



# MARITIME REVIEW

A PUBLICATION OF THE MARITIME LEAGUE

Issue No. 19-1

January-February 2019

## Fishery Protection: A Challenge to Maritime Forces

### Also Inside:

- ▶ **The Bells of Balangiga and Bauang**
- ▶ **FVR: Solving Present-Day Challenges Through UN**
- ▶ **Strengthening Hydrography**
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*About the Cover:*  
This issue's cover features Philippine Navy's BRP Andres Bonifacio at the RIMPAC exercises in Hawaii held in June 2018.  
Photo credit: Philippine Navy





# Maritime Events Calendar

## JANUARY '19

- 4 GUJARAT JUNCTION (RADISSON HOTEL KANDLA, GANDHIDHAM, IN)
- 15-17 SURFACE NAVY ASSOCIATION 2019 (HYATT REGENCY CRYSTAL CITY, ARLINGTON, VA, USA)
- 17-20 KREUZFAHRT & SCHIFFSREISEN (MESSE STUTTGART, STUTTGART, DE)

**25 MARITIME BREAKFAST FORUM #141 (DEPARTMENT OF FOREIGN AFFAIRS (DFA))**

- 29-30 NAVAL TRAINING AND SIMULATION (LONDON, GB)
- 29-31 16TH TRANS MIDDLE EAST (JUMEIRAH MESSILAHBEACH HOTEL AND SPA, SAFAT, KW)

## FEBRUARY '19

**7 MARITIME BREAKFAST FORUM #142 (CEBU PORTS AUTHORITY (CPA), CEBU)**

- 18-21 MARITIME RECONNAISSANCE & SURVEY TECHNOLOGY (ROME, IT)
- 18-21 FERRY SAFETY & TECHNOLOGY (THE IBIS STYLES, BANGKOK, TH)
- 12-14 WORLD MARITIME WEEK (BILBAO EXHIBITION CENTRE, BARAKALDO, SP)
- 19-21 PHILIPPINE PORTS & SHIPPING (MAKATI, PH)
- 26-27 GREENTECH IN SHIPPING GLOBAL FORUM (HAMBURG, DE)
- 27-28 MARITIME RECONNAISSANCE & SURVEY TECHNOLOGY (ROME, IT)

## MARCH '19

- 13-14 LOGISTIC SUMMIT & EXPO (CENTRO CITIBANAMEX, MEXICO CITY, MEXICO, MX)

**18 MARITIME BREAKFAST FORUM #143 (MAAP, KAMAYA POINT, MARIVLES, BATAAN)**

- 19-22 GREEN SHIP TECHNOLOGY CONFERENCE (RADISSON BLU SCANDINAVIA, COPENHAGEN, DK)
- 20-21 INTERMODAL AFRICA (SAROVA WHITESANDS BEACH RESORT, MOMBASA, KE)
- 26-28 NAVEXPO INTERNATIONAL (PORT DE LORIENT LA BASE, LORIENT, FR)
- 27-29 INMEX VIETNAM (SAIGON EXHIBITION AND CONVENTION CENTER, HO CHI MINH, VN)

## APRIL '19

- 1-5 LNG'19 SHANGHAI (SHANGHAI WORLD EXPO AND CONVENTION CENTER, SHANGHAI, CN)
- 2-4 CMA 2019 (HILTON STAMFORD HOTEL, STAMFORD, CT, USA)
- 4-5 MID ATLANTIC REPAIR & SUPPLY SUMMIT (ALFREDO KLAUS AUDITORIUM, LAS PALMAS PORT, ES)
- 5-7 MARINE DIVING FAIR (SUNSHINE CITY CONVENTION CENTER, TOKYO, JP)

- 9-11 SEA ASIA '19 (MARINA BAY SANDS, SINGAPORE, SG)
- 16-17 CHEMLOGISTICS INDIA (MUMBAI EXHIBITION CENTRE, MUMBAI, IN)
- 19 MARITIME BREAKFAST FORUM #144 (MARITIME INDUSTRY AUTHORITY (MARINA))**

## MAY '19

- 6-8 SEA-AIR-SPACE 2019 (GAYLORD NATIONAL CONVENTION CENTER, NATIONAL HARBOR, MD, USA)
- 4-7 OFFSHORE TECHNOLOGY CONFERENCE (NRG PARK, HOUSTON, TX, USA)
- 23-25 IMABARI MARITIME FAIR (TEXPORT IMABARI, IMABARI, JP)
- 24 MARITIME BREAKFAST FORUM #145 (PHILIPPINE NAVY HEADQUARTERS (PNHQ))**

## JUNE '19

- 4-7 NOR-SHIPING (LILLESTRØM, NO)
- 18-20 PHILMARINE '19 (SMX CONVENTION CENTER, SM MALL OF ASIA, PASAY CITY)
- 14-19 MAST ASIA (MAKUHARI MESSE, TOKYO, JP)
- 17-19 MARINE MONEY WEEK (THE PIERRE HOTEL, NEW YORK CITY, NY, USA)
- 20 MARITIME BREAKFAST FORUM #146 (NATIONAL COAST WATCH COUNCIL (NCWC) SMX CONVENTION CENTER, MALL OF ASIA COMPLEX, PASAY CITY)**

- 25-27 ELECTRIC & HYBRID MARINE WORLD EXPO CONFERENCE (RAI AMSTERDAM, AMSTERDAM, NL)

## SEPTEMBER '19

- 3-6 OFFSHORE EUROPE (ABERDEEN EXHIBITION AND CONFERENCE CENTER, ABERDEEN, UK)
- 11-13 SEATRADE EUROPE (HAMBURG MESSE, HAMBURG, DE)
- 14-19 MAST ASIA (MAKUHARI MESSE, TOKYO, JP)
- 18-21 MARINETEC INDEONESIA (JAKARTA INTERNATIONAL EXPO, JAKARTA, ID)
- 23-25 SEATRADE OFFSHORE MARINE & WORKBOATS (ABU DHABI NATIONAL, ABU DHABI, UAE)

**25 MARITIME BREAKFAST FORUM #149 (PHILIPPINE COAST GUARD)**

## OCTOBER '19

- 2-3 OILCOMM AND FLEETCOMM 2019 (HOUSTON MARIOTT WESTCHASE, HOUSTON, TX, USA)
- 23-25 OIL AND GAS VIETNAM (PULLMAN VUNG TAU, VUNG TAU, VN)

# Fishery Protection: A Challenge to Maritime Forces

by VAdm Emilio C Marayag Jr AFP (Ret)

With over 2 million square kilometers of coastal and oceanic waters connecting the archipelago, the Philippine fishery is one of the major sources of food and income of the population. This area contains a common property resource – fishery and aquatic – that needs protection for the present and future generations.

Recent reports indicate that among the country's major economic sectors **agriculture**, which includes **fisheries**, is the “weakest” registering a dismal performance of 0.15% growth in the first 9 months of 2018 compared with 4.59% in 2017. The fisheries sub-sector posted continuous downward trend in the last 5 years due to climate change, aging and diminishing ranks of fishermen, and numerous tropical cyclones. Aquaculture posted some improvement in harvests, but the commercial and municipal fishing showed a downtrend. While the contraction of 0.9% in 2017 is lower than the previous year of 4.0%, the reduction of fisheries harvest has become more evident.

Of the 3 principal sources of fishery harvests the combined yield of **commercial and marine fishing** during 2011-2017 represents less than the aquaculture outputs. This means Filipino fishers have not thoroughly exploited the vastness of the fishing grounds, including the **Benham Rise** and **Scarborough Shoal** where the Chinese have established control over that rich marine area since 2012. Apart from the Chinese, Vietnamese and Taiwanese fishers continue to poach our borders to gather fish and other marine products. The anticipated ocean temperature rise will further reduce fish harvest by 10-30% by 2050.

Since the 1950s, fish stocks in South China Sea have dwindled by no less than 70%. This is largely caused by the China's high demand of fish when its fishing fleet, the world's largest, concentrated on South China Sea after depleting the stocks in East China Sea and the Yellow Sea. China's fish consumption is 20% more than the world's average and is expected to increase 5-10 years from now. In 2014, China's fish produce reached 17% of the global output, making it the world's top fish produce exporter. With rising population and diminishing fish stocks in its jurisdictional waters, China will continue to dispatch its fishing fleet far beyond its maritime borders. Some quarters argue that fishery resources that may trigger conflict in South China Sea rather than energy and other seabed resources.

The prevalence of **illegal, unregulated, unreported (IUU)** fishing has reached an alarming level that a number of concerned international organizations, including the **UN Food and Agriculture Organization (FAO)**, have committed to support the Fishery Resources Monitoring System. This will assist the goal of sustainable fishing by providing “scientific evidence on the status and trends of fishery resources.” One group, Secure Fisheries - One Earth Future, conducts science-based research with policy-oriented approach to build sustainable fishery practices, improve food and economic security, and combat IUU. The research papers will certainly help many countries that are inundated with fishery concerns.

The Philippines like other maritime nations must prevent depletion of its fishery resources from man-made intervention. Its Constitution clearly states: “The State shall protect the nation's marine wealth in its archipelagic waters, territorial sea and **Exclusive Economic Zone (EEZ)**, and reserve its use and enjoyment exclusively for Filipino citizens.” The fundamental law also highlights the rights of subsistence fishermen and local communities in the preferential use of marine and fishery resources. With the **UN Permanent Court of Arbitration** upholding the country's sovereign rights over its **EEZ** and cited the environmental degradation caused by China's military facilities in the **Spratlys**, the Philippine authorities must come up with necessary measures to protect its marine resources.

Fishery protection need not lead to hostile military acts if the threat comes from another sovereign state. Verbal expressions and unfavorable diplomatic acts may achieve the same impact if properly calibrated. Some verbal displays of displeasure could include condemning specific actions, making accusations, failing to reach an agreement, requesting change in policy, and holding a civilian protest. Diplomatic moves to underline disagreement include lawsuits, non-adherence to existing agreements, seeking arbitration, trade ban, fishing ban, high fines, and closing ports.



Two fishing vessels were observed to be flying inverted Philippine flag within Philippine archipelagic waters. Upon inspection, documents provided by the crewmembers showed that the 2 vessels are registered with China and had no authorization to traverse Philippine waters. BFAR / Rappler

But the Indonesians have a peculiar way of sending a strong message to those who illegally gather their fishery resources: torching the fishing boats. Recently, Indonesia called for a global pushback on **IUU**. The Vietnamese too had one: a civilian-led condemnation rally against a bully. These two nations showed that “**silence is not an option**” and that a “defeatist attitude” would embolden the transgressor, undermine the fighting spirit of the maritime forces, and dampen the patriotism of the people.

For domestic threats, our fishery maritime forces must have an effective and efficient force capability to detect, prevent and suppress persons and groups engaged in **IUU**

activities, and must have support capability to investigate and prosecute the perpetrators. Coordination and cooperation between and among the maritime forces will surely lead to better fishery protection. The Navy should do their work in stealth, away from prying eyes. As Winston Churchill once remarked: “Much if not most of the Navy's work goes unseen.”

The importance of protecting the national patrimony in the maritime domain is best exemplified by the US when its Congress added in 2017 a new task for the **US Navy: anti-illegal fishing**. Traditionally performed, and still being performed, by the coast guard and other law enforcement agencies, the countering of illegal fishing by naval units as well stresses the urgency of arresting the alarming decline of fishery resources. This not only assures food security but also enhances the ecological systems.

The enthusiasm and persistence to recover the Balangiga Bells must likewise be made evident in recovering the **Scarborough Shoal** and other features in the South China Sea to demonstrate a firm resolve to protect our nation's fishery resources. ⚓



The bells of Balangiga tolled on Tuesday (11-December-2018) midnight at the Church of San Lorenzo de Martir in Eastern Samar to mark the start of the new year. Photo Credit: George Calvelo, ABS-CBN News

# PH-US Relations: The Bells of Balangiga and Bauang

by Commodore Carlos L Agustin AFP (Ret)

The Maritime Forum this January stresses international relations and emphatically the DFA will host the 141st Maritime Forum.

As we enter a new year and get closer to the next decade, will there be an improvement in our relations with our erstwhile former closest ally and benefactor?

The United States has been the favorite “punching bag” of President Rodrigo Duterte from day one of his administration. He had often expressed in colorful terms his hatred for the United States in many of his day to day speeches, including the much-awaited State of the Nation Address (SONA) in July, 2017.

Reading the Philippine Star report on the 2018 SONA's foreign policy thrusts, I listed a comprehensive foreign policy list:

- ♦ “Your concern is human rights, mine is human lives” (referring to both local and international critics);

- ♦ We will continue to assert an independent foreign policy;
- ♦ We will continue to reach out with other nations;
- ♦ The Philippines is to seek stronger bonds with fellow ASEAN countries;
- ♦ We will 'defend' Philippine interests in the South China Sea.

The blog, *Duterte Daily* on 15-December-2018 recalls that “President Duterte aired his call on the return of the **Balangiga bells** during his second State of the Nation Address (SONA) and also took time to join in the 116th Commemoration of the Balangiga Encounter Day at that municipality's auditorium on 28-September-2017.”

“These **Balangiga bells** were taken by the American troops as ‘war booties’ after the encounter on 28-September-1901. For more than a century, the two bells were kept at the F.E. Warren Air Force Base at Cheyenne, Wyoming in the U.S.A., while the smallest bell was at the regimental museum of Camp Red Cloud in Uijeongbu, South Korea,” continued Duterte Daily.



The return of the Balangiga bells, to me, is a symbolic gesture indicating a willingness to overlook PRRD's animosity to the United States.

US Defense Sec **James Mattis'** speech at the Veterans Remembrance Ceremony at the **Warren Air Force Base** in Wyoming on 14-November-2018 where he officially announced the return of the **Bells of Balangiga** to the Philippines, as reported by in the website of the US-Philippines Society was an excellently worded reconciliatory speech.

<https://www.usphsociety.org.>

*History teaches us that nations with allies thrive and reminds us that all wars end. In returning the Bells of Balangiga to our ally and our friend—the Philippines— we pick up our generation's responsibility to deepen the respect between our peoples – linking western people of the great state of Wyoming with people in eastern Philippines, not far from a town named for General Macarthur.*

*We return these bells with consideration of our present, but also with utmost respect for our past, one of shared sacrifice as co-equal brothers in arms. For we in the U.S. military do not forget those who stood by our side when the chips were down.*

*We do not forget the Filipino soldiers and people who fought with us, bled with us, and died with us in the dark days of WWII: In "the green hell of Bataan," on "the rock" we call Corregidor, on islands and in landings from Leyte to Luzon.*

*We do not forget our shared sacrifice in Korea, where in 1951, at Yultong, the Philippines' 10th Battalion Combat Team, though surrounded, held their position against the Communist Chinese onslaught, allowing the US 3rd Infantry to escape.*

*We do not forget how the Filipino people organized doctors and nurses in "Operation Brotherhood" in Vietnam. We recognize how the Philippines stands with America today in the fight against ISIS, against terrorism, a scourge that has struck their home as well.*

*In this world that is awash in change, we recognize the 117 years of enduring friendship between our people and comradeship in some of the toughest fighting in our nations' history.*

*Last Monday, we observed Veterans Day: we honored those who defended our experiment in democracy, who restored our freedom and that of the free world, including the Filipinos who paid dearly at our side. Today, we aid the future generations by ensuring allies stand together in a future that is ours to shape; and so persuade potential adversaries that it simply isn't worth it to gamble against*

*Wyoming warriors who live by the cowboy code or their comrades-in-arms from the Philippines.*

*Our proud veterans, dedicated members of the US-Philippines Society and all those of good will in both the Philippines and the United States who labored so long for this moment—thank you! To those who fear we lose something by returning the bells, please hear me when I say: bells mark time, but courage is timeless. It does not fade in history's dimly lit corridors, nor is it forgotten in history's compost. Let me also speak briefly of a different set of bells, those that toll over the Manila American Cemetery, our largest overseas military cemetery of WWII dead. Inscribed there on its walls are the names of thousands MIA—American, Filipino and other nationalities.*

*As these bells ring, honored dead rest, freedom lives. Thank you*

*Very well said.*

I cannot recall when the effort to have the bells returned actually started, but it is safe to assume that the clamor came just after the Philippine-American War on the first decade of the last century.

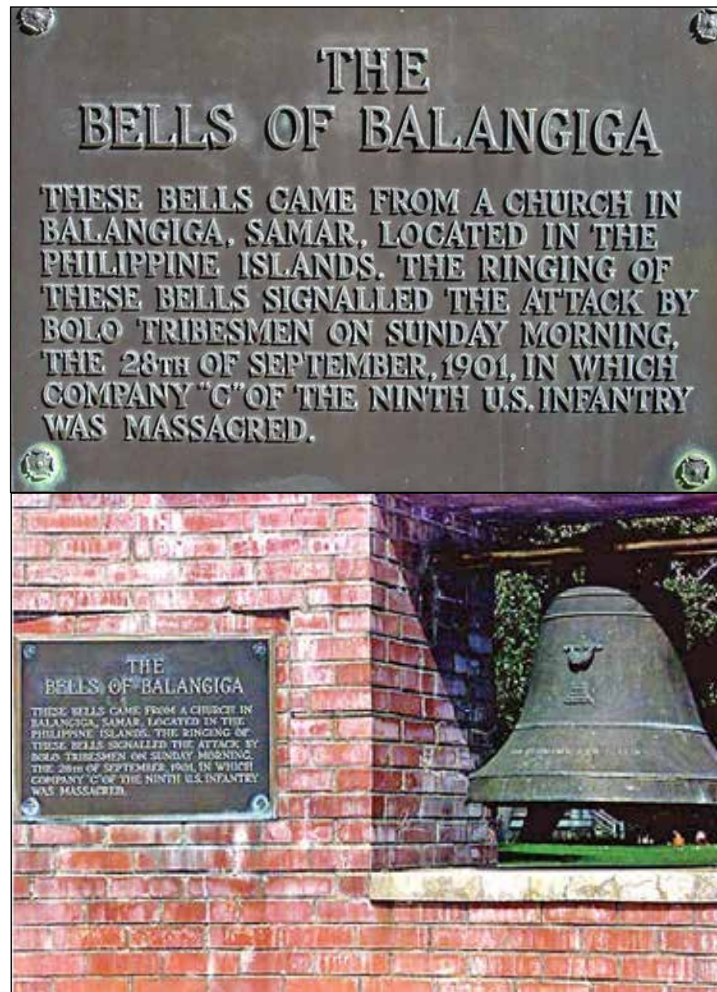
I grew up with the generation that saw peace, harmony and prosperity during the Commonwealth days, which resulted in absolute loyalty to "Mother America" prior to, during and after World War II, because of the goodwill that ensued as a result of the democratic US colonial administration. That was when we called the **Philippine-American War** the "Philippine Insurrection" as indeed it looked from American eyes, as we were American territory after the **Treaty of Paris of 1898**.

The 2017 SONA can perhaps be cited as the main reason why we, after more than a century, finally succeeded in retrieving the looted bells.

It wasn't easy, I recall that having been a **Defense and Armed Forces Attaché (DAFA)** at the Philippine Embassy in 1985-88, that was one of our tasks, but just like when you deal in many things with the State Department on matters that do

not coincide with their interest, you face a tough barrier to crack. Even prior to my posting, people at the Embassy were on it, including then DCM (later in the 2000s Ambassador) **Raul Rabe**, the Ambassador's Special Assistant Capt **Winston G Arpon** PN and DAFA Team: **Capt Domingo Tucay** PN, Col **Roman P Maddela** PC, Col **Melchor P Rosales** PAF and Col **Narciso Abaya** PA.

I can remember one man, **John Swallow**, a US veteran married to a Filipina (she must be *Waray*) living in the Washington, DC area



*Bells of Balangiga at F.E. Warren Air Force Base, Cheyenne, Wyoming  
Photo Credit: AP/Manila Bulletin.*

whom I met there during my **DAFA** tour. He had this dedication to that objective of returning the bells, pushing for it in veterans' groups, Philippine-American community groups, the US Army, the DOD and with US legislators, spending time and money as well. We were not successful but succeeding staff after us pursued it still.

**John Swallow** later came to me once when I was President, **National Defense College of the Philippines (NDCP)** at Camp Aguinaldo, QC sometime in the early 2000s with his wife, and I again sent out a few emails to contacts in the US, including **Sen John S McCain Jr.**, to support his effort. He was the one who told me one of the bells was with the 8th Army in Korea.

I forwarded to him the good news in late November, 2018 of the projected return of the bells by email as I still have his email address in my directory, reflecting his passion: [balangiga@aol.com](mailto:balangiga@aol.com), although he probably already knew about it.

I posted this information in the **Philippine Defense and Armed Forces Attaché (PHILDAFA)** Forum and voila, a former **PHILDAFA** Washington, now Defense Secretary **Delfin Lorenzana** came back with this reply:

*... I know John Swallow whom we at the Embassy fondly called: Juan Lunok. And you are right; he went for the return of the bells with great passion. He kept waving in front of us a letter from FVR designating him as rep for the return of the bell. He became very pushy, demanding and obnoxious that we stopped dealing with him. One morning sometime in 2013 our Consular General Dong Nolasco who goes to the Embassy very early caught him inside the embassy compound pouring gasoline. He wanted to burn the Embassy down. The police caught him and detained him. Only then did we find out he was suffering from emotional and mental breakdown. He was eventually released but was ordered by the judge that he could not come near the Embassy, the Chancery and Ambassador's residence closer than 50 meters. I still saw him up to 2015 in gatherings of Filipinos outside the Embassy. I think he is still alive. He would be delighted to know that the bells are being returned.*

As it turned out, **John Swallow** did know, as he acknowledged my email, but he had not at the time seen Secretary **James Mattis'** speech.

This item will not be complete without noting the effort of the current US Ambassador to Manila, **Sung Kim**. The news about the return of the bells came earlier, including the posting of the speech

of Secretary **Mattis**, but the details of the arrival were given during the traditional fellowship dinner on 15-December-2018 at the AFP Officers Club of the **West Point Society of the Philippines** and the PH Chapter of the **US Naval Academy Alumni Association** on the occasion of the Army-Navy football game, a tradition that started back in 1900.

The schedule for the arrival was announced by retired US Consul General **Santiago "Sonny" Busa** during that dinner and reiterated by Ambassador **Kim** during a call by the National Security Committee of the Philippine Council for Foreign Relations at Ambassador **Kim's** office at the US Embassy the following Tuesday.

**Sonny Busa**, a Class 1976 graduate at the **US Military Academy at West Point** mentioned in his remarks after the dinner about his own efforts, first as a Consul at the US Embassy when requested by former **President Fidel V Ramos**, and later after retirement, as a resident of the Greater Washington area.

After he retired from the State Department, he returned to **West Point** as a Visiting Professor, but would eventually land a "pro bono" professorship at the **PMA** in Baguio. How this happened can be perused in an article he wrote on 20-December-2018 that was posted in the ManilaMail.us website:

*Several years ago, I mentioned to my good friend, Delfin Lorenzana, now Philippine Secretary of National Defense, that I would find it interesting to teach at the PMA. I was at the time the Visiting Professor of International Relations at the United States Military Academy at West Point, the premier military school in the world in my unbiased opinion (take that all you Navy and Air Force Academy types).*

*To my amazement he emailed out of the blue last year to inquire if I was still interested in coming over. I hesitated because it would mean a separation from my wife, Ceres, and would mean leaving my active lifestyle at home where I am involved in many civic and academic activities.*

*All that paled in consideration to that fact that this was an opportunity to give back to the land of my birth and to do so in a manner that would influence future leaders of the country. I accepted the position on a pro bono basis because giving back means giving back completely.*

*Teaching the smartest and snappiest young men and women of the Philippines gave me an insight into what the Philippines can*



**Top:** Bauang Bell taken in 1901 is returned to the Philippines. US War Veterans pay respect at San Pedro (St. Peter) Church. Photo Credit: The Inquirer National. **Bottom:** Defense Secretary Delfin Lorenzana and US Ambassador to the Philippines Sung Kim inspect the Balangiga bells during the arrival ceremony at the Villamor Air Base in Pasay City on 11-December-2018. Photo Credit: Ben Nabong and Lito Boras / Rappler





Photo Credit: Coconuts Manila / Yahoo Finance.

become.

*A country that can produce such fine youth is capable of anything. All those who bemoan the condition of the country need only to spend some time with these cadets to suddenly become optimistic for the future.*

*What I love most about these cadets is that they mostly come from modest socio-economic backgrounds. They know what it means to be poor and they know what it takes to overcome those circumstances. You don't see the children of the mega wealthy at the **PMA**. The graduates are motivated and driven by a desire to serve and to be a role model to their families and communities.*

*I will return to the **PMA** to do one more semester to teach Military Philosophy and Ethics. But I'm afraid that the tug and pull of being with the best of the Philippines will make me consider a longer stay. Will just have to tell my wife, Ceres, to come to Baguio. She actually is all for it. What's there not to like?*

From details in <https://penmanila.ph/tag/busas/> posted 9-May-2016, one gets an idea of Sonny's passion for the return of the three bells taken as war trophies by American troops from Balangiga, Samar in 1901 (two bells in a "Trophy Park" in a military base in Wyoming, and another at a military museum in South Korea.)

## The Bauang, La Union bell

As it turns out, the **Balangiga** bells weren't alone. In 1899, during the **Philippine-American War**, one **Lt Tom Berry** USA took a bell from the Church of **St. Peter and Paul** in Bauang, La Union and shipped it to America, where it languished for over three decades in some Army warehouse. "In 1933, the same soldier—now Lt Gen Tom Berry, the Superintendent of West Point—had the bell taken out of storage to be displayed at the **Catholic Chapel** of the Academy," according to the account.

The post continues:

*Last January, acting on an inquiry from Fr. **Ronald Raymund Chan** of the Diocese of San Fernando, Lt. Gen. **Robert Caslen, Jr.**—the current Superintendent of **West Point** and a friend of Sonny's—wrote Fr. **Chan** back to say that "The bell currently displayed on the grounds of our **Catholic Chapel** here is apparently the bell in question. According to our own records, the markings on the bell itself match all the descriptions you provided. While we have been honored to guard and display this bell for the past several decades, we would be glad to return the bell to its rightful home.*

For a very interesting read on this and Sonny Busa's role, which is noteworthy, please visit:

<https://www.pressreader.com/philippines/the-philippine-star/20160509/282578787252856>

As announced by Busa at the Army-Navy reunion last December, the C-130 transport plane did land in Manila one Tuesday morning before Christmas carrying three bells taken from the Philippines a century ago during its war with America, ending a long-standing dispute between the two allies.

U.S. Ambassador **Sung Kim** turned over the "Balangiga Bells" to the Philippine government, which has called for their return for decades over the objections of some U.S. veterans.

"The history of these bells spans the entire relationship between the United States and the Philippines," Ambassador Kim said during the ceremony at the **Villamor Air Base**, repeating what he told us at the US Embassy earlier: "Their return underscores the enduring friendship, partnership and alliance between our countries."

The Philippine government eventually took the three bells to their original parish in Balangiga, Samar at a ceremony on Saturday, 15-December-2018.

I find Butch Dalisay's parting statement in the Philippine Star item quite apropos:

*I fear that many of us have forgotten how valuable our democracy is, and what artifacts like the San Pedro bell stand for. We seem to squander our votes on mindless whimsy and puerile petulance. I so desperately pray we can prove ourselves deserving of that bell, Sonny. How hollow its ring would be otherwise – a death knell for sanity and decency rather than the vibrant peal of freedom.*

At **Fort del Pilar**, Baguio City, home of the **Philippine Military Academy**, stands a **Philippine-American Memorial**, which we founded through a project authorized by Secretary **Eduardo R Ermita**, followed through by Sec **Gilbert Teodoro** and **Voltaire Gazmin**, and inaugurated by no less than former President **Fidel V Ramos** in 2013.

**Replicas of the 4 bells from Bauang and Balangiga, to memorialize the heroes of the Philippine-American War, and to emphasize the friendship and goodwill manifested by the United States, as well as the efforts of those who worked for the bells' return, such as John Swallow, Lt Gen Robert Casten and especially Santiago "Sonny" Busa, deserve to be installed in that hallowed memorial. ⚔**





# Solving Present-Day Challenges Through the UN's 17 Sustainable Development Goals

by Former Philippine President Fidel V Ramos

About three months ago, I informed the management and readership of *Manila Bulletin* of the doctor's advice for me to go on medical leave, which I did starting 19-October-2018, with a request to accommodate for publication in the same column-space any article I might submit from time-to-time, when opportunities arise.

Crucial issues have been hounding not just the Philippines but even rich countries like the U.S., Canada, Germany and France – to name a few. The root cause of most problems is poverty – the reduction of which is the first priority of the United Nations framework titled “Transforming Our World: The 2030 Agenda for Sustainable Development” (composed of 17 Sustainable Development Goals [SDGs] and 169 targets to wipe out poverty, fight inequality and tackle climate change over the next 15 years). Said framework was formally adopted by all 193 members of the U.N. on 25-September-2015, compelling member-nations to look beyond national boundaries and short-term interests and act in solidarity for long-term mutual benefits.

In effect, we all should *Prosper Thy Neighbor* – the title of the book FVR recently launched.

The book launch was held in conjunction with the testimonial dinner held in FVR's honor by the **United Church of Christ in the Philippines (UCCP)** – with President Rodrigo Duterte in attendance as our special guest – last 14-October-2018 at Manila Hotel.

One of the esteemed guests during said event was respected journalist **Domini M. Torrevillas** who reported her observations through her column titled “FVR Book” (*The Philippine Star*, 06-November-2018), thus: “The Centennial Hall of Manila Hotel was filled to the rafters with people attending the national thanksgiving and testimonial dinner for the first Protestant President of the Philippines, Fidel V. Ramos, and the launching of his book, *Prosper Thy Neighbor*. The Sunday-best-dressed crowd was a mix of politicians, government officials, businessmen, and professionals loyal to the former tobacco-chewing head of state, and feeling high to hear in person, shake hands, and do selfies with the special guest – President Duterte.



The book is a compilation of FVR's column pieces in a major broadsheet. The affair was sponsored by the UCCP and intended to raise funds for the **Center for Leadership and Development**. UCCP officials said of their celebrated honoree as having 'profound faith in God and strong sense of duty, honor and love for country, nurtured early in life in a Christian family.'

The book's topics are wide-ranging from poverty to climate change, to terrorism and law enforcement. The first part consists of FVR's not so savory assessment of President Duterte's first 100 days, of Team Philippines' losing on board **Ship Pilipinas**, and of Du30's and Malacañang's need to learn more about governance.

"FVR writes that at the outset of Du30's steering of the nation's ship of state, much was expected of his term: alleviation of mass poverty, relief from the escalating costs of living, and improvement of the people's quality of life."

"FVR's assessment was based simply on two concepts of primordial importance – LEADERSHIP and TEAMWORK – because that is where the obvious failures have emerged at this point in time."

Talking from experience, FVR believes that confronted with many serious concerns, President Digong is "like a juggler, balancing and keeping aloft at least ten balls, which are transnational problems. But, as Chief Executive and Commander-in-Chief, he must perform with greater agility and competence than the ordinary circus juggler handling hot potatoes while on a highwire going 100 meters upwards, catching and managing the balls in a calm, harmonious manner, and not drop any in the process."

"Duterte cannot do it alone," writes FVR. "Neither can the government do it alone. But when all of us strive together with one goal in mind, and abide by the same precious values and commitments – we become a strong nation, able to achieve the higher quality of life we have always yearned for – in an environment of enduring peace and sustainable development."

"FVR's reprinted columns are written seriously, marching forth like a soldier's measured cadence. But former First Lady Ming Ramos steals the thunder from her husband with five articles devoted to her summary of her life as the wife of the President of the Republic."

"Briefly, she tells of her acquaintance with Eddie (FVR's nickname to family and friends), when they became neighbors in Padre Faura in 1940. But they were engaged in 1952 – and got married on 21-October-1953 – after she had finished her Master of Science in Physical Education at the University of California, Los Angeles, California. FVR by then had also graduated from the United States Military Academy at West Point, New York and had completed his Masters in Civil Engineering at the University of Illinois in Urbana, Illinois."

"Ming writes that on 15-June-1992, Congress official proclaimed FVR the President-elect. 'That evening changed our lives as a family. All of us could not believe that our Eddie had become the President of the Republic of the Philippines and that we had become the First Family. Suddenly, we were thrown into a rush of activities.'

"In the course of our married life, circumstances would prove his patriotism time and time again. Take his participation as a member of the 20th Battalion Combat Team (BCT) in the Korean War in 1951, the Vietnam War from 1966 to 1968, the 1986 EDSA Revolution, and the various coup attempts between the years 1987-1991. All were life threatening. All were participated in by him selflessly. All for the good of the country as we, his family, prayed for his safe return." To prove his 'workaholic' further was

the 'carotid operation' incident in 1996 in which he wanted to go back to work immediately, but Ming said no, thus for the first time, the family had Christmas dinner at a hospital. "For once, he listened to me."

"Eddie remained first and foremost a military man, and second, a family man. He ran a household as he would run a battalion. He set up a strict time schedule for everyone: the time to sleep, wake up, and eat. Not that it lasted. To put it quite simply, it was the kind of routine that invited mass rebellion. With five daughters, all in one way or the other resembling their father in temperament, Eddie's attempt to militarize the Ramos family was a dismal failure. I think it was the only endeavor in which he failed, miserably I might add. This shows you the power that women have."

"What I never understand about politics is how you try to do something good and it's never good enough. There were many difficult moments for me during his term but the most difficult ones remain to be two incidents which I hope never to encounter again."

"One was during the **Flor Contemplacion** incident in March 1995. On board the plane from Europe on the way to General Santos City, the Ramos family decided that Ming fly from GenSan to Manila on a Fokker F-27 aircraft to meet the remains of OFW Flor Contemplacion at NAIA. There was so much anger and hatred at the scene. The flowers she gave were seized and torn to pieces. What hurt the most was when she handed Flor's husband an envelope containing P100,000. He opened the envelope and saw its contents. The next day, the papers announced that he said the envelope was empty. Flor's husband later retracted his statement, but the damage had been done."

"The other incident was the 'Anti-Charter' and later on, what I perceived to be the 'Anti-Ramos' campaigns which resurfaced time and time again in 1997 and 1998. After seeing Eddie working so hard for the country, I was quite downhearted and disappointed."

"The eminent scientist Dr. **Angel Alcala** and former Foreign Secretary **Perfecto Yasay Jr.** gave testimonials, and the Manila Concert Choir headed by Education Secretary **Leonor Briones** provided the special music. Bishop **Melzar Labuntog**, UCCP General Secretary, gave an inspirational message; Bishop Joseph Agpaoa the prayer of dedication; and several bishops, the blessing."

We also learned from the *Capitol Post* (29 September-05 October 2018), a weekly publication in Pangasinan, FVR's home province, that Representative **Leopoldo Bataoil** urged his fellow lawmakers in both houses of Congress for the immediate approval of House Bill No. 8367 calling for the establishment of the **FVR Library and Museum** in Lingayen, Pangasinan under the supervision of the National Library of the Philippines – similar to the presidential libraries and museums in the U.S. It truly is my distinct privilege to be so honored.

After this article today, FVR will seek the *Manila Bulletin's* consent to invite others to write in his column-space and share their thoughts on how to achieve an environment of enduring peace and sustainable development – for the Philippines and in cooperation with our neighbors in the Asia-Pacific.

**Kaya natin ito!**



Please send any comments to [fvr@rpdev.org](mailto:fvr@rpdev.org).  
Copies of articles are available at [www.rpdev.org](http://www.rpdev.org).



BRP Hydrographer Presbitero. A survey vessel of the Hydrography Branch of NAMRIA used in the survey of the Philippine Rise and the Extended Continental Shelf.

# Strengthening Our Hydrographic Office to Secure Our Future

by Cdr. Carter Luma-ang PN(NAMRIA)

This year is a milestone year for the global hydrographic community. 100 years ago or in June 1919, the 1st International Hydrographic Conference was held in London. It marks the beginning towards the creation of an international bureau for hydrography. Today, the **International Hydrographic Organization (IHO)** is the authoritative worldwide hydrographic body which actively engages all coastal and interested States to advance maritime safety and efficiency, and which supports the protection and sustainable use of the marine environment. A principal aim of the IHO is to ensure that all the world's seas, oceans and navigable waters are surveyed and charted. The Mission of the IHO is to create a global environment in which States provide adequate and timely hydrographic data, products and services and ensure their widest possible use.

In the Philippines, hydrography officially started in 01-July-1901 when the **Bureau of Coast and Geodetic Survey (BCGS)** was established by the United States Philippine Commission. The BCGS was first placed under the **Department of Commerce and Police**. All its personnel then were US citizens except for some crew members of the survey vessels. It was in 1938 that Filipino males were accepted as cadets to become hydrographic survey officers. The following year, the BCGS was placed under the **Department of National Defense** through Executive Order No. 230 by President Manuel L. Quezon. During 1901 to 1950, the Chief Hydrographers/Directors of the BCGS

were US officers. The Philippines had its first Filipino Director, Capt. **Andres O. Hizon**, in 1950 after the Philippines was free from foreign control. Since that time until 2005, only males were allowed to become hydrographic survey officers. Today, at least 30% of the hydrographic survey officers are female.

For several decades, the **BCGS** was under the **Ministry of National Defense (MOND)** which was later renamed the **Department of National Defense (DND)**. In the 1980s, it was one of 9 bureaus of the MOND along with the Armed Forces of the Philippines, Government Arsenal, Integrated National Police, National Police Commission, National Defense College of the Philippines, Office of Civil Defense, Philippine Atmospheric, Geophysical and Astronomical Services Administration, and Philippine Veterans Affairs Office. After the EDSA Revolution, many of the Bureaus under the **MOND** were transferred to other departments of the Government.

In what appears to be an attempt to reduce the power of the military because of the experiences during the Martial Law regime, several uniformed services were removed from the **Department of National Defense (DND)** and transferred to other departments. The **Philippine Coast Guard**, which was previously under the **Philippine Navy** was transferred to the then Department of Transportation and Communication. The **Integrated National Police** was reorganized to



become the **Philippine National Police** under the **Department of Interior and Local Government**. The **BCGS** was also removed from the **DND** and merged with other agencies to create what is known today as the **National Mapping and Resource Information Authority (NAMRIA)**, an attached agency of the **Department of Environment and Natural Resources (DENR)**. After the Rationalization Program in 2013, **BCGS** is now called the **Hydrography Branch of NAMRIA**. Despite the transfer of **BCGS** and several re-structuring and re-organization, it maintained its uniformed service, which is composed of officers and enlisted personnel with ranks similar to the **AFP**.

Year 2019 marks the 118th year of coast survey in the Philippines, and the 32nd year of **BCGS** under **DENR**. Questions arise as to whether the transfer did bring more benefit to the country. The question may not be answered successfully as there is no precise method to evaluate whether the transfer brought more benefit or not. What can be analyzed is whether the present needs of the country warrant **HB** to still be under **DENR**, or needs to be brought back under **DND**, or moved to another department. There was also the idea of transferring the **HB** to the proposed **Department of Maritime Affairs**. However, the bill died a natural death in the Senate.

In the global scene, national hydrographic offices are usually under the **Navy**. In South East Asia, the long-established hydrographic offices are also under the Navy. The Hydrography and Oceanography Centre is under the **Indonesian Navy**, the National Hydrographic Centre is under the **Royal Malaysian Navy**, and the Hydrographic Department is under the **Royal Thai Navy** just to name a few. However, there are deviations from the usual organization of hydrographic offices under the navy. For example, the **Japan Hydrographic and Oceanographic Department** is under the **Japan Coast Guard** since Japan does not have a **Navy** at least on technical terms.

However, it must be considered that the **coast guard** is also an armed and uniformed service.

Why are most national hydrographic offices under the **navy** of their Government? The history of the **IHO** traces its roots to the navy. After the World War I, it was the navies of the French and British that suggested the establishment of an international bureau for hydrography. The **Navy** is concerned with the defense of its State. It is logical that the **Navy** should have the information first about their waters than anyone else.

What are the pros and cons if the Hydrography Branch of the Philippines will be transferred to the **Philippine Navy** or the **Philippine Coast Guard**? Putting the Hydrography Branch under the **Philippine Navy (PN)** ensures that the hydrographic information is primarily under the control of our self-defense agencies before anyone else. National security is the government's utmost concern. Recently, there has been news that the **PN** is planning to acquire submarines. It is now more important that the **PN** have easier and greater access to hydrographic information, which is valuable to the success of any submarine warfare. The **Naval Meteorological and Oceanographic Center (NAVMETOC)** of the **PN**, which should conduct hydrographic services for the **AFP** does not yet have the needed resources and expertise

as the **HB** does. The **PN** can surely strengthen the **NAVMETOC**. However, when it is fully capable of performing hydrographic services, it would also mean duplication of effort. The requirements of the armed forces, both here and abroad, are usually more stringent than civilian requirements. Hence, when the **NAVMETOC** serves the requirements of the **AFP**, it would also generally meet the requirements of the **IHO**. On the other hand, if the **HB** satisfies the standards of the civilian users, it does not necessarily mean it satisfies the standards of the armed forces.

How about transferring **HB** to the **Philippine Coast Guard**? The mandate of national hydrographic offices is to ensure safety of navigation through reliable hydrographic information. This information is disseminated through the nautical charts and publications. The mandate of the **Philippine Coast Guard (PCG)** is search and rescue. It is undeniable that the mandates of both **HB** and **PCG** are intertwined. Many times, the **HB** has been asked to support activities of the **PCG** in search and retrieval operations such as the **SOLAR I** incident in Iloilo Strait in 2006, and the **MV Starlite Atlantic** in 2016. The **HB** successfully located the locations of the sunken vessels for the **PCG** to conduct their operations. As of the moment, the **PCG** does not have equipment similar to the **HB**. With several maritime accidents happening within Philippine waters yearly, it might be worthwhile to consider putting the **HB** under the **PCG** similar to Japan's **JHOD** under the **JCG**. Having **HB** would be complementary to **PCG** operations.

There are also other options for the reorganization of the **HB**. The important thing is the **HB** should be able to address the present needs of the Government and its international obligations. The priorities of the State change from time to time. Hence, structures of Government offices should also adapt. The years ahead will surely be challenging to the Philippines. Human activities have shifted and much

has moved to the oceans for food, transportation and even energy. The waters of the Philippines Archipelago are much larger than its terrestrial area and with over 7,000 islands, the **Navy** and the **Coast Guard** has a lot of islands and waters to guard and protect. The geographical location of the Philippines also makes it an important route for marine transportation. Add also to this the growing concern over the **West Philippine Sea**. In short, hydrographic information has become more important than ever whether in defense or in commercial purposes. It is about time we evaluate the structure of our hydrographic office considering the archipelagic nature of the Philippines.

They say you have to look at the sea to look into the future. Sooner or later, our energy, food and other needs will mainly be coming from the sea. This is the right time that we strengthen our national hydrographic office in order to secure our future.



*BRP Hydrographer Palma. Catamaran type survey vessel of NAMRIA-HB commissioned into service in 2015.*



#### **About the Author:**

*Commander Carter Luma-ang is currently the Chief of the Maritime Affairs Division of the Hydrography Branch.*





*The Peace Tower dominates the Centre Block structure of the Canadian Parliament buildings in Ottawa. Photo Credit: Saffron Blaze, via <http://www.mackenzie.co>*

# Federalism in Canada: An Observation

by BGen Manuel P. Oxales AFP(Ret)

I have been going back and forth to Canada for the last 10 years visiting my son's family, staying in for six to eight months and I have observed and read about how a federal government works.

Canada is located on the northern boundary of the of United States which lies in the south of Canada, and extends to the north up to the Arctic Ocean in a vast land area from the Pacific Ocean to the Atlantic Sea. Canada has one of the largest land area in the world, second only to Russia. It is one of the most highly ethnically diverse and multicultural nations, a product of large-scale immigration from countries of the world` mainly from European and Asian countries. Its population is estimated at 37 million people that include one and a half million of its aboriginals, the First Nations as well as hundreds of indigenous tribes in the north. Canada's land mass is comparable to that of California.

Federalism has its beginnings in Canada during its colonial days under Great Britain when its Parliament enacted the Constitutional Act of 1867, which modified its sovereign power and granted self-governing powers and authority on domestic affairs settlements to British North America. It was a response to the colonial era diversity between the French speaking Lower Canada (southern Quebec and

Labrador region in Newfoundland), the English speaking Upper Canada (modern day Ontario province), and the Maritime provinces in the east (New Brunswick, Nova Scotia, and Prince Edward). From a beginning of 4 provinces, the settlement colonies grew to 10 plus 3 territories of today.

Its government is a federal parliamentary democracy and a constitutional monarchy with the Queen of England as the Head of State who is represented by a Governor General. It has three levels of government: federal, provincial or territorial; and municipal (city).

The first level is the single national government referred to as the 'federal government,' which has jurisdiction and exercises certain powers across the entire country. It refers to the Monarchy, the head of the state, which is ceremonial, and exercised by the Governor General, the Prime Minister and his Cabinet –an elected legislature, the House of Commons and the Senate –an appointed body. The second level holds the self-governing 10 provinces (states) and 3 territories, which exercise certain powers and authority within the region or territory. Each province has a head of state –the Deputy Governor General, and an elected legislature. Executive powers are exercised by the Premier and his cabinet. The provinces have constitutionally recognized powers independent of the federal government and can enact



and implement laws within their territories. The 3 territories (Northern territory, Nunavut and Yukon) that are part of the First Nations, have their own legislatures but unlike the provinces, are under the legislative jurisdiction of the federal government. In actuality, the 3 territories have been acting more like the provinces, having their powers and influence felt by the federal government. The third level is municipal. Mayors lead municipal governments. Municipal governments run cities, towns or districts (municipalities).

Canada's Constitution Act of 1867 has undergone many changes and amendments in the powers of the federal government. Its constitutionally recognized powers are broadly stated as the 'Peace and Order and Good Government' clause which includes the power to regulate trade and commerce, postal service, census and statistics, the military, navigation and shipping, sea coast inland fisheries, Indian reserve land and criminal law and treaty making. The provinces can enact laws on hospitals, asylums, municipalities, prison, property and civil rights have sole jurisdictions on these areas. Both have concurrent powers on agriculture, immigration, pension and supplementary benefits. The territories have power to enact laws on education, health and social welfare.

The federal government has wide taxing powers and may raise revenue, such as direct taxes income or corporate taxes, and indirect taxation such as duties and fees. The provinces have limited power of taxation, confined only to 'direct tax' to raise revenue. Most provinces levy income and corporate taxes, sales on exchange of goods and services and may raise revenue through licensing and fees. Hence, the need for coordination between the federal government and the province because both levels have powers to impose direct taxes, income and corporate taxes. Otherwise, there will be duplication and over-taxing of individuals and business establishments.

The federal government uses the tax system to transfer taxes to other levels of government as it provides subsidies or conditional grants (block transfers) to provinces and territories to ensure that these entities' public services can come up to standard. The federal government has special power to control provinces and may approve or reject provincial legislation, and declare under its control any local work or undertaking which it deemed to the general advantage of Canada. It has fiscal spending power, which means it can spend money on areas not within its jurisdiction. It can fund provincial programs such as education, health care welfare etc as a way of making the province comply with certain federal policies. Also, to remove disparities in rendering public provincial service, it may transfer revenues from one province to another in need (Equalization Clause). It reserves for itself powers and authority not specifically delegated to the provinces.

The history of federalism in Canada is a narration of disputes between the two levels of government on the delineation of powers and authority on broad areas, and on sharing on major ones, and has led to amendments of its Constitution and enactment of pertinent laws. The issue is to determine which 'rule to follow, and who will raise the money'.

Examples of these major disputes are what will likely happen if the Philippines adopts a federal government (first level) with the regions (the second level of government), as discussed below:

- ♦ **Derailment of a National Project.** This is the expanded Trans Mountain Pipeline, a 1100 km conduit of crude and refined oil from northern Canada, which will pass through the provinces of Alberta to the west coast of British Columbia. It will enable Canada to ship oil from its western ports, open new markets and sell much bigger volume at more competitive prices thereby deriving more revenues. The project has been stalled for many years and has been litigated in the courts over demands and claims on environmental and other concerns by the provinces and territories, including the investors.

If the **Philippine Federal Government (PFG)** will construct a railway in Mindanao, which will pass through several regions, it is expected that the latter will ask for concessions such as royalties, permits, payments for right of way, and other demands to raise revenues. TRO's will be filed and

long litigations in courts will certainly stall or ultimately doom the project.

- ♦ **Obstruction to National Programs.** The federal government in response to the United Nations Convention on Climate Change has mandated that provinces formulate a viable program to control emission of carbon content from fossil based fuel (coal, petroleum, and natural gas). Those provinces, which do not comply, will have to be taxed a certain amount per ton of emission. Despite a pledge by the federal government to rebate to the provinces the taxes received, the affected provinces objected citing rising costs on goods and services that may ensue, and result to an inadequate rebate.

The supposed **PFG** would require Metro Manila (one of the proposed regions) to have a viable and self-funded garbage collection and disposal program. (Quezon City budgets P1.7billion a year for garbage collection). Cities will have to levy new taxes in addition to present ones. It may levy tax on residences on the basis of area of land occupied or collect fees on a number of garbage drums used by the residents and from establishments such as restaurants, factories and schools.

- ♦ **Multiple Taxation.** If you buy groceries say from Walmart in Ontario province, your receipt will show a Harmonized Sales Tax (HST) of 13%, of which 8% is provincial sales tax and 5% is for Goods and Services, which is the same for 6 provinces. At one time, Ontario levied a tax on gasoline resulting in the increase in prices, which the customer had to bear.

What then will stop the Philippine regions from levying tax on any business on any goods and services sold? More taxes will result in the increase of both the price of goods and services in an inflation vulnerable economy.

- ♦ **Transfer of Revenues.** Under the Equalization Clause of its tax code, the federal government may transfer revenues raised from a richer province to another in need to remove disparities in the rendering of public services to the residents.

If this "transfer of revenue" scheme is adopted in the Philippines, it may engender opposition from the local political leaders of the richer regions for that would mean fewer projects for their provinces, towns and barangays, and in turn lead to loss of votes.

- ♦ **Additional Layers of Power and Administrative Set-up.** Each province in Canada has its own elected legislature and executive body composed of the Premier and Cabinet.

In the Philippines, a federal set-up will result in one more layer of power and authority in the regions – more bureaucracy and red tape. Setting up and running private businesses will undergo more checks and procedures and public projects will be subjected to additional reviews and scrutiny.

- ♦ **Additional Financial Burden.** Based on the estimates by the Department of Finance, it will require trillions of pesos, which have to be appropriated by Congress to initially support and maintain for a number of years the legislatures and administrative bodies to be set up in the regions. The regions may be required to support/fund this additional burden. It would need close coordination between the federal government and the regions to avoid tax duplication, which might add another step in the bureaucracy.
- ♦ **Rise and Entrenching of Local Power.** In an environment where there is space for creative initiatives and pioneering entrepreneurship as in the provinces and territories of Canada, which are autonomous in areas within their authority, some new leaders in politics, business, and other fields will likely emerge.

Such may not likely happen in the Philippines as the political family dynasties that own vast tracts of plantation land and big businesses will continue to lord over the political landscape and ensure they remain entrenched in power, nullifying the Lincoln dictum of "a government for, of, and by the people."

- ♦ **Spurring Separatist Movement.** The desire of the people of Quebec province to be distinct and separate from the rest of the provinces has roots to the colonial period under Great Britain. The separatist movement in Quebec reached its violent period in October 1970 when its Deputy Minister for Labor was kidnapped and killed, and a top British diplomat was kidnapped. The government invoked for the first time after WW II the War Measures Act and had some 500 persons arrested and jailed without bail. A non-binding referendum held in 1995 sponsored by a private organization resulted in the separatists losing by a slim margin.

The present Philippine government, however, avers that the federal government is a possible solution to the centuries old separatist movement and struggle by the Muslims in Mindanao since so many peace agreements that were forged by past administrations have failed or have been aborted.

The above deficiencies in federalism may be avoided if there are clear and unambiguous delineation of powers and authority between the levels of government. The major benefits in a federal set-up are as follows:

- ♦ **Devolution and Decentralization of Powers.** Under the subsidiary principle, power is exercised by the most competent who is nearest to the ones who will be most affected. In Canada, the legislature and governing bodies in the provinces and the territories are in a better position than the federal government to determine what services are to be rendered, programs to be pursued, and projects to be built for the benefit of the residents within their jurisdictions. They can collect taxes, fund and implement them.

The Philippine system has local politicians having to go to Imperial Manila, to lobby in Malacañang and the Batasan for funds to build schools, houses, farm to market roads, a bridge or a wharf, etc.

- ♦ **Development of National Leaders.** The legislatures and governing bodies in the Canadian provinces provide training and experience in preparation for office at the national level. Governors are choice candidates for senators and Presidents.

Unfortunately, in the Philippines, the trending basis of choice is 'popularity and money.' Celebrities like movie stars (or linked to movies figures), sports figures and other personalities notably covered by media for good or bad, have more chances of being elected in national and local offices than career government officials, prominent educators or top professionals.

- ♦ **Foil to Tyrannous Central Government.** A strong central government can easily impose its rule and power all over the country. In a federal set-up, the sub-governments or states can serve as a deterrent to a tyrannous government.

In the October 1970 crisis, the provincial government of Quebec requested the federal government of Prime Minister Pierre Trudeau (father of incumbent Prime Minister Justin Trudeau) to invoke the War Measures Act and send federal troops to help restore order, guard property, and quell the rebellion.

President Ferdinand Marcos in 1972 declared a national emergency and martial law all over the country with powers and authority he had under the 1936 Philippine Constitution.

- ♦ **Mitigating a Separatist Movement.** Studies have shown that separatist movements in countries like India and Pakistan where people are differentiated by religion, ethnic origin, and language have been mitigated or muted. This has been attributed to the autonomous powers granted to the regions.

While the deep historic desire of its French sector that influences people to be distinct and independent still exists in Quebec, the liberal and democratic policies of the federal government have led to a more stable and harmonious relation between the two.

The proponents of federalism for the Philippines claim that the solution to end the Muslim rebellion and separatist movement in Mindanao is to give them adequate powers and authority to govern themselves and resources within their territories; recognize their ownership of ancestral lands, and respect their language and culture.

There are cases in the past, however, where federalism has given rise to secession or separatist movements as illustrated below:

- ♦ The 11 southern states of the United States composed of the Confederacy and the loyal northern states, and the Union headed by President Abraham Lincoln, went to war from 1861 to 1865 on the issue of states rights and slavery. The seceding 11 states had claimed that the power and authority of the federal government were originated and granted by the states, hence, they are supreme on these issues. The defeat of the Confederacy strengthened the federal government and saved the Union. But victory cost some 800,000 American lives.
- ♦ In the case of Yugoslavia, it was a loose federation of 6 republics and 2 autonomous entities formed years before WW II. Marshall Broz Tito, who rose as the victorious partisan leader in WWII against the Germans, consolidated the regions of varied culture and languages and adopted socialism. After his death in 1980, the federation started to break up into warring independent states characterized by heavy fighting and genocide of minorities. Western countries led by NATO had to intervene to restore order and stability to the country.
- ♦ A more recent separatist moment was that of Catalonia province, an autonomous region in federal Spain when its Minister declared independence. The Spanish government, invoking a provision in Spain's Constitution, the indivisibility and unity of the Spanish nation— had him and his ministers, who fled and sought asylum in Belgium, arrested and charged for sedition and rebellion.

The strength and stability of the federal government of Canada is attributed to many factors. It has evolved through decades over a span of more than one and half centuries starting from the colonial period under the British empire, which granted the colonies settlements power and authority over domestic matters.

Federalism was a pragmatic solution to governing and administering a very large tract of land over people of diverse languages and culture adapting to changing situations and circumstances by making revisions in its constitution, enacting pertinent laws and formulating sound policies. Its parliamentary form of government, in which the majority party in the House of Commons forms the Cabinet, avoids the frequent disputes between the executive and legislative branches of a presidential form. Canada is described as a 'full democracy' with a tradition of liberalism and a centrist moderate political ideology. Its stated political goals are 'Peace, Order and Good Governance.' Its approach to governance is egalitarian, emphasizing social welfare, economic freedom and multiculturalism.

In a survey by the **World-Wide Governance (WGI)** in 2013, Canada was ranked in the 84th percentile in Political Stability and Absence of Violence and Terrorism. It was also ranked in the 97th percentile in Government Effectiveness. Its economy is 11th largest in the world and ranked 8th. It is a member of the Government Organization for Economic Cooperation, The Group of Seven, comprising the largest economies of the world.

A top official of the Philippine **Department of Interior and Government (DILG)** was quoted by media to have recommended that the President declare a Revolutionary Government and decree a federal government be set up in the country. However, his proposal is an antithesis of what federalism is, and what it has been. Settlements and communities have evolved over time into self-governing entities, certainly not by decree but rather after decades of growth and nurturing, forming and binding themselves into a federation, and adapting themselves to changing situations. 📍





Delegates attend the SRI Regional Meeting in Manila. Photo credit: Seafarer's Rights International.org

# Asian Seafaring Nations Announce First Ever Manila Statement on the Fair Treatment of Seafarers

by Seafarer's Rights International

A Regional Meeting of Asia's leading seafaring nations has highlighted the plight seafarers face in the event of a maritime accident and has pledged to lead the drive towards proper and effective implementation of the **International Maritime Organization (IMO)** and **International Labor Organization (ILO)** agreed **Guidelines on the Fair Treatment of Seafarers**.

The Regional Meeting, held in Manila on 13-November, was organized by **Seafarers' Rights International (SRI)**, a world leading international pan-industry body researching maritime and seafarers' law, and **DOLE**, the Philippine **Department of Labor and Employment**. Issuing the first ever **Manila Statement on the Fair Treatment of Seafarers**, senior government representatives from more than 10 countries in the region said the time was right for action to be taken to protect their seafarers. This important event was held as a direct result of a highly successful international conference on the **Guidelines** held by **SRI** at the **IMO** Headquarters in London in June of last year. Representatives from more than 50 countries attending that specially held conference, called for regional

meetings to be convened to discuss the **Guidelines** and how they aligned with national legal frameworks.

The Regional Meeting in Manila aimed at raising awareness of the **Guidelines** amongst stakeholders and role players, and at exploring how the region could develop resources, knowledge and expertise in relation to the **Guidelines**. It also addressed increasing cooperation amongst States at regional and international level. It received international support from the Secretary-General of the **IMO**, the Director of Standards at the **ILO**, as well as Ambassadors and Embassy staff from more than 30 countries from outside the region. A keynote address was delivered to the Regional Meeting on behalf of the President of The Philippines.

Asia is the largest supplier of seafarers to the international fleet and seafarers are recognized as essential to the conduct of international trade and as a special category of worker. Given the global nature of the shipping industry and the different jurisdictions that seafarers may be brought into contact with, they need special protection, especially in relation to contacts with public authorities in the event of a maritime accident.



Silvestre H. Bello III, Secretary of DOLE; Deirdre Fitzpatrick, Executive Director of SRI; and Stephen Cotton, General Secretary of ITF.

The decision by the Asian countries to take the lead in the fight for the **Fair Treatment of Seafarers** is significant and will now pave the way for other regions to follow suit.

Silvestre H. Bello III, Secretary of DOLE; Deirdre Fitzpatrick, Executive Director of SRI; and Stephen Cotton, General Secretary of ITF.

**Deirdre Fitzpatrick**, SRI Executive Director, said the announcement of the **Manila Statement** is a crucial step in the fight to raise awareness over the Fair Treatment of seafarers. *"We were delighted to host this first Regional Meeting in Manila in cooperation with **Silvestre H. Bello III**, Secretary of the Philippine **Department of Labor and Employment**. It is especially significant to see Asia taking the lead in respect of this vital*

*issue for seafarers. A number of governments have already implemented the **Guidelines** but many others need to consider them and look at how they can be implemented within their own legislation, and how capacity can be built among all stakeholders and role players to ensure more effective implementation and enforcement of the fundamental rights contained in the Guidelines."* **Stephen Cotton**, General Secretary of the **International Transport Workers Federation (ITF)**, welcomed the Manila Statement saying this powerful statement charts the way forward for our work on the fair treatment of seafarers. *"You have the **ITF's** commitment working with **SRI** for an ongoing program to support the fair treatment of seafarers."*

The **Guidelines**, which are voluntary, do not seek to interfere with any State's domestic, criminal, or civil law. Instead, they balance the rights and obligations of stakeholders to whom the **Guidelines** are addressed, namely port and coastal states, flag states, the seafarers' states, shipowners and seafarers.

The objective of the regional meeting in Manila was to raise awareness of the **Guidelines** amongst all stakeholders and role players and to explore how to develop resources, knowledge and expertise in relation to the **Guidelines** and relevant matters associated with the Guidelines. It also aimed to look at cooperation amongst States at regional and international level.

Sponsored by the International Transport Workers' Federation (ITF) and the ITF Seafarers' Trust; participants at the conference included senior Government officials and Ambassadors from Asian countries; senior representatives of the maritime industry, including shipowners and seafarers' unions; senior representatives of the IMO and ILO; senior representatives of maritime administrations from Asian countries; judges; professors; auditors; casualty investigators; prosecutors; Master Mariners; and seafarers. ⚓







# Procedures: Mooring Line Handling Tips

by Safety4Sea

**M**ooring and unmooring operations provide the circumstances for potentially serious accidents. There is no doubt that this duty requires a good technique initially in lifting the heavy eye of the rope, followed by a good pulling technique. Care must be taken, therefore with the laying out of heavy mooring ropes and wire ropes/hawsers.

Seafarers involved in mooring operations should be given additional instruction on the specific equipment and mooring configurations used on the vessel. This should include but may not be limited to:

- types of winches and windlass and their operation;
- location of emergency stop buttons;
- types of ropes and/or wires used; and
- location and use of rollers, dollies and leads.


Crew should make sure that there is enough manpower available to do the task safely. Personnel should never stand in the bight of a rope or near a rope under tension, and they should treat ropes on drums and bollards with the utmost care. Detailed familiarization should be given to all new joining seafarers regarding the installation, use, and hazards related to permanent and loose mooring equipment. Based on the risk assessment, appropriate control measures should be put in place.

**Real life incident.** An officer-in-charge of the forward mooring party on board an LNG tanker suffered severe head injuries. He was struck by a mooring rope that parted during a berthing operation at an LNG terminal. The Officer was injured because he was standing in the snap-back zone of the spring line when it parted. The area where he was standing was designated as a safe area; this was because the vessel operator had not carried out a thorough snap back assessment, and there was a perception that high modulus polyethylene ropes did not recoil on failure. The spring line parted due to tensile overload even

though the load being applied to the line at the time was less than a quarter of its specified minimum breaking load. The predominant cause of the rope's loss of strength was found to be axial compression fatigue.

Actions to be taken during mooring and unmooring operations:

- A sufficient number of seafarers should always be available both forward and aft of the vessel to ensure a safe operation;
- A supervising officer should be in charge of each mooring party, and a suitable means of communication (primary and secondary) should be established with bridge team;
- If this involves the use of portable radios, then the ship should be clearly identified by name to prevent confusion with other users;
- Appropriate PPE should be in place for seafarers' protection (including safety helmet, safety shoes and gloves);
- A toolbox meeting should be conducted between Master and officers in charge of mooring parties to discuss the mooring plan, the lines that are going to be used, the involvement with the terminal's or port's personnel, use of tugs, environmental conditions and communication details;
- Special considerations and instructions should be made for snap-back zones and lines under tension in order to avoid incidents due to line failure (parted line).

The **Oil Companies International Marine Forum (OCIMF)** has recently released the 4th edition of its **Mooring Equipment Guidelines (MEG4)**, an industry publication for the safe mooring of tankers and gas carriers at terminals, providing clear and concise guidance for ship and terminal designers, ship operators and mooring line manufacturers on safe mooring system design, with an emphasis on the safety of ship and terminal personnel. Access and download **MEG4** at: <https://safety4sea.com/cm-ocimf-mooring-equipment-guidelines-meg4-an-update/>. 



Avangrid Renewable. Photo Credit: Jim I Knightley / Portland Business Journal

# US Announces Roadmap to Accelerate Offshore Wind

by NYSERDIA

**T**he **National Offshore Wind Research and Development Consortium (Consortium)**, the first federally funded public-private partnership focused on advancing research and development to accelerate the offshore wind industry in the United States, today announced the release of its first **Research and Development Roadmap (Roadmap)** to advance offshore wind technology, drive wind innovation and combat climate change. Established in response to industry-led feedback, the **Roadmap** establishes a long-term vision for innovative **offshore wind** technology development in the United States and identifies key priorities for establishing the industry as a national leading clean energy sector.

"We were excited to convene the first official meeting of the **Consortium** Board of Directors on 18-October-2018, at which time we ratified our first **R&D Roadmap**. This was a critical milestone in the development and implementation of the Consortium, allowing us now to clearly focus on our key priorities for advancing the **offshore wind** industry in the US," says **Consortium Chairman of the Board Robert B. Catell**, who is also the Chairman of the **Advanced Energy Research and Technology Center (AERTC)**, a NYS Center of Excellence located at Stony Brook University.

In June, in line with New York State's significant work, research and planning to develop a responsible and cost-effective way to develop a U.S. offshore wind industry, the **New York State Energy and Research Development Authority (NYSERDA)** was awarded \$18.5 million by the **U.S. Department of Energy (DOE)** for a term of four years to lead the national research and development consortium. The **Consortium** is growing and expanding upon New York's work to advance the cost effective and responsible development of **offshore wind** through collaboration between the offshore wind industry, utilities, research

laboratories, and other states. The **DOE** award, matched by **NYSERDA**, is being used to establish this independent partnership that is both market-driven and industry-led to develop the cutting-edge technology needed to make **offshore wind** an even greater economic driver for coastal states and a clean source of renewable power for the nation.

*"The **Roadmap** on **offshore wind** technology will help to grow the industry and advance our aggressive clean energy goals," said **Lieutenant Governor Kathy Hochul**. "The **Roadmap** will serve as a strategic guide to further research and development of **offshore wind** technology – driving innovation, creating new economic opportunities, and helping to combat climate change."*

**Richard Kauffman, Chairman of Energy and Finance, New York State**, "I thank the policy leaders and industry partners who have led the development of the **offshore wind Roadmap** to further the progress we're making for a sustainable, cost-effective industry which will bring good jobs to New York while combating climate change. New York is leading the growth of **offshore wind** with smart, innovative market-driven policies and I'm proud New York is lending its expertise and contributing to the consortium's work."

**Alicia Barton, President and CEO, NYSEDA** said, "The **National Offshore Wind Consortium** is a symbol for the rest of the world that the United States is serious about establishing a leadership position in the rapidly growing global offshore wind industry. Led by **NYSEDA, DOE** and industry partners, I am proud of the **Consortium's** forward-thinking vision to advance the cost-effective and responsible development of offshore wind in the U.S. and look forward to supporting research and development that unleashes this industry's potential to bring tremendous benefits to our economy and environment while accelerating our pace to meeting **Governor Cuomo's** target of developing 2,400 megawatts of **offshore wind** energy by 2030."





Deepwater Wind LLC. Photo credit: CleanTechnica

The **Consortium**, headquartered at the **AERTC**, will prioritize, support and promote research and development activities, which target barriers that slow the adoption of offshore wind technologies as well as support U.S.-based manufacturing and offshore wind supply chain and infrastructure. Public and private partners were enlisted to support consortium initiatives that will specifically focus on driving further cost reductions for **offshore wind** development, lowering the deployment risk to investors, and expanding the range of feasible project sites in each of the 5 U.S. offshore regions. As such, the **Consortium** will fund research and development initiatives that focus on 3 pillars:

- 1. Offshore Wind Plant Technology Advancement:** Will include research and development opportunities that focus on addressing near-term and mid-term challenges to reducing development costs in the initial phases of U.S. offshore wind projects.

### 2. Offshore Wind Power Resource and Physical Site Characterization:

Aims to reduce the risk of offshore wind in the United States through research and development that focus on activities that lower the cost, time, and uncertainty of site characterization for offshore wind developers on the U.S. Outer Continental Shelf (OCS).

### 3. Installation, Operations and Maintenance, and Supply Chain:

Will focus on research and development activities that lower cost and time of U.S. offshore wind project construction, installation, and operation and maintenance costs.

Focusing on the research and development priorities identified in the Roadmap, the Consortium intends to distribute available research funds through a series of open solicitations over the next 4 years. The first request for proposals under the Roadmap will be announced in 2019. After the first-round of competitive solicitations, the Roadmap will be regularly revised to incorporate up-to-date stakeholder feedback and new research priorities and objectives that support the evolving offshore wind market.

The **Consortium's** Board of Directors is structured to include offshore wind industry leaders, states, U.S. representatives of national utilities and national laboratories. Board members include representatives from industry leaders at the Advanced Energy Research and Technology Center (AERTC) at New York State University at Stony Brook; The Carbon Trust International, Inc.; National Grid; NYSERDA; Renewables Consulting Group and U.S. national laboratories; offshore wind developers **Avangrid Renewables LLC; Deepwater Wind LLC; EDF Renewable Energy; EDP Renewables; Equinor; Innogy; Northland Power; Ørsted; and Shell.**

Building on successful European models, the **Consortium** is engaging private sector support that will allow it to chart a path to financial self-sufficiency, so it can continue its work well beyond the initial four-year federal award period. ⚓



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# The Fjords Announces New Zero Emission Vessel

by Vessel Performance Optimisation (VPO) News

**T**he **Fjords** is to add another all-electric, zero emission passenger vessel to its fleet.

The **Legacy of The Fjords** is under construction at Brødrene Aa and will join the hybrid **Vision of The Fjords** and all-electric **Future of The Fjords** once complete.

**Legacy of The Fjords** will employ a specially constructed **Power Dock**, an innovative, floating, charging solution originally designed for **Future of The Fjords**, allowing it to refill its Westcon supplied 2.4MWh battery capacity in 20 minutes.


The **Power Dock** bleeds energy from the local grid throughout the day – while also storing consumables, fuel and waste for collection, and in doing so, avoids unsustainable, expensive power surges. It is also able to store grey and black water to ensure zero emissions to water and air.

The 400 PAX, carbon fiber catamaran will operate in Oslo, Norway, an entirely new operational area for this fleet of ships. **Vision of The Fjords** and **Future of The Fjords** currently operate between Flåm and Gudvangen, taking passengers to see the UNESCO World Heritage listed Nærøfjord.

The **Fjords** CEO **Rolf Sandvik** said, “Oslo is very different from Flåm, but we believe it should demand the same degree of operational responsibility and environmental care – especially seeing as it is EU Green Capital of the Year 2019. We want to set new standards for the urban environment, as we have done for the natural one, and the silent running, highly efficient, zero emission **Legacy of The Fjords** will allow us to do so.”

The new vessel will receive support from state run organizations **Enova** and the **NOx Fund**, conceived to help enable low emission technology.

**Mr Sandvik** continued, “This is a considerable investment, but an important one. From a growth perspective it marks a new phase for the business, but, more importantly, it also shows other operators here and around the world that it is possible to operate with the utmost environmental care, while providing sensational passenger experiences, in cities as well as natural landscapes.

“**Legacy** will be unique when it arrives, but it’s our hope we can provide a model for sustainable future transport – one that will inspire other responsible, visionary cities and owners to follow suit. That will be our **Legacy**.” 



# Life Support Systems Design Inside the Submarines

## Design Series 4 of 12

by Capt Tomas D Baino PN (Ret), Naval Architect

### INTRODUCTION

The atmospheric characteristics inside the submarine are importantly equal to the submarine's major ship systems such as propulsions, navigations and sensors, weapons, auxiliaries, etc. A need to ensure an efficient and reliable health and safety of the submarine's complements and ship machineries from atmospheric pollutants is definitely a must. To achieve and maintain this goal, an atmospheric control system to maintain good quality air while the submarine is operating submerged underwater is summarized in this article, and how submarine crew are able to live under hydrostatic pressure exerted by the water on all sides of the external surface of the submarine. A good life support system of quality air must be maintained and contain the following tabulated clean dry air composition.

Table 1 Clean Dry Air Composition				
Composition	Symbols	Specific Gravity	Volume %	Partial Pressure
Nitrogen	N <sub>2</sub>	0.967	78.09	593
Oxygen	O <sub>2</sub>	1.105	20.95	159
Argon	Ar	1.38	0.93	7
Carbon Dioxide	CO <sub>2</sub>	1.53	0.03	1

*Ref. Technical Manual for Nuclear Power Submarine Atmospheric Control Manual*



Humans need to breathe clean and dry air to sustain life. In similar manner, propulsion machineries and other auxiliaries that need to support proper combustion need to be naturally aspirated for efficient operational performance.

## EFFECT TO HUMAN LIFE AND MEDICAL TOXICOLOGICAL ASPECTS

The air we breathe into our lungs is through the respiratory system, where air reaches a small dead-end space of the organ called alveoli. The alveoli provides a large surface area through which gasses press into the capillaries' blood and into the blood stream. Gasses establish almost immediate equilibrium and balance with blood, causing oxygen to come in and carbon dioxide to leave. The red blood cells and oxygen unite chemically with hemoglobin to form a relatively weak chemical bond. When red blood cells have been consumed by the cell, the blood returning to the lungs carries CO<sub>2</sub> and other waste products for expulsion. Fig. 1 shows a material balance for an average submarine crew member.

<b>Oxygen Consumption</b>	<b>Carbon Dioxide Output</b>
0.25-3.6 SPLM 0.05-0.7 lbsm/hr	0.2-2.9 SPLM 0.05-0.75 lbm/hr
<b>Metabolic</b>	<b>Water Intake</b>
280-4800 BTU/hr 82-1406 watts	Drinks 3.3 lbs/day Food 1.5 lbs/day Metabolic 0.7 lbs/day Total 5.5 lbs/day
<b>Thermal Constraint</b>	<b>Water Output</b>
T <sub>core</sub> = 36-38°C Avg Skin Temp >25°C Not heat loss < 3 kcal/kg	Urine 3.3 lbs/day Feces 0.2 lbs/day Resp/Swat 2.0 lbs/day

Under normal conditions, the human respiratory breath rate is 15 times/minute, which requires about 0.02 cubic feet of air intake at work. With each exertion of energy, it requires greater demand of greater interval of breathing to test whether the body absorbs oxygen for biochemical brain activity and other organs. When not at work, crewmembers of the submarine are required to lay down in the bunks to rest in order not to consume small amounts of oxygen when standing or sitting.

## IMPROPER DESIGN OF ATMOSPHERIC CONDITIONS INSIDE THE PRESSURE HULL OF SUBMARINES CAN RESULT IN THE FOLLOWING:

- ♦ **Lack of Oxygen** can result in impaired right vision, heavy breathing, dizziness, faulty judgment, slow thinking, weak muscular coordination, fainting, or death.
- ♦ **Sickness** as a result of decompression causes the formation of bubbles in the blood due to nitrogen, and results into an excessive reduction of ambient pressures.
- ♦ **Lung injury** due to oxygen poisoning.
- ♦ **Carbon Buildup** and increased respiration with mild discomfort, dizziness, stupor, unconsciousness and death.
- ♦ **Carbon Monoxide** can lead to deprivation of oxygen in the blood
- ♦ **Excess Refrigerants** can cause simple asphyxiation causing dizziness at low concentration, and death at high concentrations.
- ♦ **Excess Hydrocarbon** at high levels can impact liver function and can affect metabolism of various organs and irritate the skin and mucous metabolism.
- ♦ **Excess Ozone** can cause eye irritation and may result in coma, etc.
- ♦ **Excess Hydrogen** is highly inflammable and explosive. This is generated from battery charging and products of electrolytic oxygen generators.

## PROPER DESIGN OF SUBMARINE ATMOSPHERIC CONTROL SYSTEMS

This necessitates the elimination of toxic contaminants and control of the source of origin; and the removal of contaminate and ample supply of oxygen to maintain proper atmospheric condition, with the following approach of design:

- ♦ **Installation of Electrochemical Oxygen Generators (EOG)** - Replenishes consumed oxygen while the submarine is operating underwater. The EOG can supply in longer periods dependent on the storage capacity.
- ♦ **Installation of Solid Polymer Generator (SPG)** - A new development of oxygen generators with a safe and reliable oxygen production unit that produce oxygen for breathing through water electrolysis by using a solid Polymer Electrolyte (SPE) cell.
- ♦ **Installation of Oxygen Candle Furnace** - A mixture of sodium chlorate, iron, small amounts of barium peroxide, and fibrous binding materials that are screened and removed by burning the candle to decompose the chlorate by thermal means.
- ♦ **Installation of Carbon Dioxide Removal.** There are 2 systems to remove the Carbon Dioxide (CO<sub>2</sub>) inside. These are:
  - **LiOH Absorbers** - A non-regenerate system called CO<sub>2</sub> "scrubb filter to entrap droplets of the Mono-ethanolamine (MEA) Solution and the air returns to the submarine internal section atmosphere at about 75 to 100% Relative Humidity.
- ♦ **Air Purification Systems (Co-H<sub>2</sub> Burner).** The system is used to remove CO, H<sub>2</sub> hydrogen and other contaminants by oxidizing the CO<sub>2</sub>, H<sub>2</sub> (Carbon Dioxide and Water). In the final stage, air passes through activated charcoal as absorber.
- ♦ **Activated Carbon.** Charcoals are activated and prepared from carbonaceous materials and activated by controlled heating steam. Heat removes noxious gases from the capillaries. Activated charcoal increases vapor absorption.
- ♦ **Emergency Supply of Compressed Air Supply**
  - **Oxygen Breathing Apparatus (OBA)** is a self contained unit worn by each person/crew for a duration of at least 60 minutes. It removes exhaled CO<sub>2</sub>.
  - **Emergency Air Breathing System (EABS)** is typically used when there is fire. It simply allows for direct connection of full-face masks for each crew member to clean high pressure air storage banks. It consists of masks connected by hoses to the source.
  - **Scott air Packs (SCBA)** is also a self contained breathing apparatus which is similar to the SWBA but designed for air environment; a portable recharge breathing system can come as alternative equipment for OBA's.



- ♦ **Atmospheric Monitor.** In a closed submarine atmosphere inside the pressure hull of the submarine, frequent and routine monitoring is needed to ensure continuity of air quality. Said monitoring allows detection of potentially hazardous substances as well as adjustment of air composition.

## HUMAN LIFE INSIDE THE SUBMARINE

On the surface of the sea, nature is very unforgiving, but underwater, nature can kill human life quickly. The submarine must be designed to have extremely reliable equipment and reliable crew. The life support system is the paramount important system in the submarine. If this fails while underwater, submarine crew will die instantly. Lives of the submarine officers and crew depend on the reliability of the submarine life support systems and their level of expertise as the first and foremost system to be concerned of by the submarine commanding officer. The submarine crew work in isolations for long periods of time, without family contacts, always in radio silence to avoid being detected, and many submarines have been lost to accidents. A submariner always depends on himself and knows what he is doing. The submariner's actions must always be 100% correct at all times when operating in the submarine underwater.

## RECOMMENDATIONS

A Navy dreaming of acquiring submarines for the first time must focus and concentrate at the forefront of the program on training on physiology of human body proficiency, built-up and enhanced shipyard support system capabilities of how to preserve, operate, and respond to various levels of maintenance, logistic support systems, etc. to reach a level of expertise before deciding to sign the acquisition and delivery of a submarine. This cannot be achieved based on hasty preparations but rather through long years of training to reach maturity. The navy can start by acquiring a training laboratory and when the right time to acquire a shallow water attack submarine comes, it is recommended to begin with the affordable Italian Cosmos or Piranha Class. This approach is similar to the submarine strategy of the Pakistani Navy.



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### About the Researcher:



CAPT TOMAS D BAINO PN (Ret) completed his post-graduate studies in Submarine Design at the Department of Naval Architecture, University College of London, United Kingdom of Great Britain, under the sponsorship grant of the UK Ministry of Defense. Capt Baino is an associate editor of the Maritime Review, providing series of articles on Naval Ship Design and presently serving as Naval Architect Consultant with the Department of Transportation and the Philippine Coast Guard Project Management Office in ship acquisition program.



## MARITIME FORUM

The League organized the Maritime Breakfast Forum (MBF) series in 1995 as a venue for developing plans and programs to discuss and resolve issues in the maritime industry. The MBF is attended by stakeholders in the maritime sector and resource persons in the government and private agencies involved in maritime concerns. The MBF is regularly held, without fail, every month except December, hosted by different agencies and organizations in the maritime industry. Policies and projects presented during the forum are published in the Maritime Review for information and dissemination to the general public.





World's first high bay container storing system to be ready for 2020 World Expo in Dubai. Photo Credit: Saudi Gazette.

# DP World Unveils Efficient Storage Rack System for Containers

by Vicky Viray Mendoza

An international joint venture formed by **DP World Group** and industrial engineering specialists of **SMS Group** may just be the catalyst that would revolutionize the way ship containers are handled in ports. A new and intelligent container storing system, called the **High Bay Storage**, will be applied for the first time in Dubai in 2020.

The **High Bay Storage** system was originally developed by **SMS group** subsidiary **AMOVA**, a specialist in systems for heavy operations. Its metal coils weigh as much as 50 tons each, in racks as high as 50 meters or 11 stories high. **AMOVA** would be the first company to transfer this storage technology to be applied to the port industry.

As opposed to stacking containers directly one on top of each other, a global standard practiced for decades in all ports and terminals, the **SMS** system places each and every container in an individual rack compartment. Containers are stored in an 11-story rack, creating 200% added capacity compared to a conventional container terminal; and loading the same capacity with less than 30% of space.

The rack is designed such that each container can be accessed without having to move another container in the stack, which in effect results in a 100% utilization rate in a terminal yard.

Consequently, the High Bay Storage system is expected to increase speed, energy efficiency, and safety of terminal operations, while reducing space as well as costs by cutting the time it takes to load and unload megaships by about 30%.

Sultan Ahmed Bin Sulayem, Chairman and CEO DP World Group, said *"DP World's experience and expertise in moving cargo coupled with the technology of AMOVA will ensure the system is remarkably efficient and relevant for present and future operations. As a world first in our industry, we*

*are tremendously excited by its potential and groundbreaking features. Our engagement in new technologies is a major priority and we have become known for seeking ways that transform the way goods are moved across the world. Innovation is part of our DNA and at the heart of our success."*

**Burkhard Dahmen**, CEO of **SMS Group**, said *"Our subsidiary AMOVA has optimized this technology in industrial applications for the metals industry over several decades. The application for container terminals is a direct result of our "New Horizon" strategy, in which SMS transfers technology from the metallurgical sector to other industries."*

**Dr. Mathias Dobner**, CEO of **DP-AMOVA** joint venture, said *"This new container handling technology allows cities to use their expensive and sensitive land and waterfront areas more effectively. Our system will significantly increase the productivity of handling ships on the quay. This means that quay walls can be shortened by a third. This disruptive innovation will greatly improve the financial performance of container ports, and well as their overall appearance."*

The first model of the **High Bay Storage** system will be installed at **Jebel Ali Terminal No. 4** where DP World expects to usher operations in time for the **Dubai Expo 2020** world fair.



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# Ports of Batangas & Cagayan de Oro Receive GPAS Awards

by PPA News



Port of Batangas. Photo Credit: PPA



Port of Cagayan de Oro. Photo Credit: PPA

The **Philippine Ports Authority (PPA)** is stepping up its 'Green Port Revolution' initiatives in all its ports nationwide. Two of the country's top gateways have recently been conferred **GPAS** awards by the **APEC Port Services Network (APSN)**. The **Port of Batangas** and the **Port of Cagayan de Oro** received their **GPAS** awards from **APSN** recently.

The **Green Port Award System (GPAS)** program is a green evaluation system for ports in the **Asia-Pacific Economic Cooperation (APEC)** region. The program is intended to improve environmental awareness and increase the understanding of green port development strategy, with the aim of achieving a balance between economic development and environmental protections in the **APEC** ports community; promote the sustainable development of ports in the **APEC** region and protect the port environment for the benefit of the entire **APEC** community; contribute to the harmonization of regulations and improve interoperability of green port systems in the **APEC** region; establish an **APEC** green port performance benchmark based on this program, share best practices and encourage mutual assistance among **APEC** ports.

According to **PPA** General Manager **Jay Daniel R. Santiago**, the twin awards are testament to the initiatives of the **PPA** toward environmental protection through the reduction of carbon footprints in its port operations.

*"We are slowly reaping the benefits of our hard work particularly in complying with the stringent requirements on environmental management and occupational safety and health," Santiago said.*

*"With the 25 Port Management Offices including the Port of Batangas and Port of Cagayan de Oro almost fully certified on Quality Management System, Environmental Management System, and Occupational Safety and Health System, we expect similar awards in the future for all our ports," Santiago added.*

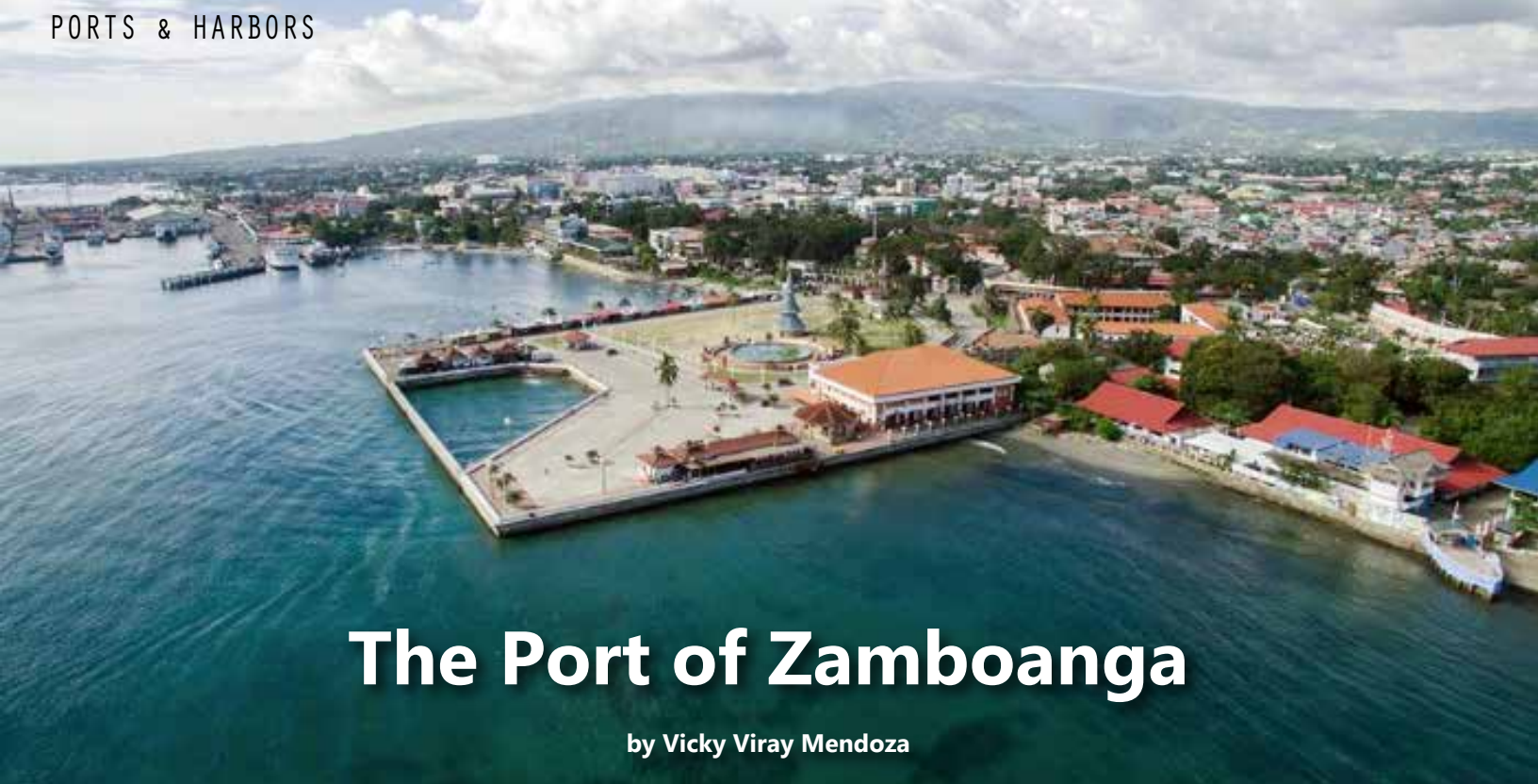
*"Rest assured that the PPA is fully committed towards environmental protection and sustainable port operations," Santiago stressed.*

The **Ports of Batangas and Cagayan de Oro** are Certified ISO 9001:2008, and recognized for its implementation of the **Port Safety, Health and Environmental Management System (PSHEMS)**. The two ports are now slowly migrating to the Integrated Management System fusing in three international standards, namely: ISO 9001:2015 for Quality Management System, ISO 14001:2015 for Environmental Management System, and BS OHSAS 18001:2007 for Occupational Safety and Health, to further solidify its quality, safety, health and environmental policies, and commitment for the protection of the environment, provision of safe and healthy working conditions and improved quality of port operations and services.

The **Port of Batangas** is located 110 kms south of Metro Manila, with an area of 150 hectares. The port is the center of transportation of goods produced in the hinterland, primarily in Batangas province, and serves as the strategic trading point for all industries in the CALABARZON ecozone. Products handled by the port include cement, logs, minerals, completely built units (motor vehicles) and other general cargo while container traffic is continuously growing. The completed **Batangas Port Development Project** has two components: Phase I is for domestic vessels and non-containerized foreign vessels, while Phase 2 is for international container vessels.

The **Port of Cagayan De Oro** is dubbed the "Global Gateway to Mindanao" for its strategic location at the Northern Coast of Mindanao within Macajalar Bay. The port serves as the entry and exit point of passengers and goods, to and from adjacent urban cities, provinces and other parts of the Philippine archipelago. It also links conveyances to countries such as Vietnam, China, Australia and the United States (USA), among others. ⚓





# The Port of Zamboanga

by Vicky Viray Mendoza

The **Port of Zamboanga** is a seaport located in **Zamboanga City** located in western Mindanao. The **Zamboanga City Special Economic Zone Authority (Zamboecozone)** known as the **Zamboanga Freeport Authority (ZFA)** manages the port. The international container **Port of Zamboanga** ranked 2nd in Asia according to the *2010 Super Efficient Ports in Asia* study (*African Journal of Business Management Vol. 5(4), pp. 1397-1407, 2011*). **Zamboanga City** is the commercial and industrial center of the **Zamboanga Peninsula**, which faces the Basilan Strait to the north, and the Moro Gulf and Sulu Sea to the south. In 2015, **Zamboanga City** ranked 3rd in infrastructure, 15th in Government Efficiency, 26th in Economic Dynamism, for an overall ranking of 15th in National Competitiveness.

The **Port of Zamboanga** is a center for sardine exports to the United States, Europe, the Middle East, and the Far East. There are 25 shipping lines that operate via the port, serviced by 4 shipyards operating within the port and **Zamboanga City**. The port has a land area of 15.6 hectares. The seaport of **Zamboanga** has 19 docks, 12 of which are privately owned. The largest dock has capacity for up to 20 vessels, and is operated by the **Philippine Ports Authority (PPA)**.

As of end-September (3rd quarter) 2018, passenger and cargo transport continue to be the major port industries of **Zamboanga**.

Total **Passenger** traffic in the Port of **Zamboanga** exceeded 3.8 million, surpassing the ports of Misamis Occidental 2.7M, Lanao del

3QTR 2018	SHIP CALLS			CARGO THROUGHPUT MT			PASSENGER	CONTAINER TEU			RORO		
	TOTAL	DOMESTIC	FOREIGN	TOTAL	DOMESTIC	FOREIGN	TOTAL	TOTAL	DOMESTIC	FOREIGN	TOTAL	INWARD	OUTWARD
<b>PMO ZAMBOANGA</b>	12,746	12,667	69	2,592,111	2,236,547	355,564	3,819,472	77,535	77,535	0	129,269	64,262	65,007
<b>BP ZAMBOANGA</b>	7,177	7,126	51	1,910,929	1,611,715	299,211	2,432,436	77,427	77,427	0	66,927	36,909	30,018
<b>BP ZAMBOANGA RORO</b>	2,982	2,982	0	117,593	117,593	0	1,314,548	0	0	0	66,927	36,909	30,018
<b>BP ZAMBOANGA NON RORO</b>	4,195	4,144	51	1,793,333	1,494,122	299,211	1,117,888	77,427	77,427	0	0	0	0
<b>TMO ISABELA (BASILAN)</b>	4,267	4,267	0	61,613	61,613	0	1,384,727	0	0	0	62,342	27,353	34,989
<b>OTP ISABELA RORO</b>	1,629	1,629	0	10,401	10,401	0	840,910	0	0	0	62,342	27,353	34,989
<b>OTP ISABELA NON RORO</b>	2,638	2,638	0	51,212	51,212	0	543,817	0	0	0	0	0	0
<b>TMO ZAMBOANGA DEL SUR</b>	157	157	0	27,722	27,722	0	0	0	0	0	0	0	0
<b>TMO MARGOSATUBIG</b>	9	9	0	2,550	2,550	0	0	0	0	0	0	0	0
<b>OTP PAGADIAN</b>	148	148	0	25,172	25,172	0	0	0	0	0	0	0	0
<b>TMO ZAMBOANGA SIBUGAY</b>	41	41	0	47,954	47,954	0	0	0	0	0	0	0	0
<b>OTP MALANGAS</b>	7	7	0	10,765	10,765	0	0	0	0	0	0	0	0
<b>OTP IPIL</b>	34	34	0	37,189	37,189	0	0	0	0	0	0	0	0
<b>OTHER GOVERNMENT PORTS</b>	364	362	2	162,394	151,662	10,732	0	0	0	0	0	0	0
<b>PRIVATE PORTS</b>	740	724	16	381,502	335,881	45,621	2309	108	108	0	0	0	0

Norte/Iligan at 2.3M, Misamis Oriental/CDO at 2.2M, Surigao at 2.1M, Marinduque at 1.5M, and Manila at 1.1M passengers.

The **Port of Zamboanga's** total **Cargo** throughput of 2.6 million MT, comprised 86% domestic cargo and 14% foreign cargo; with 75% of operations largely at Baseport (Non-Roro). Its cargo throughput surpassed Lanao del Norte at 2.2M; Bicol at 1.8M; Eastern Leyte/Samar at 1.7M; Misamis Occidental at 1.1M; Zamboanga del Norte at 0.8M; Mindoro at 0.5M; and Masbate at 0.4M MT.

Total **Shipcalls** in the **Port of Zamboanga** were mainly domestic, and reached 12,746 shipcalls, lower than Eastern Leyte/Samar at 15,930; Western Leyte/Biliran at 13,210; but higher than Misamis Oriental/CDO at 12,595 shipcalls.

With 8 Reefers and 6,200 sqm paved storage complementing facilities, the **Port of Zamboanga's** total **Container** cargo ships reached 77,535 TEUs, which were purely domestic ships, and surpassed Palawan at 59,927 TEUs; Eastern Leyte/Samar at 39,875; Agusan at 38,800; Negros Oriental/Siquijor at 32,308; Misamis Occidental at 32,176; Bohol at 27,711 TEUs, Lanao del Norte/Iligan at 10,544; Bicol at 5,963 TEUs; Surigao at 4,157 TEUs, and Masbate at 3,554 TEUs.

With 2 **RORO** ramps and a Finger Pier with a RORO platform, the Port of Zamboanga's RORO cargo exceeded 129,000 units, which were mostly type 1 cargo from the Baseport and OTP Isabela. Its RORO cargo is higher than Bohol at 120,510; Zamboanga del Norte at 74,957; Masbate at 58,074; Agusan at 8,811; Manila North Harbor at 1,139; and Palawan at 1,116 RORO cargo units.

In 2107, with 6 major berthing areas with drafts ranging between 6-13 meters, the **Port of Zamboanga's** total Gross Registered Tonnage exceeded 8.9 million GT, the volume of all enclosed spaces of ships that had docked last year.

Philippine 2GO Ferries have one ferry a week sailing to & from Manila to **Zamboanga City** via Dipolog and Dumaguete. The Port of Zamboanga, an international port of entry, also features Aleson Shipping Lines, a scheduled passenger ferry going to & from Sandakan, Malaysia. A shipping cargo company from Vietnam also services the route to & from **Zamboanga City**. Departing passengers are well accommodated in a spacious terminal building. Terminal 1 covers 620 sqm while Terminal 2 covers 960 sqm. The Port of Zamboanga not only handles inter-island and international fast ferries, but on occasion, international cruise ships as well.

The **Port of Zamboanga** is considered the shipping hub of western Mindanao. Its 5,400 sqm container yard is large enough to handle 20 ft and 45 ft containers; with a 4,320 sqm container freight station to load & unload containerized cargo. It has a paved marshalling yard covering 13,700 sqm where the containers can be arranged and stacked in sequence. Local drayage capacity to pull containers out of the port to load or unload is more than sufficient, and the port is the beginning & ending terminal of the Pan-Philippines National Highway, allowing delivery of goods to any port in the country. The port employs stevedoring laborers who are skilled, and ample in number.

In the pipeline are two expansion reclamation projects, covering 7,291 sqm and 12,958 sqm, as back-up storage areas, which were about 25% complete as of January this year.

On 26-November-2018, **PMO Zamboanga** inaugurated its **Port One-Stop-Shop (POSS)**. **PMO Zamboanga**, led by Port Manager Liberto C. Dela Rosa, inaugurated its POSS designed to facilitate various transactions at the port in compliance with RA 11032, the Act of Promoting Ease of Doing Business and Efficient Delivery of Government Services.

The **POSS**, the first of its kind under the PPA, is aimed to streamline all port operation transactions and pool together concerned or attached government agencies under a single roof to optimize efficiency.

The **POSS** hosts key agency partners such as the Philippine Coast Guard (PCG), Maritime Industry Authority (MARINA), Bureau of Animal Industry, Bureau of Plant Industry, Bureau of Quarantine, ZC Integrated Ports Services Inc, and Shipping Line Operators. 🚢

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Taal Volcano in Taal Lake. Photo Credit: Magtxt.com.

# Taal Lake

by Josephine M Viray

**T**he **Taal Lake**, also known as **Talisay Lake** and **Bombón Lake**, is a circular fresh water lake located in the Province of Batangas, in Southern Luzon with over 26,700 hectares. As a child, I frequented my great grandaunt's house by the ridge of Tagaytay City, overlooking **Taal Lake**. Every year, I was awestruck by the beauty of **Taal Volcano**, its 1.5 km by 0.3 km crater, and the serenity of **Taal Lake**.

**Ken Jennings** reported **Taal Lake** was once part of the ocean a few hundred years ago. It was an arm of **Balayan Bay**, which opens to the West Philippine Sea. During the 18th century, a series of eruptions filled in the entrance to the inlet, isolating it from the ocean except for one narrow river. Jennings also alludes to the **Taal** tale that begins with the **Taal** peak's current cone as an island rising out of the **Lake Caldera**, which is called **Volcano Island**. The smaller crater of **Volcano Island** is now filled with rainwater. Yellow Lake or **Main Crater Lake** is more than half a mile across, making it the world's largest "double" lake: "It's a lake on an island on a lake on an island."

The Batangas locals sometimes claim that a rock outcropping from the **Main Crater Lake**, called Vulcan Point, is the world's largest "triple" island: "An island in a lake on an island in a lake on an island."

In the middle of **Taal Lake** sits an island called the Volcano Island. On the Volcano Island is a volcano named **Taal Volcano**. The volcano's crater formed another lake (Yellow Lake/**Main Crater Lake**). Thus, there is a lake (the Yellow/Main Crater Lake) within a volcanic crater

(**Taal Volcano**) on an island (the Volcano Island) in a lake (**Taal Lake**) in an island (Luzon).

When viewing this complexity from the Tagaytay Ridge, the **Taal Volcano in Taal Lake** view is one of the most picturesque locations in the Philippines.



The Main Crater. Photo Credit: Conde Nast Traveler

The **Taal Volcano** is the world's smallest active volcano. It is only 1,000 ft tall. The last eruption was in October 1977. It has had 33 recorded eruptions. Volcanic eruptions of strong intensities sometime between 500,000 and 100,000 years ago formed a volcanic caldera, known as the **Taal Caldera**, and **Taal Lake** fills this caldera with fresh water.

A Caldera is a large, bowl-shaped volcanic depression. A Caldera forms when the top of a volcanic cone collapses into the space left after magma is ejected during a violent volcanic eruption. Its diameter is many times that of the original vent. The term Caldera is Spanish for Caldron.

**Pia Ranada** reported not many are aware that 264 years ago, **Taal Volcano** experienced a devastating eruption lasting almost 7 months. The 1754 eruption is to date **Taal Volcano's** biggest eruption. Beginning on 15-May-1754 and ending on 5-December-1754, it buried 4 Batangas towns under ash, volcanic rocks, and water. It brought about days of ink-black darkness and changed the topography and characteristics of the **Taal Volcano** and lake system. **Ranada** further elaborated about the aftermath of the 1754 eruption stating that the nearby **Pansipit River**, which connects **Taal Lake** to **Balayan Bay** and the West Philippine Sea, was partially buried. River and lake waters displaced by the ejected debris submerged, not only Taal, but also the cities of Old Lipa, Tanauan, and Sala.

It has been over a hundred years since the 1754 eruption of **Taal Volcano**, and newer towns have since emerged. These are Talisay (1869), Cuenca (1877), Alitagtag (1910), Mataasnaakahoy (1932), Agoncillo (1949), San Nicolas (1955), Laurel (1961), Santa Teresita (1961), and Balete (1969).

**Laguna de Bay** is the Philippine's largest lake. **Lake Lanao** is the second largest, and **Taal Lake** is the third largest lake. Taal Lake is well renowned overseas because of two species of fish that can only be found there. These are the **Maliputo** (*Caranx ignobilis*) and the overharvested **Tawilis** (*Sardinella tawilis*). A lesser-known endemic fish species to **Taal Lake** are two **Goby** species (*Gnatholepis volcanus* and *Rhinogobius flavoventris*). The rare **Garman's Sea Snake** (*Hydrophis semperi*) also called the Lake Taal Sea Snake, is a black and white fresh water sea snake that is only found in Taal Lake. The Bull Sharks (*Carcharhinus leucas*) used to be part of Taal Lake's once-diverse ecosystem but were extirpated by the locals by the 1930s.

**Sofia Alaina** and **Carmelita Rebanco**s reported in the *Journal of Nature Studies* that **Maliputo** is endemic to **Taal Lake**, and is a catadromous fish that breeds and spawns in estuarine waters. These waters have a mixture of marine and fresh waters and found in river mouths and mangroves. A catadromous fish lives in fresh water and enters salt water to spawn. Most of the eels are catadromous. The **Maliputo** spawns in **Balayan Bay** and its fingerlings migrate and swim upstream through the Pansipit River to seek fresh water in **Taal Lake**.

The **Talakitok** or **Muslo**, is a saltwater fish that is usually found in mangroves and river mouths. They are called **Maliputong Labas** when they are found in the **Pansipit River**.

The **Tawilis** sardine measures 15 centimetres in length and weighs less than 30 grams. **Tawilis** is the only *Clupeidae* family of fish that inhabits fresh water. A *Clupeidae* is a large family of soft ray-finned fishes (Isospondyli) that include the Herrings, Sardines, Shads, Menhaden, all having a forked tail. Dr. Rafael D. Guerrero III reported in *Agriculture Magazine* that the Tawilis is the only fresh water sardine in the world.

Of the two **Gobies** (*Gnatholepis volcanus* and *Rhinogobius flavoventris*) in **Taal Lake**, it is the *Rhinogobius flavoventris* that is wildly traded as an aquarium fish. The *Gnatholepis volcanus* is a tropical fish, which is the only marine genus that includes mostly estuary-dwelling and freshwater fish.

The Philippine **Garman's Sea Snake** (*Hydrophis semperi*) species is only one of two "true" sea snake species that are known to live entirely in freshwater; the other sea snake (*Hydrophis sibauensis*) is from Sibua River, Borneo, Indonesia.

However, there are threats to the survival of **Taal Lake's** indigenous fish. It is alarming that **Tilapia** fish cage farming is seriously threatening the existence of **Maliputo** fish, **Tawilis** sardines, and other fish that are endemic to **Taal Lake**.

*Agriculture Magazine* (March, 2018) reports about **Nile Tilapia** Farming in **Taal Lake**, Batangas, which had began in the 1980's. Tilapia fingerlings are stocked at 50,000 to 200,000 per cage for culture periods of 6 to 8 months. Intensive feeding of the fish is done with commercial pellets that either sink or float. One result of **Tilapia** Farming in fish cages is massive fishkills due to poor water quality as a result of low dissolved oxygen and high levels of toxic gases in the water. There are also **Milkfish** (*bangus*) grown in fish cages. Millions of Filipinos rely on Tilapia and Bangus for food. However, the over-crowding of **Taal Lake** with fish cages, combined with over-crowded fish cages as well, is infamous for damaging the overall water quality, whether they are staked in the open seas, coastlines, rivers, or lakes.

The presence of the **Jaguar Guapote** (*Parachromis managuensis*) is another serious threat to the fish in **Taal Lake**. It is a predatory piscivorous fish native to the Atlantic waters of central and south America, including Florida, and eats other fish. The illegal introduction of this invasive species into the **Taal Lake** is quite unfortunate for all the fish in the lake and its tributaries. Edna Agasen, et.al. in a study published in 2008 had anticipated that this alien fish could become abundant in all areas of **Taal Lake** because of the lavish growth of aquatic vegetation which serves as their spawning and feeding grounds, abundant natural food, and a favorable environment. This may cause serious damage to native fish communities through direct predation.

Above all, pollution is the major threat to **Taal Lake**. Human waste and garbage disposal emanating from the vacation resorts and residents in nearby towns, as well as animal waste from the thriving piggery industry in the same nearby towns all resulting in fishkills, are the main sources of pollution in **Taal Lake**. On 30-May-2011, the Bureau of Fisheries and Aquatic Resources (BFAR) announced a fish kill of 750 metric tons. The pollution problem needs to be addressed as soon as possible to prevent endangering the fish endemic to Taal Lake, and the untimely destruction of **Taal Lake's** panoramic landscape and its waters.

**Protected area and management.** Proclamation No. 235 declared the Taal Lake basin as the Taal Volcano National Park on 22-July-1967. Under *Republic Act 7586*, known as the *NIPAS Act of 1992*, the area was reestablished as the **Taal Volcano Protected Landscape** by Proclamation No. 906 on 16-October-1996. The protected area is managed by a **Protected Area Management Board (PAMB)**. A Management Plan was crafted and approved by the **PAMB** in 2009 and now serves as the blueprint for lake conservation.



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Agriculture Undersecretary Waldo R. Carpio (right) exchanges tokens with Ministry of Agriculture Head of the Department of International Cooperation Maksim Markovich during the 1st Joint Working Group Meeting on Agricultural Cooperation in Moscow on 5-December-2018. Photo Credit: V. Cara.

# Philippine Fishery Products Can Now Enter Russia

by Philippine News Agency

**P**hilippine fishery products can now enter the Russian market after the conclusion of talks between agriculture officials from the Philippines and Russia on 5-December-2018 in Moscow.

Agriculture Undersecretary **Waldo R. Carpio** said that three Philippine fisheries exporters have been granted accreditation to export fisheries products to Russia.

The announcement was made following the first-ever **Philippines-Russia Joint Working Group Meeting on Agricultural Cooperation** held in Moscow on December 5.

The Joint Working Group meeting is a direct result of the Memorandum of Understanding signed by Philippine Agriculture Secretary Emmanuel Piñol and his counterpart, then Russia's Minister of Agriculture Aleksandr Tkachov, during the landmark visit of President Rodrigo Duterte to Moscow in May 2017.

*"We give credit to the President's policy of engaging Russia and other non-traditional partners for opening access to a very important market for our fisheries exports,"* said Agriculture Undersecretary **Carpio**.

*"We look forward to continuing and expanding this symbiotic relationship between the Philippines and Russia,"* **Carpio** added.

**Bigfish Foods** (canned fish), **Century Pacific Food** (canned fish), and **RDEX Food International** (fresh/frozen/chilled fish) have been

cleared to export their products to the Russian market after undergoing stringent inspections by the **Russian Federal Service for Veterinary and Phytosanitary Surveillance**.

The same companies may now also export to Armenia, Belarus, Kazakhstan, and Kyrgyzstan under the Eurasian Economic Union single market.

Agriculture Undersecretary **Carpio** led a delegation composed of Dr. **Maria Araceli Escandor** and Kristine Yap of the Department of Agriculture (DA), Dr. **Imelda Santos** of the Bureau of Animal Industry, Dr. **Dennis Tiotangco** of the Bureau of Fisheries and Aquatic Resources, and Dr. **Paulo Silarde** of the National Meat Inspection Service.

They were joined by Second Secretary and Consul **Jeffrey Valdez**, Third Secretary and Vice Consul **Catherine Alpay**, and Cultural Officer **Vida Cara** of the Philippine Embassy in Moscow, Commercial Counsellor **Kristine Umali**, and Agricultural Attaché **Jose Laquian**.

While in Russia, Undersecretary **Carpio** and his delegation will also have meetings in Moscow and St. Petersburg with several potential importers of Philippine fishery products.

From Russia, the DA team will proceed to Minsk in Belarus to meet with their counterparts to discuss technical cooperation and also meet with potential importers. ⚓

# The Fishing Industry in the Philippines

by Vicky Viray Mendoza



**N**ational Fishery is composed of **Commercial, Municipal, and Aquaculture Fishery**. The **Municipal Fishery** sector is composed of **Municipal Marine** and **Municipal Inland Fishery**. **Aquaculture** is composed of **Mariculture** (Seaweed, Oyster, Mussel), Marine Fish Cage, Marine Fish Pen; Brackishwater Fish Cage, Brackishwater Fish Pen, Brackishwater Fish Pond; Freshwater Fish Cage, Freshwater Fish Pen, Freshwater Fish Pond; Small Farm Reservoir, and Rice Fish.

The annual average share of the main fishery sectors as a % of total Fishery value shows: **Commercial Fishery**, 27%; **Municipal Fishery**, 34%; and **Aquaculture**, 39%. These fishing sectors are distinct and separate, but they are actually competitors.

The **6 Major Fishing Grounds**: **West Sulu Sea** near Palawan (30K sq km); **Moro Gulf** near Zamboanga del Sur, Maguindanao, and Sultan Kudarat (12.9K sq km); **South Sulu Sea** near Zamboanga del Sur, Sulu, and Tawi-Tawi (12.6K sq km); **East Sulu Sea** near Zamboanga del Norte and Negros (9.3K sq km); **Sibuyan Sea** near Aklan, Masbate and Romblon (8.1K sq km); and **Bohol Sea** (7.9K sq km).

The **7 Main Landing Fish Ports**: **GenSan, Navotas, Iloilo, Lucena, Zamboanga, Davao**, and **Sual** receive 20% of fish landings. The rest land in small municipal ports. **GenSan** and **Navotas** receive majority of the landings for having more processing facilities nearby. The **GenSan Fishport** accounts for 42% of Total Marine Tuna landings. **Marine Tuna** is the largest export seafood commodity comprised of Bigeye, Frigate, Skipjack, and Yellowfin as the major Tuna species. Yellowfin is considered "Sashimi-grade" and highly sought after in the international market. Tuna export share however dropped by 6%, from 44% in 2014 to 38% in 2016. Shrimps and *Tiger Prawn* export share rose by 5% in the same period.

Over the period **2011-2016**, herewith are the **annual average** volume and values of the **Philippine Fishery** production. The leading provinces with their main species of production by volume (**Metric Tons**), and by value (**Php'000**) are cited. Tables are provided such that the distant placers are also included for the purpose of identifying development areas for potential government support or private sector investment towards higher production growth and financial returns. Support may come in the form of grants, low interest loans, new drying and cooling facilities, low cost fingerlings; and fish meal and pellets, which are mostly imported. The lack of feeds impacts production level across all farmed species.

## NATIONAL FISHERY

Top 10 Fishery Provinces			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Palawan	551,641	Pampanga	19,567,208
Tawi-Tawi	356,800	South Cotabato	18,283,321
Sulu	315,559	Pangasinan	12,568,820
Zamboanga City	258,392	Palawan	11,038,445
South Cotabato	191,581	Quezon	8,254,721
Pampanga	161,542	Zamboanga City	8,279,230
Zambo-Sibugay	137,494	Sulu	4,597,521
Pangasinan	131,218	Maguindanao	3,745,522
Quezon	128,923	Tawi-Tawi	3,648,034
Maguindanao	125,904	Zambo-Sibugay	2,781,604



Palawan is the highest producer overall at 12% of Total Fishery. Tawi-Tawi and Sulu follow due to various aquaculture production. Pampanga brings in top value due to brackishwater mud crab, freshwater tilapia, rice fishery, and aquaculture; South Cotabato by marine tuna; Pangasinan by talaba and marine bangus; and Palawan by municipal marine and aquaculture. Not in the top 10 but Lanao del Norte brings in even higher return per unit. Total Fishery value is comprised of about 47% Marine Fishery and 53% Inland Fishery. National Fishery averaged 4.7M MT, and valued P236M.

**COMMERCIAL FISHERY**

The top producers in volume and value are South Cotabato and Zamboanga City due to Frigate, Skipjack, and Yellowfin Tuna. However, Indian Sardines (Tamban) is the top commercial fish produce, while Skipjack (Gulyasan) is the highest value contributor. Yellowfin Tuna generates the highest return per unit while Negros Occidental brings in the most value per unit. National Commercial Fishery averaged 1.1M MT, and valued P64M.

**MUNICIPAL FISHERY**

- ♦ The core of Municipal Fishery is Bigeyed Scad (Matambaka) at 6% of total Municipal Fishery. Palawan is the leading producer due to predominance in Municipal Marine fishery. National Municipal Fishery averaged 1.25M MT, and valued P80.5M.

Top 10 Commercial Fishery Provinces			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
South Cotabato	224,412	South Cotabato	17,754,019
Zamboanga City	163,136	Zamboanga City	5,681,800
Metro-Manila	98,109	Metro-Manila	5,197,808
Cebu	77,234	Quezon	4,392,904
Sulu	74,618	Iloilo	3,030,001
Quezon	54,817	Sulu	2,587,227
Iloilo	34,699	Negros Occ.	2,376,945
Zambo del Sur	33,042	Zambo del Sur	2,202,268
Palawan	30,991	Cebu	1,777,392
Negros Occ.	27,953	Palawan	1,209,443

Top 10 Municipal Marine Fish		
Commercial Species	Production(MT)	Value (PHP'000)
Bigeyed Scad (Matambaka)	185,858	4,875,372
Indian Sardines (Tamban)	177,949	10,088,722
Roundscad (Galunggong)	176,294	9,895,925
Frigate Tuna (Tulingan)	82,684	9,051,177
Yellowfin Tuna (Tambakol)	74,602	4,668,559
Anchovies (Dilis)	47,272	1,585,371
Indian Mackerel (Alumahan)	44,447	2,977,234
Fimbriated Sardines (Tunsoy)	34,595	2,396,793
Squid (Pusit)	23,527	1,065,537
Skipjack (Gulyasan)	21,272	1,174,181

- ♦ In Municipal Marine fishery, Palawan and Iloilo lead production and bring in the highest values. Although not in the top 10, Surigao del Sur generates a higher return per unit. Among the species, Yellowfin tuna brings in the highest return per unit. National Municipal Marine Fishery averaged 1.1M MT, and valued P71.6M.

Top 10 Municipal Marine Provinces			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Palawan	133,942	Palawan	6,793,806
Iloilo	48,717	Iloilo	4,020,757
Masbate	45,329	Negros Occ.	3,182,531
Zamboanga City	40,022	Masbate	2,950,616
Tawi-Tawi	38,286	Surigao del Norte	2,757,875
Negros Occ.	38,150	Cebu	2,457,541
Zambo del Norte	36,623	Zamboanga City	2,340,904
Surigao del Norte	35,095	Capiz	2,248,840
Capiz	33,431	Tawi-Tawi	1,779,418
Cebu	33,145	Zambo del Norte	1,279,283

- ♦ There are more high-producing provinces in Municipal Inland than in Municipal Marine, but smaller in tonnage and value. Rizal leads production, Maguindanao brings top value, and Cagayan generates the highest return per unit. Suso is the top produce, tilapia gives top value, and dalag offers the highest return per unit. National Municipal Inland Fishery averaged 195.6K MT, and valued P8.8M.

Top 10 Municipal Inland Fish		
Commercial Species	Production(MT)	Value (PHP'000)
Snail (Suso)	52,529	433,230
Tilapia	48,082	2,742,020
Carp (Carpa)	14,506	876,255
Big Head Carp	11,787	346,428
Mudfish (Dalag)	10,671	889,419
Milkfish (Bangus)	6,610	424,668
Gourami (Gurami)	6,184	256,260
Freshwater Catfish (Hito)	5,945	468,936
Freshwater Shrimp (Hipon)	4,909	440,634
Freshwater Gobi (Biya)	4,884	335,523

Top 10 Municipal Inland Provinces			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Rizal	49,570	Maguindanao	1,290,425
Laguna	38,019	Pampanga	810,427
Maguindanao	18,210	Rizal	809,583
North Cotabato	14,608	North Cotabato	791,741
Pampanga	10,215	Laguna	680,267
Sultan Kudarat	9,183	Cagayan	626,608
Lanao del Sur	8,000	Lanao del Sur	581,186
Cagayan	7,669	Sultan Kudarat	427,694
Iloilo	4,826	Iloilo	281,579
Camarines Sur	3,793	Camarines Sur	236,537

## AQUACULTURE

The **Autonomous Region in Muslim Mindanao (ARMM)** tops in **aquaculture** production at 27% of total Aquaculture. The **Liguasan Marsh** and **Bulusan Lake** in **Maguindanao** are home to tilapia, catfish, and mudfish in fish cages and fish pens. But **Central Luzon Region** contributes the most value. By province, **Palawan** leads due to seaweed; **Tawi-Tawi** and **Sulu** follow. By value, **Pampanga** leads due to freshwater sugpo and tilapia; **Pangasinan** due to marine *bangus*; and **Batangas** due to tilapia and freshwater bangus. **Bulacan** and **Negros Occidental** bring in the highest value per unit. *Seaweed* is the top produce, *Bangus* brings top value, and *tiger prawn* and *mudcrab* generate the highest values per unit. The top 10 produce do not necessarily bring the relative value per unit. There might be more volatility in **aquaculture**. By value share, **Brackishwater Fishpond** holds the biggest share with an increase from 50% to 52%, while *Seaweed* has the biggest drop from 12% to 9%. **National Aquaculture** averaged 2.4M MT, and valued P91.7M.

Top 10 Aquaculture Fishery		
Commercial Species	Production(MT)	Value (PHP'000)
Seaweed	1,611,790	9,334,720
Milkfish ( <i>Bangus</i> )	388,854	34,436,587
Tilapia	261,032	18,567,782
Tiger Prawn ( <i>Sugpo</i> )	48,611	19,707,815
Oyster ( <i>Talaba</i> )	21,051	162,347
Mussel ( <i>Tahong</i> )	20,747	243,677
Carp ( <i>Carpa</i> )	17,297	517,226
Mud crab ( <i>Alimango</i> )	16,183	5,121,969
Pac-White Shrimp ( <i>Vannamei</i> )	7,325	1,656,123
Catfish ( <i>Hito</i> )	3,580	958,354

Top 20 Aquaculture Provinces			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Palawan	386,528	Pampanga	18,605,260
Tawi-Tawi	315,932	Pangasinan	11,388,253
Sulu	219,891	Batangas	6,191,437
Pampanga	149,324	Lanao	6,965,819
Bohol	108,749	Bulacan	4,264,894
Pangasinan	115,097	Capiz	3,568,749
Zambo Sibugay	108,809	Palawan	3,027,914
Maguindanao	100,022	Rizal	2,279,483
Batangas	75,898	Negros Occ.	2,448,549
Antique	74,149	Zambo del Sur	2,152,906
Lanao del Norte	55,595	Davao del Sur	1,704,619
Zamboanga City	55,183	Tawi-Tawi	1,222,033
Rizal	49,109	Zambo Sibugay	1,187,687
Capiz	45,357	Sulu	1,089,203
Zambo del Norte	39,330	Maguindanao	1,672,664
Bulacan	38,928	Bohol	700,830
Zambo del Sur	35,209	Zamboanga City	348,590
Negros Occ.	27,732	Zambo del Norte	348,583
Davao del Sur	22,922	Antique	327,905
Surigao del Sur	16,682	Surigao del Sur	280,682

As a % of Total Aquaculture Value		
Types of Aquaculture	Avg 2011-13	Avg 2014-16)
Brackishwater Fish Pond	50%	52%
Seaweed	12%	9%
Freshwater Fish Pond	11%	12%
Marine Fish Cage	11%	9%
Freshwater Fish Cage	8%	6%
Freshwater Fish Pen	4%	5%
Marine Fish Pen	2%	4%
Others	2%	1%

## MARICULTURE

*Talaba* and *tahong* production are low compared to *seaweed*, but their contributing values are increasing.

- Talaba* is most prevalent in **Capiz** and **Bulacan**, and both contribute the highest value. But **Aklan** at 8th place brings in the highest return per unit. National **Oysters** averaged 21.1K MT, valued P179M. **Oysters** are 1.3% of total **Mariculture** value.

Top 10 Oysters(Talaba) Provinces			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Capiz	6,545	Bulacan	45,520
Bulacan	4,912	Capiz	34,180
Negros Occ.	2,125	Negros Occ.	21,693
Iloilo	1,906	Pangasinan	18,125
Pangasinan	1,450	Cavite	16,967
Cavite	1,145	Iloilo	11,264
Cagayan	603	Aklan	8,601
Aklan	503	Bohol	6,515
Bohol	480	La Union	6,251
La Union	428	Cagayan	3,604

- Tahong* is prevalent in **Capiz**, **Samar**, and **Cavite** although their contributing values are in the reverse order. **Metro-Manila** brings in the highest value per unit. National **Mussels** averaged 20.7K MT, valued P243.7M. **Mussels** are 1.3% of total **Mariculture** value.

Top Mussels (Tahong) Provinces			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Capiz	7,343	Cavite	94,069
Samar	5,307	Samar	52,082
Cavite	2,526	Capiz	42,719
Bataan	885	Bataan	22,169
Pangasinan	580	Metro-Manila	17,904
Negros Occ.	515	Negros Occ.	6,243
Metro-Manila	306	Pangasinan	5,585
Aklan	288	Sorsogon	5,558
Sorsogon	263	Aklan	4,117



3. **Seaweed** takes the lead at 67% of national **Aquaculture**. **Palawan**, **Tawi-Tawi**, and **Sulu** are the top producers, and the highest value contributors. **Camarines Sur** generates the highest return per unit although it ranks 14th place. **Seaweed** is prevalent in many provinces, thus, contributes a high value overall despite a downward trend in production. National **Seaweed** averaged 1.6M MT, valued at P9.3M. **Seaweed** is 97.4% of total **Mariculture** value.

distant follower. By value, **Sarangani** brings in the highest value per unit, thus **South Cotabato** moved down a notch. Not in the top 10 is **Negros Occidental** with an even higher return per unit. **National Marine Fish Cage** averaged 99.7K MT, and valued P10.8M.

Top 15 Seaweed Provinces			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Palawan	386,197	Palawan	2,579,116
Tawi-Tawi	315,932	Tawi-Tawi	1,837,036
Sulu	219,872	Sulu	1,063,344
Bohol	105,858	Maguindanao	627,508
Zambo Sibugay	103,163	Zambo Sibugay	485,782
Maguindanao	90,113	Antique	389,549
Antique	73,762	Bohol	316,621
Zamboanga City	53,930	Camarines Norte	270,551
Zambo del Norte	37,857	Zambo del Norte	245,844
Camarines Norte	32,364	Zamboanga City	237,541
Lanao Del Norte	32,340	Lanao del Norte	206,845
Quezon	32,088	Quezon	191,359
Zambo del Sur	25,561	Zambo del Sur	190,495
Camarines Sur	20,746	Camarines Sur	186,013
Surigao del Sur	15,429	Surigao del Sur	96,423

Top Marine Fish cage			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Pangasinan	71,214	Pangasinan	7,154,043
Davao del Sur	10,293	Davao del Sur	924,585
Zambales	6,181	Zambales	645,711
Davao del Norte	2,400	Davao del Norte	215,026
Misamis Oriental	2,111	Misamis Oriental	199,175
South Cotabato	1,152	Sarangani	108,169
Sarangani	977	South Cotabato	107,126
Davao City	860	Davao City	60,646

♦ The core of **Marine Fish Pen** is *bangus* at 99% of total **Marine Fish Pens**. **Pangasinan** is the top producer and highest value contributor. **Davao del Sur** is a far second. **Surigao del Norte** leads in *spiny lobster and grouper*, and brings in the highest value per unit. **National Marine Fish Pen** averaged 17.4K MT, and valued P1.8M.

Top Marine Fish pen			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Pangasinan	7,343	Pangasinan	94,069
Davao del Sur	5,307	Davao del Sur	52,082
Negros Occ.	2,526	Negros Occ.	42,719
Iloilo	885	Surigao del Norte	22,169
Capiz	580	Masbate	17,904
Masbate	515	Iloilo	6,243
Surigao del Norte	306	Capiz	5,585

**MARINE FISHERY**

♦ The core of **Marine Fish Cage** is *bangus* at 99% of total **Marine Fish Cage**. **Pangasinan** is the top producer of marine **bangus**, and the highest value contributor as well. **Davao del Sur** is a



- By species, *Indian Sardines (Tamban)* leads in **Marine Fishery**, while *Skipjack (Gulysan)* contributes top value. *Yellowfin Tuna (Tambakol)* brings in the highest return per unit. Not in the top 10 but *Spanish Mackerel (Tanigue)* generates an even higher return per unit. Total **Marine Fishery** averaged 1.7M MT, and valued P109.7M.

## BRACKISHWATER FISHERY

- The core of **Brackishwater Fish Cage** is *bangus* at 80% of total **Brackishwater Fish Cage**. **Agusan del Norte** is the top producer and the highest value contributor. **Cagayan** is a distant second but leads in *tilapia*. **Ilocos Sur** brings in the highest return per unit. **National Brackishwater Fish Cage** averaged 976 MT, and valued P109.8M

Top 10 Brackishwater Fish cage			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Agusan del Norte	619	Agusan del Norte	59,872
Cagayan	109	Cagayan	15,263
Ilocos Norte	95	Ilocos Norte	13,302
La Union	66	Ilocos Sur	7,294
Davao del Norte	38	La Union	7,242
Leyte	21	Davao del Norte	5,265
Northern Samar	12	Leyte	3,165
Ilocos Sur	9	Aklan	2,469
Aklan	6	Northern Samar	1,433
Surigao del Sur	5	Surigao del Sur	445

- The core of **Brackishwater Fish Pen** is *bangus* at 96% of total **Brackishwater Fish Pen**. **La Union** is the top producer and the highest value contributor. **Aklan** is a far second. **Samar and Ilocos Sur** bring in the highest values per unit; and **Biliran** loses its 10th place to **Iloilo's** higher value generation. Not in the top 10 is **Siquijor** but brings in an even higher return per unit. **National Brackishwater Fish Pen** averaged 1.1K MT, and valued P108.6M.

Top 10 Brackishwater Fish pen			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
La Union	979	La Union	100,786
Aklan	36	Aklan	3,375
Northern Samar	12	Northern Samar	1,336
Pangasinan	3.7	Pangasinan	353
Surigao del Sur	3.1	Surigao del Sur	314
Ilocos Sur	2.2	Ilocos Sur	276
Agusan del Norte	1.3	Agusan del Norte	96
Bohol	0.7	Samar	70
Samar	0.5	Bohol	64
Biliran	0.3	Iloilo	51

- The core of **Brackishwater Fish Pond** is *bangus*, but *sugpo*, *mud crab*, and *tilapia* also have high levels of volume and

value. By share: *bangus* is 48%, *Sugpo* 15%, *mud crab* 5%, and *tilapia* 5% of total **Brackishwater Fish Pond**. **Pampanga** is the main producer of *sugpo*, *mud crab*, *tilapia*, and *bangus*, and the highest value contributor overall. **Lanao del Norte** leads in *sugpo* and *mud crab*. **Zamboanga del Sur** leads in tiger prawn. **Capiz** and **Sorsogon** lead in *bangus* and *tilapia*. **Pangasinan** and **Bulacan** are high producers of *sugpo* and *bangus*. **Iloilo**, **Negros Occidental** and **Quezon** are also high producers of *bangus*. **Misamis Occidental** brings in the highest value per unit overall. **National Brackishwater Fish Pond** averaged 323K MT, valued P48.1M.

Top Brackishwater Fish pond			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Pampanga	47,842	Pampanga	11,759,386
Capiz	31,259	Lanao del Norte	6,717,384
Bulacan	31,068	Bulacan	4,024,484
Negros Occ.	24,698	Misamis Occ.	3,530,653
Iloilo	15,568	Capiz	2,968,767
Lanao del Norte	22,731	Pangasinan	2,593,984
Pangasinan	22,563	Negros Occ.	1,938,672
Quezon	18,809	Quezon	1,479,609
Misamis Occ.	10,197	Iloilo	1,300,132
Bataan	9,731	Bataan	1,251,183

## FRESHWATER FISHERY

- The core of **Freshwater Fish Cage** is *bangus* and *tilapia*, at 85% and 17% of total **Freshwater Fish Cage**, respectively. **Batangas** is the lead producer and highest value contributor due to *bangus* and *tilapia*. **Laguna** and **Camarines Sur** follow. **Rizal** and **Laguna** lead in carp production. **Albay** and **Benguet** bring in the highest returns per unit, while **Metro-Manila** loses its 8th place to **Maguindanao**. **National Freshwater Fish Cage** averaged 97.4K MT, valued at P19M.

Top 10 Freshwater Fish cage			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Batangas	74,946	Batangas	6,055,715
Laguna	8,827	Laguna	522,886
Camarines Sur	5,445	Camarines Sur	385,925
Rizal	2,390	Albay	276,650
Albay	1,983	South Cotabato	137,061
South Cotabato	1,600	Rizal	99,827
Ifugao	700	Ifugao	62,385
Metro Manila	463	Isabela	27,075
Isabela	310	Benguet	25,110
Benguet	250	Maguindanao	22,006

- The core of **Freshwater Fish Pen** is *bangus*, *tilapia* and *carp* at 40%, 34% and 24% of total **Freshwater Fish Pen**, respectively. **Rizal** leads *tilapia*, *bangus* and *carp* production, and contributes the highest value overall. **Sultan Kudarat**, and **Maguindanao**



follow. Outside the top 5, the rest pale in comparison. By value, **Maguindanao** brings in the highest return per unit. **National Freshwater Fish Pen** averaged 41.3K MT, and valued P3.4M.

Top 5 Freshwater Fish pen			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Rizal	46,719	Rizal	2,179,655
Sultan Kudarat	7,706	Maguindanao	614,135
Maguindanao	6,145	Sultan Kudarat	466,813
Metro-Manila	1,313	Metro-Manila	76,380
Laguna	659	Laguna	31,900

- The core of **Freshwater Fish Pond** is *tilapia*, comprising 98% of total **Freshwater Fish Pond**. **Pampanga** leads in *tilapia* production, as well as in value contribution. **Isabela** and **Iloilo** bring in the highest value per unit. Not in the top 10 are **Nueva Viscaya** and **Ifugao** but they contribute even higher returns per unit. **National Freshwater Fish Pond** averaged 146.2K MT, and valued P10.4M.

Top 10 Freshwater Fish pond			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Pampanga	101,426	Pampanga	6,859,013
Pangasinan	7,214	Isabela	507,689
Tarlac	6,900	Tarlac	483,812
Isabela	5,864	Pangasinan	458,134
Nueva Ecija	4,413	Nueva Ecija	311,175
Bulacan	2,946	Bulacan	211,327
Davao del Sur	1,817	Davao del Sur	154,282
Iloilo	1,676	Iloilo	146,247
Bataan	1,203	Bataan	82,662
Camarines Sur	1,082	Camarines Sur	75,376

### SMALL FARM RESERVOIR

The core of **Small Farm Reservoir** is *tilapia* and hito at 84% and 5% of total **Small Farm Reservoir**, respectively. **Quirino** takes the lead due to *tilapia* and *mudfish*, and is the top value contributor as well. **Pampanga** is a close second for producing more types of fish (*tilapia*, *hito*, and *gourami*). By value, **Cagayan** at 5th place brings in the highest value per unit. But **Negros Occidental** although at 13th place, generates an even higher return per unit. **National Small Farm Reservoir** averaged 173 MT, and valued P12.3K.

Top 5 Small Farm Reservoir			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Rizal	46,719	Rizal	2,179,655
Sultan Kudarat	7,706	Maguindanao	614,135
Maguindanao	6,145	Sultan Kudarat	466,813
Metro-Manila	1,313	Metro-Manila	76,380
Laguna	659	Laguna	31,900

### RICE FISHERY

The core of **Rice Fishery** production is **Tilapia** at 81% of total **Rice Fishery**, which as a subsector of aquaculture is even smaller than **Small Farm Reservoir**. **Pampanga** takes the lead in rice fishery in volume and value, and is worth citing for producing 82% of total **Rice Fishery** comprising all the main species – *tilapia*, *carp*, *catfish*, *mudfish*, and *gourami*. By value, **Iloilo** brings in the highest return per unit. **National Rice Fishery** averaged 24 MT, and valued P1.4K.

Total Rice Fishery			
Top Provinces	Production(MT)	Top Provinces	Value (PHP'000)
Rizal	46,719	Rizal	2,179,655
Sultan Kudarat	7,706	Maguindanao	614,135
Maguindanao	6,145	Sultan Kudarat	466,813
Metro-Manila	1,313	Metro-Manila	76,380
Laguna	659	Laguna	31,900

### TRENDS AND RECOMMENDATIONS

In 2017, total **Fisheries** decreased slightly by 1.1%. **Commercial** fisheries decreased by 10.9% and **Municipal** fisheries decreased by 1%, while **Aquaculture** improved 5% in its harvests. Tuna accounted for 87% of total fish landings at GenSan Fishport amounting to 210,761 MT.

By mid 2018, total **Fisheries** production registered 1.133K MT, or 2.6% higher than mid 2017. **Commercial fishery** improved by 2%, **Municipal Marine** fishery declined by 3.4%, **Municipal Inland** fishery improved by 4.3%, and **Aquaculture** improved 5.8%. Of the major species, *milkfish*, *yellowfin tuna*, *roundscad* and *tiger prawn* outputs decreased, of which the highest decrease was in *yellowfin tuna* by 15%. In contrast, seaweed, *tilapia* and *skipjack* outputs increased, of which the highest increase was *tilapia* by 14%. The **GenSan Fishport** again takes the lead in **Commercial** fishery at P18M or 31% of total Fishery. Currently, the Philippines is the leading exporter of high-grade Yellowfin Tuna to the European Union despite depletion of stock. According to the **United Nations Food and Agriculture Organization's State of World Fisheries and Aquaculture 2018**, the Philippines rose to 10th place from 12th in marine capture production despite a 4.3% decline in volume, overtaking Chile and Myanmar.

There is a strong rationale to further support the increase in **seaweed** production: **Climate Change**. The latest finding is that **seaweed** can absorb CO<sub>2</sub> from the air and trap CO<sub>2</sub> in the water. **Seaweed** can capture CO<sub>2</sub> 20 times more than land forests can. The vast Amazon Forest captures 2 billion tons of CO<sub>2</sub> per year. Imagine what vast farms of large Kelp **seaweed** can do. Reducing CO<sub>2</sub> levels helps to combat the effects of global **Climate Change**. In addition, **Seaweed** serves as habitats for marine life, reduces ocean acidity, provides us a highly nutritious food source, and can be turned into biodegradable packaging.



Sources of Statistical Data: DA-BFAR, Bureau of Agricultural Statistics (BAS), Fisheries Statistics Division; and Philippine Statistics Authority.





AMOSUP - PTGWO - ITF

# Maritime Academy of Asia and the Pacific - Kamaya Point

Associated Marine Officers' and Seamen's Union of the Philippines-PTGWO-ITF

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### MAAP Profile

Geographic destiny has given the Filipino the innate talent to be an excellent seafarer. To enhance this natural skill, the Maritime Academy of Asia and the Pacific (MAAP) was established on January 14, 1998. The Academy stands on a 103-hectare property in Kamaya Point, Mariveles, Bataan.

The Associated Marine Officers' and Seamen's Union of the Philippines (AMOSUP) founded by the late Capt. Gregorio S Oca, capitalized and developed the Academy. The new AMOSUP President, Dr. Conrado F. Oca, heads the Academy's board of governors. The board is comprised of representatives from the private sector, the International Transport Workers Federation, the Filipino Association of Maritime Employers, the International Transport Workers Federation, the All Japan Seamen's Union, the International Mariners Management Association of Japan, the Norwegian Seafarers' Union, the International Maritime Employers' Committee, the Danish Shipowners' Association, the Norwegian Shipowners' Association, and the Japanese Shipowners' Association.

MAAP conducts shipboard training aboard T/S Kapitán Felix Oca, a 5020 DWT dedicated training ship capable of accommodating 180 midshipmen and 9 instructors in 30 air-conditioned cabins and six berths.

MAAP students are all scholars who are entitled to free tuition, board and lodging. They receive a comprehensive, up-to-date and well-rounded education that fully complies with the requirements of STCW 95 and the Commission on Higher Education (CHED). To ensure the highest standards of quality, MAAP adheres to a Quality Standards System that has been certified to comply with ISO 9001 version 2008, the Det Norske Veritas (DNV) Rules for Maritime Academies, and the Productivity and Standard Board (PSB) of Singapore.

The Academy offers three main programs: the Bachelor of Science in Marine Transportation (BSMT), Bachelor of Science in Marine Engineering (BSMarE) and the Bachelor of Science in Marine Transportation and Engineering (BSMTE). The curricula for the three courses were designed with the help of the United States Merchant Marine Academy at Kings Point, New York. Courses are four-year courses with sea phases scheduled in the third year. The BSMT curriculum requires a total of 192 units: 152 at MAAP, 40 practicum/shipboard units on board T/S Kapitán Felix Oca and/or a shipping company sponsorship. The BSMarE curriculum requires a total of 193 units: 153 at MAAP, 40 practicum/shipboard units on board T/S Kapitán Felix Oca and/or a shipping company sponsorship.



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Full Mission Engine Simulator



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### Our Curricula



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