# Title: Back-to-Back Hurricanes Wreak Havoc on Supply Chains

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Two weeks after Hurricane Helene slammed the East Coast, resulting in at least [230 deaths](https://apnews.com/article/hurricane-milton-helene-florida-557c5c512135e0a8661b298e45e17c92), Hurricane Milton is [expected to reach landfall](https://www.bbc.com/news/articles/crl8e084r9yo) Wednesday near Tampa, Florida, en route to the Atlantic Ocean, causing more damage in its wake.

“If Hurricane Milton hits Florida as forecast, major ports in Florida could experience severe damage, affecting imports and exports,” says Sara Saberi, Ph.D., associate professor of operations and industrial engineering at Worcester Polytechnic Institute in Worcester, Massachusetts. “This will likely delay shipments of key materials and consumer goods, impacting national supply chains.”

Supply chains have already been heavily impacted by the [damage done by Hurricane Helene](https://www.cbsnews.com/news/thom-tillis-hurricane-helene-damage-north-carolina-face-the-nation/), equated by some to that of Hurricane Katrina, which devastated New Orleans in 2005.

“The hurricanes/storms are hitting many different areas of the country, which will likely impact many different categories,” says Robert Handfield, Ph.D., Bank of America Distinguished university professor of supply chain management and executive director of the Poole College of Management Supply Chain Resource Cooperative at North Carolina State University in Raleigh, North Carolina. “One of the biggest concerns is health-care supplies for the hospitals, which typically do not have a lot of inventory, in Hurricane Helene’s path.”

According to [AccuWeather](https://www.accuweather.com/en/hurricane/helene-is-2nd-deadliest-u-s-hurricane-in-50-years-could-cost-250-billion/1698452), Helene, the second-deadliest U.S. hurricane in 50 years, has wreaked “catastrophic infrastructure damage, loss of life, business disruptions and other economic impacts” and losses amounting to as much as US$250 billion.

Handfield and Saberi, through email interviews, and Joel N. Myers, AccuWeather’s founder and executive chair, through press release comments, offer thoughts on how supply chains are being impacted by the hurricanes and adverse weather, what long-term effects could be and how supply management organizations can become more resilient and strategic in reducing the risk caused by them.

**Question: How has Hurricane Helene impacted supply chains and the availability of goods?**

**Saberi:** Hurricane Helene has caused significant disruptions to supply chains in the Southeast, particularly in automotive, retail and agriculture. With transportation routes blocked, many goods are delayed, causing shortages in stores and manufacturing stoppages due to a lack of critical components. The widespread flooding and infrastructure damage have made it difficult to distribute goods, especially perishable items like food and medicine. This has also affected the flow of goods between the Southeast and other regions, impacting both local industries and broader national supply chains reliant on Southeast logistics hubs.

**Handfield:** Interstates 40 and 26 are major thoroughfares for a lot of freight for the East Coast. It likely will be months before logistical channels improve. We also need to think about rebuilding infrastructure — cell phone towers, roads, power lines and many other elements. This will take months to repair and get communities working again.

**Q:** **Which industries and products have been/are most likely to be impacted?**

**Handfield:** Western North Carolina plays a pivotal role in the supply chains for certain important products as highlighted in some news stories this week. Spruce Pine, North Carolina was hit particularly hard; it [sources a vast majority of the quartz](https://apnews.com/article/north-carolina-quartz-hurricane-57153eaba12ba9dcb87bf618d72364ec) used in production of semiconductors, solar panels and fiber optic cables. Marion, North Carolina produces a large majority of the [IV fluids used by hospitals across the country](https://www.washingtonpost.com/health/2024/10/03/iv-fluid-supply-disruption-hurricane-helene/), and disruption of those supplies is already causing shortages at hospitals nationwide.

Similarly, relief supplies like water, generators, building, cleaning and medical supplies are being sent to western North Carolina in disproportionately large numbers. This will create temporary shortages in other areas. The sooner we can restore services, recover and rebuild in western North Carolina, the less impact these shutdowns will have on those across the globe that depend on products that are produced, sourced, or currently needed in western North Carolina.

**Saberi:**We must consider both internal and external disruptions, as they create a chain reaction of challenges. Retail and consumer goods industries, especially in food, beverages and pharmaceuticals, are highly vulnerable due to their reliance on just-in-time inventory systems. These sectors are likely to experience shortages in stores, driven by transportation delays and warehousing bottlenecks.

Additionally, the construction and automotive industries will be significantly affected, as they depend on imported raw materials and components. Port closures or infrastructure damage will delay the delivery of critical materials such as steel, aluminum, and semiconductors, disrupting production. These setbacks will further ripple into the retail and consumer goods industries, creating a cascading effect of unintended consequences.

**Q: What havoc could Milton cause?**

**Myers:** Milton can result in significant losses of vegetables and fruit crops like oranges and tomatoes, which can have an even greater impact than Helene on agriculture. Price increases on some vegetables and fruits, such as oranges and tomatoes, could be seen at the grocery store within a couple of weeks.

**Q:** **What about other aspects of the supply chain, such as logistics, ports, deliveries, warehousing?**

**Handfield:** The damage from the storm to western North Carolina is unprecedented for this region. The damage is being compared to Hurricane Katrina — and the scale is enormous, even beyond our region.

Multiple big issues commonly impact global supply chains, and supply chains have become increasingly global in the past 30 years. Greater globalization inherently presents greater complexity and greater risk. The longer the flows of materials and information, the greater the chance these flows will be disrupted at multiple points.

For example, it is quite possible to have a war in Ukraine and a ship stuck in the Suez canal or to have a pandemic while also dealing with wildfires in California. What is “unprecedented” is the increasing frequency and scale of the natural disasters due to climate change combined with the growing labor shortages in supply chains. There is also greater public awareness of supply chain issues and greater consumer dependence on ultra-fast delivery of globally sourced products than in the past.

**Saberi:** Port operations are critical, and damage to key ports can disrupt not only regional supply chains but also national and global networks. Ports in the Southeast and Florida are essential gateways for international trade, and any disruption could slow the flow of imported goods. Warehousing and transportation infrastructure could be severely impacted by hurricanes, leading to a ripple effect of delays in fulfilling orders and delivering goods. Power outages, damaged roads and labor shortages will further slow the recovery process.

**Q:** **What are likely long-term impacts?**

**Handfield:** It could take years to rebuild the infrastructure in Western North Carolina. Many people did not have flood insurance and have lost their homes.

**Saberi:**The long-term impact could include a reevaluation of geopolitical dependencies on certain materials, especially those sourced from vulnerable regions. Companies and countries may work to reduce reliance on foreign imports, such as critical minerals and electronics, to mitigate geopolitical risks in supply chains.

Additionally, there may be a focus on developing new designs that seek alternative materials, reducing dependence on scarce or geopolitically sensitive resources. For materials that do not have acceptable alternatives, companies may need to form strategic alliances with other regions to secure reliable supply chains. In tandem, there may be a shift toward more resilient and localized supply chains, where companies invest in local suppliers and manufacturing capabilities to reduce dependence on global networks. This shift would foster more sustainable and resilient supply chains, decreasing the risk of future disruptions.

Equally important is the role of automation in the future of port supply chains. By increasing automation, the impact of human-related challenges can be reduced, ensuring more consistent and efficient operations. To support this shift, educating the workforce for the future in areas such as automation, AI and cybersecurity will be essential.

However, automation requires substantial energy, which makes it crucial to explore alternative energy sources that reduce dependency on the grid. Amplifying the use of green energy sources, such as solar and wind, will help create a more sustainable and risk-averse system, further decreasing the reliance on foreign energy supplies and strengthening supply chain resilience.

**Q:** **Are there inflation and interest rate implications?**

**Myers:** Should Milton result in total damage and economic losses of $200 billion or more, the sum of two hurricanes in just three weeks elapsed time can have a total damage and economic loss of 2 percent of the country’s gross domestic product. This can put the U.S. Federal Reserve in a quandary.

On the one hand, the Federal Reserve raises interest rates to reduce inflation. However, the storms cause inflation by increasing the costs of goods. On the other hand, the hurricanes are harmful to the economy causing some businesses to fail and others to struggle as a result of the disasters, so jobs are being lost, and people and businesses are facing a long tail of economic impacts from the disasters.

The Federal Reserve has indicated that two more rate cuts are probable this year; the combined impact of the hurricanes will cause the economy to weaken but might also cause prices to rise and there is the quandary. Normally, weakness in the economy causes interest rates to fall, but inflation causes the opposite.

**Q:** **What steps can organizations take to ensure the flow of goods? Now and into the future?**

**Saberi:**Companies should diversify their supplier base and source from multiple regions to avoid reliance on a single area that could be vulnerable to natural disasters. Establishing backup suppliers in different geographical locations ensures business continuity in the event of regional disruptions. Overall, investing in risk management and supply chain visibility tools will allow organizations to better monitor the flow of goods and identify weak points in real-time. Using technologies like artificial intelligence (AI) and blockchain for tracking will improve decision-making and enable faster responses to disruptions.

**Handfield:** Mapping out supply chains and understanding the impacts is essential.

These supply chains issues remind us that we live in a globally connected economy. What happens in our region can have lasting impacts on those outside and vice versa. Even a seemingly small disruption, a small pebble, can have wider and wider ripple effects.

Supply chains balance being efficient with being flexible. Efficient supply chains try to reduce cost and eliminate waste. Flexible supply chains bend or adapt quickly to changes and uncertainty. There’s an inherent tradeoff between the two.

For 30 years, many organizations and entire industries focused more on efficiency in their supply chains by reducing inventory and using global outsourcing to reduce costs. Since the disruptions of the coronavirus pandemic, organizations have realized the importance of greater flexibility and resilience and are moving towards efforts like nearshoring, higher inventory buffers, and greater supplier redundancy.

By focusing on efficiency for many years, supply chains lowered costs and made products more affordable for consumers. This works best when things are smooth and predictable — especially when consumers demand ultra-fast delivery. However, with fewer buffers and redundancies, supply chains built for efficiency see greater ripple effects when disruptions do happen because they are less flexible and resilient.

Supply chains may be moving toward greater flexibility and resilience to adapt to risks such as COVID-19 and Helene, but this transition will take many years and will likely come with higher costs and thereby higher prices for consumers.