

Joint Logistics Over the Shore in Times of War: Lessons Learned from Gaza's Trident Pier¹

Prof. Dr. M.F. HARAKE

CEREGE Research Laboratory – University of Poitiers (France)

Abstract

The aim of this study is to examine the project management process of the U.S. military's floating pier that was intended to provide humanitarian assistance in the Gaza Strip during the ongoing Palestinian-Israeli conflict since October 2023. The purpose of this research is to present a summary of the project management procedure for an obscure military capability known as Joint Logistics Over-the-Shore (JLOTS), which transports soldiers, vehicles, and equipment worldwide for military and humanitarian operations. Moreover, it seeks to gain insight into how this process can offer options to enhance mission effectiveness and efficiency to support guaranteed mobility, freedom of movement, and delivery of assistance in volatile and inaccessible areas. Additionally, it seeks to clarify how a complex project costing 320 million U.S. dollars, with a two-months lifespan, providing supplies equal to only a few days of aid, and now decommissioned before its intended completion, has become a representation of great project failure.

Key Words: Joint Logistics Over-the-Shore; Humanitarian Aid; Project Failure; Warzone.

1. Introduction

1.1. Context

Since the outbreak the 2023 Israeli-Palestinian conflict, there were major humanitarian challenges in getting aid to the deprived people in Gaza. It should be noted that before the war, less than 500 aid trucks were entering Gaza daily, while the enclave's Border and Crossing Authority spokesperson suggests that 1,000-1,500 trucks were necessary to address the existing humanitarian need (Kahn, 2024). In May 2024, the UN World Food Program (WFP) cautioned that humanitarian efforts were on the verge of collapsing (WFP, 2024a); while in June 2024, the EU Commissioner for Crisis Management, Janez Lenarcic, declared that most individuals in Gaza relied entirely on humanitarian aid (EU Commission, 2024a).

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As the war progressed, the logistics of delivering aid became increasingly challenging, posing obstacles for the few remaining humanitarian organizations carrying out their missions. These constraints have led to numerous serious humanitarian emergencies with devastating outcomes such as famine, diseases outbreaks, and more (WHO, 2024).

1.2. The Proposed Floating Pier Project

Within the context of the international community's response to address the humanitarian crisis in Gaza, the U.S. military proposed the creation of the "Floating Pier" project, a floating dock designed to provide aid to the concerned and deprived community. The project was suggested right before the State of the Union Address on March 7, 2024, by President Joe Biden of the United States (White House, 2024).

The "Floating Pier", also known as the "Trident", was built by the U.S. military on ships near the Gaza Strip and linked to the shore with a causeway to bring maritime aid cargo to Gaza. The point of unloading connects to the Netzarim Corridor. The distribution of aid was to be mainly carried out by the World Food Program (WFP) of the United Nations (UN) (Martinez, 2024).

It was expected that the pier would provide an average of 150 trucks of aid daily (Baldor et al., 2024a). Nevertheless, despite numerous obstacles and issues such as the need to dismantle it thrice due to rough sea conditions, the pier had been in operation for 20 days and distributed 8,800 tons of aid when it was officially closed on July 17, 2024 (Britzky & Bertrand, 2024).

1.3. The Purpose of this Paper

The purpose of this paper is to examine the project management process of the U.S. military's "Floating Pier" project in Gaza. The study intends to review this relatively unknown or misunderstood military operation known as Joint Logistics Over-the-Shore (JLOTS) and both how and why it was used in a humanitarian context. Furthermore, the research will decrypt the dynamic of the "Trident" project deployed in the Gaza strip while reviewing its various steps and processes. Finally, the paper, will outline the various challenges and setbacks that led to its failure (from a project management perspective) after a two-months functional (more-or-less) lifespan which prevented it from attaining its intended project objectives in terms of aid delivery.

2. Joint-Logistics Over the Shore: An Overview

2.1. Context

In unstable and troubled times, when either wars or natural disasters occur – expeditionary humanitarian missions will rely upon sea lanes and air routes to supply and sustain aid in targeted communities (Fisher, 2013; Burrell et al., 2017). Ideally, the targeted countries or neighboring ones would open their seaports and airports to allow the use of existing infrastructure for the reception and delivery of needed humanitarian assistance (Pehrson, 2000; Clady, 2013).

It would be appropriate to note that both history and prudence tell us that this will not always be the case (Thede et al., 1995; Pehrson, 2000; Clady, 2013; Fisher, 2013; Evans et al., 2016; Burrell et al., 2017):

- **Political Rejections:** Sometimes certain nations, for political purposes, may deny the use of their facilities and infrastructure.
- **Lack of Facilities and Infrastructure:**
 - **Targeted Country:** The targeted country may lack such infrastructure as it was ravaged by the cataclysmic event that took place (i.e. naturel disaster, war, etc.).
 - **Neighboring Countries:** Neighboring countries may not have such facilities and infrastructure (i.e. underdeveloped, war, etc.).
- **Lack of Capacity:** Concerned and / or implicated nations may not be capable of receiving the amount of material required through their existing seaports and airports due to lack of capacity.

Indeed, when the targeted country's infrastructure is not adequate, the international community might consider getting some direct assistance from the military to facilitate the transfer of aid (Evans et al., 2016; Burrell et al., 2017). Here, the theater commander has Logistics Over-the-Shore operations (LOTS) Operations at their disposal (Pehrson, 2000; Clady, 2013).

LOTS is a military endeavor which can be carried out solely by the Army, by the Navy, or by a joint effort involving both the Army and Navy, as a military operation. When both branches of the military engage in LOTS, it is referred to as Joint Logistics-Over-the-Shore (JLOTS) (Fisher, 2013; Burrell et al., 2017). LOTS or JLOTS is not a combat operation, but rather a support one (or in this case, a humanitarian support operation) that requires a permissive setting (Thede et al., 1995; Pehrson, 2000). Control over sea routes, cargo unloading points, and marshalling areas beyond the shore must be maintained by either friendly forces or a welcoming / accepting community (Clady, 2013; Evans et al., 2016). This contrasts from military combat operations that

move from the sea to the land, known as amphibious operations. In a non-permissive and hostile environment, an amphibious mission could pave the way for a subsequent LOTS operation, but LOTS cannot be carried out while facing or in contact with the enemy (Evans et al., 2016). The main difference between the support logistics of an amphibious operation and the logistics of a LOTS operation is that the former is carried out to establish a foothold on enemy premises (Thede et al., 1995; Pehrson, 2000; Fisher, 2013).

Based on the information provided above, it would be appropriate to present an overview of the Joint-Logistics Over the Shore (JLOTS) project. This will be achieved by outlining the differing concepts, components, elements, and processes that constitute it.

2.2. Logistics Over-the-Shore (LOTS) Operations

Most field experts believe that Logistics Over-the-Shore (LOTS) Operations consist of moving personnel and supplies from ship to shore when ships are unable to unload directly at the pier (Burrell et al., 2017). LOTS includes loading and unloading ships when there are no deep draft-capable fixed port facilities available or as channel to transport military forces to tactical assembly areas (Pehrson, 2000; Evans et al., 2016; Gaidai et al., 2022). The procedure involves offloading goods from vessels moored at sea or in the river, directing them to land or a dock, and organizing them for transportation further inland (Clady, 2013; Fisher, 2013). LOTS operations vary from basic beach activities to operations that support stationary port facilities and transportation in a specific area of operation (Thede et al., 1995).

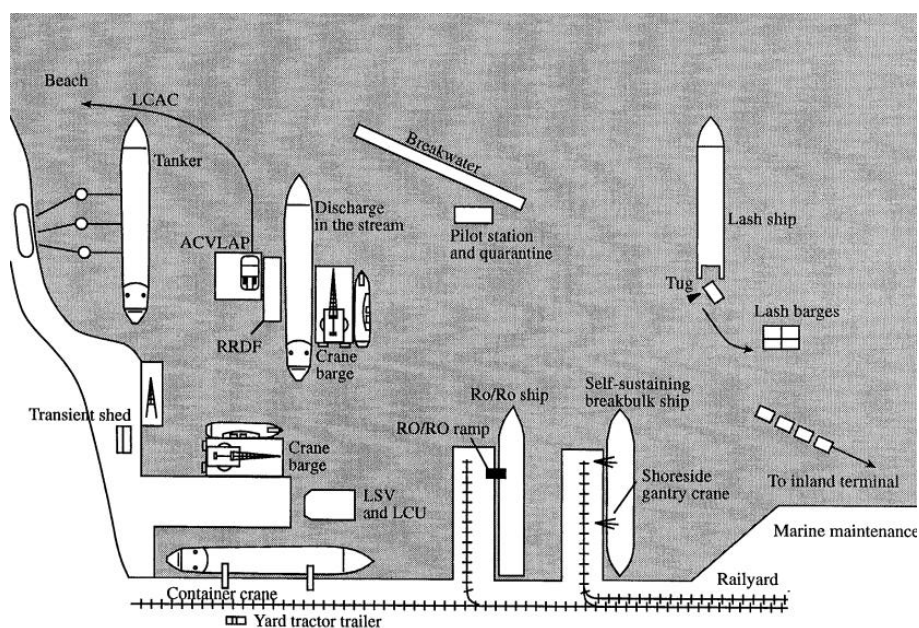


Figure 01. Fixed-Port Augmentation (Thede et al., 1995)

Although it is best to carry out Joint Logistics Over-the-Shore (JLOTS) operations in a safe environment, there may be times when military personnel must perform JLOTS in an insecure, asymmetrical setting in both present and future scenarios (Clady, 2013; Burrell et al., 2017).

According to most U.S. military scholarly sources, it is possible for both the Navy and the Army to carry out LOTS operations:

- In a scenario involving an amphibious or Maritime Prepositioning Force (MPF) operation, the Navy could perform LOTS operations with a Marine Corps and/or Army Land Forces (LF) to rapidly deploy and gather a Marine air-ground task force (MAGTF) in a safe area (Fisher, 2013; Burrell et al., 2017; Gaidai et al., 2022). In an amphibious or MPF operation, the Navy brings cargo and supplies to the high-water mark, where the LF is responsible for receiving, transferring, and transporting to inland marshalling areas (Pehrson, 2000; Clady, 2013; Evans et al., 2016).
- Army LOTS operations are typically part of base, garrison, or theater expansion, but they can also occur directly following amphibious operations or as an independent event (Fisher, 2013). It could get assistance and/or be organized with other services or allied forces (Pehrson, 2000; Clady, 2013). Supplies, equipment, and personnel are transported to the shore during Army LOTS operations before being handed over to the organization in charge of overseeing theater movement control (Theede et al., 1995).

It is important to understand that the extent of the LOTS operation will vary based on geographic, tactical, and time factors. A LOTS Operation Area (LOA) is the geographical area necessary for carrying out a LOTS operation (Theede et al., 1995; Fisher, 2013; Burrell et al., 2017). Furthermore, JLOTS can be a multinational endeavor where a coalition of forces collaborate under the leadership of a multinational force commander (Pehrson, 2000; Clady, 2013; Evans et al., 2016; Gaidai et al., 2022).

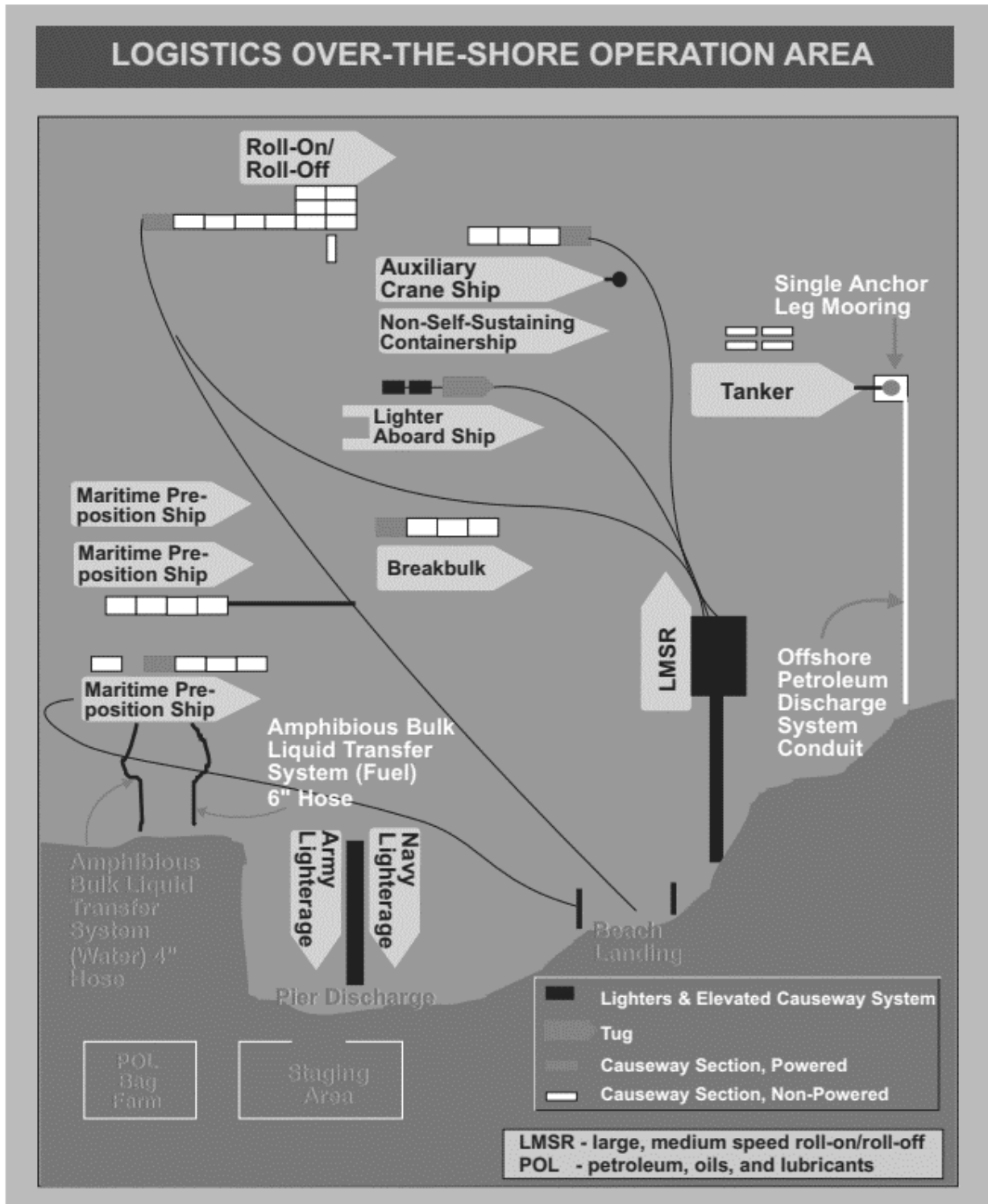


Figure 02. Logistics Over-the-Shore Operation Area

2.3. Joint Logistics Over-the-Shore (JLOTS) Operations

2.3.1. General Definition

Joint Logistics Over-the-Shore (JLOTS) Operations occurs when both Navy and Army LOTS forces work together in coordinating LOTS operations under a Joint Force Command (JFC). That said, JLOTS operations (Thede et al., 1995; Pehrson, 2000; Clady, 2013; Evans et al., 2016):

- Encompass all activities from accepting ships for unloading to the delivery of equipment and cargo at inland staging and marshalling areas.
- Involve the collective use of Army and Navy LOTS assets by a common and unified commander to transport and support a military force.
- Enable a military's strategic sealift vessels to unload cargo through ports that are insufficient or damaged, or directly onto a beach.
- Ensures the strategic moving units, materials, and other equipment within a designated theater (i.e. warfare, humanitarian aid, exercises, etc.).

There are two main types of JOTS that will require the usage of various kinds of equipment to carry out its tasks – mainly: "Port Operations" and "Bare Beach".

2.3.2. Joint Logistics Over-the-Shore (JLOTS) – Port Operations

One way to increase cargo throughput is by expanding fixed-port facilities, which is known as a form of LOTS. During this situation, strategic sealift ships can start unloading their cargo in the water while waiting for pier access (Thede et al., 1995; Evans et al., 2016). The goods will be transferred to a floating dock like a floating causeway, a cargo offload and discharge system (COLDS), or a roll-on/roll-off discharge facility (RRDF) (Pehrson, 2000; Fisher, 2013; Burrell et al., 2017). Cargo would be transported from the floating dock to the pier using lighterage. This method of operation can also be utilized when a stationary port is incapable of accommodating a big ocean vessel because of a shallow draft or harbor obstacles (Thede et al., 1995; Clady, 2013).

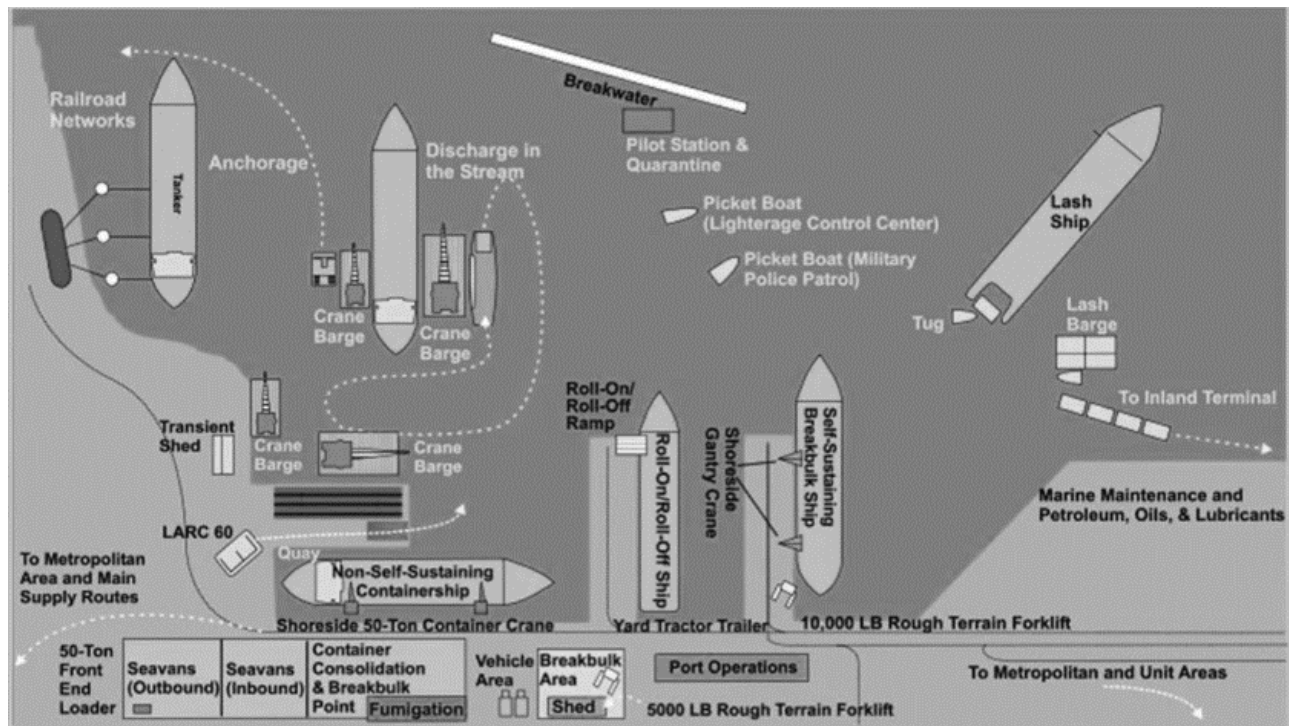


Figure 03. JLOTS – Port Operations

Multiple studies were carried out to establish the role and effect of JLOTS in delicate environments, as stated in the acknowledged military science literature (Buchanan, 1994; Burrell et al., 2017). Many academics have highlighted the restrictions on the U.S. strategic sealift fleet and the significance of LOTS for efficient cargo delivery (Thede et al., 1995; Clady, 2013). The strategic sealift fleet has been leaning towards bigger ships to deliver cargo faster and more efficiently (Beary, 1997; Evans et al., 2016; Gaidai et al., 2022).

It is important to mention that with full cargo, these vessels have drafts reaching 11.6 meters and need berths no less than 12 meters deep. However, out of 102 major ports analyzed in Europe and Africa, just 30 can handle ships needing 12-meter berths and 52 can handle ships needing 10-meter berths (Buchanan, 1994; Clady, 2013; Fisher, 2013).

There are two ways to service the inaccessible ports (Buchanan, 1994; Fisher, 2013; Gaidai et al., 2022):

- The ships must either discharge their cargo in deep water using LOTS procedures; or
- The ships must enter ports with less cargo to reduce their draft.

This constraint becomes more striking when considering that most of the Multi-Purpose Support (MPS) vessels positioned globally are either at or close to their full draft limit (Clady, 2013).

Modern strategic sealift relies heavily on deep-water ports or efficiently unloading ships in-stream and transporting cargo to shore using lighterage more than ever before (Beary, 1997; Fisher, 2013).

The prepositioned MPS ships' cargo, which includes crucial force opening modules for warfighters, cannot be easily unloaded to decrease draft (Burrell et al., 2017). If deep water ports are not available, then they need to discharge LOTS in-stream to an existing port or onto the bare beach (Beary, 1997; Evans et al., 2016).

2.3.3. Joint Logistics Over-the-Shore (JLOTS) – Bare Beach

Another different type of Joint Logistics Over the Shore (JLOTS) operation is known as the “Bare Beach” operation (Pehrson, 2000; Gaidai et al., 2022). Typically, opting for this kind of JLOTS operations is both possible and suitable when accessing the site is either prohibited, not realistic, or impractical. It includes lighters carrying goods directly to a coastal area that is unimproved or undeveloped, with (a) port(s) that is poor, devastated, and/or destroyed (Thede et al., 1995; Evans et al., 2016). The boats might be either transporting items from a vessel close to the shore or conducting a sealift operation between ports in the same area of operation (Clady, 2013). In any situation, they will be directly offloading their cargo onto the beach. This process of moving goods from ship to land is generally viewed as inefficient and dangerous and is more complex than a port operation (Burrell et al., 2017).

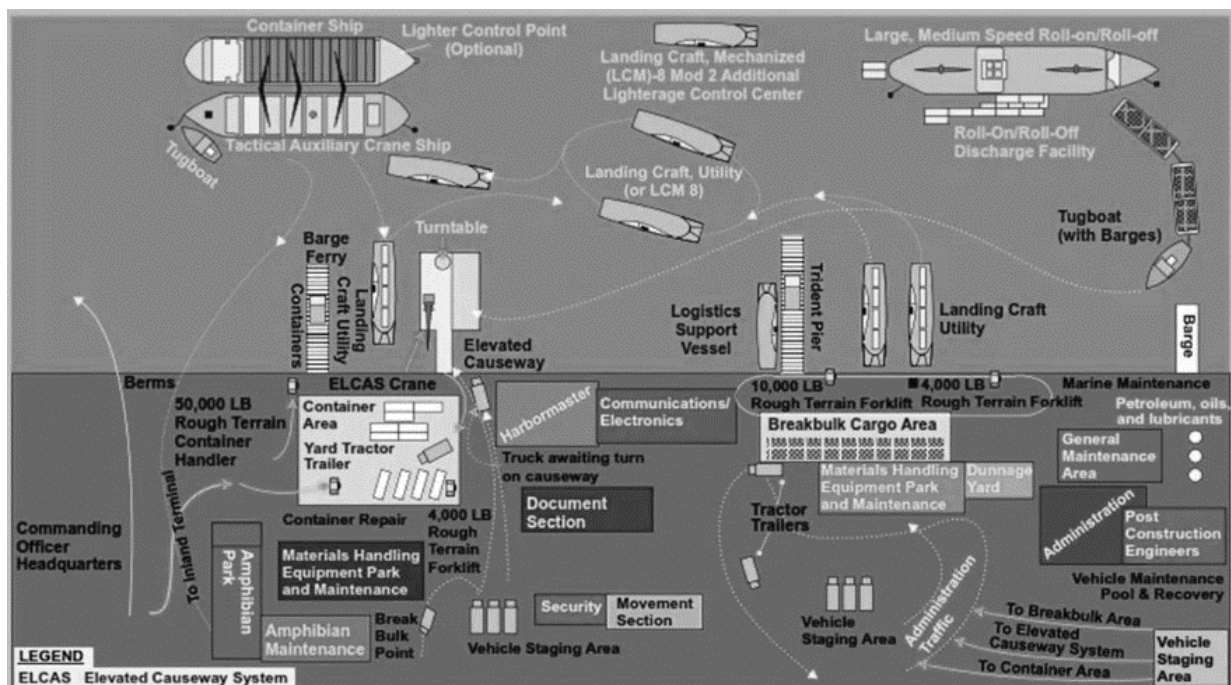


Figure 04. JLOTS – Bare Beach Dry Cargo

The bare beach JLOTS operation has different issues and features compared to port augmentation JLOTS. Due to the absence of a port, the beach needs to be inspected and readied. This task requires a lot of time and must be completed before JLOTS operations start (Burrell et al., 2017). During the planning phase, it is necessary to conduct beach reconnaissance to identify an appropriate JLOTS location (Pehrson, 2000). It is necessary to conduct a hydrographic survey to establish beach slope and underwater terrain. The chosen location needs to be reachable via main supply routes, accessible for lighterage and causeway installation, and have suitable beach crossing roads and beach hard stands (Fisher, 2013; Evans et al., 2016). If the beach cannot handle the weight of Material Handling Equipment (MHE) or cargo, then roads need to be built (Clady, 2013). Roads must be built for beach access to make sure that items can be removed from the beach for transportation (Thede et al., 1995; Gaidai et al., 2022).

Preparation is needed for a cargo marshalling zone. The marshalling site may have to make room for containerized cargo, breakbulk cargo, wheeled or tracked vehicles, or bulk liquids, depending on the operation (Clady, 2013). Due to the more intricate nature of the bare beach JLOTS mission compared to the port augmentation mission, a considerable amount of time will be needed for planning and beach preparation (Pehrson, 2000; Fisher, 2013). Setting up a JLOTS system to increase a port's berth capacity can be completed within a specific time frame (usually short term) (Burrell et al., 2017). Before starting the JLOTS operation to move cargo over the beach, it may take 14 to 30 days to install an elevated causeway for a 810 and 3,000 foot pier if vehicles and cargo need to be transported across the surf line onto the beach (Buchanan, 1994). These planning and preparation considerations must be resolved beforehand.

Other distinct features of bare beach JLOTS need to be considered for the operation to succeed. In contrast to operations at an established port with existing infrastructure, a bare beach operation must build a complete port facility from scratch (Burrell et al., 2017). When unloading goods at a current port, you may be able to use cargo handling equipment from either commercial or local sources (Evans et al., 2016). To carry out basic beach operations, there is a lack of both suitable commercial equipment and the ability to complete the task (Pehrson, 2000). Specialized equipment for handling cargo, which can function on rough and unpaved terrain, needs to be transported to the beach area as part of the first batch of cargo deliveries (Thede et al., 1995; Gaidai et al., 2022). This moves important warfighter material. Contract labor may be on hand at current ports for cargo handling, stevedore, and longshoreman tasks (Clady, 2013). On the naked beach, all gear and personnel belong to the military and need to be taken to the JLOTS operational zone. Once more, this will shift essential materials that are crucial for the military personnel.

3. The Constraints of a JLOTS Bare Beach Operation

3.1. Context

Military forces are always conducting JLOTS operations exercises simulating warfare, humanitarian intervention, and disaster relief activities – especially within an international-coalition framework. Because these exercises were conducted in a controlled environment, rather than under operational conditions, exercise participants and observers were able to collect valuable information and make meaningful recommendations (Pehrson, 2000; Clady, 2013; Evans et al., 2016). Many themes emerge as lessons learned from these exercises and others like them. Highlighted are a host of known problem areas such as equipment interoperability, training and proficiency, too much dependence on the reserve force versus the active force, and doctrinal issues (Fisher, 2013; Burrell et al., 2017).

There are three main-key themes, which have been highlighted in training exercises and historical events, which play a significantly larger role in the effectiveness of bare beach operations compared to other JLOTS types (Pina, 1991; Thede et al., 1995; Pehrson, 2000; Rice, 2006; Clady, 2013; Fisher, 2013; Gaidai et al., 2022):

- **Watercraft Ineffectiveness:** Water vessels limit performing bare beach JLOTS. The watercraft's equipment mix is not the ideal solution for any JLOTS mission, and the prepositioning strategy does not meet urgent requirements – especially for both wars and urgent relief interventions.
- **Bad Sea State:** Bare beach JLOTS capability is unsatisfactory in anything but relatively calm seas, degrading rapidly in worsening sea state conditions.
- **Lack of Proper Infrastructure:** Another constraint affecting bare beach JLOTS is not related to the actual operation but is dependent on the beach's characteristics. The bare beach lacks any logistics or transportation infrastructure.

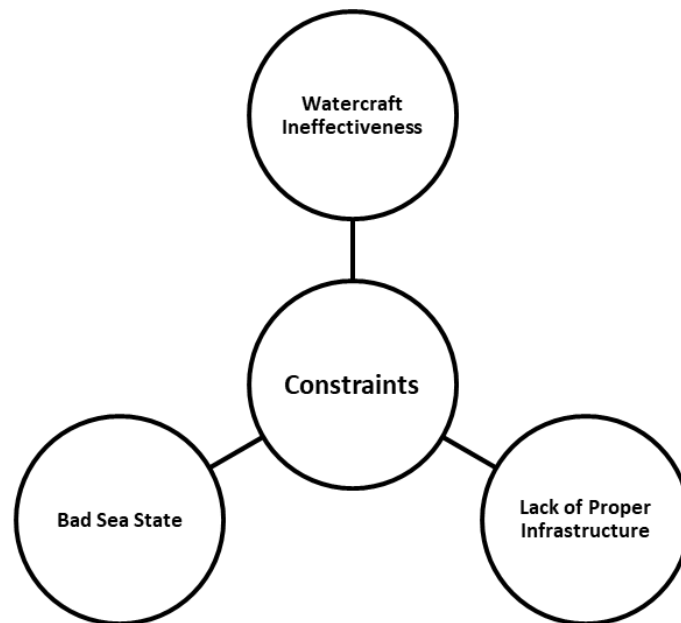


Figure 05. The Constraints of a JLOTS Bare Beach Operation

3.2. Watercraft Ineffectiveness

When a theater commander determines that JLOTS is needed to assist a military operation (combat-related or not), they should ideally have all the necessary manpower and equipment readily available to begin the operation (Thede et al., 1995; Pehrson, 2000). This would involve either enough time to deploy JLOTS equipment to the operational area or positioning the equipment at all possible JLOTS locations in the area of responsibility (AOR) (Evans et al., 2016). Both choices are neither realistic nor achievable. Deploying a small number of essential assets in advance and having a plan for additional watercraft forces is the military's approach to achieve the JLOTS mission. In this situation, there are numerous obstacles that can be encountered (Rice, 2006; Fisher, 2013; Gaidai et al., 2022):

- **Not Supporting International Responsiveness:** The current structure, stationing, and prepositioning strategies do not adequately support and are not globally responsive to meet urgent interventionism needs.
- **Not Supporting JLOTS Requirements:** Broadly, there are no ships stationed in or close to the AOR (since most ships are not situated near the operational area). Those capable of sailing towards the operational area wouldn't arrive on time to assist with early JLOTS, supply transportation, and port opening needs.
- **Non-Conform Equipment:** Most of the interventionist equipment that is currently available is not sufficient for the specific situation they are intended for (especially humanitarian and disaster relief ones).
- **Harmonize the Implicated JLOTS Force:** The implicated team must revamp with a force blend that most effectively supports the interventionist efforts.

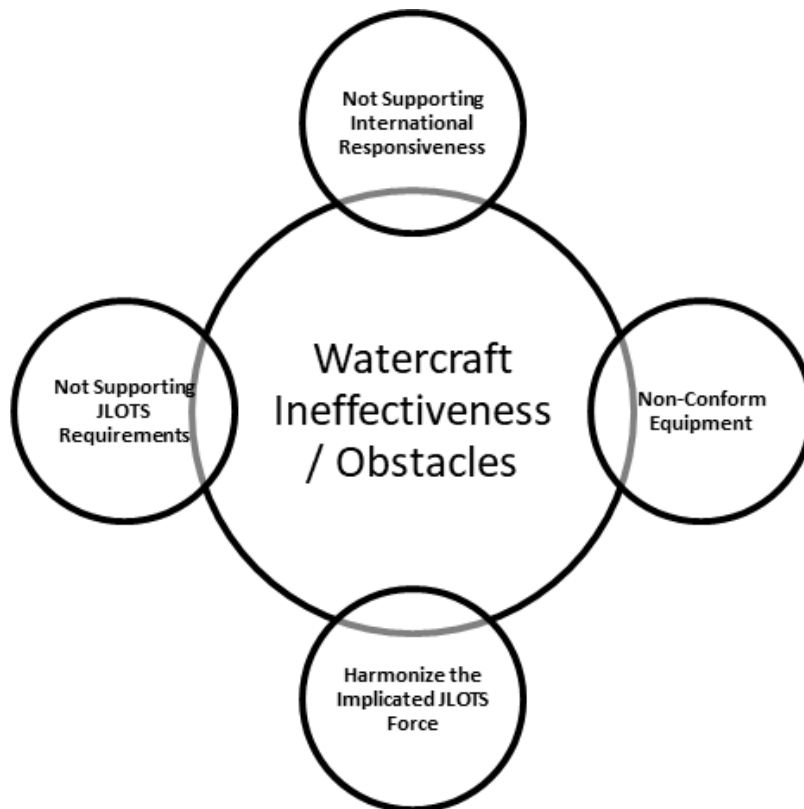


Figure 06. Watercraft Ineffectiveness / Obstacles

The lack of this inadequacy has the greatest negative effect on bare beach JLOTS operations. Moreover, as previously mentioned, setting up a bare beach JLOTS system requires more planning and preparation time compared to other JLOTS methods (Thede et al., 1995). In addition, when factoring in the time needed for assets to be transported to a specific location and the time needed to prepare the watercraft, the effectiveness of the JLOTS operation decreases quickly (Fisher, 2013; Gaidai et al., 2022).

3.3. Bad Sea State

The main limitation for JLOTS operations, especially bare beach JLOTS, is the inability to unload cargo onshore during anything other than calm seas. Practical observation and hands-on practice have demonstrated that weather and sea conditions are the primary factors limiting cargo throughput calculations (Thede et al., 1995; Vaughters & Mardiros, 1997; Rice, 2006; Clady, 2013).

Indeed, creating effective JLOTS procedures that consider the condition of the sea to function in unpredictable and occasionally severe sea conditions (e.g. winds, waves, storms, etc.). (Workman, 1996) must be cited. It should be acknowledged that creating this skill poses a significant difficulty. The military hasn't significantly enhanced its capability to conduct LOTS operations in anything other than calm seas since World War II (Keegan, 1989; Watkins, 2000).

In this situation, researchers have pinpointed various specific challenges to the Sea Stat requirements placed on JLOTS operations (Workman, 1996; Vaughters & Mardiros, 1997; Fisher, 2013; Burrell et al., 2017):

- Initiating the use of lighterage vessels (such as landing craft, etc.).
- Extensive fendering is necessary for ships, lighters, and staging facilities (such as discharge platforms and causeways).
- Crane cannot lift due to too much movement.
- Lack of capability to use bulk fuel offload equipment.
- Severe challenge in building a causeway of any kind.
- Building discharge facilities is proving to be incredibly challenging.
- Sea water flooding causeways and discharge facilities because there is not enough freeboard.

3.4. Lack of Proper Infrastructure

When selecting the JLOTS landing site, the coastal regions and waterways play a crucial role due to their flexible transportation networks and channeling routes. These locations were purposely chosen for specific reasons, including their proximity to communication routes, access to inland areas, and protection from the open ocean (Thede et al., 1995; Pehrson, 2000).

It is important to mention that any bare beaches left is typically in that state due to unsuitability for transportation or economic advancement. This is the reason why it is seen as a significant limitation for bare beach JLOTS operations (Pehrson, 2000; Fisher, 2013). Despite the ability of men and material to transfer from the ship to the shore, the continuation of movement from the empty beach remains a challenging obstacle for the warfighter. No roads, no railhead, and no airports are present (Rice, 2006; Clady, 2013).

The empty beach remains crucial for military operations like amphibious operations, which can sustain themselves initially (Pehrson, 2000). However, its role as a logistical route is not very useful for urgent interventions. The empty shore is a suitable location for self-sustaining amphibious operations in the first attack stage (Burrell et al., 2017).

4. The Evolution of the Response to Gaza's War Humanitarian Crisis

4.1. Amalthea Initiative

Right after the start of Gaza's war on October 7th, 2023 – Cypriot president Nikos Christodoulides developed the idea of installing a maritime aid corridor – which was named the "Amalthea Initiative". The idea was proposed at a European Council summit in October 2023 (Charalambous, 2023; EU Commission, 2024b).

The idea of the initiative was to open a maritime corridor between Cyprus and Gaza, intending to deliver aid to Gaza during the ongoing Israeli–Palestinian war (Irish, 2023; Kambas, 2024; UK Government, 2024):

- Utilizing Larnaca’s port for shipping significant amounts of humanitarian relief to Gaza by sea.
- Shallow-draft vessels were proposed to be used in the short term to ferry aid.
- The aid would be collected, inspected, and stored in Cyprus.
- After daily checks by a joint committee, including Israel, the aid would be sent to Gaza.
- The vessels would be accompanied by warships and would arrive at a designated neutral area on the coast of Gaza.
- In the medium term, a floating dock off Gaza could be used.

At first, the initiative was being developed slowly but steadily (Charalambous, 2023; EU Commission, 2024; Kambas, 2024; Magdy et al., 2024):

- From its early stages, the initiative was supported by the governments of Egypt, Jordan, UK, US, UAE, etc.
- The first step was completed on 1 January 2024, when Cyprus and the United Kingdom collaborated to successfully send 87 tons of aid to Gaza through Port Said in Egypt. The aid was then transferred through the Rafah border without security checks in Israel.
- During the month of March 2024, the European commission started assessing the infrastructure needed for Cyprus' humanitarian corridor initiative.
- On 8 March, the U.S. president Joe Biden announced that the United States Armed Forces will establish a temporary port in Gaza to enhance sea-based humanitarian aid delivery. The port will handle large vessels carrying food, medicine, and water, with initial shipments arriving via Cyprus. The United States will collaborate on security and coordinate with UN agencies and humanitarian operations on the ground.

4.2. Temporary Interim Jetty

On 12 March 2024, a barge "testing" the delivery route, operated by the Spanish NGO's salvage vessel Open Arms departed from the port of Larnaca to deliver humanitarian aid to Gaza. The ship towed a barge loaded with supplies (200 tons of food staples) provided by the US charity World Central Kitchen and funded by the UAE (Kambas et al., 2024; De Vega & Hierro, 2024).

A jetty for unloading the barge was built at a location that initially undisclosed, but later discerned to be south of Gaza City, navigating a newly opened shipping route. The mission faced several technical challenges, including capacity and weather concerns (Patil, 2024; Prousalis & Kourtoglou, 2024; Sella, 2024).

4.3. The Fogbow Plan – Blue Beach Plan

The Fogbow plan was a strategy created by a little-known private advisory firm, Fogbow, which is run by former U.S. military and intelligence officials (Le Masurier & Leimbach, 2024).

The plan aimed to establish a maritime corridor. Known, internally as the “The Blue Beach Plan”, the project aims to develop a temporary maritime delivery mechanism to enable humanitarian aid to Gaza at scale (Le Masurier & Leimbach, 2024; Clemmensen, 2024). The humanitarian aid would be bought by Fogbow and shipped through the Amalthea maritime route from the Port of Larnaca in Cyprus to Gaza that is being promoted by the Cypriot government (Bertrand *et al.*, 2024b).

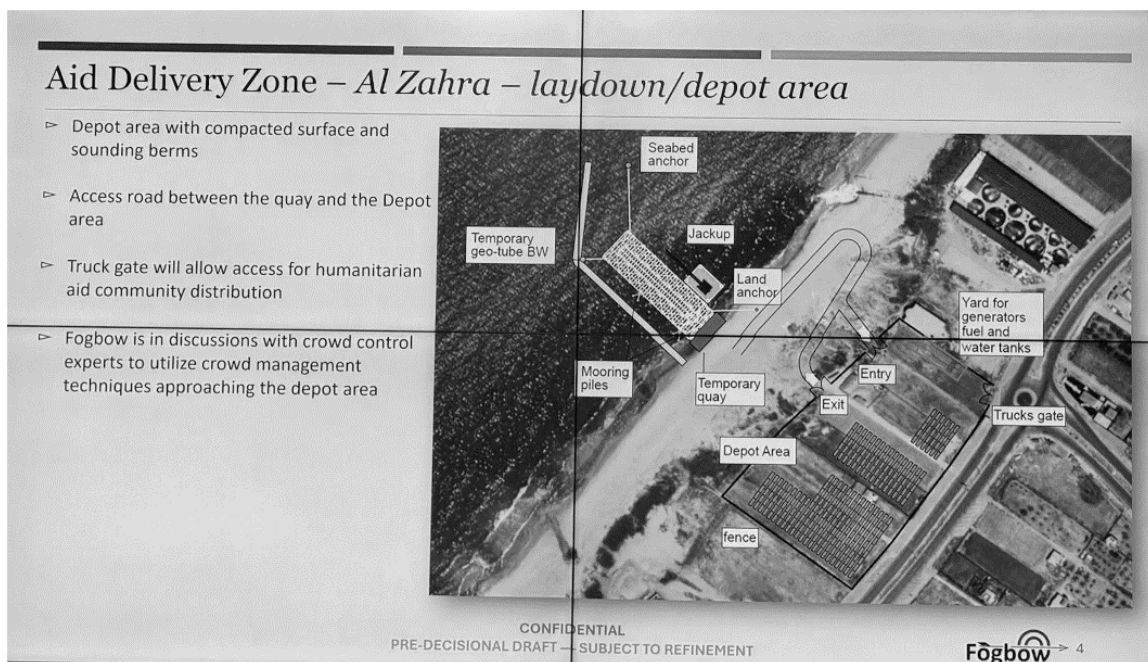


Figure 07. Fogbow's 'aid delivery zone'. © France 24

According to the initial Fogbow plan, a significant portion of aid would be transported using Masri trucks to the Gaza Industrial Zone, a specified area within the Gaza sector (Le Masurier & Leimbach, 2024; Stewart, 2024).

On another note, Fogbow aimed to set up a new beach landing site to deliver humanitarian aid. The initiative sought to improve aid distribution by increasing the number of drop zones along the coast, making it easier to transport aid to remote areas that are difficult to reach by typical overland routes (Stewart, 2024; Clemmensen, 2024).



Figure 08. Fogbow presentation showing Gaza Industrial Estate. © France 24

To support the implementation of this plan, funding would be directed through a recently established foundation called the “Maritime Humanitarian Aid Foundation” (Le Masurier & Leimbach, 2024; Clemmensen, 2024).

5. Trident Pier Operations’ Dynamic

5.1. The Choice of a JLOTS Bare Beach Approach

The JLOTS bare beach approach was adopted since the Gaza strip had no large maritime port that can harbor cargo ships of this capacity – even though it had several small fishing ports.



Figure 09. The Fishing Ports of the Gaza Strip

Other than the small fishing ports of Gaza, the strip has a small port near the Rimal district of Gaza City, Palestine; the latter is the home port of fishing-boats and the base of the Palestinian Naval

5.2. Gaza’s JLOTS Bare Beach Operation – An Overview

Over 1,000 U.S. military personnel were involved in the construction of the pier and 1,800-foot (550 m) long Joint Logistics Over-The-Shore (JLOTS) type modular causeway over 60 days (Robertson & Ziezulewicz, 2024).



Figure 11. Pier Location

The JLOTS system involves several parts: a massive discharge platform, where cargo ships can offload aid, the trident pier, or causeway, and a series of pier sections-slash-boats that will move the aid from the platform to the pier (Clark, 2024). All the parts are built from the same sectional modular pieces, which are put together like an at-sea erector set (Kube, 2024; Baldor, 2024b).

The part of the JLOTS system included in this project is a large floating modular unloading platform secured by sea anchors stationed about three miles offshore, allowing supplies to be then transferred by lighters to a modular causeway off the shore (Srivastava & Schwartz, 2024).

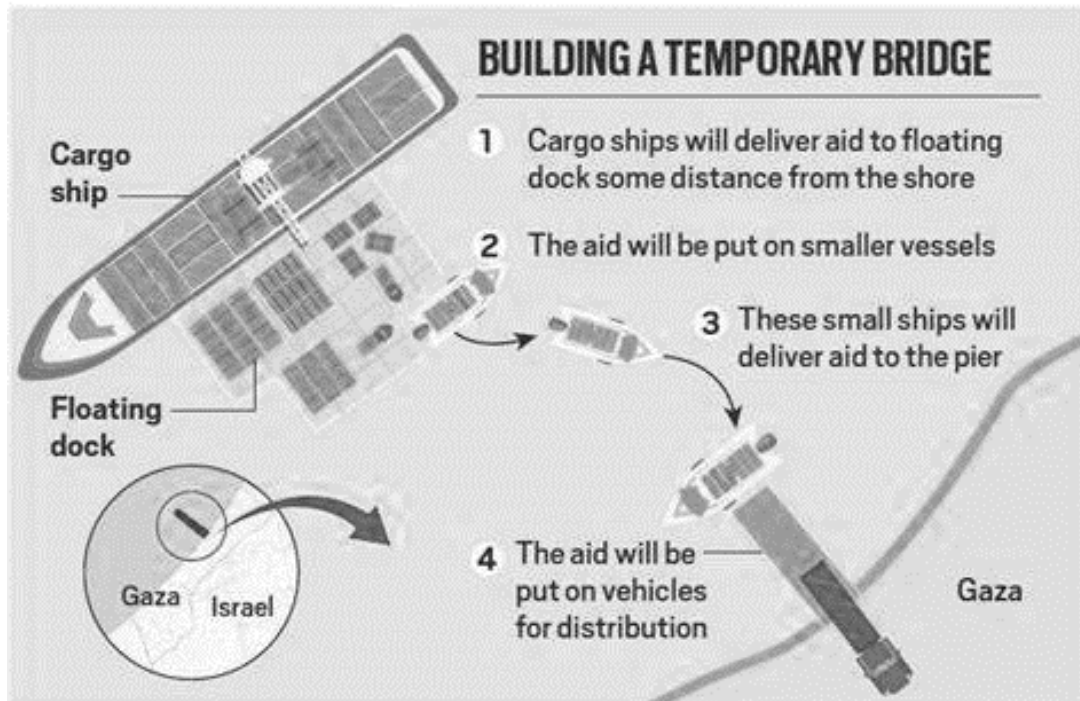


Figure 12. Trident Pier as it was Envisioned

The project is an advanced version of the Blue Beach Plan developed by Fogbow and builds up on the Amalthea Initiative – as both projects did not include a JLOTS (Clark, 2024; Srivastava & Schwartz, 2024).

The project will work (Kube, 2024; Olay, 2024; Ziezulewicz, 2024):

- To allow barges to approach the shore for aid distribution onto trucks.
- To allow international assistance to enter the equivalent of two million meals a day to Gaza – to feed almost all the territory's 2.3 million population (approximately).
- To overcome the current status quo of aid delivery.
- The military pier, once operational, could provide another way for aid delivery.

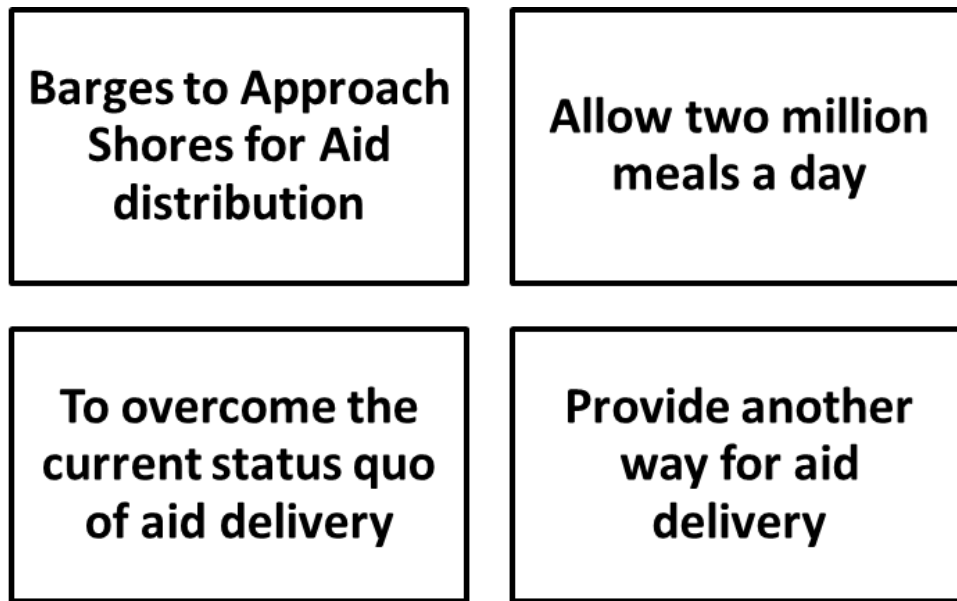


Figure 13. The Goals and Advantages of the Pier Project

The project became increasingly – in theory vital (Srivastava & Schwartz, 2024; Ziezulewicz, 2024; Clark, 2024). The maritime option was the best available and only viable one to meet demand as the others were either insufficient or unavailable (Schoenfeld Walker. & Shao, 2024):

- This project would constitute far more aid than is currently coming in over land through the Rafah border crossing with Egypt and Kerem Shalom crossing with Israel (that were later both closed); even though there is no substitute for assistance coming in trucks over land.
- Very insufficient airdrops.

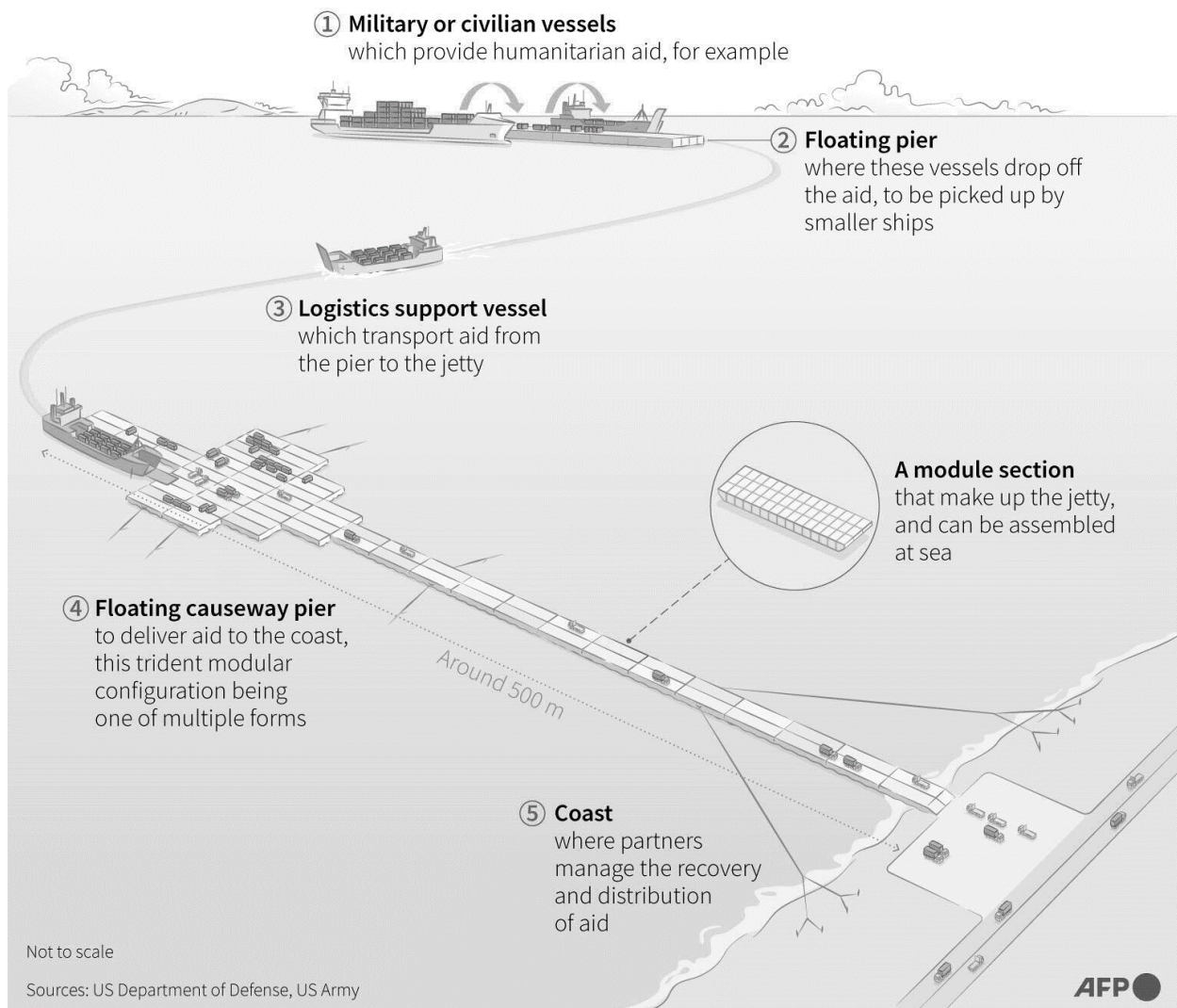


Figure 14. The JLOTS – The U.S. Temporary Port System

This “Trident Pier” aims to send aid coming from all over the globe (Kube, 2024; Srivastava & Schwartz, 2024; Ziezulewicz, 2024; Clark, 2024):

- First through Cyprus – by assembling them.
- Then by channeling them to a floating pier through vessels.
- Transporting aid through trucks that will cross the jetties and send them to a dock point on Gaza’s coast.

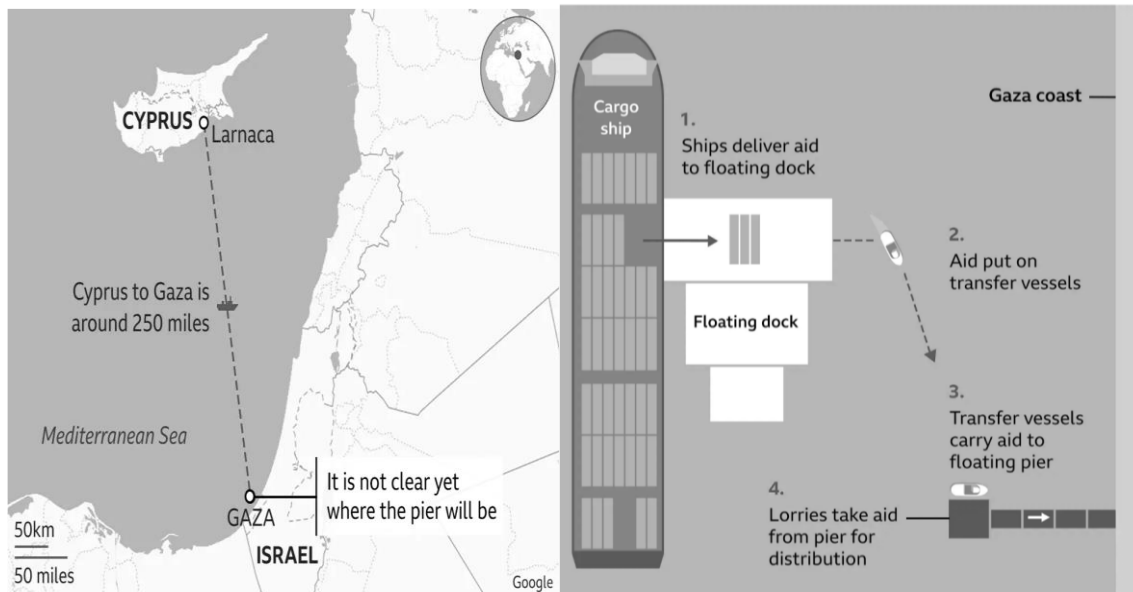


Figure 15. How the Temporary dock for Gaza Aid will Work

The U.S., through this new project was scrambling to pull together a complex 320 million U.S. dollars’ system through the means of a JLOTS operation. The project has two components (Srivastava & Schwartz, 2024; Kube, 2024; Clark, 2024):

- **Component 01:** A floating offshore barge that is a first point of arrival for aid deliveries; and
- **Component 02:** A 550-metre (1,800ft) causeway anchored to the shore.

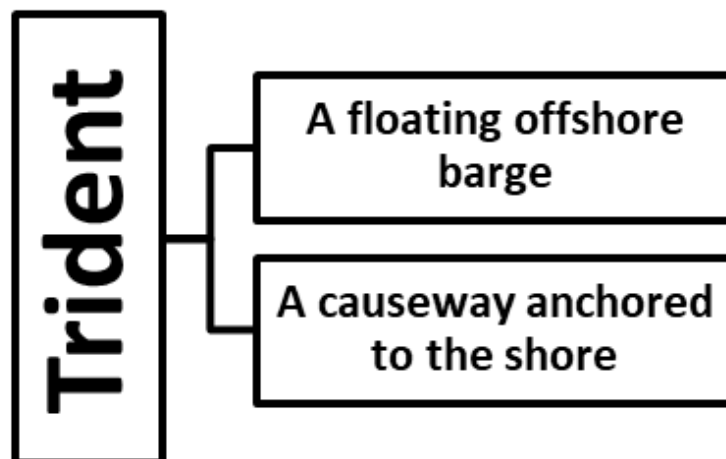


Figure 16. The Main Components of the Trident Project

5.3. Trident Pier Project Process Steps

5.3.1. Context

The following sections of this study will aim to decrypt the project steps of Gaza's Trident Pier. This part of our study will both outline and define the various elements that constitute the process as is (Srivastava & Schwartz, 2024; Kube, 2024; Ziezulewicz, 2024).

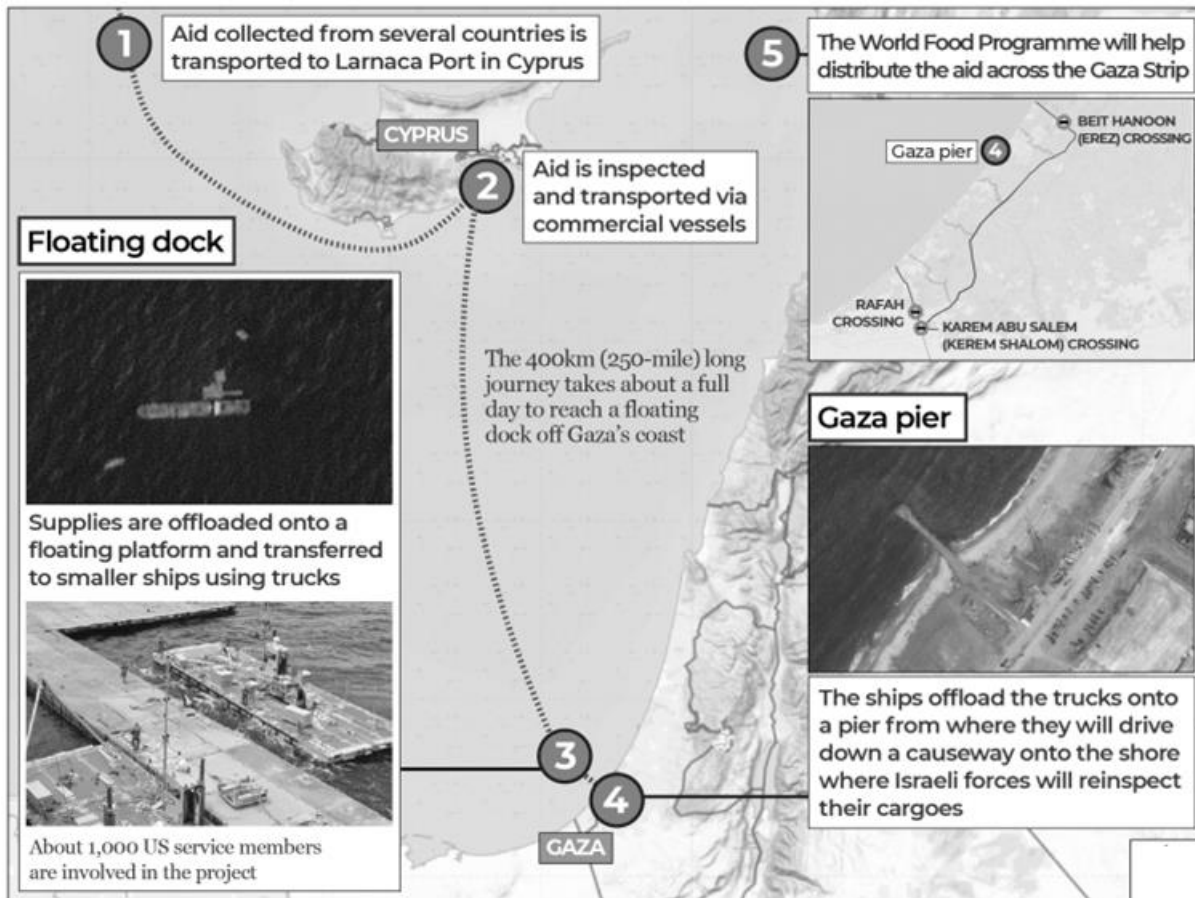


Figure 17. Pier's Dynamic as it was Envisioned

Based on the pier’s planners, the project is a ten (10) steps’ process – which will be reviewed thoroughly.

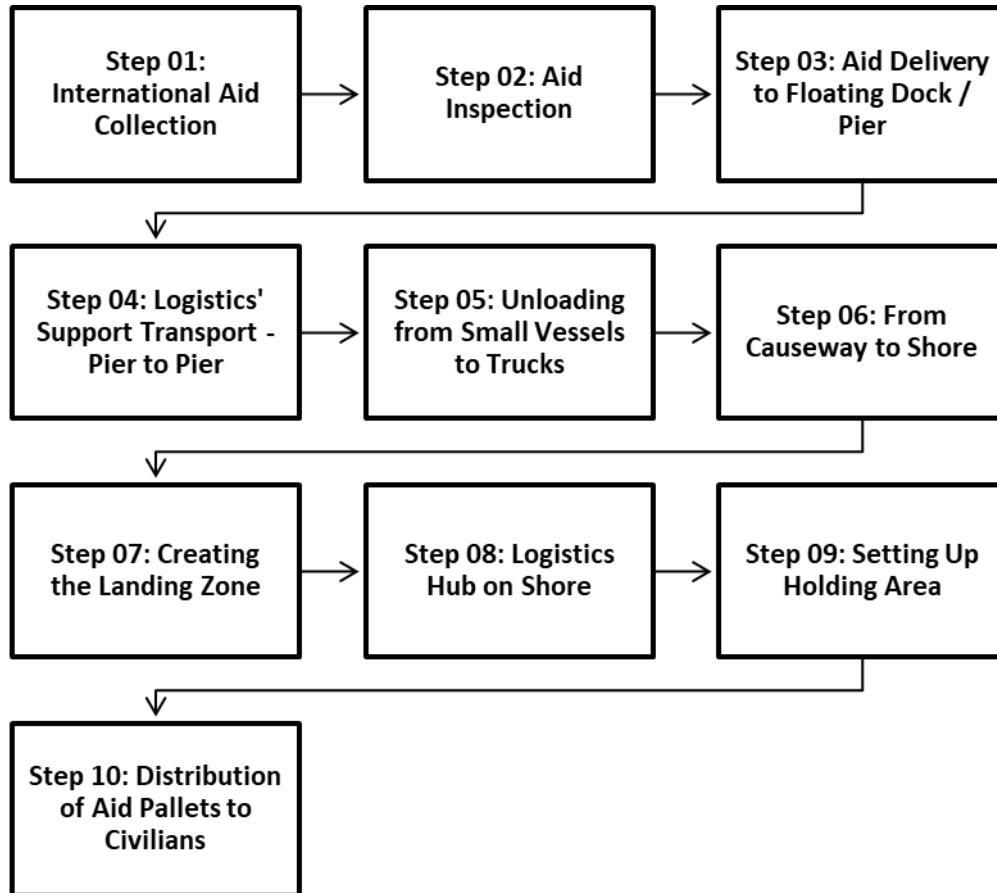


Figure 18. Trident Pier’s Ten (10) steps’ process

5.3.2. Step 01: International Aid Collection

Humanitarian aid bound for Gaza through the maritime route will be collected from several countries, NGOs, INGOS, international transnational organizations, etc. and will subsequently be delivered by air or sea to Cyprus. (Srivastava & Schwartz, 2024; Kube, 2024). It will then be transported to the Port of Larnaca (Debusmann, 2024; Clark, 2024). That said, the U.S. has set up a coordination cell in Cyprus to work with the local there, the U.S. Agency for International Development, and other agencies and partners – who will oversee aid collection (Ziezulewicz, 2024; Baldor, 2024a).



Figure 19. Aid Arriving to Cyprus

5.3.3. Step 02: Aid Inspection

Aid docked in the port of Larnaca is thoroughly inspected by the implicated international military personnel (Debusmann, 2024; Baldor, 2024a; Ziezulewicz, 2024; Davidson et al., 2024; Yee et al., 2024):

- The Cypriot as it is on their sovereign land and given that they have accepted to host this project.
- The U.S. as they will serving as the both the catalyst and middleman in this project.
- The Israeli officials who are military occupying the Gaza coastline.
- The United Nations Office for Project Services given that it is a humanitarian crisis intervention within the context of a full-fledged armed conflict.

5.3.4. Step 03: Aid Delivery to Floating Dock / Pier

After aid pallets are assembled and inspected in Cyprus, it departs by cargo ship to the floating dock. The journey is a 400 KM one and takes approximately fifteen (15) hours – from Larnaca Port to attain the floating Pier (Srivastava & Schwartz, 2024; Kube, 2024).

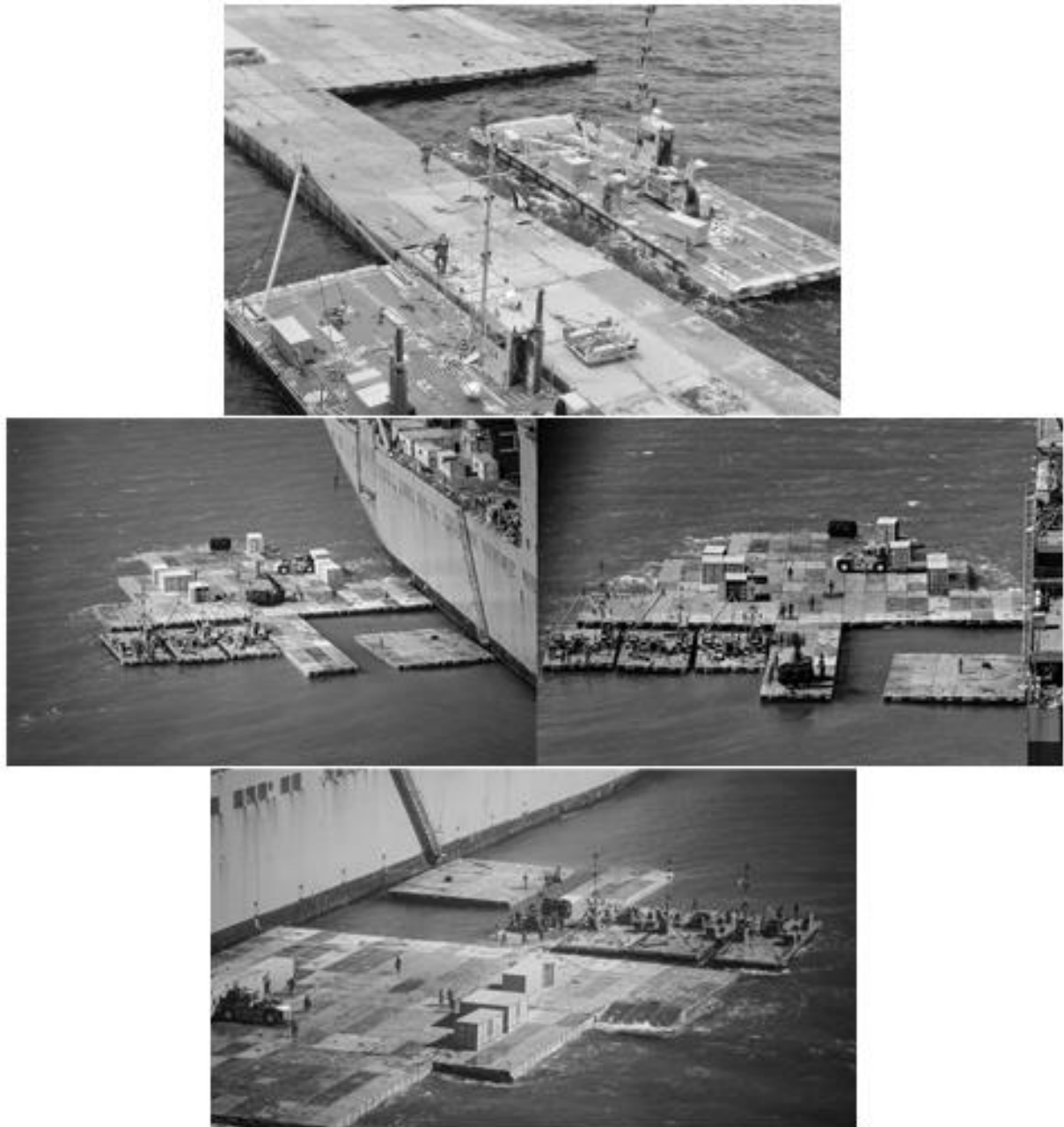


Figure 20. Floating Pier

5.3.5. Step 04: Logistics' Support Transport – Pier to Pier

Cargo ships deliver supplies to the dock and the aid pallets are then offloaded onto two types of smaller army vessels using trucks. The two army vessel's types are: Logistic Support Vessels, or LSVs, and Landing Craft Utility boats, LCUs. It should be noted that LSVs can hold fifteen (15) trucks each and the LCUs about five (5) (Baldor, 2024a; Hadjicostis & Knickmeyer, 2024) The

vessels are then used to transport aid from the floating pier to the jetty (Srivastava & Schwartz, 2024; Kube, 2024; Ziezulewicz, 2024).



Figure 21. LSVs transports Aid Trucks

5.3.6. Step 05: Unloading from Small Vessels to Trucks

The small vessels will offload the trucks into the pier where they will drive down the causeway onto the shore – where Israeli forces will reinspect their cargo (Clark, 2024; Ziezulewicz, 2024; Debusmann, 2024).



Figure 22. Unloading Trucks from Small Vessels to Trucks

5.3.7. Step 06: From Causeway to Shore

The trucks loaded with aid are driven by international aid workers all through the causeway towards the shore of Gaza (Debusmann, 2024; Kube, 2024). After aid pallet are dropped-off, the trucks will immediately turn around and return to the boats (Clark, 2024; Srivastava & Schwartz, 2024). The trucks will repeat that loop over and over, and they will be confined to that limited route to maintain security (Baldor, 2024a; Ziezulewicz, 2024).



Figure 23. Trucks Traversing the Causeway

It is to be noted that the causeway (Srivastava & Schwartz, 2024; Kube, 2024; Ziezulewicz, 2024; Clark, 2024):

- Will be composed of interconnected, 12M (40 feet) steel pieces linked together and attached to the shore.
- Will be assembled at sea and "driven" into the beach, allowing US forces to avoid setting foot on Gaza.
- Will be anchored into the beach by the Israeli military.



Figure 24. Assembling the Causeway

5.3.8. Step 07: Creating a Landing Area

For the pier to become operational, and to be able to receive aid, there was a need to create a landing area. Hence, for the “Trident” (Srivastava & Schwartz, 2024; Kube, 2024; Ziezulewicz, 2024; Sharpe, 2024):

- To stab the trident pier into the beach, a platoon’s worth of soldiers first uses military bulldozers to dig a massive slot trench on the beach, which leads the pier into a so-called “duck pond,” basically a water-filled entry point for the pier to mate with the beach, the officers said.
- After the duck pond is established, which usually takes a day or so, the pier is rammed at four or 5 knots into the sand, and must get at least 40 feet in.
- After that, a mix of buried anchors and Army tug vessels keep the pier in place as trucks start rolling on and off. Those anchoring systems need to be constantly maintained, to hold the pier in place, securely and stable so that they can do discharge operations safely.



Figure 25. “Trident” Stabbing the Shore

In this context, a landing zone was chosen and set. However, the Israeli military had to demolish several homes and infrastructure that stood in the area (Sparks et al., 2024).



Figure 26. Landing Zone

5.3.9. Step 07: Logistics Hub On Shore

UN Aid groups (including the WFP) as well as international agencies (i.e. USAID) will collect the supplies for distribution on shore, at a port facility built by the Israelis just southwest of Gaza City (Debusmann, 2024; Kube, 2024; Ziezulewicz, 2024). Officials say they expect about 90 truckloads of aid a day initially and that when the operation reaches full capacity, 150 trucks are expected to make their way into Gaza daily. However, International aid organizations say a minimum of 500 trucks are needed each day (Srivastava & Schwartz, 2024).

When it comes to the logistics hub on the beach, there will be three points at the port (Kube, 2024; Olay, 2024; Martinez, 2024):

- **USAID OIG Point:** USAID OIG (offices of the General Inspector) will assess the handover of aid from the U.S. military’s-controlled maritime pier to the UN officials.
- **Israeli Point:** The first one will be controlled by the Israelis where aid from the pier will be dropped off.
- **UN Point:** The second one is where the aid will be transferred. Palestinian drivers contracted by the UN will wait to pick up the aid before taking it to distribution points.

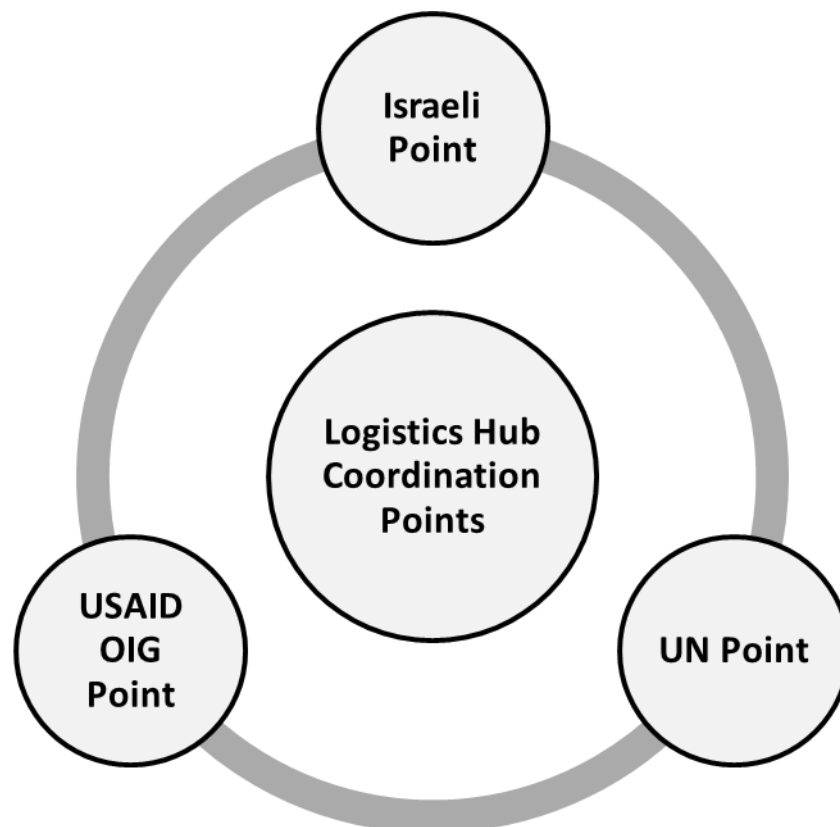


Figure 27. On-site Logistics' Hub Points

5.3.10. Step 08: Setting Up Holding Area

Once on shore, aids are then stored in a secure holding area on the beach where they are again inspected and stored (Srivastava & Schwartz, 2024; Kube, 2024; Davidson et al., 2024; Yee et al., 2024; Knickmeyer et al., 2024).



Figure 28. Holding Area

5.3.11. Step 09: Distribution of Aid Pallets to Civilians

Palestinian drivers contracted by the UN will drive up to several distribution points for aid pallets final offload – which will be carefully chosen by the UN so that the supplies could be distributed safely and as effectively as possible to civilians (Clark, 2024).



Figure 29. Distribution of Aid Pallets

6. Questioning JLOTS Humanitarian Efficiency in Times of Crisis

6.1. The Constraints of Humanitarian JLOTS Operations

Part of our research aims to present a critical overview of “Bare Beach” JLOTS operations to determine if they still provide adequate utility for their targeted objectives (Srivastava & Schwartz, 2024). Indeed, and as previously explained, JLOTS is a large-scale and very complex operation with its own unique characteristics, that must be conducted in a permissive environment (Pehrson, 2000; Evans et al., 2016; Burrell et al., 2017). The research showed that bare beach JLOTS humanitarian operations requires vigorous planning and preparation making it indeed costly to the military in terms of both time and resources (Thede et al., 1995; Johnson, 2006; Fisher, 2013; Clady, 2013; Kube, 2024).

Several researchers questioned JLOTS as a reactionary-fast-deployment operation. This is due to the fact in many cases the military derived little utility from bare beach JLOTS. Indeed, three main constraints were identified that limit the utility of JLOTS operations (Pehrson, 2000; Wolosz, 2000; Johnson, 2006; Clady, 2013; Fisher, 2013; Burrell et al., 2017):

- **Know-How and Lack of Situational Training:** There is a lack of proper training and education needs – especially when it comes to humanitarian response.
- **Equipment Availability:** Very few fleet facilities and equipment can participate in such an operation.
- **Moving the Fleet:** Given that a crisis can occur anywhere, hence, a fleet cannot be strategically positioned for a quick response.
- **Sea-State Conditions:** It is the inability to perform any form of in-stream discharge or bare beach JLOTS operation through bad Sea State conditions
- **Operational Costs of Abandoning the Beach:** From a logistician’s perspective, bare beach JLOTS is a high-cost, high-risk, and inefficient means of supporting the warfighter. The operational cost of abandoning the logistical support option of bare beach JLOTS is too great for the military to bear.

Finally, some experts have gone all the way and questioned the utility of the bare beach JLOTS operation itself. The nature of the beach and lack of transportation infrastructure beyond the beach demands a determination of whether or not bare beach logistics is an outdated concept (Johnson, 2006; Clady, 2013).

6.2. The Future of Humanitarian JLOTS Operations

Following on the many highlighted constraints, experts have also highlighted whether or not bare beach JLOTS operations provide adequate utility for today’s military-led humanitarian operations (Pehrson, 2000; Evans et al., 2016). Many scholars and practitioners alike have point out that it (JLOTS humanitarian operation) does not derive adequate utility from bare beach with its current capability to deliver swift aid given its expensive, risky, unreliable, and inefficient dynamic (Thede et al., 1995; Clady, 2013; Kube, 2024). However, it has an effective output for warfare operations

and a unique capability in the U.S. military arsenal (Watkins, 2000; Fisher, 2013; Burrell et al., 2017).

7. The Critical Case of the Gaza Pier

7.1. Outline

The Gaza pier was heavily criticized by aid groups as well as project managers and logisticians alike as a costly (multi-hundred million USD project), risky (i.e. moving 20–40-ton containers on an environment that is moving), dangerous (i.e. security), and ineffective mean that could never replace land deliveries. Also, the pier needed complicated logistics and security on each step of the way (Kube, 2024; Ziezulewicz & Baldor, 2024). Furthermore, every step added to aid delivery increased both cost and risk. In end, and by mid-July, administration officials opted to end the project after officials from U.S. Central Command recommended against rebuilding the pier following its separation from shore during bad weather as well as security issues on the ground (Srivastava & Schwartz, 2024).

Despite the many contesting voices, many military officers affirmed that the JLOTS was tailor-made for the Gaza mission, delivering much-needed relief via the sea where no port is available. In this context, many experts still consider the mission to be a given that the pier mission was always a temporary endeavor to enable the additional flow of aid into Gaza during a period of dire humanitarian need (Srivastava & Schwartz, 2024). According to supporting specialists, the controversial Gaza pier mission helped transport about 20 million pounds of food (nearly 8,100 metric tons) and humanitarian aid to Gazans over a three-month period. But weather and logistics issues limited how frequently the pier could be accessed (Ziezulewicz & Baldor, 2024; Britzky & Bertrand, 2024; Kube, 2024; Olay, 2024).

This part of our research will provide detailed feedback regarding the project process challenges as well as a critique when it comes to its all-in-all outcomes.

7.2. The Identified Project Process Challenges

7.2.1. High Project Cost

The project had a colossal budget (estimated around 320 million USD) (Srivastava & Schwartz, 2024; Kube, 2024; Stewart & Psaledakis, 2024):

- **Project Planning Fees:** It was supported by the U.S. military and included internal planning as well external logistics and consulting.
- **Transportation Fees:** This was supported by multiple stakeholders and includes the transport of both material, aid, personnel, etc. to the targeted area.
- **Pier Construction Fees:** It was supported by the U.S. military. It the budget allocated to the construction of the all-in-all JLOTS pier.

- **Pier Maintenance Fees:** It was supported by the U.S. military, and it includes maintaining the pier in good conditions as well as all repairs that were conducted while considering the risks associated with the project (both acceptable and force majeure).
- **Pier Operations Fees:** It was supported by the E.U., U.S. military, Israel, etc. as well as from other donating agencies (i.e. UN, etc.) and covered operations from aid arriving to Cyprus until their dispatch to Gaza. This included the necessary equipment (e.g. vessels, trucks, etc.), staff (e.g. soldiers, contractors, humanitarian volunteers, harboring personnel, etc.), and other related expenses necessary for this endeavor (i.e. fuel, conditioning aid, etc.).
- **Operations' Contingency Fees:** It was supported by the U.S. military. This includes the budget that is allocated to ensure continuing operations in case of emergencies (i.e. transporting the last of the channeled aid from Ashdod once the pier was dismantled).
- **Distribution Fees:** This was supported by the UN and include aid distribution via contractors and under the supervision of the UN's WFP once the aid is on the shores of Gaza.
- **Aid Fees:** This was supported by multiple stakeholders and include the cost of the aid.

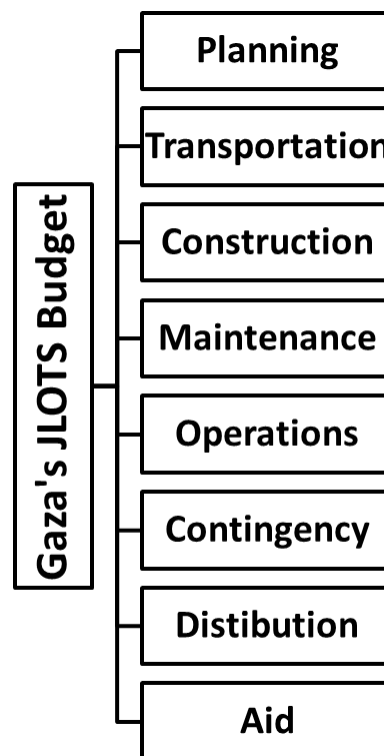


Figure 30. Gaza's Pier Budget Categories

7.2.2. Bad Sea Conditions

The project was put on-hold on multiple occasions (i.e. pausing off-shore assembly of the pier, circulation restrictions to ships, etc.) due to bad weather days as rough seas slow down the ships while the pier is unusable in waves higher than 90 cm (three feet) or winds faster than 24km/hour

(15mph), according to a 2006 US Naval War College paper on safe cargo handling (Bertrand et al., 2024a; USCENTCOM, 2024).



Figure 31. A satellite image from Maxar shows the temporary Trident pier anchored to the Gaza coastline after it was hit by a storm (Mesa, 2024).

The pier was damaged on multiple occasions by heavy wind and volatile waves (Kube, 2024; Srivastava & Schwartz, 2024; McCullough et al., 2024; Britzky & Bertrand, 2024 Sullivan, 2024; Ruthven & deHah, 2024):

- On one occasion heavy seas and a North African Storm led the pier to being towed to the southern Israeli port city of Ashdod for repairs after a section broke off. During the same storm, four US Army vessels supporting the pier were washed ashore on beaches: two (2) in Gaza and two (2) in Israel. It was reattached over a week later, only to have to be temporary dismantled again less than a week after that in advance of more heavy seas. It was disconnected from the beach for a third time at the end of June, and the sea states had prevented its reattachment.
- On numerous occasions, parts of the pier floated up the coast, washing up on the beaches of Tel Aviv.
- At one point, ships intending to reach the pier were rerouted to Ashdod port, where the aid travelled by road to Gaza.



Figure 32. Pier Reassembled After Being Damaged

When considering whether to bring back the pier after bad weather in late June 2024, U.S. officials said there would be little point in doing so immediately because the marshalling area next to the pier was nearly full. Pentagon officials have cautioned that the sea could become too rough for the pier after the summer (Srivastava & Schwartz, 2024; Kube, 2024; McCullough *et al.*, 2024).

After being fixed and redeployed in early June 2024, the pier has been reviewed, dismantled, moved, and reassembled multiple times due to sea conditions. Finally, in early July 2024, the pier was supposed to be put back in place one final time to allow aid that has piled up in Cyprus to be brought ashore in Gaza before the pier is permanently dismantled. But even that effort did not go according to plan as on 12 July, technical and weather-related issues had prevented the pier from being re-anchored. The end finally came on 17 July when Vice Admiral Brad Cooper of the US military told reporters that the “mission involving the pier is complete” (USAID, 2024; Stewart & Ali, 2024; Reidy, 2024).

7.2.3. Great Security Concerns

7.2.3.1. Wartime Conditions

Humanitarian assistance in times of war – have very high security threats. Also, with the war becoming increasingly violent, ensuring safety for aid workers remains as challenging as ever. Gaza’s war was indeed a very hostile environment for aid workers – and both militants and the Israeli military were criticized for targeting aid workers:

- Several United Nations staff members and facilities (i.e. UNRWA) as well as INGOs workers’ aid convoy (i.e. World Central Kitchen) were targeted by the Israeli Airforce while on duty (Kourdi et al., 2024; Gritten, 2024; Goodwin & Mezzofiore, 2024).
- On another note, there was a mortar attack at the pier site near WFP aid assembly area by militants, reflecting the ongoing threats from Hamas (Baldor et al., 2024b). That said Some aid workers expressed concern that a pier operated by the U.S. military could put humanitarian staff and operations at risk because locals might question their neutrality or see them as undercover agents (Reuters, 2024) Several specialists were worried about the Israeli and U.S. militaries’ ability to counter lower-tech threats, such as mortar rounds (Ziezulewicz, 2024).

Furthermore, within the context of the Pier project, aid that has made it ashore has often remained stuck in the Israeli-controlled marshalling yard, with aid agencies reluctant to collect and distribute it in such an insecure environment. However, it should be noted that within the project planning process of Gaza’s floating pier, key agreements for security and handling the aid deliveries were made between the U.S. military and the Israeli forces; those include (Baldor, 2024a):

- **Offshore Security:** The U.S. military provide its own security for personnel, Army and Navy forces, INGOs staff and truck drivers, as well as the aid while offshore.
- **Onshore Security:** The IDF will handle security on the shore to ensure that aid workers are not harmed on the territory under Israeli occupation and control.

7.2.3.2. Operations Security

Gaza’s JLOTS operations is a complex and risky endeavor. Indeed, the project involves massive ships at sea crane-load and dangle massive platform and pier sections over the side, etc. The sections used to assemble the discharge platform, the ribbon bridge ferries, and the trident pier are all massive and heavy, and everything is assembled via human labor. It should be noted that soldiers have been crushed carrying out the mission in the past (Srivastava & Schwartz, 2024).

Thus, the project is a huge risk in doing that, and the processes must be done in ideal conditions (i.e. relatively good weather, good sea conditions, to be able to put and stitch all that stuff together).

During Gaza’s pier mission, three US service members were also injured. While two experienced minor injuries and were returned to duty the same day, the third service member was in critical condition and was transferred back to the US to be treated (Perez, 2024).

7.2.3.3. Distribution Security

There are also the many risks that rise when conducting distribution activities. Indeed, several WFP on duty trucks, taking the assistance to warehouses in the north for distribution were overrun and seized by desperate Palestinians, who took their contents (Reidy, 2024). Similar incidents occurred inside Gaza Strip where several humanitarian aid warehouses were looted as the living conditions continue their decline (Hadjicostis, 2024).

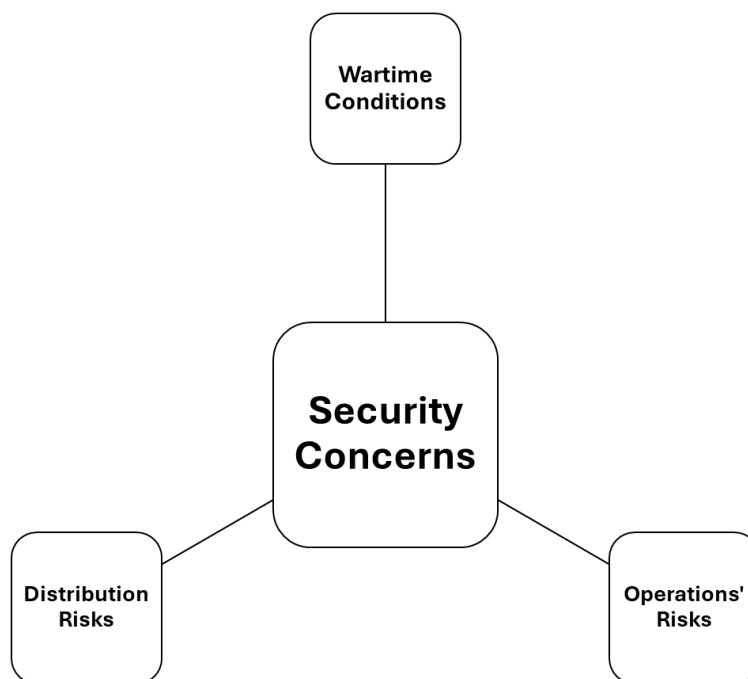


Figure 33. Security Challenges

7.2.3.4. Results of security concerns

With the many security concerns, little aid was delivered. Fewer than 600 trucks remained piled-up on the shore and rotted in the summer sun of Gaza – perishing much need food, medicine, etc.

Also, in mid-June UN’s WFP paused its operations from the pier due to security concerns. In early July, the WFP planned with commercial contractors to move all the humanitarian aid that had been offloaded from the US military’s temporary pier to warehouses. That aid was moved by the commercial contractors to warehouses to avoid waste or spoilage. WFP’s distribution of aid from the pier did not resume after it was paused (Knickmeyer, 2024; WFP, 2024b).

7.2.4. The Lack of Competence of Non-Military Truck Drivers

The U.S. military has indicated that contractors will drive the aid trucks down the trident pier and onto the beach. This rose several questions (Srivastava & Schwartz, 2024):

- **Military VS. Commercial Truck Drivers:** whether a non-military truck driver would be up to the daunting task – as a commercial truck driver that probably has never driven on a causeway section before.
- **Small Pier:** The pier itself is about 24-feet-wide and way smaller when driving on it. Sections are connected but they move to some degree independently. Everything's moving, nothing is stable, and until the driver get used to that and trust their own ability to just go straight and not worry about it, that's an interesting experience
- **Pier Sections:** One section goes one way, while the one ahead goes the other way.
- **Cargo Moving:** Once everything is in place, moving the cargo can be equally harrowing; Cargo trucks must drive down a 50-degree sloped ramp from the cargo ship to the floating discharge platform, and those soldiers may not be trained in JLOTS. This is extremely hard, even with soldiers on the ground guiding them. It is exponentially worse at night.
- **Nothing but Water:** Drivers generally take a right turn to get off the cargo ship and onto the ramp, with little visibility regarding where they're going. They see nothing except water, they cannot see the discharge platform and they must trust in their skill, and they go off this thing and then down and make a left-hand turn onto the discharge facility.
- **The Path Back:** Once onto the ribbon bridge ferry or trident pier, the path back to land is undulating in three dimensions.

7.2.5. Too Many Implicated Stakeholders

Even though it is an international interventionist humanitarian project – it still had too many implicated parties with each entity having its own interests, agenda, resources, etc. This situation led to complexifying the project and slowing down its activities and operations and contributing to its failure (Srivastava & Schwartz, 2024).

What was divulgated to the public is the participation of: the U.S. Military (several of its branches), Israeli Military, the British Royal Navy, UN agencies, USAID, the Cypriot military, EU agencies, several INGOs, etc.

7.2.6. Harboring Units and no U.S. Boots on Gaza's Shore

One of the particularities of this project resides in the fact that the U.S. president Joe Biden has made clear that no U.S. forces will step foot in Gaza (Bertrand et al., 2024c). This made it more difficult in terms of construction, development, cost, and operations (Magdy et al., 2024)

To facilitate things on the detriment on the cost and operationality of the project (Baldor, 2024c):

- U.S. forces needed to add additional ships to the area near the floating dock to accommodate the troops who were involved in construction, driving, and operating the boats.
- The RFA Cardigan Bay, a support vessel of the British Royal Navy, offered lodging for many American sailors and soldiers helping to set up the dock.
- An additional contracted vessel was utilized for accommodation; however, its identity was not disclosed by officials.

7.2.7. JLOTS Project Planning Setbacks

The endeavor showed that the military had several project planning setbacks in terms of (Srivastava & Schwartz, 2024; Ziezulewicz, 2024):

- **JLOTS Sets:** The military had limited JLOTS sets – and the one used for Gaza cannot be used for something else.
- **Experienced Drivers:** The military lacks experienced truck drivers capable of conducting heavy automobile down a tight pier in rough conditions.
- **Supply Chain Planning:** There were several supply chain planning deficiencies:
 - The US department of defense initially estimated that it would take up to 60 days to move project equipment and implicated military personnel into place and assemble the pier. In the end, it took more than 70 days before the first aid delivery via the pier was made.
 - Non-anticipated adverse weather conditions.
 - Project Partners have also had several setbacks:
 - Lack of fuel on the premises.
 - Roads have been destroyed by bombardments.
 - The fact that JLOTS is built for a less-kinetic environment, and using it in the Gaza strip could come with risks, and additional challenges:
 - Normally, a Joint Logistics Over-the-Shore (JLOTS) operation would occur after a Marine Corps amphibious attack on a specific area. After breaking in, they establish control of the area, advance further into land, and establish a standoff position. After the Marine Corps clears the area, the Army comes in for extended operations, utilizing the JLOTS capability.
 - A non-kinetic environment was observed in Gaza.

7.3. The Project's Outcome Critiques

Each project once concluded must be evaluated for its accomplishments as well as for its deficiencies / shortfalls and failures. When announcing that the pier was being dismantled, military officials highlighted some of the project's accomplishments (Schoenfeld Walker & Shao, 2024; Robertson & Ziezulewicz, 2024):

- **Delivered Aid via Pier:** The JLOTS pier provided 19.4 million pounds of assistance, sufficient to feed 500,000 Palestinians for a month. During its 20-day operation, the pier transported a quantity of aid that was two to three times higher than what the U.S. had anticipated. Approximately 8,500 tons of assistance has been transported to the dock through Cyprus, almost equal to 425 aid trucks.
- **Delivered Aid via Airdrops:** In contrast, the U.S. has delivered 2.4 million pounds through airdrops and 33 million pounds via land routes since the beginning of the conflict in October 2023. Aid has also been distributed by some countries via air drops, which typically contain only a few tons of aid, significantly less than a truckload, and may endanger civilians on the ground.

Altogether, the pier managed to send the most humanitarian support ever made by the U.S. to the Middle East. This was done while considering that the pier has always been intended as a temporary solution to enable the additional flow of aid into Gaza during a period of dire humanitarian need, with limited access, supplementing land and air channels of delivery (Robertson & Ziezulewicz, 2024).

However, the project had several failures which questioned its choice in the first place – given that it did manage to fulfill its main objective – which was to respond to the needs of the deprived community of Gaza. This is because (Schoenfeld Walker & Shao, 2024; Srivastava & Schwartz, 2024; Reidy, 2024):

- **Required Aid Needs:** Aid officials say about 600 trucks of humanitarian supplies are needed in Gaza daily to meet the needs of the population.
- **Land Aid Delivery:** Land routes are the most efficient and secure means of delivering humanitarian aid to Gaza. Prior to the commencement of Israel's increased military operation in Rafah in early May 2024, most of the aid had been entering Gaza through either the Rafah crossing with Egypt or the nearby Israeli-controlled crossing of Kerem Shalom. During April 2024, a daily average of 189 trucks passed through the Rafah and Kerem Shalom border crossings. Many international non-governmental organizations have consistently pushed for land aid delivery due to their belief that airdrops, and maritime routes are not enough to meet the needs of Gaza's residents.
- **Pier Aid Delivery VS. Land Aid Delivery:** If one were to calculate the total operational days of the pier, it was only a small part of what could be received through the land crossing.
- **Pier-Achieved Deliveries VS. Objectives:** The pier was expected by the US military to facilitate the transportation of two million meals daily for Gaza's 2.1 million Palestinian residents. Nevertheless, over the course of two months of operation, only 8,000 metric

tons of aid were transported through the pier. This is approximately the same as 600 trucks, which is the estimated number of trucks that humanitarian organizations believe should be allowed into Gaza daily. The UN's World Food Program (WFP), the project's distributing partner, faced difficulties in providing that aid to those in need because of anticipated logistical and security obstacles.

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About the Author



Prof. Dr. M. F. HARAKE

Poitiers, France



Prof. Dr. M. F. HARAKE is a management Professor based in France. He is currently affiliated with CEREGE Research Laboratory at the University of Poitiers (France), and a visiting research fellow at CABMR Research Center (Paris – France). He is also an Honorary Academic Advisor and Research Scholar for the PM Library (Texas – USA). His research interests include Post-Conflict Public Management, Crisis and Urgent Operations Management, Humanitarian Logistics, and Project Management in Unstable Environments.

He can be contacted at mohamed.fadl.harake@univ-poitiers.fr