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**DENR**

**IN THE NEWS**

Strategic Communication and Initiative Service



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**Product expo** Environment Secretary Roy Cimatu and Agrarian reform Secretary John Castricones (2nd from right) cut the ceremonial ribbon formally opening the product exhibit of the 3rd National Convergence Initiative Sustainable Rural Development Summit in Iloilo City recently. DENR PHOTO



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# No closure, no swimming during El Nido rehab

**By Trina Ibarie Orquiza**

Palawan's El Nido beach will not be closed to tourists as it undergoes rehabilitation efforts, but a no-swimming policy will be implemented in certain parts of the area, said Environment Secretary Roy Cimatu yesterday.

Cimatu cited that some areas within the Bacuit Bay and Corong-Corong have high fecal coliform counts, deeming it unsafe for swimming, according to a recommendation by the regional office of the Department of Environment and Natural Resources (DENR) in MIMAROPA.

## **El Nido's water quality has degraded due to a lack of sewerage systems of household and commercial establishments.**

"We will not close El Nido, and we will continue the 'no-swimming (policy)' in (three outfalls) in Bacuit Bay and one in Corong-Corong," said Cimatu, referring to the El Nido Estero, Cabugao and Masagana outfalls.

"We waited for this so that we can make a decision. The decision is that we will continue the rehabilitation," he added during a press conference following a meeting with Tourism Secretary Bernadette Romulo-Puyat and Interior and Local Government Secretary Eduardo Año in Camp Aguinaldo last Thursday, 1 August.

El Nido's water quality has degraded due to a lack of sewerage systems of household and commercial establishments, which Cimatu said will be investigated during the rehabilitation.

He added that the encroachment in easement

zones and timberlands, solid waste management and violation of environmental laws were also found to have contributed to the dreadful conditions in El Nido.

An inter-agency task force composed of regional offices of the Department of Tourism (DoT), and the Department of the Interior and Local Government and representatives from the local government unit (LGU) was created to conduct the investigation and inspection of establishments and households within El Nido's tourism area.

Cimatu also ordered the task force to identify non-compliant commercial establishments or those that violate environmental laws, operating without business permits and without DoT accreditation.

The investigation will start on 5 August, in which the task force should complete their operations and submit results by 25 August.

The same plan used in the rehabilitation of the Boracay Island will be followed for the rehabilitation of El Nido and the rest of the ecotourism areas in the country such as Coron, Siargao, Panglao and Puerto Galera.

Asked about the cause of the current state of El Nido, Cimatu cited the lack of regulatory measures from the LGU, especially the mayor, despite the Local Government Code designating the LGU in charge of their respective tourism sites.

"This is what happened to Boracay before, there was no one who took control, but this time we are able to stop all this. And we will continue to stop this because we cannot allow El Nido to deteriorate into another Boracay," Cimatu said.



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## 'No Swimming Policy' sa El Nido tuloy – Cimatú

Sinabi ni Department of Environment and Natural Resources (DENR) Secretary Roy A. Cimatú na patuloy ang rehabilitasyon sa El Nido beach sa Palawan subalit bubuksan pa rin ito sa mga turista.

Ayon kay Cimatú ang 'no swimming' policy ay mananatili sa ilang lugar gaya ng Bacuit Bay at Corong-Corong dahil sa mataas na antas ng coliform.

Base sa rekomendasyon ng regional office ng Department of Environment and Natural

Resources (DENR) sa MIMAROPA, sinabi ni Cimatú na ang mga naturang lugar ay 'di ligtas para magswimming dahil sa mataas na fecal coliform count na umaabot sa halos 16 milyong na napakalayo sa normal level na 100 milliliter (mpn / 100ml).

"We will not close El Nido, and we will continue the 'no swimming' in [three outfalls] in Bacuit Bay and one in Corong-Corong," sabi ni Cimatú.

Bukod sa pagkasira ng kalidad ng tubig na dulot ng

kakulangan ng mga sewerage system sa mga Kahayan at commercial establishment, sinabi ni Cimatú na ang paglabag sa mga batas sa kapaligiran ay nakadagdag din sa pagkasira ng kapaligiran ng El Nido.

Inatasan ni Cimatú ang regional executive director ng DENR MIMAROPA na bumuo ng isang inter-agency task force na bubuin ng Department of Tourism (DOT) at Kagawaran ng Panloob at pamahalaang lokal at mga

kinatawan mula sa local government unit (LGU) na magsawa ng pagsisiyasat at pag-inspeksyon ng mga establisimyento, kabilang ang mga residential houses sa loob ng El Nido.

Ayon pa kay Cimatú na parehong plano ang gagamitin sa rehabilitasyon ng Palawan gaya nang ginamit sa Boracay Island gayundin sa ibang eco-tourism sa bansa gaya ng Coron, Siargao, Panglao at Puerto Galera. **(Riz Dominguez)**



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## **Pag-recycle ng water lilies sa Laguna Lake at putik sa Pasig River, isusulong**

ISUSULONG ng Green Charcoal Philippines, Inc. (GCPi) ang programang pupukaw sa interes ng publiko na tumutulong na maipaunawa sa mga awtoridad ang kahalagahan ng kapaligiran sa pamamagitan ng thematic program sa peste, basura at iba pang environment problems, kasabay nito, umaasa ang kompanya na aani ito ng suporta ng publiko, ayon kay Gonzalo Catan Jr.

Ang programang pinamagatang "Modern Indigenous Proven Solution" ay nakasaad sa position paper na iprinisenta sa DENR noong administrasyong Arroyo.

Ito ay tungkol sa pag-recycle ng water lilies mula sa Laguna Lake at putik mula sa Pasig River na maaaring maging modelo sa pagbuhay at paglilinis ng mga lawa sa pamamagitan ng organic vermincomposting gamit ang green charcoal technology ayon sa Article 1, Section 2 ng Republic Act 9003 at Solid Waste Management Law.

Ayon sa source, ang programa ay nabuo kasunod ng mga resulta ng pagsasaliksik hinggil sa mabilis na pagdami ng water lilies sa Laguna Lake at putik sa Pasig River. Ayon sa pananaliksik, ang water lilies ay maaring gawing vermicast (organic fertilizer) sa pamamagitan ng patented Green Charcoal technology ng kompanya.

Ang Green Charcoal technology, paliwanag niya, ay kino-convert ang bio waste patungo sa green charcoal sa porma ng pellets, fire load at briquette at mainam sa kapaligiran. Ito ay activated carbon na pinoprodus mula sa coconut shell, coal, banana peelings at iba pang forest wastes.



## Mayor to preserve Baguio's forest

**BAGUIO CITY:** Mayor Benjamin Magalong vowed to preserve and enlarge the Summer Capital's remaining forest cover, which is now only 30 percent of its total land area, according to the Department of Environment and Natural Resources-Cordillera (DENR-CAR), continues to be threatened by incursions.

He made the commitment during the DENR-CAR public consultation on key environmental issues, which also tackled the proposed moratorium on the construction of high rise buildings and tree-cutting.

Magalong expressed alarm on the unabated depletion of the city's watersheds, the number of which, he said, had been practically reduced to just four after two of the original six pine stands have shrunk significantly.

He said the city was moving to address the problems besetting the watersheds including the Busol Forest Reservation, the city's biggest source of potable water which continues to be threatened by squatters.

"We are preparing actions on Busol because 40 percent of the forest are now occupied by squatters and we have to do it at a proper time so that we can still save it," the mayor said.

He said the preservation and even the expansion of what was left of the forest cover are reasons why he pushed for the moratorium, which he worked out with DENR Secretary Roy Cimatu and Interior Secretary Eduardo Año and is now up for the President's approval.

The moratorium includes a funding component to finance rehabilitative programs particularly on the upgrading and expansion of its sewerage treatment system.

The mayor said it would cover the construction of commercial buildings and cutting of trees except those that are dead and causing danger to life and properties.

As proposed, it would run for one year with an option for an extension.

Those who spoke during the consultation expressed support to cease constructions and cutting of trees citing

the need to address the city's current environmental problems.

Baguio Water District General Manager Salvador Royeca welcomed the moratorium, saying its benefits would also redound to the city's water supply situation.

DENR-CAR Regional Executive Director Ralph Pablo said the city has long reached its maximum carrying capacity and the moratorium would give the city a respite from too much development.

During the consultation, the DENR-CAR also received inputs on other crucial issues such as the requirements and procedures for the issuance of tree-cutting permits and Environmental Clearance Certificate, the geo-hazard status of the different areas in the city, and the solid waste management status of the city.

The suggestions will be taken into account in the improvement of existing policies and crafting of new ones, the department assured.

**GABY B. KEITH**



# LAGUNA DE BAY NOW A SOURCE OF POTABLE WATER

**H**EAVY rainfall flooded Metro Manila streets on Aug. 2 but helped assuage the water supply shortage caused by the large demand of the growing population and a prolonged dry spell this year.

Data from the Philippine Atmospheric, Geophysical and Astronomical Services Administration show that the water level at Angat Dam, which supplies 96 percent of water requirements in Metro Manila and surrounding provinces, exceeded 167 meters in the morning of Aug. 3, above the 160-meter critical level but still below the "normal high" water level of 210 meters.

Ferdinand dela Cruz, the 52-year-old president and chief executive of east zone concessionaire Manila Water Company, says the company's customers are now enjoying "24x7 water availability at the ground floor". Manila Water achieved this by tapping another source of potable water—Laguna de Bay.

Angat Dam in Bulacan province which supplies 4,000 million liters per day to Metro Manila, Rizal and Cavite was constructed in 1967. This means that over the past 42 years, households and establishments were fully dependent on Angat Dam for their water needs.

As the El Niño dry spell pulled down the water level at Angat Dam this year, the two concessionaires of Metropolitan Waterworks and Sewerage System—Manila Water on the east side and Maynilad Water Services Inc. on the west side—were forced to implement water rationing at certain hours during the dry months.

Under the 1997 concession agreements, the east zone of Manila Water led by the Ayala Group receives an allocation of 1,600 MLD or 40 percent of the total while Maynilad Water now controlled by Metro Pacific gets 2,400 MLD or the balance of 60 percent.

The administration of former President Fidel Ramos ordered the privatization of the water distribution business of MWSS to pay off the agency's \$800-million debt, replace the old pipe network, improve the piped water service coverage and reduce the excessive leakage or non-revenue water level which represented more than half of the total water supply in the 1990s.

As water supply ran thin during this year's dry months, Manila Water experienced an average supply deficit of 150 MLD as total demand of its 6 million customers reached 1,750 MLD, exceeding its allocation of only 1,600 MLD.

In response, Manila Water invested in new water sources and opened the Cardona Water Treatment Plant on March 14, 2019.

The facility draws water from the central portion of Laguna de Bay and now delivers more than 60 MLD of water to Rizal towns. The treatment plant will operate at its full capacity of 100 MLD later this month. It is supported by 45 kilometers of transmission lines and 61 kilometers of distribution lines. At full capacity, it can deliver potable water to about 800,000 people in the east zone.

Unlike other treatment facilities that draw water from Angat Dam, the Cardona WTP employs a more rigorous and complex treatment process and equipment to treat the diverse quality of water from Laguna Lake. The process includes treatment for suspended solids, organic matter, algae and dissolved solids.

"Our Cardona Water Treatment Plant can now produce up to 63 MLD and will reach 100 MLD capacity this August," says dela Cruz, who graduated cum laude from the University of the Philippines with a degree in Mechanical Engineering. He also took the Advance Management Program at Harvard Business School.

Manila Water also operates more than 100 deep wells to augment its supply. "Our deep well capacity is now at around 60 MLD," says dela Cruz. He says the reduction in system losses or non-revenue water to 7.5 percent in July from 12 percent in March translated into another 70 to 74 MLD of recovered supply. The NRW level before the privatization of water distribution was 63 percent.

"We have also installed 65 line boosters in our distribution network to reach our customers located at high elevation or at the end of our network," says dela Cruz, who joined Manila Water in July 2011.

Prior to heading Manila Water, Dela Cruz worked for major companies



Manila Water Company president and CEO Ferdinand dela Cruz

such as Globe Telecom, Kraft Foods (Philippines) Inc., Ayala Land Inc., San Miguel Brewing Philippines, Inbisco Philippines and Unilever Philippines.

Dela Cruz says putting water distribution in the hands of the private sector has significantly improved the level of services. "Privatization has significantly improved the services over the past 22 years. From 3 million customers, we now serve 6.8 million people. System losses have been reduced from 63 percent to 7.5 percent. Waterborne diseases have been reduced significantly," he says.

He says that given the growing population and rapidly expanding economy, there is a need to tap new large water sources such as Kaliwa Dam in Quezon province.

"The key issue remains the need for large new water sources to be developed by MWSS to support the growing demand and [minimize] the over-dependence on Angat Dam," he says. "We need to harness the Laguna Lake more to augment the supply needs of Metro Manila."

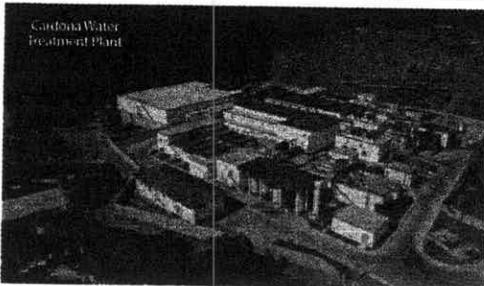
Among the planned water sources projects are the 600-MLD Kaliwa Dam; the 500 MLD Wawa Dam in Rizal province proposed by billionaire Enrique Razon Jr. and Oscar Violago in partnership with Manila Water; the 350-MLD Laguna Bay projects by Maynilad and Manila Water; and the 1,850-MLD "ABC Projects".

ABC Projects involve maximizing the untapped water and water wastage from Angat Dam; the Bayabas Dam Project in Doña Remedios Trinidad also in Bulacan; and the Candaba Multi-Purpose Impounding Dam in Pampanga.

Dela Cruz says at the consumer level, households and businesses should do their part by observing water conservation especially in the face of global warming.

"We need to implement demand management initiatives to reduce per capita consumption. Responsible use of water should be promoted heavily," he says.

Dela Cruz says climate change and water security are serious issues that Filipinos need to address collectively. "We should all be prepared to shoulder the additional costs of achieving water security to sustain the progress of Metro Manila and Rizal. All stakeholders need to work together to update and execute a comprehensive and implementable masterplan," he says. **Roderick T. dela Cruz**



Cardona Water Treatment Plant



# Feeding 10 billion without ruining Earth

Experts Friday began negotiating the most comprehensive scientific assessment ever of the role the land we live off plays in climate change, expected to highlight the stark choices humanity faces to feed 10 billion people while preserving Nature.

The Intergovernmental Panel for Climate Change (IPCC) special report on land use is expected to warn how industrialized food chains, rampant resource exploitation, and even efforts to stave off the worst effects of global warming, are jeopardizing our future.

But it will also deliver a withering verdict on global inequality, depicting a planet where billions of overfed people throw away vast amounts of calories at the end of each day as hundreds of millions go to bed hungry.

As delegates from around the world began poring over the report's draft text in Geneva on Friday, experts said the importance of using land efficiently had long been overlooked.

"When you look at both the effects of the changing climate as well as contributions to climate change, the land sector

is incredibly important," Lynn Scarlett, vice president for public policy at The Nature Conservancy campaign group, told *AFP*.

Land use including agriculture and deforestation account for around a quarter of planet-warming greenhouse gas emissions. Industrial farming uses one third of all land on Earth and up to 74 percent of fresh water.

Stephen Cornelius, WWF's chief advisor on climate change, said the world needed "an urgent transformation in how we use land in the future.

"This includes the type of farming we do, our food system and diets, and the conservation of areas such as forests and other natural ecosystems."

Addressing the opening plenary, IPCC Chair Hoesung Lee said the land use assessment affected everyone.

"You could say this report is about my landscape, my farm and my food," he said.

Inger Andersen, the new head of the UN's Environment Programs, called the 1,200-page document "a hugely important piece of science."

"Land can either be a source or a sink of greenhouse gases, and

whether it has a positive or negative impact on a climate-changing world is up to us," she told delegates via video link.

With the global population set to hit 10 billion by mid-century, there are fears existing food systems will be stretched to breaking point.

Meat is a major problem, as is food waste. It's estimated as much as 30 percent of all food produced ends up in landfills — with a carbon footprint to match.

**Land use including agriculture and deforestation account for around a quarter of planet-warming greenhouse gas emissions.**

"Although land provides more than enough food to feed everyone, there are still 820 million who go to bed hungry every night," said Stephan Singer, senior adviser on global energy policies with Climate Action Network, a global grouping of NGO.

In addition, monoculture crops such as soy used for energy and animal feed are reshaping Earth's surface, contributing to the

destruction of carbon-absorbing forests.

An IPCC report in October on the feasibility of limiting temperature rises to 1.5C (2.7F), in line with the Paris climate accord goals, sparked global protest movements demanding that governments bring their policies in line with the science.

The land use report is expected to detail increasing desertification and habitat degradation from agriculture, with an area of tropical forest the size of Sri Lanka lost each year.

It will also throw up a number of trade-offs.

One is striking the right balance between land used for food and land used to mitigate global warming, such as forests and bioenergy projects.

"We need to move away from harmful industrial agriculture that relies on chemicals, drives deforestation and releases emissions," Teresa Anderson, climate policy coordinator at global campaign group ActionAid, told *AFP*.

"The writing is on the wall for big agriculture corporations." **AFP**



CLIMATE policy coordinators have underscored the need to move away from industrial agriculture that rely on chemicals and release emissions.



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## Declogging should start at barangays

Barangay officials should take the initiative to unclog causes of floods in their locality

**By Pat C. Santos**

It might be counterintuitive but declogging operations should go full-blast even as monsoon rains inundate most parts of the City of Manila.

The city chief executive gave this order to officials of the city's 896 barangays in an effort to ease flooding and open up roads to vehicles.

The mayor, who was the guest of honor at a tree planting activity at the College of the Holy Spirit in Mendiola, Manila, assured Manileños his administration is studying the overall situation and is finding ways to address the issue.

He stressed barangay officials should take the initiative in the cleanup drive as duly elected public officials.

"The almost 300,000 employees of the city government who get their salaries from taxpayers should repay them by providing service such as the declogging of flood waters in your areas," he said.



# Don't shoo the zoo away

Manila Zoo was the first ever zoo built in Asia

By Maria Romero

For the past six months, people have been wondering when Manila Zoo would reopen following its city-imposed closure early in the year after it was found dumping untreated wastewater into Manila Bay. Considered as the first ever zoo in Asia, it has been a constant in every child's growing-up years, the venue for weekend outings to see the animals. Thus, its shutdown was greeted with expressions of dismay and delight from animal lovers—those who see the park as venting for wildlife studies and those who consider keeping animals an act of cruelty.

The change in city management just might shed a positive light on the fate of this Manila institution.

## 60-year old zoo

Formally called the Manila Zoological and Botanical Garden, the 5.5-hectare zoo opened to the public on 25 July 1959 when Carlos P. Garcia was the Philippine President. The Manila Zoo used to be a home to about 500 animals, with 106 different species in the zoo, of which 30 were mammals, 63 reptiles and 13 birds.

Aside from its stars such as elephants, tigers, lions and hippos, Manila Zoo also housed several indigenous species of animals like the bearcat, long-tailed macaques and crocodiles.

Over the past years, animal

welfare groups sought the zoo's closure after the management failed to fully protect the animals in it, which was deemed a violation of the Animal Welfare Act. The zoo's most famous resident Mali, a 43-year-old elephant, had been the subject of campaigns alleging animal cruelty.

In July 2017, the zoo lost Bertha, believed to be the world's oldest hippopotamus, who died at 65. According to zoo director James Dichaves, the 2.5-ton female hippo was found dead in her enclosure, with a post mortem examination concluding that Bertha had died from multiple organ failure. Meanwhile, in September last year, a video of a lion in the zoo experiencing seizures went viral online.

When then Mayor Joseph Estrada indefinitely closed the zoo in line with the government

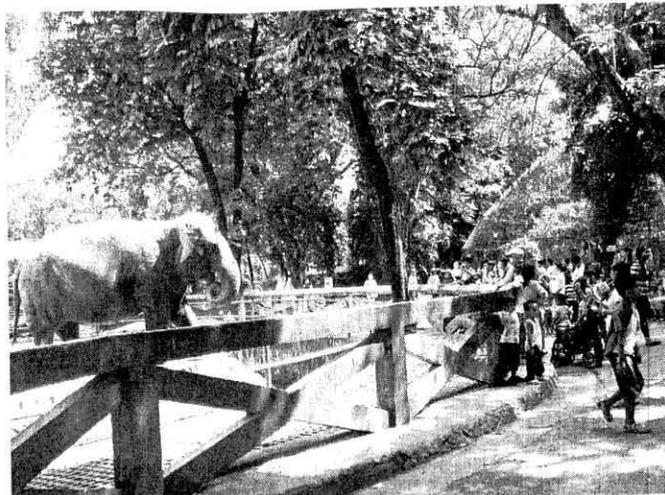
program to rehabilitate Manila Bay, observers were at a quandary as to its fate. There were rumors that it would eventually be closed, the lot sold to a developer to transform into a mall or a high-rise condominium.

**It has been a fixture in many children's memories of weekend outings.**

Under the city's new regime will Manila Zoo emerge from its forlorn state to a promising tourist spot in the country's capital?

## Dev't plans

Following his oath-taking last 30 June 2019, the newly-elected Manila Mayor got to work immediately. He was active both off and online—personally attending clearing operations to make sure his directives are properly enacted and then reporting his progress through his social media accounts right



THE rehabilitation of Manila Zoo, the first zoo built in Asia, will not be rushed, says the Manila city government.

off the bat.

On 4 July, he visited the zoo and was adamant that the city government would not rush its repair. It was fair warning, given that he just barely started his term and the local Manila government still lacks funds to support the full-on rehabilitation of the zoo.

"It doesn't make sense if we're going to open next week, next month, if we continue to violate as an institution our environmental protection," the

mayor was quoted as saying.

He noted that the city may lose income due to the zoo's shutdown, but it doesn't matter so long as they don't contribute to the further destruction of the environment.

The Manila chief executive also said donations from private companies are welcome to reestablish the park to its full glory.

With the mayor at the frontline of bringing back the glory of Manila Zoo, the message is clear:

The zoo that we all loved will not be sold and it will soon be reopened.

"Good news, I will not sell Manila Zoo. We are going to redevelop it. I call on the public to participate," he asserted.

With that, the Manila Zoo is expected to not only become a family-friendly park but an environment- and student-friendly tourist spot "in such a way that students in their regular classes will go here because they have to study biology."





## MAGTANIM NG PUNO - ISKO

**HINIKAYAT** ni Manila Mayor Francisco "Isko Moreno" Domagoso ang mga Manileño na magtanim ng puno upang maging "green city" ang Maynila.

Ginawa ito ni Domagoso sa kanyang talumpati sa seremonya ng "tree planting event" kahapon ng umaga sa College of the Holy Spirit.

Ayon sa alkalde, nasa mahigit 1,700 ektarya ng lupa ang planong taniman ng iba't ibang uri ng halaman bilang tulong sa paglilinis ng hangin na kokontra sa polusyon.

Inatasan na rin ni Domagoso ang lahat ng opisyal ng may 896 barangay sa Maynila na magsagawa ng "declogging" sa kanilang nasasakupang lugar sa gitna ng paghagupit ng malakas na ulan dulot ng hangiang habagat na naging sanhi ng pagbabaha sa maraming lugar sa

lungsod.

Ngayon, aniya, ang tamang panahon upang lahat ng barangay ay magsagawa ng declogging na itinatakda ng batas ngunit ang malaking "budget" napupunta lamang kadalasan sa bulsa ng mga tiwaling opisyal.

Iginiit naman ng alkalde na hindi lahat ng problema ng Maynila ay iaasa sa pamahalaang lungsod kundi magkusa rin ang mga opisyal ng barangay na solusyunan ang mga maliit na suliranin sa kani-kanilang kinasasakupan.

Paiiitngin din ng alkalde ang pagpapatupad ng Anti-littering law at poposasan at ipakukulong agad ang sinomang magtatapon o mag-iwan ng kanilang basura sa bangketa o kalsada sa lungsod na pangunahing dahilan ng pagbabaha.

**JAY REYES**



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## Water in Angat rises; Bustos Dam spills

MALOLOS – The water level in Angat Dam has risen to more than a meter amid heavy rains spawned by the southwest monsoon.

Meanwhile, Bustos Dam breached its spilling level yesterday.

Monitoring by the Bulacan provincial disaster risk reduction office showed that as of 8 a.m. yesterday, the water level in Angat Dam was at 167.22 meters compared to 166.09 meters on Friday.

Angat's critical mark is 160 meters while its minimum operating level is at 180 meters. The normal high during rainy season is 212 meters.

The water level in Bustos Dam is 17 centimeters above its spilling level of 17.34 me-

ters.

The water elevation in Ipo Dam is only a centimeter below its spilling level of 101 meters.

Felix Robles, head of the water control and coordinating unit of Bustos Dam, told **The STAR** that water spills at around 2.54 cubic meters per second from the dam's rubber gate. He said there is no need to open the sluice gates.

Angat Dam serves as the primary source of water of Metro Manila residents.

Ipo Dam serves as the water reservoir of the two water concessionaires for Metro Manila residents while Bustos controls the release of water for irrigation in Bulacan and parts of Pampanga.

– Ramon Efren Lazaro



## Angat, La Mesa water levels up

**By Korinah Saromines**

Weather bureau Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) on Saturday reported that the recent monsoon rains caused the water levels at Angat Dam and La Mesa Dam to rise.

In its report, PAGASA said that as of 6 a.m. Saturday, the water level at Angat Dam was at 167.17 meters, which was higher than the 166.02 meters recorded at the same time on Friday.

Meanwhile, La Mesa Dam's water level stood at 74.65 meters yesterday morning, slightly higher than the 74.48 meters recorded earlier.

The Angat Dam has been experiencing water shortage from lack of rain due to the El Niño phenomenon, but rain from thunderstorms and "habagat" is helping Angat gain some water, according to PAGASA.

"That rain will help increase water in Angat Dam," said PAGASA weather forecaster Ana Clauren,

adding that the "habagat" rain will be light to moderate to at times heavy.

The other dams' water levels on Saturday are as follows – Ipo Dam, 100.99 meters (from 100.98 m on Friday); Ambuklao, 746.75 meters (from 746.33 m); Binga, 573.96 meters (from 573.74 m); San Roque, 232.20 meters (from 231.94 m); Pantabangan, 190.44 meters (from 190.23 m); Magat, 184.78 meters (from 184.92 m) and Caliraya, 286.51 meters (from 286.65 m).

PAGASA also noted that the low-pressure area (LPA) east of the Philippines will likely develop this weekend into a tropical depression (TD) and will enhance the southwest monsoon or "habagat," enabling the weather system to further bring rain over Luzon where Angat is.

Clauren added that the LPA was recurving northeast away from the country and noted that it can still develop into a TD and enhance the "habagat"

The TD will assume the local name "Hanna," PAGASA said.



## BUSTOS DAM UMAPAW, ANGAT TUMAAS ANG LEVEL NG TUBIG

UMAPAW ang tubig sa Bustos dam habang ang Angat dam ay tumaas ang level ng tubig dahil sa walang tigil na pag-ulan na direktang tumama sa watershed nito kamakalawa.

Sa report, umakyat sa 17.56 meters kaya nag-over-flow ang tubig sa Bustos dam.

Sinasabing umapaw ang tubig sa anim na rubber gates ng naturang dam kamakalawa sa kasagsagan ng malakas na ulan.

Kahapon ng 8:00 ng umaga ay bumaba rin sa 17.51 meters ang level ng tubig sa Bustos dam.

Umakyat din ang tubig sa Angat dam na mula sa 165.67 meters kamakalawa ay nasa 167.22 meters na kahapon.

Nasa 101.81 meters naman kamakalawa ang tubig ng Ipo dam na umabot naman ng 100.98 meters kahapon ng umaga.

Bagama't umapaw ang Bustos dam at walang tigil ang pag-ulan, tanging high tide lamang ang magiging dahilan para magbaha sa ilang bayan gaya ng Calumpit, Hagonoy, Paombong, Bulakan, Balagtas, Bocaue at iba pang mababang lugar.

DICK MIRASOL III



### Tubig sa Angat patuloy sa pag-angat

PATULUY ang pagtaas ng lebel ng tubig sa Angat Dam sa harap ng nararanasang malalakas na pag-ulan sa maraming bahagi ng bansa, ayon sa Philippine Atmospheric, Geophysical and Astronomical Services Administration.

Sa isang bulletin alas-6 ng umaga, sinabi ng Pagasa na bahagyang tumaas ang lebel ng tubig ng dam sa 167.17 metro, mas mataas ng 1.15 metro kumpara sa 166.02 metro noong Biyernes ng umaga.

Samantala, tumaas din ang lebel ng tubig sa La Mesa Dam ng 74.65 metro

kumpara sa 74.48 metro.

"Water levels in other dams such as Ipo, Ambuklao, Binga, San Roque and Pantabangan have also went up," sabi pa ng Pagasa.

Kapwa nakaranas ng pagbaba ng lebel ng tubig ang Magat Dam at Caliraya Dam.

Nakaranas ng malalakas na pag-ulan ang maraming bahagi ng bansa bunsod ng Habagat, samantalang patuloy na minomonitor ang isang low pressure area, na posibleng maging bagyo at nakatakdang pangalanan na Hanna. — *Inquirer.net*



Department of Environment and Natural Resources  
STRATEGIC COMMUNICATION INITIATIVES SERVICE

THE EXPONENT OF THE PHILIPPINE PROGRESS  
SINCE 1900

# MANILA BULLETIN

THE NATION'S LEADING NEWSPAPER

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## Rains to drench MM, Western Luzon until Tuesday – PAGASA

By ELLALYN DE VERA-RUIZ

Monsoon rains will likely prevail over a large swath of Luzon in the next two to three days as a potential cyclone off the coast of eastern Luzon is enhancing the effects of the southwest monsoon

(habagat).

The Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) said monsoon rains will be experienced over Metro Manila, Pangasinan, Zambales, Bataan, Rizal, Cavite, Laguna,

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### Rains to drench MM...

Batangas, Occidental Mindoro, Antique, Guimaras, and the northern portion of Negros Occidental.

Meanwhile, cloudy skies with scattered rain showers and thunderstorms will prevail over the rest of Luzon and Visayas.

Before Saturday noon, the low pressure area (LPA) that is enhancing the impact of habagat was estimated at 875 kilometers east of Virac, Catanduanes.

PAGASA weather specialist General Quitlong said the LPA is most likely

to develop into a tropical depression today or Monday. Should it intensify, the potential cyclone will be locally called "Hanna," the first cyclone this month and eighth this year.

While it is not expected to make landfall, he said the trough or extension of the LPA is already bringing scattered rain showers and thunderstorms over Bicol, and parts of Visayas and Mindanao.

The LPA is also expected to boost the habagat until Tuesday, bringing light to moderate with at times heavy

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rains over Metro Manila and western Luzon, Quitlong pointed out.

Due to the incessant monsoon rains, the water level at Angat Dam in Bulacan has increased overnight by more than a meter.

Based on PAGASA's monitoring, Angat Dam's water level rose to 167.17 meters on Saturday from 166.02 meters last Friday which is still below the 180-meter minimum operating level and 210-meter normal high water level.

The inclement weather has also caused the cancellation of six international flights and nine domestic flights.



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# Rains are here but all those plans must not be forgotten

**T**HE rains have begun in Metro Manila but the schedule of water service interruptions will have to continue perhaps until September, according to the National Water Resources Board (NWRB) which is not recommending any adjustments in the supply at this time.

The Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) said several days of rains have started replenishing the water stored in Angat Dam, principal source of Metro Manila's water supply. Angat's water level had gone down below 160 meters during the hot months, necessitating substantial reductions in the water supply to Metro Manila. After several days of steady rain last week, the water level rose to 162.4 meters.

It should soon reach the critical low operating level of 180 meters, but that is still a long way to 210 meters, the normal level. PAGASA said this level should be reached around September with the continued rains brought by the "habagat" from the southwest and local thunderstorms, and hopefully two or four typhoons from the Pacific in August. Until then, we can expect no change in the current schedule of water rationing in Metro Manila.

We look forward to plans approved during the

last water shortage to develop new water sources for the region's fast-growing population. Manila Water in the East Zone has plans to tap Laguna de Bay and several deep-water wells. It has approved a partnership to tap the Wawa Dam to add 500 million liters a day (MLD) to its supply.

Maynilad in the West Zone is building a new water treatment plant to tap water from Laguna de Bay to add 150 MLD to its supply.

MWSS has asked the two concessionaires to partner up to build a new conveyance tunnel from La Mesa Dam which could add 2,400 MLD. Much further in the future, the MWSS is trying to develop the Kaliwa Dam, with financing assistance from China, which would add 600 MLD, but that is targeted for completion only by 2023.

We also hope that just as many buildings and homes in Metro Manila have installed solar panels to add solar power to their local mix of power sources, there will also be buildings and homes that will devise ways to save the rainwater that comes at this time of the year.

The rains have started but it should not be back to the usual for the agencies whose task is to develop new water resources so that we will not have to go through this annual experience of water shortage and water rationing.



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FEATURES / A6  
THE SECRET LIFE  
OF PANGOLINS



**By Gregg Yan**  
Contributor

PALAWAN—It's 1 a.m. and deep in the jungles of Palawan, researchers and a squad of Philippine Marines are searching for pangolins, the most illegally trafficked mammals on earth.

Pushing up a sheer slope of thorny rattan palms carpeted with rotting orange leaves, our Tagbanua scout Joel's tracker dog Itiman suddenly barks, picking up a scent. "We haven't found a pangolin in six months," Joel confessed a day before.

But there are fresh pangolin claw marks on the trees around us. The three Marines behind me lock and load M4s in case what Itiman found isn't a pangolin. We slink forward.

Pangolins, or scaly anteaters, got their name from Malaysians, who called them "penggulung" ("parang gulong" in Filipino—like a tire) for their tendency to roll into protective balls when threatened.

Their golden scales that look like King's guard armor from "Game of Thrones" shield them from predators and prey. They use backhoe-like claws and sticky tongues to rip into and slurp up to 20,000 ants or termites nightly, the main reason they're incredibly hard to keep in captivity.

Four species inhabit Africa while four more live in Asia, including the Philippine pangolin (*Manis culionensis*), found only in the province of Palawan and classified as endangered by the International Union for Conservation of Nature.

Having developed secretive habits to avoid detection and predation, pangolins hide in earthen burrows, rotting tree stumps, or high in trees, emerging only at night. They give birth to one or two young yearly—less than the current rate of capture for the illegal wildlife trade.

"They're what we call cryptic animals, experts at remaining hidden," says Phoebe Meagher of Australia's Taronga Zoo, who joined the research team.

**NEWS FEATURES**



RUSH TO SAFETY A pangolin and its young look for shelter in the wilds of Southern Palawan. —PHOTOS BY GREGG YAN

The US Agency for International Development (USAID)'s Protect Wildlife Project is working closely with the Palawan Council for Sustainable Development and Katala Foundation to assess pangolin numbers in mainland Palawan.

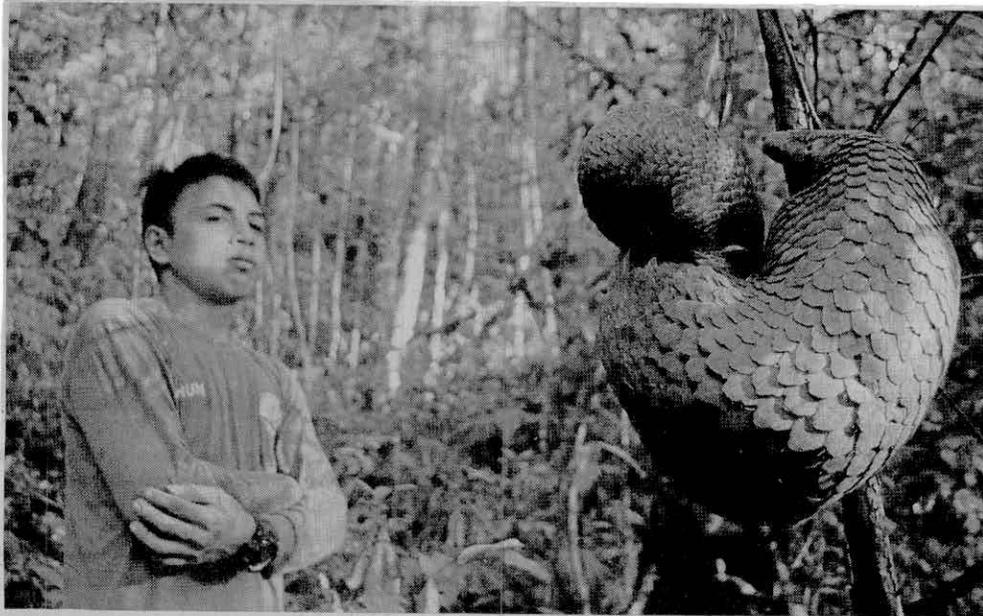
"This initiative aims to give decision-makers an idea of just how many pangolins remain in the Philippines," says Sabine Schoppe, an expert on the Philippine pangolin. "With their range limited to the islands of Palawan, we need to conserve these animals before they're hunted to extinction."

**Meat and scales**

An estimated one million pangolins have been traded in at least 67 countries in the past decade to feed the centuries-old demand for meat and scales—especially in China and Vietnam, the top consumers. The meat is a delicacy; the scales are used as traditional medicine.

Due largely to poaching, the

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'LIKE A TIRE' A pangolin curls itself tightly "like a tire" to avoid predators (left), while a researcher studies fecal and scale samples of the elusive creatures.

population of the Philippine pangolin has dropped by 95 percent since the 1980s, the Chinese pangolin by 94 percent since the 1960s, and the Sunda pangolin by 80 percent since 2000.

"The traditional Chinese medicine trade has already wrought havoc on Asian pangolin populations, so the trade has shifted to Africa. Since Asian pangolins are now rarer, they fetch higher prices," Schoppe says.

At least 667 poached Philippine pangolins were intercepted by authorities from 2001 to 2017. In April 2013, a Chinese poaching vessel rammed into the Philippines' famed Tubbataha Reef. Found aboard were 2,870 dressed Sunda pangolins, which were eventually buried in Puerto Princesa.

In April 2019, 25 tons of scales from an estimated 38,000 African pangolins were confis-

cated in Singapore—the largest haul ever recorded. Just four months earlier in January, nine tons of scales from an estimated 14,000 pangolins were intercepted in Hong Kong. In 2007-2009, Malaysia's Sabah Wildlife Department revealed just one syndicate traded 22,200 dead and dressed pangolins.

The poaching goes on even while all pangolin species are banned from international trade under the multilateral treaty, the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Traditional Chinese healers believe that pangolin scales—made of keratin, like human hair and nails—have magical powers. They believe that the scales, which are dried, ground and inserted into pills, relieve fever, pain, ulcers, arthritis and other ailments.

A 1938 article in Nature sta-

ted: "The scales—when roasted, cooked in oil, butter, vinegar, boy's urine or other substances—can cure various conditions, including hysterical crying in children, malarial fever, deafness, plus women possessed by ogres or devils."

These claims have zero basis in science, but convincing millions of users to shift to alternatives hasn't proven easy.

#### Trade driver

Stopping the trade starts with reducing demand for pangolin meat and scales. The meat is often a status symbol, for it doesn't actually taste good. The scales drive the trade.

"Think about it. No one pays for powdered fingernails, but traditional Chinese medicine believers spend a fortune for powdered pangolin scales, which are no different," Schoppe says. "Legal prescribed medicines are

cheaper and more efficient alternatives, while the alleged powers of pangolin scales will die out with the last pangolin. It's time to leave old traditions behind and opt for more sustainable solutions."

Western and Chinese medicine experts have found that cowherb seeds, earthworms and other items are viable alternatives to pangolin scales. Tighter enforcement of laws is needed. "Wildlife trafficking doesn't rank as highly in the government's radar as drugs or weapons trafficking," notes Edward Lorenzo, USAID's Protect Wildlife crime prevention advisor. "The illegal wildlife trade is run by organized syndicates with their own systems for capturing and smuggling animals, pangolins included. Since we're an archipelago, it's also hard to monitor exit and entry points, especially informal ones. Boats



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can land anywhere and smuggle out wildlife.”

Last June, 10 live pangolins were seized at a checkpoint in Tagaytay City.

Regional collaboration is crucial. “DNA tests conducted for the pangolins confiscated off the Tubbataha Reef in 2013 revealed they came not just from Palawan, but also from Cambodia, Indonesia, Malaysia and Vietnam. This is significant for it proves that illegal traders source their contraband from all over Southeast Asia,” says Mundita Lim, executive director of the Association of Southeast Asian Nations (Asean) Center for Biodiversity.

She adds: “Efforts to combat the illegal wildlife trade cannot be undertaken separately, at a country-by-country level, but through coordinated action at the regional level. An Asean ministerial declaration adopted in Chiang Mai in early 2019 outlined the commitment of Asean member states to combat the illegal wildlife trade individually and regionally. China, the biggest consumer, should be engaged through the Asean plus China framework for cooperation.”

#### Sheer stupidity

We actually find two pangolins, one a juvenile. Researcher JR Pastraña swiftly puts the pair in a canvas bag while Elmie Caabay jots down GPS coordinates, food sources and so on.

At our jungle base camp hours later, JR and Elmie take measurements and fecal and scale samples before marking the animals with white water-based paint to ensure they won't be counted twice if seen again. In 10 months, the research team had covered 2,000 hectares, encountering just 16 pangolins.

After a few minutes at base camp, we trek back up the mountains to release our rare finds.

The sheer volume, the sheer stupidity, of the global trade in pangolins struck me hard because I've seen how difficult it was to find even one of them. I realized how even the most lovable, harmless animals can disappear because of human greed. But beside me, the young researchers were full of hope.

Perhaps, with no-nonsense enforcement measures in source countries like the Philippines, plus an aggressive campaign to cut demand in consumer countries like China and Vietnam, pangolins might have a slim chance of making it to the next century. But if the trade continues, as it has the past decades, then pangolins had better hide—for their own good.

May they live long, safe and secret lives! INQ



An award-winning environmental communicator, the author is behind Best Alternatives, a movement that promotes more sustainable alternatives to endangered wildlife products like shark fins, pangolin scales and giant clams.



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El Nido, Palawan

## DOT welcomes 'Travel + Leisure' ranking of Palawan, Cebu, Boracay

**T**HE Department of Tourism (DOT) celebrates the inclusion of the three popular island tourist destinations of Palawan, Cebu and Boracay in *Travel + Leisure's* World's Best Awards 2019.

Leading the Philippine honorees is the "the perennially popular Philippine island of Palawan," wrote the magazine. Palawan, which ranked second on the 15 Best Islands in the World list, is home to the enchanting Puerto Princesa Subterranean River National Park, Coron and El Nido.

Palawan is also where the DOT's San Vicente Flagship Tourism Enterprise Zone (TEZ) is located. Master-planned as an integrated tourism destination project, it is envisioned as a sustainable investor's haven that will be a catalyst for inclusive economic growth through public and private partnership.

"We are thrilled that Palawan has improved its ranking this year, and is inching closer to regaining its top spot in *T+L's* World's Best Awards. Hats off as well to Cebu and Boracay for being recognized among the best in Asia," DOT

Secretary Bernadette Romulo Puyat said.

Cebu and Boracay were voted seventh and ninth, respectively, in the Top 10 Islands in Asia category by the readers of the international travel magazine. The islands were rated according to their activities and sights, natural attractions and beaches, food, friendliness and overall value. Palawan also came in second on this list.

"This citation by a major publication validates our efforts toward attaining a sustainable tourism industry and now, more than ever, encourages the DOT to work even harder on this advocacy, creating a tourism environment that is recognized and lauded not only today, but for the generations to come," remarked Puyat. *T+L* writer Rebecca Ascher-Walsh quoted one reader naming Palawan as the "single most beautiful place I have ever seen."

Ascher-Walsh also wrote that the Philippine island triumvirate of Palawan, Cebu and Boracay are longtime favorites thanks to top-notch reef and wreck diving, white-sand beaches, hiking trails with waterfalls and welcoming locals.



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# Finding science-based solutions to tourism needs

STORY AND PHOTOS BY JONATHAN L. MAYUGA

**B**ELIEVE it or not, there's a strong link between the tourism and science and technology sectors because for every tourism industry's need, there is a science-based or technology-driven solution waiting to be tapped.

Various Department of Science and Technology (DOST) projects are in fact aimed at boosting the country's tourism industry, said Science Undersecretary for Regional Operations Brenda L. Nazareth-Manzano at the Caraga Science and Tourism Industry Forum in Butuan City last week.

She said the DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) is helping shape the tourism sector through the various research and development projects it is funding with its partners from other government agencies, research institutions, academe and private companies.

"We look now at the tourism industry at a broader perspective and see how DOST can put more fun, as the DOT's [Department of Tourism] tagline says, in the Philippines through science, technology and innovation," she said. The event gathered tourism industry players in the region, including hotel and resort owners.

Tourism Assistant Secretary Myrna Paz V. Abubakar, who represented Secretary Bernadette Romulo Puyat, gave an overview of the country's tourism industry and its needs from science and technology (S&T) developers.

Abubakar said the event was "very timely" considering that the DOT is now working to position the Philippines as "a must-experience destination."

"We acknowledge the importance of S&T in improving the country's competitiveness also in boosting inclusive and sustainable growth," she said.

### Robust tourism

ACCORDING to Abubakar, the country's tourism industry is on an upward trajectory.

"Our overall tourism performance is robust and on the up-trend. Last year, our foreign visitor arrivals were at an all-time high at 7.1 million, 8.27 percent higher than 2017's inbound figures of 6.62 million," she said.

Citing the Philippine Statistics Authority data, she said the tourism sector contributed 12.7 percent to the country's GDP in 2018, or 0.5 percent higher than its 12.2-percent share in 2017.

Approximately 5.4 million jobs

were generated in 2018, contributing 13 percent of the total employment in the country, up by 1.8 percent than the 5.3 million jobs generated in 2017.

### ✓ Sustainable tourism

ACCORDING to Abubakar, while it is hoped that tourism will be a major economic activity in the regions, the DOT is proceeding with "utmost caution to avoid the ill effects of unplanned and hasty development," citing the case of Boracay.

"We should look at the Boracay rehabilitation experience as a case study for sustainable tourism," she said. According to Abubakar, the world is looking at the government's efforts in rehabilitating the island paradise.



## Needs from science

ABUBAKAR highlighted the need for the development of digital platforms for the tourism industry.

During last year's World Tourism Day, the World Bank had a presentation about the Digital Platforms and the Future of Tourism. I would like to share part of their statement which is very apt for this activity. It goes: "When properly planned and managed, sustainable tourism can contribute to improved livelihoods, inclusion, cultural heritage, and natural resource protection and promote international understanding. And digitalization is one way to hasten this development," she said.

S&T can boost sustainable tourism by mitigating the aviation industry's impact on climate change.

"Since 98 percent of our visitors enter our country by air, we are looking at science to mitigate the aviation industry's impact on climate change. Again, with the world's concern about sustainability, tourists may, in the future, weigh their options on how to travel or where to with the least carbon footprint," she said.

According to Abubakar, while the government's "Build, Build, Build" program serves to promote seamless travel, innovation is needed to develop fuel-efficient transport systems for air, land and sea mobility.

The facilitation of entry through visa reforms, biometrics, machine-readable passports, modern scanners and other electronic

systems can contribute to the first impression at the ports of entry, she pointed out.

## Science and technology solutions

DUBBED "Luwas Pilipinas, Ligtas Pilipinas," the two-day event co-organized by PCIEERD and the DOST Caraga region showcased the various tourism-related research and development (R&D) projects funded, wholly or in part, by the DOST-PCIEERD.

Most R&D projects were already completed, tested and ready for transfer, said PCIEERD Executive Director Enrico C. Paringit.

Manzano showcased the different technologies developed by Filipino researchers, focusing on accommodation, food and beverage services, recreation and entertainment, transportation and travel services.

The DOST, she said, looks at the tourism industry as a partner in serving the people and transforming lives through its various projects and programs, highlighting the industry's phenomenal growth over the years.

"The tourism industry is flourishing in the country and we are keen on supporting this industry through technologies, programs and services that we can offer," she said.

## Agro ecotourism

THE DOST recently poured in P6.6 million to the Mount Kitanglad Agro Ecotourism to develop a science-based tourism farm site in Northern Mindanao.

"Through the funding, the 22-hectare farm will enhance its capability to produce chemical-free high-value crop vegetables which are its niche offer. This will be done through a package of technologies using chemical-free cabbage and sweet pepper, lettuce, mints, and other high-value vegetables," Manzano said.

## Structural safety

THE DOST-PCIEERD and its partner also developed the Universal Structural Health Evaluation and

Recording (Usher) System.

A 24/7 economical and hassle-free system, Usher allows stakeholders, such as building managers, to comply with the National Structural Code of the Philippines and the implementing rules and regulations of the revised National Building Code of the Department of Public Works and Highways.

The technology uses the concept of structural health monitoring, which provides a diagnosis of the condition of various structures.

## Smart energy

THE science agency also worked in partnership with WattSmart Philippines, an award-winning energy management company that introduced an innovative and affordable way of saving electric power consumption to around 20 participants from food-, metal-, sugar- and coconut-processing companies in various provinces.

The Smart Energy Program, designed to support the manufacturing sector to minimize energy wastage through an energy audit, on-site installation of energy data centers to facilitate analysis of energy consumption and professional energy consultation, provides long-term financial benefits.

The technology helps control electrical energy consumption, save overhead costs and boost business competitiveness.

Several DOST-PCIEERD projects, meanwhile, are linked to disaster-risk reduction and management.

## Geo-Safer

THE Geo-Informatics for the Systematic Assessment of Flood Effects and Risks for a Resilient Mindanao (Geo-Safer) is a research program conducted by the Phil-LiDAR 1 Mindanao Cluster higher educational institutions, consisting of Ateneo de Zamboanga, Caraga State University, Central Mindanao University, Mindanao State University-Iligan Institute of Technology and the University of the Philippines-Mindanao.

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Geo-Safer produced highly detailed flood hazard maps using geo-informatics-based technologies—such as Light Detection and Ranging (LiDAR) remote sensing, Global Navigation Satellite System, Geographic Information System, and Numerical Simulations—of flood-prone river basins based on the demands by local government units across 18 provinces in various parts of Mindanao, specifically in Zamboanga City-Basilan-Sulu-Tawi-tawi area, Agusan, and Northern, Western and Southeastern Mindanao.

### Integrated water management

THE integrated and comprehensive water assessment and management study evaluates the quality and quantity, assess and map water resources and location of groundwater aquifer through a smart wastewater and sewerage management in small ecotourist island.

The project deploys a monitoring system that measures water quantity and quality, including hydrometeorological parameters, wastewater, and sewerage treatment plants and will recommend policies for the management of groundwater extraction and surface water utilization.

### Food and beverage safety

FOOD safety modules are targeted to be the standard training materials to be used in 17 DOST regional offices in the country.

The DOST Unified Food Safety Modules consist of training presentations, teacher's manual, learner's manual, and examination booklet on the three components of food safety, including food safety hazards, basic food hygiene and good manufacturing practices.

Its Detect Immediately by Probe System is designed for rapid and efficient detection of salmonella in food and feed samples. It is an easy-to-use method and requires nonsophisticated laboratory equipment. Results of testing can be obtained within 24 hours.

### Recreation and entertainment

THE DOST-PCIEERD partnered in March last year with Toon City Academy to capacitate and hone more Filipino animators to promote the creative industries. The pilot project was designed to strengthen animation since it is now a known emerging market in the business-process outsourcing sector.

The project, dubbed "Industry-defined 2D Basic Animation Course" is a 12-week intensive basic animation workshop and actual work production through an internship program.

So far, the DOST-PCIEERD and Toon City Academy has trained 120 animators from Pangasinan and Iloilo.

### Transportation

THE Rapid Charging E-Vehicle Station, a project by the University of the Philippines-Electrical and Electronics Engineering Institute, is similar to a regular refueling station where the user uses a demo-compliant connector to recharge the e-trike in less than 30 minutes.

On the other hand, the Intelligent Electric Transportation Network Program is envisioned to develop a smart network of energy-aware electric vehicles and charging stations through cooperation between the electric vehicles and infrastructure.

Operations, such as scheduling of vehicles, the route to take, when and where to charge, and charging time will all be coordinated so that the overall energy demand of the system will be optimized.

Meanwhile, Transeek, a hailing transport application, provides ease for tourists who would want to get a tricycle in Butuan City. It is now available on Google Play which can be downloaded in smartphones.

Easybus PH, another DOST-PCIEERD start-up, has launched a transportation service that offers real-time easy- and hassle-free bus ticket booking experience for passengers.

Through the web site, commuters can see the date, time of departure, destination, available and reserve seats, the bus line and the bus type. Easybus PH is deployed in buses going to Baguio and Bicol.

The official also highlighted its partnership with Future of Aviation and Maritime Enterprise, an award-winning DOST-PCIEERD start-up which developed transponders that can be used by small maritime vessels.

Through a transponder, data is sent from the device on the vessel to a gateway and is received in a receiving station on land, allowing real-time monitoring of the vessel's activity during expeditions.

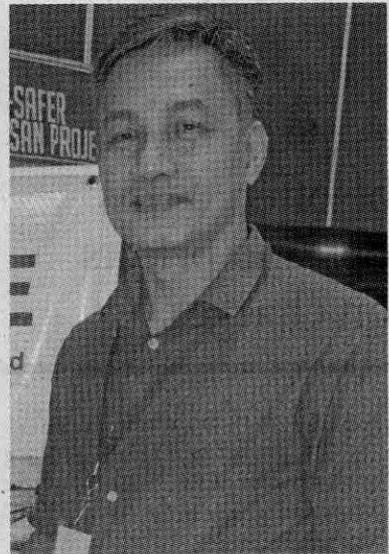
According to Manzano, the DOST will continue to work with the tourism industry to find science-based solutions to tourism needs.



**TOURISM Assistant Secretary  
Myrna Paz V. Abubakar**



**SCIENCE Undersecretary for  
Regional Operations Brenda  
L. Nazareth-Manzano**



**ZES MARTINEZ, co-CEO of FAME, shows the  
firm's transponder. FAME is one of the  
exhibitors during the "Luwas Pilipinas,  
Ligtas Pilipinas" science and technology  
forum of DOST-PCIEERD in Butuan City.**

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# Water privatization a successful legal framework – MWSS chief

By **MADELAINE B. MIRAFLOR**

**A**t the seemingly tail end of a water crisis, outgoing chief of the Metropolitan Waterworks and Sewerage System (MWSS) has defended the government's decision to privatize water distribution in Metro Manila, saying that the successful legal framework between MWSS and water utilities are actually now being adopted by other countries.

During the Wallace Business Forum, MWSS Administrator Reynaldo Velasco said the successful legal framework of the Public-Private Partnership (PPP) between MWSS and the concessionaires, Maynilad Water Services, Inc. and Manila Water Company, Inc., is now being replicated in other parts of the country and also in our ASEAN neighbors like Cambodia, Indonesia, Myanmar, Thailand, and Vietnam.

The real-life threatening situation due to lack of potable water back in the 1990s prompted then President Fidel Ramos to enact the Water Crisis Act. His issuance of Executive Order (EO) No. 311 on March 20, 1996 paved the way for

the privatization of the MWSS, a heavily indebted agency incapable of viable operations.

The EO authorized MWSS to enter into arrangements involving private sector participation in aspects of MWSS operations or facilities.

"I always refer to the privatization of MWSS as a master stroke of a genius by no less than former President Fidel V. Ramos," Velasco said.

The decision of the Ramos administration to privatize MWSS drew flak a few months ago after several parts of Metro Manila had to experience low to no water service interruptions for weeks, which was implemented by Manila Water is it ran out of supply.

Velasco said the problem of water shortage felt early this year demonstrated what would happen if no new water infrastructure projects are pursued.

MWSS concessionaires Manila Water and Maynilad currently provides for the water requirement of 6.8 million and 9.5 million people, respectively. Both these companies source bulk of their water from Angat Dam.

"Imagine an ever-increasing water

requirement for agricultural, industrial and domestic use dependent on a single water source — Angat Dam," Velasco said.

Angat Dam, constructed in 1967 and operationalized the following year, recently underwent massive rehabilitation to ensure its structural integrity in case of a 7.2 magnitude earthquake.

Being the source of 97 percent of raw water for Metro Manila and neighboring provinces, destruction of Angat Dam would greatly affect energy, food and water supply.

Right now, MWSS are pursuing water infrastructure projects that will reduce the capital's reliance on Angat Dam.

Being fast-tracked under the new water security roadmap are the following projects: 150 million liters per day (MLD) Putatan (2019); 100 MLD Cardona (2019); 188 MLD Sumag (2020); 50 MLD Rizal Wellfield (2020); 80 MLD Calawis Wawa (2021); 100 MLD Putatan 3 (2022); and 250 MLD Lower Ipo.

These, aside from the 600 MLD Kaliwa Dam projects whose implementation was began in 2017 and is expected to be completed in 2023.



# 2 SUBWAYS TO LESSEN POLLUTION

By Maricel V. Cruz

**M**ETRO Manila is bound to enjoy considerably cleaner and healthier air in the years ahead once its first two subway trains become operational, a lawmaker said on Saturday.

"Besides providing everybody a better way to commute, the two subways will surely improve in a big way Metro Manila's air quality—with lower toxic carbon dioxide concentrations," said Makati City Rep. Luis Campos Jr.

Unlike buses and other public utility vehicles that run on diesel or gasoline, the electric-driven subways will not discharge harmful exhaust fumes into the air, he said.

"More important, we are actually counting on the convenience of subway rides to reduce over time the number of people using their own cars to go to work," Campos said.

Less use of private cars will not only mean less exhaust emissions, but also less road congestion.

Campos earlier filed House Bill No. 1432 which seeks to reduce carbon dioxide emissions by providing incentives for the manufacture, assembly, conversion and importation of electric, hybrid and other motor vehicles that run on cleaner alternative fuel.

Philippine InfraDev Holdings Inc. and the Makati City government on Tuesday signed the joint venture agreement for the \$3.5-billion Makati Intra-city Subway Public-Private Partnership Project.

The 10-kilometer and 10-station Makati underground rapid transit system, also known as Line 5, is expected to start operations in 2025.

This is around the same time that the 36-kilometer and 15-station Metro Manila Subway Project from Quezon City to Taguig City, or Line 9, would also be up and running.

The two subway lines will be linked.

The Makati subway is projected to move up to 700,000 commuters daily. It will also be linked to the existing MRT (Line 3) and the proposed new Pasig River Ferry System.

It is anticipated to initially convey some 365,000 commuters daily starting 2025, and up to 973,000 daily by 2035.

"Overall, we envisage subway rides to be easier, faster, cheaper and safer for everybody," Campos said.



## Duterte renews land reform commitment

President Duterte on Friday assured farmers that his administration is working with legislators to craft a law that will provide them easy access to financing.

Duterte, at the ceremonial turnover of Certificates of Land Ownership Award to Agrarian Reform Beneficiaries in Mindanao in Davao City, renewed his commitment to land reform as he recognized the important role of Filipino farmers in nation-building.

"We are crafting a law that would allow you to use... to mortgage your title of your land to borrow money to improve the land," he said. "You know, agriculture is the weakest link sa atin. So, we have to do more," he added.

According to Duterte, the land titles handed over represent not just ownership of lands by the farmers but also the administration's commitment to implement genuine agrarian reform anchored on social justice, peace, equity, and productivity.

"With today's distribution of titles, we look positively into the future as government endeavors to complete the acquisition and distribution of almost 550,000 hectares of agricultural lands nationwide, 81,000 hectares of which are here in Mindanao," he said.

A total of 58,387 CLOAs were turned over by the Land Bank of the Philippines to the Department of Agrarian Reform, which is mandated to release the land titles to 60,233 ARBs from five regions of Mindanao involving a total of 102,727 hectares.

In addition, a total of 1,361 CLOAs were distributed to 1,709 ARBs in the Davao region involving a total of 1,452 hectares of lands.

These CLOAs cover some 182 hectares of private agricultural lands acquired in 2018 and early 2019, and 1,179 hectares of partitioned CLOAs, which were the resultant titles of collective CLOAs issued to agrarian reform cooperatives.

As of June this year, the President reported that almost five million hectares of land have been distributed to almost three million ARBs nationwide. Almost two million hectares of these lands are located in Regions 9 to 13, benefiting more than 960,000 farmers.

Duterte said the aggressive land reform program by the government is an effective way to defeat communist insurgency in the countryside.

"You only have to make them irrelevant. What? The greatest promise that the communist can give is land reform. I have been at it since I became President three years ago," he said. **(Argyll Cyrus B. Geducos)**



Department of Environment and Natural Resources  
STRATEGIC COMMUNICATION INITIATIVES SERVICE

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# MANILA BULLETIN

THE NATION'S LEADING NEWSPAPER

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## Climate battle will 'succeed or fail' in Asia-UN

TOKYO (AFP) – The battle to combat climate change will "succeed or fail" based on what happens in Asia, where growing energy needs are increasing demand for fossil fuels, United Nations (UN) officials said Friday.

The UN will host a key climate summit next month that has been billed as a last chance to prevent irreversible climate change, three years after the Paris agreement went into force.

Commitments from countries in Asia to move towards carbon-neutral

economies would be crucial, said Rachel Kyte, a UN special representative for the UN secretary-general.

"It is really in this region that we will succeed or fail in the energy transition in order to be able to meet our climate change goals," Kyte told reporters.

The summit hopes to secure commitments to zero net carbon by 2050, but growing demand for electricity in Asia is likely to be one of the key obstacles.

"Southeast Asia is one of the fastest growing economic regions in the world.

This is where population and urbanization mean that electricity demand is expected to triple between 2015 and 2040," warned Kyte.

"In order to meet this, Southeast Asia is currently turning to fossil fuels, many countries are."

New coal plant projects continue throughout the region, particularly in Indonesia, Vietnam and the Philippines, and countries including Japan are funding their construction despite criticism from climate groups.



## UN: Climate battle will 'succeed or fail' in Asia

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► **Battle A8**

### ■ BATTLE FROM A1

## UN: Climate battle will succeed

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But Kyte said the sector should be seen as on its way out.

"There is really no future for coal," she insisted.

"It is not competitive by price..."

and it has such an extreme impact on human health as well as on the planet."

In recent months, some private sector firms in Japan and elsewhere have moved away from funding coal, seeing it as a poor long-term investment, a trend that Kyte said was encouraging, along with growing energy efficiency in China and India.

Luis Alfonso de Alba, UN special envoy for the Climate Action Summit, also challenged the idea that the transformations needed

to combat global warming would hamstring economic development.

"Fighting climate change is fully compatible with the fight against poverty," he said.

"There are many opportunities, especially for those that will take the lead in this transition, which in any case is going to be inevitable."

A key part of the climate summit's success will be China's commitment, which remains both a leading emitter and also a key

financier of coal plants in the region.

Beijing wields significant economic clout throughout the region and beyond thanks to its Belt and Road Initiative, which funds infrastructure projects and more.

"The greening of the belt and road initiative is absolutely essential," Kyte said.

"We are tentatively positive about the extraordinary hard work that is going on in China to make sure that that happens."

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