

The Global Supply Chain's Newest Enemy: Climate Change



As governments, organizations and individuals work to better understand and address climate change, it's already having a negative impact on the world's critical supply chains.

As if global supply chains weren't under enough pressure right now, climate change has become yet one more stress point for the intricate, intertwined global networks that produce and distribute products for end-users. Made up of producers, vendors, warehouses, transportation companies, distribution centers, retailers and other key players, supply chains are being disrupted at every corner due to ongoing pandemic impacts, new overseas lockdowns, labor shortages and a lack of transportation capacity, to name just some of the key stressors.

We can now add climate change to that list. [Defined by the United Nations](#) as “long-term shifts in temperatures and weather patterns,” climate change includes natural shifts that come from variations in the solar cycle. Since the 1800s, however, it says human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil and gas.

“Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the earth, trapping the sun's heat and raising temperatures,” the UN points out, explaining that examples of greenhouse gas emissions (GHGs) that are causing climate change include carbon dioxide and methane.

“These come from using gasoline for driving a car or coal for heating a building,” it adds. “Clearing land and forests can also release carbon dioxide. Landfills for garbage are a major source of methane emissions. Energy, industry, transport, buildings, agriculture and land use are among the main emitters.”

The Climate Change-Supply Chain Connection

Connecting the dots between supply chain disruption and climate change in [YaleEnvironment360](#), Jacques Leslie says that while the global pandemic has been blamed for most of the supply chain upheavals that have emerged over the last two years, climate change is a long-term problem that's not going away anytime soon.

For example, he says the rising sea level is potentially one of the biggest threats to supply chains. “Even now, years before sea level rise begins inundating ports and other coastal infrastructure, supply chain disruptions caused by hurricanes, floods, wildfires, and other forms of increasingly extreme weather are jolting the global economy,” Leslie writes.

He points to the Texas freeze that caused the worst involuntary energy blackout in U.S. history; heavy rainfall and snow-melt causing some banks of Europe's Rhine River to begin to burst (triggering a halt in river shipping for several days); and flooding in central China that disrupted supply chains for commodities such as coal, pigs and peanuts (and forced the closure of a Nissan automobile plant) as just some of the negative, climate-related impacts on the world's supply chains.

“Scientists say that such climate-related disruptions are bound to intensify in coming years as the world warms,” Leslie writes. “In addition, ports, rail lines, highways, and other transportation and supply infrastructure will be threatened by increases in sea level of an estimated 2 to 6 feet—and perhaps more—by 2100.”

With about 90% of the world's freight moving by ship, rises in the sea level will eventually threaten most of the world's coastal ports. To most port managers, however, Leslie says the threat still feels remote. "The rate of future sea level rise is so uncertain and solutions so elusive that only a few port managers have taken action to counter the threat," he adds, "and only a fraction have tried to assess it."

The Supply Chain Disruptor

Climate change can also disrupt the supply side of the equation, where rapidly warming oceans and increasingly extreme weather have already started to affect multiple industries, decreasing their output, *GlobalTradeMag* reports. "As this trend continues, supply chains will have fewer and fewer reliable sources for some products."

Climate change also poses a threat to the very workplaces that sustain global supply chains. "The most straightforward way this would happen is through temperature-related worker exhaustion and illness," the publication points out. "Every increase of 1° Celsius could reduce worker productivity by 1-3% for those outside or without air conditioning"

While those percentages may seem inconsequential right now, *GlobalTradeMag* says they could add up to the equivalent of 80 million job losses by 2030. "That would result in global losses of \$2.4 trillion," it adds. "Rising sea levels and extreme weather would also displace many workers, making it difficult for some warehouses and other facilities to maintain adequate staffing levels."

Next Steps

As governments, organizations and individuals work to better understand and address climate change, the UN says that while climate action requires significant financial investments on the part of governments and businesses, "climate inaction" is significantly more expensive.

"One critical step is for industrialized countries to fulfill their commitment to provide \$100 billion a year to developing countries," the UN states, "so they can adapt and move towards greener economies."