**Improving the Safety of the Philippines Ferry System**

By: Abigail Golden

Dept. of Ecology, Evolution, and Environmental Biology, Columbia University[[1]](#footnote-1)\*

**Study conducted for the Worldwide Ferry Safety Association[[2]](#footnote-2)\*\***

September 2014

**Introduction**

The Republic of the Philippines is an archipelago nation of some 7,000 islands covering an area of 115,000 square miles. As such, its nearly 100 million inhabitants are heavily dependent on water transportation for inter-island traffic, especially the poorer segments of the population that do not have access to the Philippines’ 85 public airports and 111 private ones. According the Asian Development Bank, 98% of the country’s domestic inter-island trade is facilitated by shipping.[[3]](#endnote-1) To meet this demand, in 2003 the Philippines government instituted a policy to promote roll-on, roll-off (Ro-Ro) truck ferries, hoping to eliminate cargo-handling costs associated with containers and increase island connectivity.

 However, the Philippines’ ferry network still holds a very poor safety record, with the region of South China, Indo China, Indonesia and the Philippines recognized as the number one “hot spot” for shipping disasters by the Allianz financial services company.[[4]](#endnote-2) The region has seen losses of over 300 vessels of all types since 2001, with a correspondingly heavy toll in human life; in high profile cases, such as the 1987 sinking of the Dona Paz (4,386 lives lost), thousands of people have died after cramming onto overcrowded ferries.[[5]](#endnote-3) Since 2000 in the Philippines, there have been a total of about 1,400 casualties in a fourteen-year period, an average of 100 ferry-related fatalities a year. Factors such as rampant overcrowding, lax government enforcement of vessel operators’ misdeeds, and poor crew training have been implicated in these deaths.[[6]](#endnote-4)

 This report compiles data on incidents involving the Philippines’ Strong Republic Nautical Highway system, which integrates land- and water-based transportation throughout the country. The report also discusses standards of accident investigation in the Philippines, with a focus on the causes and circumstances of over a dozen of the country’s major ferry accidents since 2000, based on a worldwide survey of ferry fatalities during the 2000-2012 period.[[7]](#endnote-5) Using these data, the report then provides recommendations about how to decrease (1) the frequency of ferry accidents in the Philippines and (2) the deadliness of such incidents, should they occur. Such recommendations will encompass suggestions for improving crew emergency preparedness and government regulation of such factors as overcrowding, vessel age and fitness, and use of ferries during bad weather.

**Methodology: A Note on Sources**

Most of the individual accident case studies in this report are based on news articles culled from a variety of sources internationally. Because many well-respected international news outlets (the International New York Times, the BBC World Service, etc.) cover events in Southeast Asia only sporadically and with little detail, this report has had to rely upon less well-known sources for the kind of details about accident causes, weather conditions, overcrowding, and so on, that can help suggest recommendations for ferry safety improvement. Some examples include Yahoo! News as well as GMA News Online, which is based in Quezon City in the Philippines. With these sources, there is the risk of repeating unsubstantiated and inaccurate information; in addition, multiple news stories about the same accident at times contain contradicting material. In particular, this report’s information about the Boards of Marine Inquiry held to determine blame in Philippines ferry accidents are entirely second-hand, gleaned from news articles in lieu of the documents themselves. To minimize factual errors, case studies of individual accidents have been based on two or more news articles wherever possible. Where articles contradict each other, we note this, and use the most detailed report.

**The Strong Republic Nautical Highway**

 **A. Inception**

 In January 2003, Philippines President Gloria Macapagal-Arroyo signed an executive order for the expansion of the country’s Ro-Ro ferry system. The policy called for a “network of terminals all over the country, separated by a distance of not more than fifty (50) nautical miles and linked by Ro-Ro vessels.”[[8]](#endnote-6) The policy’s stated goals were to (1) reduce the cost of traveling between islands in the Philippines, (2) help modernize the country’s fisheries and food security programs, (3) enhance tourism and commerce throughout the islands, and (4) encourage private sector involvement in the ferry system. Although the Philippines did possess a system of ports and shipping before the establishment of the Strong Republic Nautical Highway, this system was run on a lift-on/lift-off basis (Lo-Lo), which required containerized cargos to be laboriously transferred onto ships using cranes and other dock equipment. This system was not only time consuming but expensive, as cargo handling fees were levied at each port. In contrast, the SRNH system has already proved to be an economic boon to the Philippines, reducing transport costs for both perishable and non-perishable cargoes and increasing tourism revenue in places like Oriental Mindoro, which was once a backwater but is now a tourist hub.[[9]](#endnote-7)

 **B. Structure**

The Strong Republic Nautical Highway consists of three main trunks: the Western, Eastern, and Central nautical highways. By 2008, the Philippines had 68 Ro-Ro routes served by 49 different shipping companies, a number that expanded with the completion of the Central line in mid-2008.[[10]](#endnote-8) The total annual ridership for the SRNH system in 2013 was 52.8 million, divided almost evenly between embarked (27 million) and disembarked (26 million) passengers.[[11]](#endnote-9) Each main trunk consists of land highways linked by Ro-Ro ports no more than 50 nautical miles apart.

The Western Nautical Highway extends from Luzon Island in the north to Mindanao in the south, with stops in Mindoro, Panay, and Negros islands (Figure 1). As of 2006, annual passenger traffic on the western nautical highway had reached 1.3 million, and vehicle traffic—including private cars, buses, and trucks—was over 200,000.[[12]](#endnote-10) The Eastern Nautical Highway, which was first developed under the name of the Pan-Philippine Highway in the late 1960s, provides access between Luzon and Mindanao through only two sea links.[[13]](#endnote-11) (For comparison, the Western line contains four sea links for the same distance.) Along the way, the Eastern line passes through the Samar and Leyte islands before terminating in Surigao, in northern Mindanao. The Central Nautical Highway is the most recently completed of the three main trunks, having been finished in 2008. Like the other two routes, it links Luzon in the north and Mindanao in the south, but among the three it is the only one to provide access to Masbate and the Central Visayas in between. The opening of the Central route provided an economic boost to the country, with a 40% increase in domestic rolling cargo traffic.

 The Philippine Ports Authority (PPA) administers the country’s shipping through five Port District Offices (PDOs) dividing the country north to south. Ridership figures for the Philippines ferry system are recorded under the rubric of these five districts.[[14]](#endnote-12) The northernmost of these, the Manila/North Luzon PDO, had a total ridership in 2013 of 1.1 million. South Luzon, directly south of it, had a ridership of 17 million. The Visayas, in the geographic center of the country, had a ridership of 19.2 million in 2013. Northern Mindanao had 9.8 million riders in 2013, and Southern Mindanao had 5.7 million (Table 1).

Table . Ridership of the Philippines ferry system for each quarter of 2013, by Port District Office. Data taken from the Philippine Ports Authority website.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  **Countrywide** |  **Manila/N Luzon** |  **S Luzon** |  **Visayas** |  **N Mindanao** | **S Mindanao** |
| **4th Q 2013** | 13,414,039 | 240,149 | 4,392,812 | 4,894,422 | 2,399,757 | 1,486,899 |
| **3rd Q 2013** | 10,457,638 | 175,603 | 3,086,810 | 3,877,669 | 2,066,729 | 1,250,827 |
| **2nd Q 2013** | 16,765,070 | 367,396 | 5,505,005 | 6,078,106 | 3,086,786 | 1,727,777 |
| **1st Q 2013** | 12,159,223 | 319,415 | 3,999,354 | 4,350,999 | 2,295,972 | 1,193,483 |
| **Total** | **52,795,970** | **1,102,563** | **16,983,981** | **19,201,196** | **9,849,244** | **5,658,986** |

Figure . Routes of the three main SRNH lines. The Western line is in yellow, the Central line is in red, and the Eastern line (also known as the Pan-Philippine Highway) is in blue. (*Bridges Across Oceans,* 2010)

**Major Ferry Accidents, 2000-2012**

Fifteen major ferry accidents resulting in loss of life occurred in the Philippines between the years 2000 and 2012, as shown in the following table (Table 2). A sixteenth, the sinking of the *MB Brian* in 2006, resulted in no fatalities, but has been included in this analysis precisely because it represents the only non-fatal sinking in the 14-year study period. It is still unclear what caused the *MB Brian* to sink, with news reports citing bad weather and overcrowding as possible culprits. However, it is worth mentioning that the *Brian* was traveling a popular tourist route from Puerto Galera to the Batangas and was carrying primarily Filipino and foreign tourists when it sank.[[15]](#endnote-13),[[16]](#endnote-14) It is impossible to draw conclusions from the scanty news records available, but the *Brian*’s location on a well-traveled route may help explain the speedy rescue that saved its passengers’ lives.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Vessel Name | Dead and Missing | Vessel Operator | Cause |
| 4/11/2002 | MV Maria Carmela | 47 | Montenegro Shipping Lines | Fire starting in sacks of copra; allegations of arson |
| 2/27/2004 | SuperFerry 14 | 116 | WG&A consortium | Islamist terrorist attack (bombing) |
| 3/19/2004 | Beringin Jaya | 26 | — | Capsized, overcrowded |
| 5/12/2006 | Mae An | 23-28 | — | Tropical storm Chanchu |
| 11/25/2006 | MV Leonida II | 35 | — | Wooden hull vessel. Large waves damaged bamboo outrigger causing vessel to sink |
| 12/11/2006 | MB Brian | 0 |  — | Capsized, weather |
| 6/10/2007 | M/V Catalyn-D | 5 | San Nicolas Shipping Lines  | Fire started in the cargo section, cause unknown |
| 7/12/2007 | M/V Blue Water Princess | 100 | Blue Magic Ferries | Improperly lashed cargo may have shifted, causing vessel to sink |
| 6/21/2008 | MV Princess of the Stars | 814 | Sulpicio Lines | Although Typhoon Fengshen had already made landfall, the vessel was allowed to sail because it was considered large enough to stay afloat in the typhoon's periphery; however, Fengshen changed trajectory |
| 11/5/2008 | MV Don Dexter Kathleen | 49 | — | Strong gust of wind caused the vessel to capsize |
| 12/15/2008 |  MVCA Mea Jan | 50 | — | Strong waves broke the vessel's bamboo outrigger |
| 5/23/2009 | MB Commando 6 | 12 | Ilagan Shipping Lines Water Transport Co. | Outrigger broke, vessel capsized |
| 9/5/2009 | SuperFerry 9 | 10 | Aboitiz Transport System Corp | Capsized; one of the ferry's side doors may have been left open or cargo may have shifted |
| 12/24/2009 | Catalyn B | 27 | — | Collision with a fishing boat |
| 12/27/2009 | MV Baleno | 41 | Besta Shipping Lines | Sank after water entered through a hole in the bottom |
| 8/21/2011 | M/V Island Fastcraft 1 | 4 | Island Express Shipping | Fire |

Table . Major ferry accidents in the Philippines between 2000 and 2012, compiled from local and international news reports. In some instances, data on the vessel name, operator, and cause of the accident could not be found; these fields are left blank where no clear information exists.

From an analysis of these sixteen incidents, certain common faults emerge. Six of the vessels[[17]](#endnote-15) involved in these accidents were significantly overloaded with passengers or cargo, making them liable to capsize. Nine accidents[[18]](#endnote-16) occurred during bouts of stormy weather, which ranged from brief sudden windstorms on otherwise calm seas to the deadly Typhoon Fengshen that killed over a thousand on land and sea and lasted more than a week. [[19]](#endnote-17),[[20]](#endnote-18) Six incidents occurred during nighttime or at dawn,[[21]](#endnote-19) when visibility is minimal, and in five cases[[22]](#endnote-20) the vessels’ crew was reported to be poorly trained in accident scenarios or to have failed to help passengers evacuate.

The accidents discussed in this report occurred in diverse locations throughout the Philippine islands, from the mouth of the Cagayan River in northeast Luzon to Jolo Island in the Sulu Archipelago, southwest of Mindanao (Figure 2). Yet there is a clear concentration of accidents in the northwest Philippines, centered on Manila Bay and the passage from Luzon to Mindoro. This clustering can partly be explained by Manila’s importance as the capital of the Philippines and the fact that most ferry routes have a terminus on Luzon. However, regardless of their cause, the sheer number of accidents occurring in this small geographic area—more than 50% of those studied here—mark this area as a prime locus for future ferry safety efforts.

Four of the accidents in Table 1 have been selected as case studies that illuminate certain pervasive problems with the Philippines ferry system. All of these incidents resulted in significant and preventable loss of life as well as being unusually well documented, allowing for analysis of the faults that lead to them. Another case, the sinking of *SuperFerry 14* in 2004, resulted in a tragically high death toll but has not been included as a case study because it was the result of a deliberate act of terror by an Islamist group. Thus the loss of *SuperFerry 14* cannot provide insight into ferry accidents caused by human error, weather, or vessel malfunction, which are the focus of this report.

Out of these four case study accidents, two of the vessels involved----the *MV Princess of the Stars* and the *SuperFerry 9*----were purchased secondhand by their operators, and both had been in service for more than 20 years at the time of their loss. Other common threads among these four incidents include bad weather and improperly stowed or balanced cargo, sometimes exacerbated by overcrowding. The four case studies are as follows, in chronological order:



Figure . Map of the Philippine Islands, with the approximate location of 13 ferry accidents occurring in the period between 2000 and 2012 (black dots). Note the cluster of accidents occurring around Manila Bay and southern Luzon (black box). (Base map taken from Wikimedia Commons, <http://upload.wikimedia.org/wikipedia/commons/a/ad/Philippines\_location\_map\_%28square%29.svg>)

1. ***MV Maria Carmela*, April 2002**

In the early morning of April 11, 2002, the *MV Maria Carmela* was an hour away from its destination of Lucena, in Quezon Province, when a fire broke out in the cargo hold. Most of the vessel’s 291 passengers and crew were rescued by the Philippine Navy, the Coast Guard, and other ships owned by the ferry’s operator, Montenegro Lines; however, 47 passengers died or were listed as missing, some of them after jumping into the water without life vests.[[23]](#endnote-21) The *Maria Carmela* was not overcrowded with passengers, but it was carrying some 1,600 sacks of copra, the highly flammable coconut byproduct used to make vegetable oil.[[24]](#endnote-22) This cargo has been implicated in the fire, since only a very small spark—from a cigarette butt, electrical wiring, or a cooking fire, for instance—is needed to ignite copra, and the substance has even been known to undergo spontaneous combustion.[[25]](#endnote-23) However, the *Maria Carmela*’s captain made claims that the fire was caused by arson, perhaps to avoid blame himself; his claims were not substantiated. The accident prompted a Special Board of Marine Inquiry, which found that the vessel’s captain and emergency responders “failed to control the fire after the accident…[and] failed to communicate properly and do their job well during the incident.”[[26]](#endnote-24) The Board of Marine Inquiry recommended that Montenegro Lines be fined for failing to show a safety video and for keeping an incomplete passenger manifest, and Montenegro crewmen were ordered to undergo re-training.

**B. *M/V Blue Water Princess,* July 2007**

The *M/V Blue Water Princess* had only 28 passengers on its manifest when it hit rough seas off Luzon Island during the night of July 12, 2007. In reality, the vessel, owned by AC-Joy Express Liner and operated by Blue Water Ferries, carried over a hundred people—perhaps more than two hundred, according to one estimate—along with a rolling cargo of 14 trucks.[[27]](#endnote-25) The vessel capsized among ten-foot waves, resulting in a toll of a hundred dead and missing, with search and rescue efforts by the Navy and Air Force hobbled by bad weather. In a Board of Marine Inquiry (BMI) convened in the weeks after the accident, the vessel’s captain was found at fault for failing to record a complete manifest and for using thin nylon ropes to secure the rolling cargo.[[28]](#endnote-26) The BMI panel speculated that this improper lashing allowed the cargo to shift, unbalancing the vessel. The panel found that a combination of severe weather, the aforementioned overcrowding, and the unbalanced cargo caused the ferry to sink. The Navy and Air Force rescued 124 passengers from the vessel, but it is unclear how many more lives could have been saved if search and rescue efforts had not had to be called off because of inclement weather.

1. ***MV Princess of the Stars,* June 2008**

The capsizing of the *MV Princess of the Stars* on June 21, 2008, has been uniquely well documented among the case studies in this report, since it attracted significant national and international media attention at the time, much of which was later collated into a comprehensive Wikipedia page. The *Princess of the Stars* was owned and operated by Sulpicio Lines at the time of its loss, but it was over twenty years old by then and had been purchased secondhand from a ferry operator in Japan.[[29]](#endnote-27) Although the *Princess of the Stars* had over 800 manifested passengers at the time of the accident, and there may have been others who were not listed on the manifest, the vessel was not overcrowded, since it had a capacity of 1,992 passengers.[[30]](#endnote-28)

When the *Princess of the Stars* left port from Manila en route to Cebu City on June 20, Typhoon Fengshen had just made landfall in the eastern part of the Philippines. The vessel was allowed to sail because its route would take it only through the projected periphery of the storm, and the *Princess of the Stars* was considered large enough to float under those conditions. However, Fengshen unexpectedly changed course on June 21, placing the ferry directly in its path.[[31]](#endnote-29) The vessel began to capsize in the midst of the storm off the coast of Romblon Island at around midday on the 21st, and the captain gave the order for passengers to put on life jackets and abandon ship. Eyewitnesses said that many people still weren’t wearing life vests when the vessel overturned, and that crewmembers were more concerned with their own safety than with helping passengers.[[32]](#endnote-30) Rescue vessels did not reach the wreck until 24 hours after the accident, since the area was surrounded by “gigantic waves, pounding rain, and gusty winds.”[[33]](#endnote-31)

The final death count from the *MV Princess of the Stars* has been established as 814 dead and missing, with only 56 known survivors. Many bodies were only recovered from the wreck months later, and hundreds were never found. The recovery process—and the ecological health of the coastline—was jeopardized by the discovery that the vessel was carrying a cargo of nearly 10,000 kilograms of the pesticide endosulfan, violating a Philippines law that prohibits the transport of toxic chemicals on passenger ships.[[34]](#endnote-32) Before bodies could be removed, a salvage team had to remove the pesticide cargo; it extracted some 200,000 liters of the compound, which is so toxic that it is in the process of being phased out in the U.S. and around the world.[[35]](#endnote-33)

1. ***SuperFerry 9,* September 2009**

On September 5, 2009, the *SuperFerry 9* owned by Aboitiz Transport System Corp. (ATSC) left General Santos City in the southern Philippines for Iloilo City on Panay Island. In the early morning of September 6 the vessel began to list, and the Coast Guard dispatched rescue vessels in response to a distress signal from the vessel’s captain.[[36]](#endnote-34) Before the ferry finally sank at 9 a.m., seven hours after it started to tilt, all but ten of the vessel’s 971 passengers and crew had been rescued. Early reports implicated a faulty generator in the accident, but several other explanations were advanced during the Board of Marine Inquiry, including that the ship’s rolling cargo may have shifted or that a side door may have been left open after loading.[[37]](#endnote-35) Years of mechanical problems on the *SuperFerry 9* proceeded the sinking of the 23-year-old vessel; in 2006, engine trouble stranded the ferry and its passengers at sea for 14 hours.[[38]](#endnote-36) The next year, another ship had to tow the *SuperFerry 9* to shore after its engine failed off Negros Island with 500 passengers aboard.[[39]](#endnote-37) In response to this incident, the Philippines Maritime Industry Authority (MARINA) revoked the vessel’s safety certificate, and ordered that it be dry-docked for repairs.[[40]](#endnote-38) However, the ferry—which was purchased secondhand by ATSC after 10 years of service in Japan—was allowed back into circulation after this incident, and stalled again in 2009, only months before its capsizing.[[41]](#endnote-39)

**Problems and Solutions**

***Incident reporting***

The first steps in promoting ferry safety throughout the world are prompt incident reporting, comprehensive analysis of these reports, and dissemination of findings to key players. The Philippines is to be lauded for its existing system, in which Boards of Marine Inquiry (BMIs) are convened after each accident to probe the causes of the incident and assign blame where due. However, the BMI system would be a greater asset to those interested in improving ferry safety if inquiry reports were published digitally in an easily accessible format soon after the incident itself. As things stand, reports are only available upon application in-person to an office in Manila, which makes it difficult to access them. (Information about BMIs in this report has been gathered from news stories, which report the findings of these inquiries at secondhand.) In addition, MARINA or another federal organization should hold ferry operators accountable for making the changes that the BMI recommends and for publicizing the results, in order to encourage other companies to do the same.

***Weather monitoring***

As seen from the case studies given above, some ferry captains seem to be willing to take the risk of going out in chancy weather, while others get caught out by sudden storms that blow up before their ships can change course. One strategy is to improve weather detection and dissemination to have accurate information about when typhoons are coming. In addition, it may be possible to remove the disincentives that dissuade captains from returning to port when the weather turns bad, such as docking fees. These strategies will be discussed at the Technology and Ferry Safety Conference being convened by the Worldwide Ferry Safety Association in New York City in April 2014.

***Cargo loads and overcrowding***

It is easy to understand the temptation to take on more cargo and passengers than recommended for a vessel’s size, since larger loads and more fares per trip mean a direct increase in profits. Without direct government regulation and heavy enforcement, it is hardly likely that ferry operators will end the risky practice of overloading on their own. Instead, would it be possible to alert passengers to the dangers of overcrowding, and encourage them to put the pressure on operators? A public interest advertising campaign about how to recognize unsafe conditions on ferries, along with the establishment of a hotline where passengers can leave tips about unsafe cargoes and overloaded ferries, could prove a productive and cost-effective way to combat this problem.

Another concern with the transport of large cargoes on passenger vessels is the risk that companies will allow hazardous—and even downright lethal—loads into vessels shared with people. One example of this is the *MV Maria Carmela* accident, in which a large cargo of copra may have been the source of the fire that killed 47 people. Copra is so flammable that it is included in class 4.2 of the International Maritime Dangerous Goods code, which includes substances that are liable to spontaneous combustion under normal conditions encountered in transit.[[42]](#endnote-40) Another example is the toxic pesticide cargo carried by the *Princess of the Stars* when it capsized, which not only posed a risk to passengers and crew but also seriously hampered rescue and recovery operations after the accident. Since legislation already exists outlawing such dangerous practices, perhaps the only solution to preventing them is tighter government regulation and enforcement, with stiff penalties for non-compliance.

***Crew training and passenger safety instruction***

Human error plays a significant role in maritime accidents worldwide, with up to 84% of ferry accidents being partly or fully caused by some form of human error.[[43]](#endnote-41) Although the Philippines has a cadre of about 500,000 certified officers and seamen, only about 40 percent of these fully trained crewmembers serve on domestic vessels such as ferries. The reason is simple: Filipino seamen can expect to make between four and eight times as much working on a foreign vessel as they can domestically.[[44]](#endnote-42) To make up this deficit of trained Filipino seamen willing to work domestically, ferry operators may turn to poorly trained, uncertified crewmembers. In addition, the Philippines’ training regimen may not meet the standards developed by the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers.[[45]](#endnote-43) To reduce the number of accidents in the Philippines, improvements in maritime training must be made and greater incentives must be offered to induce certified Filipino seamen to work domestically.

In particular, crew and passengers alike lack training about safety measures in the event of an accident. Before the sinking of the *MV Maria Carmela* in April 2002, as mentioned above, crewmembers failed to show passengers a brief safety video and did not have a complete passenger manifest. Immediately after the accident other crewmen in the operator’s fleet failed a surprise test, and were ordered to undergo retraining.[[46]](#endnote-44) In addition, passengers have been known to contribute to overcrowding or overbalancing a vessel, as for example the Indonesian ferry passengers who climbed onto the roof of their vessel to get a stronger cellphone signal, capsizing it.[[47]](#endnote-45) The Worldwide Ferry Safety Association is combating this lack of information by developing training materials for crew and passenger information resources.

***Regulatory loopholes***

Sulpicio Lines, owner of the ill-fated *Princess of the Stars,* is one of the most notorious ferry operators in the Philippines Ro-Ro system. Along with the *Princess of the Stars,* it owned the *Doña Paz*, which sank in 1987, and the *Doña Marylin,* which sank in 1988. The *Doña Paz* accident still ranks as the world’s worst maritime disaster in peacetime, with over 4,300 dead.[[48]](#endnote-46) After the *Princess of the Stars* accident in 2008, MARINA ordered Sulpicio to cease operations.[[49]](#endnote-47) However, within a year Sulpicio had re-emerged as the Philippine Span Asia Carrier Corporation, and the name change allowed the company to operate as normal. It is imperative that such regulatory loopholes be closed if ferry operators are to be held accountable for the safety of their vessels.

**Summary**

Although the Philippines has a long way to go to ensure the safety and security of its millions of ferry passengers, the information and recommendations included here are designed to highlight high-priority safety issues so that personnel and resources can be targeted there. The most urgent issues identified by this report are as following:

* Improved dissemination of accident reports and BMI results, especially through digital/web-based means.
* Better enforcement of existing regulations regarding overloading, vessel condition, and so on.
* Higher standards for crew training, and increased pay so that more highly trained seamen remain on Philippines vessels.

If these critical needs are met, the Philippines could soon be on the path to safer and more reliable ferries, saving hundreds of lives in the process.

1. \* Advisor: Dr. Joshua Drew, Dept. of Ecology, Evolution, and Environmental Biology, Columbia University [↑](#footnote-ref-1)
2. \*\* Worldwide Ferry Safety Association wished to thank Mary Ann Pastrana and Bob Couttie for their informative and kind reviews of this document. [↑](#footnote-ref-2)
3. *Bridges Across Oceans: Initial Impact Assessment of the Philippines Nautical Highway System and Lessons for Southeast Asia.* Mandaluyong City: Asian Development Bank, 2010. p. 2. [↑](#endnote-ref-1)
4. Allianz Global Corporate & Specialty. *Safety and Shipping Review 2014.* Ed. Greg Dobie. Allianz, 2014. p. 3 <http://www.agcs.allianz.com/assets/PDFs/Reports/AGCS%20Safety%20and%20Shipping%20Review%202013%20WIDE.pdf> [↑](#endnote-ref-2)
5. Wilson, Karl. “Poor standards sink Philippines’ ferries.” *The National.* October 28, 2009. [↑](#endnote-ref-3)
6. Wilson, Karl. “Poor standards sink Philippines’ ferries.” *The National.* October 28, 2009. [↑](#endnote-ref-4)
7. “Golden, Abigail. “Ferry Fatalities: Statistics and Causation of Major Accidents 2000-2012.” *Worldwide Ferry Safety Association.* September 2014. In progress. [www.ferrysafety.org](http://www.ferrysafety.org). [↑](#endnote-ref-5)
8. Basilio, Enrico. *Linking the Philippine Islands through highways of the sea.* Pasig City: Center for Research and Communication, 2008. 73. [↑](#endnote-ref-6)
9. *Bridges Across Oceans,* 28. [↑](#endnote-ref-7)
10. *Bridges Across Oceans,* 17. [↑](#endnote-ref-8)
11. “Summary on Port Performance.” *Philippine Ports Authority.* Accessed September 8, 2014. <http://www.ppa.com.ph/> [↑](#endnote-ref-9)
12. Basilio. *Linking the Philippines Islands.* p. 29. [↑](#endnote-ref-10)
13. Basilio. *Linking the Philippines Islands.* p. 51-52. [↑](#endnote-ref-11)
14. “Summary Port Statistics by PDO/PMO/Port.” *Philippine Ports Authority,* Jan. 2013-Dec. 2013. Accessed September 8, 2014. <http://www.ppa.com.ph/Port%20Statistics/PortPerformance/2013\_Passenger\_4th%20Qtr.htm> [↑](#endnote-ref-12)
15. Ramos, Marlon and Joel Guinto. “80 tourists rescued from sinking ferry from Puerto Galera.” *Inquirer.* December 11, 2006. [↑](#endnote-ref-13)
16. “Puerto Galera ferry with tourists sinks.” *The Filipino Express.* December 18, 2006. [↑](#endnote-ref-14)
17. The *Beringin Jaya, MV Leonida II, MB Brian, M/V Catalyn-D, MVCA Mae Jan,* and *MB Commando 6.* [↑](#endnote-ref-15)
18. The *Beringin Jaya, MV Leonida II, MB Brian, MV Princess of the Stars, MV Don Dexter Kathleen, MCVA Mae Jan,* and *M/V Island Fastcraft 1.* [↑](#endnote-ref-16)
19. “39 killed, 76 rescued after boat capsizes in c. Philippines.” *Xinhua News Agency.* November 4, 2008. [↑](#endnote-ref-17)
20. “PHILIPPINES: Typhoon Fengshen Death Toll Rises to 224.” *IRIN News.* June 23, 2008. [↑](#endnote-ref-18)
21. The *SuperFerry 14, M/V Catalyn-D, M/V Blue Water Princess, MVCA Mae Jan,* and *SuperFerry 9.* [↑](#endnote-ref-19)
22. The *MV Maria Carmela, MV Princess of the Stars, MB Commander 6,* and *MV Baleno.* [↑](#endnote-ref-20)
23. “27 still missing in Northern Philippines Sea Mishap.” *Xinhua News Agency.* April 11, 2002. [↑](#endnote-ref-21)
24. Aravilla, Jose. “Captain of Burned M/V Maria Carmela Ferry Cries Arson.” *Philippine Headline News Online.* April 23, 2002. <http://www.newsflash.org/2002/04/hl/hl015571.htm> [↑](#endnote-ref-22)
25. Grimwood, Brian E. *Coconut Palm Products: Their Processing in Developing Countries.* Food and Agriculture Organization, 1975. Page 108. [↑](#endnote-ref-23)
26. Aravilla, Jose, and Sheila Cristostomo. “MV Carmela Ferry Tragedy: Heads Roll at Coast Guard, BFP.” *The Philippine Star.* May 11, 2002. <http://www.philstar.com/headlines/160439/mv-carmela-ferry-tragedy-heads-roll-coast-guard-bfp> [↑](#endnote-ref-24)
27. Punay, Edu. “Blue Water captain admits negligence.” *The Philippine Star.* July 26, 2007. <http://www.philstar.com/headlines/8404/blue-water-captain-admits-negligence> [↑](#endnote-ref-25)
28. “Eight killed in Philippines ferry accident.” *BBC Monitoring Newsfile.* July 12, 2007. [↑](#endnote-ref-26)
29. Allen, Tony. “MV Princess of the Stars.” *WreckSite.com.* <http://www.wrecksite.eu/wreck.aspx?58695> [↑](#endnote-ref-27)
30. # “MV Princess of the Stars Disaster: Ship Owner Not Aware of the Latest Guidelines of Philippine Coast Guard.” MarineBuzz.com. June 25, 2008. <http://www.marinebuzz.com/2008/06/25/mv-princess-of-the-stars-disaster-ship-owner-not-aware-of-the-latest-guidelines-of-philippine-coast-guard/>

 [↑](#endnote-ref-28)
31. AFP. “28 Philippines ferry survivors found: report.” *Yahoo! News.* June 22, 2008. <http://web.archive.org/web/20080626173627/http://news.yahoo.com/s/afp/20080622/wl\_asia\_afp/philippinesweatherstormferry> [↑](#endnote-ref-29)
32. “Hundreds missing as ship capsizes.” *BBC News.* June 22, 2008. <http://news.bbc.co.uk/2/hi/asia-pacific/7467696.stm> [↑](#endnote-ref-30)
33. Guinto, Joel. “Ferry carrying over 800 sinking in storm—officials.” *Inquirer.net.* June 22, 2008. <http://www.inquirer.net/specialfeatures/typhoonfrank/view.php?db=1&article=20080622-144117> [↑](#endnote-ref-31)
34. Associated Press. “Deadly pesticide on board sunken Philippines ferry: official.” *CBS News.* June 27, 2008. <http://www.cbc.ca/news/world/deadly-pesticide-on-board-sunken-philippines-ferry-official-1.722076> [↑](#endnote-ref-32)
35. Environmental Protection Agency. “Endosulfan Phase-out.” Updated May 9, 2012. Accessed July 16, 2014. < http://www.epa.gov/oppsrrd1/reregistration/endosulfan/endosulfan-agreement.html> [↑](#endnote-ref-33)
36. “Ship tilts off Zamboanga; rescue launched for 959 passengers.” *GMA News Online.* September 6, 2009. <http://www.gmanetwork.com/news/story/171606/news/regions/ship-tilts-off-zamboanga-rescue-launched-for-959-passengers> [↑](#endnote-ref-34)
37. Wilson, Karl. “Poor standards sink Philippines’ ferries.” [↑](#endnote-ref-35)
38. “SuperFerry9 passengers finally arrive at South Harbor.” *GMA News Online.* April 26, 2009. < http://www.gmanetwork.com/news/story/4820/news/nation/superferry-9-passengers-finally-arrive-at-south-harbor> [↑](#endnote-ref-36)
39. “(Update) SuperFerry stalls near Negros.” *GMA News Online.* February 20, 3007. <http://www.gmanetwork.com/news/story/31373/news/regions/update-superferry-stalls-near-negros> [↑](#endnote-ref-37)
40. “SuperFerry9 operations halted over safety issues.” *GMA News Online.* February 21, 2007. < http://www.gmanetwork.com/news/story/31494/news/regions/superferry-9-operations-halted-over-safety-issues> [↑](#endnote-ref-38)
41. “SuperFerry 9: No stranger to danger.” *GMA News Online.* September 6, 2009. <http://www.gmanetwork.com/news/story/171640/news/nation/superferry-9-no-stranger-to-danger/> [↑](#endnote-ref-39)
42. *International Maritime Dangerous Goods Code (Volume 1).* 2006 Ed. London: International Maritime Organization, 2006. 54. <https://law.resource.org/pub/us/cfr/ibr/004/imo.imdg.1.2006.pdf> [↑](#endnote-ref-40)
43. Golden, Abigail. “Ferry Fatalities.” [↑](#endnote-ref-41)
44. Wilson, Karl. “Poor standards sink Philippines’ ferries.” [↑](#endnote-ref-42)
45. Bhan, Ashley. “EU: Philippines’ seafarer training standards need improvement.” *Vancouver News Desk,* May 2, 2014. [↑](#endnote-ref-43)
46. Aravilla, Jose, and Sheila Cristostomo. “MV Carmela Ferry Tragedy: Heads Roll at Coast Guard, BFP.” [↑](#endnote-ref-44)
47. Mandari, Presi. “At least 31 dead as Indonesian ferry sinks.” *Mail & Guardian.* October 19, 2007. < http://mg.co.za/article/2007-10-19-at-least-31-dead-as-indonesian-ferry-sinks> [↑](#endnote-ref-45)
48. Agence-France Press. “Ferry disaster is 5th tragedy for Philippine firm.” *Inquirer.net.* August 18, 2013. < http://newsinfo.inquirer.net/467969/ferry-disaster-is-5th-tragedy-for-philippine-firm> [↑](#endnote-ref-46)
49. Merueñas, Mark. “Sulpicio bucks BMI findings on ‘Princess’ tragedy. *GMA News Online.* August 27, 2008. < http://www.gmanetwork.com/news/story/116375/news/nation/sulpicio-bucks-bmi-findings-on-princess-tragedy> [↑](#endnote-ref-47)