

GRAF PUBLICATIONS



Golden
Ring
Economic
Forum

“COMPARATIVE ANALYSIS OF FOOD SECURITY IN PAKISTAN AND IRAN: PROSPECTS OF IMPROVING BILATERAL TRADE AND COOPERATION”



Kazakhstan



Tajikistan



Uzbekistan



Kyrgyzstan



Turkmenistan



Azerbaijan

COMPARATIVE ANALYSIS OF FOOD SECURITY IN PAKISTAN AND IRAN: PROSPECTS OF IMPROVING BILATERAL TRADE AND COOPERATION

- * **Dr. Asia Mukhtar**¹
*Assistant Professor
Kinnaird College for Women University, Lahore*
- * **Dua Hamid**
Beaconhouse College Campus, Gulberg, Lahore.

ABSTRACT

Food security is a multi-faceted concept. Adopting a qualitative methodology, this study has focused on tracing the causes of food insecurity in Pakistan and Iran. In Iran, arid and semi-arid climate is the major reason, while economic sanctions have aggravated the situation. In Pakistan, mismanagement and policy incapacitation in the agricultural sector are the basic hurdles. The lack of land reforms and technology, subsidized agriculture, and increase in smuggling has exacerbated the food insecurity in Pakistan. Concerted efforts to resolve these conditions can not only bring about increase the food production of Pakistan but also can boost trade with Iran. As the economic sanctions on Iran have been the major trade impediment between Iran and Pakistan, barter trade can offer an effective alternative. Finally, this paper provides policy recommendations for improving bilateral trade and cooperation that can not only enhance the food security in Iran but also the energy security in Pakistan.

Key Words: *Food Security, Bilateral Trade, Security Conditions, Resource Management, SMART WADI*

INTRODUCTION

Ensuring availability to food has been the most central concerns of human beings since the day human life has existed on the face of earth. Without food security, the survival and existence of 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'. In contrast, as defined by the Food and Agricultural Organization (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'. 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'. Iran, with an index of 7.7 has comparatively low level of food insecurity, however its condition has been worsened with the recent droughts in 2021. In both the states, natural environmental conditions, political issues, policy failures, economic constraints including high levels of inflation and low levels of technological innovation have been responsible for the food insecurity. Historically, the bilateral trade and cooperation between both the states has remained unsteady due to the economic sanctions repeatedly imposed on Iran. Other political issues such as Pakistan's involvement in Afghan jihad, as well as the cross border smuggling have been some issues that have been the cause of frost in the relations. However, by increasing bilateral trade and cooperation, both the states can not only improve their food security, but can also enhance their coordination for better

¹ Dr. Asia Mukhtar is affiliated with Golden Ring Economic Forum as Research Advisor/Fellow. This Paper has been Prepared under GREF initiative of "Shared Economic Recovery".

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.

FOOD SECURITY CONDITION IN PAKISTAN

Considering the fact that Pakistan occupies prominent positions in the global food market, it becomes difficult to imagine that a food-surplus state that exports agricultural products might itself be food insecure. That however is the case with Pakistan. Despite possessing one of the world's largest irrigation system, being amongst the top ten producers of cotton, wheat, mango, sugarcane, oranges and dates; and occupying 13th out of top 15 positions of rice producers in the world, Pakistan remains food insecure^{2 3 4 5}. 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 percent of population in Pakistan is food insecure, making it 90.7 million people facing the crisis⁶. According to the World Food Program Report of Pakistan, in 2020-2021, 20.5 percent of the population in Pakistan was undernourished and 44 percent of the children under the age of 5 continued surviving with stunted growth⁷. 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 Index⁸.

A look at the official statistics of Pakistani government regarding the agricultural production and food availability in Pakistan present a very promising picture. The table below depicts the food availability in Pakistan from the year 2018-2021. Presenting these statistics, the government of Pakistan has claimed that Pakistan produces enough food for domestic

² 2021. "Wheat Production by Country 2021." *World Population Review*. Accessed January 10, 2022.

<https://worldpopulationreview.com/country-rankings/wheat-production-by-country>

³ Hortmeyer, Elke. 2020. "Top 10 Cotton Producing Countries in the World." *Discover Natural Fibres Initiative*. July 01. Accessed January 10, 2022. <https://dnfi.org/cotton/top-10-cotton-producing-countries-in-the-world-4785/>.

⁴ 2021. "Top 15 Biggest Mango Producers." *Ranking Royals*. Accessed January 10, 2022.

<https://rankingroyals.com/top-15-biggest-mango-producers/>.

⁵ Basharat, Muhammad. 2019. "Water Management in the Indus Basin in Pakistan: Challenges and Opportunities." In *Indus River Basin: Water Security and Sustainability*, by Thomas Adams Sadiq Khan, 375-388. Elsevier.

⁶ Saleem, Farrukh. 2021. "Food Insecurity." *The News International*. August 15.

<https://www.thenews.com.pk/print/878304-food-insecurity>.

⁷ WFP. 2021. "Country Brief- Pakistan." *World Food Program*. October.

<https://docs.wfp.org/api/documents/WFP->

[0000133985/download/?_ga=2.203646997.402553185.1638789858-123792941.1638008043](https://docs.wfp.org/api/documents/WFP-0000133985/download/?_ga=2.203646997.402553185.1638789858-123792941.1638008043).

⁸ Editorial. 2021. "Food-insecure nation." *Dawn*. July 2021. Accessed January 10, 2022.

<https://www.dawn.com/news/1633265/food-insecure-nation>.

consumption.

Table 11.8: Food Availability (Kg) Per Capita Per Annum

Food Items	2018-19	2019-20	2020-21 (P)
Cereals	133.0	137.0	149.0
Pulses	7.0	8.0	8.0
Sugar	24.0	26.0	27.0
Milk (Liter)	168.0	169.0	172.0
Meat (Beef, Mutton, Chicken)	21.0	22.0	23.0
Fish	3.0	2.0	3.0
Eggs (Dozen)	5.0	5.0	5.0
Edible Oil/Ghee	15.0	14.0	14.0
Fruits& Vegetables	56.0	54.0	55.0
Calories/Day	2,410	2,445	2,580

P: Provisional

Note: The data for the year 2018-19 & 2019-20 has been revised on the basis of Population Census, 2017

P: Provisional

Source: Ministry of Planning Development & Special Initiatives (Nutrition Section)

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

Similarly, the agricultural statistics are presented with the claim that the agricultural growth of 2.77 percent against the target of 2.8 percent has been highly encouraging. As the graph below depicts, there has been a decline in the productivity of important crops and forestry. Livestock and fishing however represented improvement in production rate as compared to the previous year.

Table 2.1: Agriculture Growth (Base=2005-06) (%)

Sector	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021 P
Agriculture	2.13	0.15	2.18	4.00	0.56	3.31	2.77
1.Crops (i+ii+iii)	0.16	-5.27	1.22	4.69	-4.96	5.54	2.47
i) Important Crops	-1.62	-5.86	2.60	3.56	-7.69	5.24	4.65
ii) Other Crops	2.51	0.40	-2.51	6.26	2.60	8.08	1.41
iii) Cotton Ginning	7.24	-22.12	5.58	8.80	-12.74	-4.82	-15.58
2.Livestock	3.99	3.36	2.99	3.70	3.82	2.10	3.06
3.Forestry	-12.45	14.31	-2.33	2.58	7.28	3.60	1.42
4.Fishing	5.75	3.25	1.23	1.62	0.80	0.60	0.73

P: Provisional

Source: Pakistan Bureau of Statistics

Source: Ministry-of-Finance. 2021. *Pakistan Economic Survey 2020-2021*. 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 countries⁹. The Hunger Index score for Pakistan is categorized as 'serious'. This situation brings forth the question of causes of food insecurity in Pakistan- a state that has the capacity of exporting agricultural products.

According to the World Food Program (WFP), affordability 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

⁹ GHI. 2021. "GLOBAL HUNGER INDEX 2021: IRAN." October. Accessed January 21, 2022.

<https://www.globalhungerindex.org/pdf/en/2021/Iran.pdf>.

in the country. While unemployment remains a global developmental issue, in Pakistan it has continuously been following an upwards trend since 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 2018-2019¹⁰. 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 percent¹¹. Such humungous two-digit rates of unemployment have an immediate impact in undermining the food security of the 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 always tightening. 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 the governmental spending. The IMF Conditionality combined with the impacts of Covid-19 had accelerated the inflation rate of Pakistan up to 12.3 percent by the end of year 2021¹² (Pakistan-Bureau-of-Statistics 2022). Resultantly, the agriculture and the food sector remains amongst the worst hit ones with food inflation being recorded at a high of 10.46percent in December 2021. The top five commonly used food commodities showing a sharp incline in prices include: eggs (32.88 percent), mustard oil (32.34 percent), vegetable ghee (23.75 percent), condiments and spices (23.27 percent), cooking oil (21.93 percent), sugar (21.54 percent), tomatoes (19.67 percent), wheat (18.99 percent), meat (16.66 percent) and milk (14.19 percent)¹³.

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 change¹⁴. As the number of floods in two decades between 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.¹⁵

In addition to droughts and floods, one of the most serious environmental threats to the agricultural production and food security of Pakistan is the water scarcity. Pakistan faces acute

¹⁰ Jamal, Nasir. 2021. "Joblessness jumped in 2018-19: labour survey." *Dawn*. September 17. <https://www.dawn.com/news/1646761>.

¹¹ Gurmani, Nadir. 2021. "24pc educated people are jobless countrywide, Senate body told." *DAWN*. September 27. Accessed January 21, 2022. <https://www.dawn.com/news/1648765>.

¹² Pakistan-Bureau-of-Statistics. 2022. "Pakistan Inflation Rate." *Trading Economics*. January. Accessed January 21, 2022. <https://tradingeconomics.com/pakistan/inflation-cpi>.

¹³ Hasan, Munawar. 2021. "Despite claims, Pakistan poised to be most food-insecure in region." *The News*. August 01. <https://www.thenews.com.pk/print/871469-despite-claims-pakistan-poised-to-be-most-food-insecure-in-region>.

¹⁴ Ministry-of-Finance. 2021. *Pakistan Economic Survey 2020-2021*. Islamabad: Pakistan Bureau of Statistics.

¹⁵ Sleet, Phoebe. 2019. *Food Security in Pakistan: Surplus Food is not Enough to Create a Food Secure Country*. Nedlands: Future Directions International.

water scarcity despite it is located on the Indus Water Basin and in its possession there are a number of glaciers. The water scarcity in Pakistan not only jeopardizes the present food and agricultural production, but is also a threat for the future generations as multiple reports have assessed that Pakistan could ‘run dry’ by 2025 and become the ‘most-water-stressed’ country in the world by 2040¹⁶ ¹⁷. In Pakistan, a major cause of water scarcity is the poor water management policy which includes the lack of reservoirs and dams. With over 5000 glaciers in the northern areas of the country, glacial runoff and snowmelt adds up to 35percent to 40 percent 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 of 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.

In the case of Pakistan, the construction of dams has remained a debated issue. While the hype surrounding Kalabagh dam sublimed 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 the current 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

¹⁶ Farooqui, Usmaan. 2021. "The Cost of Pakistan’s Dam Obsession." *The Diplomat*. March 4. <https://thediplomat.com/2021/03/the-cost-of-pakistans-dam-obsession/> .

¹⁷ Sleet, Phoebe. 2019. *Food Security in Pakistan: Surplus Food is not Enough to Create a Food Secure Country*. Nedlands: Future Directions International.

highly inefficient as they only increase seasonal storage ¹⁸. 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 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 percent of the water being consumed by the extremely water-intensive agricultural sector that still relies on outdated irrigation system. Furthermore, the over-reliance on the groundwater resources after the depletion of surface water-resources has resulted in dramatic decline in the groundwater tables in the Indus River Basin. While the 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 percent of crop production in Pakistan ¹⁹. 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 percent to the GDP, providing employment to over 38.5 percent population and having over 70 percent of the population depending on it for its livelihood ²⁰. Yet, agriculture has been largely neglected in improved policy making that has adversely affected not only the production levels, but also the food availability in the country.

The flawed policy making has affected the food security and the agricultural sector in multiple dimensions. The current government of PTI has begun the Ehsas Program. Under the program, the government's focus is to transfer cash (an amount of Rs. 12000 per family) to the targeted families in order to improve the food security conditions. This approach has attracted much criticism for being unsustainable in nature. Former Finance Minister, Hafeez Pasha took a jibe 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 rupee devaluating and the costs of fertilizers and seeds increasing dramatically, the food security and self-sufficiency becomes a challenging goal ²¹.

The current government has come up with schemes to provide subsidized agricultural products, but these too have challenges associated. Very recently, the PTI government in Punjab has issued the Punjab Kissan Card scheme to help small farm holders gain easy and direct access

¹⁸ Usmani, Ibrahim. 2020. "What value does Diamer Bhasha Dam provide to Pakistan?" *The News International*. September 28. <https://www.thenews.com.pk/print/721481-what-value-does-diamer-bhasha-dam-provide-to-pakistan>.

¹⁹ Farooqui, Usmaan. 2021. "The Cost of Pakistan's Dam Obsession." *The Diplomat*. March 4. <https://thediplomat.com/2021/03/the-cost-of-pakistans-dam-obsession/>.

²⁰ Ministry-of-Finance. 2021. *Pakistan Economic Survey 2020-2021*. Islamabad: Pakistan Bureau of Statistics.

²¹ Qamar-uz-Zaman. 2020. "Low earnings and agricultural neglect push Pakistan into food insecurity." *The Third Pole*. December 11. <https://www.thethirdpole.net/en/food/low-earnings-and-agricultural-neglect-push-pakistan-into-food-insecurity/>.

to governmental subsidies for fertilizers, 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. However, a major challenge persists. The channelization of resources needs a revision. As accounted by the State Bank of Pakistan, between 90-94 percent of the farm loans are utilized in production while only a miniscule amount of 6-10 percent goes to the agricultural development. Resultantly, while machinery is bought and tunnel farms are constructed, there persists a lack of research focus towards strategies and methods that can improve the crop-yield while minimizing the waste²². Almost none of the governments has paid due attention towards tackling long-term issues such as loss of soil fertility, low levels of technological advancement, poor quality seeds and waste of water resources²³.

Another way in which policy neglect affects the 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 country. Due to the smuggling, a scarcity is created, to fulfill which, 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 demand²⁴. 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 Rs 2500 per 40 kg against the federal government's support price of Rs1800 per 40 kg- causing a loss of over Rs400 billion to Pakistani farmers²⁵.

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 the flawed policy making. The economic downturn and uncontrolled inflation on one hand make the 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 the agricultural production and food security. Here again, the 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

²² Aazim, Mohiuddin. 2021. "Need to overhaul agricultural finance regime." *DAWN*. March 8. <https://www.dawn.com/news/1611249>.

²³ 2021. "Neglect of farm sector." *DAWN*. August 17. Accessed January 21, 2022. <https://www.dawn.com/news/1641140/neglect-of-farm-sector>.

²⁴ Haider, Mehtab. 2021. "Wheat Fiasco." *The News International*. October. <https://www.thenews.com.pk/magazine/money-matters/724557-wheat-fiasco>.

²⁵ Nizamanni, Aijaz. 2021. "Wheat import and food security." *DAWN*. October 22. Accessed January 21, 2022. <https://www.dawn.com/news/1653353>.

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, the 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 and order has encouraged cross border smuggling which has created 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 subsidized seeds and fertilizers and loans on easy conditions. There has been negligence in technological advancement, mechanization and research and development in the agricultural sector which has hampered the food security in the state.

FOOD SECURITY IN IRAN

Owing to its arid and semi-arid natural climate, achieving and maintaining food security in Iran has been a challenge historically. While droughts and famines had continued threatening food security in the neighboring state of Pakistan during the years of Anglo-Soviet occupation, the insecurity prevailed robustly during the Shah's regime. With the 1979 revolution, to ensure 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 products²⁶. 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 percent in 1988 to less than 4.1 percent 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 percent of the food it consumed annually, whereas in 2014, it became able to produce 66 percent of its local food consumption demand²⁷. However, while Iran became able to combat with 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 percent of the Iranian population was facing moderate to severe food insecurity²⁸. As of 2021, Iran has been ranked on 35th position in 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

²⁶ Michel, David. 2019. "Iran's troubled quest for food self-sufficiency." *Atlantic Council*. July 9. <https://www.atlanticcouncil.org/blogs/iransource/iran-s-troubled-quest-for-food-self-sufficiency/>.

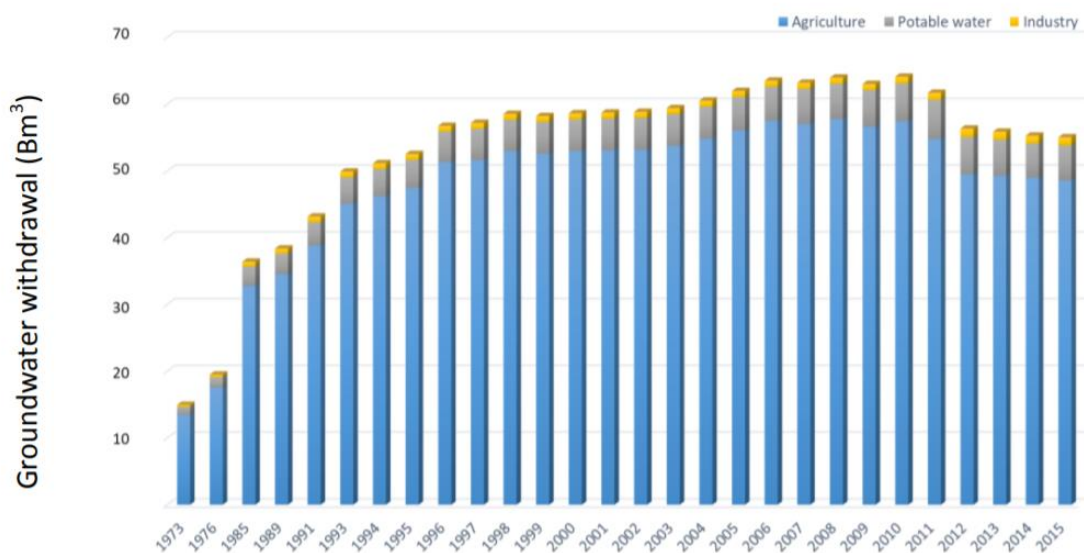
²⁷ Heslot, Soazic. 2014. "Iran's Food Security." *Future Directions International*. August 8. <https://www.futuredirections.org.au/publication/iran-s-food-security/>.

²⁸ FAO. 2020. "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>.

undernourished population has inclined from less than 4.1 percent to over 5.5 percent in 2021²⁹.

Iran’s natural environmental conditions and constraints continue to threaten the 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 percent of the water consumption in Iran. The figure below depicts the water consumption in agricultural sector in comparison with industry and portable usage. Government’s policies to regulate the water consumption and limit the 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 the groundwater resources. According to the study of Soltani et al., Iranian food self-sufficiency would drop to levels below 39 percent if the current rate of water consumption for agriculture continued till 2030³⁰.

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



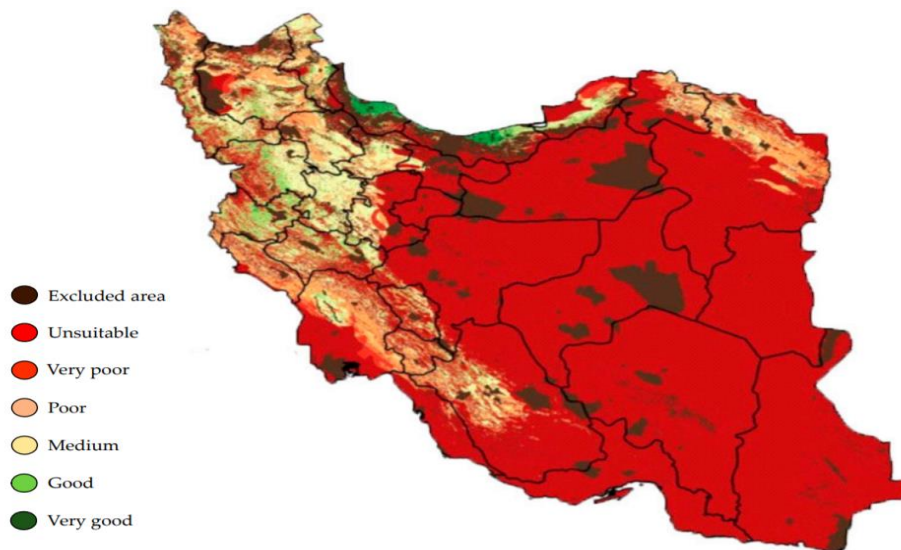
Source: Iran Water Resource Management Co.

Source: Nabavi, Ehsan. 2018. "Failed Policies, Falling Aquifers: Unpacking Groundwater Overabstraction in Iran." *Water Alternatives*, 11(3) 699-724.

²⁹ GHI. 2021. "GLOBAL HUNGER INDEX 2021: IRAN." October. Accessed January 21, 2022. <https://www.globalhungerindex.org/pdf/en/2021/Iran.pdf>.

³⁰ Rad, Abdullah Kaviani, Redmond R. Shamschiri, Hassan Azarm, Sive Balasundram, and Muhammad Sultan. 2021. "Effects of the Covid-19 Pandemic on Food Security and Agriculture in Iran: A Survey." *Sustainability* 1-19.

The soil erosion and salinity make the 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.



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

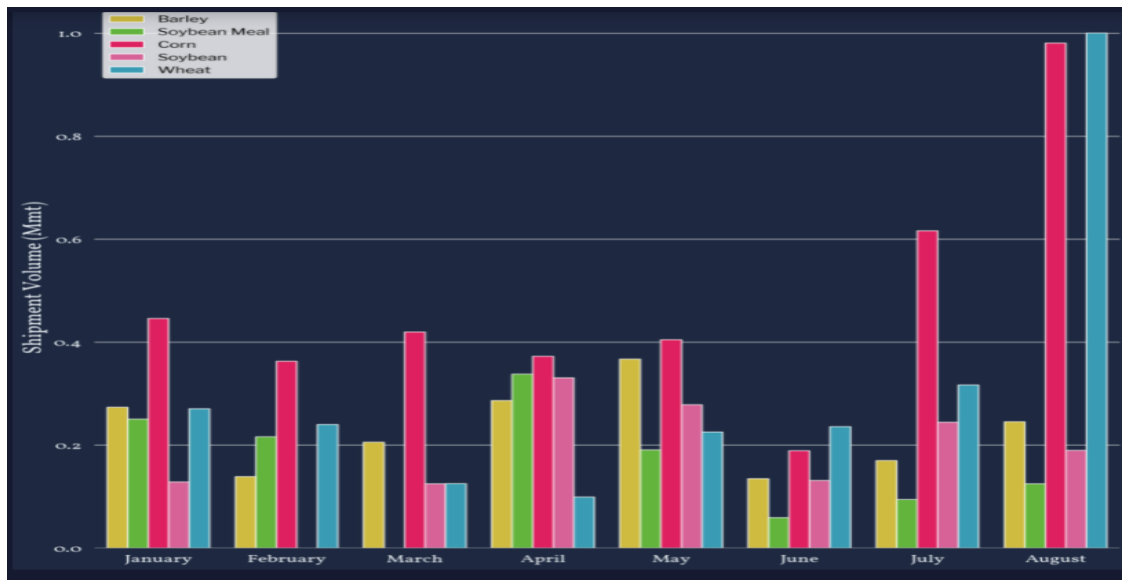
With the water scarcity and high levels of soil salinity, the food production does not meet the food demand in Iran, thus impeding Iran from reaching the goal of food self-sufficiency. The table below depicts the disparity in food production and demand in Iran, along with the percentage of self-sufficiency 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: Soltania, A., S.M. Alimaghani, A. Nehbandani, B. Torabi, E. Zeinali, E. Zand, V. Vadez, M.P. van Loon, and M.K. van Ittersum. 2020. "Future food self-sufficiency in Iran: A model-based analysis." *Global Food Security*.

Furthermore, the irregular and sudden rainfall patterns cause recurrent floods and droughts which threaten the food security in Iran. 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 are expected to increase up to 8 Million Tons by March 2022. The barley imports also increased from 3.2 Million Tons to 5.2 Million Tons ³¹. 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.



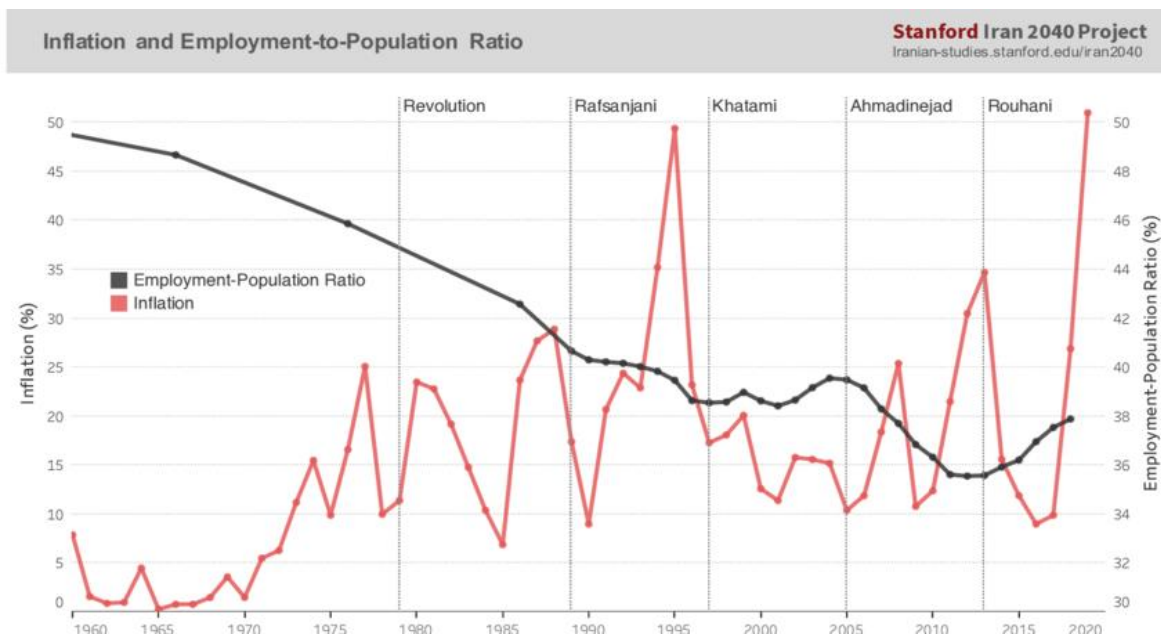
Source: AgFlow. 2021. "Here is Why Turkey and Iran Grain Imports Surged in August 2021." *AgFlow*. September 21. <https://www.agflow.com/agricultural-markets/here-is-why-turkey-and-iran-grain-imports-surged-in-august-2021/>.

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. As depicted in the graphs below, the Iranian GDP had a negative growth between 2018 and 2020. Similarly, with declining economic conditions, the unemployment rate and inflation increased to unprecedented levels, worsening Iran's food insecurity.

³¹ Grain-Brokers-Australia. 2021. "Iran wheat imports soar due to drought." *Grain Central*. October 12. <https://www.graincentral.com/markets/iran-wheat-import-soars-due-to-drought/>.



Source: Hejazi, Jalal, and Sara Emamgholipour. 2020. "The Effects of the Re-imposition of US Sanctions on Food Security in Iran." *International Journal of Health Policy and Management* 1-7.



Hejazi and Emamgholipour (2020) 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 percent between 2017 and 2019 as USA re-imposed the sanctions in defiance of the JCPOA. The high nutrition foods such as fruits, vegetables and meat had highest inflation whereas the 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, Iranian currency depreciated 7 times between 2017 and 2020 and its exchange rate value declined by 590 percent. Resultantly, while prior to the imposition of sanctions around 10 percent of the Iranian population was facing food insecurity, it heightened up to 50 percent for urban population and 24 percent for the rural population ³².

³² Hejazi, Jalal, and Sara Emamgholipour. 2020. "The Effects of the Re-imposition of US Sanctions on Food Security in Iran." *International Journal of Health Policy and Management* 1-7.

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: 2021. "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->

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.

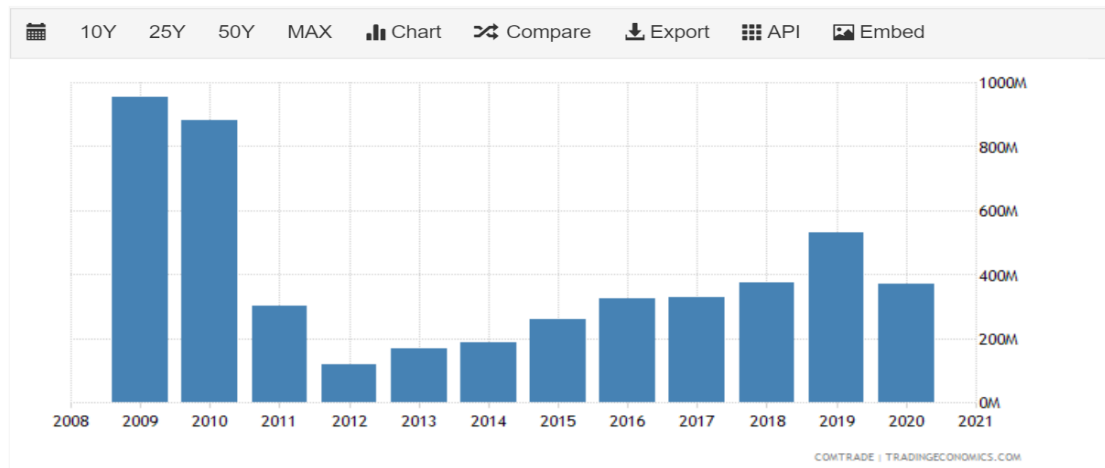
The food insecurity in Iran primarily owes to its arid climate with high levels of water scarcity and soil salinity. Despite rigorous efforts, the Iranian governments had not been able to achieve their goal of food self-sufficiency. While appreciable improvement in food security indicators was experienced, 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 attack has threatened the food self-sufficiency of Iran as it has increased its imports of staple food since 2020.

PROSPECTS OF IMPROVING BILATERAL TRADE AND COOPERATION

Despite a warm initiation of relations between both the states at the time of 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 had 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 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 1980's, the Economic Cooperation Organization 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, which has now declined to less than \$ 332million in 2018 ³³.

³³ Khalid, Iram, and Faheem Ahmad Khan. 2020. "Iran Pakistan Relations: Convergences and Divergences in Present Political and Economic Developments." *Journal of the Punjab University Historical Society* 119-135

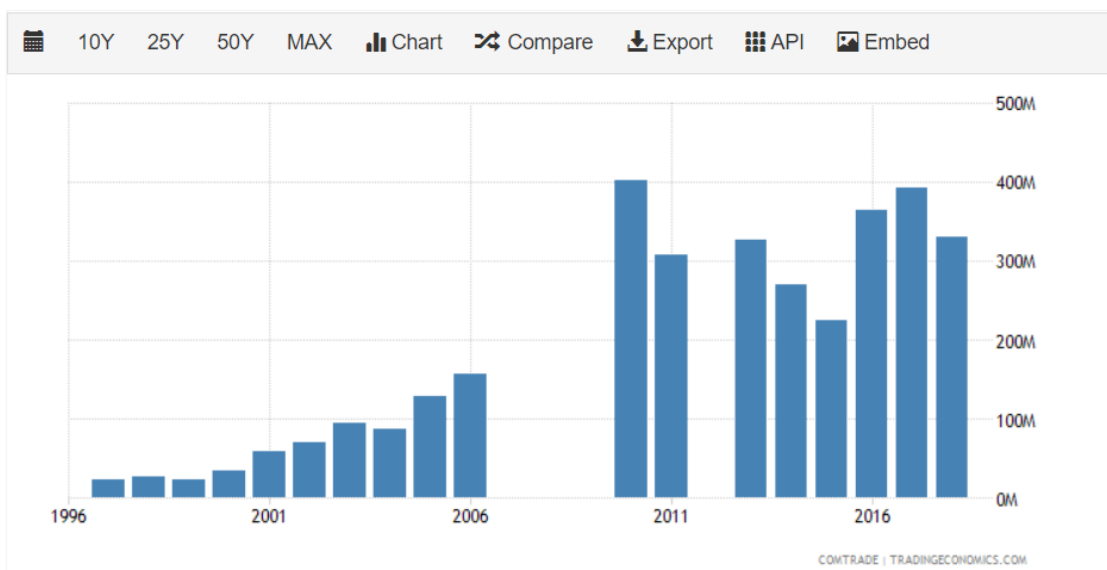
Pakistan Imports from Iran



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, oleagious fruits, grain, seed, fruits	\$1.94M	2020
Plastics	\$1.81M	2020
Wadding, felt, nonwovens, yarns, twine, cordage	\$1.78M	2020

Source: 2021. "Pakistan Imports from Iran." *Trading Economics*.
<https://tradingeconomics.com/pakistan/imports/iran>.

Iran Imports from Pakistan



Source: 2021. "Iran Imports from Pakistan." *Trading Economics*.
<https://tradingeconomics.com/iran/imports/pakistan>.

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: 2021. "Iran Imports from Pakistan." *Trading Economics*.
<https://tradingeconomics.com/iran/imports/pakistan>.

As evident from the above mentioned data, the quantitative statistics of trade between Iran and Pakistan have not been encouraging. However, both the states realize 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 18percent of items. Iran has given concession to Pakistan on 309 items, which Pakistan has reciprocated by giving a concession to Iran on 338 items ³⁴.

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 of wheat and rice, Pakistan was to import iron ore and fertilizers from Iran. The nature of the deal was kept barter as Iran had been facing payment issues due to the renewed sanctions ³⁵. 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

³⁴ Web-Desk. 2019. "Trade and economic relations between Pakistan and Iran." *Business Recorder*. November 15. Accessed January 22, 2022. <https://www.brecorder.com/news/544423>.

³⁵ Nauman, Qasim, and Rebecca Conway. 2012. "Iran, Pakistan "in talks on wheat barter deal"." *Reuters*. February 24. Accessed January 22, 2022. <https://www.reuters.com/article/uk-iran-pakistan-wheat-idUKTRE81N0HA20120224>.

barter trade with Iran, the officials at both the sides of borders have asserted that the deal is taking place in the private sector between the Chamber of Quetta and Chamber of Zahedan ³⁶.

From all the above mentioned aspects, it can be concluded that there is massive potential of improving bilateral trade between Iran and Pakistan. While Iran's natural environmental conditions have made food self-sufficiency a far-fetched goal, Pakistan's agricultural and food surplus can be channelized for 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 ³⁷. 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 Pakistani-based research think-tank IPRI, the Iranian imported gas could add upto 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 ³⁸. Pakistan imports a massive amount of its required oil, with over 75percent of the imports being from Saudi Arabia and UAE ³⁹. 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 state. While the government of Pakistan has started a crackdown on the oil-smugglers in 2021, willingness has also been expressed by the government officials to initiate legal oil trade with Iran ^{40 41}. In conclusion, the bilateral barter trade between Iran and Pakistan, with Pakistan

³⁶ Ahmed, Khurshid. 2021. "Pakistan to trade rice for LPG under barter arrangement with Iran – PM's commerce adviser." *Arab News*. November 18. <https://www.arabnews.pk/node/1970286/pakistan>.

³⁷ APP. 2022. "Pak-Iran to remove taxes on food exports to fight inflation." *Global Village Space*. January 5. Accessed January 22, 2022. <https://www.globalvillagespace.com/pak-iran-to-remove-taxes-on-food-exports-to-fight-inflation/>.

³⁸ Munir, Muhammad, Muhammad Ahsan, and Saman Zulfiqar. 2014. "Iran-Pakistan Gas Pipeline: Cost-Benefit Analysis." *Islamabad Policy Research Institute*. April 4. Accessed May 22, 2021. <https://ipripak.org/iran-pakistan-gas-pipeline-cost-benefit-analysis/>.

³⁹ Khan, Aamir Shafaat. 2015. "Import of Iranian oil still elusive." *DAWN*. July 18. Accessed May 22, 2021. <https://www.dawn.com/news/1195157>.

⁴⁰ Khan, Mubarak Zeb. 2021. "PM orders action against fuel smuggling across Iran border." *DAWN*. January 3. Accessed May 22, 2021. <https://www.dawn.com/news/1599346>.

⁴¹ Khan, Mubarak Zeb. 2021. "PM orders action against fuel smuggling across Iran border." *DAWN*. January 3. Accessed May 22, 2021. <https://www.dawn.com/news/1599346>.

exporting agricultural products and Iran providing oil and natural gas to Pakistan can improve the food and energy securities 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 feasibility phase in Iran, the project appears to be promising as it focuses on quantifying water consumption by using satellite technology and on providing policy recommendations for effective and efficient usage of water for irrigation and agricultural processes. The project has been initiated since 2014-2015 under the title SMART WADI (Water Decisions for Iran). The project aims at 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 the water consumption and productivity by using 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 utilize the policy advise for effective irrigation planning ⁴².

The Iranian government has also began making investments in the 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 system 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, but the researchers assert that it created a rebound effect due to the absence of water allocation system that increased the water consumption ^{43 44}. 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 and the requirement of

⁴² Simons, Gijs. 2019. "SMART-WADI: SMART WATER Decisions for Iran." *Future Water*.
<https://www.futurewater.eu/projects/smart-wadi-iran/>.

⁴³ Nabavi, Ehsan. 2018. "Failed Policies, Falling Aquifers: Unpacking Groundwater Overabstraction in Iran." *Water Alternatives*, 11(3) 699-724.

⁴⁴ Karandish, Fatemeh. 2021. "Socioeconomic benefits of conserving Iran's water resources through modifying agricultural practices and water management strategies." *Springer* 1824-1840.

great management skills for operations ⁴⁵. 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 the 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 and unavailability in Pakistan, but 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 neighbors 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 in to 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 border. With the dearth of development and employment opportunities from the state, a massive number of Balochs 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 deathblow to the families and communities residing near the border on both the sides. According to the statistics from one district of Baluchistan, 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 ⁴⁶. While the illicit trade is a major set-back for the economies of the respective states, it also worsens the political conditions and security of Pakistan as well as 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, there is also a dire need to regularize and channelize economic activity and trade across the border in Iran and Pakistan, so that the ones engaged in illegal activities can have legitimate alternatives for economic activity and earning livelihood.

Lastly, the use of outdated agricultural methods, lack of technological innovation and mechanization 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 Prime Minister Imran Khan which focuses on mechanizing the agricultural sector, improving quality seed and ensuring efficient water management ⁴⁷ (Raza 2021). On the other side of border, Iran has declared self-

⁴⁵ Ali, Syed Haris. 2021. "Why Drip Irrigation not popular in Pakistan despite subsidies?" *24 NEWS*. April 27. <https://www.24newshd.tv/27-Apr-2021/why-drip-irrigation-not-popular-in-pakistan-despite-subsidies>.

⁴⁶ Suleman, Mariyam. 2021. "What's Going on at the Iran-Pakistan Border?" *The Diplomat*. April 23. Accessed May 23, 2021. <https://thediplomat.com/2021/04/whats-going-on-at-the-iran-pakistan-border/>.

⁴⁷ Raza, Syed Irfan. 2021. "Agriculture sector being transformed on priority: PM Imran." *DAWN*. December 28. Accessed January 23, 2022. <https://www.dawn.com/news/1666249>.

sufficiency in producing farm machinery. The agricultural machinery sector of Iran has experienced a boom since the Comprehensive Agricultural Mechanization Plan was started a decade ago. Iran has been implementing billions of dollars in development, research and education for improvement in the agricultural sector (Tehran-Times 2021). As both the states 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 the 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 with Iran being unable to meet the local food demand with its domestic production. For Iran, the 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 with the crushing sanctions placed on Iran that have crippled down its economy while slashing all the subsidies on food and agricultural sector. Across the border, Pakistan being one of the major agricultural producers in the world with high ranks in export of wheat, cotton and rice, is still having a dramatic rise in the rate of food insecurity. With Pakistan having a climate highly conducive to agrarian production, the neglect in policy making to address water scarcity, to provide agricultural input at subsidized rates and the inability to control smuggling has worsened the food security situation in the state. As both the states have been facing rampant food insecurity, increasing bilateral trade and cooperation can help in improving the conditions in both the 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 have nullified the efforts. However, by using barter deals and engaging private organizations, 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 cases 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 the efficiency.
- As wheat and rice are the major staples in Iran, with Pakistan producing surplus of these crops-not only for domestic demand but also for foreign market (if the crop does not fail due to mismanagement or is not smuggled out), regularization 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 neighboring state

- Economic sanctions remain one of the main hurdles in regularizing and channelizing 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 witness 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 private sector
- As previously discussed, illicit trade and cross-border smuggling pose multi-dimensional threats to both the states, efforts should be coordinated to enhance border security. Furthermore, the illicit trade should not only be curbed; rather it should alternatively be channelized and regularized under the states' auspices. This will not only help in improving the food security, but would also improve the general security and stability in the Balochistan province, that has remained instability stricken since long.

Recommendations for Pakistan

- One of the first things required in Pakistan in this regard is the need of realization of the significance of agricultural sector for the economy of Pakistan. With 19.5percent of GDP and a non-negligible large part of population linked directly and indirectly with the agricultural sector for its livelihood, it's 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-days 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 percent 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 as continuing with the same years old outdated policies is one of the major constraints on the agricultural growth and food production in Pakistan