Logistics Analysis of Puerto Rico: Will the Seaborne Supply Chain of Puerto Rico Support Hurricane Recovery Projects?

RESEARCH SUMMARY

RESEARCH QUESTION
Would the logistics capacity of Puerto Rico support the anticipated increase in imports of materials for use in funded recovery projects?

KEY FINDINGS

A bottleneck in the Port of San Juan can be mitigated by increasing port capacity or avoided by smoothing increases in demand

- The key capacity constraint at the port is in material-handling equipment and yard space to store containers.
- If increases in demand are communicated with sufficient lead time to terminal operators, the operators can ensure that equipment is in place when it is needed.

With $10 billion in annual recovery spending, 2,300 additional truckers will be needed

- This will require procuring vehicles, training and licensing new drivers, and attracting truck drivers.

Puerto Rico’s seaborne logistics capacity is assessed in the context of the anticipated increase in imported materials used in recovery projects following Hurricane Maria. Key constraints at ports and on roads are identified. This analysis shows that the increased traffic from implementing the recovery plan can be supported with existing infrastructure using modest mitigation actions.
Because procurement of trucking services is a prerequisite to utilizing the road network, potential logistics delays may occur due to shortage of truckers irrespective of road network capacity.

If each additional trucker employed increases the number of trucks on the road by one, the Puerto Rico road network outside San Juan can accommodate this additional demand

- Off-peak, the highways outside San Juan can handle 1,000–2,000 additional trucks per hour before there is a very high risk of congestion.
- This capacity is expected to be sufficient for the amount of recovery activity associated with $10 billion in annual recovery spending.

If additional material is released over several hours at off-peak times, highways near San Juan will also have sufficient capacity

- Highways in San Juan are more likely to be congested even in off-peak hours but will likely experience only minor delays.
- Bridges along the highway network should be able to sustain the additional traffic, although some will require maintenance soon.

RECOMMENDATIONS

- Coordination between the Federal Emergency Management Agency (FEMA) and the port terminal operators may enable the terminal operators to prepare to manage increased container shipments by arranging for access to more material-handling equipment as soon as it is needed.
- The Puerto Rico Port Authority (PRPA) can make more space available for use as container yard adjacent to, or near, the Crowley Maritime terminal. Warehouse 21, which is damaged beyond repair, could be taken down and used as yard space. Warehouse 22 could also be taken down and used for container storage during a surge.
- The PRPA should also avoid using potential cargo yard space that is near a cargo terminal for debris storage after a natural disaster.
- The analysis of potential travel conditions on the road network suggests that coordinating projects will be beneficial. The government of Puerto Rico could direct an office to gather information about recovery projects and make the information accessible. By that means, municipalities and government agencies that contract for work to be performed can time projects to be complementary.
- FEMA and U.S. government agencies should focus on workforce capacity building in Puerto Rico, including truck drivers, to address logistics challenges ahead of execution of recovery plan projects.