

Beirut Port Explosion to Have Long-Lasting Economic and Political Consequences



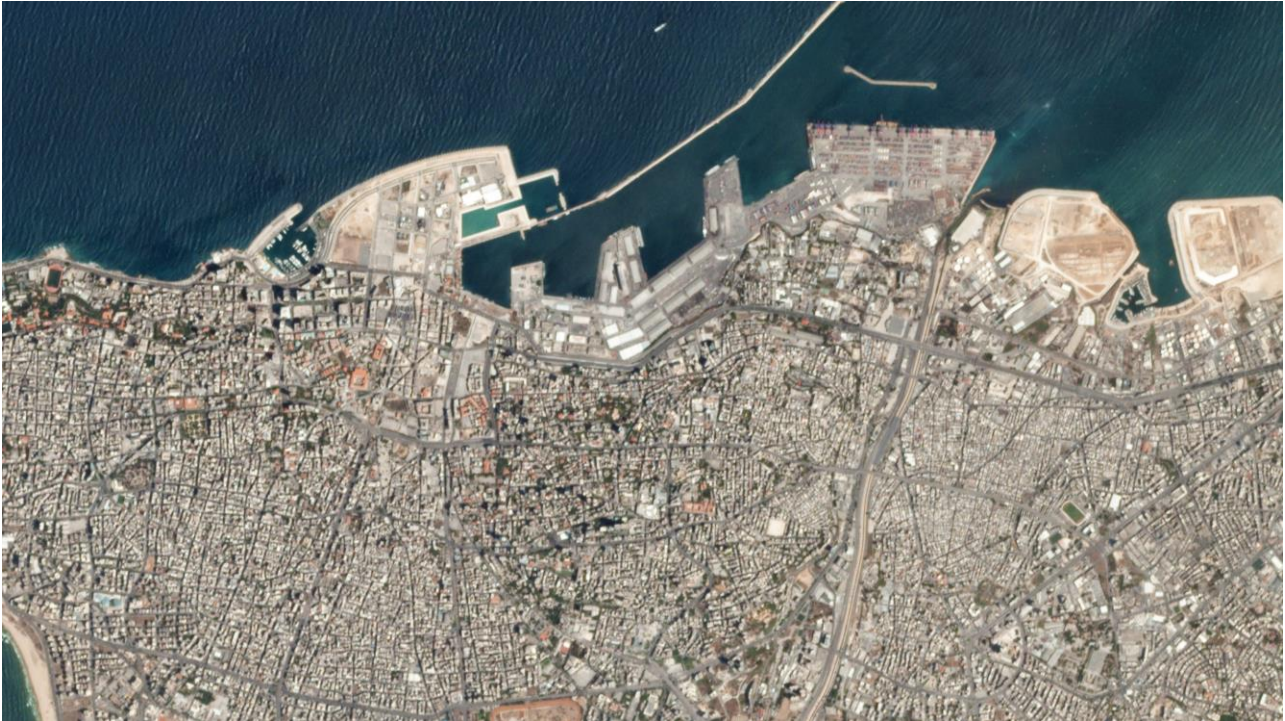
EXECUTIVE SUMMARY

At approximately 6:00 PM local time on Tuesday, August 4, a stockpile of more than 2,750 tons of ammonium nitrate exploded at the Port of Beirut in Lebanon. The blast inflicted significant casualties, extensive damage, and compromised trade and transportation infrastructure. This incident stands to exacerbate deteriorating economic conditions in Lebanon, as well as political turmoil and rising infection rates of COVID-19. With tensions over these issues and others already having been escalated for months, a resumption of widespread anti-government protests and associated unrest is highly likely in the coming days and weeks. Further, the process of recovery from the August 4 explosion will almost certainly be lengthy and uneven.

KEY JUDGEMENTS

- + It is highly probable that import and export infrastructure, transportation networks, and healthcare capacity will be compromised in the coming months, and perhaps longer.
- + The physical toll and what are predicted to be devastating economic consequences of the August 4 explosion stand to aggravate social and political tensions, with anti-government protests almost certain in the near to medium term.
- + Despite unfounded rumors and speculation to the contrary, there is no credible evidence suggesting that the August 4 explosion was deliberate or perpetrated by an external actor.

Port of Beirut Pre-August 4 Explosion



Port of Beirut Post-August 4 Explosion



Source: Planet Labs, Inc.

BACKGROUND

A massive explosion struck the Port of Beirut in Beirut, Lebanon, on Tuesday, August 4. Preliminary investigations suggest that a fire involving fireworks ignited in a warehouse before spreading to an area where 2,750 tons of ammonium nitrate - a highly combustible compound – had been stored for more than six years. The resulting explosion leveled much of the port and its environs, with other damages reported as far as six miles away. Search and rescue efforts are ongoing and are likely to continue for several days. As of this writing, at least 135 people are dead and over 5,000 have been injured, though casualty numbers will almost certainly rise.

Lebanon relies heavily on imported goods, 80 percent of which arrive through the Port of Beirut. When combined with the loss of the country's main grain silo and large quantities of grain stored inside in the August 4 explosion, the closure of the facility could reduce access to goods and grain-related foodstuffs, especially in the near term. Additionally, the port lies near one of the Beirut's main commercial areas, and with Tuesday's explosion having occurred during the evening commute, it is probable that the timing and location of the incident resulted in a larger number of human casualties.

RECOMMENDATIONS

- + Individuals should wear protective face masks and remain indoors whenever possible in the coming days. Although no widespread shelter-in-place orders have been issued, local officials and the U.S. Embassy have warned of the possibility of poor air quality conditions due to toxic chemicals released in the explosion.
- + Contingency plans should be formulated and adopted to mitigate the impact of any travel, supply chain, and communication issues that may arise in the near and medium term.

EXPLOSION DETAILS AND IMPACTS

An initial explosion and fire were reported just before 6:00 PM local time on Tuesday, August 4, in a section of a warehouse referred to as "Hangar 12" at the Port of Beirut. The cause of the initial fire remains unknown; however, local media sources reported it may have started due to welding work that was being carried out. Believed to have involved fireworks, the large fire reportedly then spread to a separate part of the warehouse, which was alleged to be housing approximately 2,750 tons of ammonium nitrate that had been seized from a cargo ship, a Moldovan-flagged vessel called the MV Rhosus, in 2013. Ammonium nitrate is an odorless substance most commonly used as an agricultural fertilizer. When combined with fuel oils, it can be used as an explosive, often done in controlled settings for the mining and construction industries. The substance is relatively safe if stored properly; however, if a large amount is left unattended for an extended period of time, the ammonium nitrate can begin to decay. Witnesses described, and videos posted on social media later confirmed, small explosions in the initial smoke cloud and fire, which also had a reddish tint. Experts believe the colored smoke was the beginning and incomplete reaction of the nitrogen burning.

The main explosion occurred several minutes after the initial blast and fire when the ammonium nitrate stockpile is believed to have ignited. The massive explosion caused a mushroom-cloud-shaped shockwave that spread out across the city in all directions. A large white cloud was reported following the large explosion and is understood to have been what is known as a condensation cloud. These occur following shockwaves of an explosion when humid conditions are present, such as in Beirut on Tuesday. Explosives experts have estimated the explosion had a force equivalent to at least 2.2 kilotons of TNT. Buildings in the immediate vicinity, including a large section of the port, were flattened. Witnesses filming the explosion from as far as one mile away were thrown backward by the force of the blast. Extensive damage has been reported across the city from as far as six miles away from the blast site, including the U.S. Embassy. Beirut-Rafik Hariri International Airport (BEY) is located approximately five miles away from the port and also reported damage, including blown-out windows. The airport remains operational and flights are currently continuing as scheduled. The blast was felt as far away as the island of Cyprus, over 100 miles northwest of Beirut, and was the equivalent of a magnitude 3.3 earthquake.

As of this writing, search and rescue operations remain ongoing, with at least 135 people confirmed dead, 5,000 others injured, and 100 people still missing and presumed trapped beneath the rubble. Upwards of 300,000 people are expected to be homeless due to the structural damage caused by the blast. Thousands of buildings have sustained various degrees of damage, with those closest to the epicenter reporting significant damage or altogether destroyed, while buildings further away from the blast site most commonly have reported blown-out windows and facade damages from the shockwave. Initial damage estimates are already between US \$3-5 billion.

2020 Beirut Explosion Primary Impact Zone



Sources: Planet Labs, Inc. -- annotations from Everbridge's Global Insights Team

Within the above polygon is the location where the August 4 explosion occurred. Known locally as the Port of Beirut's "Hangar 12," this section of the facility houses at least 14 cargo warehouses primarily used for the storage of dry bulk and vehicles. A scanner used to inspect containers, thereby expediting the customs process, was also situated in the area, as were an elevator—the city's largest—terminals, and silos used to store grain. The silos had a total capacity of 120,000 metric tons. All these structures were destroyed by Tuesday's blast and will require the most time and resources to rebuild and resume operations. Meanwhile, satellite imagery suggests that the Port of Beirut's container terminal, located on the eastern side of the facility, suffered less extensive damage. Although these operations have been disrupted as well, it is possible that recovery will be quicker than in the general cargo area.

Amid widespread damage and casualties, extensive damage to infrastructure and disruptions to supply chains were reported due to the explosion. Most notably, the destruction of the port rendered the facility inoperable, presumably for an extended period. The explosion also destroyed a nearby grain silo, the largest in Lebanon, which was holding an estimated 15,000 tons of wheat at the time of the explosion. Power outages have occurred across Beirut following the blast, including at hospitals. Internet outages are also being reported across the whole of Lebanon following the explosion on Tuesday. The power and telecom outages are purportedly hampering search and rescue efforts. Hospitals across Beirut have reported being overwhelmed by the number of patients and a number of hospitals have also reported significant damages from the blast and/or are dealing with the ongoing power outage.

The exact cause of the major explosion has yet to be officially reported; though, experts have largely agreed that it is likely that the initial warehouse fire, involving what is believed to be fireworks, spread to the section of the warehouse storing the ammonium nitrate causing the massive follow-up explosion. Still, baseless theories on the explosion have been floated, including that a nuclear weapon was used or that neighboring Israel or the U.S. carried out an airstrike targeting the Lebanese militia group Hezbollah. No evidence has been found to support any of these claims and Israel has denied any involvement. There were also reports attempting to link the blast to tensions over what was expected to be the release of the verdict, on Friday and now postponed until August 18, in the trial of the suspects in former Prime Minister Rafik al-Hariri's assassination. Again, no evidence has been found to support this claim.

The explosion site continues to smolder, and smoke has lingered and remains above the city. Air quality remains a concern due to the chemicals involved in the explosion. Following the major blast, orange clouds of smoke were reported. The orange color occurs due to the presence of nitrogen dioxide gas, which is toxic. Local officials encouraged residents to wear face coverings while outside as protection from potentially inhaling the smoke and the U.S. Embassy in Beirut also issued an alert to citizens warning them to stay indoors and wear face coverings if they ventured outside. In response to the explosion, Lebanese President Michel Aoun declared a two-week state of emergency for Beirut. A security cordon has been created near the epicenter of the explosion and the military has been given control of the site. The state of emergency can be renewed after the initial two-week period as needed. The president also announced the release of US \$66 million in emergency funds to help in response and recovery efforts.

ASSESSMENT

While an investigation into the cause of Tuesday's explosion remains underway, characteristics of the blast, photographs taken at the port prior to August 4, and statements from munitions experts and government officials seem to rule out many of the theories, rumors, and misinformation that circulated on social media and other platforms in the wake of the incident. In particular, suggestions that the blast was a nuclear detonation due to the fact that it was accompanied by a mushroom cloud are unconvincing, as, according to nuclear weapons specialists, mushroom clouds are not unique to such explosions. Additionally, had a nuclear event occurred, it would have been followed by a bright flash and elevated radiation levels, and individuals near the blast site would have been burned. None of these conditions materialized on Tuesday.

Further, the reddish color of the cloud points to a chemical explosion, akin to the blast at a Texas fertilizer plant in 2013, which also produced a mushroom cloud. Meanwhile, statements from Lebanese officials blaming Tuesday's explosion on a large shipment of ammonium nitrate that had been stored at the Port of Beirut for several years seem to be corroborated by photos taken at the facility on an unknown date before the incident. In the images, bags bearing the label "NITROPRIL," the trade name of an ammonium nitrate product manufactured by the company Orica, are seen stacked on top of one another in a warehouse at the docks. Likewise, videos taken of the fire moments before the second, larger explosion showing small lights and sparks inside the smoke signal the involvement of fireworks, which local authorities have also said played a role in the incident. Indeed, the August 4 explosion was very powerful; however, based upon the information available at this time, the most likely explanation is that Tuesday's explosion at the Port of Beirut was accidental and triggered by fireworks and ammonium nitrate, rather than the result of foul play.

In the near term, the public is advised of the likelihood of significant disruptions to transportation and infrastructure, as well as logistical complications, in the days and weeks following Tuesday's explosion. The physical toll inflicted by the blast was extensive and widespread, and rescue and recovery operations are likely to be lengthy. Areas near the blast site are likely to be cordoned off as authorities work to locate missing people and remove debris and rubble, rendering them inaccessible to motorists and pedestrians. Additionally, damage to already-weak infrastructure could cause power outages and impact internet connectivity, both of which stand to negatively affect business operations, especially with more people working from home due to the COVID-19 pandemic. Further, Tuesday's explosion is likely to generate considerable logistical issues, with regard to marine transport and container shipping in particular. The Port of Beirut, seen as vital to the country's economy and a gateway for both maritime and overland trade throughout the region, is said to have been significantly destroyed by the explosion. While there is another port in the northern city of Tripoli, along with a handful of container terminals elsewhere, notably in Sidon and Tyre, these facilities are not believed to have the capacity to accommodate additional cargo volumes. With maritime industry sources suggesting on Tuesday that 13 vessels were due to arrive at the Port of Beirut over the next 30 days, these ships will likely be diverted and forced to offload elsewhere, raising the possibility of port congestion, backlogs of shipping containers, and delays in delivering goods at other facilities. Also, because Lebanon relies heavily on imported goods, 80 percent of which arrive via the Port of Beirut, coupled with the loss of the large quantities of wheat stored in the grain silos, the closure of the facility could lead to shortages and food insecurity in the coming weeks. Indeed, bread prices were already said to have risen on Wednesday, with spikes of this and other foodstuffs expected in the coming days. Beirut's port also handled most oil imports, meaning the suspension of operations there is likely to exacerbate chronic fuel shortages in the country, possibly leading to more frequent and longer-lasting power outages.

Separately, the August 4 explosion is likely to hamper the country's efforts to curb the spread of COVID-19. Even before the start of the pandemic, Lebanon's public healthcare system was weak and plagued by shortages of medicines and supplies, due in large part to the country's economic woes, including a shortage of U.S. dollars. The coronavirus has diverted already-limited medical resources, and although private facilities are seen as better equipped to handle the outbreak, they too lack large quantities of supplies. Tuesday's incident is likely to exert additional pressure on the nation's medical system by triggering an influx of patients injured by flying debris, potentially overwhelming hospitals and clinics, in addition to hindering the delivery of much-needed equipment.

It was also reported on Tuesday that structural damage and/or power outages prevented a number of hospitals and medical facilities in Beirut from admitting or treating patients, causing some individuals to be directed elsewhere. With Lebanon currently in the midst of a spike in new COVID-19 cases, higher bed occupancy and further diminished capacity could obstruct the detection and treatment of coronavirus patients. This could lead to greater exposure, potentially including a sustained outbreak, and deaths attributed to COVID-19 in the days and weeks ahead.

More broadly, the August 4 incident comes amid a tumultuous time in Lebanon. The economic situation is arguably the worst that it has been since the country's 1975-90 civil war. The Lebanese pound has lost more than 80 percent of its value over the past year, individuals have seen their purchasing power and savings slashed due to capital controls imposed to prevent an outflow of foreign currency, and anti-government sentiment and political tensions have been elevated for months over the entrenched ruling class's perceived role in creating the current climate and for failing

to take corrective action that would risk hurting their personal interests. Against this backdrop, Tuesday's explosion is likely to be seen as a manifestation of the government's alleged corruption, incompetence, and mismanagement, with critics questioning and assigning blame over how such a large quantity of dangerous, explosive material was allowed to be stored improperly in the heart of the city despite numerous warnings for it to be moved. The declaration of a three-day mourning period and the arrest of port officials on Wednesday signal that the government will attempt to deflect blame and promote national unity and solidarity; however, with initial damage estimates from Tuesday's blast ranging from US \$3-5 billion, this latest economic blow, coupled with the existing financial woes, presumably limit the extent to which any assistance could be provided to promote recovery or improve socioeconomic conditions in general. As a result, the shock and outpouring of grief that have followed the explosion will likely turn to anger, possibly reigniting anti-government protests that broke out across the country last October but have waned since the beginning of the year due to the COVID-19 pandemic. Initially, Riad el-Solh and Martyrs squares in Beirut were the epicenters of the demonstrations; however, those that have occurred in recent months have increasingly occurred along major roadways and in the vicinity of banks, state institutions, politicians' residences, and political party offices. While most gatherings have been peaceful, some have escalated into violence, with activists committing vandalism or engaging in clashes with police or rival groups. Although unlikely to be the target of a concerted demonstration or vandalism campaigns, foreign interests could be affected by incidental violence.

From a health and security standpoint, individuals in Beirut should maintain a heightened sense of situational awareness and stay apprised of ongoing developments in the coming days. It was reported that smoke from the blast potentially containing toxic fumes was expected to linger throughout the day on Wednesday in Beirut, raising potential concerns over air quality in the city in the coming days. Therefore, individuals are advised to consider limiting time spent outdoors, and if unavoidable, wearing a protective face covering. The public should also avoid all damaged and potentially damaged structures until they have been thoroughly inspected by government-appointed engineers. This is especially true of buildings situated in close proximity to the blast site, as their structural integrity may have been compromised, putting them at risk of collapse. Further, any demonstrations that materialize should be avoided due to the potential for unrest and disruptions to overland travel and infrastructure. Likewise, it is advised to formulate contingency plans to mitigate the impact of any transportation, supply chain, communication, or logistical issues that may arise following the August 4 explosion.