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Impact of the Panama Canal Espansion

Liliana Rivera[1]
1 Amherst St.
Building E40-234A
Cambridge, MA 021242
mlrivera@mit.edu

Yossi Sheffi[2]
1 Amherst St.
Building E40-261
Cambridge, MA 021242
sheffi@mit.edu

[1] PhD Candidate, Center for Transportation and Logistics, MIT
[2] Elisha Gray II Professor of Engineering Systems; Director, MIT Center for Transportation and Logistics

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Chapter X: Impact of the Panama Canal Expansion

The Panama Canal expansion project is, arguably, the most important current transportation project in the world today. It will allow most Post-Panamax vessels to use the canal and is likely to change transportation flow patterns throughout North and South America, as well as port loads and transportation flows inland in the Americas. This paper gives a short update on the status of the project and its likely impacts.

Impact of the Panama Canal Expansion

The Panama Canal Expansion Program is perhaps the most impactful transportation project today. The $5.5 Billion project will enable the Canal to handle up to 12,600 TEU, Post-Panamax vessels, instead of the current maximum of 4,400 TEU, Panamax Vessels. The Panama Canal Expansion Program was launched in September 2007 and is scheduled for completion in 2014, 100 years after the original inauguration of the canal. Many pundits are claim that the project will lead to "the biggest shift in the freight business since the 1950s, when oceangoing ships began carrying goods in uniform metal containers." (Severson 2011) Halfway through the program, it is appropriate to examine the progress to date and how are ports outside Panama gearing up to be ready for larger ships.

The Panama Canal Expansion Program has four components: (i) construction of new Post-Panamax locks on the Pacific and Atlantic sides, (ii) excavation of the new Pacific Post-Panamax locks for the channel's north access, (iii) improvements to navigational channels, involving dredging of existing navigation channels, and (iv) improvements to water supply to improve Canal water supply and draft dependability. (ACP 2010) These four components are tackled through six main projects, whose progress as of December 2010 is presented in the accompanying table provided by the ACP (2011)

According to the ACP, by the end of 2010 19% of the work has been completed. Initial work has been focused on the removal of dirt and dredged materials, and the preparation of the construction of the third set of locks by the Grupo Unidos por el Canal consortium (GUPC). The consortium is led by Spain's Sacyr Vallehermoso and includes Italy's Impregilo, Belgian dredging and marine engineering company Jan de Nul, and Panama's largest construction company Constructora Urbana SA (CUSA). Phases 1 and 2 of the Excavation of the Pacific Access Channel are complete, while phases 3 and 4 are on-going. The excavation work for lock chambers, lock heads and water-saving basins is in progress, as well as drilling and blasting operations for the lock excavations. The Pacific and Atlantic Entrance Navigational Channels' dredging work is moving forward and so is the work in Gatun Lake and the Culebra Cut. To finalize the configuration of the locks' hydraulic system, GUPC contracted Compagnie National du Rhône (CNR), who built a model of the locks in Lyon, allowing for experiments with competing engineering designs. Also, the first floodgates design is almost done and its construction should start in 2011.

PROGRAM	PROGRESS
Excavation of the Pacific Access Channel (Phase 1)	100%
Excavation of the Pacific Access Channel (Phase 2)	100%
Excavation of the Pacific Access Channel (Phase 3)	93%
Excavation of the Pacific Access Channel (Phase 4)	21%
Dredging for the the Pacific Entrance Navigational Channel	63%
Dredging for the the Atlantic Entrance Navigational Channel	67%
Dredging for the Deepening and Widening of Gatun Lake and Deepening of Culebra Cut by ACP	40%
Third Set of Locks (Design and built)	8%
Raising Gatun Lake's Maximum Operating Level	2%
TOTAL	19%

The Panama Canal Expansion Program is on schedule, despite a strike and the heavy rains that battered Panama in 2010 and caused the canal's first closure in over 20 years. In 2011 the contractor for phase 4 of the excavation of the Pacific Access Channel is expected to start the construction of the Borinquen 1E damn, the first to be built in the Canal area in the last 75 years. In addition, 2011 should witness the first pouring of concrete for the new set of locks in the Pacific and the Atlantic.

The Panama Canal expansion will impact cargo throughout the Americas, presenting new opportunities, leading to new transportation routes, new distribution patterns and new logistics hubs formation. Today, the fastest and preferred way to send cargo from China

to the population centers on the U.S. East Coast is by a combination of ship and rail. It takes about 12-14 days for the ocean voyage from Shanghai to the west coast, and another 7-8 days from the US West Coast to the New York by rail for a total of 19-22 days. Sending the same Shanghai-New York cargo through the Panama Canal takes 25-26 days, while sending it through the Suez Canal takes 27-28 days. Using Panamax vessels the route via the West Coast and overland costs about $600 more than the trip through the canal, yet the economics of Post-Panamax vessels more than compensate for this. (Economist 2009)This is the reason that 75% of Asian imports use the West Coast route (With the ports of LA/Long Beach accounting for 43% of this volume (US DOT 2009)) and only 19% use the Panama Canal (while 6% use the Suez route). The Panama Canal expansion will lower shipping costs by allowing Post-Panamax ships sail directly to the US East Coast. However, it will still take longer than the current ship-rail combination.

Traffic diversion estimate vary widely. Most estimates put the maritime traffic gains through the canal at between 20% and 35% of the current West Coast freight. Naturally, this will also depend on the toll levied by the ACP. Currently the ACP charges each ship $72 per container-capacity – thus a 4,500 TEU vessel pays $324,000 to traverse the canal, whether it is loaded or empty. Given its past practice, however, it is likely that the ACP will continue to segment the market and practice yield management in order to maximize the traffic through the canal and its revenues.

To capture some of the new traffic, almost all large ports in the US east cost and along the Gulf of Mexico have expansion projects on the way involving both harbor deepening and land-side expansion of rail and handling capacities. The Port of Norfolk, Virginia, which is 50 feet deep and currently the only port on the US East Coast that can handle the Post-Panamax ships, has five priority navigation projects that focus on maintaining unrestricted navigation in the Port, allowing for easier access for these vessels. The Port of Charleston, South Carolina is investing in keeping its current depth through a continuous dredging program and working towards deepening the harbor further. At the Port of New York/New Jersey work is underway to increase deep water capacity and there are plans to raise the roadbed of the Bayonne Bridge to allow for the Post-Panamax

ships to pass under it. The Port of Tampa has an ongoing terminal expansion to quadruple its size. The port of Miami is establishing an intermodal container rail service and rail and bridge expansions. Savannah Harbor is being dredged. Gulf of Mexico ports in Gulfport, Mississippi and Mobile, Alabama, as well as the Tennessee-Tombigbee Waterway, have signed memoranda of understanding (MOU) with the Panama Canal Authority to encourage increased traffic in the Gulf. Other ports involved in MOU are Ports of Houston, Boston, Miami, New Orleans, Charleston, and Tampa.

The massive investments along the US East Coast and elsewhere in the hemisphere may be overdone. The high estimates of diverted traffic requiring port expansion may not take into account several factors:

1. The competitive response of the existing players. To this end, some of the West Coast ports: Los Angeles, Long Beach, Oakland, Portland, Seattle, and Tacoma have banded together with the Western railroads: Burlington Northern Santa Fe and Union Pacific to form the U.S. West Coast Collaboration (USWCC) to guarantee competitive cost and service options. To ignore the possibility of a competitive response recall the fate of the Groupe Eurotunnel SA which went bankrupt as ferry operators improved their service and reduced their costs in response to the competitive threat of the channel tunnel.
2. As some traffic will start to be diverted to the canal, the efficiency of the West Coast ports will improve as the congestion in ports such as LA/Long Beach, Oakland and Seattle/Tacoma eases up. The resulting improved service will attract shipper and ocean carriers.
3. One of the main objectives of the ACP and the Panamanian government is to increase the rate of transshipments and related logistics operations in Panama. While this may or may not take place in Panama, many other ports in the Caribbean's (including Cuba, if relationships with the US will improve) are set to unload Post Panamx vessels and transfer the container to smaller vessels that can get into any East Coast port.
4. Increased focus on environmental issue and carbon pricing in the future may favor the West Coast route. The reason is that the CO2 emissions per TEU for a large Panamax

vessel is only 2/3 of the emissions involved in a trip through the Panama Canal.

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