) (%)

Sector	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22 P
Agriculture	2.22	3.88	0.94	3.91	3.48	4.40
1. Crops (i+ii+iii)	1.37	4.61	-4.38	6.32	5.96	6.58
i) Important Crops	2.68	4.27	-8.59	5.24	5.83	7.24
ii) Other Crops	-1.24	4.65	3.62	9.21	8.27	5.44
iii) Cotton Ginning	5.24	8.27	-11.23	-4.06	-13.08	9.19
2. Livestock	2.89	3.59	3.65	2.80	2.38	3.26
3. Forestry	-2.92	2.24	7.22	3.36	-0.45	6.13
4. Fishing	1.22	1.57	0.78	0.63	0.73	0.35

P: Provisional
Source: Pakistan Bureau of Statistics

Source: Ministry of Finance. 2022. ‘Agriculture’, *Pakistan Economic Survey 2021-2022*. Islamabad: Pakistan Bureau of Statistics

Despite the governmental claims of Pakistan being self-sufficient in food production and having promising agricultural growth, Pakistan scored 24.7 on the Global Hunger Index in 2021, and acquired 92nd position out of 116 countries.¹³ The Hunger Index score for Pakistan is categorised as ‘serious.’ This situation brings forth the question of the causes of food insecurity in Pakistan -- a state that has the capacity of exporting agricultural products.

According to the World Food Program (WFP), unaffordability is the greatest barrier to a healthy and nutritious sufficient diet. In Pakistan, the economic instability, flawed agricultural policies, sky-rocketing poverty, unemployment, and inflation all contribute in aggravating the food crisis

¹² Shahzad Paracha, “Agriculture sector surpasses growth targets in FY 2022,” *Pakistan Today*, June 9, 2022, <https://www.pakistantoday.com.pk/2022/06/09/agriculture-sector-surpasses-growth-targets-in-fy2022-sector%20has,surpassed%20the%20target%20of%203.5%25>.

¹³ “Global Hunger Index 2021: Iran,” GHI, accessed January 5, 2022, <https://www.globalhungerindex.org/pdf/en/2021s/Iran.pdf>.

in the country. While unemployment remains a global developmental issue; in Pakistan it has continuously been following an upwards trend for the past few years. According to the statistics published by Pakistan Bureau of Statistics (PBS), the unemployment rate jumped from 5.8% in FY 2017-2018 to 6.9% in FY 2018-2019.¹⁴ The Covid-19 pandemic worsened the situation and according to the statistics of Pakistan Institute of Developmental Economics (PIDE), the actual rate of unemployment currently in Pakistan is around 16 per cent.¹⁵ Such massive two-digit rates of unemployment have an immediate impact on undermining the food security of families with unemployed people.

Owing to the economic crisis, out of which Pakistan hardly ever moved out, the amount of loans is always mounting with the servicing and structural adjustments tightening continuously. Around 30% of Pakistan's federal budget is spent on servicing the debt. While efforts have been made to negotiate the IMF Conditionality, the negotiations with the loans taken in 2021 failed to bring about any relaxation in the austerity measures and budget cuts in governmental spending. The IMF Conditionality combined with the impacts of Covid-19 had accelerated the inflation rate of Pakistan up to 24.9 per cent by the mid of 2022.¹⁶ Resultantly, the agriculture and the food sector has remained amongst the worst hit ones with food inflation being recorded at a high of 19.5 per cent in 2022.¹⁷ The top five commonly used food commodities showing a sharp incline in prices include: eggs (32.88 per cent), mustard oil (32.34 per cent), vegetable ghee (23.75 per cent), condiments and spices (23.27 per cent), cooking oil (21.93 per cent), sugar (21.54 per cent), tomatoes

¹⁴ Nasir Jamal, "Joblessness jumped in 2018-19: labour survey", Dawn, September 17, 2021, <https://www.dawn.com/news/1646761>.

¹⁵ Nadir Gurmani, "24pc educated people are jobless countrywide, Senate body told," DAWN, September 27, 2021, <https://www.dawn.com/news/1648765>.

¹⁶ Shahbaz Rana, "Inflation rate highest since Great Recession," The Express Tribune, August 2, 2022, <https://tribune.com.pk/story/2369084/inflation-rate-highest-since-great-recession>.

¹⁷ Mohiuddin Azam, "Furious Food Inflation," DAWN, February 14, 2022, <https://www.dawn.com/news/1674954>.

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(19.67 per cent), wheat (18.99 per cent), meat (16.66 per cent) and milk (14.19 per cent).¹⁸

Amongst natural conditions that affect the food security of Pakistan include the state's vulnerability to natural disasters such as drought, famine, floods and earthquakes. According to German Watch, in global ranking, Pakistan is listed in the top ten countries threatened by climate change.¹⁹ As the number of floods in two decades, from 1993-2013 increased up to 54, the country has also faced worst droughts in Sindh since 2014, thus negatively affecting the food security of the state.²⁰ More recently, the floods of 2022 have wreaked a havoc on the state of Pakistan, with over 1100 people losing their lives, half a million being displaced from their homes and the agricultural production, including many crops such as rice, cotton, onions and tomatoes being completely wiped out. This has dramatically threatened the food security of the state by making the food unavailable in the first place, and also by drastically increasing the food inflation to over 25 per cent by July 2022.²¹

In addition to droughts and floods, one of the most serious environmental threats to the agricultural production and food security of Pakistan is water scarcity. Pakistan faces acute water scarcity, despite the fact that it is located in Indus Water Basin and possesses numerous glaciers. The water scarcity in Pakistan not only jeopardizes the present food and agricultural production but is also a threat for future generations as multiple reports have assessed that Pakistan could 'run dry' by 2025, and

¹⁸ Munawar Hasan, "Despite claims, Pakistan poised to be most food-insecure in region," *The News*, August 1, 2021, accessed December 01, 2021 <https://www.thenews.com.pk/print/871469-despite-claims-pakistan-poised-to-be-most-food-insecure-in-region>.

¹⁹ "Pakistan Economic Survey 2020-2021," Ministry-of-Finance, accessed January 27, 2022, https://www.finance.gov.pk/survey/chapters_21/Overview.pdf.

²⁰ Phoebe Sleet, "Food Security in Pakistan: Surplus Food is not Enough to Create a Food Secure Country," *Nedlands: Future Directions International* (2019).

²¹ Faseeh Mangi and Ismail Dilawar, "Pakistan's Food Security Threatened by Massive Flooding", *TIME*, August 31, 2022, <https://time.com/6209889/pakistan-food-floods/>.

become the ‘most-water-stressed’ country in the world by 2040.^{22 23} In Pakistan, a major cause of water scarcity has the poor water management policy which includes lack of reservoirs and dams. With over 5000 glaciers in the northern areas of the country, glacial runoff and snowmelt add up to 35 per cent to 40 per cent respectively in Pakistan’s hydrological cycle. However, as Pakistan’s water storage spaces have a storage capacity limited to 30 days only, the country faces drastic droughts and devastating floods in the dry and wet seasons respectively. With the two largest dams in Pakistan, Tarbela, and Mangla, hitting their dead levels each year since 2018, the surface water availability for agricultural production has been seriously constrained. As the figure below elucidates, the water availability for the Rabi and Kharif crops remains insufficient over the years. Thus, the Ministry of Food and Agriculture has claimed that water scarcity is one of the major challenges to agricultural production.

Period	Kharif	Rabi	Total	% age increase/decrease over the average system usage (103.5 MAF)
Average system usage	67.1	36.4	103.5	-
2011-12	60.4	29.4	89.8	-13.2
2012-13	57.7	31.9	89.6	-13.4
2013-14	65.5	32.5	98.0	-5.3
2014-15	69.3	33.1	102.4	-1.1
2015-16	65.5	32.9	98.4	-4.9
2016-17	71.4	29.7	101.1	-2.3
2017-18	70.0	24.2	94.2	-9.0
2018-19	59.6	24.8	84.4	-18.5
2019-20	65.2	29.2	94.4	-8.8
2020-21	65.1	31.2	96.3	-7.0

Source: Indus River System Authority

Source: Ministry-of-Finance. 2021. *Pakistan Economic Survey 2020-2021*. Islamabad: Pakistan Bureau of Statistics.

The table above has provided an analysis of the required water for the Kharif and Rabi crops, compared with the actual availability of surface water. The record of the past decade elucidates that water has never been

²² Usmaan Farooqui, "The Cost of Pakistan’s Dam Obsession," *The Diplomat*, March 4, 2021, <https://thediplomat.com/2021/03/the-cost-of-pakistans-dam-obsession/>.

²³ Phoebe Sleet, "Food Security in Pakistan: Surplus Food is not Enough to Create a Food Secure Country," *Nedlands: Future Directions International* (2019).

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sufficiently available for the crops. The minimum water deficit of -1.1 per cent was recorded in 2014-2015, while the maximum had been recorded in 2018-19 with a deficit of -18.5 per cent. As an agricultural country, with a majority of the population relying on agriculture for the provision of livelihood and food, water scarcity has drastic consequences for the food security of Pakistan.

In case of Pakistan, the construction of dams has remained a controversial issue. While the hype surrounding Kalabagh dam subsided over the years after becoming a victim of political controversy, the construction of Diamer-Bhasha and Mohmand Dams have been in limelight since the former Chief Justice Saqib Nisar and Prime Minister of Pakistan Imran Khan began the campaign of crowd funding for the dam. The extent to which the dams can resolve the issue of water scarcity remains debatable. While there is no doubt that the construction of these dams will increase the water storage capacity of Pakistan from 30 days to 48 days, Professor Danish Mustafa from Kings College London asserts that surface storage is highly inefficient as they only increase seasonal storage.²⁴ Additionally, the cost of building these dams is another controversial issue with years of crowd funding bringing about no laudable results due to the high cost of building a dam. While the cost of building the dam is a major obstacle, the fact that it can improve at least the seasonal storage of water is critically important for Pakistan to improve the availability of water and have improved flood mitigation.

Pakistan's current rate of water consumption is ranked 4th highest in the world, with 93 per cent of the water being consumed by the extremely water-intensive agricultural sector that still relies on outdated irrigation systems. Furthermore, the over-reliance on groundwater resources after the depletion of surface water resources has resulted in the dramatic decline in the groundwater tables in the Indus River Basin. While the

²⁴ Ibrahim Usmani, "What value does Diamer Bhasha Dam provide to Pakistan?," The News International, September 28, 2020, <https://www.thenews.com.pk/print/721481-what-value-does-diamer-bhasha-dam-provide-to-pakistan>.

Indus River Basin has become one of the most stressed underground aquifers, the number of tube wells being drilled in Pakistan is ever-increasing with over 1.3 million wells recorded in 2017. This groundwater reserve is accounting for up to 80 per cent of crop production in Pakistan.²⁵ Thus, agriculture in Pakistan is not only the victim of water scarcity, rather it has also been the cause of water scarcity in the country which has created a vicious cycle of water scarcity and food insecurity.

Agriculture is one of the most important sectors in the economy of Pakistan, contributing about 19.5 per cent to the GDP, providing employment to over 38.5 per cent population, and having over 70% of the population depending on it for its livelihood.²⁶ Yet, agriculture has been largely neglected in improved policy-making that has adversely affected not only production levels but also food availability in the country.

The flawed policy making has affected the food security and the agricultural sector in multiple dimensions. The former government of Pakistan Tehreek-i-Insaaf (PTI) (2018- 2022) started with the Ehsaas Program. Under the program, the government's focus was to transfer cash (an amount of Rs12000 per family) to the targeted families in order to improve the food security conditions. This approach attracted much criticism for being unsustainable in nature. Former Finance Minister, Hafeez Pasha took a swipe on the government's agricultural neglect and asserted that the reason of food inflation and insecurity was the high cost of agriculture in the past few years. With the electricity and gas prices hiking, the devaluation of rupee and the costs of fertilisers and seeds

²⁵ Usman Farooqui, "The Cost of Pakistan's Dam Obsession," *The Diplomat*, March 4, 2021, <https://thediplomat.com/2021/03/the-cost-of-pakistans-dam-obsession/>.

²⁶ "Pakistan Economic Survey 2020-2021," Ministry-of-Finance, accessed January 27, 2022. https://www.finance.gov.pk/survey/chapters_21/Overview.pdf.

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increasing dramatically, the food security and self-sufficiency becomes a challenging goal.²⁷

The PTI government also came up with schemes to provide subsidised agricultural products, but these too have challenges associated. Of late, the PTI government in Punjab issued the Punjab Kissan Card scheme to help small farm holders' gain easy and direct access to government subsidies for fertilisers, seeds, and pesticides, and small loans on easy conditions in the long run. Similar ambitious schemes for agricultural financing have been rolled out by predecessor governments. As accounted by the State Bank of Pakistan, between 90-94 per cent of the loans are utilized in agricultural production, such as buying seeds and fertilizers; while only a miniscule amount of 6-10 percent is invested in the agricultural research and development sector. Resultantly, while machinery is bought and tunnel farms are constructed, there persists a lack of research focus on strategies and methods that can improve the crop yield while minimising the waste.²⁸ Almost none of the governments has paid due attention to tackling long-term issues such as loss of soil fertility, low levels of technological advancement, poor quality seeds, and waste of water resources.²⁹

Another way in which policy neglect affects food security in Pakistan is in the form of smuggling. According to Nizamanni, the policymakers of Pakistan have no idea about the time when food prices are higher in the international market as compared to the local support price. Due to this major neglect, the food finds its way to the food-scarce neighboring states of Pakistan such as Afghanistan and Iran, thus benefitting a few agricultural investors at the expense of the wider population of the

²⁷Qamar-uz-Zaman, "Low earnings and agricultural neglect push Pakistan into food insecurity," *The Third Pole*, December 11, 2020, <https://www.thethirdpole.net/en/food/low-earnings-and-agricultural-neglect-push-pakistan-into-food-insecurity/>.

²⁸Mohiuddin Aazim, "Need to overhaul agricultural finance regime," *Dawn*, March 8, 2021, <https://www.dawn.com/news/1611249>.

²⁹"Neglect of farm sector," *DAWN*, August 17, 2021, <https://www.dawn.com/news/1641140/neglect-of-farm-sector>.

country. As a result of smuggling, food scarcity is created in Pakistan. To meet the demands of the domestic market, Pakistan has to import wheat on higher prices- a commodity which has the tendency to be produced in surplus. Most recently, the government has allowed the private sector to import wheat since 2020, by relaxing the import tariffs in order to meet the local food demand.³⁰ As a result of such flawed policies, Pakistan has become a net importer of food which has caused a loss of billions of rupees to Pakistani farmers. A recent example of this has been the imported wheat price of Rs2500 per 40 kg against the federal government's support price of Rs1800 per 40 kg- causing a loss of over Rs400 billion to Pakistani farmers.³¹

Summing up the food security condition of Pakistan, it can be easily concluded that despite massive potential, the country is facing a 'serious' level of food insecurity. Being an agricultural state with fertile soil and ample water resources, the food and agriculture crisis mainly owes to flawed policymaking. The economic downturn and uncontrolled inflation on the one hand makes food inaccessible for the poor and unemployed; and on the other hand, increase the prices of seeds and fertilizers to the point that the agricultural input becomes unaffordable. In natural conditions, while Pakistan is highly vulnerable to the effects of climate change, water scarcity is one of the most serious threats to agricultural production and food security. Here again, policy neglect appears to be the main culprit for the crisis. With multiple glaciers and the Indus River System flowing, water scarcity should not have been an issue. However, the inefficient agricultural methods that lead to over-consumption and abstraction as well as the alarmingly low storage capacity of only 30 days in dams are the policy failures that have resulted in water scarcity being a threat to food security. Lastly, agricultural neglect yet again comes forth as responsible for food insecurity in Pakistan. The lack of coordination with international market prices and the unsatisfactory condition of law

³⁰ Mehtab Haider, "Wheat Fiasco," *The News International*, October 2021, <https://www.thenews.com.pk/magazine/money-matters/724557-wheat-fiasco>.

³¹ Aijaz Nizamanni, "Wheat import and food security," *Dawn*, October 22, 2021, <https://www.dawn.com/news/1653353>.

and order has encouraged cross-border smuggling which has created a scarcity of basic food items such as wheat and sugar. Additionally, while subsequent governments have brought forth ambitious programs to reinvigorate the agricultural sector, the overall focus has been on short-term goals such as providing subsidised seeds and fertilisers, and loans on easy conditions. There has been negligence in technological advancement, mechanisation, and research and development in the agricultural sector which has hampered the food security in the state.

Food Security in Iran

Historically, owing to its arid and semi-arid natural climate, achieving and maintaining food security in Iran has been a challenge. Droughts and famines had threatened the food insecurity of Iran during the Anglo-Soviet years and had exacerbated to unprecedented levels in the Shah's regime. With the 1979 revolution, ensuring self-sufficiency in food became one of the imperative objectives of the regime as it got enlisted in the constitution. Expecting the repercussions of economic sanctions that were imposed on Iran almost immediately after the Revolution, the new regime adopted a number of policies focusing on the agenda of food self-sufficiency such as subsidies to the farmers and increased tariffs on the imported food products.³² The policies adopted by the revolutionary regimes brought about positive improvement in the food security indicators in Iran. For instance, the Global Hunger Index (GHI) indicated that the number of people suffering from hunger in Iran declined from 8.5 in 1990s to below 5 in 2014. Furthermore, there has been a decrease in the number of underweight children from 16 per cent in 1988 to less than 4.1 per cent in 2012. By 2012, quite impressively, Iran became the 12th largest wheat producer in the world, which dramatically reduced the amount of its wheat imports. The efforts to move towards self-sufficiency also brought about some positive results as in 1979, Iran was importing 65 per cent of the food it consumed annually, whereas in 2014, it started to

³² David Michel, "Iran's troubled quest for food self-sufficiency," Atlantic Council, July 9, 2019, <https://www.atlanticcouncil.org/blogs/iransource/iran-s-troubled-quest-for-food-self-sufficiency/>.

produce 66 per cent of its local food consumption demand.³³ However, while Iran combatted its natural environmental conditions to an extent to improve its food security conditions, the economic sanctions reversed some achievements in food security. In the year 2019, over 42.5 per cent of the Iranian population was facing moderate to severe food insecurity.³⁴ As of 2021, Iran has been ranked in 35th position in the Global Hunger Index out of 116 countries. Iran's GHI, which had dropped to less than 5 has inclined to 7.7 in the year 2021, and the percentage of the undernourished population has inclined from less than 4.1 per cent to over 5.5 per cent in 2021.³⁵

Iran's natural environmental conditions and constraints continue to threaten agrarian production and associated food security in Iran. With Iran being an arid and semi-arid climatic state, droughts remain a permanent climatic constraint to its food production. Due to the aridity, agriculture remains the most water-intensive sector, making up to 90 per cent of the water consumption in Iran. The figure below depicts the water consumption in the agricultural sector in comparison with industry and portable usage. The government's policies to regulate water consumption and limit over-consumption by prohibiting the drilling of unlicensed wells in water-scarce areas have largely failed as reported in the study conducted by Nabavi (2018). Furthermore, the pro-agricultural policies adopted since the revolution of 1979, including the water and energy subsidies have only led towards over-consumption and over-abstraction of groundwater resources. According to the study of Soltani et al., Iranian

³³ Soazic Heslot, "Iran's Food Security," Future Directions International, August 8, 2014, <https://www.futuredirections.org.au/publication/iran-s-food-security/>.

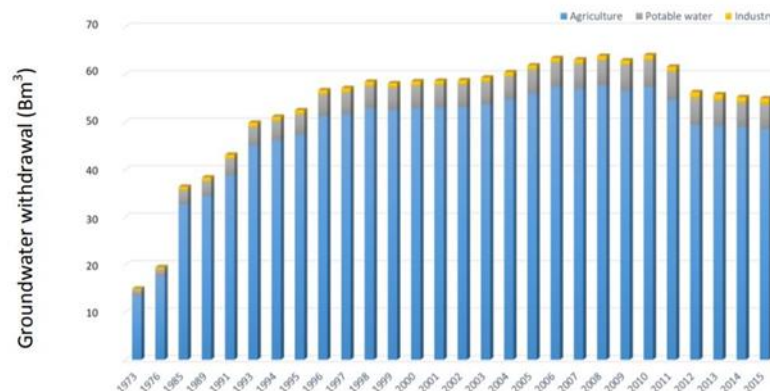
³⁴ "Prevalence of moderate or severe food insecurity in the population (%) - Iran, Islamic Rep.," World Bank-Data, accessed January 21, 2022. <https://data.worldbank.org/indicator/SN.ITK.MSFI.ZS?end=2019&locations=IR&start=2015>.

³⁵ "Global Hunger Index 2021: Iran," Global Hunger Index, <https://www.globalhungerindex.org/pdf/en/2021/Iran.pdf>. Accessed January 21, 2022.

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food self-sufficiency would drop to levels below 39 per cent if the current rate of water consumption for agriculture continued till 2030.³⁶

Figure 3. Groundwater use for different sectors (1973-2015).



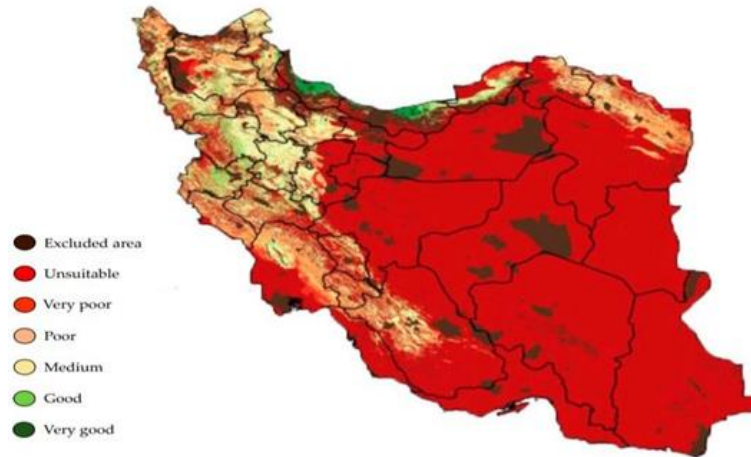
Source: Iran Water Resource Management Co.

Source: Ehsan Nabavi, "Failed Policies, Falling Aquifers: Unpacking Groundwater Overabstraction in Iran." Water Alternatives 11 no. 3 (2018): 699-724.

The graph above depicts the share of water consumption by different sectors of the Iranian economy. As evident from the graph, agriculture is the most water-intensive sector of Iran- thus worsening the issue of water scarcity.

The soil erosion and salinity make food production a challenge and the attainment of complete food self-sufficiency an unattainable goal. The diagram below indicates the soil suitability for cultivation in Iran.

³⁶ Abdullah Kaviani Rad, Redmond R. Shamschiri, Hassan Azarm, Siva Balasundram, and Muhammad Sultan, "Effects of the Covid-19 Pandemic on Food Security and Agriculture in Iran: A Survey." Sustainability 13 (2021): 1-19.



Source: Abdullah Kaviani Rad, Redmond R. Shamshiri, Hassan Azarm, Siva Balasundram, and Muhammad Sultan, "Effects of the Covid-19 Pandemic on Food Security and Agriculture in Iran: A Survey." *Sustainability* 13 (September, 2021) 1-19

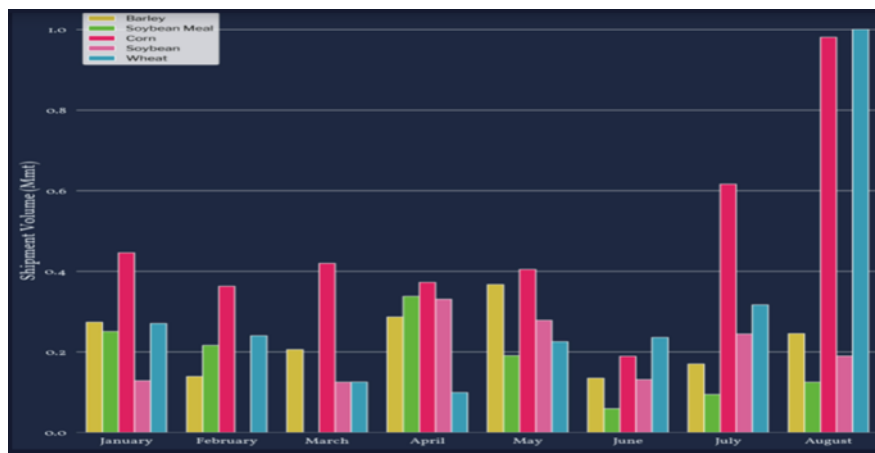
With water scarcity and high levels of soil salinity, food production does not meet the food demand in Iran, thus impeding Iran from reaching the goal of food self-sufficiency. The table below depicts the disparity in food production and demand in Iran, along with the percentage of self-sufficiency in the relevant food items.

Current food demand, production and self-sufficiency (SS) in Iran along with estimates of irrigation water needed to produce for self-sufficiency within the country and current water withdrawal for production of the products. A population of 80 million was used for demand calculations.

Product	Weight (million tons)		SS (%)	Water (billion m ³)	
	Demand	Production		Requirement	Withdrawal
Wheat	14.47	10.97	75.8	13.54	10.26
Unpolished Rice	4.46	2.49	55.8	16.29	9.10
Pulse	0.65	0.52	80.0	1.11	0.89
Potato	4.59	4.93	107.4	1.63	1.75
Oil grains	5.72	0.72	12.6	24.44	3.06
Sugar Crops	21.45	11.99	55.9	7.67	4.29
Fruits	14.51	17.78	122.5	20.96	25.68
Vegetables	14.36	22.27	155.1	4.12	6.39
Barley	4.56	3.00	65.8	4.30	2.83
Maize, grain	7.24	1.59	22.0	14.53	3.20
Maize, silage	9.28	9.38	101.1	2.75	2.78
Forage, legumes	11.02	11.45	103.9	11.06	11.49
Straw	7.07	6.58	93.1	0.0	0.00
Bran	3.36	1.84	54.8	0.0	0.00
Meal form oil crops	5.62	0.47	8.4	5.54	0.00
Forage, rangeland	10.24	10.00	97.7	0.00	0.00
Red meat	0.9	0.77	85.6	0.076	n.d.
Chicken meat	2.09	1.96	93.8	0.016	n.d.
Eggs	0.90	0.87	96.7	0.007	n.d.
Milk	8.64	8.37	69.9	0.053	n.d.
Fish	0.81	0.84	103.7	-	n.d.
Sum	151.9	128.8	84.8	128.1	86.1

Source: A. Soltania, S.M. Alimaghani, A. Nehbandani, B. Torabi, E. Zeinali, E. Zand, V. Vadez, M.P. van Loon, and M.K. van Ittersum, "Future food self-sufficiency in Iran: A model-based analysis," *Global Food Security* 24 (March 2020): 1-9, <https://doi.org/10.1016/j.gfs.2020.100351>

Furthermore, the irregular and sudden rainfall patterns cause recurrent floods and droughts which threaten the food security in Iran.



Source: AgFlow, "Here is Why Turkey and Iran Grain Imports Surged in August 2021," AgFlow. September 21, 2021. <https://www.agflow.com/agricultural-markets/here-is-why-turkey-and-iran-grain-imports-surged-in-august-2021/>.

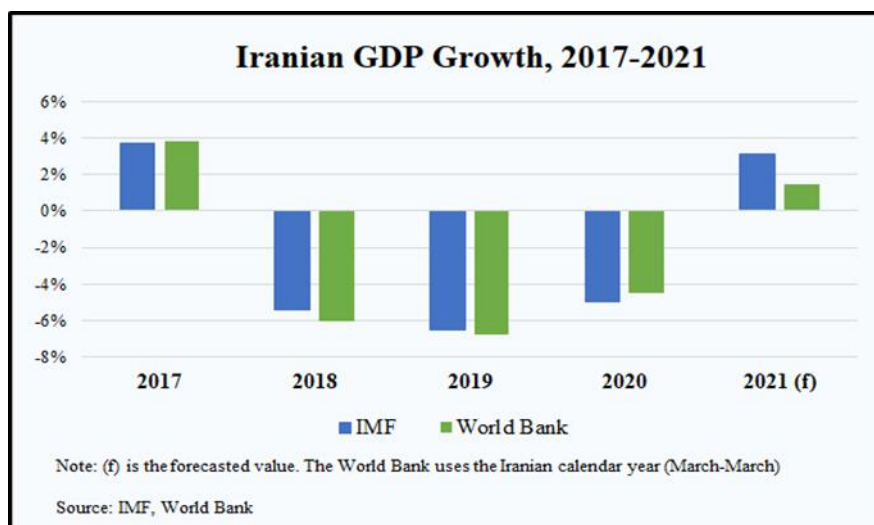
Most recently, in the Fiscal Year 2020-2021, the below average levels of rainfall have caused a massive drought that caused an insufficient local production, thus dramatically increasing the food imports. By August 2021, the wheat imports had increased up to 6 Million Tons, which further inclined up to 8 Million Tons by March 2022. The barley imports also increased from 3.2 Million Tons to 5.2 Million Tons.³⁷ According to Kaveh Zargaran from the Iran's Grain Union, the total Iranian imports of grains including meal and oilseeds would increase up to 25 million tonnes in the year 2022-23.³⁸ The figure below depicts the increase in imports of 5 basic food commodity products. The sharp incline in the import of staple food took place due to the drought which had made the local food production insufficient for the domestic demand.

³⁷ "Iran wheat imports soar due to drought," Grain Central, October 12, 2021, <https://www.graincentral.com/markets/iran-wheat-import-soars-due-to-drought/>.

³⁸ "Iran faces second year of big wheat imports after drought, says grain union," Reuters, May 10, 2022, <https://www.reuters.com/business/iran-faces-second-year-big-wheat-imports-after-drought-says-grain-union-2022-05-10/>.

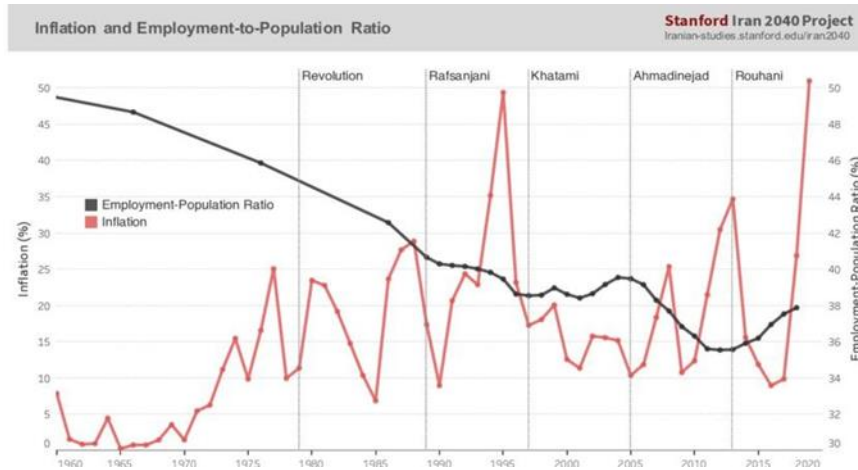
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Apart from the natural conditions and policy issues, the major factor in heightening the food insecurity in the current scenario is the re-imposition of US sanctions as well as the Covid-19 pandemic. As the sanctions barred the Iranian trade, restricted its oil and gas exports while also limiting the food imports from many of the states, Iranian economy faced massive shocks.



Source: Jalal Hejazi and Sara Emamgholipour, "The Effects of the Re-imposition of US Sanctions on Food Security in Iran." International Journal of Health Policy and Management 11, no. 5 (2022): 651-657.

While the economic conditions of Iran had improved after the uplifting of sanctions in the aftermath of JCPOA, the Trump administration revoked the sanctions while withdrawing from the Iran nuclear deal. This resulted in negative growth in the Iranian GDP since 2018, as depicted in the graph below.



Similarly, with declining economic conditions, the unemployment rate and inflation increased to unprecedented levels, worsening Iran's food insecurity. As shown in the graph above, Hejazi and Emamgholipour (2022) have studied the impacts of imposition of US sanctions on the food security in Iran. According to their analysis, the prices of most of the food products increased by 50 per cent between 2017 and 2019, as the USA re-imposed the sanctions in defiance of the JCPOA. The high-nutrition foods such as fruits, vegetables, and meat had the highest inflation whereas low nutrition food such as, bread and oil had low levels of inflation. As a result of the sanctions, and subsequent IMF efforts to bring about macroeconomic stability, the Iranian currency depreciated 10 times between 2017 and 2022³⁹ and its exchange rate value declined by 590 per cent. Resultantly, while prior to the imposition of sanctions around 10 per cent of the Iranian population was facing food insecurity, it heightened up to 50 per cent for the urban population and 24 per cent for the rural population.⁴⁰

³⁹ Syed Zafar Mehdi, "Iran's currency hits all-time low amid nuclear deal standoff," Anadolu Agency, June 12, 2022, <https://www.aa.com.tr/en/middle-east/irans-currency-hits-all-time-low-amid-nuclear-deal-standoff/2611949#>.

⁴⁰ Jalal Hejazi and Sara Emamgholipour, "The Effects of the Re-imposition of US Sanctions on Food Security in Iran," *International Journal of Health Policy and Management* 11, no. 5 (2022): 651-657

Fig.3. Prices of processed agricultural products on the market for Iranian consumers

Product	Price in March 2017 (IRR)	Price in March 2019 (IRR)	Price in mid-2021 (IRR)
1l Bottle of milk	28,000	45,000	71,000
1kg Red meat (Sheep)	394,000	950,000	1,200,000
1kg Chicken	88,000	165,000	350,000
1kg Rice	120,000	198,000	260,000
1kg Bananas	38,500	137,000	310,000
1kg Apples	110,000	115,000	139,000

Castlereagh Associates³⁴

Source: "AGRICULTURAL AND AGRI-FOOD INDUSTRY IN IRAN," *EU Sanctions Help Desk*, Accessed January 18, 2022, [https://sanctions-helpdesk.eu/sites/default/files/2021-07/2021.07%20Agriculture%20and%20Agri Food%20Industry%20in%20Iran%20Web-](https://sanctions-helpdesk.eu/sites/default/files/2021-07/2021.07%20Agriculture%20and%20Agri%20Food%20Industry%20in%20Iran%20Web-)

The table above depicts the sharp increase in food prices from 2017 till 2021. The price hike in 2019 was mainly the result of re-imposed sanctions whereas the 2021 increased prices are the consequence of economic decline following the Covid-19 pandemic. More recently, as a combined result of numerous factors including drought, sanctions and devaluation of the Iranian currency, the rate of inflation in Iran went up to 40 per cent in April 2022,⁴¹ which further steeply inclined up to 52.2 per cent in June 2022. This has dramatically proliferated the food insecurity in Iran. Violent protests have broken in the country as there has been 80 per cent increase in the price of dairy products and the fruits and vegetables consumption of people has declined by 25 to 30 per cent.⁴²

The food insecurity in Iran primarily owes to its arid climate with high levels of water scarcity and soil salinity. Despite rigorous efforts, the Iranian government had not been able to achieve its goal of food self-

⁴¹ "Iran's Protests Over Food Prices," *The Iran Premier*, June 1, 2022, accessed July 15, 2022, <https://iran.primer.usip.org/blog/2022/jun/01/explainer-iran%E2%80%99s-protests-over-food-prices>.

⁴² "Consumption Falls as Skyrocketing Prices Hit Iranian Food Security," *Radio-Free-Europe*, June 23, 2022, <https://www.rferl.org/a/iran-food-security-price-increases/31912264.html>.

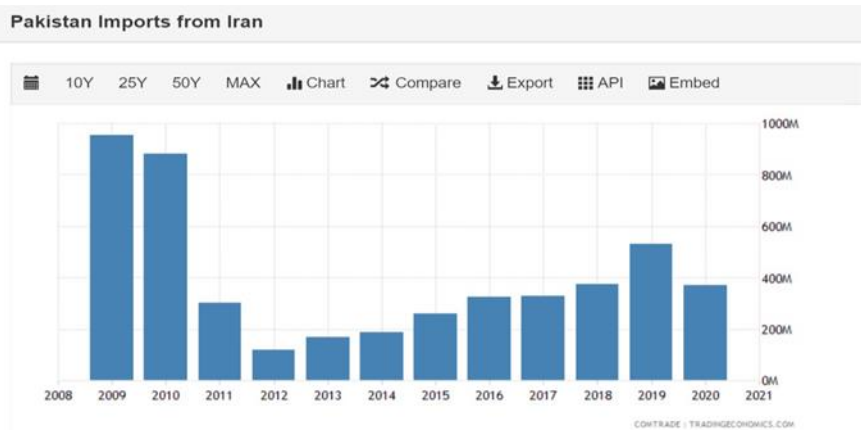
sufficiency. While appreciable improvement in food security indicators was experienced, the success did not sustain long due to the re-imposition of sanctions on Iran. Combined with the sanctions, the economic impacts of the Covid pandemic have reversed some of the achievements in the food sector of Iran. Lastly, the most recent drought and locusts attacks have threatened the food self-sufficiency of Iran as it has increased its imports of staple food since 2020.

Prospects for Improving Bilateral Trade and Cooperation

Despite a warm initiation of relations between both states at the time of the inception of Pakistan, the bilateral trade, just like the bilateral relations of Iran and Pakistan has been subjected to the changing regional as well as global geopolitical shifts. As Pakistan came into being during the Cold War era, both Iran and Pakistan allied with the American-led bloc and thus enjoyed cordial bilateral relations. Being part of the CENTO, Iran, and Pakistan, in association with Turkey, led to the formation of the Regional Cooperation for Development (RCD). However, with the Iranian Revolution and American sanctions on Iran, as well as with the Pakistani involvement in the Afghan war, the trade volume dwindled as the relations hit a rocky patch. In the mid of the decade of 1980s, the Economic Cooperation Organisation was developed to replace the RCD and to encourage regional cooperation in trade, investment, agriculture, industry, tourism, research, and development. Despite these regional efforts, the bilateral trade relations between Iran and Pakistan have been marred with rocky patches ever since the imposition of sanctions on Iran. The bilateral trade peaked in the year 2010 when the amount crossed over \$1 billion,⁴³ which has now declined to less than \$393 million in 2022.⁴⁴

⁴³ Iram Khalid and Faheem Ahmad Khan, "Iran Pakistan Relations: Convergences and Divergences in Present Political and Economic Developments," *Journal of the Punjab University Historical Society* 33, no. 2 (2020): 119-135.

⁴⁴ "Pakistan-Iran Relations," Ministry of Foreign Affairs- Government of Pakistan, accessed on June 19, 2022, <https://mofa.gov.pk/news-items/#:~:text=Currently%2C%20the%20volume%20of%20trade,imports%20US%24%20369.23%20million>.

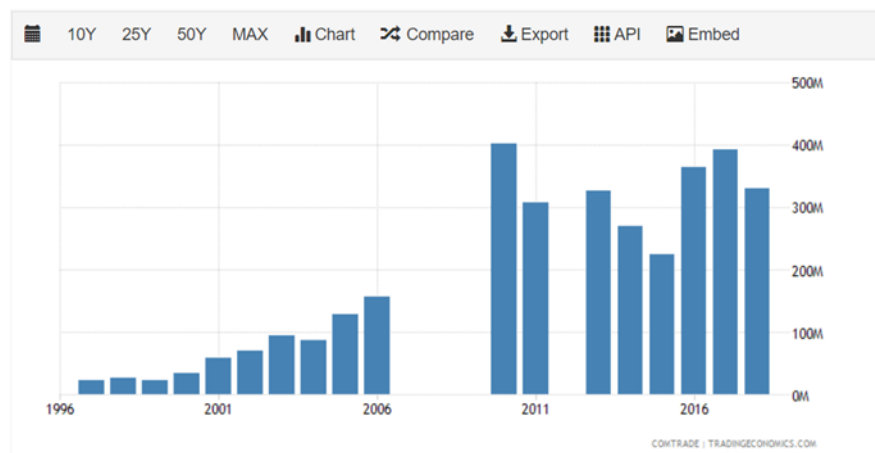


Pakistan Imports from Iran	Value	Year
Mineral fuels, oils, distillation products	\$247.25M	2020
Edible vegetables and certain roots and tubers	\$33.44M	2020
Edible fruits, nuts, peel of citrus fruit, melons	\$24.70M	2020
Iron and steel	\$21.80M	2020
Coffee, tea, mate and spices	\$8.78M	2020
Raw hides and skins (other than furskins) and leather	\$5.24M	2020
Ceramic products	\$3.65M	2020
Salt, sulphur, earth, stone, plaster, lime and cement	\$3.40M	2020
Rubbers	\$3.28M	2020
Inorganic chemicals, precious metal compound, isotope	\$2.12M	2020
Carpets and other textile floor coverings	\$2.12M	2020
Oil seed, oleagic fruits, grain, seed, fruits	\$1.94M	2020
Plastics	\$1.81M	2020
Wadding, felt, nonwovens, yarns, twine, cordage	\$1.78M	2020

Source: "Pakistan Imports from Iran." Trading Economics, Accessed July 10, 2022, <https://tradingeconomics.com/pakistan/imports/iran>.

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Iran Imports from Pakistan



Source: "Pakistan Imports from Iran." Trading Economics, Accessed July 10, 2022, <https://tradingeconomics.com/pakistan/imports/iran>.

Iran Imports from Pakistan	Value	Year
Cereals	\$228.76M	2018
Oil seed, oleagic fruits, grain, seed, fruits	\$41.09M	2018
Paper and paperboard, articles of pulp, paper and board	\$16.10M	2018
Live animals	\$15.39M	2018
Edible fruits, nuts, peel of citrus fruit, melons	\$12.63M	2018
Meat and edible meat offal	\$10.39M	2018
Optical, photo, technical, medical apparatus	\$2.56M	2018
Machinery, nuclear reactors, boilers	\$1.13M	2018
Vegetable textile fibers not specified elsewhere, paper yarn, woven fabric	\$596.51K	2018
Plastics	\$449.44K	2018
Impregnated, coated or laminated textile fabric	\$304.82K	2018
Iron and steel	\$232.19K	2018
Miscellaneous edible preparations	\$215.03K	2018
Albuminoids, modified starches, glues, enzymes	\$134.54K	2018
Edible vegetables and certain roots and tubers	\$94.81K	2018

Source: "Iran Imports from Pakistan." Trading Economics, Accessed July 10, 2022, <https://tradingeconomics.com/iran/imports/pakistan>.

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As evident from the above-mentioned data, the quantitative statistics of trade between Iran and Pakistan have not been encouraging. However, both states realise their trade potential and have repeatedly engaged in trade deals and agreements. In 2004, for instance, Iran and Pakistan concluded the Preferential Trade Agreement (PTA), according to which both states enjoy concessions on about 18 per cent of items. Iran has given concession to Pakistan on 309 items, which Pakistan has reciprocated by giving a concession to Iran on 338 items.⁴⁵

As shown in the tables above, Pakistan's major exports to Iran include food and agricultural products including staples and cereals such as wheat, rice, and sugar. On the other hand, Pakistan's major imports from Iran include minerals such as oil and natural gas, as well as iron and steel. Given the fact that the economic sanctions on Iran have recurrently curbed the state's trade relations, Pakistan and Iran have sought the channel of 'barter trade' to bypass the US sanctions. In 2012, Iran concluded the 'Wheat Barter deal' with Pakistan. According to the deal, Iran was to import a million tonnes of wheat as well as 200,000 tonnes of rice from Pakistan as it faced a food shortage due to the US and European Union imposed sanctions. In exchange for wheat and rice, Pakistan was to import iron ore and fertilisers from Iran. The nature of the deal was kept barter as Iran had been facing payment issues due to the renewed sanctions.⁴⁶ More recently, with Iran under the strain of renewed sanctions from USA, a barter trade deal between Iran and Pakistan has been concluded under which Pakistan will import Liquefied Petroleum Gas (LPG) in exchange of rice. As US sanctions have also prohibited barter trade with Iran, the officials at both the sides of borders have asserted that the deal is taking

⁴⁵ "Trade and economic relations between Pakistan and Iran," Business Recorder, accessed November 15, 2021, <https://www.brecorder.com/news/544423>.

⁴⁶ Qasim Nauman, and Rebecca Conway, "Iran, Pakistan "in talks on wheat barter deal," Reuters, February 24, 2012, <https://www.reuters.com/article/uk-iran-pakistan-wheat-idUKTRE81N0HA20120224>.

place in the private sector between the Chamber of Quetta and Chamber of Zahedan.⁴⁷

From the above-mentioned aspects, it can be concluded that despite the fact there have been obstacles to the improvement of bilateral trade between Iran and Pakistan, there is still massive potential. While Iran's natural environmental conditions have made food self-sufficiency a far-fetched goal, Pakistan's agricultural and food surplus can facilitate in bolstering trade with Iran. As evident from the two barter deals, Iran has been interested in importing staple cereals such as wheat and rice from Pakistan. Historically, Pakistan has been included in the list of top producers and exporters of wheat and rice. Recently, the Iranian Ambassador to Pakistan, Syed Muhammad Ali Hussaini claimed that with 8 million tonnes of rice ready to be exported, Pakistan can meet the entire demand of rice of Iran. He also claimed that Pakistan can find a lucrative market of meat, fisheries, livestock, citrus fruits and mangoes in Iran.⁴⁸ By increasing food trade with Pakistan, Iran can efficiently mitigate its food insecurity. On the other hand, while Pakistan can find an important market for its agrarian products in Iran, Pakistan can also benefit by importing oil and natural gas from Iran. Given the constraints of sanctions that prohibit trading in currency-being forced to deal in barter goods, Pakistan can import minerals that can help improve the energy security of Pakistan. According to an assessment of the Pakistani-based research think-tank IPRI, the Iranian imported gas could add up to 4000 MW of electricity in the national gridlines of Pakistan. Additionally, it could facilitate Pakistan in an annual saving of USD 2.3 billion which it spends on importing the high-cost furnace oil for the production of electricity.⁴⁹ Pakistan imports a

⁴⁷ Khurshid Ahmed, "Pakistan to trade rice for LPG under barter arrangement with Iran – PM's commerce adviser," Arab News, November 18, 2021, <https://www.arabnews.pk/node/1970286/pakistan>.

⁴⁸ "Pak-Iran to remove taxes on food exports to fight inflation," Global Village Space, accessed January 5, 2022, <https://www.globalvillagespace.com/pak-iran-to-remove-taxes-on-food-exports-to-fight-inflation/>.

⁴⁹ Muhammad Munir, Muhammad Ahsan, and Saman Zulfiqar, "Iran-Pakistan Gas Pipeline: Cost-Benefit Analysis," Islamabad Policy Research Institute, April 4, 2014, <https://ipripak.org/iran-pakistan-gas-pipeline-cost-benefit-analysis/>.

massive amount of its required oil, with over 75 per cent of the imports being from Saudi Arabia and UAE.⁵⁰ Oil trade between Iran and Pakistan has been halted since 2009, with the pretext of American sanctions. However, between Iran and Pakistan, a serious issue of oil smuggling looms overhead that is negatively affecting the economies of both the concerned states. While the government of Pakistan has started a crackdown on the oil smugglers in 2021, willingness has also been expressed by government officials to initiate legal oil trade with Iran.⁵¹ In conclusion, the bilateral barter trade between Iran and Pakistan, with Pakistan exporting agricultural products and Iran providing oil and natural gas to Pakistan can improve the food and energy security of the respective countries.

One challenge persists however. While increasing food trade with Pakistan and importing the basic essential staples of wheat and rice from Pakistan can assist Iran in curbing the food insecurity; the problem of food insecurity persists in case of Pakistan. Where food insecurity in Pakistan requires serious efforts in the improvement of policy making at domestic level, Pakistan can also coordinate with Iran in three main sectors to effectively deal with the challenge. Pakistan and Iran can establish bilateral cooperation mechanism for dealing with water scarcity; security arrangement for mitigating cross-border smuggling and a regional level effort with the assistance of China for promoting agricultural research in order to increase the quantity and improve the quality of food available.

For dealing with the issue of over-abstraction of groundwater resources, Pakistan can coordinate with Iran to replicate the SMART WADI model of Iran. While the program itself is in the feasibility phase in Iran, the project appears to be promising. It focuses on quantifying water consumption by using satellite technology, and on providing policy recommendations for effective and efficient usage of water for irrigation

⁵⁰ Aamir Shafaat Khan, "Import of Iranian oil still elusive," DAWN, July 18, 2015, <https://www.dawn.com/news/1195157>.

⁵¹ Mubarak Zeb Khan, "PM orders action against fuel smuggling across Iran border," Dawn January 3, 2021, <https://www.dawn.com/news/1599346>.

and agricultural processes. The project has been initiated in 2014-2015 under the title SMART WADI (Water Decisions for Iran). The project aims at the provision of up-to-date information and policy recommendation regarding water productivity, irrigation, and farm management. The operational framework of the project is to quantify water consumption and productivity by using the latest satellite technology while monitoring the crop growth with high-resolution drone images. The desired goal of the SMART WADI project is to achieve a high crop yield with high water productivity and to eventually enable the farmers to utilise the policy advice for effective irrigation planning.⁵²

The Iranian government has also begun making investments in new irrigation technologies such as drip irrigation, which has the potential of saving water by delivering it to the roots of the plants while minimizing the evaporation rate. The replacement of traditional irrigation systems with drip irrigation has the maximum potential of conserving water. In case of Iran, the effectiveness has been debated as the policy makers point towards the fact that the scheme was successful in saving up to 7.5 Bm³. The researchers, however, assert that it created a rebound effect due to the absence of water allocation system that increased the water consumption.^{53 54} The debate surrounding the efficiency of drip irrigation scheme indicates the fact that it is one of the most effective ones, if combined with proper allocation system. Additionally, while Pakistan has also initiated its projects on drip irrigation, the progress is very slow and with multiple obstacles. While the Punjab government subsidized the installation of High Efficiency Irrigation Systems (HEIS), the clogging of emitters, the salinity of soil, there is a requirement of the great

⁵² Gjis Simons, "SMART-WADI: SMART WAtEr Decisions for Iran," *Future Water*, accessed December 18, 2021, <https://www.futurewater.eu/projects/smart-wadi-iran/>.

⁵³ Ehsan Nabavi, "Failed Policies, Falling Aquifers: Unpacking Groundwater Overabstraction in Iran," *Water Alternatives* 11, no. 3 (2018): 699-724.

⁵⁴ Fatemeh Karandish, "Socioeconomic benefits of conserving Iran's water resources through modifying agricultural practices and water management strategies," *Springer*, (2021):1824-1840.

management skills for operations.⁵⁵ Thus, Pakistan and Iran can collaborate with one another to share research and information regarding the feasibility, opportunities, successes and threats of efforts for dealing with water scarcity that affects agricultural production and food security. As discussed earlier, the illicit trade and smuggling between Iran and Pakistan is not only a cause of food insecurity it has also been a cause of strain in bilateral relations between Iran and Pakistan. The illicit trade at the Iran-Pakistan border, between the Pakistani Balochistan and the Sistan Balochistan of Iran is a multi-faceted challenge for both the states. Wheat, rice, and sugar are smuggled out of Pakistan to the food-scarce neighbours such as Iran and Afghanistan, causing a loss of billions of Rupees to the local producers and consumers of food. While the smuggled food plays a key role in improving the food security in Iran's border areas, oil is smuggled into Pakistan from Iran. With Balochistan on both sides of the border being highly underdeveloped and sheer poverty-stricken, the locals find no option other than engaging in smuggling food and fuel across the border. With the dearth of development and employment opportunities from the state, a massive number of Baloch depend on illicit oil trade across the border with Iran as their livelihood. The government of Pakistan has recently begun a crackdown on the oil smugglers along the 900km of Pakistan-Iran border. While smuggling might negatively affect the economy of a state, this crackdown is almost an equal or even more intense death blow to the families and communities residing near the border on both sides. According to the statistics from one district of Balochistan, as quoted by *The Diplomat*, the crackdown on oil smuggling would adversely affect over 9000 fishing boats, 54 fishing farms, 125 local trucks, and over 25 inter-provincial buses- thus leading to the sudden unemployment of over thousands of people in the province.⁵⁶ While the illicit trade is a major setback for the economies of the respective states, it also worsens the political conditions and security of Pakistan as well as

⁵⁵ Syed Haris Ali, "Why Drip Irrigation not popular in Pakistan despite subsidies?" 24 NEWS, April 27, 2021, <https://www.24newshd.tv/27-Apr-2021/why-drip-irrigation-not-popular-in-pakistan-despite-subsidies>.

⁵⁶ Mariyam Suleman, "What's Going on at the Iran-Pakistan Border?" *The Diplomat*, April 23, 2021, <https://thediplomat.com/2021/04/whats-going-on-at-the-iran-pakistan-border/>.

Iran. In Pakistan, the situation aggravates to the point of separatist demands. Pakistan and Iran need to address the problem jointly. Not only should there be strict border controls with a rigorous crackdown on smuggling, but there is also a dire need to regularise and channelise economic activity and trade across Iran and Pakistan, so that the ones engaged in illegal activities can have legitimate alternatives for economic activity and earning a livelihood.

Lastly, the use of outdated agricultural methods, lack of technological innovation and mechanisation and negligible research efforts in the agricultural sector have been the common issue of agricultural productivity and food security in Iran and Pakistan. Recently, the Agricultural Transformation Plan has been initiated by ex-Prime Minister Imran Khan. It focuses on mechanising the agricultural sector, improving quality seed and ensuring efficient water management.⁵⁷ On the other side of border, Iran has declared self-sufficiency in producing farm machinery. The agricultural machinery sector of Iran has experienced a boom since the Comprehensive Agricultural Mechanisation Plan was started a decade ago. Iran has been investing millions of dollars in development, research and education for improvement in the agricultural sector.⁵⁸ As both Iran and Pakistan have started paying attention towards research and development in the agricultural sector, the efforts can be coordinated to share technical information that can help both countries in improving their agricultural sector and food security.

Analysis and Assessment

Food security including the availability, accessibility, affordability and nutritious quality of food is a unanimous concern of the humankind. In Iran, despite numerous policies adopted since the revolution for the improvement of food self-sufficiency, the situation remains unsatisfactory

⁵⁷ Syed Irfan Raza, "Agriculture sector being transformed on priority: PM Imran," Dawn, December 28, 2021, <https://www.dawn.com/news/1666249>.

⁵⁸ "Iran almost self-reliant in manufacturing agricultural machinery," Tehran Times, October 30, 2021, <https://www.tehrantimes.com/news/466487/Iran-almost-self-reliant-in-manufacturing-agricultural-machinery>.

with Iran being unable to meet the local food demand with its domestic production. For Iran, major threats to food security come from its arid and semi-arid climate which lowers the potential of agricultural production. The situation is further exacerbated by the crushing sanctions placed on Iran that have crippled its economy while slashing all the subsidies on the food and agricultural sector. Across the border, Pakistan is one of the major agricultural producers in the world with high ranks in the export of wheat, cotton, and rice, the rate of food insecurity is rising dramatically. With Pakistan having a climate highly conducive to agrarian production, the neglect in policy-making to address water scarcity, to provide agricultural input at subsidised rates and the inability to control smuggling has worsened the food security situation in the state. As both states have been facing rampant food insecurity, increasing bilateral trade and cooperation can help in improving the conditions in both states. As discussed previously, despite the fact that numerous times, efforts have been made and agreements have been concluded to increase trade; the US imposed sanctions nullified the efforts. However, by using barter deals and engaging private organisations, this hurdle can be surpassed. Furthermore, while Pakistan can provide wheat, rice and fruits to Iran, it can import minerals such as oil and natural gas. While this can reduce the food insecurity of Iran, it can also improve the energy security of Pakistan. For improving its own food security, cooperation with Iran in the agricultural research, improving border security, and knowledge and experience sharing for dealing with water scarcity, can be the suitable options for Pakistan.

Policy Recommendations for Improving the Prospects of Cooperation between Iran and Pakistan

- In case of common threats faced by Pakistan and Iran, joint collaborative efforts should be initiated for the mutual benefit of the participating states. As water scarcity is a common issue, Pakistan and Iran can collaborate in the research and development sector regarding policy programs such as drip irrigation and smart metering system.

Sharing of knowledge regarding the challenges and prospects of these programs can improve efficiency.

- As wheat and rice are the major staples in Iran, Pakistan produces a surplus of these crops-not only for domestic demand but also for foreign markets (if the crop does not fail due to mismanagement or is not smuggled out), regularisation of trade in this sector can benefit both the states. While it can improve the food security in Iran, it can earn foreign exchange for Pakistan while improving the relations with its neighbouring state.
- Economic sanctions remain one of the main hurdles in regularising and channelising trade with Iran. In this regard, Pakistan and Iran can resort to barter trade deals. As Iran requires food commodities from Pakistan, Pakistan can gain fuel (oil and gas) from Iran at concessional rates. While the food security of Iran will improve, simultaneously Pakistan will also experience improved indicators for its energy security.
- In case the barter deals are also sanctioned with Iran, the states can continue trading through the involvement of the private sector.
- As previously discussed, illicit trade and cross-border smuggling pose multi-dimensional threats to both states. Efforts should be coordinated to enhance border security. Furthermore, the illicit trade should not only be curbed; rather it should alternatively be channelised and regularised under the states' auspices. This will not only help in improving food security but would also improve the general security and stability in the Balochistan province, which has remained unstable for long.

Recommendations for Pakistan

- One of the first things required in Pakistan in this regard is the need of realisation of the significance of agricultural sector for the economy. With 19.5 per cent of GDP and a non-negligible large part of the population linked directly and indirectly with the agricultural sector for its livelihood, it is definitely a sector in which neglect is unaffordable.
- In addition to the smart metering and drip irrigation programs for efficient water consumption, there is a dire need to increase the water conservation capacity of the country. The 30-day water storage capability of Pakistan is alarmingly low, as recurrently the major dams of Tarbela and Mangla have hit their dead storage levels. Reservoirs and dams need to be built.
- With Pakistan's 60 per cent of the rural population being composed of small-scale farmers, targeted subsidies should be provided by the government to increase and improve the quantity as well as quality of the input for agricultural production.
- While agricultural loans are available in Pakistan, efforts should be made to improve their accessibility for the remote and small-scale farmers. Furthermore, from the budget allocated for the agricultural sector, a certain portion must be allocated for the research and development sector. Continuing with the same years old outdated policies is one of the major constraints on the agricultural growth and food production in Pakistan.■