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President Marcos should help protect Masungi, other protected areas

There is something really suspicious going on here.

Why does it seem like everyone and anyone wants a piece or, more appropriately, parcels and parcels of Masungi Georeserve, a 1,600-hectare conservation area and a rustic rock garden tucked in the rainforests of Rizal?

There are constant threats from developers, land grabbers and those in the quarrying business; there's also a congressional hearing put together by lawmakers from Rizal which seems to only be for Masungi at a glance but actually attacks reforestation and now – surprise, surprise – we have the Bureau of Corrections (BuCor) laying its claim over a portion of the forest reserve.

One can't really help but wonder what this is really all about. Is there a big developer pulling the strings on this? Or is this a case of people or a community which refuse to believe the work that the Masungi Georeserve Foundation is doing, that its agenda is to protect the environment and nothing more?

President Marcos and Environment Secretary Ma. Antonia Yulo-Loyzaga must step in and intervene in all the ongoing tensions and threats surrounding Masungi.

Once and for all, Marcos must say his piece because Masungi is one of the country's protected areas.

Masungi's statement

This is what happened, according to Masungi Georeserve:

In the morning of Feb. 16, five cars and 20 men from BuCor arrived at Masungi Georeserve.

They said they have orders to conduct an "ocular inspection" of the alleged "relocation site of the New Bilibid Prison."

They bear a newly minted title over 270 hectares of the Lot 10 property in the name of BuCor. The remaining 30 hectares of Lot 10 were reportedly titled simultaneously in the name of the DENR. Lot 10 and the 300 hectares in question comprise the Masungi Georeserve.

How is this even possible? Here are the facts, as stated by the foundation:

Lot 10 is home to the fragile limestone formations of Masungi Georeserve and has already been equitized in a joint venture project between the DENR and Blue Star as early as 2002. Blue Star leads Masungi's conservation efforts.

It is also included in conservation efforts under the Masungi Geopark Project between the Masungi Georeserve Foundation and the DENR through a valid and binding Memorandum of Agreement signed by Gina Lopez in 2017.

As early as 2009, then DENR Secretary Lito Atienza issued a memorandum to the DENR Regional Director to submit an alternative area for the New Bilibid Prison for the amendment of Presidential Proclamation 1158, since Lot 10 is already subject to private rights.

Moreover, the site is mountainous and geologically unbuildable. The development will be financially prohibitive and, in the words of scientists from the National Museum of the Philippines, will have "expensive consequences" for the environment.





Needless to say, Lot 10 is part of several protected and conserved areas. There is a national park, a wildlife sanctuary and game preserve (Proclamation 1636 in 1977 created by president Ferdinand Marcos Sr.), the proposed Masungi Strict Nature Reserve and Wildlife Sanctuary (protected by DENR DAO 33 in 1993 by former DENR secretary Dr. Angel Alcala) and the Kaliwa River Forest Reserve (Proclamation 573 in 1969).

The Masungi Georeserve Foundation and Blue Star have been protecting the area for decades against professional squatters, physically and legally.

Rangers have been harassed, shot at and bullied multiple times protecting this area.

Beyond the legal, community acceptance, fiscal and environmental realm, why would the DENR allow a building of the BuCor to ruin a national park and geological treasure?

This new development comes on the heels of celebrated cancellations of quarrying MPSAs over the MGP – a win against many big vested interests – and congressional hearings that Masungi is being subjected to.

The multiple adversarial efforts against Masungi in recent months reveal a concerted plan to remove the government's faithful conservation partner from the picture.

Masungi is a priceless legacy of the nation that should be preserved at all costs instead of destroyed.

I very much agree with the Masungi Georeserve Foundation and all the points in its statement.

For its part, BuCor officer-in-charge Gregorio Catapang Jr. said the agency "has all the right to conduct any activity in the area" as it is the registered owner of the property. BuCor is essentially eyeing the majority of the 300-hectare conservation site.

He said that the parcel of land will not be used as a relocation site of the New Bilibid Prison, but as a site of the BuCor headquarters, "including its residential uses for its personnel and employees and for the development and implementation of land use development plans and policies of BuCor for the sustainment of its basic institutional food requirements."

The current headquarters of BuCor is in the New Bilibid Prison Reservation in Muntinlupa in southern Metro Manila.

Protecting our geological treasures

Against this backdrop, President Marcos and Environment Secretary Loyzaga must uphold the Masungi Geopark Project, appoint a competent project manager to resolve conflicts and prevent further violence against environment defenders and immediately cease the unending issuance of unscrupulous instruments within Masungi and adjacent protected areas, and make those responsible accountable.

The Masungi Geopark Project is at the forefront of the Philippines' climate change agenda to enable effective, nature-based solutions involving the private sector, civil society and communities.

Sabotaging Masungi goes against our nation's sustainable development.

I fervently hope Malacañang will intervene to address the situation once and for all and remove the uncertainties surrounding Masungi.

Protecting Masungi will show that President Marcos is serious in addressing climate change, which was among the first commitments he announced early on.

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Email: eyesgonzales@gmail.com. Follow her on Twitter @[eyesgonzales](https://twitter.com/eyesgonzales). Column archives at [EyesWideOpen](https://www.facebook.com/EyesWideOpen) on FB.





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BuCor binoldyak sa Masungi housing

PINALAGAN ni ACT Teachers party-list Rep. France Castro ang plano ng Bureau of Correction (BuCor) na magpatayo ng bagong headquarters o housing sa Masungi Georeserve sa Tanay, Rizal.

"Mukhang marami talagang naglalaway sa Masungi Georeserve dahil napakaganda ng lugar pero ito po ay dapat ipreserba para masilayan pa ng mga susunod na henerasyon at dapat ding protektahan laban sa mga gustong gamitin ito para sa sariling interes lalo pa at plano daw tayuan ng mga bahay ang lugar baka 'di tumagal ay mga resort na ang nakatayo diyan," ayon kay Castro.

Dahil dito, sinabi ng mambabatas na dapat umanong pigilan ng Department

of Environment and Natural Resources (DENR) ang planong ito ng BuCor daihl malinaw naman na ang Masungi ay isang protected area.

Bukod dito, pinababawi rin ni Castro sa Malacañang ang pinirmahang Presidential Decree 1158 ni dating Panuglong Gloria Macapagal Arroyo na nagtalaga sa lugar para sa relocation and construction ng NBP.

"The land title of the Bucor for Lot 10 in Masungi must be nullified and they should look elsewhere for their new headquarters. Iisa lang po ang Masungi Georeserve kapag ito ay nasira ay di na ito maibabalik," dagdag ni Castro. **(Eralyn Prado)**



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WASTE placed in bottles forms an ingenious scheme for recycling which, according to children who collect these, is equivalent to school supplies for their education and their future. PHOTOGRAPHS BY ELMER RECUERDO FOR THE DAILY TRIBUNE

FEATURE

Solid waste scheme powered by youth (1)

BY ELMER RECUERDO

PALOMPON, Leyte — No empty plastic soft drink bottle escapes the alert eyes of 15-year-old Lean as he roams around the village.

During his free time when his father tells him to man their sari-sari store, Lean would always ask buyers of soft drinks to either return the container or he would pick it up at their home later.

He would then stuff plastic materials into the empty bottles that he found and place them under his cot where three other fully-stuffed plastic bottles stand. He proudly shows them to his close friends who come to visit as they brag about who gets to accomplish more.

"This is mere garbage to many people but for us, this is equivalent to school supplies that we will receive in the future," he says.

When Brigada Eskwela season starts before the opening of a school year, children who have collected plastic bottles bring them to school

where they are exchanged for school supplies like backpacks, pens, notebooks, and tumblers.

Palompon Mayor Ramon Oñate beams with pride as he tells his audience how school children are ecstatic about supporting the local government-initiated "Basura Mo, Edukasyon Ko" program.

"You will see how happy they are when they receive these little things like notebooks or pens," he said.

"They know that they are somehow helping their parents as they get the supplies for free."

The collected plastic items are then brought to the Municipal Eco-Park where the local government runs several pieces of equipment for solid waste management such as a pulverizer, melter, shredder and bioreactor.

Last Friday, the local government unveiled its newest piece of equipment, a Thermal Decomposition Machine, an environment-friendly device that can process waste from residences, industry, farms, commercial

agriculture and markets.

The machine can also eliminate medical wastes such as used masks, test kits, gloves, waste from patients, infectious waste, pathological waste, sharp instruments, and pharmaceutical and drug waste.

"Palompon has no dumpsite. What we have is ecological solid waste management," says Raoul Bacalla, the municipal consultant on progressive tourism and sustainable management of the environment.

Bacalla said the solid waste management program started in 2011 when Palompon developed an eco-tourism program that considered the needs of the environment, the local community, the local government, and tourists.

"It all started when we decided to make tourism our economic driver," Bacalla said.

"You cannot simply make tourism your economic driver if you have faulty solid waste management."

(To be continued)



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Bongbong: Forests, mining can coexist

In terms of protecting the environment, it's very clear what the position of this government has always been.

President Ferdinand Marcos Jr. on Saturday vowed his administration will undertake a balancing act to protect the environment and enforce the country's law on responsible mining.

"In terms of protecting the environment, it's very clear what the position of this government has always been. It has been an important part of all our policies, that we are environmentally conscious, that we are moving the economy towards green technologies, we are moving our production of power towards renewables," Marcos said.

"So in that regard, all our forest cover is important and must remain. We fall into the category of a carbon sink country because of our forest cover and so that is a very valuable asset for the Philippines," he added.



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The consequences of sea-level rise are unthinkable

Rising seas are sinking futures. Sea-level rise is not only a threat in itself. It is a threat-multiplier.

For the hundreds of millions of people living in small island developing states and other low-lying coastal areas around the world, sea-level rise is a torrent of trouble.

Rising seas threaten lives, and jeopardize access to water, food and healthcare.

Saltwater intrusion can decimate jobs and entire economies in key industries like agriculture, fisheries and tourism.

It can damage or destroy vital infrastructure — including transportation systems, hospitals and schools, especially when combined with extreme weather events linked to the climate crisis.

And rising seas threaten the very existence of some low-lying communities and even countries.

The World Meteorological Organization has just released a new compilation of data that spells out the grave danger of rising seas.

Global average sea levels have risen faster since 1900 than over any preceding century in the last 3,000 years.

The global ocean has warmed faster over the past century than at any time in the past 11,000 years.

Mega-cities on every continent will face serious impacts including Cairo, Lagos, Maputo, Bangkok, Dhaka, Jakarta, Mumbai, Shanghai, Copenhagen, London, Los Angeles, New York, Buenos Aires and Santiago.

The danger is especially acute for nearly 900 million people who live in coastal zones at low elevations — that's one out of 10 people on earth.

And around the world, a hotter planet is melting glaciers and ice sheets.



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According to NASA, Antarctica is losing an average of 150 billion tons of ice mass annually.

The Greenland ice cap is melting even faster — losing 270 billion tons per year.

And consider the hundreds of millions of people living in the river basins of the Himalayas.

The consequences of all of this are unthinkable.

Low-lying communities and entire countries could disappear forever.

We would witness a mass exodus of entire populations on a biblical scale.

And we would see ever-fiercer competition for fresh water, land, and other resources.

We must meet this rising tide of insecurity with action across three areas.

First — we must address the root cause of rising seas, the climate crisis.

Our world is hurtling past the 1.5-degree warming limit that a livable future requires, and with present policies, is careening towards 2.8 degrees — a death sentence for vulnerable countries.

We urgently need more concerted action to reduce emissions and ensure climate justice.

Developing countries must have the resources to adapt and build resilience against climate disaster.

Among other things, this means delivering on the loss and damage fund, making good on the \$100-billion climate finance commitment to developing countries, doubling adaptation finance, and leveraging massive private financing at a reasonable cost.

Second — we must broaden our understanding of the root causes of insecurity.

That means identifying and addressing a much wider



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THE CONSEQUENCES OF SEA-LEVEL RISE ARE
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range of factors that undermine security – from poverty, discrimination and inequality, violations of human rights, to environmental disasters like rising sea levels.

We must also improve foresight and early warnings to prepare and protect vulnerable communities.

One prime example is our plan to ensure that early warning systems against natural disasters protect every person on earth within five years.

Third – we must address the impacts of rising seas across legal and human rights frameworks.

Rising sea levels are – literally – shrinking landmasses, a cause of possible disputes related to territorial integrity and maritime spaces.

The current legal regime must look to the future and address any gaps in existing frameworks.

Yes, this means international refugee law. But is also means innovative legal and practical solutions to address the impact of rising sea levels on forced human displacement and on the very existence of the land territory of some states.

People's human rights do not disappear because their homes do.

Last year, the International Law Commission considered this issue and explored a range of potential solutions. This includes continuing statehood despite loss of territory, ceding or assigning portions of territory to an affected state, or even establishing confederations of states.

We must keep working to protect affected populations and secure their essential human rights.

We must all work to continue turning up the volume on this critical issue, and supporting the lives, livelihoods and communities of people living on the front lines of this crisis.

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Excerpts from the UN Secretary-General's remarks to the Security Council, 14 February 2023.



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Pampanga town first in PH to ban polluting steel plant equipment

By **Tonette Orejas**
@ttorejasINQ

CITY OF SAN FERNANDO—The municipal government of San Simon in Pampanga province has banned the use of induction furnaces (IF) in the smelting of metal scraps in the town following reports of respiratory illnesses among residents and easily rusting roofs in at least five villages near these steel plants.

The ban was included in the final version of Ordinance No. 003, also called the "Strengthening the Modernization of Smelting Metal Scrap Ordinance," which was unanimously approved by the municipal council on Feb. 13.

Mayor Abundio Punsalan Jr. signed the ordinance on Thursday, according to Vice Mayor Romanoel Santos, the council's presiding officer.

This made San Simon the first town in the country to have legislated a ban on induction furnaces.

The five steel bar manufacturers operating in the town were given two years to upgrade their equipment, but were also offered "incentives" from the local government should they comply.

Under Section 13 of the ordinance, the companies that will



ALARM IN THE AIR Residents of San Simon town in Pampanga provided this photo taken on Jan. 27 showing a local steel manufacturing plant emitting smoke that allegedly causes respiratory problems among nearby villagers and the quick corrosion of their roofs. —CONTRIBUTED PHOTO

modernize their facilities and put antipollution safeguards in place will get a discount in business tax payments for three years and another discount on their real property tax and other regulatory fees imposed by the municipality, also for three years.

The mayor was expected to create a technical working group to draft the implementing rules and regulations (IRR) of Ordinance No. 003 within two months, Santos said.

But Punsalan, in an interview here on Friday, said the IRR would only be "ready after two years when the grace period of two years is over."

The local law defined IF as "an electrical furnace in which the heat is applied by induction

heating of metal."

According to the minutes of a hearing conducted by the town council on Jan. 18, three of the local steel manufacturers—Melters Steel Corp., Real Steel Corp. and Wan Chiong Steel Corp.—reported using IF in smelting scrap metals. The two others—Altima Empire Steel Corp. and SKK Steel Corp.—use electric arc furnaces.

Residents' complaints

The five companies produce an average of 3,000 tons of steel bars daily, according to an industry source.

In January, personnel from the Environmental Management Bureau (EMB) of the Department of Environment and Natural Resources in Central Luzon in-

spected the Wan Chiong and Melters plants in response to a formal complaint lodged by nearby residents, who said they had been suffering from respiratory problems due to the foul smoke emitted by the plants.

They also complained that the roofs of the houses and other structures in their villages were rusting away quite easily, again because of the air quality.

The EMB has yet to release the results of the air and water tests conducted in the affected areas.

The five companies have yet to respond to media queries as of this writing.

According to the municipal council secretary, George Cariño, they did not register any formal objection to the passage of the ordinance.

Santos earlier said not all of the companies had updated their environmental clearance certificates.

"This is why the number of their pollution control device (PCD) are not in proportion to the number of their smelting their machines," he said. "Most of them do not have continuous emission monitoring system and they need to have reserved PCD for contingency situations."

A PCD costs around P50 million, said an industry source. INQ



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'Feedback loops' worsening climate crisis-report

Cycle of ice melt and water's absorption of heat significantly increasing global warming, researchers warn

WASHINGTON—Global warming melts sea ice, which leads to further warming because water absorbs more heat than ice, creating what scientists call a "climate feedback loop."

A report released Friday contains what researchers believe is the most comprehensive list of feedback loops ever compiled and a stark warning that climate models may be underestimating their impact.

"Many feedback loops significantly increase warming due to greenhouse gas emissions," the researchers from Oregon State University (OSU), University of Exeter and other institutions said in the report published in the journal *One Earth*.

"However, not all of these feedbacks are fully accounted for in climate models."

Coauthors William Ripple

and Christopher Wolf of OSU said an "immediate and massive" boost in research about feedback loops was needed to help guide world leaders in making climate policy.

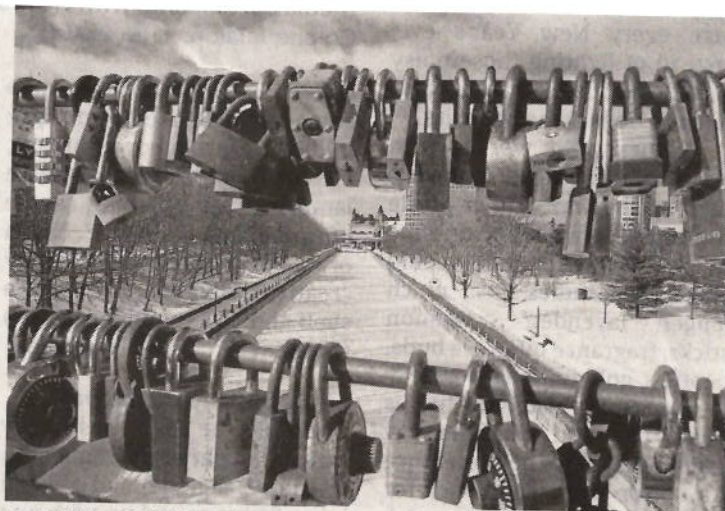
They urged UN experts with the Intergovernmental Panel on Climate Change to produce a special report on the effects of feedback loops and their potential "severe consequences."

'Run on a bank'

The researchers identified 41 climate feedback loops in their report, 27 of which accentuate warming, seven of which have a dampening effect and seven that are uncertain.

Wolf compared a feedback loop to a run on a bank.

People withdraw money because they are concerned about a bank defaulting, raising the risk of it defaulting, which causes



LOCKED DOWN The world's longest skateway along the Rideau Canal in Ottawa, Canada, remains closed due to a lack of snow amid a warmer winter. —AFP

es more people to withdraw money, and so on.

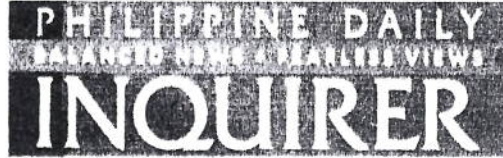
Among the biological feedback loops they cited were thawing permafrost, forest die-

back, loss of soil carbon, and drying and smoldering peatlands.

In the permafrost example, rising temperatures lead to



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thawing, producing carbon dioxide and methane emissions which lead to further increasing temperatures.

The report warned that interacting feedback loops may result in a sequence of catastrophic climate "tipping points," where changes to climate systems become self-sustaining.

"Some feedback loops may be associated with key tipping points that could profoundly disrupt the global climate system and biosphere once critical thresholds are crossed," it said.

Exceeding tipping point

"Once sufficient warming has occurred, feedbacks could ultimately cause the Greenland ice sheet to collapse, which is a result of exceeding a tipping point," Wolf said.

The report noted that most

nations have signed on to the Paris Accord, which calls for limiting global warming to 2 degrees Celsius, and ideally 1.5 degrees Celsius, but they said more drastic action is needed to reduce emissions.

"Waiting until 2050 to achieve net-zero carbon emissions might be far too late," the authors said. "Time is running out to avoid the worst effects of climate change."

In the short term, a failure to dramatically reduce emissions could result in ongoing and intensifying climate impacts, they said.

"In the worst-case long-term scenario, interactions among feedback loops could result in an irreversible drift away from the current state of Earth's climate to a state that threatens habitability for humans and other life forms," they added. —AFP



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Protest mounts vs Brooke's Point illegal mining ops

Feliciano said that on 6 February 2023, Municipal Mayor Cesareo Benedito Jr. ordered the INC to stop operations after it was discovered that the mining company has no mayor's permit for 2023.

BY JING VILLAMENTE

Residents of Brooke's Point in Palawan have set up barricade as they demanded the Ipilan Nickel Corporation to stop its mining operations for not having a mayor's permit.

In a statement on Saturday, Vice Mayor Jean Feliciano stressed that residents have no recourse but to organize a barricade since the mining company continues to operate despite an order by the municipal mayor to stop the firms mining operations.

Feliciano said that on 6 February 2023, Municipal Mayor Cesareo Benedito Jr. ordered the INC to stop operations after it was discovered that the mining company has no mayor's permit for 2023.

"The people themselves are organizing the action to fight for their welfare. We are thankful to the residents of Brooke's Point who are willing to make sacrifices to protect our natural resources, livelihoods and our future." Feliciano said.

National Coordinator of the Alyansa Tigil Mina representative Jaybee Garganera likened the Brooks point scenario to the case of Sibuyan where the mining company also has no permit to cut down trees and no PPA permit for the construction of the port and causeway.

"Ipilan Nickel is in effect, undermining the autonomy of the local government and clearly violating the law," Garganera said.

Sanggunian Bayan member Vic Colili, on the other hand, said that the company is doing business without a business permit and stressed that the Ipilan Nickel also has three major contractors engaged in mine pit extraction and they use hauling hundred units of equipment.

Job Lagarda of Ipilan Farmers, meantime, said they support the local government of Brooke's Point, which has the mandate to take care of the environment, adding that the one who issued the earlier permit was simply an acting mayor.

"We are not here just because of our sentiments but because of the truth that this company violates laws. Also, we have policies like the Comprehensive Land Use Plan that stipulates that mining is not suitable here in our place. This was adopted by the DENR. Why was a permit given when this is not part of the local government policies?" Lagarda said.



By JONATHAN L. MAYUGA

AS the country struggles to recover from the adverse economic impact of the global pandemic, the big players in the country's mining industry are optimistic of better days ahead with the recent pronouncements of support for mining by the government.

No less than the Department of Trade and Industry (DTI) said the country can be a "vital partner" for mining, not only as an exporter of raw ores like nickel and copper but as a processor and producer of semifinished and finished products, underscoring that mineral processing is crucial given the country's resources of green metals—referring to nickel, copper and cobalt.

The country's top trade official said these minerals can be used for downstream industries such as electric vehicle (EV) battery manufacturing, hyper-scale data centers, and renewable energy projects.

Positive pronouncements

MICHAEL TOLEDO, chairman of the Chamber of Mines of the Philippines (COMP), in particular, welcomes the pronouncements of the DTI chief, Department of Finance (DOF) Secretary Benjamin Diokno, and Department of Environment and Natural Resources (DENR) Secretary Maria Antonia Yulo-Loyzaga.

Recent pronouncements of government regulators under the Marcos administration recognize mining as a potential source of sustained economic growth, says Toledo.

Indeed, he said the concerns of the minerals sector are multifaceted and can be better addressed through the close coordination of various government departments and agencies, and not the DENR alone.

"It would be good to see this co-



TOLEDO: "[The Philippine Mining Act of 1995] holds the distinction of being one, if not the only one, of the mining legislations in the world that has built-in provisions for the protection of the rights of indigenous peoples. Its social and environmental provisions are comparable to measures formulated in industrialized nations. This law is supported by many other environmental, social and governance laws, rules and regulations that are fully responsive to the needs of the times."

ordination work continue through the Mining Industry Coordinating Council (MICC), this time not only to assess and review the compliance of mining operations with existing laws and regulations but, equally important, to deal with the challenges confronting the mining industry and to enable it to achieve its full potential in a responsible, sustainable manner," says Toledo.

He noted that Secretaries Pascual and Diokno in particular underscored the benefit of mobilizing investments for mine development.

"They reflect the Marcos administration's broad-minded view

on our industry. They also come on the heels of the removal of mining policy roadblocks—notably the ban on open-pit mining and the moratorium on new mining projects—in 2021 after a terribly restrictive regulatory environment that began in 2012. Clearly, these developments are timely. The government needs all the help it can get in these unsettling times as we continue to experience the ill effects on the global economy of the Covid-19 pandemic and the Ukraine crisis," said Toledo.

According to Toledo, the Philippine Mining Act of 1995 is considered by many industry experts to be one of the most advanced mining laws in the world.

"It holds the distinction of being one, if not the only one, of the mining legislations in the world that has built-in provisions for the protection of the rights of indigenous peoples. Its social and environmental provisions are comparable to measures formulated in industrialized nations. This law is supported by many other environmental, social and governance laws, rules and regulations that are fully responsive to the needs of the times," he pointed out.

Toledo said the industry fully supports Secretary Lozaga's initiatives to consult various stakeholders, including mining, as part of her efforts to achieve the sustainable use of the country's natural wealth.

"We have said time and again that what is needed is to increase the capability of government, both national and local—and the political will—to fully implement the provisions of the Mining Act.

Mining's huge potential

TOLEDO noted that the Philippines is richly endowed with mineral resources, with nickel and nickel products that were produced in 2021 having an estimated value of over P89 billion; and copper, more than P17 billion. As such, he said, the potential for the Philippines to be a major min-



As the country struggles to recover from the adverse economic impact of the global pandemic, the big numbers in the country's mining industry - - -

erals processor can be huge.

For downstream processing to be economically viable, however, the right kind of investors who will be willing to put up extremely expensive facilities to process the type of mineral ores that we have is needed.

"Our investment environment, therefore, should be attractive and competitive—comparable with, if not better than, other mining jurisdictions with equally rich mineral resources.

"We can learn from Indonesia's experience in transitioning to downstream processing and take stock of our situation vis-à-vis theirs. For nickel, a roadmap can be drawn similar to the one the government did for copper. The roadmap could provide our policymakers, industry players, potential investors, and all mining stakeholders the guide from where we can build our strengths and address our weaknesses as we move along," said Toledo.

Stable business environment

TOLEDO said COMP has never wavered in advocating for a business environment that is both stable and predictable for both current and potential investors in a way that investments are protected and constantly ensure a fair return to all stakeholders.

"Only in such an environment will we be able to develop and encourage investments in mining and in minerals processing. We shall continue this thrust, fully aware of—and always striving to meet, even exceed—the expectations of society on the impact of our operations on the environment and our gracious host communities," he said.

According to Toledo, the existence of 7 mineral processing plants (4 gold, 2 nickel, 1 copper) in the Philippines proves that we have the technical capability to become a major mineral processor.

"Filipino miners in direct and related fields here and abroad have a proven and demonstrated track record in expertise, professionalism, adaptability and capacity to

absorb new and emerging technologies," he said.

To truly revitalize the country's mining industry—which includes attracting investments in mining and encouraging the building of enormously expensive mineral processing facilities and manufacturing plants for electric vehicles and for renewable power projects—the industry needs full government support in terms of stable mining and investment policies that do not change mid-stream, lower power costs, infrastructure, harmonized local and national laws. Moreover, he said it also calls for a fiscal regime that considers the Philippines's competitiveness vis-à-vis other mining jurisdictions, and incentives.

"As mentioned earlier, all these require close coordination between and among government departments and agencies. The scope and magnitude of these concerns also require the support and cooperation of the executive and legislative branches of government, as well as of the national and local government units," he explained.

Fight illegal mining

ACCORDING to Toledo, the government should intensify the campaign against illegal mining operations, which he blamed for the industry's negative image, explaining why COMP continues to prod the government to take a tougher stance against illegal mining activities, particularly unregulated small-scale mining (SSM).

"Illegal SSM does not employ the same stringent safety practices required of legitimate large-scale mining operators. We thus applaud President Ferdinand R. Marcos Jr.'s recent order for the DENR to strengthen its regulatory powers on small-scale mining so the government can provide miners with social protection plus skills training and even financial incentives for their operations," he said.

Toledo said COMP looks forward to further full and meaningful consultations with the govern-

ment, and to working closely with both legislators and executive officials so that, ultimately, the country will see more investments in mining coming to our shores, to help unlock the industry's huge economic potential.

Increase mining benefits

ANTI-MINING groups likewise endorse the idea of increasing the benefits from mining by discouraging the wholesale export of raw minerals.

"In general, ATM welcomes the idea that mineral processing is being considered by the Department of Trade and Industry to increase the benefits from mining and possibly contribute to an energy transition as a response to climate-change impacts. This is, after all, part of a set of strategies that must be explored for proper minerals management, that includes the option of keeping the minerals on the ground if it is more costly to extract them," said Jaybee Garganera, national coordinator of ATM.

However, he counsels the government to ensure that such a track does not remain myopic and imbalanced in its long-term goal to make minerals play a key role in the country's industrialization while complying with the rigorous framework of sustainable development.

"Our alliance believes that the Philippine government must first ensure that we have a clear definition of a 'just energy transition' and what are the contribution and roles of Philippine minerals towards this. This means that mining is part of a system that will ensure that everyone benefits from the production and deployment of renewable energy, without harming the environment and communities that are hosting or providing the raw materials for RE technologies."

Garganera draws attention to the inspiring comment of Earth Justice in 2021 that "we cannot justly move to a clean energy future at the cost of harming people or the environment."

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BusinessMirror

A broader look at today's business

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Make it mine: Better days ahead?

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Circular economy, sustainable consumption

ACCORDING to Garganera, ATM believes that any discussion about additional extraction of transition minerals should be informed by the principles of the circular economy and sustainable material consumption.

"We believe that any initiative on 'transition minerals' can benefit from a general framework that we shouldn't open up more mines in the Philippines to simply respond to the growing energy demands, especially of developed countries and the Asian giant economies such as China and India. We must prioritize a robust and expanded cost-benefit analysis (CBA) appli-

cable to directly affected host communities, the local governments, and the nation as a whole. And this CBA must factor in the environmental, social, cultural and human-rights cost of mining," he explained.

According to Garganera, it doesn't make sense that the Philippines is prioritizing an industry (mining) that merely contributes 1 percent of the GDP but threatens the other combined 14-17 percent of GDP from agriculture, forestry, and tourism—this, especially in the context of climate change and extreme weather events.

"Any policy reform in mining should adequately address the question, 'Who benefits from this, both during the mine life and the generation after the mine is closed

down?'" he pointed out.

ATM suggested that DTI, DOF and the DENR put in place policy reforms, particularly in operationalizing what the mining industry claims as responsible mining, before any expansion of mineral processing and additional mining projects for transition minerals.

"Right now, the Alternative Minerals Management Bill (AMMB) that has been languishing in Congress is the most comprehensive legislative proposal that should be prioritized," he said.

"Finally, we emphasize the general call of environmental defenders—"for this just transition to happen, we cannot allow more sacrifice zones in the name of mining, to provide the raw materials for renewable and clean energy," he ended.



Can mined-out areas be green again?

YES, mined-out areas can still be rehabilitated through the government's Greening Mined-out Areas in the Philippines (GMAP) program that adopted bioremediation, the Department of Science and Technology said in a news release.

Led by Dr. Nelly Aggangan from the University of the Philippines, Los Baños, the program successfully developed microbial-based protocol that can effectively rehabilitate unproductive mine tailing areas in the Philippines, converting barren lands into mini forests.

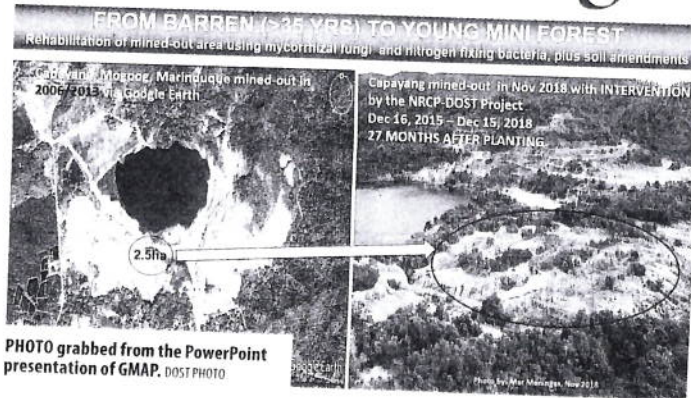
GMAP makes use of live microbes and plants as biological solutions to clean up and rehabilitate stressed environment such as mined out or mine tailing areas.

Mined-out areas are devoid of plants due to many factors from living and not living organisms. One of them is the presence of residual heavy metals in mining waste.

"Bioremediation is the cleaning contaminated soil with microbes, enhancing carbon capture and reducing heavy metals contamination to surrounding communities" Aggangan explained.

The first phase of GMAP program is done in 2015-2018 in a copper gold mined-out and mine tailing dumpsite Marinduque.

The protocol developed in Marinduque is now being adopted by the lo-



cal government units and being replicated in Surigao, the second phase of the program.

The GMAP in Surigao del Norte which is expected to end this year aims to test the effectiveness of Marinduque bioremediation protocol by assessing Marinduque isolates potency in rehabilitating gold and nickel areas. It also looked for microbes in Surigao that can help in bioremediation.

"We are expecting that the Marinduque isolates will work also in Surigao. If that is the case, we can also introduce the Marinduque isolates in all mined-out areas in the Philippines," Aggangan explained.

The researchers developed two trademarked products: microbial-based

fertilizers Mykovam, a soil-based mycorrhizal inoculant, and Mykorich, a sand-based mycorrhizal inoculant.

These developed inoculants give way to symbiosis, meaning, there is a give and take relationship between plants and the fungus.

With symbiosis, fungi derive nutrients from the soil, while the plants give out carbohydrates, and this increases the population of microbes.

Aggangan clarified the difference between the traditional fertilizer and the inoculants. The former is quite expensive, easily runs out and can even end up polluting the ecosystem, while the latter can only be applied once and lasts for a longer period.

"If you always apply fertilizer it

causes the soil to be acidic. While the microbes make the acidic soil neutral that make the plants have thick foliage. When the soil is acidic, the plants could die or become stunted," Aggangan pointed out in Filipino the advantages of inoculants.

Inoculants cause plants to grow bigger, taller and have more developed roots. Inoculated plants take out more nickel contaminants from the soil. As contaminants are drawn in by plants, the soil is cleaned from toxic materials.

Despite the success of the first phase of the program, and the initial success of the second phase, Aggangan appeals to the mining companies to cooperate and allow them to conduct their research in their mining sites because her team's previous experience was quite a challenge.

"I cannot do this alone, Please help me. Especially those in mined-out areas, please help us so we can help train you in doing this good program," she appealed partly in Filipino.

GMAP program is under the "Sustainable Communities," the top priority program of the National Integrated Basic Research Agenda of the Harmonized National Research Agenda 2017-2022 of the Department of Science and Technology-National Research Council of the Philippines. **Geraldine Bulaon-Ducusin/S&T Media Service**



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'Hot' logs seized in Nueva Ecija, Bulacan

NUEVA ECIJA – Illegally cut lumber have been seized in Nueva Ecija and Bulacan.

Reports reaching Col. Richard Caballero, Nueva Ecija police director, showed that personnel of the First Provincial Mobile Force Company and Bongabon town police seized 280 board feet of illegally cut white *lawaan* and three pieces of *yakal* on Friday.

The illegally cut logs were turned over to the Community Environment and Natural Resources Office in Cabanatuan City.

In Bulacan, the provincial public affairs office reported that two persons were arrested for illegal possession of 50 pieces of illegally cut narra during an Oplan Kalikasan operation on Wednesday.

– Ramon Efren Lazaro



PBBM: PH forest cover a very valuable asset

PRESIDENT Ferdinand R. Marcos Jr. on Saturday cited the importance of taking care of the country's forest cover to spur economic growth and development.

In a media interview in Fort del Pilar, Baguio City, Marcos said the country's forest cover is a "very valuable asset for the Philippines."

"You can actually now monetize forest cover. You can give it a peso value, a dollar value," he said.

"We can take advantage of being more active in promoting and monitoring, regulating, and encourag-

ing the care of our forest cover, of all our environmental assets. It's very, very important."

The Department of Environment and Natural Resources oversees 15 million hectares of land classified as forestlands.

In 2011, the country's forest cover was 6.8 million hectares but it increased by 5.6 percent or 7.2 million hectares, according to the recent 2020 data captured by the National Mapping and Resource Information Authority (NAMRIA).

The DENR has already laid down strategic plans and programs for the for-

estry sector, which offers strong potential for driving growth to the Philippine economy.

The department also aims to establish a conducive investment climate by developing a real-time, single-point access forestry investment portal that will provide information and services about forestry investment and ready areas for development and utilization.

The portal will have links to financial and credit facilities of partner financial institutions, including the Development Bank of the Philippines,



PHILIPPINE FORESTS — Protecting the Philippines' forest cover is vital in spurring economic growth and development, President Ferdinand R. Marcos Jr. said during an interview at Fort del Pilar, Baguio City on Saturday (Feb. 18, 2023). He said the country's forest cover is a very valuable asset for the Philippines as it could be "monetized" or given a peso or dollar value. File photo which supports the DENR's agro-forestry plantation program.

It will also offer access to insurance packages of the Philippine Crop Insurance Corp. for selected tree species in developed forest plantations.

Responsible mining

The government would also continue promoting responsible mining to avoid a repeat of mishaps that occurred in the past, Marcos said as he acknowledged the important role of the mining sector in his administration's plan for the economy.

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Pagprotekta sa kapaligiran at batas sa pagmimina, babalansehin

Magsasagawa ng masusing pagbabalanse ang gobyerno ni Pangulong Ferdinand Marcos Jr. upang protektahan ang kapaligiran at ipatupad ang batas ng bansa sa responsableng pagmimina.

"In terms of protecting the environment, it's very clear what the position of this government has always been... It has been an important part of all our policies, that we are environmentally conscious, that we are moving the economy towards green technologies, we are moving our production of power towards renewables," ani Marcos.

"So in that regard, all our forest cover is important and must remain --- that is giving the Philippines, we fall into the category of a carbon sink country because of our forest cover and so that is a very valuable asset for the Philippines," dagdag ng Pangulo.



Biodiversity in a glass

By JONATHAN L. MAYUGA

WHEN I was a small boy, my friends and I used to collect red and black ants, even wasps and earthworms. We put them inside empty bottles or jars half-filled with soil or sand and some stones.

We also caught lizards using miniature snares of a string tied to the end of a single piece of a broom stick.

We then make a miniature lake by digging into the soil and putting water in it to mimic an inland water body which we covered with broken pieces of glass that we found around.

To keep the lizards alive, we fed them with their favorite—what else, but flies—which we also caught with a transparent plastic bag from the trash bins.

That little hobby has a name, which is gaining popularity among "serious" hobbyists nowadays.

'Riums' what?

BEFORE you get confused by the name and its definition, let us just keep it simple.

Aquariums, terrariums and vivariums are basically glass containers with plants and small animals in them.

An aquarium, of course, has fish in it; a vivarium has an animal, usually, a reptile, either snake or lizard, or an insect, most likely a spider; while a terrarium has plants, sometimes, with small bugs, too.

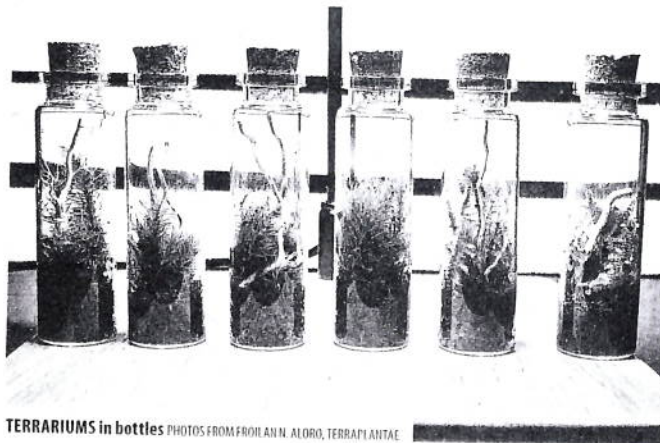
Scientists often maintain a vivarium to observe a specific species of animal.

Like scientists, many are now fixed on "observing" the wonders of nature and the aesthetics of plants and animals no matter how small inside these glass receptacles they keep beside their bed, their man-cave or the living room.

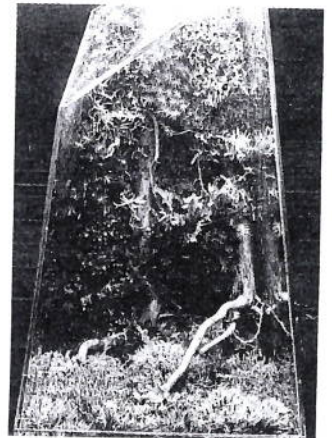
If you look closely, they are minia-



CLOSE ups of Gregg Yan's Cricketopia with cricket and mushroom. PHOTOS FROM GREGG YAN, BEST ALTERNATIVES



TERRARIUMS in bottles PHOTOS FROM FROILAN N. ALORO, TERRAPLANTAE



the first to commercialize terrarium in the Philippines, including moss and miniature ferns.

Terraplantae also fathered the Terrarium Series as a naming convention for the designs in the Philippines and the Ugly Mossarium Series, its first, is still a highly in-demand

an environmentalist and a hobbyist, said: "For many people, a fish-filled aquarium is the way to go. A terrarium, on the other hand, is like a dry aquarium, housing terrestrial or swamp plants and animals like frogs, newts, salamanders, turtles, insects and snakes," he told the BUSINESSMIRROR via e-mail

He added that a terrarium is like a miniature world or the earth that can be viewed through the glass.

For his part, Yan said that keeping aquaria and terrariums can teach many people how the environment works.

"If you think about it, a healthy aquarium or terrarium is a microcosm



If you look closely, they are miniature ecosystems with living organisms in it—or biodiversity in a glass.

Moss and terrarium

IN recent years, terrariums is gaining popularity, putting the lowly moss that is commonly used in the ecosystem in the spotlight.

Asean Centre for Biodiversity Executive Director Theresa Mundita S. Lim said mosses are classified under Phylum Bryophyta of the Plant Kingdom.

"They are nonvascular flowerless plants that cluster together as dense green carpets in damp or moist locales," she said.

There are six classes with over 12,000 species and the Philippines has around 500 of the species, told the BUSINESSMIRROR via Messenger on February 15.

Ecosystem functions

ACCORDING to Lim, a former director of the Biodiversity Management Bureau of the Department of Environment and Natural Resources, mosses act like sponges that cling to moisture with their capillary spaces.

"They soak up rainwater, regulate moisture in the soil and maintain humidity in their surroundings. Their natural role allows the support of plant growth around them," she said.

"Mosses have an important role in the improvement of an ecosystem. They are among the first organisms that occupy a disturbed or degraded area. The aforementioned niche they occupy allows new plants to thrive in these types of areas," Lim added.

Sunrise industry

FOR a young businessman like Froilan N. Aloro, terrariums or making terrariums, is fast becoming a sunrise industry in the Philippines.

At 38, the registered nurse, who works as an operations manager of a US-based healthcare company, is the founder and owner of Terraplantae Gardening Services.

The company, which he started in 2020 at the height of the pandemic, is

its first, is still a highly in-demand design collection.

Terraplantae provides a wide range of services, from customized terrariums, terrarium supplies, terrarium-making workshops, true living walls, moss frames and walls, and indoor garden setting up and design.

Valentines hit

TERRAPLANTAE, though still a young business, is showing its potential, Aloro said in an interview on February 14 via Zoom.

For one, surviving and peaking during the worst of the pandemic, Terraplantae is still busy as a bee providing customers with various services.

Although the last year already saw the "plantito" and "plantita" fade slowly from the scene with the easing of the community quarantine, Aloro said his "small business" continues to flourish.

"In fact, just this Valentine's Day, the orders kept coming," he told the BUSINESSMIRROR, adding that small terrariums are good gift ideas to loved ones for all occasions.

Huge potential

HE said he believes the terrarium industry has huge potential in the Philippines, because enterprising Filipino, with a little inspiration, can make their own terrarium from materials that can be abundantly found around them.

"Even those living in urban areas will not have a problem looking for moss or materials to use," he explained.

The company's mantra is helping build communities and take part in its social responsibilities.

More importantly, Terraplantae said it does business by sourcing only from sustainable materials and limiting wastes through its effort to use as little nonbiodegradable materials.

"I know there are mossy forests and I've been to one, but we don't gather materials from mossy forests. It's illegal," he said.

Dry aquarium

WHAT really is a terrarium? Gregg Yan,

told the BUSINESSMIRROR via e-mail on February 14.

Yan, also an explorer and wildlife photographer, is no stranger to keeping plants and animals.

A columnist for a popular pet magazine as well as numerous international agriculture and conservation platforms, Yan recalled one of his most memorable terrariums.

"Cricketopia was a tiny rescue home for crickets originally destined to be bought by other hobbyists and fed to predators like arowanas and iguanas," he explained.

Search and rescue

"I HAVE a tendency to try to rescue animals that are destined to be eaten. Even today, when I pass through local markets, I would sometimes buy a snail or two to spare them from the chopping block. Luckily, many of those animals are still alive today," he said.

Yan's terrarium not only lit up a corner of their house. The chirping crickets filled their home with the sound of nature, especially at night.

"Cricketopia made sleeping in a condominium sound like sleeping in the forest," he laughs.

Everything in his Cricketopia was sourced sustainably.

"The crickets were rescued from a pet store; the plants I 'secretly borrowed' from my mom's display in our house's plastic plants [please don't tell my mom]; the mushrooms came from a growing kit; and the pieces of bark came from rotting stumps in our *bakuran* [yard]," he said.

Learning from observation

MERELY observing how the ecosystem works inside an aquarium, vivarium or terrarium can help people learn about nature and the environment.

This is the reason why Terraplantae is providing lectures and training to the young and old alike, including school children, Aloro said.

"We can look back at what we do when we are young, while the young can learn at how things work inside a terrarium," he explained in Filipino.

aquarium or terrarium is a microcosm of Planet Earth," he said.

Yan explained: "By closely observing and understanding how light and nutrients sustain plants, how animals graze on these plants, how other animals eat these grazers, and how waste in the form of feces, dead bodies, or uneaten food is broken down by fungi and bacteria, you'll get a general idea of how interconnected life is on this planet and how removing one group can wreak havoc on the entire system."

Threats to ecosystems?

TERRARIUMS, like aquariums, offer no serious threat to the ecosystem, as long as they are done sustainably.

Lim said: "It depends on how much they collect and where they are collecting it from."

She explained that just like all biological resources, "they can reproduce and propagate in the natural habitat for as long as they are not over-collected to the point of endangerment and extinction, and their habitat and ecosystems, which they are a part of, remain healthy and intact."

"The key is a sustainable collection based on scientific data and information. Thus, safeguards should be in place to make sure we promote a more responsible industry for terrarium enthusiasts," she said.

For his part, Yan appeals to hobbyists never to release their pets in the wild.

"Too many plants and animals have become invasive when a few well-meaning hobbyists and farmers set them loose in their home countries. Just look at the most popular plants and animals around your barangay or subdivision: maya birds, cane toads, guppies, janitor fish, American cockroaches, and even Indian mango trees that aren't native to the Philippines. The dangers of introducing invasive species are real and can be prevented by us hobbyists."

"With properly kept terrariums, the joys of enjoying nature's beauty and understanding the intricacy of its natural processes can be enjoyed by all Pinoys," Yan said.



SCIENTIFIC studies on the marine resources in Panaon Island showed a healthy biodiversity and declared its corals as one of the world's priority reefs that will highly likely withstand the devastating impacts of climate change. GONZALO ARAUJO, LAMAVE PHOTO

Rich marine biodiversity sustains S. Leyte fisherfolk

PINTUYAN, Southern Leyte—The day hasn't dawned yet but 45-year-old Ery Cordova already paddles his fishing boat, not to catch fish but to look for their water's constant visitors—the whale sharks.

When he spots a sliver of whale sharks, he paddles back to their community in Barangay Sok-ok so that tourists and tour guides are alerted and organize a fleet of bancas to the site.

For the last 18 years, whale shark watching in this town has sustained tourism—with visitors mostly coming from Europe—and provided alternative livelihood to the fisherfolk like Cordova.

As a spotter for whale sharks, he earns P300 for three hours while the tourists are interacting with other sea creatures.

Fisherfolk in the community formed themselves into an association in 2005, the Kapulungan sa Sok-okanon Alang sa Kalamboam (Association of Sok-okanon for Progress). They assigned members as spotters and tour guides to support the then-fledgling whale shark watching tourism.

Cordova said that based on a tagging on whale sharks done by the nongovernment Large Marine Vertebrates Research Institute Philippines (Lamave) before the devastation of Super typhoon Odette (international code Rai) occurred, over 400 whale sharks were monitored to have frequently come to the waters here.

"The income as a spotter is not stable but this brings money to our family. We can no longer rely on our coconut because everything was destroyed by Odette. We have not even received planting materials for the replacement of our felled coconuts," he said.

Cordova says he now relies on his small vegetable garden and fishing on the municipal waters of Pintuyan for the food of the family.

Protecting the biodiversity

SOUTHERN Leyte Second District Rep. Christopherson Yap knows by heart the rich biodiversity of the waters of Panaon Island, the southernmost part of Southern Leyte that covers the towns of Pintuyan, Liloan, San Francisco and San Ricardo.

When the sessions in Congress are on break, Yap would roam around the different municipalities and huddle with fishermen, many of whom he addresses on a first name basis.

"I grew up seeing them. The waters here were my playground where I would swim or dive. I have seen those whale sharks, sea turtles, colorful fishes and those large corals," he said.



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RICH MARINE BIODIVERSITY SUSTAINS S. LEYTE

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Yap and Southern Leyte First District Rep. Luz Mercado filed separate bills that seek to declare Panaon Island as a protected seascape under the Expanded National Integrated Protected Areas System (E-Nipás) Act, and enhance efforts to safeguard the island's coral reefs and threatened and endangered species.

Sen. Cynthia Villar, chairman of the Senate Committee on Environment and Natural Resources, also filed Senate Bill 1690 for the inclusion of Panaon Island as a marine protected area under E-Nipás Act.

In filing SB 1690, titled "Panaon Island Protected Seascape Act of 2023," Villar said that despite the presence of extensive coral reefs and vibrant fish communities, the biomass of commercially important species shows signs of overfishing and other human-induced environmental threats.

The Sangguniang Bayan of the four municipalities earlier this year passed their respective resolutions expressing support for the establishment of Panaon Island as a protected seascape under the E-Nipás law.

The four municipalities have their own local ordinances designating part of their respective municipal waters as protected area.

Yap said declaring Panaon Island as a marine protected area will ensure that the future generations will still be able to enjoy the diverse marine flora and fauna that are still present today.

He said that once the bill is passed into law, there will be a special body to protect the area which will deter commercial vessels from encroaching in municipal waters and keep its prized reefs from destruction.

The international advocacy group Oceana, in a study, said the coral reefs in Panaon Island are among the priority reefs that will highly likely withstand the devastating impacts of climate change.

In a position paper submitted to Congress, Oceana said that Panaon Island is one of the 50 priority reefs globally identified by a group of scientists in a study commissioned by Bloomberg Philanthropies.

In 2020, the international advocacy group Oceana partnered with the province of Southern Leyte, Southern Leyte State University and the four municipalities on Panaon Island in the conduct of an expedition around it to assess its coastal habitats and fisheries.

"Our studies show that coral reefs around the island had some of the highest live hard coral cover in the country, with greater than 44 percent hard coral cover while none were found to have less than 22 percent hard coral cover," Oceana said.

The group said reef-associated fish communities at the different reef areas around Panaon Island were found to have "moderate richness and very high abundance."

During the expedition, Oceana also noted a total of 19 mangrove species including two species listed in the International Union for Conservation of Nature's Red List of vulnerable and near-threatened species.

"As for seagrasses, there were eight seagrass species, which constitutes 42 percent of the seagrass species found in the Philippines," the group added.

"With the establishment of Panaon Island as a 61,251-hectare marine protected area, the Philippines can contribute to the international commitments under the Convention on Biological Diversity, Paris Agreement and other multilateral environmental agreements. At present, the Philippines's marine protected areas constitute 3.1 million hectares, which is only 1.4 percent of our territorial waters under national law," Oceana said.