

# UPDATE ON THE WUHAN CORONAVIRUS: LATEST DEVELOPMENTS ON SUPPLY CHAIN IMPACTS

February 5, 2020

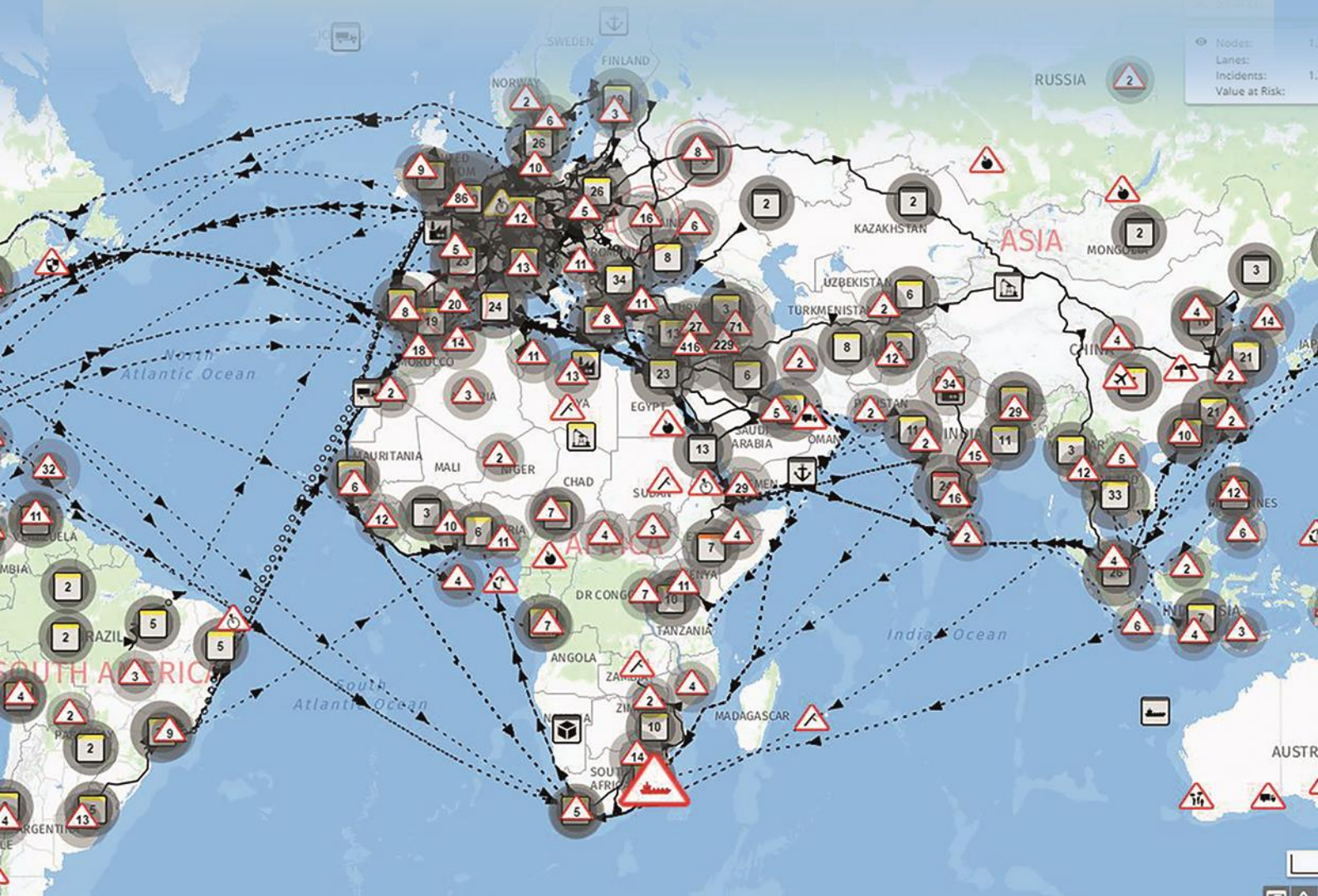
**Resilience360 Special Report**

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## EXECUTIVE SUMMARY

- Resilience360 identified a total of 26 provinces and 9 cities across China that has announced that the Lunar New Year holiday would be extended beyond February 2 in a bid to quell the coronavirus outbreak. Non-essential companies have been ordered by government authorities to delay the restart of operations until at least the second week of February.
- The unpredictability surrounding the extent to which the coronavirus will spread, coupled with government-mandated production delays in select provinces and cities, has led to uncertainty about how this will impact global manufacturing across various sectors ranging from technology and automotive to energy, chemicals, and pharmaceuticals.
- On top of the impacts to business operations, manufacturing constraints outside of China have emerged mainly due to infected workers, the lack of available labor, supply shortages, and a decrease in global demand for certain products.
- From a logistics perspective, air freight is expected to be heavily impacted with over 25,000 flights from, to, or within China being canceled. Inbound shipments to China are likely starting to congest terminals and warehouses, while outbound shipments could face reduced capacity over the next few months.
- Full or partial border closures from Central Asia, Russia, Mongolia, and Southeast Asia have impacted cross-border road freight as well as rail freight. Interprovincial shipments within China are also likely to experience delays due to checkpoints on highways, particularly to and from Wuhan and Hubei province which remains under quarantine until at least February 14.
- Port operations in China remain largely unaffected with the exception of Wuhan and other ports along the Yangtze River where barge services have been suspended. However, delays can be expected at ports worldwide accepting bookings to China as cargo may be held for a longer period, causing storage and equipment demurrage costs.
- The influx of multiple – and at times overlapping – sets of regulations issued from different levels of government within a short span of time has meant that companies with plants and suppliers across China will need to cope with additional regulatory ambiguity as they attempt to plan their production schedules accordingly.

# ABOUT RESILIENCE360



Resilience360 is an innovative, cloud-based platform that helps companies to visualize, track and protect their business operations. The solution facilitates intuitive supply chain visualization, tracks shipments and ETAs across different transport modes and enables near real-time monitoring of incidents capable of disrupting supply chains. Resilience360 easily integrates with business systems and helps companies keep track of risk in combination with their business performance indicators. It enables companies to better ensure business continuity, building risk profiles based on over 30 risk databases, and identifying critical hotspots using heat-maps to mitigate risks and to turn potential disruptions into a competitive advantage.



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**RESILIENCE360**



## BACKGROUND

The outbreak of the Wuhan coronavirus has sent shockwaves throughout global supply chains as companies scramble to mitigate the impact on logistics and manufacturing of parts and components sourced out of China. As of February 5, 04:00 GMT, the coronavirus has sadly captured the lives of 492 people with 23,860 confirmed cases now being reported in 28 countries worldwide.

Resilience360 found that 35 jurisdictions in China have announced an extension of the current Lunar New Year (LNY) holiday beyond February 2. The move aims to keep non-essential companies out of operations for a prolonged period in a bid to curb the coronavirus outbreak. The affected jurisdictions made up over 90 percent of China's gross domestic product (GDP) in 2018 and are home to some of the country's most important manufacturing regions including Guangdong, Shanghai, Zhejiang, Jiangsu, and Hubei.

The extended shutdown in business operations in China has also started to impact overseas production activities, spilling beyond China's borders across a number of key industries such as high-tech (for the production and assembly of semiconductors, panel displays, and optoelectronics); cars and auto parts; chemicals and energy; and steel and other industrial manufacturing.

In recent days, the coronavirus has escalated into a global phenomenon with over 25,000 flights from, to, or within China being canceled as of this writing. Air freight has been heavily impacted by the outbreak with inbound shipments to China congesting terminals and warehouses, and outbound shipments likely to face reduced capacity over the next few months. In addition, border closures between China and its neighbors have severely hindered cross-border road freight and rail transport to Southeast Asia and Europe.

## LATEST DEVELOPMENTS ON GOVERNMENT-RELATED SHUTDOWNS

### Production delays to last until mid-February

Resilience360 identified a total of 26 provinces and 9 cities across China that has announced that the current LNY holiday will be extended beyond February 2 in a bid to quell the coronavirus outbreak. Companies – with the exception of medical equipment, pharmaceutical, supermarkets, utilities, and logistics companies – have been ordered by government authorities to delay the restart of operations with the majority of businesses not starting operations until at least the second week of February.

The affected provinces and cities are crucial parts of China's manufacturing engine and are considered essential for global technology, auto, energy, chemicals, and pharmaceutical industries. As the first city to have been under a full lockdown since January 23, Wuhan has in recent years developed into a hub for optoelectronics and semiconductors and is known as China's "motor city" for its large presence of car makers. Guangdong, which is home to a number of major high-tech and auto manufacturing facilities, has already seen operations disrupted at some car plants of Japanese carmaker Toyota as well as facilities of Taiwan's Hon Hai Precision Industry (also commonly known as Foxconn) used for making Apple iPhones.

Jiangsu and Zhejiang, two neighboring eastern coastal provinces, are similarly home to large manufacturing facilities for electronics suppliers, chemicals, and active ingredients used in the global pharmaceutical industry. For the chemicals sector, a major Chinese chemical maker, Taixing Jijnjiang Chemical, has been forced to declare force majeure on ethyl acetate at its Jiangsu plant, while Swiss multinational Lonza Group has delayed the restart of operations at its Nanjing (used for drug formulation and pyromellitic dianhydride), Nansha (niacin), and Suzhou (drug capsule) plants for an indeterminate period of time. Altogether, the impacted regions account for around 90 percent of copper smelting, 65 percent of crude oil refining, and at least 60 percent of steel production.

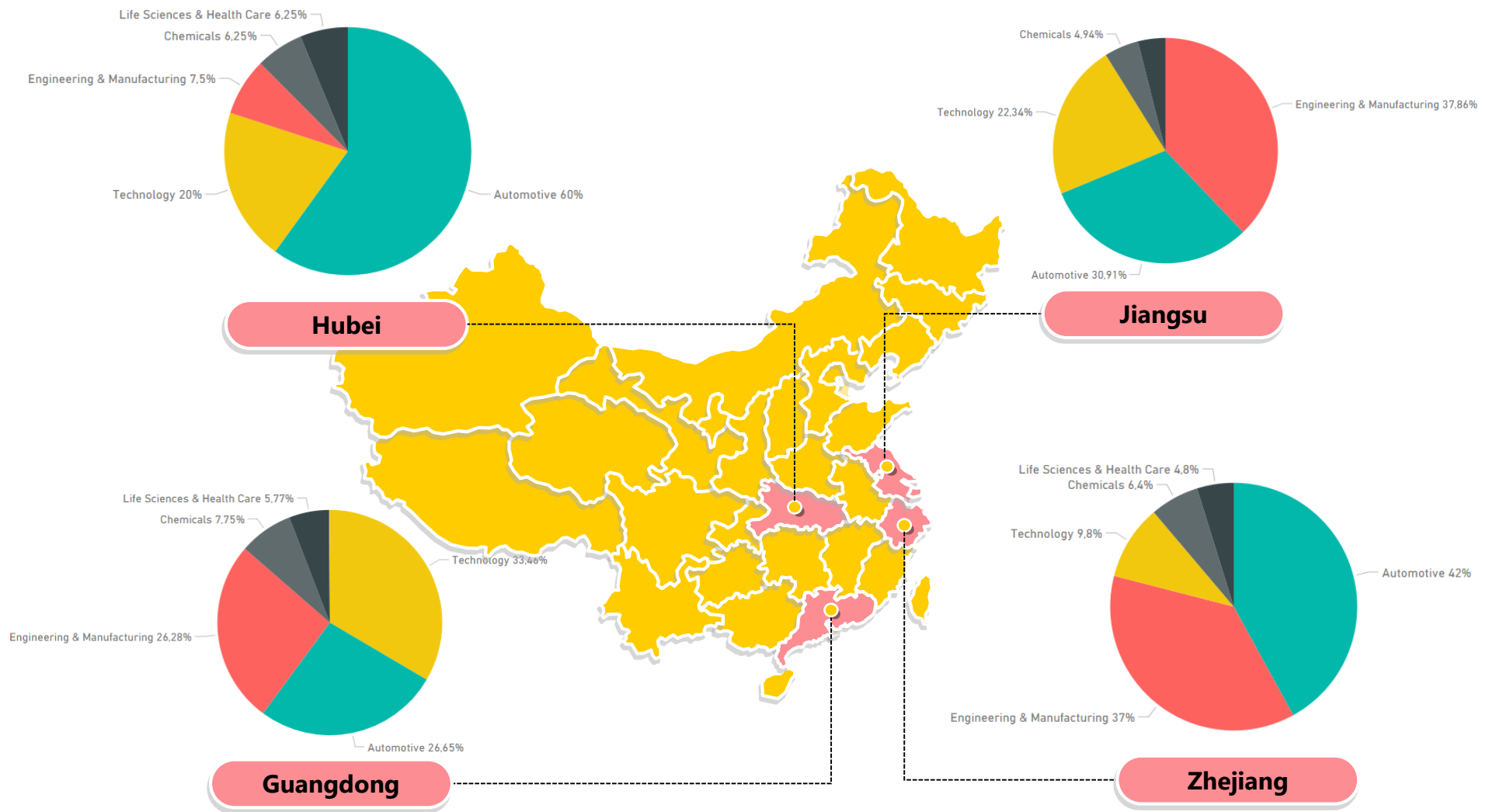


Figure 1: Sector breakdown of locations in selected provinces impacted by government-mandated shutdowns; source: Resilience360

## LATEST DEVELOPMENTS ON GOVERNMENT-RELATED SHUTDOWNS

### Additional city-wide lockdowns complicate recovery efforts

Full or partial citywide transit lockdowns were recently announced for additional cities in Zhejiang (Hangzhou, Taizhou, Ningbo, Wenzhou and Yueqing), Jiangsu (Nanjing and Xuzhou), Henan (Zhengzhou and Zhumadian), Shandong (Linyi), Heilongjiang (Harbin) and Fujian (Fuzhou), while the lockdowns remain in effect throughout thirteen cities in Hubei province since last week. Although the restrictions outside of Hubei are less severe, they could further impact e-commerce shipments from Chinese tech giant Alibaba, with its global headquarters in the region, delay production restarts at technology makers in Zhengzhou and access to the Port of Ningbo-Zhoushan, which is the busiest port in the world in terms of cargo tonnage.

Dongying, a city home to around 40 teapot refineries in Shandong and one that imports around a fifth of China's crude oil, has introduced a ban since January 31 on vehicles entering the city from outside that has severely restricted the flow of products. Local manufacturers have been further asked to apply for special passes to facilitate the logistics required for production. Public transit restrictions were also announced in Tangshan, a major steel manufacturing hub in northern Hebei province, in a move that could severely impact the ability of employees to access factories and warehouses upon their return after the holiday period.



Figure 2: Jurisdictions that have been subject to government-mandated production shutdowns and city lockdowns (as of February 5, 04:00 GMT); source: Resilience360

## LATEST DEVELOPMENTS ON GOVERNMENT-RELATED SHUTDOWNS

### Manufacturing disruptions spread beyond China

On top of the impacts to business operations, the government-mandated production delays in selected provinces and cities have led to manufacturing constraints outside of China, mainly due to infected workers, the lack of available labor, supply shortages, and a decrease in global demand for certain products.

The threat of infected workers and forced quarantines have featured prominently and halted business operations worldwide. In Germany, auto parts supplier Webasto reportedly shut down its headquarters near Munich for 14 days, sending home about 1,000 employees following several infections among its workforce. Across the border from China in Vietnam, local authorities in the manufacturing hub of Haiphong have set up quarantine camps for migrant workers from China in which they will reportedly be kept for two weeks to check for symptoms.

Government-mandated production shutdowns, city-wide lockdowns, and ground transportation restrictions have all contributed to a shortage of labor that could trigger a significant reduction in global supplies in the short-term. While semiconductor manufacturing is heavily automated, Taiwanese electronics manufacturer Pegatron and Foxconn remain reliant on the significant manpower available in China. The global supply of liquid crystal display televisions (LCDs) and organic light-emitting diode (OLED) may similarly be impacted with prices for display panels used in personal computers and laptops likely to rise amid the supply shortages. Tianma Microelectronics, one of five panel display manufacturers with factories in Wuhan, is currently facing severe short-term strains on the delivery and supply of raw materials, although the impact has been relatively smaller at the company's other production centers.

Sudden supply shortages stemming from the coronavirus outbreak have therefore had global implications as companies race to mitigate further disruptions to their supply chains. For the automotive sector, several carmakers in South Korea such as Hyundai Motors and Ssangyang Motor have been unable to continue production on some days in February due to parts shortages from their suppliers in China. In particular, Hyundai Motor became the first global automaker to fully idle some of its South Korean factories due to a shortage of wiring harnesses used to bundle a group of wires together in car manufacturing.



## LATEST DEVELOPMENTS ON GOVERNMENT-RELATED SHUTDOWNS

Likewise, the commodities sector has been hit hard by a sharp decrease in global demand for liquefied natural gas. Several major Chinese state-owned enterprises such as China National Offshore Oil Corporation (CNOOC), Sinopec, and China National Petroleum Corporation (CNPC) are reportedly considering provisionally halting contracts for liquefied natural gas under force majeure. The developments come as members of the Organization of Petroleum Exporting Countries (OPEC) are in discussions about potentially deepening oil supply cuts by an additional 500,000 barrels per day (bpd) in an effort to stabilize global prices amid the coronavirus outbreak.

## CONGESTED AIRPORTS AND CLOSED BORDERS SLOW LOGISTICS OPERATIONS

### **Customs operations resume on February 3**

All customs offices in China have resumed operations on a nationwide level on February 3, starting to clear inbound and outbound shipments at airports, ports, and border crossings. Lower productivity should be expected due to customs officers working with reduced staff as a result of travel restrictions. While shipments should be cleared normally at airports and ports, delays in clearance processes may occur until February 11-12 for rail shipments and cross-border road shipments, in particular on Europe-bound cargo trains and international road freight to Hong Kong and Vietnam.

### **Border closures disrupt intra-provincial and international road freight**

While interprovincial shipments are likely to experience delays due to checkpoints on major highways, the biggest impact on road freight should be expected for shipments to and from Wuhan and the wider Hubei province which remains under quarantine until February 14, a date which may be further extended. Due to enhanced restrictions for residents and vehicles in 11 additional cities outside of Hubei Province, including Hangzhou, Taizhou and Ningbo, shipments with these origins or destinations may be delayed or temporarily halted.

## CONGESTED AIRPORTS AND CLOSED BORDERS SLOW LOGISTICS OPERATIONS

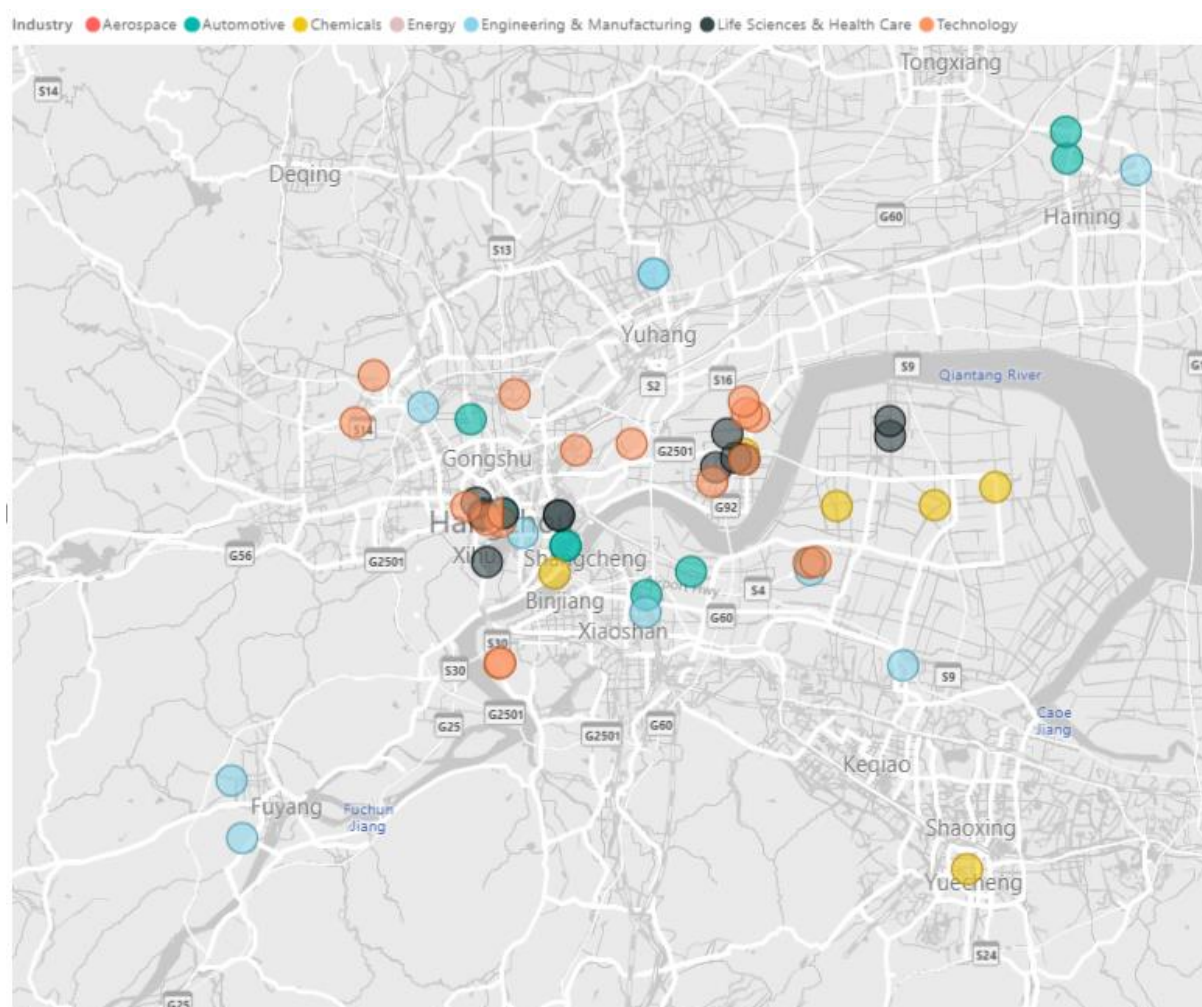


Figure 3: Manufacturing and supplier locations in Hangzhou and surrounding areas; source: Resilience360

Cross-border road freight to and from Central Asia, Russia, Mongolia, and Southeast Asia has largely been suspended until further notice due to full or partial border closures. On the China-Hong Kong border, all but three crossings at the Hong Kong International Airport, at Shenzhen Bay and the Hong Kong-Zhuhai-Macao Bridge have been closed. Trucks are still able to take the latter two ports of entries with no significant delays reported so far; however, available capacity is reportedly limited and advanced booking may be required.

## CONGESTED AIRPORTS AND CLOSED BORDERS SLOW LOGISTICS OPERATIONS

Several border gates between Vietnam and China in the northern province of Lang Son have also suspended imports and exports until February 9, including at the important Huu Nghi/Ping Xiang customs post. However, other border crossings remain open, including two of the busiest crossings at Mong Cai near Nanning and Lao Cai near Kunming.

### **China-Europe rail freight connections severely impeded**

As trains between China and Europe continue to operate via the northern route in Russia, several rail carriers have suspended Europe-bound services via the Kazakhstan route and will resume normal operations from February 10. Trains scheduled to depart from Wuhan have been relocated further north to Xi'an. China-bound services out of Europe have continued to operate mostly normal as of this writing.

However, trucks carrying containers to and from cargo rail stations may be in limited supply prior to February 10. The cancellations and postponements are likely to further constrain rail freight capacity out of China, with the earliest trains likely carrying pending containers from before the LNY period.

### **Port operations mostly unaffected**

Port operations in China remain largely unaffected, with the exception of Wuhan and other ports on the Yangtze River where barge services have been suspended. Many ocean carriers have announced blank sailings in the wake of the Chinese New Year holidays. However, delays should be expected in particular at ports worldwide accepting bookings to China as cargo may be held for a longer period, causing storage and equipment demurrage costs. Storage fees at major Chinese ports have been waived by Chinese authorities.

### **Risk of congestion at air cargo terminals**

Dozens of airlines have continued to cancel passenger flights from and to Wuhan and/or other parts of China in the past days, with return of services ranging from February to April. For instance, Lufthansa has canceled all flights to Beijing and Shanghai until February 28, while Delta Airlines has suspended all flights to China until April 30. For the week of February 3, more than 25,000 flights from, to, or within China has been canceled. This is in particular likely to reduce air cargo capacity from and to China and cause delays. However, as shipping volumes are also expected to remain low during the extended production shutdown across most of China's provinces, the overall impact is likely to remain limited, in particular since cargo flights have remained largely unaffected. Lufthansa Cargo, for example, has announced a special schedule to and from China for the week of February 3.

## CONGESTED AIRPORTS AND CLOSED BORDERS SLOW LOGISTICS OPERATIONS

The biggest risk is likely to come from congestion at air cargo terminals and warehouses due to inbound shipments for which delivery and pick-up services cannot currently be arranged. This is likely to cause increased storage costs. Capacity shortages are most likely to occur for outbound shipments from Chengdu and Chongqing which rely more heavily on passenger flights than hubs such as Shanghai.

### **Postal operations experience severe disruptions**

Postal operators continue to experience severe disruption to processing, pick-up, and delivery services in mainland China, Macau, Hong Kong, and Mongolia. On February 3, Macau extended a work exemption for civil servants until February 7, while around 8,000 packages are reportedly congesting the Air Mail Centre at the Hong Kong International Airport, waiting for express delivery to locations within the territory. Several European postal providers have suspended acceptance of shipments to China due to the increase in flight cancellations until further notice.



## OUTLOOK

While it is difficult to anticipate how the outbreak will continue to unfold, the Chinese government has announced its intention on February 4 to enforce stricter measures to curb the number of new infections. Following this announcement, several Chinese cities in Zhejiang province, outside of the epicenter of the outbreak, have implemented enhanced travel and transportation restrictions. If these measures prove to be successful, additional cities could see partial or full lockdowns being implemented, which would very likely prevent factories from restarting operations, employees from reaching workplaces, and normal logistics operations to resume in the short term. A first indication has been the announcement of additional lockdowns in Jiangsu, Shandong, Henan and Fujian provinces on February 5.

Another development to monitor is how strictly Chinese authorities will be enforcing work restrictions. For tech manufacturers, semiconductor and LCD panel fabrication plants are unable to stop production easily without incurring considerable losses and would have therefore been running throughout the holiday period. South Korean tech manufacturers LG Display and SK Hynix, both of which have plants in provinces that are hit with production delays, reportedly had factories that were operating in China over the LNY period.

The impact of the extensive number of flight cancellations from and to China until the end of February, March, or April will start to be felt once Chinese factories restart operations and are ready to ship deliveries. As shipping volumes gradually increase while flight cancellations remain, a capacity crunch can materialize in places relying on belly cargo in passenger flights.

## APPENDIX 1: FLIGHT SUSPENSIONS AND CANCELLATIONS BY AIRLINES DUE TO CORONAVIRUS OUTBREAK (AS OF FEBRUARY 5, 04:00 GMT)

Airline	Headquarters (Jurisdiction)	Regions	Flight suspensions	Duration of suspension
Delta Airlines	U.S.	North America	All flights to China suspended from February 2 to April 30.	February 2 to April 30
American Airlines	U.S.	North America	All flights to China suspended from January 31 to March 27. Flights between Los Angeles and Shanghai (Pudong) and Beijing canceled from February 9 to March 27. Service to Hong Kong from Dallas and Los Angeles suspended from February 8-20.	January 31 to March 27
United Airlines	U.S.	North America	Service to Beijing, Shanghai, and Chengdu suspended. Service to Hong Kong suspended from February 8-20.	February 5 to March 28
Air Canada	Canada	North America	Cancelling select flights to Beijing and Shanghai.	January 30 to February 29
China Eastern	China	Asia	Flights from Shanghai (Pudong) to Los Angeles and New York City (JFK) canceled from February 2-10. Flights from Shanghai to San Francisco canceled from February 6-9. Flights from Shanghai to Chicago suspended from February 8 to March 27 and flights from Shanghai to Honolulu from February 3 to March 27. Several flights to Los Angeles, San Francisco and Vancouver from Chengdu and Kunming have also been canceled.	February 2 to March 27
Hainan Airlines	China	Asia	Flights suspended between Budapest-Chongqing from February 7 to March 27.	February 7 to March 27
Shanghai Airlines	China	Asia	Suspending Chengdu-Budapest flight between February 4 and March 28 and Xi'an-Budapest flight between February 6 and March 26. Shanghai-Budapest flight remains unaffected.	February 4 – March 28

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Airline	Headquarters (Jurisdiction)	Regions	Flight suspensions	Duration of suspension
Air China	China	Asia	Flights between China and Singapore, Vietnam, Philippines, and Australia suspended. Beijing-Manila route cancelled from February 6 to March 28. Beijing-Singapore flights from February 11-29 and Singapore-Beijing from February 12 to March 1 are canceled. Beijing-Ho Chi Minh City, Beijing-Hanoi, Beijing-Nha Trang, and Chongqing-Nha Trang routes canceled from February 2 to March 28. Chengdu-Sydney route canceled from February 3 to March 28. All flights on the Beijing-Sydney and Beijing-Melbourne routes are canceled from February 5-29.	February 3 to March 28
Cathay Pacific	Hong Kong	Asia	Cutting flight capacity to and from China by 90 percent and global capacity by about 30 percent.	January 30 to March 31
Cathay Dragon	Hong Kong	Asia	Airline will cut flight capacity to and from the rest of China by 50 percent or more from January 30 to March 31.  Flights to and from Wenzhou, Hangzhou, Ningbo, Sanya, and Haikou suspended from February 2 to March 28.  Flights to and from Guangzhou and Chongqing suspended from February 5 to March 28. Flights to Wuhan suspended from January 24 to March 31.	January 24 to March 31
China Airlines	Taiwan	Asia	Flights to and from Wuhan suspended from January 23 to February 29.	January 23 to February 29
Mandarin Airlines	Taiwan	Asia	Flights to and from Taiwan suspended from January 23 and February 29.	January 23 to February 29

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Airline	Headquarters (Jurisdiction)	Regions	Flight suspensions	Duration of suspension
Korean Air	South Korea	Asia	Incheon-Wuhan flights canceled from January 24 to March 28. Flights between Incheon and Huangshan, Zhangjiajie, Changsha, or Kunming and between Busan and Beijing and Nanjing suspended from February 2 to March 28.	January 24 to March 28
Air Seoul	South Korea	Asia	All flights to China suspended (Incheon to Zhangjiajie and Linyi).	January 28 (until further notice)
All Nippon Airways	Japan	Asia	Flights between Tokyo (Narita) and Wuhan suspended from January 23 to March 28.	January 23 to March 29
Japan Airlines	Japan	Asia	Flights between Tokyo (Narita) and Beijing suspended from February 17 and March 28.	February 17 to March 28
Air India	India	Asia	Mumbai-Delhi-Shanghai flights canceled from January 31 to February 14. Delhi-Hong Kong flights canceled from February 8.	January 31 to February 14
IndiGo	India	Asia	Bengaluru-Hong Kong and Delhi-Chengdu flights canceled from February 1-20. Flights between Kolkata-Guangzhou from February 6-26.	February 1 to February 26
Pakistan International Airlines	Pakistan	Asia	Suspended all direct flights to and from China from January 31 to February 2. All flights to and from China resumed on February 3.	January 31 to February 2
AirAsia	Malaysia	Asia	All flights to Wuhan and selected flights to China suspended. All flights between the Philippines and China, Hong Kong, and Macau suspended until further notice.	January 24 to February 29
Singapore Airlines	Singapore	Asia	Flights to Beijing, Shanghai and Guangzhou suspended from February 3 to March 1.	February 3 to March 1

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Airline	Headquarters (Jurisdiction)	Regions	Flight suspensions	Duration of suspension
Philippine Airlines	Philippines	Asia	Flights to Beijing, Guangzhou, Shanghai, Xiamen, Quanzhou, Hong Kong, and Macau suspended.	February 2 to 29
Thai Airways	Thailand	Asia	Cuts to flight capacity to and from Beijing and Guangzhou (February 8-29), Shanghai (February 10-29), Chengdu and Xiamen (February 6-27), and Kunming (February 6-29).	February 6 to 29
Vietnam Airlines	Vietnam	Asia	Flights between Vietnam and Beijing, Shanghai, Guangzhou and Shenzhen canceled from February 4; Chengdu from February 5; Macau from February 6. Hanoi-Hong Kong route suspended from February 6. Flight frequency for Ho Chi Minh City-Hong Kong flights reduced from 10 to 7 flights per week.	February 4 (until further notice)
Air France	France	Europe	All scheduled flights to China canceled from January 30 to February 9 and to Wuhan from January 27 until further notice.	January 30 to February 9
Lufthansa	Germany	Europe	Flights to Beijing and Shanghai suspended until February 29 and to Nanjing, Shenyang, and Qingdao until March 28. Flights maintained to Hong Kong.	January 29 to March 28
British Airways	United Kingdom	Europe	Flights to Beijing and Shanghai suspended from January 29 to February 29.	January 29 to February 29
Virgin Airlines	United Kingdom	Europe	Flights to Shanghai suspended for two week period until February 14. Flights to Hong Kong maintained.	February 1 to February 14
Austrian Airlines	Austria	Europe	Flights to Beijing and Shanghai suspended from January 29 to February 29.	January 29 to February 29



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Airline	Headquarters (Jurisdiction)	Regions	Flight suspensions	Duration of suspension
Neos	Italy	Europe	All flights to and from China suspended until further notice.	January 30 (until further notice)
Finnair	Finland	Europe	All flights to China from February 6-29 suspended. Flights to Guangzhou from February 5 to March 29 suspended.	February 6 to February 29
Iberia Airlines	Spain	Europe	Flights between Madrid and Shanghai suspended.	January 31 to February 29
KLM	Netherlands	Europe	Flights to Chengdu, Hangzhou, and Xiamen suspended from January 30 to February 29. Flights to Beijing and Shanghai suspended from February 3-9.	January 30 to February 29
Swiss International Airlines	Switzerland	Europe	Flights to and from Beijing and Shanghai suspended until February 29.	January 29 to February 29
SAS	Scandinavia	Europe	Flights to Beijing and Shanghai suspended until March 31.	January 31 to March 15
Ukraine International Airlines	Ukraine	Europe	All flights to China suspended.	February 4 (until further notice)
EgyptAir	Egypt	Middle East	Flights to Hangzhou from February 1 and to Beijing and Guangzhou (February 4) suspended until further notice.	February 1 (until further notice)
El Al Israel Airlines	Israel	Middle East	Flights to Beijing suspended from January 30 until March 25. Flights from China will not be allowed to land at its airports according to the Israeli Health Ministry. Other routes to China maintained.	January 30 to March 25
Saudia	Saudi Arabia	Middle East	Suspending flights between two Saudi Arabian cities and Guangzhou from February 2 until further notice.	February 2 (until further notice)

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Airline	Headquarters (Jurisdiction)	Regions	Flight suspensions	Duration of suspension
Emirates	UAE	Middle East	Flights to Shanghai and Guangzhou suspended from February 5 until further notice. Flight service to Beijing being maintained.	February 5 (until further notice)
Ethiad Airways	UAE	Middle East	Flights to Shanghai and Guangzhou suspended from February 5 until further notice. Flight service to Beijing being maintained.	February 5 (until further notice)
Qatar Airways	Qatar	Middle East	All flights to China suspended from February 3 until further notice.	February 3 (until further notice)
Turkish Airlines	Turkey	Middle East	Flights to Beijing, Guangzhou, Shanghai and Xi'an suspended from January 31 to February 29.	January 31 to February 29
Kenya Airways	Kenya	Africa	Flights to and from Guangzhou suspended from January 31 until further notice.	January 31 (until further notice)
Royal Air Maroc	Morocco	Africa	Direct flights between Casablanca and Beijing suspended from January 31 and February 29.	January 31 to February 29
RwandAir	Rwanda	Africa	Flights between Kigali and Guangzhou suspended from January 31 until further notice.	January 31 (until further notice)
Air Tanzania	Tanzania	Africa	Postponing maiden flights to China. Will begin charter flights to China in February.	
Qantas Airlines	Australia	Oceania	Suspending direct flights to China from February 1. Flights from Sydney to Beijing and Sydney to Shanghai will be halted from February 9 to March 29.	February 1 to March 29
Air New Zealand	New Zealand	Oceania	Flights between Auckland and Shanghai suspended.	February 9 to March 29

Source: Resilience360 and various media sources

## APPENDIX 2: NATIONAL FLIGHT BANS FROM AND TO CHINA BY COUNTRY DUE TO CORONAVIRUS OUTBREAK (AS OF FEBRUARY 5, 04:00 GMT)

Jurisdiction	Flight suspension	Duration of suspension
Egypt	All flights to and from China suspended indefinitely.	January 27 (until further notice)
Indonesia	Temporarily suspends flights to and from China from February 3 for two weeks until February 17.	February 3 to February 17
Israel	Flights not allowed to land in country's airports by Health Ministry of Israel.	N/A
Italy	All flights from China, Hong Kong, Macau, and Taiwan suspended from February 2 to April 28. Italian Civil Aviation Authority (ICAA) re-opens cargo flight connections between China, Hong Kong, and Macau.	February 2 to April 28
Turkey	All flights from China suspended from February 5 until February 29	February 5 to February 29
UAE	All flights to China, except for Beijing, suspended.	February 5 (until further notice)
Ukraine	All direct flights to China suspended from February 4 until further notice.	February 4 (until further notice)
Vietnam	Vietnam suspends flights to and from China for a 90-day period effective from February 1, 06:00 local time. Vietnam reverses decision to ban flights to Taiwan, Hong Kong, and Macau on February 2 after previously stating that it would ban flights to all three destinations in addition to China.	February 1 to April 30

Source: Resilience360 and various media sources