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SPECIAL REPORT

FOOD SECURITY

> The impact of COVID-19 on agri-food production
> The need to reduce agricultural imports
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> Rising vulnerabilities amid the economic crisis

By Nabila Rahhal

ENOUGH TO EAT?


Biomass

Economic and coronavirus crises threaten Lebanon's already fragile food security

For almost anyone residing in Lebanon, trips to the supermarket have become laced with a vague sense of apprehension. The more privileged may wonder how much the price of their favorite brand of imported cereal is now (as prices have been inflating since the last quarter of 2019), or if indeed it is still found in the Lebanese market. Those at a low income level worry that they will no longer be able to purchase the basics needed to feed their families, as prices of even staple items are rising—not to mention the requirement to wear a mask at many supermarkets now, retailing at pharmacies at LL2,000 a pop.

The ongoing economic crisis in Lebanon—and now coronavirus-inspired trade restrictions—have led to inflated prices on imported goods, which, according to the Food and Agriculture Organization (FAO), account for 85 percent of Lebanon's food basket (a list of basic food commodities calculated according to the minimum daily diet of 2,100 calories per the World Food Programme). This has led to questions about our food security, defined by the FAO as when "all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life." It has also made many question Lebanon's lack of food self-sufficiency, defined by the FAO as when "a country produces a proportion of its own food needs that approaches or exceeds 100 percent of its food consumption."

The size and scope of global food supply chains today has made nations largely interdependent on each other for food security. According to FAO's Food Outlook Biannual Report on Global Food Markets 2019, an estimated 168.2 million tons of wheat was traded in 2018/2019 and 172.1 million tons are expected to be traded in 2019/2020, an increase driven by larger expected imports from drought affected Morocco and higher purchases by

"Before we talk about food sufficiency and decreasing our dependence on imported foods, let us first talk about supporting and strengthening our local production."

several countries in Asia (the report was compiled before the coronavirus crisis). This year-on-year increase in trade of a key staple food is just one example of the importance and common practice of global food interdependence.

A high dependency on imports for food supplies, however, makes a country's food security vulnerable to external factors such as lower production in source countries due to climate change-related factors or when trade routes are disrupted because of political tensions or strife in an exporting country. An example of this is the coronavirus-related trade restrictions and food hoarding being witnessed in many countries, which has a potential negative impact on global food supplies, according to an article by Reuters published on March 26, 2020. While the article assures readers that, according to analysts, global supplies of the most widely consumed food crops are adequate, it still gives several examples—such as surging prices of soymeal in Argentina—where closed borders and reduced workforces are "putting a strain on the usual supply routes."

These potential disruptions to trade routes are why most countries aim for a balance between food self-sufficiency and trading within the global food supply chain to ensure high levels of food security. One of the categories used by FAO to measure a country's food security is "stability," under which falls indicators such as per capita food production variability and cereal import dependency ratios (the higher the dependency ratio, the less food secure the country).

Lebanon falls on the lower end of food self-sufficiency as it imports 85 percent of its food basket. This makes its food security highly vulnerable: the liquidity crisis—which cut off traders' credit lines—and the more recent restrictions on global trade brought on by the coronavirus crisis both indicate the extent to which this is true.

AROUND THE WORLD

For Lebanon to strengthen its food security, it needs to begin with a better strategy for securing its food imports, says Rabi Mohtar, dean of the faculty of agricultural and food sciences at the American University of Beirut. Mohtar is critical of the fact that information regarding where Lebanon imports its foodstuff is not easily accessible through government reports, and that deciding on sources for agricultural imports does not appear to follow a strategy or plan set by the responsible ministries such as agriculture, industry, and trade.

According to Mohtar, the concept of food security has evolved from when a well-stocked silo of grain at the village entrance meant a happy and well-fed population to become "more complex and akin to portfolio management." Just like it is considered prudent to diversify investments when managing a stock portfolio—or else risk losing all money invested if one stock plummets—it is wise to have more than one import source for staples. Mohtar gives the example of Saudi Arabia, which he says is one of the most food secure countries in the region because it imports the same staple from multiple countries, therefore diversifying its portfolio of agricultural imports and minimizing the risk to its food security.

> The ongoing economic crisis in Lebanon—and now coronavirus-inspired trade restrictions—have led to inflated prices on imported goods.

Lebanon, by contrast, tends to opt for the cheapest source country for importing a staple foodstuff, meeting all its demands from it. For example, all of Lebanon's wheat imports are from Ukraine (the 6th largest exporter of wheat in dollar value), according to Mohtar. "Our criteria were to import at a low cost and so we were not looking at that from a robustness of the food system and diversification perspective but I think moving forward we need to be looking at these issues and the tradeoffs," he says.

MADE IN LEBANON

Regardless of how much Lebanon diversifies its sources for imports, however, its food security will remain weak if 85 percent of its food basket comes from external sources. To decrease this dependency on global food supply chains, Lebanon needs to work toward increased food self-sufficiency. On aggregate, Lebanon is most self-sufficient in fruits (147 percent) followed by vegetables (93 percent) while it imports 83 percent of its total cereal consumption, as per ESCWA and World Food Programme's 2016 Strategic Review of Food and Nutrition Security in Lebanon.

The first and most basic step for Lebanon to become more food self-sufficient is to further develop its agriculture and agro-industry sectors, according to Kanj Hamade, assistant professor of agricultural economics and rural development at the Lebanese University. "Before we talk about food sufficiency and decreasing our dependence on imported foods, let us first talk about supporting and strengthening our local production, our local agro-industry," he says.

The ongoing economic crisis in Lebanon and the more recent trade restrictions due to the global coronavirus pandemic have made clear the importance

of productive sectors to the economy (see Q&A with Nadine Khoury page 16) and more attention is now being given to improving the country's agriculture and agro-industry sectors (see page 10). Strengthening agriculture and agro-industry is easier said than done, however. Four years ago, in 2016, EXECUTIVE covered the Lebanese agricutural sector and its limitations, which back then included a problematic and traditional irrigation system, limited availability of irrigated land, and lack of planning and coordination at the ministerial level, coupled with a lack of regulations and weak implantation of existing ones. Sadly, not much has changed since. According to FAO's website: "Agriculture plays a relatively minor role in Lebanon, contributing about 5 percent of GDP." In terms of the number of Lebanese dependent on agriculture to make their living, however, the picture is slightly different. Both the FAO and ESCWA estimate as high as 25 percent of employment in the country is through agriculture and up to 80 percent of economic output in rural areas is agriculture-based. On agro-industry in Lebanon, the FAO says it accounts for an additional 5 percent to GDP and "constitutes a major and growing employer in the economy."

It is often said that opportunities lie in every challenge for those who know where to look. To Hamade, the difficulties in getting food products into Lebanon nowadays and their increased prices (caused by both the economic and coronavirus crises) creates an almost golden opportunity for import substitution in agro-industry. He sees the most potential for import substitutions in dairy production but says goat meat, pasta, and wheat-based breads—if we expand our wheat production—are all areas to consider. "In agro-industry, you can easily use existing production lines to produce and substitute items like pasta and other hard wheat products," he says. "We have an opportunity in almost all food products to first try and get raw material from local markets—so we can support them—and if [the local supply] is not enough or not available, then import raw material to develop any part of the agro-industry sector so you can substitute imports and meet local demand."

THE BEST LAID PLANS

Both Hamade and Mohtar told EXECUTIVE that increasing self-sufficiency is not a zero sum game—no country in the world is a 100 percent self-sufficient. Decreasing our percentage of imports, however, is still an important goal. "Because of the economic crisis and now the corona crisis, we have an opportunity to decrease this figure, which is very good," Hamade explains. "We don't have to be fully self-sufficient, however—which is hard anyway because we are a small country with limited resources such as water and land that are needed if we want to raise livestock, for example—but we can move the percentage lower." Doing so, he says, will help Lebanon reduce its balance of trade deficit and move toward having a productive economy instead of being dependent on remittances.

Mohtar believes that any plan for Lebanese food security should first take into account the modern day Lebanese diet and then concerned ministries can set a strategy for what can be locally produced and what should be imported. "The need is not to make [the percentage of agricultural products that we import] zero because at some point it becomes a tradeoff—if it is too expensive to produce locally, then it is better to import—but we need to have a national plan for food security," he says. "A plan would say, 'Ok, this is my food basket, I am going to import this much wheat from multiple sources because I don't want to be dependent on one country and I am going to produce my vegetables, eggs, and chicken. I will import some of my needs for red meat but I need to reduce my consumption of it and return to the traditional Lebanese diet where red meat was not consumed daily.'" Mohtar explains that the balance between import and local production would be a function of water, land, and technological availability, which, when combined would dictate the cost of local production against importing these commodities. "A national plan to protect, invest in, or to promote certain food products will guide this balance," he says.

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As it stands today, Lebanon's food security is highly vulnerable due to the challenges facing food imports, which our national food basket depends on, and due to years of neglect toward the agro-industry and agriculture sectors. This cannot continue as is. Lebanon is now in serious risk of seeing a significant percentage of its population go hungry, as prices of basic imported commodities increase with limited viable locally produced options. If there ever was a time for the state to have a food security plan, then it is now.

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Food security

By Nabila Rahhal

REAPING NOT WHAT YOU SOW

Lebanese agro-industrialists discuss challenges and opportunities in times of crisis

Gibran Khalil Gibran's poem Pity the Nation, published in 1933, could almost have been written about lockdown in modern day Lebanon. Most prophetic is the line "pity the nation that eats a bread it does not harvest." Lebanon is indeed far from harvesting its own bread, given that we import 85 percent of our food needs and that even what we produce locally is reliant on imported items, be it in the packaging or raw material.

Amidst the ongoing economic crisis, now compounded with coronavirus crisis, prices on a wide range of imported and locally produced food items (based on individual and collective observations)—including basics like potatoes, pasta, and rice—are on an increasing trajectory, while consumers' purchasing power is simultaneously decreasing.

Back in November 2019, the World Bank warned that, if the economic situation continued to worsen, 50 percent of Lebanese could be living below the poverty line. With the situation showing no signs of improvement anytime soon, a growing number of Lebanese are worrying about how to feed their families and collectively we have all been reminded of the importance of well-developed agriculture and agro-industry sectors. Unfortunately, the agriculture sector in Lebanon is underdeveloped and contributes a mere 5 percent to GDP, with an additional 5 percent coming from agro-industry, according to the UN's Food and Agriculture Organization (FAO).

It is this reality that is facing local stakeholders in food production who tell EXECUTIVE, via telephone interviews, about the challenges of operating under the existing crisis and how the

L'Atelier du Miel

Agriculture and agro-industry had been struggling long before Lebanon's economic woes accelerated in the last quarter of 2019.

agriculture and agro-industry sectors can be supported in order for Lebanon to meet more of its food demands locally, and so decrease its dependency on imports.

A MALNOURISHED SECTOR

Lebanon's compounded crises have created new challenges for local food production sectors and brought them to the forefront of public debates on social media and news programs. However, agriculture and agro-industry had been struggling long before Lebanon's economic woes accelerated in the last quarter of 2019. "Before we talk about the crisis, we have to know that the agro-production sector was facing many problems even before the economic crisis," says Marc Antoine Bou Nassif, founder of L'Atelier du Miel, a honey production company that has been in operation since 2012.

One of the problems facing agro-industry, according to Bou Nassif, is a lack of government imposed regulations and control over food production, which creates a chaotic local market and regulatory barriers to exporting Lebanese products in external markets (he gives EXECUTIVE the example of not being able to export honey to European markets because a test for a certain enzyme is not available in Lebanese government labs).

The regional export market is another area where the food production industry has been suffering since the onset of the war in Syria in 2012 and the subsequent closure of land borders (the impact of which was felt starting 2015), says Mazen Khoury, production manager at Khoury Dairy. Because of the longer routes refrigerated trucks had to take to reach Iraq, in the example Khoury gave, the cost of transport increased from 10 percent of overall production cost to 40 percent. The regional market, according to him, is still suffering from many of the same factors today.

Indicative of a weakening economy, and another detrimental factor for local agro-industrialists according to Khoury, was the closure of regional (in 2017) and local (in 2018) supermarket chains. "These closures, in addition to the smaller markets who were also struggling with paying back the credit they owed us, caused us an estimated annual loss of $500,000," he says.

FIRST CAME THE ECONOMIC CRISIS

It is in this fertile ground of challenges that buds of Lebanon's ongoing economic crisis made their first appearance. As the agro-industrialists interviewed for this article explain, Lebanon's food production industry is a value-added one, in the

Food security

Picture provided by Biomass

sense that almost all raw materials are imported, paid for with foreign currency, and are used in Lebanon to make the final product.

Food producers were faced with a severe cash flow problem when, after the banks reopened on November 1, 2019 (following almost two weeks of closure), their credit lines were cut and access to their dollar accounts severely restricted. "It's like somebody opened a new company on November 1 and they have zero cash flow," says Youssef Fares, general manager of olive production company Olive Trade, which owns Lebanese olive oil brand Zejd. "Our only cash flow is the stock we have at hand and so we are trying to sell that and use the money to buy our supplies, because the money we have in the bank has no meaning anymore. This is the big problem." Fares tells EXECUTIVE that he only imports the bottles and containers for his olive oil because Lebanese glass production factory Soliver shut down in 2017.

The increased parallel foreign exchange (FX) rate coupled with the restrictive banking policies led to both financial and access related difficulties across the sector. Speaking for Biomass, a company which produces an organic line of fresh produce, dairy products, and pantry items, its executive manager Mario Massoud says: "Most of the organic raw material we use in farming [from the seeds and animal feed to the greenhouses and equipment] is imported. This has dramatically increased in cost and became more scarce, making it more costly to operate than before October 2019, because of the halting of the credit lines and the issues with the FX exchange." He says that buying from local agricultural distributors is also costly since their prices have increased as well (the price of organic seeds has increased threefold, for example) and they ask to be paid in cash dollars.

Khoury also tells EXECUTIVE about the increased costs from local suppliers, saying that even the price of the milk they use as raw material—which they buy from the local farms they control to supplement their own supply—has increased from LL900 per liter to LL1,350 (which was the amount set by the Ministry of Agriculture on March 4 to support farmers, who have had pay the increased cost of imported cattle feed). Khoury says their cost of production has increased by roughly 50 percent because of these factors.

Another major consequence of the economic crisis, according to Nadine Khoury, CEO of Robinson Agri, is that the halting of credit lines means the company can no longer extend credit to farmers, who are dependent on that support. "The problem with the agriculture sector is that banks do not give loans to individual farmers—you need land or assets as collateral, when most farmers rent the land—so what usually happens is that private sector agriculture companies lend to most farmers," she explains. "The economic crisis cut off our

credit limits in the banks so we were no longer able to lend to these farmers and started asking for payments in cash." Robinson's Khoury explains that since the spread of COVID-19 and increased fear about possible food shortages and limited imports during the crisis, several NGOs, in collaboration with agriculture companies, have launched campaigns to support small growers and sustain the agricultural sector. "These interventions could help in alleviating the hard times we are going through, although they are not enough on their own," she says.

THEN CAME THE CORONAVIRUS

The coronavirus has largely made matters worse for Lebanon's food producers—although some have seen sales pick up with Lebanese in lockdown looking for healthier options.

Local sales of Taqa, a Tripoli-based wholesale bakery that produces healthy snacks, had decreased by 35 percent since the start of the economic crisis in October 2019, but Soumaya Merhi, founder of BreadBasket sal, which owns Taqa, says they have stabilized since the beginning of 2020 with the start of the coronavirus lockdown. "We have experienced a positive shift in our product sales because people are looking for healthy products to consume at home," she says.

Massoud has also noticed this increased demand on health-conscious products since news of the coronavirus hit Lebanon, although he says it is too soon for him to quantify it. "Also, people are now experimenting with cooking in their homes like never before," he says. "For farmers and sellers of fruits and vegetables or healthy foods, this is opening a bigger market for them [as those looking to prepare healthier meals at home source fresh produce]." According to Massoud, demand for Biomass products has "increased tremendously in the past month," both regionally and locally, to an extent that he is worried they won't be able to keep up in the supply side (these observations are based on feedback at points of sale, when asked for a percentage increase he told EXECUTIVE no figures had been finalized yet). "If we want to increase the production of lettuce, tomatoes, and cucumbers, we should have done so three months ago," he says. "We are starting to do this now and expect the augmented harvest in August. We expect the demand to remain high because people are now more aware of the benefits of eating healthy, fresh, and organic foods."

Those EXECUTIVE spoke with have attributed the desire to cook at home and eat more healthily as behind consumer decisions they have witnessed during the lockdown period, though caution it is too early to determine the longevity of these trends or their impacts on their businesses long term. Increased interest in eating healthy and home cooked meals aside, the coronavirus crisis has caused disruptions to the food production business. Besides making imported goods even scarcer and costlier to secure, Massoud says coronavirus has had a negative impact on their exports. "We used to export via air freight with Middle East Airlines but today the airport is closed," he says. "We do have a few cargo planes, such as DHL, but they are not enough and so everyone is fighting for cargo space in air freights. Because of the corona lockdown, export is kind of limited or more expensive."

A big percentage of Zejd's clients are in the hospitality sector, from caterers to restaurants and hotels, according to Fares. With hospitality outlets across the country shut down because of the coronavirus pandemic, Zejd's local market demand is down to almost zero. While Khoury admits that agro-industry is faring better under the coronavirus lockdown than other sectors that have been completely shut down, he tells EXECUTIVE that, despite it being too early for exact numbers, he has noted a drop in consumption of dairy products that he attributes both to a decrease in consumer purchasing power and to people being more conscious of food waste (buying only the quantities they need and avoiding wasting food).

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MAINTAINING THE PRICE

Food producers' struggles with the increased cost of production, and the other operational pressures they are dealing with, makes it increasingly difficult for them to sustain their businesses without increasing their prices. Producers are in full knowledge, however, that most consumers are struggling financially and cannot afford excessive price hikes, and so tell EXECUTIVE they are trying to maintain a balance between managing their costs without pricing out their customers.

Most of the agro-industrialists interviewed mentioned relying on their export markets to intro-

Taqa

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duce fresh money into their local accounts, which, in turn, are used to pay their suppliers. "With the high conversion rates, it's almost impossible for you to continue without guaranteeing fresh money so, for me, it's become essential to keep my good books with my export partners in order to sustain my purchasing power," says Merhi, who imports 20 percent of her raw material and now exports almost 50 percent of her production to Qatar, Canada, and very recently to Saudi Arabia.

Merhi says she has been able to keep Taqa's price as is not only by relying on exports but also through producing less quantities, trying to access raw material locally when possible, negotiating the best possible deals with her suppliers, and creating synergies with local producers who use similar ingredients as her.

Khoury says that, despite a long resistance to doing so, those in the dairy production sub-industry could no longer absorb the compounding cost increases and so hiked their prices by 8 percent in January 2020, followed by another 8 percent increase in March. He explains that while Dairy Khoury's prices have increased by 16 percent so far this year, their cost of production has increased by around 50 percent. Biomass also only recently, in early April, introduced an average price increase of 15 percent on some products, although they are trying to keep their prices in check by leveraging both their export markets and stocks and attempting to negotiate better deals with their suppliers, according to Massoud.

This increase in the price of food, in a time when a big percentage of Lebanese are losing their jobs or experiencing reductions in their salaries, has scary implications. "The potential problem is bigger than a factory closing or companies going bankrupt," says Khoury. "Today, if people can no longer afford to feed their children, we will be facing a social problem where people might steal or commit crimes before they allow their family to go hungry. The problem started with an economic crisis and corona but it is heading to an even worse direction of a problem of famine."

SHORT-TERM SUPPORT

Given this scenario of increased prices on imported foodstuffs (and the upward creeping prices of locally produced ones) it has become clear that if the Lebanese government wants to avoid the looming threat of hunger among the country's population, then one of the immediate and more effective ways of doing so is through supporting local food producers. "Today the crisis is an opportunity to solve the key problems facing beekeeping and agro-industry in general," Bou Nassif says. "It is forcing us to give importance to our local production since we can no longer import at the same rate as before. We also have to export agro-industry products to get fresh money into the country so that's another reason to support the sector." Supporting local food production, according to Merhi, also has the added benefit of employing Lebanese, decreasing dependency on imported

foods, and therefore benefiting the local economy through generating a circular economy.

Both Fares and Robinson's Khoury tell EXECUTIVE separately that the government should subsidize some of the food production industry's imports. "A new strategy should be placed by the government who is the body responsible to provide real solutions to the current economic collapse," Khoury says. "What is needed in the short is an immediate action plan to assist the agri input companies by subsidizing their import needs just like they are doing with fuels, grains, and medical supplies. We still only need $75 million till the end of 2020." She explains this figure is based on the cost estimations made by the association of the distributors of supplies for agricultural production in Lebanon, and was presented to Riad Salameh, the governor of Banque du Liban, Lebanon's central bank, and the agriculture minister separately a couple of months ago. For Mazen Khoury, the short term measures the government can take in support of the sector are subsidizing the difference in the currency exchange or, if that is not possible, supporting agricultural businesses with exports so they can sustain themselves with the fresh money accounts.

UP BY THE BOOTSTRAPS

While short-term measures such as subsidies are vital to offer immediate support to the sector, it is also important to keep the lessons learned during these crises in mind and foster long-term measures to develop the food production industry. The aim, according to those interviewed for the article, is not to have food production be the sole, or even the strongest contributor to GDP—as there are too many obstacles in the way for that (see article page 6 on food sufficiency)—but rather to develop it enough to at least meet local demand and be less dependent on imports. "I hope now we understand that the economy should be built on a multitude of factors, such as a well-planned agriculture sector that can contribute 8 percent to GDP, good industry (including agro-industry) that is 20 to 25 percent GDP, and also services and tourism," says Atef Idriss, CEO of MENA Food Safety Associates. "That way, if one sector is hit the other sectors can support it. We got to a time when our economy became too dependent on services and tourism and we spent a big portion of our budget to develop infrastructure, real estate, and tourism in urban areas, forgetting that we have citizens in rural communities such as areas of the Bekaa who can only live from their land, or in the south who want to export their olive oil—one does not cancel the other. We need a minister of economy who can look at the big picture and develop an interconnected economic model for Lebanon."

The need for a long term vision and plan developed by the public sector that would guide the development of the food production industry was stressed by all those to whom EXECUTIVE spoke. The plan would have, as its main pillar, the reduction of dependency on imports (see comment page 26) both for needed ingredients in the agro-industry and the supply chain materials for agriculture. "For local consumption to [help improve Lebanon's trade balance], it is important to produce locally and try as much as possible to meet local demand in some products, such as wheat or potatoes, through local production," Fares says. "There needs to be a strategy to provide food for people at lower costs, so that means with reduced imports."

To Merhi, any plan to support the agro-industry sector through the production of raw material should follow through the production process until the end product. "To invest in agro-industry, you need to have the supply chain buckled," she says. "To simply plant something is not enough, you need to think of distribution, supply, and workers [employed] under good working conditions." She adds that, in order for this to succeed, it needs private sector initiative from individual companies with the support of the public sector, the latter of which she sees as having failed agro-industrialists to date.

We are living in unprecedented times globally, where nothing is certain and the future is obscure. In Lebanon, this is compounded by an ongoing economic and financial crisis. Lebanese are dealing with the very real worry of going hungry, having lost parts of their incomes or their jobs and seen prices of food increase. This should not be a time to panic and give in to despair, however, it should instead be the time for the government to take immediate measures to support local food production. Lebanese food producers were succeeding prior to these crises, despite all the obstacles in their paths—all they are asking for now is for some support to be able to feed the nation.

By Nabila Rahhal

FOOD IN THE TIME OF CORONA

Q&A with Nadine Khoury, COO of Robinson Agri, on how COVID-19 has impacted agriculture

Lebanon's ongoing economic crisis has highlighted the importance of well-functioning productive sectors—namely agriculture and industry—to a country's GDP and economic well-being. This was further emphasized with the COVID-19 global pandemic significantly slowing down trade, disrupting food supply chains, and forcing each country to think of its own supply needs first.

EXECUTIVE spoke with Nadine Khoury, chief operating officer of Jbeil-headquartered Robinson Agri, a greenhouse producer and provider of agricultural and irrigation products and services with customized turnkey projects, to learn about how COVID-19 is impacting agriculture in Lebanon and what potential opportunities can be gleaned from this challenging time.

E How has COVID-19 impacted Lebanon's farmers and the agriculture sector in general?

In Lebanon, the agriculture sector was already suffering from the severe economic crisis and now their challenges have been compounded with this crisis.

In his March 22 statement, the minister of interior placed the agriculture sector on the list of exceptions [that can continue to operate under certain conditions, despite the lockdown] and the minister of agriculture also stated (in a decree issued on March 23) that farmers and agricultural companies can continue to operate, but under reduced hours.

This is important because agriculture companies are an essential part of the food supply chain and we should make sure that our country's food supply is not disrupted by unforeseen events. For example, at Robinson Agri, our skeletal warehouse is open only on schedule for the delivery of materials and the receiving of orders, although now it is the growing season and the whole sector is usually busy.

Another problem is that growers need workers to sow seeds and seedlings and do other tasks, as most farms are not yet mechanized in Lebanon and we don't have the machinery whereby one employee in a plant machine can plant the whole field. Because of COVID-19, farmers have reduced the number of workers on the field and are following precautionary measures so the growing phase is taking a longer time.

In times like these, it is very important for us not only to give tribute to healthcare providers but also growers and food suppliers who are working daily to bring food and fresh fruits and vegetables to our plate.

E Do you think that this crisis will serve to foster more value and consideration for the agriculture sector?

We cannot take the agriculture sector for granted anymore. Lebanon's economic crisis opened our eyes to the importance of productive sectors, especially agriculture. Studies from the Food and Agriculture Organization (FAO) indicate that 65 percent of the land in Lebanon is arable and yet only 25 percent of that is planted.

So the potential is huge.

Yes, it is. What is happening today is that because of the corona crisis, we are no longer able to import [foodstuffs and agriculture supplies] as much as before. In Lebanon, we already had difficulties importing because of the liquidity problem, and now, because of corona, each country is taking care of its own needs first. What is affecting the world is also affecting us and here we are talking about decreased productivity, decreased transport etc.

To give you a simple example, I am now being asked to place orders from European companies five months in advance whereas before orders needed a maximum of 20 days to be processed. This is because globally all companies have reduced their working hours and are under a lot of pressure.

E ***What will be the impact on this season's harvest and our supply of locally grown vegetables and fruits?***

We had already received seed varieties for some families of products before the corona crisis had started but were too late for the irrigation equipment and some fertilizers.

Because of the economic crisis, many growers had already planted roughly half the amount they usually do. Even if, let us consider that, consumers will stick to the bare minimum of food needs because of their decreased purchasing power, the produce we are talking about are considered basics. In Lebanon, can you live without tomatoes when a big portion of our cuisine is based on tomato sauces? There are some vegetables and fruits that are considered luxuries and one can live without them, but a lot are necessities and less of them has been planted this year.

Also, because of the corona related closures, the season has been disrupted in that many growers delayed planting by up to three weeks (since warehouses decreased their working hours, it takes more time for the farmers to secure the needed seeds).

E ***Will this delay affect the produce?***

Yes of course. When you delay planting, it shortens the season and reduces the amount of fruits or vegetables that you harvest. Also, if after planting growers don't have access to quality fertilizers, plants will not grow properly which will impact the produce.

Agriculture engineers are no longer able to physically visit farmers anymore. Sometimes growers do send them pictures of the plants and agriculture engineers address the issue remotely but it is not the same [as being physically present].

E ***When will we consumers feel the impact of these scenarios?***

Starting June or July when it is harvest time. Fruits should be OK because they grow on trees and this year, the weather was favorable for them. Some types of vegetables will also not be affected at the consumer level because big growers had already stocked up on needed seeds and equipment. The problem will be with the small and medium farmers who constitute up to 50 percent of farmers in Lebanon. Their income will be reduced because of their decreased production.

E ***How have you adapted your working environment in light of the government measures taken to reduce the spread of COVID-19?***

We are having online meetings via Zoom with our line managers and sales engineers to keep business on track. We are trying to keep our warehouse open as much as possible. We in the agriculture domain are used to work in uncertainty and difficult circumstances—because we work with nature which is unpredictable—and so we are trying to see what we can offer to mitigate this crisis so that Lebanon doesn't face a food security problem down the line.

E ***Anything you would like to share in that regard?***

We are thinking of ideas that don't need a lot of investment, since there is a financial problem these days. We are also thinking of how we can support people in planting in their own gardens, about what crops grow best in this scenario, especially for those that have homes in rural areas. We are using our online platforms to promote this idea, encouraging people to visit our nurseries to receive vegetable seedlings and grafted seedlings that are resistant to soil borne disease and climate change and produce more.

> "In Lebanon, the agriculture sector was already suffering from the severe economic crisis and now their challenges have been compounded with this crisis."

When it comes to the farmers, we are trying to support them, regardless of whether they are paying us or not, so they can still plant on time. We also introduced crop varieties that are naturally resistant to diseases so they can decrease the usage of pesticides, if not enough quantities of that are available.

We are also promoting hydroponics, which is a way of planting that produces healthy clean produce with more yield and 90 percent less water and minimum fertilizers. A well-trained farmer or a new investor could seize this opportunity to meet consumer demands and improve the local market.

Food security

By Nabila Rahhal

BACK TO BASICS

Growing trend of individual or community planting in Lebanon

As prices of both imported and locally produced food items continue to increase and Lebanon's food security is potentially threatened (see articles on agro-industry and food security, pages 6, 10, and 22), the old Lebanese proverb *"fellah mekfi, sultan mikhfi"*—which roughly translates to "a satisfied farmer is really a sultan"—rings true. Knowing how and being able to grow one's own consumption needs of fruits and vegetables, is a wealth in these economically challenging times we are passing through.

This awareness of the significance of a productive sector like agriculture was close to zero prior to 2019. Ramy Boujawdeh, deputy general manager at Berytech—an ecosystem that fosters innovation technology and entrepreneurship, initiated in 2002 by Université Saint-Joseph, recalls (in an earlier interview with EXECUTIVE) that when they launched the first edition of accelerator program Agrytech in 2017, they struggled to attract participants. After a lot of efforts to drum up interest in agriculture, targeted mainly toward universities, this was slowly beginning to change and their third accelerator round—launched on October 16, 2019—attracted 110 participants (up from 65 in the first batch).

As indicators of bleak days to come over Lebanon showed their first buds toward the end of 2019, this emerging interest in agriculture was heightened as more Lebanese felt the need to be food independent (being able to provide food for one's self and community). This interest was manifested at individual and community levels, with more people showing interest in growing their own food. Kon, a neighborhood growing initiative in Furn el-Chebbak that was developed in early 2020, is one example of community efforts revolving around agriculture.

Also born out of this awareness of the value of producing one's food were volunteer-based movements or initiatives aimed at supporting those interested in becoming more food independent. The popularity of these movements can be viewed as an indicator of the growing interest in agriculture. A Facebook group called Izraa, developed by agricultural engineers to answer all agriculture-related questions (whether urban or rural, high or low tech) and to share expertise through tutorials, exceeded its admin's expectations by reaching 1,000 members barely two days after it was launched in mid-January 2020, according to Salim Zwein, one of Izraa's founders. The group has 14,500 members at time of writing, an increase of 2,200 from the same time last week, and receives an average of 15 questions per day, per this writer's observation.

Similarly, a talk on food sovereignty that was held in Tripoli's Nour Square early in December 2019 took three hours instead of the planned hour and a half due to the high level of engagement, with a larger than expected 150 attendees. The talk was organized by the Socio Economic Action Collective (SEAC), a coalition of individuals and organizations working on agriculture-focused sustainable development projects with refugees and vulnerable communities in Lebanon, members of which formed Haraket Habaq as a media and public engagement platform for the SEAC. One of Haraket Habaq's founders,

> Awareness of the significance of a productive sector like agriculture was close to zero prior to 2019.

Mourad Ayyash, tells EXECUTIVE that the platform came to being just two days after the talk while a group of SEAC members were planting in Nour Square and distributing seeds to protestors. "We saw the need for us to organize this momentum that had developed around the importance of agriculture and food sovereignty," Ayyash says. "So, we went across Lebanon (Hemmanah, Majdal Anjar, Saida, Sour, Akkar, Tripoli, Beirut, and the Bekaa) engaging with whoever was interested in this subject. From these talks, other initiatives were born."

There is also increased interest in agriculture from private sector individuals, according to Shady Hamadeh, director of the Environment and Sustainable Development Unit (ESDU) at the American University of Beirut's Faculty of Agricultural and Food Sciences. "Many are expressing interest in investments in agriculture," Hamadeh says. "So we would like to take this opportunity, through Ardi Ardak [NB: a national food security initiative launched in December 2019 as a collaboration between ESDU, the Lebanese League for Women in Business (LLWB), the Food Heritage Foundation, and Zico House] to link these investors and big land owners with small farmers and rural women. Rural women are at the center of Ardi Ardak."

THE FACE OF THE MODERN DAY FARMER

Those interested in individual and community planting nowadays span a wide range of people in Lebanon. "We have professional farmers who ask us a question related to crop disease and also individuals asking us how to best care for their gardenia or what vegetables to plant next to their olive trees, so we cater to everyone," says Izraa's Zwein.

Although the interest in agriculture and being food independent was born out of Lebanon's economic crisis—proof being that a big percentage of the initiatives promoting agriculture were developed by the end of 2019—the COVID-19 crisis gave people enough time on their hands to do something about it. Izraa receives daily comments from members who had no prior background in agriculture but say they have developed a passion for planting after having first tried their hand at it during the lockdown, according to Zwein. Although he cannot yet quantify it, he also says that based on interaction within the group since the start of the lockdown there has been an increase in both high-quality rooftop garden installations, complete with raised beds, and in youth returning to rural areas and planting in the neglected land of their grandparents.

Asmahan Zein, president of LLWB, also believes that the coronavirus crisis has made people with no background in agriculture realize its value as a productive sector. "People are looking toward alternative productive industries that would help them survive and they no longer assume that everything will arrive to them while they are at their office in Beirut," Zein says, explaining that this thinking has allowed her to gather several organizations they work with around Ardi Ardak.

> Emerging interest in agriculture was heightened as more Lebanese felt the need to be food independant.

Because the quarantine measures limit gatherings, growing efforts are more at the individual level rather than the community level nowadays. Souad Abdallah, founder of Kon, says that some neighbors have expressed their interest in the initiative but have shied away from actively participating because of the restrictions; she expects this to change once the lockdown is lifted. For now, there are four active participants in the rooftop garden of her building and they communicate online with representatives of another rooftop garden two minutes away from her and three balcony planting projects, also in the area.

THE ABCS OF PLANTING

The beauty of planting is that anyone interested can find a surface to grow something in. When it comes to food, herbs are ideal for those planting on small balconies, says Zwein, while potatoes and tomatoes are more suitable for rooftop gardens and those with access to land can plant wheat alongside a variety of fruits and vegetables, depending on the land's specifications.

Abdallah says they have assigned different produce for the participating neighbors depending on the specifications of their planting area: One neighbor grows lettuce for the community because his garden gets a lot of shade and that is favorable for lettuce, for example.

The initiatives EXECUTIVE spoke to all promote sustainable agriculture, which Hamadeh explains as environmentally friendly agriculture that is resources efficient, or permaculture, defined as "an agricultural system or method that seeks to integrate human activity with natural surroundings so as to create highly efficient self-sustaining ecosystems."

This type of agriculture does not use chemical fertilizers or pesticides, which has the benefit of

driving down gardening costs. The latter two, according to Zwein, are the highest costs for farmers, especially nowadays when the price of chemical fertilizer has gone up because of the foreign exchange rate. Instead, permaculture uses organic fertilizer or compost instead. This can either be homegrown—Abdallah says Kon makes its own compost out of egg shells, coffee grinds, and organic material such as fruit peels—or bought from local producers. In this case, the cost of compost for a 200-square meter rooftop garden would be an average of LL50,000, Zwein says, speaking out of personal experience.

Abdallah says permaculture uses less soil than conventional planting, explaining that in Kon they use layers of dead matter (dead leaves), green matter (grass), horse manure, and soil to plant the seeds in. "This decreases the weight on the roof and the usage of soil and creates a healthy environment for plants," she explains. Other ways Kon is decreasing costs is by using donated recyclable items for planters and pots, and relying on exchange of services to get some gardening tasks done (neighbors help her plant in exchange for seeds or seedlings, for example).

Zwein estimates that a 6 meter by 3 meter raised bed (for rooftop gardening), with a depth of 60 centimeters, would need a maximum investment of LL1 million when using the best soil (a mix of 80 percent peat moss and 20 percent compost). Those who already have arable land would have an understandably smaller investment, since the soil is already there.

WHY PLANT?

There are many reasons why Lebanese are more inclined to spend more time with a shovel and soil these days. A main driver for promoting agriculture among the movements and initiatives EXECUTIVE interviewed is to promote food independence. "Food sovereignty among urban dwellers is a main goal for Kon because we are passing through an economic crisis when it is very easy to produce our own food and also very healthy since we know we are putting into the soils," Abdallah says.

Ayyash also speaks of the importance of food sovereignty and people's right to nutritious food. He adds that providing refugees with employment opportunities is another goal for Harkat Habaq, since Lebanese labor law restricts the fields which they can work in. He gives an example of a project in Tripoli that Haraket Habaq is collaborating on with another organization called Hajjar w Bashar (Stones and People) where the municipality donated a 13,000 meter square garden to be planted by the two organizations—produce from the land will be distributed by them to vulnerable communities.

A main driver for promoting agriculture among the movements and initiatives EXECUTIVE interviewed is to promote food independance.

Aside from being able to feed one's self and community, planting in rooftop gardens and small plots of land, if done at a very large scale, could conceivably free up Lebanon's already limited agricultural land. "When people can feed themselves from these ways, it will decrease the pressure on the land used for vegetables nowadays and so it can be used for more interesting projects such as growing wheat or animal feed, for example," Zwein says.

One of the main goals of Ardi Ardak, according to its concept document, is to "promote food security at the rural producers' level by promoting small scale producers' access to markets; and urban consumers level by providing them access to healthy local produce."

For Abdallah, community growing in urban areas has the added benefit of improving air quality, an element which she feels is very important in Beirut, where air pollution exceeds World Health Organization recommendations over threefold. Abdallah also says that neighborhood planting initiatives such as Kon nurture a sense of community among neighbors and she hopes to see this initiative eventually replicated across many of Beirut's communities. "It shows that people can work together on a common interest without having a political umbrella or identity," she says.

Whether this individual and community growing trend is a temporary fix to lockdown and economic hardships or whether it will remain in the long term remains to be seen. What is clear, for now, is that people have realized that they can no longer take for granted their access to food, and that the effects of the economic and coronavirus crises has had and will continue to have impacts.

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By Abdallah al-Wardat

THE CHANGING FACE OF VULNERABILITY

Food insecurity in Lebanon

As Lebanon weathers through an economic crisis and COVID-19 outbreak, food insecurity has become a major concern across media headlines and in society. More stories are surfacing on how many families can no longer afford to meet their food needs, raising questions on the future of Lebanon's fragile food sector.

What is food security, and what does it mean for a country to be food insecure? For the United Nations World Food Programme (WFP), the world's largest humanitarian agency concerned with food security and food assistance, these questions are essential in today's Lebanon. Access to food is a basic need and a basic right, with serious and far-reaching human and economic consequences when under threat, especially since the poorest and most vulnerable groups in society are usually those first and most affected.

At the 1996 World Food Summit, the United Nations' Committee on World Food Security defined food security as people having at all times "physical, social and economic access to sufficient, safe and nutritious food that meets their food preference and dietary needs for an active and healthy life." It is not just food availability that determines the food security status of a certain country, group, or person, but also the stable and constant access to food, and how this food is used. How do these definitions apply to Lebanon in the present circumstances?

FOOD AVAILABILITY

Food availability derives from domestic production or from imports, with Lebanon relying heavily on the latter as a net food importer. The recent scarcity of US dollars and capital control

measures have put food availability at risk as food importers have been facing increasing obstacles to make payments on the international market.

Between 2015 and 2019, Lebanon imported about three million tons of food products each year to meet the demand on the domestic market. Less than 20 percent of the consumption needs of cereals was covered by local production.

FOOD ACCESS

Food availability on the domestic market, however, does not guarantee that consumers will be able to afford and to access, in sufficient quantity, the various and adequate food products necessary for a healthy diet. Even prior to the COVID-19 outbreak and the resulting lockdown of economic activity, WFP has been concerned that access to food was threatened by the steady inflation in food prices that commenced in the latter months of 2019 and the economic recession causing large-scale job losses and salary reductions.

Between September 2019 and March 2020, WFP research recorded an increase of 40.1 percent in the price of the basket of eight basic food commodities (rice, bulgur, pasta, white beans, sugar, sunflower oil, salt, and canned meat) which serves to determine the cash transfer value for food assistance programmes benefitting vulnerable Lebanese and Syrian refugee families. This food basket is known as the Survival Minimum Expenditure Basket (SMEB), as it is required, in sufficient quantities, to cover an individual's minimum survival food needs for a month. The inflation observed for the SMEB can be compared to the inflation reported by Lebanon's Consumer Price Index (CPI), derived from a much larger basket of food and non-alcoholic beverage products, which stood 18.4 percent for the period September 2019 – January 2020.

This high inflation of food prices, unprecedented in Lebanon in the last ten years, is strongly correlated to the unofficial devaluation of the Lebanese lira against the US dollar, which made food imports more expensive and also more difficult to get due to capital control measures. Food price inflation combined with inflation affecting non-food products and services, and with loss of income resulting from rising unemployment and salary cuts, has undoubtedly and drastically reduced Lebanese households' ability to afford adequate and sufficient food, especially for the poorest and most vulnerable.

Since 2014, WFP and its partners, including international donors and Lebanon's Ministry of Social Affairs (MoSA), had already been reaching out to almost 150,000 Lebanese and Syrian refugee families (close to one million individuals) with cash-based food assistance to cover their basic needs (SMEB). Estimates, however, indicate that almost twice as many additional households are currently unable to meet their minimum food needs and would require assistance until economic recovery enables them to afford the cost involved.

THE FACE OF VULNERABILITY

The economic crisis has changed the face of poverty and vulnerability in Lebanon—it has made it significantly more acute.

Even prior to the current economic and COVID-19 crises, poverty levels were high in Lebanon, hovering just above 30 percent according to the World Bank. Based on negative GDP per capita growth projections for 2020, the World Bank estimates poverty prevalence will rise to 45 percent in 2020, up from 37 percent in 2019. Likewise, extreme poverty (also known as food poverty) is expected to affect 22 percent of the population, up from 16 percent in 2019. According to these estimates, Lebanon could count as many as 335,000 poor Lebanese households in 2020 (out of 4 million Lebanese residents), including 163,000 households (close to one million individuals) under the food poverty line.

Between September 2019 and March 2020, WFP research recorded an increase of 40.1 percent in the price of the basket of eight basic food commodities.

Significantly, Lebanon's Ministry of Education and Higher Education reported last January that 40,000 students previously schooled in the private education system had enrolled in public schools, as their families were no longer able to afford tuition fees. This represented a 15 percent increase in students enrolled in the public education system, at a time when the government's fiscal capacity is severely challenged. This example is emblematic of a sudden and rapid impoverishment affecting even the middle class, while the impact on the poorer strata of society is undoubtedly much more severe.

Syrian and other refugees as well as migrant workers residing in Lebanon have also been seriously affected by the economic downturn. WFP estimates that between 2019 and 2020, the pro-

portion of Syrian refugee households unable to meet their minimal survival needs, including food, has increased from 55 percent to 83 percent (WFP estimates that Lebanon is host to 1.2 million Syrians). Only half of these extremely vulnerable families are currently receiving basic assistance.

THE NEED FOR CHANGE

This sudden and significant rise in poverty and food insecurity comes at a very critical time and in a very challenging context in Lebanon, where targeted social safety nets are the lowest in the Middle East and North Africa region (at less than one percent of GDP), and when public debt and fiscal challenges severely undermine the government's capacity to mitigate the impact of the crisis, even on the poorest and most vulnerable.

The government and partners, including WFP and international donors, are acutely aware of the situation and are urgently seeking to protect the most vulnerable in the short term, while looking at sustainable solutions to improve social safety nets as well as economic and fiscal policies impacting poverty and food security in the medium and long term.

The MoSA's National Solidarity Programme launched in early April to assist 200,000 vulnerable households through cash-based transfers puts food security at the center of its objectives. Likewise, reform and expansion of the National Poverty Targeting Programme (NPTP), which could benefit as many as 150,000 extreme poor Lebanese households as an emergency social safety net, are being actively discussed. The main feature of the current NPTP, supported by WFP, is to ensure that food needs of the poorest Lebanese families are covered through a food "e-card" that can be used as a means of payment at food retailers. WFP also commends and supports initiatives from civil society and non-governmental organizations to address urgent food needs across Lebanon.

Availability and access to food at affordable prices have emerged as major issues in Lebanon in recent months. As they are closely associated to basic human and social rights, if not to social justice, and as their contribution to health and economic indicators is highly critical, they deserve priority attention.

The measures and programmes discussed above are only part of what is needed to address urgent needs and to build efficient social safety nets to protect food security. Food security in Lebanon, sustainable and affordable to all, will require all actors to engage in a wider range of reflections and reforms, touching on domestic food production and transformation, agricultural policy, food value-chains and markets, terms of trade issues, and the environment. In this sense, food security as a central social and economic determinant should also be seen as a critical starting point and catalyst for reform in general.

Lebanon is facing a period of many unknowns, yet in the current state of emergency at national and global levels the provision of enough food at affordable prices for all Lebanon's residents, including refugees and migrant workers, must be secured. Failing this, the country's food security situation will rapidly deteriorate, both in terms of food availability and access to food.

Diminishing food imports will lead to increasing food scarcity, while the agricultural sector is also bound to suffer from the higher prices of imported inputs such as seeds and fertilizers. As for access, if food prices continue to increase and if families continue to lose their income, there is a high risk that residents will no longer be able to afford their daily meals.

This highlights the need to undertake not only appropriate and urgently needed fiscal and structural reforms, but also to address the immediate food and essential needs of the most vulnerable households. Lebanon should also explore cost-effective methods to increase its domestic food production, which would decrease its reliance on food imports and increase job opportunities. It would also relieve the pressure on Lebanon's scarce foreign currency reserves, and ultimately reinforce them through increasing exports from the food sector.

> The economic crisis has changed the face of poverty and vulnerability in Lebanon—it has made it significantly more acute.

Lebanon's food sector must reach stability when it comes to access and availability. This would considerably reduce the risks and consequences of sudden economic or health shocks such as the ones Lebanon and the rest of the world are facing now with the coronavirus pandemic.

Abdallah al-Wardat is the country director and representative of the World Food Programme office in Lebanon.

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Comment

Food security

By Souhad Abou Zaki

HOME GROWN WHEAT

Lebanon needs to lower its import dependency

My grandfather died in 2016 at the age of 103. He survived two world wars, the Great Famine of Mount Lebanon (1916 – 1918), and the Lebanese Civil War. A few years before he died, I was with him as he read the newspaper and he turned to me and said: "Are you storing wheat? Things aren't going well." I remember laughing—at the time I didn't understand why he was so worried. Then the day came when everybody started to worry about wheat and food security in general.

Based on Food and Agriculture Organization (FAO) indicators, the prevalence of undernourishment in Lebanon has been on rise since 2011, yet the issue of food security and hunger did not make it to the headlines until the economic crisis started to worsen in late 2019. With the fast deterioration of economic conditions and the outbreak of COVID-19, all pillars of food security—availability (through domestic production or imports), access (physical and economic), utilization (consumption of safe and nutritious food), and stability (of the three other dimensions over time)—seem to be at risk.

The media has been focusing on the threat of the COVID-19 pandemic and Lebanon's economic crisis on food availability and stability—this is understandable. Lebanon is a net importer of food, with the latter accounting for 18 percent of the country's total imports in 2018, according to the World Bank, and covering a wide range of categories from wheat to rice, sugar, fruits and vegetables, food preparations (such as spices and oils), and cattle. The reliance of domestic consumption on these imports is striking and best captured by imports to consumption ratios across food categories: these ratios exceed 80 percent for major categories such as cereals and 100 percent for others such as refined sugar, rice, and vegetable oil. This heavy dependency on imports raises concerns over the availability and stability of a large range of items, not just wheat.

Food access seems to be even more problematic. The pandemic may constrain physical access to food due to quarantine measures as well as disrupt distribution channels. While in Lebanon food producers and distributors have been allowed to con-

tinue to operate, this is happening under certain constrictions regarding the times they can open and the levels of staff they are able to work with. Some facilities and branches were forced to shut down, and restaurants, which are also part of the food supply chain, have closed. This has come at a time when the purchasing power of the Lebanese was already under strain due to the liquidity crisis. This could be compounded by the coronavirus, as it may also trigger price hikes if food exporting countries resort to trade restrictions and aggressive stockpiling—as has happened during previous crises and pandemics. Higher food prices in international markets would, in turn, be passed-down to domestic prices, making food less affordable.

In Lebanon, both poverty and extreme poverty are expected to rise to 45 percent and 22 percent respectively, according to the Ministry of Finance, while the World Bank, prior to the coronavirus crisis, warned that the poverty level could hit 50 percent if the economic situation continued to worsen. Inflation and unemployment are set to surge as well, with effects already being felt by many. With the vast majority of Lebanese households being net buyers of food (meaning they consume more food than they produce), these changes will alter what economist Amartya Sen calls exchange entitlement set—the "set of all alternative bundles of commodities they can acquire in exchange for what they own"—and eventually change their consumption habits. Based on a 2016 report by ESCWA, on average, Lebanese households spend 20 to 35 percent of their income on food and so any increase in food prices will translate into a further reduction in purchasing power and food access. Even before the pandemic's effects began to be felt in Lebanon, a February 2020 report by the Central Administration of Statistics pointed to the substantial increases in price of staple foods such as rice (40.2 percent), flour (28.7 percent), and lentils (36.5 percent), as well as other food categories.

Practically, when faced with such price increases, households resort to different coping mechanisms to escape hunger or at least to mitigate the impact of the crisis. Coping mechanisms vary from borrowing money to substituting expensive food items with cheaper ones. Such substitutions may occur within the same food category from different sources, across categories, or in the quality of the same products that are frequently consumed, as explained in a 2008 paper on substance consumption by American economists Robert T. Jensen and Nolan H. Miller. Households may even drop certain categories or sacrifice on other areas of their budget, such as healthcare or education, to be able to continue purchasing some foodstuffs.

As much as these coping strategies provide a way to escape hunger, they can also be highly problematic as they hide a more serious trade-off between nutritious food and cheap food—particularly when done in absence of adequate understanding of their nutritional implications. This is how the current crises are impacting food utilization, the third pillar of food security. Needless to say, poor Lebanese households in general, and vulnerable groups including urban poor and refugees in specific will be hit the hardest—the food crisis in 2008-2011 provides a good illustration.

In Lebanon, both poverty and extreme poverty are expected to rise to 45 percent and 22 percent respectively.

BACK TO WHEAT

Wheat and wheat products constitute an indispensable component of the Lebanese diet. On average, the consumption of wheat per individual is around 130 kg per year, the highest among cereals, according to a 2010 report by the FAO and the Ministry of Agriculture (MoA)—not to mention that it is a major feed for livestock. Thus, the availability of wheat is more of a necessity than a choice—a matter of food security par excellence.

Unfortunately, 80 percent of the wheat consumed domestically is imported—a good reason to be worried about its availability. Around 90 percent of imported wheat is sourced from Ukraine and Russia, making Lebanon highly susceptible to changes in these countries. Any move toward trade restrictions in these countries would threaten wheat supplies, raise the imports bill in Lebanon sharply, and most likely the cost would be passed down to the consumer through a spike in domestic prices. Thankfully, this has not been the case so far.

To mitigate such risks, the Ministry of Economy and Trade (MoET) normally keeps wheat reserves in its silos at Beirut port that would cover about three months of consumption. For years, private mills had been importing wheat and supplying the market, however, with the increasing shortage of dollars and the need to carefully manage the remaining reserves, the MoET is now considering purchasing the wheat instead. This step would save costs significantly if done properly, but also reflects how critical the situation has become.

Imports have always been a cheaper alternative to domestic production. Lebanon has been importing an average of 567,958 tons of wheat annually, while domestic production averaged about 130,000 tons only, according to the FAO in 2019. Around 77 percent of the wheat grown domestically consists of hard varieties of wheat (durum), according to the MoA, which are not suitable for making the typically consumed Arabic bread but is suitable for *burghul, frikeh,* and pasta. In an attempt to increase the production of soft varieties of wheat and lower imports, the MoA, through the Lebanese Agricultural Research Institute (LARI), distributed free seeds in 2019 encouraging farmers to grow soft wheat, though it is too early to determine the outcome of the initiative.

In principle, Lebanon can grow its wheat, but it cannot be self-sufficient for many reasons. First, the country does not have enough land to be self-sufficient. Unplanned urban expansion has reduced the amount of land available for agriculture, although increasing cultivation area is possible. Second, wheat agriculture suffers from major anomalies. Yields vary significantly with climate conditions and the amount of rainfall every year, which make them unpredictable. Under certain conditions, supplementary irrigation can help increase yield but in most cases small farmers do not have the financial means to invest in appropriate irrigation systems. Habib Massaad, an agricultural engineer and consultant whom I spoke with for this article, clarifies that increasing output does not rely solely on expanding the area cultivated but also on increasing the productivity of currently cultivated ones. He stresses on the importance of investing in supplementary irrigation systems to reduce waste, increase productivity, and extend production over more than one season.

Third, compared to high-value crops, wheat does not generate high revenues making it less attractive to farmers. Yields vary largely between 100 kg/dunam (dn) and 800 kg/dn depending on the variety grown and the characteristics of the soil, as stated in a 2019 study by a team at the American University of Beirut titled: "Challenges and Sustainability of Wheat Production in a Levantine Breadbasket: The Case of the West Bekaa." Despite the high yield in certain areas, the study found that costs of production remain high due to the cost of labor, inappropriate irrigation techniques, and expensive land rental rates, not to mention the post-harvest losses due to inappropriate storage or transportation methods.

Wheat producers have been able to secure consistent average revenues of $150/dn according to the FAO, due to government subsidies that are managed by the Directorate General of Cereals and Beetroot with the help of LARI. The government offers seeds to farmers at subsidized prices, buys the harvested wheat from them at a set price, and sells it to mills at discounted rates to keep the price of bread stable.

■ Unfortunately, 80 percent of the wheat consumed domestically is imported—a good reason to be worried about its availability.

Over the years, farmers became largely dependent on these subsidies, best illustrated in the 2019 study above, which found that 42 percent of the farmers surveyed would either possibly or definitely stop growing wheat if the government suspends subsidies—an alarming statistic given the ability of the government to sustain them is now in doubt.

RESTORING PRIORITIES

What to grow, how to grow, and what to specialize in are not straightforward questions to answer. It needs careful examination and a strategy to make use of abandoned lands and available resources in an optimal way. So far, the MoA has made some good efforts but these have been insufficient and scattered. The gravity of the situation now requires a more proactive and comprehensive approach to food security and agriculture, and a massive coordination of efforts among different stakeholders including different ministries and academic institutions, as well experts from other sectors such as energy and technology.

Looking at food security in a very fragmented way is no longer plausible and self-sufficiency, as much as it sounds reassuring, should not be the aim. Lowering import dependency and improving domestic production should be the priorities now.

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