Katrina’s National Security Impacts
Cheattle, Julian, World Watch, Sep/Oct 2006,

A Hint of Dreadful Possibilities

The Patriot Act of 2001 contains the U.S. government's most recent definition of critical infrastructure: "Systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters."

By this measure, New Orleans and nearby areas along the Gulf coast easily qualify as locations of critical infrastructure — a fact reflected in the toll of damage done by Hurricane Katrina in August 2005, estimated at nearly $100 billion by the U.S. government and even more by others. That is a substantial amount of damage, roughly equal to the GDP of New Zealand or the combined GDPs of the 69 poorest countries in the world. Adding to this toll were the economic costs incurred indirectly from lost oil production in the Gulf of Mexico, and trade and consumption losses from the complete or partial closures of seven major ports on the coast.

In New Orleans, situated strategically at the junction of one of the world's major inland waterways, the Mississippi River, and the international shipping lanes of the Gulf of Mexico, the environment has long been right for the concentration of several components of U.S. critical infrastructure. Energy, chemicals, agriculture and food, transportation, and shipping services are all listed in the Bush administration's National Strategy for the Physical Protection of Critical Infrastructure and Key Assets. In one way or another, New Orleans is a core location in the production, distribution, or facilitation of them all.

One year ago Katrina hinted at what effect a major disaster — natural or human-caused — could have when such assets are put at risk. The implications applied not only to the United States; a comparable disaster could happen nearly anywhere. And in a world where national economies are linked so closely by trade in energy, food, and many other commodities, a collapse of infrastructure in one country can be felt across the globe.

Energy

Not surprisingly, Katrina dealt a heavy blow to U.S. oil and natural gas extraction and processing, with swift and headline-generating effects on prices. The Outer Continental Shelf in the Gulf of Mexico is the source of 25 percent of U.S. crude oil extraction and 20 percent of natural gas output. Over 43 percent of total U.S. oil refining capacity is clustered along the Texas and Louisiana coasts. Louisiana alone is the source of about 15 percent of domestically produced petroleum.

Katrina raised concerns about four possible problems: damage to the oil platforms in the Gulf; damage to refineries; damage to pipelines that supply the refineries and then carry refined
products to the rest of the country; and the loss of skilled labor needed to man the rigs and refineries. The news that all four had occurred stimulated fears that the supply of refined products would be inadequate and that prices would spike. A few commentators even contemplated recession on the grounds that a rise in consumer spending on heating fuel and gasoline would mean less money spent elsewhere.

Hurricane Katrina and Hurricane Rita, a month later, together destroyed 113 drilling platforms and damaged 53 others. All of Gulf oil production, which is approximately 1.5 million barrels a day (mbd), was shut in during both storms, and 94 percent of Gulf gas production, which is 10 billion cubic feet a day, was shut in during Katrina. As of mid-June 2006, crude-oil field production had still not reached pre-Katrina levels, with 180,000 barrels per day still shut in. Almost 1 billion cubic feet a day of gas production was also still down.

In addition, 4.8 mbd of refining capacity in Texas and Louisiana, about one-third of the nation's refining capacity of 15 mbd, was shut down during the storm. Between August 2005 and June 2006, more than 166 million barrels of oil production capacity were lost, almost one-third of yearly output in the Gulf of Mexico. When Strategic Petroleum Reserve crude oil was released to help relieve shortages, much of it was left unused because of a lack of refining capabilities.

Storm damage also affected the network of pipelines supplying both crude oil and refined products to cities across the United States. The Capline, for instance, which transports crude oil from Louisiana to Illinois, was shut for several weeks and even by late October was still operating at only 80 percent capacity. Outage of the Colonial Pipeline, which transports fuels from the Gulf northeastward as far as New York, resulted in very high prices in places like Maryland and Washington, D.C., which at one point had the highest gasoline prices in the nation.

A warmer-than-average winter in the United States, as well as over-supplied world crude oil markets, helped ease the crisis. Nonetheless, the nationwide average gasoline retail price increased from $2.28 per gallon on August 1 to $3.08 on September 5, a nominal all-time high for U.S. markets.

According to the U.S. Congressional Budget Office, GDP growth for the second half of 2005 fell only half a percentage point. But the consumer price index, a measure of inflation, jumped by 1.2 percentage points — the largest one-month increase since 1980 — as a result of the gas-price spike. Gasoline prices also increased by about a third in Europe and by over 13 percent in Asia, as world supplies were diverted to the U.S. market to relieve the pressure.

**Trade**

Katrina also had serious effects on U.S. trade. The Gulf of Mexico allows easy water access through the Panama Canal to Asia and across the Atlantic to Europe, Africa, and South America, and waterborne trade through the Gulf accounts for 9 percent of total U.S. trade. The Gulf routes in turn are linked by the ports of New Orleans and South Louisiana to the mouth of the Mississippi River and its 23,000-kilometer inland waterway system. This system, which carries enormous volumes of barge traffic, provides considerable transportation cost savings to the regional and national economy and has helped U.S. products compete in international corn and
soybean markets. (One barge has the carrying capacity of 58 trucks, and barging is the lowest-cost transport mode for moving high volumes of bulk commodities long distances.) For the period 2002-04, barged shipments through the mouth of the Mississippi accounted for 64 percent of U.S. corn exports and 67 percent of soybean exports, as well as substantial shares of rice and wheat exports.

The ports are also a major destination for incoming containers, rubber, steel, plywood, and coffee. The port of South Louisiana, situated on the river between New Orleans and Baton Rouge (the state capital and site of another, smaller, port), is the largest of the 149 ports in the United States by tonnage and was ranked ninth-largest in the world in 2004. Combined, the two ports are served by six major railroads, 16 barge lines, 50 ocean carriers, and over 75 trucking lines. More than 6,000 ocean vessels move through New Orleans annually on the Mississippi, making the river one of the world's busiest waterways.

Katrina partly or completely closed several of the major ports in the Gulf, including New Orleans and South Louisiana, and temporarily halted the flow of agricultural trade through New Orleans by destroying or damaging 400 of 11,000 barges and 70 percent of navigation aids (buoys). Stretches of the river were temporarily closed while authorities carried out extensive checks to ensure shipping channels were still deep enough. Damage to the waterways and the ports turned out to be minimal, but the short disruption led to declines in interior market commodity prices along the Mississippi.

Following the closures, arrivals and departures of ships and barges servicing the Mississippi ports were soon out of sync, creating a traffic bottleneck. Some vessels waited to load produce that had not yet arrived because it was stuck in the queue on the other side, and others waited to unload onto vessels still laden with earlier shipments. This continued into the spring of 2006. Luckily for the farmers and the U.S. economy, the disaster occurred before the main harvesting season. Even so, total monthly port-level exports from the district of New Orleans dropped from $2.5 billion in August 2005 to $2 billion in September 2005, down from $2.9 billion in September 2004. Cereal exports dropped by more than 20 percent from August to September.

Ripples

In October 2002, 85 leaders from private industry and government, all with a critical stake in port security, attended an exercise in Washington, D.C., called the "Port Security War Game." The report issuing from the exercise concluded that "strategic simulation of a terror attack designed to assess the vulnerability of America's cargo transportation system and supply chains found that such an attack could cripple global trade and have a devastating impact on the nation's economy."

Major ports are vital not only to their host countries but to the global economy as well, and even temporary closure generates ripple effects. Events such as Katrina suggest the dimensions of physical damage possible from major natural disasters, but although a terrorist attack (perhaps using a small nuclear bomb) could have comparable effects on infrastructure, given the differing psychological import of natural disasters and such attacks, the extended economic effects of terrorism (on stock markets, for instance) could be far graver. Imagine the effect of a terrorist
attack on Rotterdam — the busiest port in Europe and the second-busiest in the world by tonnage — or on Hong Kong, Los Angeles, or Tubarao (Brazil's largest). In many cases the physical damage could be far worse than that inflicted by Katrina — South Louisiana only handles about half the cargo volume of Shanghai, China's busiest port, for instance — but the broader economic effects could be truly catastrophic.

In the Port Security exercise, all U.S. ports were closed for nine days. Under this hypothetical situation it took about three months to clear the resulting container backlog. After Katrina struck, the backlog from the comparatively minimal disruption to the Mississippi ports alone lasted into 2006 — and the U.S. economy was lucky that it was New Orleans that was worst hit, rather than the larger port of South Louisiana; New Orleans was still operating at less than 40 percent capacity a month later. Disaster-induced port closures could easily be much longer. A report on the economic impact of a hypothetical terrorist attack on the twin ports of Los Angeles and Long Beach, published three months before Katrina, used bookend port closures of between 15 and 120 days. The report assumed closure of both ports from radiological ("dirty") bombs as well as destruction of all major road bridges servicing the ports, and estimated the direct, indirect, and induced costs to the U.S. economy from the 120-day closure at about $34 billion.

The confluence of events that characterized Hurricane Katrina — a devastating storm striking a vital, populated, and vulnerable area — is a tragedy, but a foreseeable and defensible one. A small nuclear device, brought into the heart of a port in an ordinary container or in a small boat and detonated there, could wreak far more widespread psychological and economic havoc. And that could happen anytime.