



MARITIME REVIEW

A PUBLICATION OF THE MARITIME LEAGUE

Issue No. 17-6

November-December 2017



MERRY CHRISTMAS, MOTHER EARTH

- ▶ **Inter-Agency Cooperation for Marine Conservation**
- ▶ **Don't Widen the Plate**
- ▶ **Massive 'Balangay' Unearthed**
- ▶ **Manila Bay Coastal Cleanup**



Manila North Harbour Port, Inc. sets the pace as partner for growth



Manila North Harbour Port, Inc. (MNHPI) continues to scale a sterling record for port operations, steadfast on its modernization program for the Manila North Harbor.

Keen on providing the environment for growth, new equipment are set in place together with enhanced IT and management services.

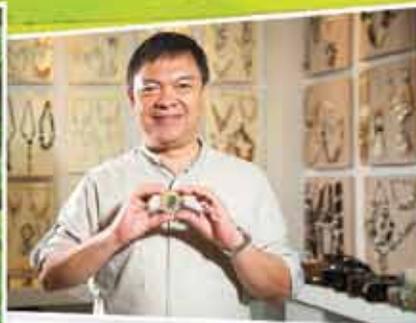
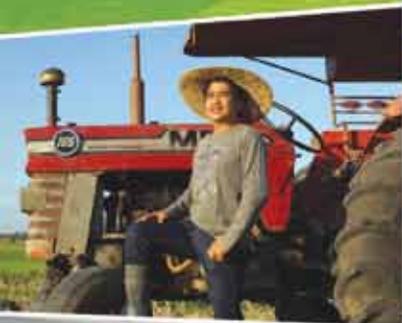


Berths now accommodate longer and bigger vessels. MNHPI productivity is at a record pace and port capacity has increased to 3 million TEUs.

With a global outlook, MNHPI continues to deliver quality services and improve port facilities, spurring economic growth and building the image of the Philippines as a premier maritime hub.



We bank on Filipino ingenuity and perseverance that have no bounds.
 We're about sharing hopes and ambitions, and nurturing them to life.
 We revere partnerships and the spirit of cooperation as keys to success.
 We believe in the Filipinos' aspiration of triumph. We believe in YOU.
 Whatever your dream, whatever your goal, **we're here to HELP YOU GROW.**



Your partner in progress.
54 years and growing.



LANDBANK

Regulated by the Bangko Sentral ng Pilipinas
 Financial Consumer Protection Department
 (+632) 708-7087 / consumeraffairs@basp.gov.ph
 ASC REF NO. LD04P100417LW



landbankofficial



LBP_Official



www.landbank.com



THE MARITIME LEAGUE

CHAIRMAN EMERITUS
Hon. Fidel V Ramos

HONORARY CHAIRMAN
Hon. Arthur P Tugade

TRUSTEE AND PRESIDENT
Commo Carlos L Agustin AFP (Ret)

TRUSTEE AND VICE PRESIDENT
VAdm Eduardo Ma R Santos (Ret)

TRUSTEE AND TREASURER
RAdm Margarito V Sanchez Jr AFP (Ret)

TRUSTEE AND AUDITOR
Commo Gilbert R Rueras PCG (Ret)

TRUSTEES

Edgar S Go
Delfin J Wenceslao Jr
Hermínio S Esguerra
Alberto H Suansing
VAdm. Emilio C Marayag (Ret)
Engr. Samuel T Lim
Philip L Ong
Capt Oscar D Orbeta (Ret)
Adm Wilfredo D Tamayo (Ret)
VAdm Edmund C Tan (Ret)

TRUSTEE AND BOARD SECRETARY
Commo Mariano S Sontillanos AFP (Ret)

ASSISTANT BOARD SECRETARY
John Paul D Agustin

HEAD, SECRETARIAT
Rosalie F Ricafort

MARITIME REVIEW

EDITORIAL BOARD

Managing Director
RAdm Quiricio V Evangelista AFP (Ret)

Chairman
VAdm Emilio C Marayag Jr AFP (Ret)

Members
Commo Mariano S Sontillanos AFP (Ret)
Capt. Tomas D Baino PN (Ret)
John Paul D Agustin

Executive Editor
Vicky Viray-Mendoza

The Maritime Review is published bimonthly on behalf of the Maritime League and is supplied to members as a part of their annual membership package. The opinions expressed by the writers do not necessarily reflect those of the Maritime League

✉ PNSLAI Compound
Bonifacio Naval Station (BNS)
Fort Bonifacio, Taguig City
🌐 www.maritimeleague.com
✉ marrev@maritimeleague.com
☎ +63 (2) 844-6918

Contents

📅	Maritime Calendar	5
📌	Feature Story	
	Merry Christmas, Mother Earth!	6
	DENR Calls for Inter-Agency Cooperation to Protect and Conserve Coastal and Marine Resources	7
👤	Chairman's Page	
	Don't Widen the Plate	8
👍	Words from FVR	
	Time to Reflect, Review and Reform	10
🕒	Maritime History	
	Massive Balangay 'Mother Boat' Unearthed in Butuan	12
🏛️	Maritime Law	
	Integrated Coastal Zone Management (ICZM), an Imperative for the Health and Livelihood, and Disaster Resilience for the ASEAN and Central Indo-Pacific Coastal Communities	15
🚢	Maritime Safety	
	Top 3 Innovations Improving Safety in the Marine Industry	20
	PRS Leads the Way in Probabilistic Damage Stability Analysis	22
	KR Launches Industry's First Survey & Audit Preparation Guide	23
⚙️	Ship Design & Shipbuilding	
	Selection Parameters for the Choice of Marine Diesel Engines for the Navy and Coast Guard Vessels	24
	Hempel Launches New Anti-fouling Coatings Delivering Outstanding ROI and Flexibility	27
🌿	Marine Environment	
	Operational Plan for The Manila Bay Coastal Strategy: Implementing the Supreme Court Order to Cleanup, Rehabilitate and Preserve Manila Bay	28
	Mangrove Forests in the Philippines	31
👤	Sustainable Fishery	
	Friend of the Sea Awards Italy's Generale Conserve for its Tuna Zero Waste Project	33



6



7



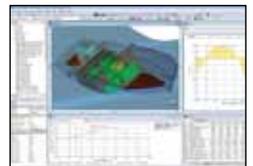
8



10



12



22



24



28

About the Cover:

Mother Earth, ravaged by natural causes in the past, faces yet another challenge from within: man-induced global warming.



Maritime Events Calendar

NOVEMBER '17

- 6-8 GLOBAL TRADE CONTROLS (THE HALLAM CONFERENCE CENTER, LONDON, UK)
- 7-8 CREWCONNECT GLOBAL(HOTEL SOFITEL PHILIPPINE PLAZA, MANILA, PH)
- 8 SHIP FINANCE & TRADE CONFERENCE (SHERATON ABU DHABI HOTEL & RESORT, ABU DHABI, UAE)
- 7-10 EUROPORT 2017 (ROTTERDAM AHOY, ROTTERDAM, NL)
- 13-14 OFFSHORE VESSEL CONNECT GLOBAL (RADISSON BLU PLAZA HOTEL, OSLO, NO)
- 15-17 GST NORTH AMERICA 2017 (SHERATON NEW YORK TIMES SQUARE HOTEL, NY, USA)
- 15-16 SHIPPING2030 NORTH AMERICA 2017 (SHERATON NEW YORK TIMES SQUARE HOTEL, NY, USA)
- 15-17 HYDROPOWER BALKANS 2017 (HILTON PODGORCIA, CRNA GORA, PODGORCIA, ME)
- 21-22 ASEAN COAST GUARDS' FORUM (MISIBIS BAY, ALBAY, PH)
- 22 MARITIME BREAKFAST FORUM #128 (DEPARTMENT OF TRANSPORTATION (DOTR), DOTR CONFERENCE ROOM, DORT, CYBER CITY, OSMENA RD, CLARK, PAMPANGA)**
- 28-29 SHIPTECH WITH SHIPPING2030 MIDDLE EAST (THE ADDRESS HOTEL DUBAI MALL, DUBAI, UAE)
- 29-30 11TH ARTIC SHIPPING SUMMIT (LONDON, UK)

DECEMBER '17

- 5-8 MARINTEC CN 2017 (SHANGHAI NEW INTERNATIONAL EXPO CENTER, SHANGHAI, CN)
- 6-8 SALVAGE & WRECK LONDON 2017 (LONDON, UK)
- 12-14 BWMTech 2017 (GRANGE TOWER BRIDGE HOTEL, LONDON, UK)

JANUARY '18

- 19 MARITIME BREAKFAST FORUM #129 (DEPARTMENT OF FOREIGN AFFAIRS(DFA), 2330 ROXAS BLVD., PASAY CITY)**
- 23-24 MEGA CARGO SHOW 2018 (HALL NO. V, BOMBAY EXHIBITION CENTRE, MUMBAI, IN)
- 24 VIETSHIP 2018 (VIETNAM NATIONAL CONVENTION CENTER, HANOI, VN)
- 30 LNG BUNKERING SUMMIT 2018 (NOVOTEL HOTEL, AMSTERDAM, NL)
- 30 MARITIME RECONNAISSANCE AND SURVEILLANCE TECHNOLOGY (CROWN PLAZA ROME, ROME, IT)

FEBRUARY '18

- 7-8 18TH BALLAST WATER MANAGEMENT CONFERENCE (SINGAPORE, SG)
- 8 MARITIME BREAKFAST FORUM #130 (CEBU PORTS AUTHORITY (CPA), NORTH RECLAMATION AREA, CEBU CITY, CEBU)**
- 21-22 12TH ARTIC SHIPPING SUMMIT (MONTREAL, CA)
- 28 9TH MAREFORUM INDONESIA 2018 (JAKARTA, IN)

MARCH '18

- 14-16 ASIA PACIFIC MARITIME 2018 (MARINA BAY SAND, SINGAPORE, SINGAPORE)
- 21-22 22ND MARITIME HR & CREW MANAGEMENT SUMMIT (SINGAPORE, SG)
- 21-23 SHIPPING 2030 EUROPE (RADISSON BLU SCANDINAVIA HOTEL, COPENHAGEN, DK)
- 21-23 GREEN SHIP TECHNOLOGY EUROPE (RADISSON BLU SCANDINAVIA HOTEL, COPENHAGEN, DK)
- 20 MARITIME BREAKFAST FORUM #131 (MARITIME ACADEMY OF ASIA AND THE PACIFIC (MAAP), KAMAYA POINT, MARIVELES, BATAAN)**

APRIL '18

- 24 LNG SHIPPING & CLEAN ENERGY FORUM (MARINA BAY SANDS, SINGAPORE, SG)
- 25 SEATRADE MARITIME AWARDS ASIA (SANDS EXPO AND CONVENTION CENTER, SINGAPORE, SG)
- 27 MARITIME BREAKFAST FORUM #132 (MARITIME INDUSTRY AUTHORITY (MARINA), TAFT AVE. COR. TM KALAW ST., ERMITA, MANILA)**

MAY '18

- 16-17 NAVIGATE 2018 (TURKU, FI)
- 22 7TH EDITION OF NAVALIA, INTERNATIONAL SHIPBUILDING EXHIBITION 2018 (PONTEVEDRA, ES)
- 25 MARITIME BREAKFAST FORUM #133 (PHILIPPINE NAVY (PN), HEADQUARTERS, PHILIPPINE NAVY, ROXAS BLVD, MANILA)**

JUNE '18

- 25 27TH WORLD GAS CONFERENCE, (WALTER E WASHINGTON CENTRE, WASHINGTON DC, USA)
- 27-29 PHILMARINE 2018 (SMX CONVENTION CENTER MANILA, MALL OF ASIA COMPLEX, PASAY CITY)

Merry Christmas, Mother Earth!

by VAdm Emilio C Marayag Jr AFP (Ret)



Many scientific researches indicate that some celestial objects collided with Mother Earth millions of years ago creating incredibly powerful explosions that led to life extinction of the dinosaurs and other pre-historic creatures. Recently there was news on a certain Planet X Nibiru that some predicted to hit the earth last month. While such risk of collision remains Mother Earth presently face a similar threat of catastrophe pose by her own inhabitants: global warming!

Studies on global climatic conditions showed strong relationship between the rise in earth's temperature and increased emission into the atmosphere of greenhouse gases (GHGs), like carbon dioxide, methane, nitrous oxide and chlorofluorocarbons. The frequent and substantial emissions from these GHGs produce heat beyond the earth's normal absorption capacity. The excess heat is stored in the atmosphere, terrestrial ecosystems and the oceans, thus creating an imbalance. This results in rising sea levels, stresses in fresh water supplies, threat of species extinction, increasing temperatures, and other detrimental impacts on human and natural systems.

Our planet's temperature changes due to natural causes such as volcanic eruptions and solar activities. Of note is the Mount Pinatubo eruption in 1991 when the earth's temperature went down by half degree Celsius. The Ice Age era lasting 10,000-30,000 years significantly reduced the earth's temperature and caused the sea level to fall some 120 meters from present level. But even as the polar temperatures rise to 3-5 degrees Celsius in subsequent warming periods the sea levels were still 4-9 meters higher than the current benchmark.

The past 200 years saw the proliferation of carbon dioxide (CO₂) emissions, the largest in volume among the GHGs. The Industrial Age starting in 1750 increased CO₂ emissions by a third to 400 parts per million (ppm) in 2013. Half of this increase occurred during the past 30 years. (Plants live at 150ppm CO₂ and doubling that would translate to an increased growth rate of 33% more.) Human population contributed most discharges of the GHGs into the atmosphere as people use fossil fuels in factories and electric power plants, utilize refrigerants for cooling homes and offices and for industrial purposes, cut trees for construction and paper manufacture, and put fertilizers, that emit nitrous oxide, to their crops and other agricultural produce.

Human GHGs discharges are ten times more than those coming from natural sources. In 2010 coal accounted for 41% of the GHG emissions while oil contributed 34%. These amounts are 49% higher than the figures recorded 10 years earlier. Scientists calculates that global temperature will rise by 0.2

degrees Celsius per decade for the next two decades and sea level will register 3.1 millimeters increase annually.

Alarmed by these climatic changes the United Nations in 1998 formed the Intergovernmental Panel on Climate Change (IPCC) to "review and assess scientific and other information on human contributions on climate change." In partnership with the World Meteorological Organization and UN Environment Program, IPCC made 5 Assessment Reports that raised concerns over Climate Change. It called on individual governments to reduce GHGs emissions, enact meaningful and strict energy legislation, and encourage citizens to change their mindset and ways towards sustainable living. Climatologist Helen Marcus powerful statement on global warming summarizes the IPCC's and other concerned parties' view: "Climate change is real, and we are killing our planet more everyday."

The IPCC initiatives, contained in the 2007 Kyoto Protocol and 2017 Paris Agreement, supported by other private groups, are slowly gaining positive responses. For example, in Singapore Professor Tommy Koh urges ASEAN banks to "align portfolios fully with the Paris Agreement" and influence business practices in approach to sustainable development where climate risks abound. In Africa a civilian-led organization helps their government in protecting and conserving the elephants and other endangered species in their territory. In the Philippines Department of Environment and Natural Resources (DENR) Secretary Roy Cimatu hosted in October 2017 the 12th session of Conference of Parties on Convention of Migratory Species and Wild Animals attended by some 1,000 participants from 93 countries. This conference came out with a Philippine-sponsored Manila Declaration to highlight the contributions of migratory wildlife to sustainable development in agriculture, forestry, fisheries, tourism, trade, transport and energy, and how to protect and conserve those creatures. Relatedly a Philippine cause-oriented group is urging the government to stop using coal to generate electricity.

These small steps taken by some countries may serve as reminders to others that our planet needs a concerted effort to reduce GHGs emissions to prevent global warming. As a maritime country the Philippines may focus its attention on how to effectively manage its oceans, forests, and other natural resources along the lines enunciated by IPCC and existing municipal laws. Indeed a daunting task for a developing nation but the only way to help "save" the planet and its living species.

As we wait for commitments and compliances to UN-led initiatives to ameliorate global warming we enjoy the world community to celebrate the Christmas season, and might as well greet our home planet: Merry Christmas, Mother Earth! 🎅

DENR Calls for Inter-Agency Cooperation to Protect and Conserve Coastal and Marine Resources

by Roy A. Cimatu, DENR Secretary



First of all, let me welcome all the participants composed of representatives from concerned government agencies in the maritime sector for the 127th Maritime Forum. This gathering is being undertaken in coordination with the Maritime League. It is truly an honor to host this event as we continue to work together to ensure that our agencies are being updated on the issues that affect our marine environment and the maritime industry.

Humans have always had a close relationship with the aquatic environment, including the early use of the sea for food harvesting and communication. Today, the sea is an important component of the transportation system, with large amounts of cargo and passengers.

The Philippines is trying to attract more Investors to the local shipping industry. Coastal areas offer plenty of opportunities for recreational activities. They attract lots of enterprises and people, which in turn require other services and establishments to address their residential and recreational needs.

These may include businesses engaged in tourism and recreation, sustainable employment, provenance and identity-building particularly for leisure areas, a platform for transport facilities, ecosystem services (flood control, power generation, etc.), raising property values for property developers, regenerating urban areas, and many others more.

But with any development, safeguards must be put in place and strictly implemented to ensure that marine ecosystems are not degraded and exploited.

I am glad that the Department of Environment and Natural Resources (DENR) is part of this regular meeting of the Maritime League, whose membership includes, but is not limited to the shipping industry, other government agencies in the maritime industry, and marine experts, to ensure that the management of our marine resources are highlighted and issues in their protection are addressed.

The DENR continues to call for the continued protection and conservation of our coastal and marine resources. In 2015, the DENR has launched the project, "**Strengthening the Marine Protected Areas (MPAS) to Conserve Marine Key Biodiversity Areas**", which involves the establishment of a more coordinated approach to conservation efforts in the Verde Island passage. This includes the Lanuza Bay in Surigao del Sur, Davao Gulf in Southern Mindanao, Tanon Strait Protected Seascape in Central Visayas and Southern Palawan.

The establishment of MPAS has been proven effective in enabling depleted fish stocks and helping ecosystems to recover and replenish.

At present, there are only 33 MPAS under Republic Act 7586 or the **National Integrated Protected Areas System (NIPAS) Act of 1992**. The law provides the legal framework for the establishment of MPAS. There are already a total of 1,620 MPAS created through local ordinances by virtue of the **Fisheries Code of 1998**, which mandates that 15 percent of coastal waters be set aside as marine reserves.

In this regard, the DENR recognizes the very important role various government agencies play in protecting our marine environment. We seek for the continued support of the Department of Transportation (DOTr), Department of Foreign Affairs (DFA), Philippine Coast Guard (PCG), National Coast Watch Center

(NCWC) and all other concerned organizations and institutions in preventing marine pollution.

Again, thank you for sharing your time and expertise in this forum. May this undertaking continue to inspire all of us to work together and move this country forward. *Mabuhay tayong lahat!*



Welcome remarks of DENR Secretary Roy A. Cimatu during the 127th Maritime Forum held at the EMB Conference Room A, AQMTC Building, Visayas Avenue, Diliman, Quezon City on 20 October 2017.



Don't Widen the Plate

by Commo. Carlos L. Agustin AFP (Ret)

How do we deal with negative news on the Maritime Industry? The most negative had been on our past shipping safety record, in particular because of the record-breaking casualty count of the Dona Paz disaster of 1987. Likewise, the sorry state of professional competence in the seafaring industry was hot news after the STCW 95 review highlighted the Philippine's inability to be on the initial white list but still it raised the country's stature as the Manning Capital of the World.

I think that while we were and are still slow in this regard, still we see progress in shipping safety, in STCW implementation, in shipbuilding, in ship management development and while we have not realized the dream of some sector for a unified Maritime Affairs bureaucracy, done a lot towards streamlining the maritime organization, albeit slowly - and still dealing with turf issues.

This past month I came across many items in print media that were often also taken up by TV and radio newscasters that were alarming, disturbing, disconcerting, disgusting, or described in extremely negative ways - about how the Philippines seems to be getting to be something like a failed state or country.

News items abound like the Philippines being

- ◆ Ninth worst country to live in
- ◆ Having the highest level of impunity among 69 countries, according to the 2017 Global Impunity Index (GII) released by Universidad de las Americas or UNDP in Mexico.
- ◆ 11th worst country for tourists
- ◆ Among the worst in driver satisfaction (for some reason rated BEST in driver service and 4th best in traffic safety, obviously due to lesser accidents based on slow traffic)
- ◆ Asia's worst Internet as rated by Forbes
- ◆ Having among the world's worst airports
- ◆ The only country in the world that had 'allowed drug convicts to rule government prisons'
- ◆ One of the worst countries in bureaucratic red tape for business transactions
- ◆ The country with "the best justice system that money can buy."

And many more, if you keep on searching, such as the one that made me post in various forums that I am member of, and which made me ask and post:

Feeling good?

Ruin your day with this thread: <https://www.rooshvforum.com/thread-8809.html> or join in on the debate.

Politicians, judges, businessmen, bureaucrats, educators and all of us should strengthen our resolve to rid our country of drugs, corruption and criminality. Can we do that?

So many things happening in the US likewise happen here, reminiscent of the "backsliding syndrome" of the Marcos era. In the US, the great rift between the Democrats and the Republicans also reflect similar issues here (oddly to include Presidential nuances reflecting their own individual idiosyncrasies put into public action)

Here is one "excellent article to read from beginning to end", as the sender so described it so I decided to paraphrase it completely:

Twenty years ago, in Nashville, Tennessee, during the first week of January, 1996, more than 4,000 baseball coaches descended upon the Opryland Hotel for the 52nd annual ABCA's convention.

While I waited in line to register with the hotel staff, I heard other more veteran coaches rumbling about the line-up of speakers scheduled to present during the weekend. One name, in particular, kept resurfacing, always with the same sentiment — "John Scolinos is here? Oh, man, worth every penny of my airfare."

Who is John Scolinos, I wondered. No matter; I was just happy to be there.

In 1996, Coach Scolinos was 78 years old and five years retired from a college coaching career that began in 1948. He shuffled to the stage to an impressive standing ovation, wearing dark polyester pants, a light blue shirt, and a string around his neck from which home plate hung — a full-sized, stark-white home plate.

Seriously, I wondered, who is this guy?

After speaking for twenty-five minutes, not once mentioning the prop hanging around his neck, Coach Scolinos appeared to notice the snickering among some of the coaches. Even those who knew

Coach Scolinos had to wonder exactly where he was going with this, or if he had simply forgotten about home plate since he'd gotten on stage.

Then, finally ...“You're probably all wondering why I'm wearing home plate around my neck,” he said, his voice growing irascible.

I laughed along with the others, acknowledging the possibility.

“I may be old, but I'm not crazy. The reason I stand before you today is to share with you baseball people what I've learned in my life, what I've learned about home plate in my 78 years.”

Several hands went up when Scolinos asked how many Little League coaches were in the room.

“Do you know how wide home plate is in Little League?”

After a pause, someone offered, “Seventeen inches?” more of a question than answer.

“That's right,” he said “How about in Babe Ruth's day? Any Babe Ruth coaches in the house?” Another long pause.

“Seventeen inches?” a guess from another reluctant coach.

“That's right,” said Scolinos. “Now, how many high school coaches do we have in the room?”

Hundreds of hands shot up, as the pattern began to appear. “How wide is home plate in high school baseball?”

“Seventeen inches,” they said, sounding more confident.

“You're right!” Scolinos barked. “And you college coaches, how wide is home plate in college?”

“Seventeen inches!” we said, in unison.

“Any Minor League coaches here? How wide is home plate in pro ball?”.....“Seventeen inches!”

“RIGHT! And in the Major Leagues, how wide home plate is in the Major Leagues?”

“Seventeen inches!”

“SEV-EN-TEEN INCHES!” he confirmed, his voice bellowing off the walls. “And what do they do with a Big League pitcher who can't throw the ball over seventeen inches?” Pause. “They send him to Pocatello!” he hollered, drawing raucous laughter. “What they don't do is this: they don't say, ‘Ah, that's okay, Jimmy. If you can't hit a seventeen-inch target? We'll make it eighteen inches or nineteen inches. We'll make it twenty inches so you have a better chance of hitting it. If you can't hit that, let us know so we can make it wider still, say twenty-five inches.’”

Pause. “Coaches... What do we do when your best player shows up late to practice? Or when our team rules forbid facial hair and a guy shows up unshaven? What if he gets caught drinking? Do we hold him accountable? Or do we change the rules to fit him? Do we widen home plate?”

The chuckles gradually faded as four thousand coaches grew quiet, the fog lifting as the old coach's message began to unfold.

He turned the plate toward himself and, using a Sharpie, began to draw something.

When he turned it toward the crowd, point up, a house was revealed, complete with a freshly drawn door and two windows.

“This is the problem in our homes today. With our marriages, with the way we parent our kids. With our discipline.

We don't teach accountability to our kids, and there is no consequence for failing to meet standards. We just widen the plate!”

Pause.

Then, to the point at the top of the house he added a small American flag.

“This is the problem in our schools today. The quality of our education is going downhill fast and teachers have been stripped of the tools they need to be successful, and to educate and discipline our young people. We are allowing others to widen home plate! Where is that getting us?”

Silence.

He replaced the flag with a Cross. “And this is the problem in the Church, where powerful people in positions of authority have taken advantage of young children, only to have such an atrocity swept under the rug for years. Our church leaders are widening home plate for themselves! And we allow it.”

“And the same is true with our government. Our so called representatives make rules for us that don't apply to themselves. They take bribes from lobbyists and foreign countries. They no longer serve us. And we allow them to widen home plate! We see our country falling into a dark abyss while we just watch.”

I was amazed. At a baseball convention where I expected to learn something about curve balls and bunting and how to run better practices, I had learned something far more valuable.

From an old man with home plate strung around his neck, I had learned something about life, about myself, about my own weaknesses and about my responsibilities as a leader. I had to hold myself and others accountable to that which I knew to be right, lest our families, our faith, and our society continue down an undesirable path.

“If I am lucky,” Coach Scolinos concluded, “you will remember one thing from this old coach today. It is this: ‘If we fail to hold ourselves to a higher standard, a standard of what we know to be right; if we fail to hold our spouses and our children to the same standards, if we are unwilling or unable to provide a consequence when they do not meet the standard; and if our schools & churches & our government fail to hold themselves accountable to those they serve, there is but one thing to look forward to ...’”

With that, he held home plate in front of his chest, turned it around, and revealed its dark black backside, “...We have dark days ahead!”

Note: Coach Scolinos died in 2009 at the age of 91, but not before touching the lives of hundreds of players and coaches, including mine.

Meeting him at my first ABCA convention kept me returning year after year, looking for similar wisdom and inspiration from other coaches.

He is the best clinic speaker the ABCA has ever known because he was so much more than a baseball coach.

His message was clear: “Coaches, keep your players—no matter how good they are—your own children, your churches, your government, and most of all, keep yourself at seventeen inches.”

And this my friends is what our country has become and what is wrong with it today, and now go out there and fix it!

“Don't widen the plate.”

I decided to post this issue precisely because we in the Philippines have really been widening the plate, forgetting to make people accountable, not maintaining “zero defects”, changing rules to suit individual selfish interests, not willing to exact compliance of rules and regulations, and thus allowing the corrupt, the opportunists and those who contribute to making the Philippines a future basket case prevail.

We need to keep the home plate intact. 📌



Time to Reflect, Review and Reform

by Former President Fidel V Ramos

"Opportunities, goodwill, reputations, wealth and other assets once lost can be recovered – but time misused or wasted is gone forever..."

– Ancient Wisdom

These last few days have brought bad news for President Duterte's Administration – and, therefore, bad news for all of us Filipinos. The negative developments indicate not just fleeting conditions but, indeed, defining trends that must be corrected. For instance:

- ♦ The ongoing devastation of Marawi City and the serious collateral damage in our national security and socio-economic condition;
- ♦ Declines in Presidential trust and credibility are sharper than before;
- ♦ Questions about the unjustified killings (EJK) of drug suspects has become universal concerns (by at least 39 U.N. member-nations);
- ♦ Massive calamities taking place in various foreign regions;
- ♦ Political instability in unexpected places such as Spain, U.K., Russia, West Africa; and

- ♦ Displacement of hundreds of thousands of refugees fleeing from civil war (Syria-Iraq), "ethnic cleansing (Muslim Rohingya-Myanmar)" or religious strife.

Because of the above, and in view of the coming ASEAN Summit of world leaders hosted by the Philippines next month, P. Du30 and other leaders must now pause, review and reform policies and programs that have gone wrong or derailed glowing promises made during the immediate past.

Regardless of political affiliation, ethnic origin, religious faith or socio-economic status – every member of our huge, extended family of more than 102,000,000 Filipinos (plus foreign retirees and investors who have cast their fortunes with our beloved Philippines), need to work more closely together and pull more forcefully as one team to keep our Ship of State "Pilipinas" seaworthy, competitive and moving steadily in the right direction – and achieve, without further reversals, our aspirations for a better future.

Our Filipino family is now ranked the world's 12th largest in population. We are no longer a small colony but must now be seen as a potentially capable global player.

All onboard "Pilipinas." Because we are all together onboard ship "Pilipinas" — which is still leaky and slow moving because of internal strife and disunity, we each need to pull an oar or plug a leak -instead of

adding more holes- to insure our ship's viability and momentum. P. DU30, therefore cannot just continue skipping our ship willy-nilly headlong, oblivious of danger signs, without addressing the strategic imperatives of public safety, community harmony, and national development.

Also, all passengers must know how to swim — if they are to survive in case our ship sinks. What about the little children and babies? Patay (dead)! — unless...

Caring for Earth: 24/7 duty. As Commander-in Chief and "Pinoy Family Head," it is P. DU30's inescapable responsibility to first put our fragmented house in order. That's the only way our nation can move forward steadily in the war against poverty, endemic disease, hunger, climate change, environmental degradation, dangerous drugs, joblessness, criminality, and corruption.

Getting our officials, government agencies, peace advocates, business sector and other components of society to work together as a competitive team at national and local levels is crucial. Together, let us propel our ship forward and upward, then stay steady on course toward a brighter future.

A grave crisis the whole world faces is climate change — with dire exhortations and warnings for all countries. Respect for and protection of Mother Earth should be a mandatory responsibility of Filipinos from all walks. This is our 24/7 duty.

Failing to heed timely admonitions to do basic preparatory and defensive measures could lead to tremendous disasters and unnecessary loss of lives. True enough, as recent super-typhoons at home and tsunamis and mega-hurricanes elsewhere have shown us, token actions or unfocused defensive measures would be suicidal.

For Filipinos, the impacts of global warming amount to more than just inundation and desertification — which are bad enough — but as we have seen, such calamities bring grave impacts upon health, housing, agriculture, food/water, power supply, transport, livelihood, etc.

Leadership through challenge and crisis. The vision of a better future from which all nations and peoples benefit equitably — regardless of ideology, religion, culture, socio-economic status, and geography — is our unceasing, ultimate aspiration.

This universal hope should provide strategic guidance to the decisions and policies of today's leaders and their successors. We must organize a caring and sharing international community, and make it a family of truly principled nations daring enough to take concerted action against the threats to humankind.

It is toward such a better world that leaders — in their roles as "custodians of the nation's ideals, values and permanent interests" — must lead their people. This is the kind of governance the Philippines needs — which P. DU30 must deliver for the next 4 ½ years despite difficult challenges.

We need leaders who — because of their visionary quality and political skills — can see beyond the gloom of the moment to brighter future possibilities, enough to carry out painful reforms. Obviously, today's complex and delicate world must be managed through inclusive governance and efficient management.

The president as juggler and skipper. Talking from experience, FVR believes that confronted with such serious concerns, P. DU30 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 tight wire 100 meters aloft — catching and managing the balls in a calm, harmonious manner, and not drop any in the process.

From our people's perspective — whose hopes for a brighter future ride on the president — the high wire represents our aspirations for a better quality of life. As skipper of our flag carrier "Pilipinas," P. DU30 must prove his navigational skills, mental stability and psychological fortitude by steering our leaky and overloaded ship safely to the "promised land."

Challenging, isn't it? Of course, it is. The presidency is no place for panicky, self-centered, onion-skinned or fragile characters.

And, P. DU30 must be able to communicate, persuade and endear effectively — without falling off the high wire or drowning in a capsized vessel.

Don't waste opportunities. In the course of time, the Philippine ship had been battered and buffeted by turbulent politics and social unrest, particularly since the 1970s. Poverty continues to be our primary problem. We need work double time to solve it. We must involve every Filipino — every man, woman, and child — start them young, teach them the right values while still tender and malleable. We must challenge them to be strong in values, be better than preceding bad examples, be good world citizens. Most of all, we have to teach everyone teamwork.

Filipinos cannot anymore afford to be fragmented and fractious. We need to be and act as one nation. We have to act in unison and move in the right direction. We need to care for each other. We need to share and contribute whatever talent one has. We must dare and try all proper means to get results faster, whose outcomes should benefit the majority.

Experience teaches us that no man/woman, be he/she the president or billionaire captain of industry, can single-handedly bring peace and progress to our land. The job of nation-building requires every citizen, no matter what his/her stature in life is, to his/her just share.

From day one, a national leader must define where he will bring the nation and show the people how to get there. He leads by setting the right example that the citizenry should emulate. He leads by making the correct decisions for — the betterment of the many, not enrichment of the few.

The Bottom line. P. DU30 cannot do it alone. Neither can just the government. 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.

The piece of brick, which a laborer, farmer, fisherman, soldier, policeman, housewife, businessman or professional contributes to the task of nation-building counts substantially in strengthening our nation. These building blocks when put together become the sum total of the collective and sustained efforts of our people.

Progress is the conquest of poverty. There is real progress when only the totally disabled are jobless. Progress is present when every citizen feels safe at home, in workplaces, and in the streets.

Let good governance ring true for every public servant, from the head of state down to LGUs. Having been there and done it, FVR believes public servants must embrace their duties, neither as mere jobs nor opportunities to grab what they wrongfully think is rightfully theirs — or even if they think they are right.

Rather, they must always value public service as the expression of their unconditional love for country and fellow Filipinos.

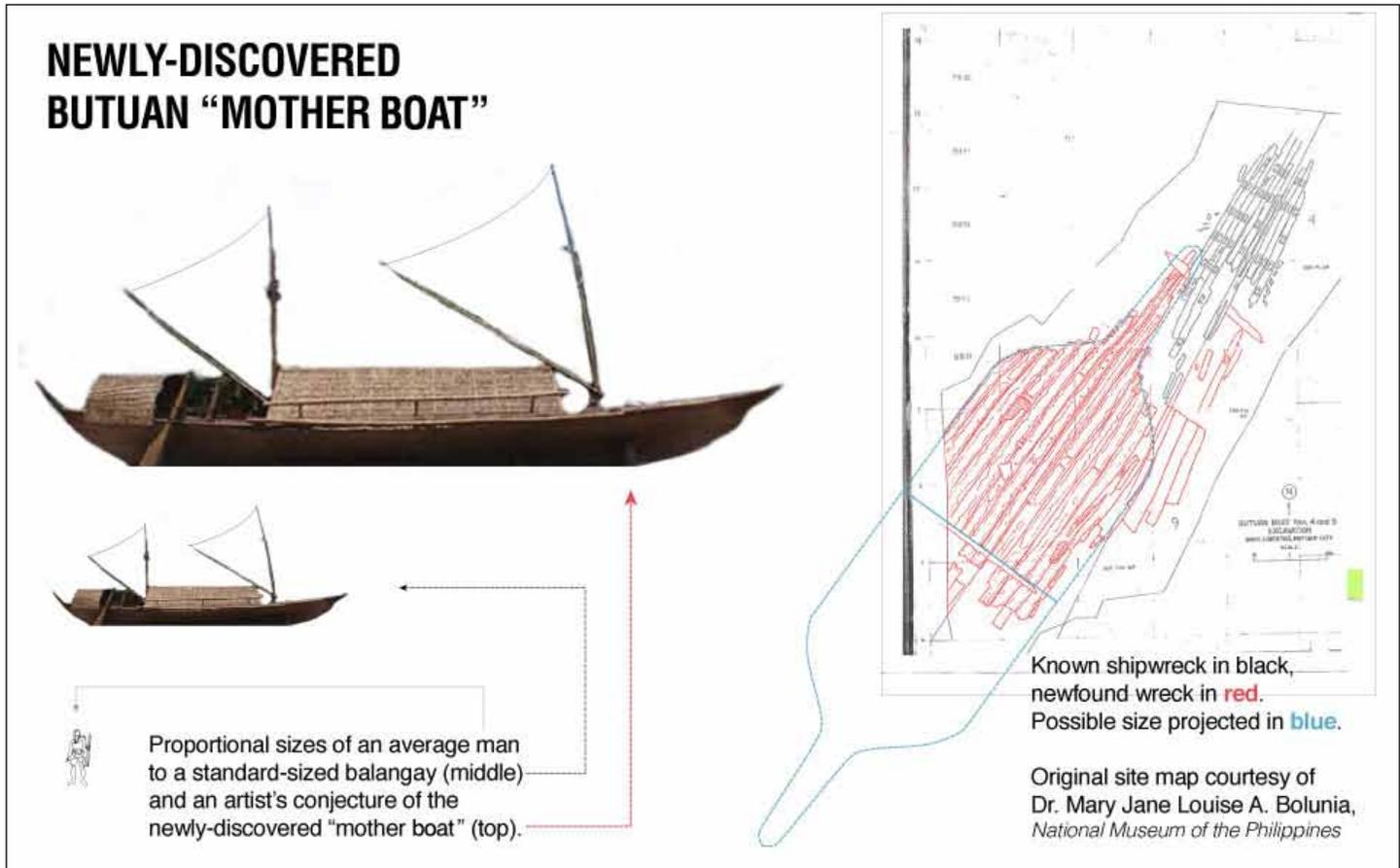
KAYA NATIN ITO (although we've already lost all of one year or more)!



Please send any comments to fvr@rpdev.org. Copies of articles are available at www.rpdev.org.

Massive Balangay 'Mother Boat' Unearthed in Butuan

by TJ Dimacali, GMA News



Four years since it was discovered in a marshy plain in northern Mindanao, the largest ancient Filipino boat ever discovered lies unexcavated. Despite its immense cultural and historical significance, the "mother boat" **balangay** has been practically untouched since 2013. Submerged under barely waist-deep brackish water, it remains tantalizingly beyond reach — at least for now.

National Museum archeologist Dr. **Mary Jane Louise A. Bolunia**, who headed the initial digs, says that raising the boat is tricky because it's buried in private land. "The National Museum has been in constant communication with the lot owners where the **balangays** are found because we would like to acquire them to establish a **maritime heritage park** in that area of Butuan," she said. The establishment of such a park, or any museum for that matter, is no easy undertaking: it's important to present artifacts in a way that encourages viewers to learn more about their historical and cultural context.

It's worth noting that a growing number of museums around the world are looking to modern technology, including CT scans and 3D printers, to make replicas that look and feel like the original artifact. "You can, for example, scan and print an artifact that's accurate down to the tiniest cracks and flaws. This allows scientists and the public alike to appreciate the original without the risk of damaging it," notes

archaeologist **Vito Hernandez**. In the case of the Butuan **balangays**, he says that such technology could be used to make replicas to take the place of the originals. "(Theoretically,) you could exhume everything, make scientific replicas, and put back those replicas and conserve the original in safer conditions," he said.

Appreciating the balangays' history. Seeing what the boats looked like buried in the ground could give the public a better understanding not just of the boats themselves but also of the conditions in which they were found. Hopefully, according to **Hernandez**, this could spark intelligent conversation on the **balangays'** history — how they were used, how they came to be buried, and how they came to be found and preserved. "Museum curation should impact the curation of knowledge itself," **Hernandez** underscored.

Temporary preservation underwater. But all that would have to wait for the time when the "**mother balangay**" can be safely exhumed. For now, according to **Dr. Bolunia**, it remains protected in its watery crypt, and adds, "Yes, we can keep the boat in situ. The present status of the **balangay** being submerged in water and mud is actually a form of preservation.

The discovery. It was back in August 2013 when the largest sailing

vessel of its kind yet discovered is being unearthed in Butuan City in Mindanao, and it promises to rewrite Philippine maritime history, as we know it. Estimated to be around 800 years old, the plank vessel may be centuries older than the ships used by European explorers in the 16th century when they first came upon the archipelago later named after a Spanish king, Las Islas Felipenas. The find also underscores theories that the Philippines, and Butuan in particular, was a major center for cultural, religious, and commercial relations in Southeast Asia.

Peg nails the size of soda cans. National Museum archeologist **Dr. Mary Jane Louise A. Bolunia**, who leads the research team at the site, says almost everything about the newly-discovered "**balangay**" is massive. She holds up her hand and curls her fingers into a circle, as if grasping a soda can. "That's just one of the treenails used in its construction," Dr. **Bolunia** says. An aptly descriptive term, a "treenail" is a wooden peg or dowel used in place of iron nails in boatbuilding. So with "nails" that size, exactly how big is this boat?



Dr. **Bolunia** produces a piece of onionskin paper with a carefully inked map of the archeological site. On the upper corner is a roughly pea pod-shaped boat wreck, about 15 meters long, one of 8 similarly sized **balangays** discovered at the site since the 1970's.

But right next to it, discovered only in 2012, are what seem to be the remains of a ninth **balangay** so wide that it could easily fit the smaller craft into itself twice over – and that's just the part that's been excavated so far. Although the boat has yet to be fully excavated, it's estimated to be at least 25 meters long.

Aside from the treenails, the individual planks alone are each as broad as a man's chest – roughly twice the width of those used in other **balangays** on the site. The planks are so large that they can no longer be duplicated, because there are no more trees today big enough to make boards that size, according to Dr. **Bolunia**.

Visiting the site. GMA News visited the site on August 14, and found the excavation site waterlogged pending further digging and study. However, Dr. **Bolunia** assured that keeping the artifacts in this condition for now is actually beneficial for their conservation. "We just let the water seep in and leave it at that because it's more protected than if you dry it. If you expose it without proper conservation, then it will disintegrate," Dr. **Bolunia** told GMA News.

Jorge Absite, officer-in-charge of the **Butuan Museum**, is hopeful that the new discovery will yield more insights about our Filipino

ancestors. The **Butuan Museum** is tasked with supervising the care and protection of the **balangay** excavations and any artifacts found therein. "Ito ang kasagutan sa 'missing link' ng kultura natin, kung ano ba talaga ang uri ng pamumuhay meron ang mga ninuno natin (This is the answer to a 'missing link' in our culture, on what kind of life our ancestors really had)," **Absite** said.

"(Filipinos') ability to construct or build big boats is not something new... Even before the Chinese came to the Philippines, the Filipinos went to China through the Butuanons," Dr. **Bolunia** underscored.

Proceeding with caution. Historians, and Dr. **Bolunia** herself, caution the public that much work still needs to be done before the boat can be conclusively dated and identified.

"(The newly-discovered boat) will need more technical verification to establish its connection and relationship with the other boats already excavated, so that we can know its date, boat typology, and technology," said Dr. **Maria Bernadette L. Abrera**, professor and chairperson of the Department of History at the University of the Philippines-Diliman, in an email interview.

"We have to be careful," said **Ramon Villegas**, a scholar who has done extensive research on pre-colonial Philippine history. "There has not been enough time to study (the artifacts). It could be a Spanish boat or Chinese junk." Aside from carbon dating to determine the age of the wood, the construction techniques used, and even the type of wood itself, all need to be ascertained before anyone can come to a definitive conclusion.

"Everything depends on the construction, on how the boat was built, before you can properly call it a **balangay**," explains archeologist and anthropologist **Dr. Jesus Peralta**. He said he has yet to see the newfound boat for himself. Nevertheless, the boat's proximity to previous sites of buried **balangays** promises to send ripples through the academic world. "It's a 'mother boat,'" Dr. **Bolunia** says with little hesitation, "and it's changing the way we think about ancient Filipino seafarers."

Rewriting Philippine history. It has long been established that Filipinos traveled across Southeast Asia as early as the 10th century, reaching as far as Champa – what is now the eastern coast of Vietnam – in groups of **balangays**. These groups or flotillas have always been thought to consist of similarly sized small vessels, an idea perpetuated by the term "**barangay**" – the smallest administrative division of the present-day Philippine government.

But, according to Dr. **Bolunia**, this new discovery suggests that these may just have been support vessels for a much larger main boat, where trade goods and other supplies were likely to have been held for safekeeping. The discovery also suggests that seafaring Filipinos were much more organized and centralized than previously thought.

Butuan as a major center of culture and trade. "This **balangay** reinforces the findings of the earlier excavations about the role of Butuan as a commercial and population center in precolonial Philippines," Dr. **Abrera** told GMA News.

"Butuan seaport had long-time trade links with Champa and Guandong (China). You can retrace the importance of (the newly-discovered boat) by utilizing it as an archeological key to that period when Butuan was a busy link to the pan-Asian cultural and commercial intercourse," historian **Arnold M. Azurin** told GMA News via Facebook chat.

In fact, Filipino seafarers from Butuan were already exploring Asia over a thousand years ago, well ahead of our Chinese neighbors: As early as 1001 AD, the Song Dynasty recorded the arrival of a diplomatic mission from the "Kingdom of Butuan."

"In 1003 AD, a Butuan chieftain petitioned the Chinese Imperial Court to allow it to bring its products direct to Guandong —instead of using

Champa as the entrepôt (main trading post)," **Azurin** added. However, according to **Azurin**, the petition was declined because the Court insisted on regulating trade via Champa. He also says that Butuan may also have played a major role in the spread of culture and religion in the Philippines long before Christianity and even Islam came to the islands. "The boat's possible deeper significance is that it may be one of the carriers of Hindu-Buddhist cultural influence in the Philippine Archipelago long before Islam and Christianity arrived here. Many scholars also say that the baybayin script arrived here through the same connection with Champa. Hence, you can deepen the cultural legacy of our ancestors," **Azurin** said.

Older than Magellan and Jung He. While the newfound boat has yet to be accurately dated, its construction and position directly alongside a **balangay** from the 1200's strongly suggest that it is also a **balangay** from the same time period. If so, then the boat predates by hundreds of years **Magellan's** arrival and death in the Philippines in 1521, and even the Chinese explorer **Zheng He's** expedition across Asia in 1400. "For more than a thousand years, the trade and settlement patterns and routes across Asia connected certain islands (of the Philippines), especially those with good harbors and steady supply of local products," **Azurin** said.

"Highly interesting is the mention of slaves-for-sale in (**Magellan's** chronicler) **Pigafetta's** account of the first circumnavigation: **Raja Humabon** boasted to **Magellan** that some boatloads of slaves had just left Cebu for Cambodia and Champa —likely in need of warm bodies for their wars of succession, or for new stonecutters for their megalithic shrines," **Azurin** added. Could Filipino craftsmen, sent abroad on **balangays**, have helped build ancient Asian monuments like Angkor Wat? "That's a possible conjecture, considering that archeologists like **Robert Fox**, and **H. Otley Beyer**, and others have pointed out that some islands in southern Philippines had communities linked to (these places)," **Azurin** said.

Continuing a seaworthy tradition. In any case, the "**mother boat**" and the smaller **balangays** in Butuan were definitely made for exploring the high seas, according to Dr. **Bolunia**. She says their overall shape and construction are suited to navigating deep ocean waters more than shallow rivers. The presence of a quarter rudder and sails would also indicate a sea-going vessel, although these have yet to be found, Dr. **Bolunia** says.



"That's especially true for a boat this size," she says of the giant **balangay**. Even today, the **Sama-Badjao** of Sulu still practice boat-building techniques that are strikingly similar to those used in constructing the Butuan boats.

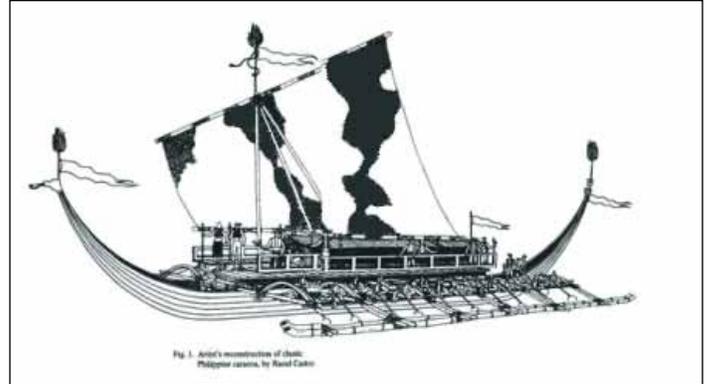
In 2010, replica **balangays** built by **Sama-Badjao** craftsmen and manned by Filipino adventurers completed a 14,000-km journey across Southeast Asia, proving the seaworthiness of the original **balangays** and the traditional woodcraft used to construct them.

One of the boats, the 15-meter-long "Diwata ng Lahi," is now on permanent display outside the National Museum in Manila.

Textual evidence of large boats. Villegas believes it was only a matter of time before a boat of this size was found, pointing out the

historical accounts about similarly grand Filipino vessels. For example, **Pigafetta** also documented the existence of a boat fit for a king: "We saw come two long boats, which they call **Ballanghai**, full of men. In the largest of them was their king sitting under an awning of mats," he wrote. Native boats "intended for cargo capacity or seagoing raids" could be "as long as 25 meters," said noted historian **Dr. William Henry Scott** in his book, **Barangay: Sixteenth-Century Philippine Culture and Society**.

Dr. Scott also hinted at the existence of even more impressive



vessels: "The most celebrated Visayan vessel was the warship called **Karakoa**, which could mount forty meter-long oars on a side. The care and technique with which (Filipinos) build them makes their ships sail like birds, while ours are like lead in comparison," Dr. **Scott** quoted a Spanish priest as having written in 1667.

However, no large Filipino vessels have been discovered and excavated – until now, if the Butuan "**mother boat**" is indeed of ancient origins.

"Historians have always known there were other (large) boats. We should expect to find big boats because (we know) they existed," **Villegas** said. "It's just that the National Museum only now has the funds to do the excavations. There's a lot to be found even just in Butuan," **Villegas** added.

Lingering mysteries of Butuan. Dr. **Bolunia** and her team plan to return to Butuan in September to complete the excavation, and hopefully to date the massive new find. They also plan to take a core sample from the ground in the hopes of answering one of the biggest mysteries surrounding the Butuan **balangays**. Dr. **Bolunia** explains that the archeological site, although now inland, was once an alcove that opened out to the sea. She says that all the **balangays** were found "drydocked" on what was once the Butuan seashore. That the vessels were so well preserved is largely because they were buried intact, and the submergence of the area over succeeding centuries kept the wood from decaying. But exactly how did the Butuan **balangays** get buried there in the first place? Dr. **Bolunia** says there are two competing theories: either the boats were intentionally buried, or they were left behind after a sudden cataclysm – such as a landslide from an earthquake.

If the boats were purposely abandoned, why did the builders take the trouble of burying them? But, on the other hand, where is the evidence of any natural calamity that might have befallen the boats and their builders? These are among the many remaining questions that face probers of the Philippines' ancient past. If Dr. **Bolunia's** hunches are correct about the latest find in Butuan, the **mother boat** could be the key to unlocking answers about how our Filipino ancestors lived, explored, and fought. — with **Howie Severino/ELR**, GMA News



Reprinted with permission from TJ Dimacali, GMA News. The article was published on 16-August-2013; updated on 2-August-2017: <http://www.gmanetwork.com/news/scitech/science/321334/massive-balangay-mother-boat-unearthed-in-butuan/story/>



Integrated Coastal Zone Management (ICZM), an Imperative for the Health and Livelihood, and Disaster Resilience for the ASEAN and Central Indo-Pacific Coastal Communities

by Alberto A. Encomienda, BalikBalangay

Introduction: Archipelagic and Maritime Philippines, an ICZM case study and proposition for ASEAN Vision 2025. The ocean management concerns of the Philippines as an archipelagic State encompass its archipelagic and internal waters, territorial sea, exclusive economic zone, and continental shelf (including a possible Extended Continental Shelf). The same situation exists for the two other archipelagic States in the Central Indo-Pacific that are adjacent to each other i.e., Indonesia and Papua New Guinea. The defining characteristic of an archipelagic State is a far greater sea area under national jurisdictions than land territory. This is on account of its maritime basepoints and baselines being designated and drawn connecting the outermost points of the outermost islands of the archipelago from which to delineate its maritime jurisdictions, under international law.

The Philippines is also considered a quintessential coastal State in that its population centers are never more than a hundred kilometers from the

coast. Among its marine endowments are a rich unparalleled biodiversity, hosting the larger part of the **coral triangle** that extends to northeastern Indonesia and Malaysia (Sabah); contains four times the number of coral species than found in the **Great Barrier Reef** and among the highest in the world. One of only two double-barrier reefs in the world is in the **Bohol**.

The archipelago is a large marine ecosystem with biodiversity that serves as an important feeding and breeding grounds for high-value commercial fish species such as tuna (highly migratory and straddling fish stocks), endangered marine mammals such as the Dugong or “sea cow,” the “Butanding” or whale shark, the rarer mega-mouth shark, and six species of marine turtles. To say that the Philippine archipelago is the oceanarium of the world and a microcosm of global marine life would not be an overstatement.

This imposes on the Philippines a national burden to nurture its marine environment and resources, and furthermore take the role as the lead

shepherd in ocean governance of the ASEAN and Central Indo-Pacific regional seas, which are interconnected enclosed and semi-enclosed seas. Collectively these regional sea areas would best be governed effectively through region-wide cooperation, which is compelled under the United Nations Convention on the Law of the Sea (**UNCLOS**), **Part IX**.

The obverse side of the coin in the above extraordinarily complex Philippines ocean scenario, extrapolated to the ASEAN and Central Indo-Pacific seas, is that this large marine ecosystem and its fisheries resources are exposed to serious threats and degradation on account of human activities such as illegal fishing and overfishing, pollution from mineral resources extraction (seabed/subsoil or land-based), run-off pollution from rivers and lakes, and international and domestic seaborne trade (shipping).

Additionally, this widespread threat situation in the ASEAN seas and the Central Indo-Pacific is aggravated by the absence of a regional governance mechanism or organization to address maritime issues for joint and coordinated renewable resource management, and to guarantee safe and secure sea trade routes (50% of world maritime trade pass through these regional seas). The non-existence of a regional management organization in this highly endangered ecosystem heritage area, further exposed to pollution threats as a major sea trade route, is very politically charged and falls under international law (**UNCLOS Part IX**) as being a critical area where regional cooperation for conservation and preservation is a base requirement. The necessity for a regional ocean management agency must be accepted and subsumed by the government and population for all would eventually be lost if there is no mechanism for effective communication leading to sustainable management of the marine resource base in the wider regional seas context; this connectivity of regional seas compels a wider governance net, that can be initiated under **ASEAN Vision 2025**.

Rationale and relevance of fisheries management and ocean governance to health and livelihood in the context of the Philippines archipelagic State, inevitably leading towards Integrated Coastal Zone Management (ICZM). In the present state of the Philippines as a developing country with vast maritime jurisdictions and dependence on the ocean, fisheries resources is critical to the health and livelihood of the greater majority of its people. As such, fisheries are a significant factor in overall social and economic development and enhancement. An ocean governance scheme initially focused on countrywide coastal fisheries management and extrapolated to a wider regional sea setting, must necessarily be a sustainable program to provide a meaningful longer lasting contribution to the socio-economic life of coastal communities in the ASEAN region and beyond. To put fisheries, marine resources and marine environment in its appropriate perspective and context in regard to sustainable national economic development and resilience, it must always be remembered that the Philippines is a developing country and an archipelago with far greater ocean jurisdictions than land territory. Thus, fisheries, especially artisanal fisheries, forms a very significant factor in social and economic enhancement of the nation, calling for all-around "bayanihan" social responsibility on the part of the Government and supporting non-governmental organizations (NGOs) and the private business sector. This has been recently demonstrated in terms of disaster relief, which is even more compelling in building resilience. Moreover, for fisheries to have a meaningful contribution to the socio-economic life of coastal communities, conservation and management of its marine resources must necessarily be sustained using appropriate national and regional mechanisms. This is the essence of Annex VI of the Final Act in the UNCLOS, entitled "Resolution on development of National Marine Science, Technology and Ocean Service Infrastructure."

Accordingly, the scope of the current agriculture program in the Philippines needs to be expanded and strengthened in its fisheries component. Fisheries mariculture and aquaculture farming is agriculture-based and will assume a greater role for the future food security as populations rapidly expand and the fisheries wild resource base is unsustainably

strained to feed growing populations. Furthermore, the fisheries component of agriculture must include marine environmental protection (MEP) mechanisms based on sound marine scientific research (MSR), awareness and training activities to achieve program coherence, cogent direction, and desired sustainability. Further, there is also the need for a wider scope approach to integrate other ocean-oriented livelihood activities such as island and river cruise tourism, sports fishing, diving, and beach resorts to accommodate and maximize the benefits of the oceans for all stakeholders, for livelihood or recreation. The foregoing cluster of economic-oriented human activities should of interest to the tourism sector in the ASEAN, starting with ASEAN Vision 2025.

An expanded agro-fisheries program would address sustainable renewable resource management and farming from the highlands, through to the lowlands, coastal areas, mangroves and to sea farming to result in a comprehensive and integrated resource-based sustainable management program which would be the ideal fully inclusive agricultural livelihood framework for the Philippines archipelago, and address its food security requirements. A holistic, seamless and balanced development of all aspects of agriculture would serve as a social safety net providing for alternative livelihoods for the population of coastal communities in the event of production deficiencies and disasters, which can happen between land-based and marine-based aspects of agriculture. The foregoing inclusive approach, integrating terrestrial and marine components, is not only essential as far as the archipelago configuration of the Philippines dictates, but most responsive to the food security socio-economic governance pillar of the Government under the (1987) Constitution. In essence, the foregoing describes **Integrated Coastal Resource Management (ICZM)** that would optimize agro-fisheries in an archipelago, and in the context of the Central Indo-Pacific archipelagic continent.

Why ICZM for archipelagic Philippines, extrapolated to the ASEAN and Central Indo-Pacific; a blueprint for a blue economy. Firstly, a general understanding of the ICZM concept and why it is perfectly suited for implementation and adaptation in the ASEAN and Central Indo-Pacific is needed. The general concept is about management of the interaction between land and sea... "where terrestrial processes and land uses directly affect oceanic processes and uses, and vice versa. Formal definitions of **ICZM**:

- ◆ Knecht and Archer (1993): "A dynamic and continuous process of administering the use, development and protection of the coastal zone and its resources towards common objectives of national and local authorities and the aspiration of different resource user groups;"
- ◆ Sorenson, (1993): "Integrated management provides policy direction and a process for defining objectives and priorities and planning development beyond sectoral activities. It adopts a systems perspective and multi-sectoral approach which takes into account all sectoral interests and stakeholder interests, and deals with economic and social issues as well as environmental and economic issues."

The **ICZM** scheme is a matured program that first conceived in the early 1970's. As can be seen, in no other geological configuration would land/sea interaction be more acute than in an archipelago configuration, which is the ASEAN and Central Indo-Pacific. Leading archipelago nations that have adopted and developed the scheme are New Zealand and Norway; while Ireland is a work in progress. Examples of non-archipelago nations that are implementing the **ICZM** scheme are India, Bangladesh, Kenya.

It is said, however, that definitions of **ICZM** can vary depending on the localized "target territory", but among principal elements of an **ICZM** program would be:

- ◆ Adopting a wide ranging view of inter-related problems;
- ◆ Decision-making based on good data and information;

- ♦ Working with natural forces;
- ♦ Involving all stakeholders and all relevant parts of the administration;
- ♦ Using a range of instruments (laws, plans, economic instruments, information campaigns, Local Agenda 21s, voluntary agreements, promotion of good practices, etc.) for coastal management. (Source: <http://www.heritagecouncil.com>)

The “integrated” or inclusive aspect of the ICZM scheme as gleaned from above, makes for the appropriate ocean governance modality for archipelagic Philippines providing coherence in the local (LGU’s), regional (RDC’s) and national context. It should also be applicable and suitable for the ASEAN and Central Indo-Pacific which is a humongous maritime area sharing characteristic regional features (UNCLOS Article 197).

This is not to say that there is no integrated coastal management effort or awareness in the Philippines, practical experience that would serve a good starting point for program dissemination. Eight years ago President Gloria Macapagal-Arroyo issued Executive Order No. 533 dated 06 June 2006 entitled **Integrated Coastal Management Policy (ICM)**. The general policy statement, which captures the essential elements above, follows; *“The ICM and related approaches, such as coastal resource management or coastal zone management, shall be the national management policy framework to promote the sustainable development of the country’s coastal and marine environment and resources in order to achieve food security, sustainable livelihood, poverty alleviation and reduction of vulnerability to natural hazards, while preserving ecological integrity.”* A year later, the **DENR** and **DA/BFAR**, together with 8 partner provinces and 80 municipalities all over the country, launched the **Integrated Coastal Resource Management Project (ICRMP)**, which is considered as a “related approach” to ICM. The project duration was 28 June 2007 to 20 June 2013.

Recalling recent natural disaster scenarios impacting on health and livelihood of coastal communities in the Philippines. The following are recent natural disaster scenarios recalled to create greater awareness and focus on calamities inflicting heavy damage to coastal communities over a wide area of the country. In these sample cases, the natural disasters were happening so close to one another that the recovery phases for each would overlap with another, creating tapestry depicting a nationwide calamity area. These recent serial disaster events demonstrate that in the archipelago configuration and geographic location of the Philippines and other coastal communities in the ASEAN and the Central Indo-Pacific, multiple natural disaster impacts including adverse effects of climate change, can happen virtually at the same time. In any such disaster, impacts to health and livelihood can be minimized through sustainable ocean governance in an integrated coastal zone management scheme. Within a year of each other, there was the high intensity Bohol earthquake followed by a super-typhoon that generated a super-storm surge and a freak oil spill in the coastal municipality of Estancia in Iloilo City, the collective effects of which was still being felt more than a year after the disasters.

To highlight certain recent disaster events in the Philippines and socio-economic costs:

- ♦ Bohol earthquake – Intensity 7.2 Bohol earthquake had its epicenter in the middle of the island and coastal livelihood did not suffer too much. It is cited here because, calling attention to our archipelago configuration and its geographical location within the Pacific “ring of fire,” an Aceh-type disaster scale cannot be ruled out if an earthquake (volcanic or tectonic) epicenter happens out at sea or even in the outskirts of its maritime jurisdictions as in the great Sendai earthquake in Japan; an ever present likelihood.
- ♦ “Yolanda” super-typhoon - The impact of super-typhoon Yolanda, with multiplied physical destruction due to an accompanying super-storm surge and its impact on fishing communities, would serve as a most tragic back-to-back wake-up call with regard to the current

mismanagement and serious neglect of fisheries resources in the country. Beyond the physical damage in central Philippines, a serious adverse impact was in livelihood and health of the population. The extent of the cost to coastal fisheries livelihood can be depicted in the form of gratuitous over replacement of thousands of fishing boats, and the graphic account of hunger and prolonged loss of livelihood in the affected coastal communities that elicited worldwide sympathy and assistance.

- ♦ Guimaras oil spill – This is just one among a few recent small-scale example of an ever-present threat of extensive damage to coastal livelihood from oil spill, from whatever source. Toxic and hazardous goods (attention also to the Princess of the Stars incident which carried loads of chemicals for fertilizer manufacture) are inevitably transported all over the country by sea. The Guimaras incident is a minor incident as far as oil spills happen, but the cost to health and livelihood of the affected communities was serious enough to negatively affect the economic performance of the country on the year of the incident. Another sample of an oil spill incident is a freak but indicative that anything can happen in the archipelago situation of the Philippines and elsewhere among coastal communities in the ASEAN and Central Indo-Pacific. This occurred in Estancia, Iloilo City and was not even a maritime incident but related to super-typhoon Yolanda. A floating power-barge was lifted off its mooring by the super-typhoon and spilled oil over a large swath of the coast. Beyond localized oil spills, the country must be forewarned of what are accidents waiting to happen in its western stretch of EEZ posed by present and future offshore oil drilling sites not to mention drilling within archipelagic and internal waters, and sealanes for supertankers and large cargo carriers loaded with toxic and hazardous goods. The Torrey Canyon, Exxon Valdes, and the Prestige II maritime incidents, and the Gulf of Mexico offshore oil spill incident would be case studies where ICZM can introduce precautionary measures and minimize damage to coastal resources and environment.
- ♦ Smaller-scale incidents but a recurring serious threat to the health and livelihood of coastal communities is “red tide” and “fish kills” (not necessarily from natural causes) wherein contamination can spread very quickly on account of the country being an archipelago. Appropriate governance measures would minimize or anticipate, if not totally prevent, such incidents.

The above sample incidents can have transborder consequences, and are demonstrations of vulnerability of the Philippines on account of its archipelago configuration and geographic location, to severe natural calamities, aggravated by human neglect. Moreover, these can happen almost simultaneously and causing economic disruption throughout the length and breadth of the archipelago. They are extreme national calamity scenarios that did and could happen in other coastal communities in ASEAN and the Central Indo-Pacific. There is no doubt that multiple disaster impacts are a new phenomenon aggravated by climate change. But the Philippines is a small developing country whose pollution emission by-products of development efforts cannot be factored as contributing in any significant degree to climate change. Nevertheless, the country is at the receiving end of the deleterious results of climate change – all the greater reason why, in addition to disaster preparedness, livelihood resilience through ICZM must be built into national governance and food security. Other similar calamity scenarios would be severe monsoon weather, prolonged dry spells, earthquakes that could generate tsunamis and coastal infrastructure destruction, benign regular weather patterns such as inter-tropical convergence zones and low pressure areas, El Nino/La Nina phenomenon, which are aggravated by climate change and cause torrential rains, flash floods and heavy sea conditions; weather/climate interactions that are the causes of production deficiencies between land-based and marine-based aspects of agriculture.

Awareness alarm call on “political disasters.” In addition to multiple natural disaster impacts, regional political events as presently exemplified in the South China Sea can also affect health and livelihood of coastal communities. For example, artisanal fisherfolk in the Provinces of Zambales and Pangasinan, feel compelled to range farther out from shore into sea areas under jurisdictional disputes because of depleted fish stocks closer to shore, and are then prevented by enforcement elements of foreign countries to undertake fishing activities (*The Philippine Star* 21-May-2014, p.14 entitled “Leviathan turns Filipino fishermen into desperate darters”). The coastal communities of the provinces of **Zambales** and **Pangasinan** are cases in point; with western Palawan and the northernmost provinces of Luzon as potential areas for similar actions. Political events such as the Spratly archipelago and Scarborough shoal stand-off situation, may be temporary and can even subsequently generate a desired regional cooperation for marine resources management if ocean governance is initiated and instituted even unilaterally at the outset. While politically colored events are a different disaster story altogether, it could be tempered through cooperative ocean governance measures.

The problem in regard to the artisanal fisherfolk in coastal **Zambales** and **Pangasinan** facing loss of livelihood is, as reported in the news media, on account of their being prevented from fishing in traditional fishing grounds in the Panatag/Scarborough shoal. The cause of the problem is attributed to Filipino fisherfolk being denied access to those traditional fishing grounds by Chinese Coast Guard and Fisheries Agency vessels especially during a seasonal fishing ban imposed by China. While it is a fact that Chinese Coast Guard and Fisheries Agency vessels are preventing access to **Panatag/Scarborough** shoal, this event alone should not cause serious disruption in livelihood of **Zambales/Pangasinan** artisanal fisherfolk. The **Panatag/Scarborough** shoal is not the only fishing area accessible to them, especially areas closer to shore. The real and underlying cause of the problem is that coastal fisherfolk are forced to range farther from the coast towards **Panatag/Scarborough** shoal, more than a hundred nautical miles from the coast and thus well beyond the normal range of artisanal fishing, because of serious depletion of fish stocks nearer the coast as a result of years of mismanagement of these resources. This is not a question of the right of Filipino artisanal fisherfolk to fish in Panatag/Scarborough Shoal; asserting that right is a political game among governments and fisherfolk is collateral damage. The question is whether artisanal fishing in the **Panatag/Scarborough** shoal is all that critical to the health and livelihood of coastal communities in the Provinces of **Zambales** and **Pangasinan** whereas they should rather be fishing closer to shore.

Conflicts between or among States arising from maritime or land border issues, what are labeled here as “political disasters,” and creating livelihood and other socio-economic concerns among inhabitants of those States, are not new and happen all over the world. In many instances, States concerned allow these issues to remain dormant for the sake of peace; in the words of former Premier Deng Xiaoping of China, to “let sleeping dogs lie.” In other cases, a weaker Party would quietly lick wounds but harbor irredentist sentiments; a case in point is the Sabah question. Another instance in the South China Sea, similar to the situation in the western coast of Region III, Vietnamese fisherfolk are prevented from fishing in the Paracels archipelago (*Manila Bulletin*, 11-September-2014, p.8 entitled: “Vietnam accuses China of beating fishermen”). Another **long**-running marine resources quarrel in Asia is that between India and Pakistan in the border between Sindh Province (Pakistan) and the State of Gujarat (India). Invariably these dormant border issues are “awakened” with the discovery of straddling resources, or sharing or allocation issues arise.

Border issues, however, have always been shown to have two facets; with opportunity as the obverse side of danger. In this situation, contending States would either take a constructive approach and agree to jointly manage and share resources, or resort to war. In the case of the South China Sea an international framework for cooperation in joint

management and sharing of marine resources is contained in UNCLOS Part IX. This is not in the context of a border dispute but in the effective governance of enclosed and semi-enclosed seas and sharing of its marine resources among riparian States. The obligation to cooperate is already present and only needs implementation. Instituting joint cooperation for the management of marine resources that is exhorted under the UNCLOS for enclosed/semi-enclosed seas would, in the jurisdictional conflict situation of the South China Sea, could also assume the character of “provisional measures” pending resolution of jurisdictional issues. It would be an interim mode of addressing jurisdictional questions but would, at the same time, serve as a durable and permanent ocean governance arrangement, which are among obligations of States Parties under the UNCLOS. Furthermore, these provisional or interim measures can create a benign atmosphere among Parties that could facilitate resolution of the territorial issues.

An interesting localized ICZM model and template. Artisanal fisheries as a livelihood and health concern all over the Philippines has recently been given attention in the wake of the Yolanda super-typhoon in the central Visayas region (Regions VII and VIII) as a natural disaster. It has been highlighted in the **Zambales** and **Pangasinan** provinces (Region III) on account of the South China Sea maritime disputes situation. In the former instance, the problem is the destruction of the means of livelihood i.e., fishing bancas. In the latter, the problem is the loss of fishing grounds i.e., the **Panatag/Scarborough** Shoal. In both instances, however, another concern would surface i.e., depletion of fish stocks. The two possible threats to health and livelihood of coastal communities due to fisheries depletion are met in Region III. This is because Region III has an agro-fishery corridor from the western coast of Luzon (**Bataan, Zambales, Pangasinan**) to the eastern coast (**Aurora**) that makes Region III vulnerable and exposed to the twin disasters mentioned earlier: an ongoing “political disaster” that is the South China Sea conflict situation in its western coast; and Aurora in the eastern coast always vulnerable and exposed to risks of Yolanda-type disasters being in tropical typhoon range and landfall. Moreover, in the two instances of fisheries depletion, the solution rests in a common approach through conservation in the setting of an **ICZM** scheme. Region III is an ideal start-up location for developing a template for **ICZM** appropriate and most suited for archipelagic Philippines. A well-designed and implemented RDC-III agro-fisheries **ICZM** program could be the launch project for the country’s **Blue Economy**, which could serve as a “two in one” model for the **ASEAN** and Central Indo-Pacific coastal communities.

The problem of artisanal fishing affecting coastal communities in Regions VII and VIII (Philippines) in the aftermath of Yolanda and Region III on account of “political disasters” can be conveyed in a transmuted graphic scenario for all over the country, thus: imagine a situation of generally perfect weather conditions for fishing, and artisanal fishermen are best equipped in regard to fishing boats and fishing tools and techniques. **But there is no fish to catch** because of crashed fisheries resources. This would be a creeping disaster worse than Yolanda, and due in part to over-capitalization, or an over-capacity build-back scheme as was also seen resulting in the Aceh, Phuket and Sri Lanka tsunami of 2004, with its disastrous affect on a wider coastal fisheries scale. This would show that, in this modern day and age, it is not enough to teach a person “how to fish” in order to survive; it is necessary to impart the commitment for implementation of sustainable management and conservation of marine resources in order to feed the population for the future. Replacement fishing boats would be the easy part if the disaster is not about crashed or severely depleted fisheries. Indeed, a current fisheries concern worldwide is “too many fishing boats chasing too few fish.” The support infrastructure for fisheries, e.g., landing sites, refrigeration facilities, and local fisheries markets; and agriculture, such as rice and vegetable and coconut crops can be restored in time, but livelihoods of millions depend on it being addressed in a sustainable and well planned manner, while assuming responsibility for the immediate livelihoods of those affected.

The solution that would serve the livelihood concerns of coastal communities in Region III is to rebuild fish stocks and institute ICZM. This recourse is necessary whether the political situation in **Panatang/Scarborough** Shoal finds resolution or not. There is no easy and fast solution but immediate steps can be taken towards rebuilding and conservation of the marine environment and resources. The BFAR implicitly shall validate the observation concerning depletion of coastal fisheries resources in **Zambales/Pangasinan** provinces. With the assistance of the **Philippine Navy** (PN) and commercial fishers, the DA/BFAR is installing two arrays of fish aggregating devices (which BFAR Region III also calls artificial reefs) in the coasts of 3 towns in **Pangasinan** – one set far offshore for commercial fishers, and another set closer to shore for artisanal fishers. (*Philippine Daily Inquirer* dated 25-May-2013, "China cordon drives fishers inland," p. A12; and *Philippine Daily Inquirer* dated 25-May-2012, "Gov't to go after PH fishermen but not China's," p. A17). This may have been intended as a "quick fix" solution but definitely never constructive, and even destructive in the longer term. Fish-aggregating devices is considered an unsound fisheries management tool.

Initiating ICZM as an ASEAN Vision 2025 Social-Cultural Broad Characteristic. Detailed aspects in an **ICZM** project depends on accompanying circumstances in each target territory. Any project with the breadth and magnitude, in a unique archipelago configuration and strategic location as in the Philippines, must necessarily involve a building-block capacity-building approach that must be prioritized and distributed over an immediate and near term, and the medium and long term. A good model in developing a suitable project program would be that of New Zealand which is also an archipelagic nation. Moreover, the Government of New Zealand, which is an **ASEAN** Dialogue partner, had supported the **ICRMP** since 1997 through the **New Zealand Agency for International Aid (NZAid)**. A first step would be to undertake a commissioned study with the collaboration of international experts and institutions to put together a design concept and organizational structure, and implementation steps with time frames.

Conclusion. A final point for a coherent and sustainable fisheries and ocean governance program in a countrywide scale is that a well-developed and properly organized and implemented national program can contribute significantly towards socio-economic resilience for the country as a whole, and contribute substantially towards food security. Moreover, as an inherently shared resource in the setting of the seas of Southeast Asia as enclosed/semi-enclosed seas, promoting cooperation and joint management among regional States concerned as under **UNCLOS Part IX**, would expectedly conduce towards regional peace and harmony. A necessary infrastructure component of the project ultimately to project nationwide and the maritime Southeast Asia region would be a durable high technology "mission control" - type central infrastructure for **Monitoring, Control and Surveillance system (MCS)**. This would be closely linked to an oceanographic institute and fisheries training centers as the monitoring and research base for the project now and in the future, with access to the public domain especially to government agencies and educational institutions at all levels. It would maximize/optimize its practical utility and educational/awareness value. The resulting support cluster would then serve as the central policy/program planning institute and educational/training facility for ocean studies and fisheries schools; and conceptually be a central tool for the region in its shared efforts to address ocean governance concerns. This technology-infrastructure science support cluster guarantees the project sustainability.

Finally, a region-wide **ICZM** program for the **ASEAN** and Central Indo-Pacific coastal communities can fall under any of the 3 broad characteristics under **ASEAN Vision 2025** (political-security, economic, and socio-cultural). It is suggested that the program be placed under the Socio-Cultural pillar, with hashtag #AEC 2015 Regional Ocean Governance Integration and Consolidation, and connectivity. ⚓

iSoftware

iSoftware Systems Technologies, Inc.

Ⓜ <http://issti.com>

☎ +63 (2) 874-2006

✉ info@issti.com

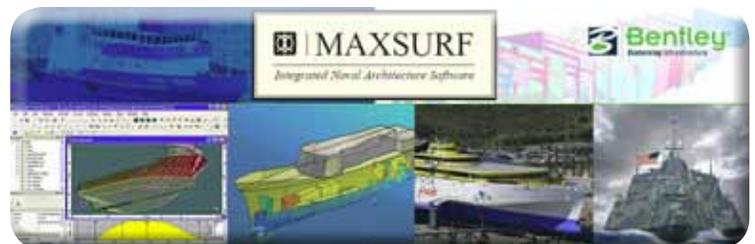
📠 +63 (2) 874-1522

Software Solutions for...

3D MODELING & ANIMATION



SHIP-DESIGN & NAVAL ARCHITECTURE



SHIPBUILDING & SHIP CONSTRUCTION DETAILING



STRUCTURAL & FINITE ELEMENT ANALYSIS



ARCHITECTURE, ENGINEERING, CONSTRUCTION, ETC.





Top 3 Innovations Improving Safety in the Marine Industry

Part One: Portable Gas Detection

by Martek Marine

Compliance with the strict marine regulations and codes can be time consuming and expensive for any operator. In an industry with such alarming historical safety statistics, it's imperative that we embrace innovation to eradicate onboard risks.

Regulations are constantly being amended and introduced to make shipping safer so we are going to look at the Top 3 Innovations Improving Marine Safety.

Portable Gas Detectors

Health and safety in the workplace is one of the most important considerations for any employer or business owner, with extensive and often expensive risk assessments needing to be carried out in any industrial environment. From farming to steelworks, most businesses now feel the weight of official bodies seeking to improve the conditions for workers and the marine industry is under more pressure than most.

Seafaring has been one of the most dangerous occupations for as long as it has been in existence and where the risks of drowning or contagious disease were once most feared, hazards onboard a ship are now much more complex and numerous.

There are industries that have their own international initiative to protect the lives of workers, but the risks are so great in the maritime sector that the **SOLAS** (International Convention for the Safety of Life at Sea) Convention was created.

The first version of the **SOLAS** convention was created in 1914 following the sinking of the Titanic and although never enforced because of the outbreak of the First World War, it formed the basis of future adaptations, which gave guidance on safety procedures for all seafaring vessels.

The efforts of **SOLAS**, international health and safety executives and operators, has helped to improve safety records onboard ships dramatically. Between 2012 and 2016, the number of marine incidents dropped from 433 to 206. Although 86% of 2016's cases were deemed to be serious or very serious, these figures show that efforts to improve safety are working.

Inflammatory Regulations. Ships are complex environments to manage, let alone to work in. Remove the situational element of being surrounded by millions of tons of water; working conditions are often cramped, with limited visibility and ventilation. Add to this a range of hazardous elements such as industrial chemicals and gases, and without proper processes, you have an accident just waiting to happen.

Health and Safety processes are bemoaned in almost every workplace. They slow down progress, add additional paperwork and generally make life difficult for anyone having to manage the reporting process. No matter the industry we work in, many of us see health and safety directives as being restrictive to efficiency and a chore in daily life, yet statistics show that they do save lives and cut the risk of injury.

Concords such as **SOLAS** exist to identify the risks and create and enforce legislations, which protect us all, otherwise we would probably all cut corners without a thought for the safety of others and ourselves.

A ship is a confined space by its very nature, meaning that workers are constantly working in restrictive and enclosed environments when carrying out their daily tasks. Early in 2016, SOLAS identified atmosphere testing as an area which could be improve working conditions and cut the risk of death and injury onboard a ship.

Regulation XI/1-7 was brought into effect to work alongside the earlier introduction of III/19, which sought to improve safety in enclosed spaces by requiring entry drills and training to be carried out every two months. The new regulation, XI/1-7, which came into effect in July 2016, requires any sized vessel to carry an appropriate portable gas detection system which could be used to identify potentially dangerous fluctuations in onboard gases, especially in confined spaces.

A ship's complex structure and need to fit an immense amount of equipment, personnel and cargo into a defined space means that carrying out regular maintenance tasks can be trickier than in an industrial operation on shore.

The invention of portable gas detection systems has been critical in the creation of marine risk prevention strategies. The ability to monitor safe levels of life threatening gases onboard a ship prevents explosions, fires and even life-threatening illnesses from exposure.

Choosing a Portable Gas Detection System. SOLAS Regulation XI/1-7 states that all vessels should carry at least one portable gas detector that is capable of measuring concentrations of oxygen (O₂), flammable gases or vapors, hydrogen sulphide (H₂S) and carbon monoxide (CO) in confined spaces.

Additional guidance states: *"It should be noted that, given a ship's specific characteristics and operations, additional atmospheric hazards in enclosed spaces may be present that may not be detected by the instrument recommended to be selected by these Guidelines, and in such cases, if known, additional appropriate instruments should be carried."* Meaning, one system does not necessarily suit all ships.

Choosing a portable gas detector isn't just about compliance, it's also about making sure that you have the correct equipment for your vessel's specific needs. On a smaller vessel, it may be that only the core 4 gases need to be monitored: Methane, Oxygen, Carbon Monoxide and Hydrogen Sulphide. On a larger ship or tanker, it may be necessary to measure levels of chlorine, propane or methane.

A portable gas detector such as the **Marine4™** emits an audible and visual alarm in the event of exposure to flammable or toxic gases. It simultaneously measures levels of the 4 key gases which are covered by regulation XI/1-7, with the additional benefit of an integral sampling pump to enable pre-entry into deep tanks, holds and void spaces.

Larger vessels and gas carriers want to ensure that all onboard gases are monitored at regular intervals, not just when work is being carried out. Previously this may have meant purchasing individual gas detectors, which were specific to each ship's cargo or infrastructure.

The **Marine5™** onboard gas detector improves safety and efficiency by offering the ability to test for bespoke gases such as ammonia,

carbon dioxide, chlorine, nitrous oxide and sulphur dioxide, in addition to the standard four, which makes the system ideal for applications such as LNG fuel operations and chlorine-producing BWT systems.

For cargo tankers, **Marine Tankscape™** has been developed to provide a complete shipping solution. Utilizing infrared technology, the **Marine Tankscape™** measures the hydrocarbon vapor in an inerted atmosphere.

The system can be calibrated with Butane, Propane or Methane, depending on the application. The integrated software also allows for onboard calibration with the ability to automatically print calibration certificates, as well as allowing logged gas readings with vessel locations that can be uploaded to internal IT infrastructure.

Always Be Calibrated. Our reliance on technology can have its downsides. We often rely so much on gadgets to help us automate tasks that we forget that we need to maintain them. Like any tool, without proper care and maintenance, portable gas detection systems can fail. Whether caused by a mechanical failure or general use and exposure to environmental factors, systems can sometimes fail to detect and react to the presence of a dangerous gas. A bump test is the only way to ascertain if a gas detector is working properly.

Bump tests expose the portable gas detector to a quantity of calibration gas to ensure that the system is working effectively. This can be an expensive and laborious process, even if you are just testing and calibrating a single unit.

The **Always Be Calibrated (A-B-C)** system is a bump test station with a difference. It only uses the minimum amount of gas required to calibrate your gas detectors with absolutely no wastage. It also automatically recalibrates in the result of a failed test giving 100% assurance of safety.

The system automatically generates a tamper-proof calibration certificate with a unique identifier to provide evidence of the compliance of your vessel, without having to wait for onshore certification, meaning that testing and calibration can be carried out at any time.

Many ship operators rely on third parties to test and calibrate their gas detection systems, even more potentially rely on older, static systems which require 6 monthly service checks which are almost never carried out onboard. Sending integral safety systems for maintenance is costly in terms of the time it takes to send back to shore, as well as the cost of the service contract.

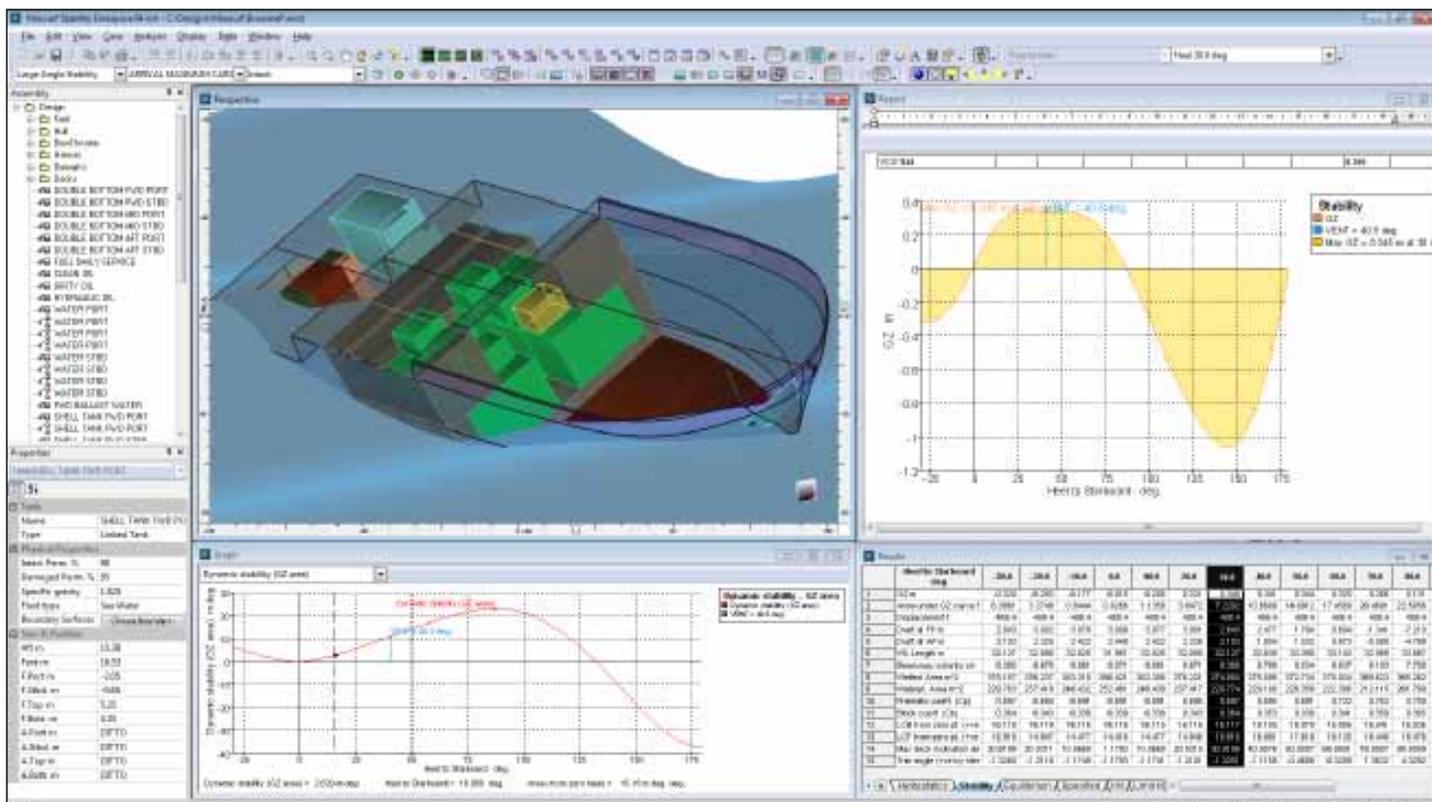
A-B-C is a compact system with the ability to bump test and calibrate whilst your gas detectors are recharging, meaning that you can be sure that they are reading accurately each time they are used. Testing and calibration takes under five minutes per unit and can be carried out by any one onboard, saving an immense amount of time and money for any operator locked into a costly service contract.

A-B-C also removes the human element out of calibrating and bump testing your equipment so that you know, without doubt, that readings are correct and date stamped each time the process is carried out. The tamper-proof calibration certificates are acceptable to Port State and Oil Majors standards.

The **Marine5™** is a self-calibrating system and combines the features of the **Marine4™** with the on-board calibration benefits of the **A-B-C** system, meaning that compliance with regulations is evidenced without any additional hard work.

Specialist innovations such as **Marine4™** and **A-B-C** have been created to make life safer for mariners and easier for operators looking to find a way to make compliance less of a burden. ⚓

PRS Leads the Way in Probabilistic Damage Stability Analysis



PRS Technical Services Inc. leads the way in assisting Filipino shipowners and operators in complying with MARINA MC 08-2015 entitled "Rules and Regulations on Subdivision and Damage Stability Requirements for Philippine-Registered Domestic Ships".

This MC outlines the requirements under Resolution MSC.216(82), adopting the regulations on subdivision and damage stability in SOLAS Chapter 11-1 which are based on the probabilistic concept and using the probability of survival as measure of ships' safety in a damaged condition. Implementation of said Circular requires powerful analytic tools like MAXSURF software.

Maxsurf Software provides PRS Tech's naval architects with powerful analytical tools, including probabilistic damage stability, advanced motions prediction and dynamic structural analysis with graphical tools that can be easy to use for defining and managing hundreds of damage conditions.

Companies who have trusted PRS Tech so far in complying with this MARINA policy includes the largest and most prestigious shipping companies in the Philippines like 2Go Group Inc./Caprotec Corporation, Magsaysay Ship Management, Oceanic Container Lines, Trans-Asia

Shipping Lines, Keywest (West Ocean) Shipping Line Corporation, etc.

For passenger vessels and larger ships, the probabilistic damage stability in the Maxsurf's Stability Enterprise module provides easy-to-use graphical tools for defining and managing hundreds of damage conditions. To facilitate compliance with the IMO (International Maritime Organization) stability criteria, MAXSURF Enterprise includes a built-in criteria library and graphical tools for defining and viewing damage zones. Maxsurf includes a comprehensive library of stability criteria, as well as the ability for users to define their own criteria. To assist with creating stability booklets, a unique templating system allows you to define the report format using a Microsoft Word template document. Tables, graphs, and images are then automatically sent to the report.



For more information on this topic, please contact:

Ms. Leyka Dillo – PR Executive

Mobile No.: +63917 3057026 / +6399 499981246

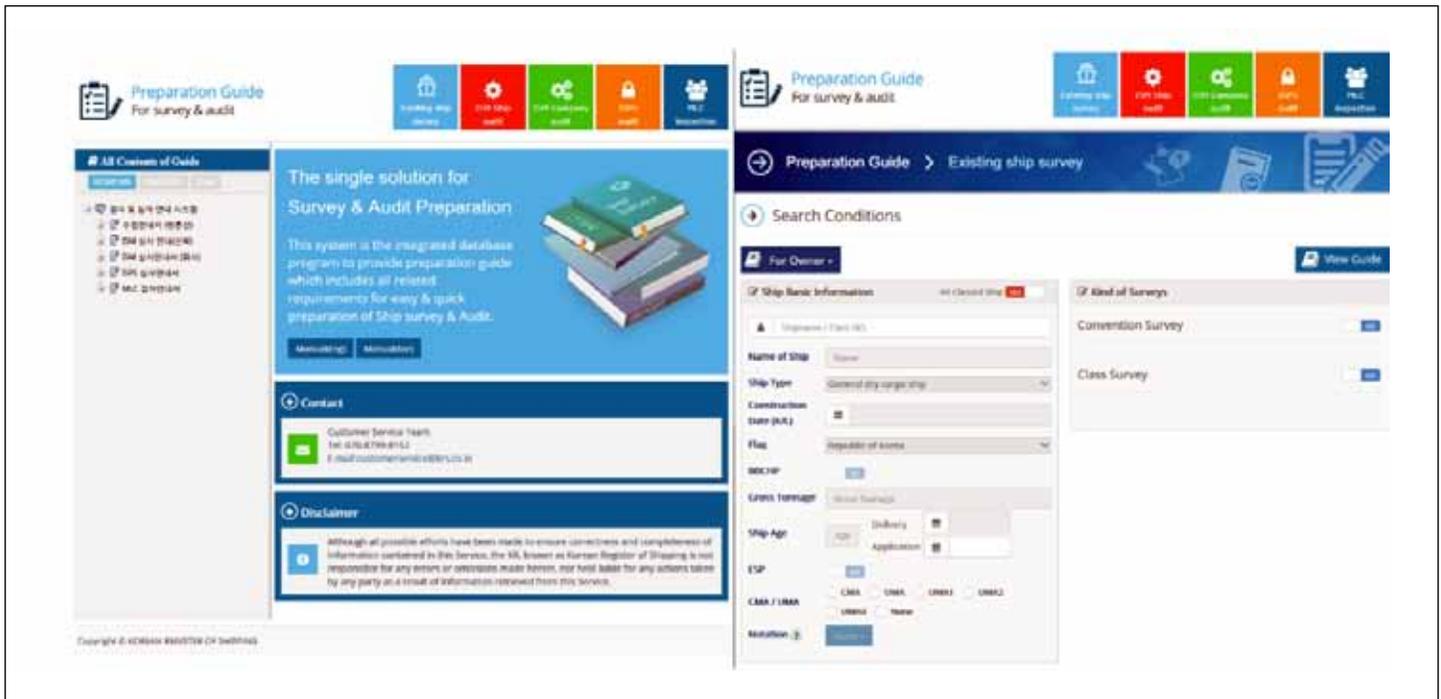
Tel No: +632 3101588

E-mail: info@prsclass.org

2nd Floor T. M Kalaw center, T. M. Kalaw Avenue, Ermita, Manila

Website: www.prsclass.org

KR Launches Industry's First Survey & Audit Preparation Guide



Korean Register (KR) – an International Association Classification Society (IACS) member classification society – has launched the industry's first **Survey & Audit Preparation Guide** which will allow shipowners to check exactly what items need to be prepared for their next vessel survey audit, before submitting an application.

KR has used its extensive data resources and IT technology expertise to develop the new tailored service that will support shipowners' forward planning helping them to get the most out of their ship safety management activities. Previously, shipowners did not know which items they needed to prepare for the ship survey before submitting their application.

Mr Jeong Kie Lee, Chairman and CEO, KR says: "This is another example of our work to go 'above and beyond' when providing convenient value-adding services for our customers to support their business activities and enhance safety. The new guide — which is the first time any organization has offered such a service — will help with timely operational planning, and can be checked anytime, anywhere."

KR has been developing a specialist database for this purpose over the last two years. It includes the different types of international maritime conventions, KR's survey rules, the legal requirements of each flag state, and identifies the specific actions and timeline for each shipowner.

The 'Survey & Audit Preparation Guide' uses this data to help shipowners prepare for forthcoming ship surveys, International Safety Management and International Ship and Port facilities Security (ISM/ISPS) audits, and Maritime Labor Convention (MLC) inspections. The online guide also offers shipowners the option to print out tailor-made information when selecting types of survey and the ship's specification including the ship type, construction date and flag state.

The new service which is tailored to each ships' specific requirements is available on the homepage of KR's website (<http://guide.krs.co.kr/Login/Login.aspx>). Current users of KR's e-Fleet system can access the 'Survey & Audit Preparation Guide' free of charge, using their existing passwords and sign in details.

New users should contact KR's customer service team on tel: +82 70 8799 8150, or email: customerservice@krs.co.kr, to be assigned access IDs for the system (<http://guide.krs.co.kr/Login/Login.aspx>).

The KR was established in 1960 with the purpose of promoting safety of life, property and the protection of the marine environment.

KR currently classes an international fleet of 3,068 vessels totaling 69 million GT. It is headquartered in Busan, South Korea and operates a network of 66 offices around the world. It's Chairman and CEO, JK Lee, is a naval architect. 

Selection Parameters for the Choice of Marine Diesel Engines for the Navy and Coast Guard Vessels

by Captain Tomas D. Baino PN (Ret) Naval Architect V, DOTr-PCG Consultant



INTRODUCTION

Propulsion is a means of creating force leading to the movement of a vehicle in the water, air or in land. The term is derived from Latin word "pro" meaning before or forward, and "pellere" meaning to drive. A propulsion system consists of the source mechanical power, and propulsion to convert the power into propulsive force.

The main engine of a ship is connected to its propeller thru the shaft. This system is used to provide speed and power to the ship efficiently.

Marine propulsion is the mechanism or system used to generate thrust to move the ship or boat across the surface or underwater. Marine engineering and naval architecture go hand and hand and their discipline is concerned with the design of marine propulsion system, for both ship and submarines.

The concern of the naval architect is to provide strong foundation attachment to the engine and reduce the frictional resistance of the hull, which if not corrected could result in power losses to the engines.

In contrast, the concern of the marine engineer concentrates on providing the power demand of the ship at the most economical means (lower fuel consumption), operation and maintenance.

Today, the primary source of the propeller power is the marine diesel engine and the power requirement and rate of revolution of the propeller is very much dependent on the ship hull form (planing, semi-planing, and displacement type) and the propeller design. This article will, in particular, explain briefly some of the most basic parameters in the choice of the best-suited propulsion marine diesel engine for a

specific type of ship, for which the Philippine Navy (PN) and Philippine Coast Guard (PCG) could adopt as a template. This article will only concentrate on the surface ship propulsion design.

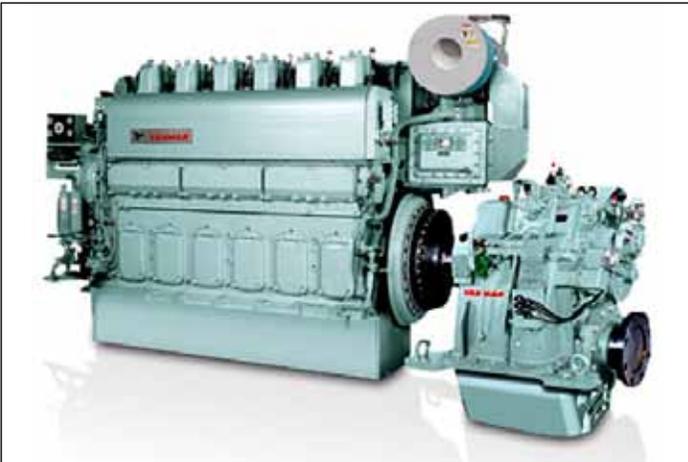
3 ENGINE TYPES AND APPLICATIONS

- 1. Low Speed Engine (95-500 revolutions per minute).** This is a large marine propulsion engine, with a direct coupled or geared reduction drive to the propeller. This type of engine is used in large displacement type vessel.



2. Medium Speed Engine (500-1000 revolutions per minute).

This has a geared-reduction or diesel electric drive. This type of engine is used in semi-displacement type vessel.



3. High Speed Engine (over 1000 revolutions per minute). A geared reduction gear. This type of engine is used in planning type vessel.



terms of operation and maintenance.

- ♦ **Scheme of Overhauling** – the engine must have the ability to be overhauled onboard the ship in order to lower the maintenance cost.
- ♦ **Power to Weight Ratio** – the engine must be as light as possible in order to lessen the weight of displacement of the ship.
- ♦ **Availability** – the engine must have longer operating time at minimum load factor.
- ♦ **Acquisition Cost** – the engine must be competitive in terms of cost of acquisition.
- ♦ **Operating Profile** – this is one of the critical points of the selection process in order to identify the engine compatible to the operation and maintenance doctrine of the propulsion system.
- ♦ **Engine Load Factor** – a characteristic of the engine to provide wide spectrum of operation utilizing minimum engine power load while at the same time achieving the various speeds and power requirement, without subjecting the engine to excessive stress.

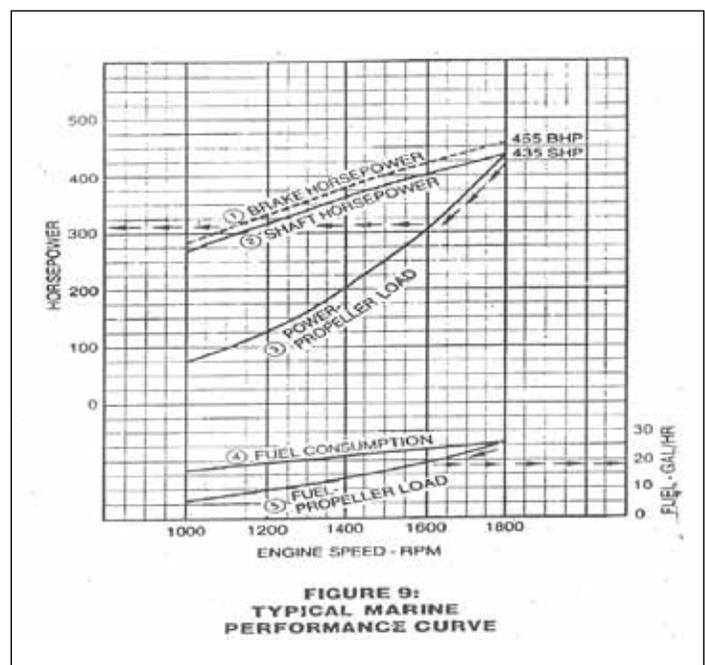
MARINE DIESEL ENGINE PERFORMANCE CURVES

The performance curves of every Marine Diesel Engine indicate the power output, fuel consumption data, and the engine speed in Revolutions per Minute. The performance curve shows the following:

- ♦ **Brake Horsepower (BHP)** – this is the power available at the engine flywheel.
- ♦ **Shaft Horsepower (SHP)** – the net power available at the output shaft of the marine gear after consideration of frictional losses through the gear, and parasitic losses from the standard driven accessories (alternator, raw water, pump, etc.)
- ♦ **Propeller Load** – the theoretical horsepower absorbed by a typical fixed pitch propeller which has been designed to absorb the engine pull power output at its rated speed.
- ♦ **Fuel Consumption** – the indicated amount of use when the engine develops power according to the performance curves.

SELECTION PARAMETERS

- ♦ **Rated Power** – the power needed by the ship to propel in the water efficiently.
- ♦ **Economy of Operation** – Minimum fuel consumption at various engine load factors.
- ♦ **Meantime Between Overhauls** – the engine must have the aptitude of longer top over role.
- ♦ **Availability of Spare Parts and Service Center** – to maintain the availability and readiness of the engine, it must have a local service center and spare parts supplier.
- ♦ **Climate Condition** – the engine must be capable to adapt to the area of operation, climate condition, and must not degrade or encounter functionality degradation.
- ♦ **Environmentally Friendly** – the engine must have low emissions of carbon monoxide so as not to pollute the environment.
- ♦ **Special Tools** – the engine must have a commonality of tools that can be used in a similar type engine.
- ♦ **Life Cycle Cost** – the engine must have low life cycle cost in



- ♦ **Fuel** – propeller load provides fuel consumption when the engine develops power according to the curve; when actual propeller demand exceeds the theoretical propeller load, the fuel consumption increases proportionally.

LOAD FACTOR OF MARINE DIESEL ENGINE

Load Factor is the amount of fuel burned over a period of time divided by the full power fuel consumption over the same period of time. The higher the fuel, the higher the speed and power imposed on the engine.

The Operating Profile of the vessel is very important in order to preserve the life span and availability, readiness and reliability of the Marine Diesel Engine. The said Operating Profile will allow the engine to conserve its rated power without undue stress to the internal combustion system of the engine. This has a significant effect on the periods of Meantime Between Overhauls (MTBO). The stated overhauls were based on the adopted Operating Profile and operated at various engine load profile. The higher the load factor, the sooner the engine will require an overhaul (MTBO time allowance exhausted).

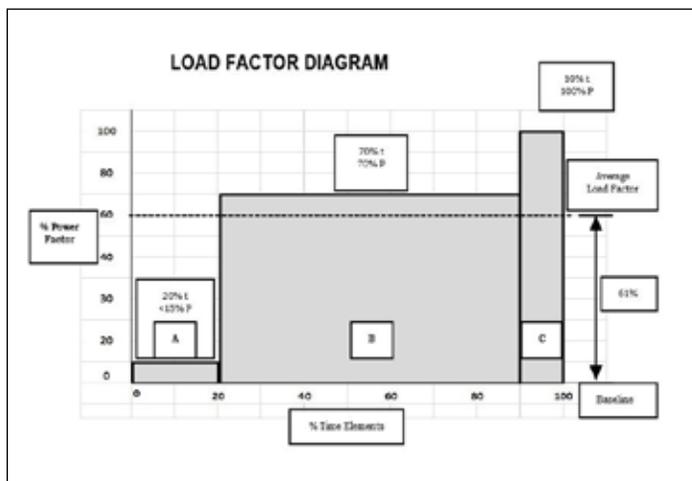
Speed Modes	Time Allowable	Power Load	Load Factor
1. Maneuvering/ Loitering	20%	<10%	$0.20 \times .10 = 0.020$
2. Cruising / Patrolling	70%	70%	$0.70 \times .70 = 0.490$
3. Interception/ Hot Pursuit	10%	100%	$0.10 \times 10 = 0.100$
Average Load Factor			0.610

Some Marine Diesel Engine limitation has some restriction. For example:

Operations Profile and Load Factor

- ♦ **Operations Profile:**
 - 30 Days Deployment at AOR = 720 hours
 - Meantime Between Overhaul of Engine = 9,000 hours
 - Operation Mode of Propulsion Engines
- ♦ **Load Factor = 0.610 x 100%**
= 61.00%
- ♦ **Usable Power (Theoretical)**
= 2,580 KW x 61.00%
= 1,573.80 KW
- ♦ **Meantime Between Overhaul (MTBO)/Deployment**
= 720 hours x 0.610%
= 439.20 hours
- ♦ **Ship Operation Time at Sea**
= 720 hours
- ♦ **Time Utilize for the Engine**
= 439.20 hours x 6 Deployment/Year
- ♦ **Number of Years Before Overhaul**
= 9000 hours/2,635.20 hours
(Average)/Years = 3.415 Years

LOAD FACTOR DIAGRAM



Recommendation:

Adopt the foregoing basic selection parameters in choosing propulsion engines for combatant and non-combatant vessels for the Philippine government.



References:

- Detroit Marine Diesel Engine
- MTU Marine Diesel Engine
- Wikipedia

PHILIPPINE REGISTER OF SHIPPING

Services that we offer:

- Classification Services
- Statutory Inspection
- Training Services

Safe Seas Always

TECHNICAL SERVICES INC.

Services that we offer:

- H&M and F&I Condition Surveys
- On Hire / Off Hire Surveys
- Pre-purchase Surveys
- Towage Approval Surveys
- Grounding and Collision Surveys
- Cargo Damage Surveys and Investigations
- Pollution Surveys
- Fire Investigations
- Expert Witness
- Risk Evaluation and Analysis
- Superintendent and Repair Supervision
- Naval Architecture and Ship Design
- Project Cargo Surveys
- Nickel Ore Loading Surveys
- Management System Development, Consultancy
- JH143 Shipyard risk assessment surveys

QUALITY ASSURANCE INC.

Services that we offer:

- ISO certification of various management systems, validation and verification of these management systems in compliance with national and international standards
- Public or in-company training events (like ISO and safety trainings) including customized training solutions or multi-disciplinary training which can better equip companies in implementing their management system

Your Partner in Technical Excellence

2nd Floor T.M. Kataw Center
963 T.M. Kataw Avenue
Ermita Manila
1000 Philippines

Tel: +632 3101588
Fax: +632 3101589

E-mail: info@prsglass.org

Website: www.prsglass.org



Hempel Launches New Anti-fouling Coatings Delivering Outstanding ROI and Flexibility

by Navigate PR

Leading global coatings manufacturer Hempel is launching two new premium antifouling coatings, Globic 9500M and Globic 9500S. The coatings offer customers a potential 2.5 per cent reduction in speed loss. This equates to significant fuel savings and lower CO2 emissions improving the operational efficiency of a vessel and minimising the operator's environmental footprint.

This next generation coating series builds on Hempel's proven Globic technology to deliver superior antifouling performance for new buildings and dry-dockings, delivering an outstanding return on investment and flexibility from outfitting through the entire docking interval.

Hempel's patented Nano acrylate technology is the strength behind the Globic range and provides a fine polishing control mechanism to bring the integral biocides to the surface at a stable rate ensuring a clean hull. By combining the strongest binder and biocide package for premium performance at different trading speeds, Globic 9500M and Globic 9500S outperform other self-polishing coatings (SPC) particularly when slow steaming.

Henrik Dyrholm, Global Product Manager, Hempel A/S says, "Globic 9500M (M for maintenance) is designed to protect against slime as well as soft and hard fouling in all conditions. Globic 9500S (S for static) is designed to protect against hard-fouling even during extended outfitting periods. Together these two coatings deliver unparalleled anti-fouling protection offering our customers improved operational efficiency, flexibility and a high return on investment."

"Our Globic range has been very well received in the market and since its launch in 2005, over 25 million litres have been delivered worldwide with more than 5,000 vessel applications achieved. Our new coating series is the next step in high performance antifouling protection".

Additionally, the patented microfibres incorporated in the paint give Globic 9500M and Globic 9500S a best in class mechanical strength to avoid cracking and peeling. Globic's unique technology allows it to start working as soon as the hull meets the water for full

and immediate antifouling protection, making it highly efficient even for slow steaming and long idle periods.

Globic 9500 Series at a glance:

- ◆ Lasting protection against all kinds of fouling – designed for 60+ months docking intervals
- ◆ Suitable for all vessels at all speeds
- ◆ Incorporates proven patented Nano acrylate technology
- ◆ Patented microfibres for best-in-class mechanical strength to avoid cracking and peeling
- ◆ Outperforms other SPC, particularly during slow steaming
- ◆ Excellent colour stability
- ◆ Nano acrylate technology

The new coatings incorporate specially designed water-activated Nano acrylate technology that uses nano capsules to control polishing. When seawater comes into contact with the nano capsules, it penetrates the hydrophobic outer shell. The hydrophilic inner core chemically hydrolyses and then expands which breaks through the outer shell, enabling controlled polishing. Consistent self-polishing and a constantly thin leach layer ensure uniform biocide release over the entire docking interval. Unlike other premium antifouling technologies, Nano acrylate technology provides immediate antifouling protection without the need for water friction.

Special microfibres reinforce the binder, providing a skeleton effect that gives the coating enhanced mechanical strength and makes it more resistant to cracking.



For further information, please contact:

Sandra Baekby-Hansen
Group Communication Manager
Phone: +45 21372985

Email: sabae@hempel.com or communications@hempel.com

Operational Plan for The Manila Bay Coastal Strategy: Implementing the Supreme Court Order to Cleanup, Rehabilitate and Preserve Manila Bay

by Donna Mayor-Gordove, Executive Director
Manila Bay Coordinating Office (MCBO)

The Supreme Court rendered a decision on 18 December 2008 ordering 13 government agencies, including the Department of Environment and Natural Resources (DENR) to clean up, rehabilitate, and preserve Manila Bay, and restore and maintain its waters to SB level to make them fit for swimming, skin-diving, and other forms of contact recreation. The case stemmed from a complaint filed on January 29, 1999 before the Regional Trial Court (RTC) in Imus, Cavite against the following agencies for their failure to perform their job of preserving the water quality of the Bay:

1. DENR
2. Department of the Interior and Local Government (DILG)
3. Metropolitan Waterworks and Sewerage Systems (MWSS)
4. Local Water Utilities Administration (LWUA)
5. Department of Agriculture thru the Bureau of Fisheries and Aquatic Resources (DA-BFAR)
6. Department of Public Works and Highways (DPWH)
7. Metropolitan Manila Development Authority (MMDA)
8. Philippine Ports Authority (PPA)
9. PNP-Maritime Group
10. Philippine Coast Guard (PCG)
11. Department of Health (DOH)
12. Department of Education (DepEd)
13. Department of Budget and Management (DBM)

Likewise, heads of agencies, in line with the principle of "continuing mandamus", were ordered to each submit to the Court a quarterly progressive report of the activities undertaken in accordance with the Decision. The Manila Bay Advisory Committee (MBAC) was created to receive and evaluate the quarterly progressive reports on the activities undertaken by the agencies in accordance with said decision and to monitor the execution phase.

Specifically for the DENR, the Court ordered it to fully implement its Operational Plan for the Manila Bay Coastal Strategy (OPMBCS) and to call regular coordination meetings with concerned government departments and agencies to ensure

its successful implementation in accordance with the indicated completion schedules. The OPMBCS outlines the actions and specific projects that would result to the realization of the stakeholders' shared vision for Manila Bay and to the Court's order of cleaning up, rehabilitating and restoring the Bay's water to SB Class. The interventions under the OPMBCS are grouped into five (5) clusters/outcomes namely: (1) Liquid Waste Management; (2) Solid Waste Management; (3) Informal Settler Families (ISFs) and Illegal Structures Management; (4) Habitat and Resources Management; and (5) Partnership and Governance, which addresses the barriers and enabling concerns of the OPMBCS, as well as, integrates the implementation of the four (4) preceding clusters.

It is worth to note that when we talk about Manila Bay we are not just talking about the bay itself with a surface area of 1,870 km² and a coastline of 190 kilometers. The Manila Bay Region consists of the National Capital Region (NCR), four (4) coastal provinces (Bataan, Bulacan, Cavite and Pampanga) and four (4) non-coastal provinces in the watershed areas (Laguna, Nueva Ecija, Rizal and Tarlac), comprising about 178 local government units (LGUs).

To facilitate the focus implementation of the OPMBCS and immediate feedback to the DENR Secretary, the Manila Bay Coordinating Office (MBCO) was transferred to the Office of the Secretary and was strengthened in 2011.

From 2011 to 2016, the implementation of the OPMBCS resulted to the following:

A. Liquid Waste Management

While the waters of the Bay remain below the SB level, much has been done to minimize the pollution load that went into the Bay. 9,600 establishments were targeted to be monitored from 2011-2016. Actual accomplishment yielded to 10,168 industries monitored.

However, only 49% of the monitored establishments have discharge permits which resulted to about 24,688.9 kg/day (54.17%) of pollution load from industrial sources treated in accordance with DENR effluent standards. The non-compliant establishments were issued with Notices of Violation (NOVs) by the Environmental Management Bureau (EMB) and compelled them to comply with existing laws, rules and regulations.

With regard to provision of sanitation services and sewerage connection, 14% of the water served population has been connected to sewer lines and sewerage system. While, 44% of the water served population has been offered sanitation services. These efforts of the MWSS, through their water concessionaires, have resulted to 35,167 kg/day BOD or 9% total pollution loading treated in accordance with current sewage and septage regulation and standards.

Lastly, three (3) Water Quality Management Areas (WQMAs) have been designated in 2016 pursuant to the Clean Water Act and an offshoot of the Area-Based Management Planning approach carried out. These are the (1) San Juan River System; (2) Imus-Ylang-ylang-Rio Grande-Canas River System; and (3) Marilao-Meycauyan-Obando River System. WQMAs are designated to address conditions which affect the physicochemical, biological and bacteriological reactions and diffusions of pollutants in the water bodies or otherwise share common interests or face similar development programs, prospects or problems.

B. Solid Waste Management Cluster

For Solid Waste Management, a total of 89 of the 178 (50%) local government units within the Manila Bay watershed area have approved 10-Year Solid Waste Management Plan. While 94 (54%) LGUs have functional materials recovery facility (MRF).

Cases have been filed in the Ombudsman against 13 LGUs for still operating open dumpsites. Likewise, continuous assistance by the DILG and the National Solid Waste Commission (NSWMC) to the LGUs is being carried out to make the 178 LGUs compliant with R.A. 9003

C. Informal Settler Families (ISFs) and Illegal Structures Management

The baseline target in 2011 was 59,180 ISFs to be removed from the easement areas of various waterways within the Manila Bay area. From 2011-2016, the DILG, MMDA and DPWH, in partnership with concerned local government units, were able to relocate 45,204 ISFs (76.38%).

However, the LGUs failed to contain the growth of the ISFs along the waterways. As of end of 2016, the total number of ISFs within the Manila Bay area has ballooned to 184,257 or about 211% from the 2011 figure.

D. Habitat and Resources Management

One of the targets under the Habitat and Resources Management Cluster is the reduction of soil erosion as sedimentation and agricultural runoffs are also major causes of water quality problems. To address this concern, the OPMBCS targeted the greening/vegetation of about 68,752 hectares. From 2011-2016, a total of 106,938 hectares have been planted under the National Greening Program (NGP).

With regard to the rehabilitation of Manila Bay ecosystems, the target was to restore the 1994 level of mangrove areas which is approximately 794 hectares. The accomplishment for 2011-2016 reached to about 600 hectares.

Aside from the restoration/rehabilitation of mangrove areas, two (2) wetlands have been added to the list to be protected. These are the Las Pinas-Paranaque Critical Habitat and Ecotourism Area (LPPCHEA) and the Balanga Wetland and Nature Park. The LPPCHEAS was declared a Ramsar site in March 2013, a wetland of international importance.



One of several trash collecting boats turned over by DENR to the Pasig River Rehabilitation Commission (PRRC), Bulacan provincial government, and the municipalities of Sto. Tomas in Pampanga and Orion in Bataan.

Moreover, five (5) locally managed marine protected areas were established. These are in (1) Mariveles, Bataan, (2) Tanza, (3) Naic, (4) Ternate, and (5) Carabao Island, all in the Province of Cavite.

E. Partnership and Governance

Scientific studies and adaptive management were carried out to strengthen the approach in planning and policy formulations. Among the studies that were conducted under the OPMBCS are as follows:

1. Assessment of Non-Point Source Pollution From Croplands of Manila Bay System
2. Application of Stable Isotopes to the Assessment of Pollution Loading From Various Sources in the Pampanga River System Into the Manila Bay
3. Study on Benchmark Data on Pollution Load From Livestock Sources (Point Sources) - Estimation of Pollution Loading From Livestock and Poultry
4. Development of Analysis and Modeling Tools As Part of Decision Support System for Managing the Environmental Quality of Manila Bay/Laguna Lake Watershed System

Moreover, area-based management plans were formulated and currently being implemented in 13 river systems in the Manila Bay area. This is to address the concern that to clean Manila Bay you have to clean the water coming from the source (upstream). Like the water quality management areas, the ABMP addresses the four thematic concerns of the OPMBCS on a micro level or per

river system. Appropriate institutional arrangement that has been agreed upon is instituted per ABMP area to ensure its implementation and coordination among concerned agencies, partners and stakeholders. The river systems with an ABMP are as follows:

NCR	REGION III	REGION 4A
1. Malabon-Tullahan-Tinajeros River System	1. Marilao-Meycauyan-Obando	1. Imus-Ylang-ylang-Rio Grande River (Cavite)
2. Paranaque-Las Pinas-Zapote River System	2. Talisay	2. Maragondon River (Cavite)
3. Pasig-Marikina-San Juan River System	3. Bulacan-Angat Watershed	3. Labac River (Cavite)
	4. Nueva Ecija (Pampanga River Basin Upstream)	4. Sta. Cruz River (Laguna)
	5. Pasak River, Porac Gumain, Pasig-Potrero River	5. Boso-boso River (Rizal)

The MBCO has also distributed forty (40) trash collecting boats to various local government units and agencies to aid them in the cleanup of Manila Bay and its waterways.

AREA	LGU/OFFICE	UNITS
NCR	Manila, Malabon, Paranaque, Taguig, Valenzuela, Pateros, Las Pinas, Navotas	8
	<ul style="list-style-type: none"> Bulacan (8): Obando, Malolos, Meycauyan, Hagonoy, Bocaue, Calumpit and PG Bulacan (2) Pampanga (5): Masantol, Sto. Tomas and PG Pampanga (3) Bataan (5): Abucay, Balanga, Samal, Pilar and Orani 	18
Region 4A	Bacoor, Rosario, Tanza, Cavite City, Kawit, Noveleta, Naic, Maragondon, Ternate and PG Cavite	10
Government Agency	MMDA	2
	PRRC	2
Total		40

Real time water quality monitoring equipment (WQME) have been installed at the (1) Vitas Pumping Station in Tondo, Manila, (2) Napindan Pumping Station, (3) Libertad Pumping Station in Pasay City and at the (4) Coast Guard Headquarters in Port Area, Manila. Four additional WQME will be installed in identified sites in Pampanga, Bulacan, Bataan and Cavite.

Currently, the OPMBCS has been updated and its coverage is 2017-2022. The updated OPMBCS is a product of series of workshops and consultations among mandamus agencies and other stakeholders. The finished product was presented to the Manila Bay Advisory Committee (MBAC) last 05 May 2017, and was approved in principle by Justice Presbitero Velasco, Chairman of the MBAC.

Final copy of the 2017-2022 OPMBCS incorporating the amendments as well as the enhancement of the Plan as agreed during the MBAC meeting was submitted to the Supreme Court on 13 June 2017. The updated OPMBCS serves as a guide to all mandamus agencies with regard to implementation of their respective targets and deliverables

Last 10 August 2017, DENR Secretary Roy A. Cimatu presided the 1st Meeting for CY 2017 of the Manila Bay Coordinating

Committee (MBCC). The meeting was primarily called to re-affirm the commitments of all the mandamus and concerned agencies, and to further forward all the efforts and actions for the implementation of the 2017-2022 Operational Plan for the Manila Bay Coastal Strategy (OPMBCS). It was the 2nd MBCC meeting presided by the DENR Secretary. The first was in 2009 by then Sec. Jose L. Atienza, Jr.

But more than just implementing the OPMBCS, we must realize that it is the duty and responsibility of every citizen of this nation to protect, conserve and rehabilitate Manila Bay. Practicing solid and liquid waste management, volunteering in clean-up activities, participating in tree planting projects, among others, and adhering to environmental laws could help bring back the Bay back to its former glory.

*Makiisa at makibahagi sa **MANILA BAYanihan** para sa Kalikasan!*



Donna Mayor-Gordove is currently the Executive Director of the Manila Bay Coordinating Office (MBCO). She has been with the Department of Environment and Natural Resources (DENR) since 2005 and held various supervisory positions.

Prior to her stint with the DENR, she worked in the Department of Transportation and Communication (now, the Department of Transportation), the Development Academy of the Philippines (DAP) and the Housing and Urban Development Coordinating Council (HUDCC).

She is a graduate of Bachelor of Science in Commerce at the De La Salle University and has an M.A. in Urban and Regional Planning at the School of Urban and Regional Planning, University of the Philippines. She is a licensed Environmental Planner and placed 3rd in the 1998 Environmental Planner Licensure Examination.





Mangrove Forests in the Philippines

by Vicky Viray Mendoza

The Department of Environment and Natural Resources (DENR) was recently mentioned on [UNTV News](#) on 05-September-2017 as continuously pushing for the periodic planting of **mangroves**. DENR is targeting to plant mangroves in more than 50K hectares of swamps, especially in areas frequently hit by typhoons. DENR spends roughly Php50K per hectare as part of the **National Greening Program** to plant **mangroves**. Management of **mangroves** is a mandate of the **Protected Areas and Wildlife Bureau (PAWB)**'s Coastal and Marine Management Division.

Mangroves along the coastlines significantly decrease the dangers and havoc brought on by typhoons, storm surges, and tsunamis. **Henry Adoraro**, Director, **Ecosystem Research and Development Bureau** stated, "*Mangroves provide shelter and protection to the community. In fact, study shows that a kilometer-wide of mangrove area can reduce the tsunamis by 70% when it comes to strength.*"

DENR defines **mangroves** as a part of the coastal and marine ecosystem that includes seagrass and the coral reefs. Out of the world's more than 70 salt-tolerant **mangrove** species, around 46 species exist in the Philippines. The **mangrove** is known as the "rainforest of the sea," and like the inland rainforest, a **mangrove** provides both economic and ecological benefits to the coastlines. **Mangroves** are a source of alcohol, medicines, tannin, timber, and housing materials.

The link between land and the sea. The **World Wildlife Fund (WWF)** considers the **mangrove** forest as a bridge between terrestrial and marine environments, and as a productive ecosystem. **Mangroves** transfer organic matter and energy from land to sea, forming the base of many marine food sources. **Mangroves** are thus home to terrestrial and marine life. **Mangroves** also play a vital role in trapping and filtering sediments, which help protect coastlines. Since **mangrove** forests grow where saltwater meets the shore in tropical and subtropical regions, they serve as an interface between terrestrial, fresh-water and marine ecosystems.

With the **mangroves'** distinctive stilt and prop roots extending from the trunk, **mangroves** thrive in areas of soft, waterlogged, and oxygen-poor soil by using aerial and horizontal roots to gain a foothold in the soil. The roots absorb oxygen from the air, and the tree leaves expel excess salt. A multitude of aquatic and salt-tolerant plants also grow within the **mangrove** forests.

Mangrove ecosystems are most diverse in South Asian seas and least diverse in Caribbean seas. **Mangrove** forests can roof a number of endemic bird species that are endangered. But apart from the natural and human threats, **Mangroves** require relatively intact hydrographic and salinity regimes. Without these conditions, the propagation or conservation of mangroves is difficult or next to impossible to achieve.

Mangroves are susceptible to pollution, particularly oil and petroleum-based compounds; and a change in salinity levels can have a dramatic impact on the **mangrove** forest.

Mangroves in the Philippines. In 2013, global Landsat imaging done from 1990-2010 by **Jordan B. Long** of EROS and **Chandra Giri** of ARSC, both of which were contractors of USGS in South Dakota, published in the *Journal of Coastal Research*, the estimated total area of Philippine **mangrove** coverage at 256, 185 hectares in 2000, which was a bit higher than **DENR's** estimate of 247,362 hectares in 2003.

The report finds 66 out of 82 (80%) provinces have mangroves; and identified the top provinces with the most **mangrove** areas as a percentage of total national area: Palawan (22.2%), Sulu (8%), and Zamboanga del Norte and Sur (9.86%); Surigao del Norte and Sur (6.8%), Eastern and Western Samar (6.1%), Quezon (5.5%), Tawi-Tawi (4.4%), Bohol (3.69%), and Basilan (2.97%). About 49K hectares (19%) of total national area is protected by IUCN for long-term conservation purposes. These protected mangroves are in Palawan, Siargao, Malampaya Sound, Biri Larosa, El Nido, Tanon Strait, Northern Sierra Madre, Dumanquilas Bay, Sibuyan Islands, and Calauit Island.

Importance of Mangrove ecosystem services:

- ♦ **Fisheries:** The **mangrove** forest is home to a large variety of fish, crab, shrimp, and mollusk species. These fisheries form an essential source of food for thousands of coastal communities. The forests serve as nurseries for coral reef fish and other fish.
- ♦ **Timber and plant products:** The **mangrove** wood is resistant to rot and insects, making it extremely valuable. Many coastal and indigenous communities rely on this wood for construction material, firewood, wood chips, pulp, and charcoal. These communities also collect medicinal plants from **mangrove** ecosystems and use **mangrove** leaves as animal fodder.
- ♦ **Coastal protection:** The dense root systems of **mangrove** forests trap sediments flowing from rivers and off the land. Trapped sediments help stabilize the coastline and prevent erosion from hurricanes, high waves, storms and floods. And by filtering out the sediments, the **mangroves** protect coral reefs and seagrass meadows from being smothered in sediment. In areas where **mangroves** had been cleared, coastal damage caused by natural disaster is much more severe.
- ♦ **Tourism:** Given the diversity of life inhabiting **mangrove** systems, and likely proximity to other tourist spots such as coral reefs and sandy beaches, it is surprising that only a few countries have tapped into the tourism potential of their **mangrove** forests. Bicol and Palawan offer snorkeling expeditions in and around **mangroves** to witness a variety of fish against an enchanting scenario of interwoven roots delving deep into the sand. Potential revenue generation lies in tourism with on-site learning about **mangrove** forests.

Threats. The **mangrove** forests are one of the world's most threatened tropical ecosystems. More than 35% of the world's **mangroves** are already gone. The rate of disappearing **mangroves** in this century is up to 50% in countries such as India, Philippines, and Vietnam, while in the Americas they are being cleared at a rate faster than tropical rainforests. Although natural disasters are big threats, man-made pollution is the biggest threat to mangroves. The threats include:

- ♦ **Clearing:** The **mangrove** forests are being cleared to make room for agriculture, human settlements, and infrastructure such as piers, airports, industrial zones, tourist developments, aquaculture, and salt farms resulting in major mangrove loss.
- ♦ **Overharvesting:** Over-harvesting **mangrove** trees have taken place for centuries and it is no longer sustainable, threatening the future of the **mangrove** forests.

- ♦ **River changes:** Dams and irrigation reduce the amount of water reaching mangrove forests, changing the salinity level of water in the forest. If salinity is too high, the **mangroves** cannot survive. Diverted freshwater can lead to mangroves drying out. Increased erosion due to land deforestation can massively increase the amount of sediment in rivers. This affects the mangrove's filtering ability, leading to a dying mangrove forest.
- ♦ **Overfishing:** The global overfishing crisis facing the world's oceans also affects the ecological balance of the food chains and **mangrove** fish communities.
- ♦ **Destruction of coral reefs:** Coral reefs are home to 25% of marine life and simultaneously provide the first barrier against currents and strong waves. When destroyed, the stronger-than-normal waves and currents reaching the coast can undermine the fine sediment where **mangroves** grow. This prevents seedlings from taking root and washes away nutrients essential for mangrove ecosystems to flourish.
- ♦ **Pollution:** Fertilizers, pesticides, sewage, and other toxic man-made chemicals carried by river systems from upstream sources can kill animals living in mangrove forests, while oil pollution can choke **mangrove** roots and suffocate the trees.
- ♦ **Climate change:** The **mangrove** forests require stable sea levels for long-term survival. Coastal habitats are already getting flooded and corals bleached. Rapid sea level rise will likely be the greatest climate change challenge to **mangrove** ecosystems.

IUCN: Mangrove forests in worldwide decline. More than 1 in 6 (17%) **mangrove** species worldwide are in danger of extinction largely due to coastal development, climate change, logging and agriculture, according to the first-ever global assessment on the conservation status of mangroves for the **IUCN Red List of Threatened Species**. As a result of the assessment, 11 out of 70 (16%) **mangrove** species have been placed on the **IUCN Red List**.

Mangrove forests are vital to coastal communities as they help protect against damage caused by tsunami waves, erosion and storms, and serve as a nursery for fish and other species that support coastal livelihoods. In addition, they have an incredible ability to seize carbon from the atmosphere, and serve as both a source and storage for nutrients for inshore marine habitats, such as seagrass beds and coral reefs.

"The potential loss of these species is a symptom of widespread destruction and exploitation of mangrove forests," says Beth Polidoro, Researcher and Principal Author, Global Marine Species Assessment Unit, in a joint study with IUCN and Conservation International. "Mangroves form one of the most important tropical habitats that support many species, and their loss can affect marine and terrestrial biodiversity more widely."

"The loss of mangroves will have devastating economic and environmental consequences," says Greg Stone, Senior Vice President, Marine Programs, Conservation International.

"These ecosystems are not only a vital component in efforts to fight climate change, but they also protect some of the world's most vulnerable people from extreme weather and provide them with a source of food and income," Stone adds.

Hanneke Van Lavieren of United Nations University said, *"There is now a growing awareness of the importance of mangroves, and government and community-led efforts are under way to restore or replant mangroves, and to improve legal systems to regulate future use."*

As **DENR's PAWD** takes the lead in propagating **mangrove** forests in the Philippines, let us find a way to lend support to this cause by joining **mangrove** tours to help our local coastal communities purchase **mangrove** seedlings and restore their **mangrove** forests. 📍

Friend of the Sea Awards Italy's Generale Conserve for its Tuna Zero Waste Project

by Vicky Viray Mendoza

Friend of the Sea awarded **Generale Conserve**, one of Italy's major canned seafood company, with the **Sodalitas Social Award** 15th edition in the category **Sustainable Innovation and Production Processes** with its brand **ASdoMAR** for **Tuna Zero Waste** project.

Friend of the Sea welcomes this prestigious recognition, as **ASdoMAR** was the first Italian brand in the industry to require an independent certification body's audit about the sustainable sourcing of its fish supplies. For almost a decade, **ASdoMAR** tuna and mackerel have carried the **Friend of the Sea** eco-label. Its salmon products have also been certified **Friend of the Sea** since 2012. Ensuring its product's sustainable origin, **Generale Conserve** has shown great care and respect for the environment and its final customers. **ASdoMAR** is a 100% sustainable fishing company.

Generale Conserve is the second largest producer of canned fish on the Italian market, with a market share of about 17%, and the leading company for production using whole tuna. Established at the end of the 1980s as a distribution company, in just over ten years, the company grew from a small entity, with a turnover of 20 million euros in 2001, to a producer whose 2015 turnover amounted to 187 million euros, generated almost entirely through sales in the Italian market. Between 2008 and 2011, **Generale Conserve** revived historic heritage traditions that faced a risk of disappearing. The company provided continuity to the artisanal processing tradition of **mackerel** in the **Vila do Conde** plant in Portugal and inaugurated a new plant in Olbia, the most modern in Europe, giving a future to the **tuna** processing tradition in Sardinia.

Furthermore, **skipjack** and **yellow-fin** tuna, the two tuna species used in **ASdoMAR products** and **fish meal** originating from tuna trimmings, have been confirmed compliant with all **Friend of the Sea's** strict sustainability requirements since 2014, as documented during its visit to the company processing plant in Olbia, located in Sardinia, Italy. By requesting trimmings to be subjected to audit, the Italian producer

has now joined the list of international big companies that in recent years have obtained the certification of **Friend of the Sea** for fishmeal, e.g., the Peruvian **Austral Group** and the Moroccan **Sovapec**.

According to **Paolo Bray**, Director of **Friend of the Sea**, "Reaching sustainability of the entire production process, from fishery to manufacturing, is a goal all companies should set as a priority. In this sense, **Generale Conserve** with **ASdoMAR** is the demonstration that sustainability is not an option, but the only choice consumers praise by giving back their enduring trust."

Friend of the Sea is an international certification program for products from sustainable fisheries and aquaculture. Over 600 companies in more than 50 countries have relied on **Friend of the Sea** to assess the sustainable origin of their seafood. Accredited independent certification bodies run audits, based on the best and the most updated available scientific data. Recently the program has expanded to the certification of sustainable shipping, ornamental fish, and whale watching operators. ⚓



Paolo Bray during an FOS visit to **Generale Conserve** plant in Olbia, Sardinia.

ALUMINUM BOATS

Small & Capable



The Philippine Coast Guard needed 300 light boats to patrol our 7,000 plus islands. The boats had to be small yet swift to be able to watch our territory effectively – and they had to be delivered in less than 12 months.

Propmech Corporation delivered all the boats to the Coast Guard in the appointed time and locations, handling the training of its crew as well. Today, the boats are in operation in various parts of the country.

As a marine integrator, Propmech is ready to meet any challenge.



Give us a call today. Be Propmech Ready
(02) 527-9055 www.propmech.com

PARTS & SERVICE

745 Solana St.
Intramuros, Manila
Telefax: (02) 5361827
(02) 5369711

SUBIC

Bldg 39 Cridley Rd. Cor
Luna St. Global Ind'l Park, 5BFZ
Fax: (047) 2523514
(047) 2500995

CEBU

J. King Warehouse M. Sanchez St.
Alang-alang, Mandaue City, Cebu
Fax: (032) 3440624
(032) 3440738

BACOLOD

2749 Hilado Street
Bacolod City
Fax: (034) 4334910
(034) 4334910

PALAWAN

Eastville Citywalk
6/F-02 National Highway
San Pedro, Puerto Princesa
(048) 4331298

ZAMBOANGA

Kasanyangan, Sta. Catalina
Zamboanga City
Fax: (062) 9931906
(062) 9931905

GENERAL SANTOS

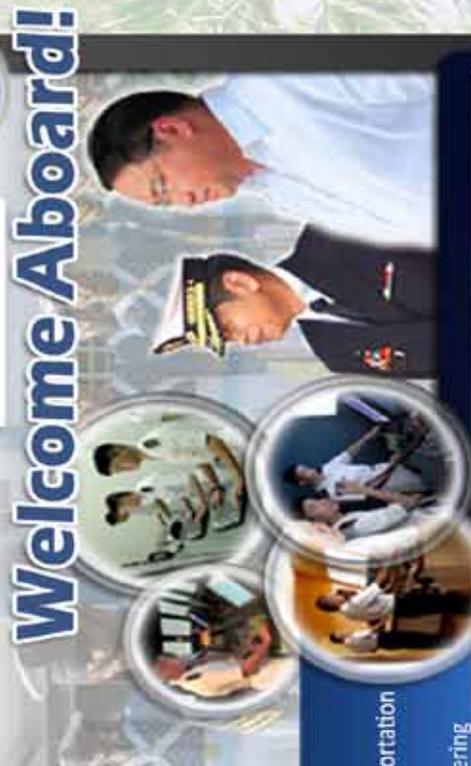
123 P. Adlaron Blvd.,
Silway Park, Gen. Santos City
Fax: (083) 5525503
(083) 3024576



Maritime Academy of Asia and the Pacific - Kamaya Point

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

Kamaya Point., Brgy. Alas-asin, Mariveles, Bataan, Philippines
 Tel. No.: (02) 784-9100 Fax No.: (02) 741-1006 Mobile No.: (0917) 533-8263
 URL: www.maap.edu.ph E-mail: info@maap.edu.ph



Welcome Aboard!

Courses Offered:

- BSMT - Bachelor of Science in Marine Transportation
- BSMarE - Bachelor of Science in Marine Engineering
- BSMTE - Bachelor of Science in Marine Transportation and Engineering

Courses Offered:

- Master of Science in Marine Transportation (Marine Superintendent)
- Master of Science in Marine Engineering (Technical Superintendent)

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.

Testing Assessment Center of TESDA



Full Mission Bridge Simulator



Full Mission Engine Simulator



AMOSUP Seamen's Training Center



Full Mission Bridge Simulator on Motion Platform



Japanese Compact Ship Handling Simulator

Our Curricula

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 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 BSMTE 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.

We combine decades of industry savvy, smart technologies, top-rate equipment and expert workforce to move your goods through our ports swiftly and safely.



Because your customers can't wait...

We keep moving to keep your business moving and growing.



**International
Container Terminal
Services, Inc.**

EXCELLENCE UNCONTAINED

ASIA-PACIFIC

Philippines: Manila | Subic | Laguna | Batangas
Davao | Gen. Santos City | Misamis Oriental
Tagum City | Indonesia: Jakarta | Makassar
Muara, Brunei Darussalam | Karachi, Pakistan
Yantai, China | Melbourne, Australia

AMERICAS

Portland, Oregon, USA | Mexico: Manzanillo | Tuxpan
Puerto Cortes, Honduras | Guayaquil, Ecuador
Pernambuco, Brazil | Buenaventura, Colombia
La Plata, Argentina

EUROPE & MIDDLE EAST

Gdynia, Poland | Batumi, Georgia | Rijeka, Croatia
Umm Qasr, Iraq

AFRICA

Toamasina, Madagascar | Lagos, Nigeria
Matadi, DR Congo

www.ictsi.com