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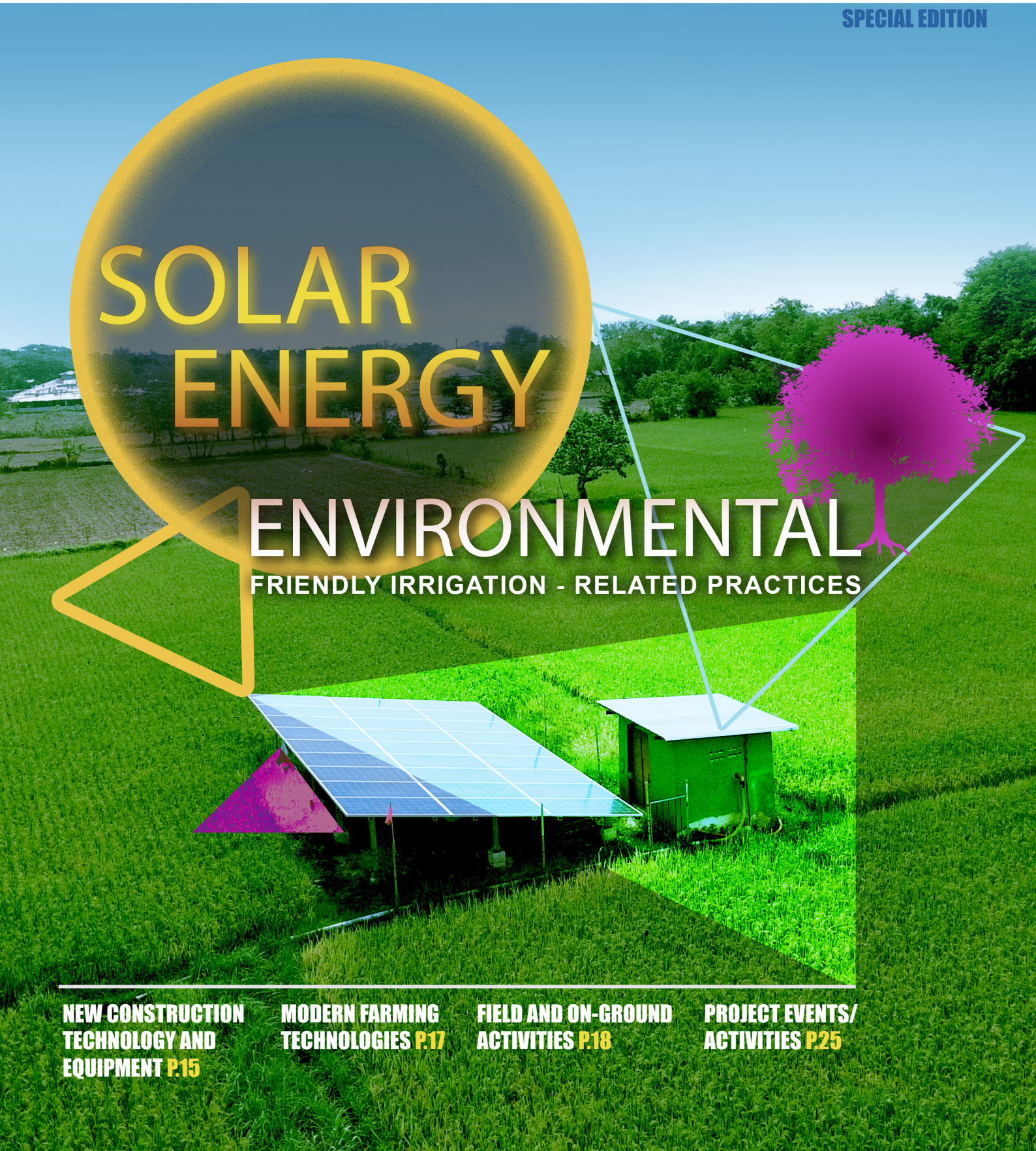

# SOLAR ENERGY

# ENVIRONMENTAL

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# NIA turns over P1.78-million Romualdez Solar Project in Rizal, Kalinga

By: Mylene Malecdan, Public Relations Officer A, NIA CAR

No electricity utilized. No diesel consumed. Yet the irrigation pump in this town is working, and irrigation water is flowing abundantly for an average of 9-10 hours a day. This developed with the newly completed Romualdez Solar Pump irrigation project in Rizal, Kalinga which was turned over to Sitio Aba Irrigators Association for operation and maintenance in a simple ceremony on September 4, 2020.

*"The project uses the power of the sun to move water, without the need for grid power or diesel, which can equate to P270,000 in annual savings at P75 per hour in electricity bills,"* said Engr. Ronilio Cervantes, head of NIA-Kalinga Irrigation Management Office.

Engr. Cervantes shared that the project is powered by 30 solar panels and installed with a submersible pump of 7.5 horsepower lowered to a depth of 52 meters. With a nine to ten-hour operation in a day, the solar pump has a minimum discharge of 200,000 liters per day where more sun equates more water. Also, two units of reservoir tanks were constructed to store water from the solar pump.

Mr. Antonio Santiago, President of Sitio Aba Irrigators Association, said they can now cultivate their lands for rice and some high value crops for two croppings a year because of the Romualdez Solar Pump. The service area of six hectares which used to be rainfed were not tilled for some years due to lack of irrigation water. The project benefits 15 members.

*"Solar pump projects for irrigation contribute in making lands productive and consequently helping feed the growing population of the Philippines. We hope for more projects like this in Kalinga,"* said Hon. Allen Jesse Mangaoang, Representative of the Lone District of Kalinga and the Guest of Honor during the simple turnover ceremony.

Ms. Remedios Dilag, one of the staunch proponents of the project, expressed gratitude to the government through the National Irrigation Administration (NIA) and Hon. Allen Jesse Mangaoang, as well as Quinones Construction for the speedy completion of the project despite the pandemic. The project started in June 2020 and was completed in August.

Meanwhile, NIA-CAR Regional Manager Benito T. Espique, Jr. urged the Irrigators Association to strengthen their association with the assistance of NIA and hopes that the project will enhance livelihood in the area because aside from farming, the service area can have potential for fishpond, hog raising, and high value crops.

With a contract cost of P1.78 million, Romualdez Solar Pump is funded under NIA's Establishment of Groundwater Pump Irrigation Project (EGPIP) CY 2020 allocation.

SOLAR PUMP. National Irrigation Administration turns over the just completed Romuladez Solar Pump to Sitio Aba Irrigators Association (IA) of Rizal, Kalinga as Hon. Allen Jesse Mangaoang (4th from left), Representative of the Lone District of Kalinga, NIA-CAR Regional Manager Benito Espique, Jr. 6th from left), Kalinga IMO Manager Ronilio Cervantes (4th from right), IA President Antonio Santiago, (5th from right) and other IA officers and stakeholders take a souvenir photo with the Solar Pump as background.

# PACUAN: ILOCANDIA'S FIRST SOLAR-GENERATED IRRIGATION FACILITY

By: Oscar S. Navata, Public Relations Officer A, NIA Region I

The Pacuan Solar-Powered Pump Irrigation Project (SPPIP) located at Brgy. Pacuan in Malasiqui, Pangasinan is first of its kind in Region 1. Funded by the Comprehensive Agrarian Reform Program-Irrigation Component (CARP-IC), in partnership with the National Irrigation Administration (NIA) and the Department of Agrarian Reform (DAR) with a total budget allocation of P 8,000,000.00, SPPIP was envisioned to help improve agricultural productivity through an efficient solar-powered irrigation system. The Aliguas Pacuan Farmers Association, Inc. with initial forty eight members who are mostly Agrarian Reform Beneficiaries (ARBs) of DAR is the main beneficiary of the project which is under the auspices of Pangasinan Irrigation Management Office (PIMO). If properly maintained, the life span SPPIPs generally run for around 20 to 25 years. The inverter is usually the only part that needs to be changed every after five to ten years because it is constantly functional in converting solar energy into electricity and heat. In an interview, PIMO Manager Gaudencio M. De Vera disclosed that farmers in Barangay Pacuan could only manage to have one cropping season yearly due to scarcity of water. But with the introduction of solar-powered irrigation facilities, *"locals can now expect at least 30% yearly increase in their cropping intensity. The overall objective is to spur economic growth in the area in terms of agricultural productivity; and the intended outcome is to improve the standard of living of farmer-beneficiaries,"* Engr. De Vera added.

The significant advantages of the SPPIP include cost efficiency since solar facilities do not require the use of fuel to keep it running for as long as we have the sun. Moreover, they do not require high cost of maintenance; what it takes is to keep the important components of the facilities relatively clean. However, there are also important factors that have to be seriously considered when venturing into SPPIP. Regional Manager Angelito S. Miguel explained that the initial cost of solar panels, inverter/controller and installation service fee is fairly exorbitant.

*"It is also a known fact that solar energy tends to drop during cloudy, and rainy days since the panels are highly dependent to sunlight to effectively gather energy. But the good news about this new technology is that farmers will benefit from it in the long run. A conservative estimate savings for a 30 hectares farm is around 150,000 Php on diesel fuel alone per cropping sseason,"* Engr. Miguel said. Finally, one has to forestall that solar PV panels require a lot of space, the more energy is required for irrigation service, the more solar panels are needed. Incidentally, there are five solar-powered facilities that were installed in Barangay Pacuan.

This milestone in irrigation development in Region I is now currently being replicated in two other municipalities and one city in Pangasinan. The funding for these additional three SPPIPs, namely Mangaldan CIP in Mangaldan, Centro Toma SIP in Bani, and Pangpang CIP in San Carlos City were included in NIA Region I's Budget for CY 2020.

(L-R): Aliguas Pacuan Farmers Association, Inc. President Jesus Dela Cruz (IA President), Maria Anna B. Francisco, CESO V (PARO-DARPO), and Danilo Pacleb, Representative of AT & E Technical Services, Inc. during the joint inspection of DAR and NIA-CARP IC representatives

# SOLAR PUMP IRRIGATION PROJECT IN ZAMBOANGA CITY

By: Lochi O. Lim and Jennylyn R. Cleofe, NIA Region IX

Photos by:
Reymar R. Dioso

The Solar Pump Irrigation Project of NIA Region IX in Zamboanga City, being the first solar-powered irrigation in the whole region, is situated in barangay Mercedes, Zamboanga City, and can irrigate five hectares of agricultural land which will benefit poorly irrigated and rain-dependent farmers in the area.

It is a community development project initiated by Congressman Manuel Jose "Mannix" M. Dalipe, 2nd District Representative of Zamboanga City, with a total project cost of P5 million. The construction is under the supervision of Zamboanga-Basilan-Sulu-Tawi-Tawi Regional Sub-Office (ZAMBASULTA RSO) Acting Head, Engr. Robert Berni L. Rada II.

This adoption to new methodology is one of the Region's initiative to enhance water sufficiency and increase economic advantage for farmers particularly in barangay Mercedes, which is considered as the biggest rice granary in Zamboanga City.

The solar powered centrifugal pump gets its water source from a spring and can pump an average of 170 cubic meter in six hours. The irrigation system is powered by 28 solar panels that can discharge approximately 200 gallons per minute. The system is also equipped with surveillance cameras and fortified with security fence so as to ensure utmost safety and security.

On September 15, 2020, technicians and personnel of ZAMBASULTA RSO together with the contractor and officers of Mercedes Culianan Cabaluay Talabaan Irrigators Association (MCCT IA) performed a successful post construction test run. With confidence of a positive outcome of this project, the officers

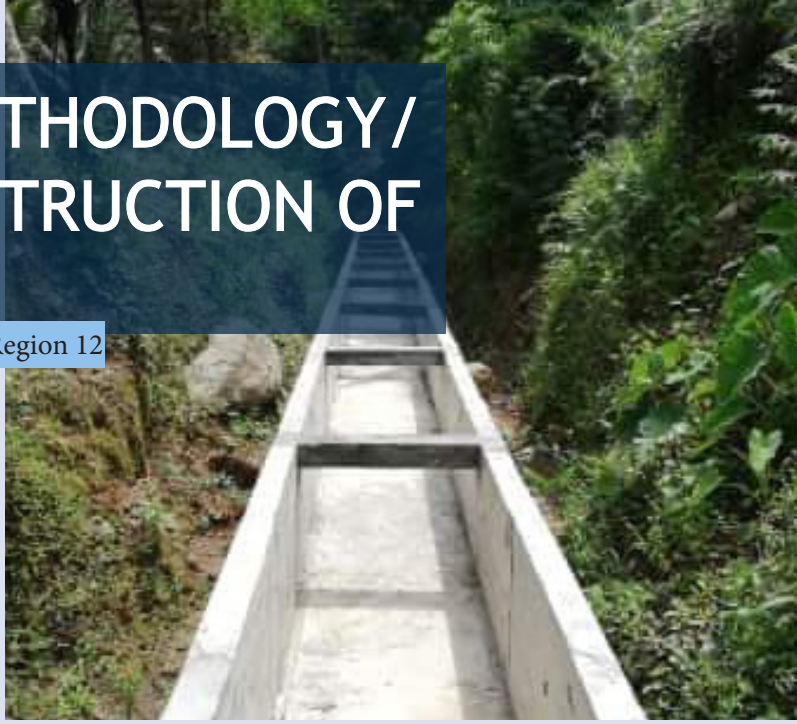
of MCCT IA expressed their gratitude for this opportunity as it will maximize the use of their farmland through sufficient water supply. Moreover, this will increase their yield as it will enable them to better strategize planting and harvesting to avoid adverse weather conditions. The official turnover of the said project to MCCT IA is scheduled mid of October 2020.

The fully constructed Solar Pump Irrigation Project in Mercedes is just one of the innovative irrigation programs of the region. Within this year, five more similarly constructed projects are expected to be fully completed, specifically Manicahan II Small Irrigation Project (SIP), Manga II SIP, Boalan II SIP, Bolong II SIP, and Buenavista Pump Irrigation System (PIS) with 53.83%, 53.13% 50.21%, 45.62%, 27.38% completion as of September 10, 2020 respectively.

Along with continuous enhancement on innovative irrigation, NIA Region IX with the support of Regional Manager Rory F. Avance, works hand in hand with IAs, contractors, LGU, and other stakeholders in fulfilling its vision towards improving the quality of life of Filipino farmers.

# ADOPTION TO NEW METHODOLOGY/ TECHNOLOGY IN CONSTRUCTION OF IRRIGATION SYSTEM

By: Edmund Gallaza, Information Officer, Skimo, NIA Region 12



**PHENOLIC PANEL SYSTEM**

The National Irrigation Administration (NIA), together with bonafide private contractors, started adopting state-of-the-art and modern construction techniques in their project implementations brought by this era's 'new normal'.

One of which is the Phenoloc Panel System which the new breed of contractors are currently using in the construction of rectangular lined irrigation canals of the agency. This is the latest innovation of formwork solutions for stronger, more accurate, and quality concrete structures which is primarily used in the construction of high rising commercial estates of the highly urbanized nations. The system includes the use of phenolic plywood which has a smooth surface and by which it enables more repeated uses than a conventional plywood and offers excellent fair-faced concrete finish, coupled with the binding strength of light weight reusable aluminium formwork. This method is designed also to save time and effort in assembling and dis-assembling of concrete forms during hectic operations.

This construction method was proudly introduced to Pangi Right CIS Project CY 2019 in the rehabilitation of their 1.754 Kilometers trapezoidal main canal and 841.5-meter trapezoidal lateral canal which was re-designed to rectangular lined canal and was successfully finished within 180 calendar days as per guarantee of NIA Sargen RSO Project In-Charge (PIC) Engr. Exequiel Ambe.

The Phase 2 of the said project is underway this calendar year 2020 which is the continuation of more or less 523-meter rectangular canal that connects the NIA dam site at the famous Pangi River white water tubing tourist spot in New La Union, Municipality of Maitum, Sarangani Province to the service areas Pangi Right CIS.

Through this new engineering innovation and participation of both farmer beneficiaries, project implementations will be easier to accomplish without wasting any valuable time and government resources.

# WATER REUSE OR OTHER ADAPTATION MEASURES TO CLIMATE CHANGE

By: Kate C. Java, Information Officer, SarGen Sultan Kudarat IMO, NIA Region XII

More or less 60 hectares of downstream agricultural service areas were restored at the Pangi Right Communal Irrigation System in the Municipality of Maitum in Sarangani Province which has not been properly irrigated from either main canal or lateral canals since early 2000s said Senior. IDO Wilson Alegado of SARGEN RSO.

But through the diligence of the Irrigators Association and NIA, *"We have discovered that about 7 kilometres from the dam, along drainage canal, instead of just collecting waste waters as its only function from upstream areas, a brass dam was designed and constructed to irrigate the downstream areas as well and by then, farmers on that end are now enjoying its services in irrigating their agricultural land planted with rice and other high value crops,"* added by Mr. Alegado.

# NIA PROVIDES SOLAR-POWERED PUMPS FOR NON-IRRIGATED AREAS AT LUPAO, NUEVA ECIJA

By: NIA UPRIIS Division I

NIA UPRIIS Division I, dedicated to its commitment in broadening the coverage of irrigation service to the Filipino farmers, conducted a series of activities for the proposed construction project of solar-powered water pumps for the non-irrigated portions of farmlands at Barangays Balbalungao and San Isidro in the Municipality of Lupao, Nueva Ecija on July 30, 2020.

Even though it was outside Division I service area, the management remained eager to accommodate the request of the farmers who were located at the tail-end areas to provide irrigation water for their farming activities.

With the initiative of NIA-UPRIIS Division I, headed by Acting Division Manager, Engr. Felix L. Teaño, Jr. and was fully supported by NIA Administrator Ricardo R Visaya and NIA UPRIIS Department Manager, Engr. Rosalinda B. Bote, a total of nine (9) solar-powered pumps will be installed at the aforementioned barangays in response to the request of the farmers thereat to support their farming endeavors.

After the successful bidding process for the project known as Lupao Irrigation Project, the management of Division I conducted meetings with the target beneficiaries to discuss the details and requirements of the project such as the donated parcels of land and its inclusion in the service area of the agency.

Aimed to inspect and visit the sites where the pumps will be installed, a walk-through activity was conducted by Acting Manager Teaño, Jr.; Acting Chief of OMID Section, Engr. Aldous Joseph S. Lamucho; Acting Head of Maintenance Unit, Engr. Kristian Jay D. Galapon; Engineer In-Charge of BSRIP, Engr. Venydick I. Santos; Head of Institutional Development Unit, Ms. Luisa A. Esplana; President of San Isidro-Balbalungao Irrigators' Association (IA), Mr. John Gonzales; and the farmers from the said areas.

Afterwards, a project orientation was conducted to inform the target beneficiaries on how the system will be constructed and operated.

The target beneficiaries of the said project expressed their overwhelming appreciation for the efforts exerted by NIA towards providing them with the means to efficiently irrigate their farmlands and contribute to the food production industry of the nation.

# PLANTING HOPE: REFORESTATION OF MACANAE DAM WATERSHED

By: NIA UPRIIS Division I

Not only our country is facing a big problem in the health care at this point in time, but undeniably, our environment is also in need of healing. With the goal of improving the irrigation systems and providing the quality irrigation service to its farmer-clientele, NIA UPRIIS Division I is currently on the third year of its project Reforestation of Macanae Dam Watershed under the Climate Change Adaptation Works (CCAW).

## History and Background: Tracing Back the Roots

Located at Barangay San Roque, Lupao, Nueva Ecija, Macanae Dam is an existing irrigation system that supplies water to 975 hectares of farmlands with 650 farmer beneficiaries, currently under the leadership of Acting Division Manager, Engr. Felix L. Teaño, Jr.

The operation of the said dam commenced in the year 1995. However, due to the poor holding capacity of the soil and high erodibility of Umingan Silt Loam, to which soil type the area belongs, soil erosion was very rampant causing the siltation of the dam affecting the irrigation water delivery.

Rehabilitation activities are not possible due to the above-said reasons. That is why NIA Management programmed the five-year reforestation project of Macanae Dam Watershed under the Memorandum of Agreement (MOA) with the Department of Environment and Natural Resources (DENR).

The said watershed has a total area of 133.80 hectares. The land classification of the forest area applied for the reforestation project is a grassland dominated by cogon, talahib, napier, and mahogany. The soil series is classified as Fluventic Eutrupepts, which is moderately well drained deep soil with distinct substratum of river-washed stones and gravel with thickness ranging from 10-15 cm.

## The Program and its Objective

Started on 2018, the main objective of the said reforestation program is to improve the forest cover of Macanae Dam Watershed Area so as to minimize soil erosion and eventually improve the water storage capacity of its reservoir.

Planting of trees or reforestation plays a big part in our watershed; trees take up water from the soil through their roots that increases the soil water storage potential and prevents soil erosion on the area. It is through this project that the management has seen the possible recovery of Macanae Dam that will pave way to the provision of better irrigation service to the farmers and stakeholders at the area.

## Accomplishment

For the past two years, the project had already planted 112.5 hectares; 28, 000 narra were planted in 2018, covering the total area of 70 hectares, while 16,000 seedlings of molave and 5,000 bamboos were planted in 42.5 hectares of land in 201.

In addition, a nursery was also established in the area, though it is not part of the program. It is vital to continuously propagate seedlings for the mortality of the planted seedlings. Fire line was also constructed on the existing plantation area to prevent forest fire that may occur anytime especially during summer seasons.

## Present Situation

This year 2020, the already planted 112.5 hectares of land is under continuous supervision and maintenance. Also, potting of fruit bearing trees is part of the activities threat.

## Hope for the Future

In 2022, the MOA with DENR will be expiring. NIA management aims to renew the said agreement to fully recover and improve the area. It is with the hope in mind that time will come when Macanae Dam will be used to its full-operational capacity to serve the farmers and be of big help in improving the quality of their lives.

We may not be able to see the whole picture now, but the future holds the fruits of this hard work.

# ENERGY-EFFICIENT IRRIGATION PROJECTS BENEFIT FARMERS IN MIMAROPA

By: Aileen Vernice Bahia, Public Relations Officer A, NIA MIMAROPA

Energy-efficient irrigation projects benefit farmers in MIMAROPA. These projects are Magbay Pump Irrigation Project (PIP), Maligaya PIP and Armaca PIP in Occidental Mindoro, Isumbo PIP in Palawan, and Cabugao PIP in Marinduque which are all solar-powered pump irrigation projects. Using sun as source of power, the projects are energy-efficient and there is minimal to no dependence on diesel and gasoline which are very helpful to farmers and the environment.

Magbay PIP and Maligaya PIP are CY 2020 projects located in San Jose, Occidental Mindoro. These projects amounting to P3.8 million each were awarded to N. Sales Construction and were already 100% complete. Each project can irrigate 10 hectares of farmland in the said municipality. Magbay PIP has eight farmer beneficiaries while Maligaya PIP has six beneficiaries. On the hand, CY 2019 Armaca PIP, a P1.9-million irrigation project awarded to N. Sales Construction was also completed and is now benefitting seven farmers in Abra De Ilog.

For Palawan, Isumbo PIP, amounting to P3.5 million has started construction in May 2020. The project was awarded to Reinastar Trading and Construction Supply and will have 3,728.5 watt or 5 horsepower (hp0 submersible pump motor capable of producing 100 gallons of water per minute (gpm). This project is set to irrigate 10 hectares of farmland and will benefit 13 farmers in Barangay Isumbo in Sofronio Española. Calambiringan IA will manage the project once it is completed.

Meanwhile in Marinduque, Cabugao PIP is a CY 2020 project amounting to P3.8 million. The project was awarded to M.O.R.E Construction and is ongoing construction. Once the project is complete, it will irrigate 10 hectares of farmland and will benefit 38 farmers in the municipality of Gasan.

NIA MIMAROPA, headed by Regional Manager William P. Ragodon, implemented the said projects in line with the Four-Point Agenda of NIA Administrator Ricardo R Visaya to improve delivery of services by modernizing equipment for operations and project implementation and as measure to adapt climate change.

# FRUIT OF IBATO-IRAAN SRIP

By: Daryle Camara, Public Relations Officer, NIA PALAWAN IMO


Climate change alters water cycle dealing the risk of heavy rains and extreme drought. Given that population and economic growth upsurges, the water demand and availability of water for agriculture also increases. Some farmers in the municipality of Aborlan, Palawan also experience dry spell due to lack of irrigation infrastructures and weather changes affecting proportion of families suffering from access of water for agriculture.

In dry season of 2020, 70 hectares out of 2,659 potential irrigable area of rice land in Abolan are being irrigated coming from Ibato-Iraan diversion dam under Small Reservoir Irrigation Project (SRIP) and 55 farmers are maximizing this benefit from irrigation, other smallholders rely on rainfed to continue agricultural production.

Seeing food security and adaptation to climate change is in need, the National Irrigation Administration (NIA) headed by Administrator Ricardo R. Visaya pursued to commence the construction of Ibato-Iraan SRIP earthfill dam and its appurtenant structure (remaining works) last January 31, 2020 in Bgy. Sagpangan, Aborlan awarded to Green Asia Construction and Development Corporation. The remaining works of Ibato-Iraan SRIP has a contract amount P322, 832,438.17 to complete prior to the end of Presidential term of Pres. Rodrigo Roa Duterte in 2022.

Ibato-Iraan SRIP earthfill dam was designed for volume storage capacity of 2.388 million cu.m and its diversion conduit has a discharge capacity of 131.4 cu.m/sec. to increase reliability of irrigation water for 860 hectares of rice land during dry season in Bgy. Sagpangan, Iraan, and Isaub. A total 425 farmers can benefit earthfill dam once fully operational.

The construction improvement of Ibato-Iraan SRIP remaining works as of July 31, 2020 includes mobilization of equipment, execution of spillway, dam area, and outlet work and construction of temporary facilities such as office house, laboratory, staff house, quarantine facilities, and canteen that will benefit also by indigenous farmers of town after project turnover.

In spite of global impact of Coronavirus Disease (COVID-19) pandemic, the NIA assures to fast track project implementation of Ibato-Iraan SRIP to certain it meets the quality of irrigation structures to combat extreme climate change and can bear fruit a more reliable, profitable, sustainable rice production to benefit by farmers of Aborlan.

# Continuous O&M Activities of Tago RIS amidst COVID-19 pandemic

By: Jek Panerio, SDS, NIA CARAGA

In line with the agency's campaign slogan #TuloyAngDaloyNIA which sends the message of consistent irrigation services for all the working farmers in the entire region. NIA-RIO Caraga, together with its Irrigation Management Offices, has continued its unceasing commitment of public services especially to all its clientele and beneficiaries. It also serves as the green signal for the Agency to continue to provide efficient and quality services in the midst of the pandemic. The slogan also highlights that nothing could halt the farmers and NIA's commitment to ensure food security in times of crisis. Concurrently, it encourages all NIAN's and especially the farmers to achieve sustainability in times of uncertainty.

Midweek of March 2020 when the government of Surigao del Sur has announced the ECQ in the entire province limiting the mobility of individuals and strictly implemented travel restrictions. In spite of the lockdown, the agency initiated to provide irrigation services not limited to, water delivery, manual desilting activities, canal clearing/brushing, canal maintenance, installation of staff gauges and slide gate that ensure farmers can continue with their farming activities and sustain their needs of sustainable irrigation. The Agency headed by Division Manager Dexter Sablaon, the office has deployed skeletal workforce/ field personnel that will help facilitate and maintain the efficiency of irrigation facilities of Tago River Irrigation System, which is one of Surigao del Sur's biggest system, providing irrigation services for two municipalities which includes San Miguel and Tago and with almost 3000 farmer-beneficiaries.

Early in April, SDS IMO started its Operation and Maintenance (O&M) activities in Tago RIS, a series of desilting works and restoration of irrigation facilities was conducted in preparation for the water delivery/ test run for the second cropping calendar. The agency ensures that all irrigation facilities in their area of operation are functioning as intended for the dry cropping this year. Moreover, WRFO, SWRFT personnel and Project-In-Charged has constantly assessed the facility for restoration and rehabilitation programs. Aside from that, the Agency is also conducting periodic water discharge monitoring to make sure that each irrigation facility has been receiving adequate water level and to determine its sufficiency for the distribution to the whole farm area of the municipalities indicated.

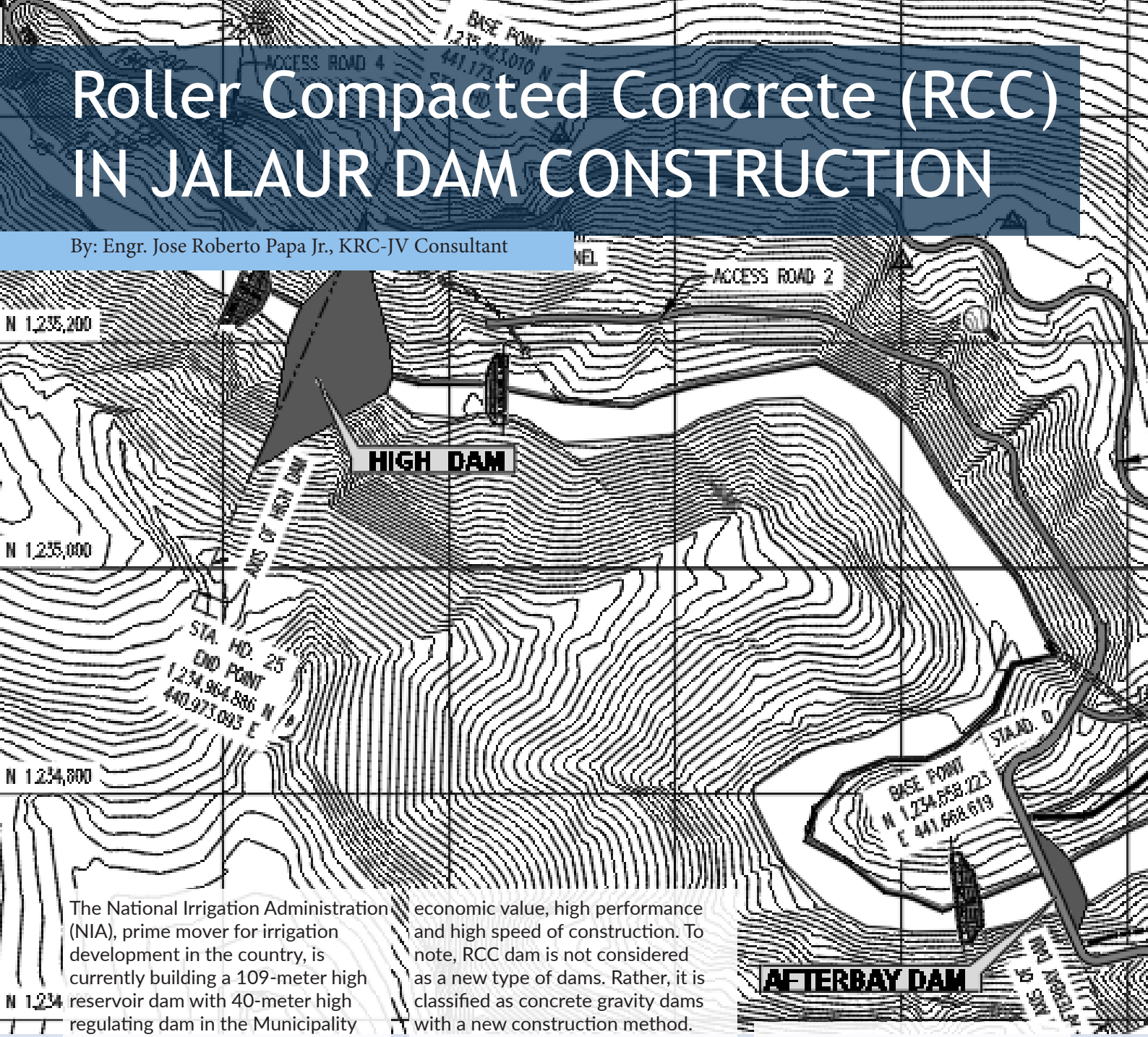
After the series of desilting and other O&M activities, the agency immediately conducted water delivery for farmers to start land soaking and farming preparations earlier than the scheduled irrigation. The Agency envisioned to aid farmers in producing more crops to combat the scarcity of rice supply in the province during this trying time.

Farmers of the municipalities of Tago and San Miguel greatly rely on the services offered by NIA since the availability of rainwater has become infrequent nowadays due to the rigid effect of climate change and El Niño. Sufficient availability of water proved to augment the productivity of yields that is why there is a pressing need for continuous operations of the agency regardless of the lockdown. NIA SDS IMO has extended its efforts to provide irrigation services to all farmer-beneficiaries while observing strict precautionary measures and following protocols implemented by the LGU. In this time of pandemic, farmer's pivotal role in mitigating the COVID-19 impact is evident as they have been able to assist the local government of Surigao del Sur in securing rice and other necessities since the province has been into Enhance Community Quarantine (ECQ) for over a month.

Feasible O&M activities indicate that farming in times of pandemic is possible through the agency's effort to resume all rehabilitation and maintenance works even with the threat of COVID-19. The Agency is more than committed to do its duties of delivering quality, efficient, and effective irrigation services through implementation of a skeletal workforce that maintain the flow of irrigation for the benefit of the clientele and farmer-beneficiaries as well.

# Roller Compacted Concrete (RCC) IN JALAUR DAM CONSTRUCTION

By: Engr. Jose Roberto Papa Jr., KRC-JV Consultant




The National Irrigation Administration (NIA), prime mover for irrigation development in the country, is currently building a 109-meter high reservoir dam with 40-meter high regulating dam in the Municipality of Calinog, Iloilo province, mainly to increase agricultural production as well as power generation and augmentation for water supply.

Construction of dams is not new to NIA. The agency has been in the forefront of constructing and managing major reservoir dams such as the Magat and Pantabangan dams in Luzon with heights of more than 100 meters. But these dams under the Jalaur River Multipurpose Project Stage II (JRMP-II) are making the waves because the High Dam and Afterbay Dam are to be constructed using the Roller Compacted Concrete (RCC), the first of its kind in the country. RCC continues to gain worldwide acceptance as an alternative to conventional concrete in dam construction due to its economic value, high performance and high speed of construction. To note, RCC dam is not considered as a new type of dams. Rather, it is classified as concrete gravity dams with a new construction method. Similar to conventional concrete, the main ingredients of RCC are cement, aggregates, and water. RCC has the same performance of conventional concrete but constructed faster using earth moving equipment like dump truck and rollers.

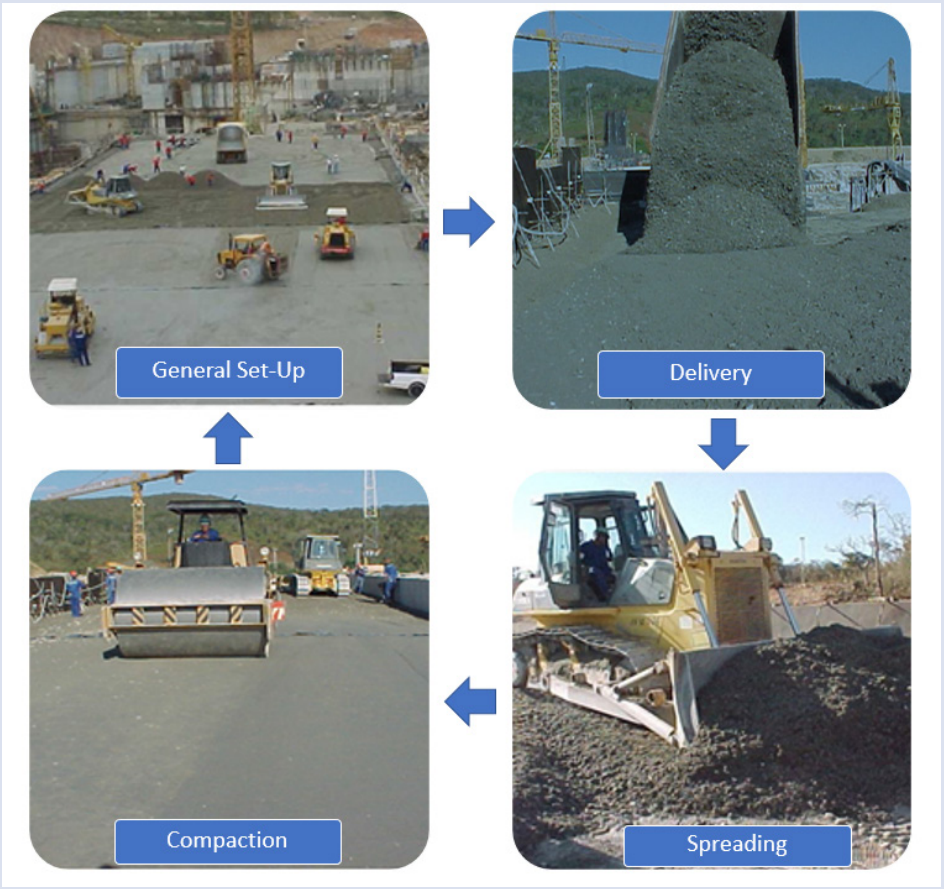
Yes, you heard it right, the concrete is delivered on site by dump truck and compacted not using the conventional concrete vibrator but by roller. The concrete used for RCC has low cement and water content. Water content is very important in RCC since insufficient water content will produce a very stiff concrete resulting to difficulty in compaction and reaching the required density and strength.

Similar with conventional concrete, the aggregates for RCC should meet the required quality and grading standards. On the other hand, compressive strength of RCC is primarily dependent on the water cement ratio and degree of compaction. The increase in RCC compressive strength is inversely proportional to the water cement ratio.

Workability of the RCC delivered to the site is very essential as well to prevent incomplete compaction. The joint between lifts of RCC should be well bonded to ensure low permeability and prevent potential damage due to water seepage through the lift surfaces. Bond between lifts are ensured by carrying out green cutting and

placement of mortar paste prior to installation of the next RCC layer. Just like the conventional concrete, RCC involves mass concrete placement wherein heat of hydration generated will be signification and the degree of thermal cracking will be dependent on the type and degree of temperature control used. Temperature control is normally done by selecting low-heat of hydration cement and addition of fly ash as well as addition of chilled water during batching of RCC. Sometimes, restriction of concrete placement during cool weather is also being applied.

Another notable characteristic of RCC is the use fly ash, a waste by-product of power plants which may pose environmental impact when not disposed properly. It will serve as partial replacement for cement to reduce heat of hydration, reduce cost and as mineral addition to the concrete to provide fines to improve workability.




For its method of construction, RCC is generally transported by dump truck or conveyors to the site, spread in layers by dozers and compacted by vibratory rollers. The procedures used during spreading the RCC layers are critical for achieving uniform non-segregated RCC placement. RCC is spread into place by dozers approximately 25 centimeters thick layers. Areas with segregation are removed and additional layers are spread till the final lift is reached. The final compaction is done by single or double propelled vibratory rollers to desired density. After compaction, the RCC surface are kept clean and moist until the placement of next lift before which a thin layer of high slump mortar is applied.

The use of RCC in dam construction is economic. Due to lower cement content used in the RCC, cost savings maybe realized. The cement content is generally 100 kg/cum. The use of fly ash in the range between 30 to 50 percent by volume will have an overall impact of the dam construction cost. Due to faster construction, additional cost savings can also be achieved. The provision of lesser forms may provide additional opportunity for savings.

In preparation for the RCC construction for High Dam and Afterbay Dam, the Upstream Cofferdam of High Dam was designated as the trial test section. The main objective of the trial section is for Daewoo E&C, the contractor of JRMP II, to demonstrate its capability to produce the specified quality of RCC and verify if the proposed RCC mix design is practicable to the adopted construction method.

A detailed trial section test plan was prepared by the Daewoo E&C which contains the lift thickness, compaction efforts, time limit from production to completion of layer compaction, lift joint preparation for different time duration for overlaying the next layer.

Based on the efforts of the Daewoo E&C, under the supervision of NIA and the consultant, in the construction of the Upstream Cofferdam as trial test section, initial results show that RCC technology when applied efficiently to JRMP-II will result to timely project completion and the predicted overall savings through the use of fly ash will be realized.

# THE EAGLE'S EYE: DRONE OPERATION IN CONSTRUCTION WORKS

By: Edmund Gallaza, Information Officer, Sultan Kudarat IMO, NIA Region XII

Irrigation construction in the Philippine playing field has never been ambitious during the administration of General Visaya. The demand of technology in all its phases becomes a must. Capturing real time images in through an eagle's eye figuratively inspires technical and civil works beyond mediocrity.

Infrastructure projects require extensive data collection, detailed mapping, and regular monitoring. In remote, hard-to-reach areas like in the high lands of Columbio and Senator Ninoy Aquino in Sultan Kudarat province, the work usually comes with a hefty price tag, and may even be dangerous for staff. That is why NIA is serious in looking at how digital tools such as drones can be used in data gathering and risky operations.

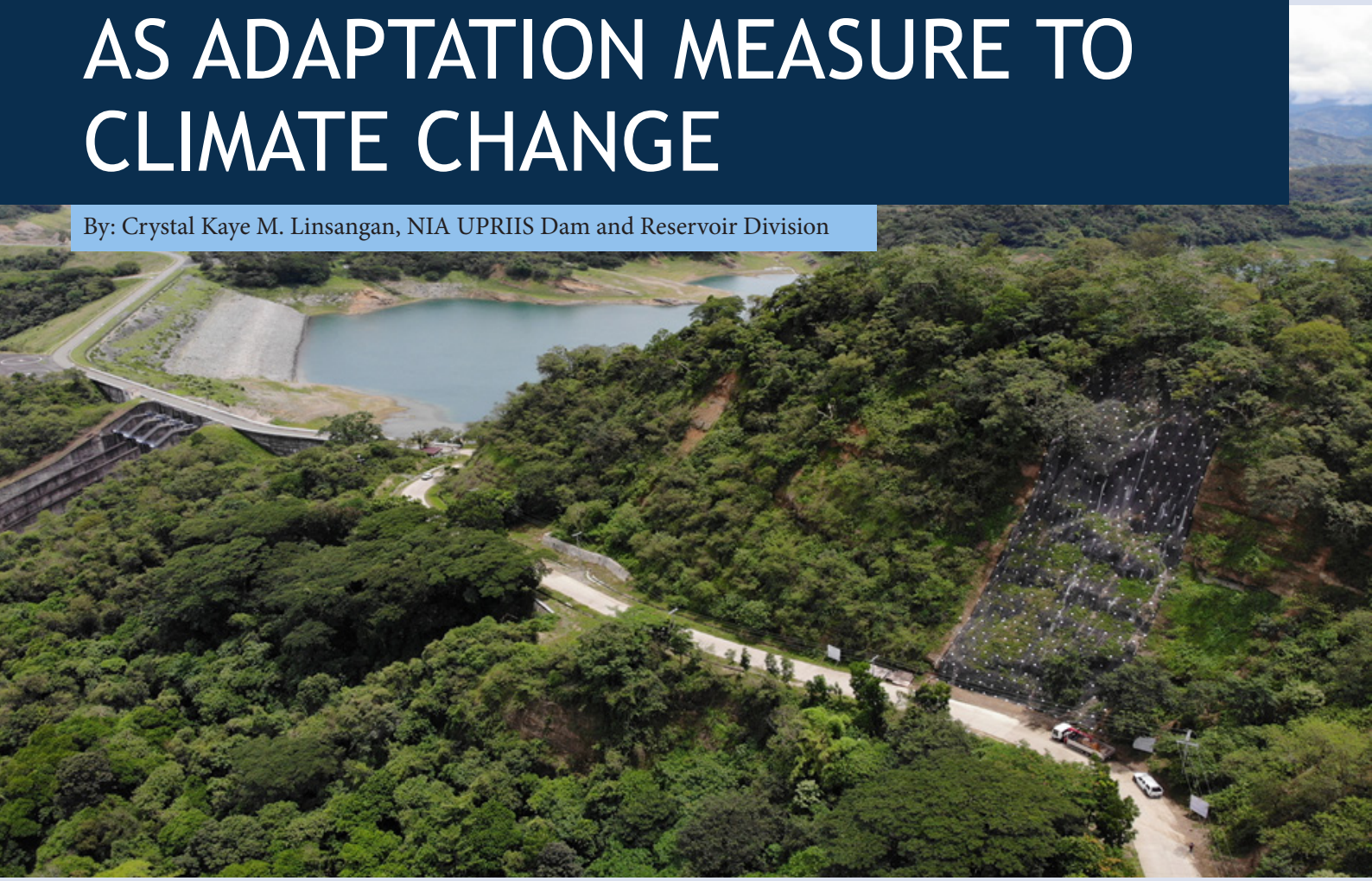
Operation of Drone technology in Sultan Kudarat Irrigation Management Office (SKIMO) began in the year 2019. This technology replaces traditional still photo and video acquisition which the office has been using. With the development of real-time monitoring technologies, UAVs provide Construction Unit personnel many positive applications in civil engineering to control the construction process through capturing videos and images from parts of views of a project site as more as possible, and checking of the structures during maintenance. Drones are utilized in the inspection, documentation, and reporting of preliminary works, progress works, and post accomplishments of constructed irrigation structures and facilities.

Recently, SKIMO turned over two irrigation projects to farmers in Columbio, Sultan Kudarat, the Dalol CIS and Macadiz SIP. These are two SKIMO projects closely monitored using Unmanned Aerial Vehicle (UAV) or Drone. When these two projects were proposed last 2019 at NIA Central Office, EDSA Diliman, Quezon City, spectators were astounded of the presentation showing a 3D bird eye view of the sites, images and videos from different locations, and efficient images from large-scale site which derived both geometry and texture data from UAV images.

The lack of infrastructure in the Philippines provides unique opportunity to leapfrog the infrastructure development phases that first world countries have had to go through because Philippines is not bound by legacy infrastructure that has to be upgraded. Unmanned Aerial Vehicles (UAV's) change the way land surveys are carried out on construction projects across the Philippines, automating the entire field-to-plan workflow. In simple terms, drones are flying computers which can carry an array of sensors to collect data, enabling agencies like the National Irrigation Administration (NIA) to make intelligent and informed decisions about their projects in a faster, safer and ultimately more efficient way.

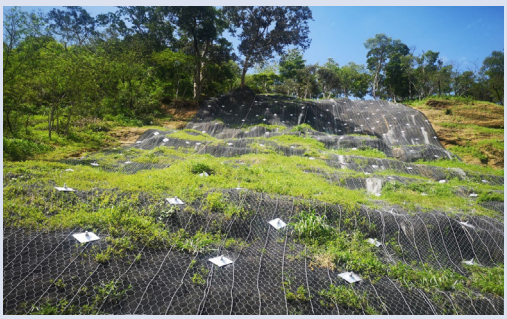
# ROCKFALL PROTECTION SYSTEM AS ADAPTATION MEASURE TO CLIMATE CHANGE

By: Crystal Kaye M. Linsangan, NIA UPRIIS Dam and Reservoir Division



In the continuous adaptation to climate change, NIA UPRIIS Dam and Reservoir Division (DRD) envisioned to conduct a project called the Rockfall Protection System along Spillway— Tanauan Road located at Barangay Fatima, Pantabangan, Nueva Ecija, initiated on December 5, 2019. Pantabangan is known to be surrounded with mountains and slopes that are extremely susceptible to erosion, especially during rainy season. This Rockfall Protection System is used to keep rocks in place and/or stop what comes loose from doing damage and provide safety to road users. Through inspection based on the slope height, topographic profile and kinds of rock materials, NIA DRD came up with the Rockfall Netting. It is simple to install, durable, environment-friendly and an effective hazard mitigation solution for the safety and security of infrastructures and motorists. Active Systems were used, which prevent excessive movement of rock detachment once it has occurred. It shall stabilize the rock mass surface layer combining potentially unstable rocks.

The said project has an area covered of precisely 1, 774.80 sq.m and with 7.0m length of Anchor Bolts. It was completed on July 31, 2020 through Angel Builders and Construction Supply, with the leadership of Engr. Ernesto D. Ponce, NIA UPRIIS DRD Division Manager and guidance of Engr. Rosalinda B. Bote, NIA UPRIIS Department Manager.



# SURVIVING THE CENTURY: FACING CLIMATE CHANGE THROUGH PRACTICAL FARMING TECHNOLOGY

By: Edmund Gallaza, Information Officer, NIA Sultan Kudarat IMO

The world is at the brim of vitality. Several scientific studies prove that at the age of 4.1 billion years old, Earth begins to deteriorate. It is an inevitable reality. All has a beginning and will come to an end. Our atmosphere is 70% damaged. Our land is 79% destroyed. Our water is 70% polluted. Our forest is 70% consumed. But humanity struggles to continue living. Humanity is unceasing in finding ways to adapt to the changes of the time.

One significant natural alteration that directly harms humanity is the extreme changing of climate from season to season. When it rains, it floods. When it heats, there's drought. The extremities have never been this over acting in the timeline of history, but humanity manages to survive and to mitigate such hostile effect of this aftermath. In the field of farming, amazing technologies sprouted life mushrooms all aimed to combat climate change.

Acknowledging this realty affecting farming industry, Sultan Kudarat Irrigation Management Office under the leadership of its Division Manager A, Flora May D. Respicio, introduced in 2018 the Alternate Wetting and Drying (AWD) technology among the farmers in the province of Sultan Kudarat.

Alternate Wetting and Drying (AWD) is a water management technique, practiced to cultivate irrigated lowland rice with much less water than the usual system of maintaining continuous standing water in the crop field. It is a method of controlled and intermittent irrigation. A periodic drying and re-flooding irrigation scheduling approach is followed in which the fields are allowed to dry for few days before re-irrigation, without stressing the plants. This method reduces water demand for irrigation and greenhouse gas emissions without reducing crop yields.

AWD method can save water by about 38% without adversely affecting rice yields. This method increases water productivity by 16.9% compared with continuously flood irrigation. High-yielding rice varieties developed for continuously flood irrigation rice system still produce high yield under safe AWD. This method can even increase grain yield because of enhancement in grain-filling rate, root growth, and remobilization of carbon reserves from vegetative tissues to grains.

AWD can reduce the cost of irrigation by reducing pumping costs and fuel consumption. This method can also reduce the labor costs by improving field conditions at harvest, allowing mechanical harvest. AWD leads to firmer soil conditions at harvest, which is suitable to operate machines in the field. Therefore, AWD increases net return for farmers.

Several studies also indicate that AWD reduces methane (CH4) emissions. AWD practice reduced seasonal CH4 emissions up to 85%. CH4 is produced by the anaerobic decomposition of the organic material in the wet/flooded paddy field. Allowing to drop water level below soil surface removes the anaerobic condition for some time till re-flooded and pauses the production of CH4 from the rice field for several times and, hence, reduce the total amount of CH4 released during the rice growing season. This method has been assumed to reduce CH4 emissions by an average of 48% compared to continuous flooding in the 2006 IPCC methodology.

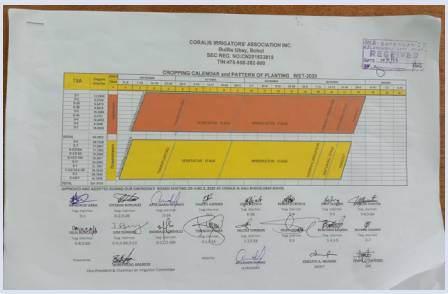
Alternate wetting and moderate soil drying reduce cadmium accumulation in rice grains. AWD can dramatically reduce the concentration of arsenic in harvested rice grains. A variant of AWD such as e-AWD practice can reduce grain arsenic, lead and cadmium levels up to 66, 73, and 33% respectively. This method can also reduce insect pests and diseases. Periodic soil drying may reduce the incidence of fungal diseases.

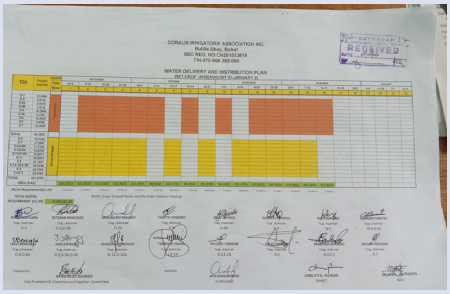
# INNOVATIVE FARMING METHODS APPLIED BY NIA R7 TO COUNTER CLIMATE CHANGE

By: Benhur G. Lumacang, Data Analyst Controller, NIA REGION 7

In this time of crisis, where food supply is at stake, the government agencies, LGUs, together with its partners, are tasked to take on more initiatives to assist more our fellow farmers. Various adaptation measures and techniques have been proposed and implemented in Region VII to address these challenges.

One of these practices is to conceptualize the cropping calendar and pattern of planting per Irrigators Association (IA). Rice has 17 weeks of life, from planting to harvesting, wherein the farmers are supposedly planting on the scheduled first week of their cropping calendar. If farmers choose to plant on the Second or Third week of the season, there is a big possibility that their crops would not fully mature during harvest since they are behind schedule and designated NIA employees are forced to close the main canals at the time of harvesting to reduce the water wastage. However, in Region VII, this is a rare case since farmers knew of its consequences. The cropping calendar is imperative and should strictly be followed. Besides, if there is a continuous downpour in the service areas, then the IA officials are then informed that the main canal will remain closed for water conservation and these paddies are also included in the service areas that have been irrigated even though the water source is not from the canals.





Farmers are also given 12 hours for water delivery starting from 5 AM until 5 PM. Since most farmers start their daily routine early in the morning and passing water is easily monitored 10 AM every day, there will be lesser complaints and problems that would arise as both parties can serve as witnesses. This is to ensure that the reading of the water discharge in the staff gauge is the same. This practice prevents the water from flowing needlessly during nighttime. Staff gauges are used to monitor the water volume and regardless of how many hectares of land are being catered, there is always an optimal amount that is to be distributed to these paddies.

Before we deliver water to the farmers, they have required to fill-up the Water Delivery Request wherein they will tell how many hectares of land do they have that need to be irrigated. If ever there is a failure to determine the right number, they will certainly encounter insufficiency of water delivery throughout the season. That is why they have to be well-informed if there are newly added service areas in the locality.

In terms of reusable water, the region is using concrete structures to block and prevent the running water from going to the waterways. It is either through gravity or by using water pumps. If the farmer's rice paddy is near the closed check structures, we use the gravity method to those areas that are on the water level. Meanwhile, in the higher areas, we use the water pumps, like the name would suggest, to pump the water upwards for recycling.

Lastly, through the joint effort of NIA Region VII and the LGUs, structures called impoundments or mini dams are being proposed to be constructed for the unused water stored in low lying areas. Though this approach is quite costly since these have to be built with a significant amount of money but still, many have welcomed the idea and are now en route to being applied throughout the region.

# LARISIP INTENSIFIES ACTIVITIES TOWARDS PROJECT COMPLETION

By: Norie W. Caole, Information Officer B, NIA LARISIP


Project Manager Engr. Angelito S. Miguel constantly conducts site inspection to closely monitor the on-going projects.

In light of the centralized prosecution of the project's CY 2020 contract works, the Project Management Office (PMO) of NIA-Lower Agno River Irrigation System Improvement Project (LARISIP) adopted a new scheme of supervision on the program implementation towards efficient and timely completion of its projects.

The scheme involved more field inspections, stationing of Project In-Charge, intensive conduct of Material Testing and Quality Control (MTQC) on all infrastructure projects, and constant coordination with contractors. With these outline, LARISIP top management has clearly established the following:

- Project assignment of PIC should be their Official Station,
- Thorough evaluation of MTQC personnel as to the quality, usability, and suitability of construction materials,
- Constant coordination with contractors, and
- Coordination of efforts of the construction, design, and survey sections.

These field inspections and PICs' presence in their official stations have enabled the management to discover deficiencies and strictly monitor and check the on-going construction as to the compliance to the design and specifications so that any defects or faulty works can be corrected at an early time.

Moreover, the management has issued Memorandum to MTQC personnel reminding them on the importance and value of quality control towards the efficient completion of irrigation facilities. Their presence in the site was also required by the management to ensure that quality standards of all construction works are met.

Concurrently, constant conduct of coordination meetings with contractors were carried out in the PMO. In a meeting dated April 27, 2020 which aimed to fast track the completion of projects, both the management and contractors were able to thresh out some issues and concerns in the implementation of the contract works. Actual accomplishments and feedback on the remaining items of work per contracts were also presented by the PICs during the said meeting.

On top of coordination and technical meetings, the PMO has conducted a Contractors' Forum spearheaded by Engr. Angelito S. Miguel, NIA Region I Manager, and concurrent Project Manager of NIA-LARISIP on July 9, 2020 to have an open discussion with contractors and to address bottlenecks in the implementation of projects. Capping the forum is the contractor's commitment to finish their projects before the contract expiration date.

LARISIP constitute the third phase of San Roque Multi-Purpose Project-Irrigation Component (SRMP-IC). Approved by the NEDA Board on September 12, 2017, the project is scheduled for implementation in five years from January 2018 to December 2022 with a project cost of P3.5 billion funded through the General Appropriations Act (GAA).

**12,650 hectares. irrigation service area benefitting 10,372 farmers of four municipalities**

LARISIP will develop 7, 519 hectares. new irrigation areas and rehabilitate 5,730.55 hectares for a total of 12, 650 has. irrigation service area benefitting 10, 372 farmers of four municipalities in Pangasinan, two municipalities in Tarlac, and one municipality in the Province of Nueva Ecija. It will provide a new water source for the Lower Agno River Irrigation System (LARIS) through excavation of the left bank of the re-regulating pond resulting to additional water discharge of 23.08 cms which will be dropped to Banilla River and conveyed to a length of 19.60 kms. where Bakit-Bakit Checkgate will regulate the diversion of water to LARIS network of canals.

For CY 2020 POW in the amount of P875,000,000.00, the program of work includes the Excavation of Left Side of Re-Regulating Pond Phase 2 under Domestic Contract while Construction of Trapezoidal Concrete Canal Lining and Appurtenant Structures of Lateral A-Extra, Sub-lateral A-1, Lateral B, Lateral B-5, Sub-Lateral B-5, Lateral B-6, Sub-Lateral B-6, Sub-Lateral B-7, Lateral C, Lateral D, Lateral E, Lateral B-3b, Lateral E-1 and Lateral H are all under Local Minor Contract. As of to date, there were 39 contracts awarded, five of these were already completed while the remaining 34 are ongoing.

Meanwhile, the Engineering Division reported that as of August 31, 2020, the physical accomplishment of CY 2020 POW is 34.39% against the target of 29.73% and ahead of schedule by 4.66%.

With the needed manpower and equipment at its command, coupled by the timely delivery of materials, and coordination of efforts of the Field Construction, Design, and Survey Section, the Construction Management Division expects to finish the works on schedule even amid pandemic.

MTQC personnel performs tests and analysis of materials to be used for the construction of irrigation facilities in the PMO's DPWH accredited laboratory.

Excavation of Left Side of Re-Regulating Pond and Construction of Slope Protection, Drainage Inlet (Sta. 0+260-Sta. 0+740 and Sta. 1+270-Sta. 1+540) and 835 meters Access Road

# WORTHY OF COMMENDATION: UPRIIS DIVISION I OPERATIONS PERSONNEL REGULAR CANAL CLEARING ACTIVITIES

By: NIA UPRIIS Division I

True to their commitment to continuously provide the quality irrigation service to our famer-clientele, NIA UPRIIS Division I under the management of Acting Division Manager, Engr. Felix L. Teaño, Jr., has undertaken their regular canal clearing activities and irrigation facilities maintenance. This is an activity of the Operations Unit of the Division to ensure that irrigation water will be delivered unimpeded. In addition to this, the cleaning and repainting of staff gauges, repainting of gates mechanism, and leveling of depth gauges were also conducted consistently.



# UPRIIS DIVISION V CANAL CLEARING AND SAND BAGGING ACTIVITY WITH THE MEMBERS IRRIGATORS' ASSOCIATION

By: NIA UPRIIS Division V

NIA-UPRIIS Division V under the supervision of Operations and Maintenance Chief, Engr. Roberto Matias, together with Ubbog Ti Biag Irrigators Association (IA) conducted a sand bagging, manual clearing and desilting at Lateral G, Sta. Lucia, Guimba, Nueva Ecija on July 16, 2020. The activity was conducted to help improve the flow of its irrigation water since the eroded and heavily silted section of Lateral G strongly affects the flow of water especially at the downstream areas of Ubbog Ti Biag.

The Senior Water Resource Facilities Technician (SWRFT) and Water Resource Facilities Officer (WRFO) of the said area rendered support in sand bagging and desilting of the canal. To ensure efficient and effective flow of irrigation water, SWRFT Marco Aquino and

WRFO Anselmo Esguerra, together with the members and officers of Ubbog Ti Biag IA worked hand in hand in repairing and removing the silt and debris inside the irrigation canal. Canal clearing activities are being conducted for three times every wet and dry season.

NIA UPRIIS Division V also extended its support by providing Ubbog Ti Biag IA a Muslin cloth *(Katcha)* and aggregate materials needed in sand bagging activities.

Located at Maturanoc, Guimba Nueva Ecija, NIA UPRIIS Division V was still under the management of Division Manager Wilfredo A. Balauro when this activity took place.

# RESTORATION OF SUPERDIVERSION CANAL

By: NIA UPRIIS Division V

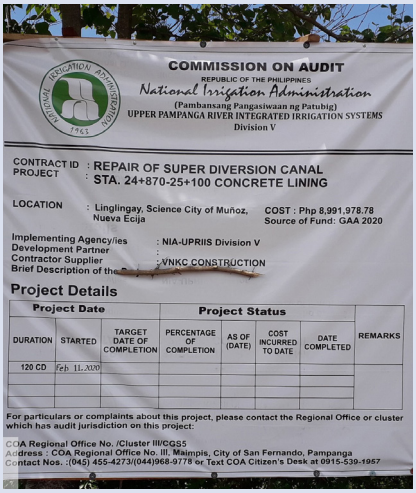




As part of its continuous project of providing efficient flow of irrigation water delivery and good services to its farmer beneficiaries, NIA UPRIIS Division V under the supervision of Operations and Maintenance Chief, Engr. Roberto Matias, conducts series of restoration works on Super Diversion Canal located at Linglingay, Science City of Muñoz, Nueva Ecija.

Headed by the Acting Maintenance Head, Engr. Donald Tabios; Area Monitor, Engineer Manny Velasco and some field personnel, Division V carried out series of inspection activities followed by the repair/reconstruction of the scoured embankment of super diversion canal concrete lining from February 11 to June 30, 2020. The said project works started at Station 24+870-25+100 with a total length of 230 meters.

NIA-UPRIIS Division V located at Maturanoc, Guimba, Nueva Ecija was formerly under the leadership of Division Manager, Engr. Wilfredo A. Balauro. It is currently manned by Engr. Leonardo F. Ramos.



COMMISSION ON AUDIT
REPUBLIC OF THE PHILIPPINES
National Irrigation Administration
(Pambansang Pangasiwaan ng Patubig)
UPPER PAMPANGA RIVER INTEGRATED IRRIGATION SYSTEMS
Division V

CONTRACT ID / PROJECT : REPAIR OF SUPER DIVERSION CANAL STA. 24+870-25+100 CONCRETE LINING

LOCATION : Linglingay, Science City of Muñoz, Nueva Ecija

COST : Php 8,991,978.78
Source of Fund: GAA 2020

Implementing Agency/ies : NIA-UPRIIS Division V
Development Partner :
Contractor Supplier : VNKC CONSTRUCTION
Brief Description of the [illegible]

Project Details

| Project Date | | | Project Status | | | | |
|---|---|---|---|---|---|---|---|
| DURATION | STARTED | TARGET DATE OF COMPLETION | PERCENTAGE OF COMPLETION | AS OF (DATE) | COST INCURRED TO DATE | DATE COMPLETED | REMARKS |
| 120 CD | Feb 11, 2020 | | | | | | |

For particulars or complaints about this project, please contact the Regional Office or cluster which has audit jurisdiction on this project:

COA Regional Office No. /Cluster III/CGS
Address : COA Regional Office No. III, Maimpis, City of San Fernando, Pampanga
Contact Nos. :(045) 455-4273/(044)968-9778 or Text COA Citizen's Desk at 0915-539-1957

# NIA, JICA UNVEIL P12-MILLION IA SUPPORT FACILITIES IN DUMACAA RIS

By: Jhon Vince R. Santoalla, Public Relations Officer A, NIA Region IV-A


NIA CALABARZON Regional Manager Romeo Lopez and NISRIP Project Manager Silvino Navarro led the Turnover and MOA Signing of Irrigators Associations Offices with Support Facilities under the National Irrigation Sector Rehabilitation and Improvement Project (NISRIP) on September 29, 2021 funded by the Japan International Cooperation Agency (JICA). The activity is part of the rehabilitation effort on the Dumacaa River Irrigation System located in Pagbilao, Tayabas City, and Lucena City Quezon.

Four Irrigators' Associations (IAs) were granted office and support facilities, namely, Alupaye Sitio Tubigan IA, Dakilang Sulok IA, Mayao Castillo of Lucena IA, and Ginintuang Butil ng Sta Teresa IA.

*"Isa po itong mahalagang araw para sa ating lahat. Naudlot man po ng ilang beses ang ating Turnover Ceremony dahil sa pandemyang kinakaharap natin ngayon, sa wakas ay pormal ng maililipat sa ating mga IAs ang pamamahala ng mga IA offices at mga pasilidad na kasama nito",* said RM Romeo Lopez.


In his speech, RM Lopez highlighted inter-agency coordination and robust partnership between the Philippines and Japan in supporting agricultural productivity in the country.

He also thanked the farmers and their organizations for trusting the Agency in the effort to rehabilitate and improve one of the important irrigation systems in Quezon province.

*"Let us use these facilities to further improve our organization. Mas maayos na kayong makakapag-meeting at makakapag imbak ng inyong mga harvests ng hindi nangangamba sa panahon",* said PM Silvino Navarro. He said that the offices and support facilities are set to prepare IAs to become dynamic and viable organizations leading to the improvement of socio-economic status of farmers.

# BALBALUNGAO SMALL RESERVOIR IRRIGATION PROJECT (BSRIP): A PROJECT OF BIG OPPORTUNITIES

By: NIA UPRIIS Division I


In line with the mission of the Agency to plan, construct, operate, and maintain irrigation systems consistent with integrated water resource management principles to improve agricultural productivity and increase farmers' income, the construction of the embankment dam of Balbalungao Small Reservoir Irrigation Project (BSRIP) commenced this year.

BSRIP is a dam project with irrigation system located at Lupao, Nueva Ecija that will utilize the water coming from Balbalungao River, which lies in between the majestic hills and mountains of San Isidro, Lupao.

The project, from its feasibility study, started on January 2012, with the objective of increasing the irrigated areas in the Municipality of Lupao. The existing San Isidro Communal Irrigation System (CIS) thereat only irrigates 200 hectares of land. The introduction of this project will irrigate 420% more, with a total of 840 hectares, and will benefit 562 farmers from Barangays Balbalungao, San Isidro, Salvacio, and Mapampang in Lupao, Nueva Ecija.

More than just an ordinary project for the development of the agriculture sector, this will also pave way for opportunities as it also objectifies to start fish culture, strengthen flood control, and propagate tourism.

This project has three facilities which is composed of one main canal, four laterals, and one sub-lateral. More so, this dam has a 3.32-mega-cubic-meter capacity at normal water elevation of 195 meters.

The construction of the embankment dam and appurtenant structures of Balbalungao SRIP already broke ground on July 2, 2020.

The estimated construction of the embankment dam is 46 months.

Currently, there are seven on-going activities. These include the 1) embankment construction and compaction at the permanent cofferdam, 2) excavation and dewatering works at the dam core trench, 3) material testing activities at the on-going construction of permanent cofferdam, 4) construction of filter drain at the dam area, 5) excavation works at the spillway structure, 6) drilling and grouting activity at the dam core trench, and 7) backfilling works at the spillway channel.

# ADDRESSING IRRIGATION SYSTEM CHALLENGES: DIVISION I AND DIFIA PARTNERSHIP

By: NIA UPRIIS Division I

Division I management, headed by Acting Manager Engr. Felix L. Teaño, Jr., continuously aims for a strong partnership with Division I Federation of Irrigators' Association (DIFIA) to provide the equal and quality irrigation service to all the farmers within the service area.
Among the steps taken by both parties to maintain a good-working relationship in the irrigation community is the conduct of monthly meeting. The said monthly meeting served as the brainstorming ground to lay out all the possible ways to effectively address the challenges in the irrigation community and the possible solutions to them, also, always in discussion is the possible steps that can be taken to improve the facilities.

Mr. Ben S. Gagelonia, DIFIA President, constantly expresses the gratitude of the association to the Division Office for providing assistance to the farmers, not only in the irrigation but also in the process of claiming incentives from other agencies. True to this, Mr. Gagelonia attends to the flag raising ceremony of the Division office every Monday.

Moreover, to maintain the smooth flow of water distribution, both parties regularly do the maintenance of irrigation canal facilities and vigilant monitoring against creation of illegal turnouts. The members of DIFIA remain committed to their duties as stated in the Irrigation Management Transfer contract. Included in the duties is the canal clearing activities conducted every two months to sustain the irrigation facilities.

Evident to this strong partnership, numerous recognitions were awarded to the Division Office, including the six-time Best Maintained Division award.

Acting Manager Teaño said that the Division office would stand by its vision to contribute in the growth of the country and in improving the quality of life of the farmers.

Indeed, Division I and its IA will stand by the battle cry *"Ang NIA at Magsasaka, Magkatuwang sa Ginhawa".*

# BRINGING NIA CLOSER TO THE FARMERS: THE STORY BEHIND THE CLUSTERING OF NIS AND CIS IN CAMARINES SUR

By: Nicx B. Baraero, Public Relations Officer B, NIA Region V


Our belief in achieving greatness is mostly attuned with having something bigger. It is also said that big is better. But is it?

Based on the study and analysis of Engr. Freddie M. Toquero, Ph.D, who has a Doctorate degree in Water Management, sometimes big is not better, especially if it's centralized, as it breeds inefficiency, red tape and poor performance in terms of project implementation, operation, and management.

Barely six months as the region's acting manager and a few days before becoming a full-fledge Regional Manager at that time, Director Toquero decided to push for the clustering of NIS and CIS in the Camarines Sur Irrigation Management Office (CSIMO), the biggest of the four IMOs in the Bicol region.
By all indicators, CSIMO, indeed, is the biggest. In terms of potential irrigable area, it has 123,700 hectares out of the 239,660 hectares or 59.67 percent of the regional total; For service area, there are 77,579 hectares being served by NIA CSIMO or 62.72 percent of the regional total of 143,004 hectares; For irrigators associations (IAs) served, CSIMO has 55 IAs out of 78 IAs in NIS or 70.51 percent, while there are 173 IAs in CIS or 31 percent of the total of 557 IAs in CIS region wide and caters to 42,404 farmer-beneficiaries out of the total of 85,321 farmers served by NIA-assisted irrigation systems across the Bicol Region as of December 31, 2019.

Naturally, with this size, CSIMO always gets the biggest slice of the pie, so to speak, in terms of projects and budgetary allocation year in and year out. In 2019, it had 48 projects with an allocation of P593,016,000. This year, it has 64 projects and P514, 150,000 allocation out of the total of 202 projects and P1.202 billion regional allocation.

When he assumed as NIA Bicol Chief in July 2019, he found out that CSIMO has 43 delayed projects as far back as 2015 until 2018. Aside from that, most of the complaints elevated by farmers to the 8888 hotline and the Presidential Complaint Center (PCC) were about projects and poor service of NIA in the province of Camarines Sur.

So how do you solve a big problem like that? Director Toquero or FMT, as he is fondly called in Upper Pampanga River Integrated Irrigation System (UPRIIS), where he rose from the ranks to become the Division Manager of its Dam and Reservoir Division (DRD) and later on as chief of its Division 1 prior to his assignment in Region 5, came up with the idea of clustering CSIMO's four National Irrigation Systems (NIS) and 173 functional Communal Irrigation Systems (CIS) under four district offices.

To implement his novel idea, FMT issued Office Memorandum No. 042, series 2020 on January 24, 2020 directing the clustering of all NIS and CIS and all ongoing projects located in the same provincial district in Camarines Sur. As a result of the clustering program, the former Irrigation System Offices (ISOs) of Libmanan-Cabusao PIS (LCPIS), Tigman-Hinagyanan RIS (THIRIS), Cagaycay RIS (CRIS), and Rinconada Integrated Irrigation System (RIIS) were transformed into District Offices I and II (LCPIS), District Office III (THIRIS); District Office IV (CRIS), and District Office V (RIIS). These four district offices are under the supervision of the CSIMO-Head Office, which long a long time has the sole responsibility of handling all matters related to CIS and implementation of communal projects.

Under FMT's clustering program, the responsibilities of project development and implementation (PDI), operation and maintenance (O&M) and institutional development program (IDP), administrative and personnel matters, and financial management of all irrigation systems and projects are now devolved to the district offices.

With this new set up, FMT said, NIA employees in district offices can immediately act on issues and concerns of irrigators associations (IAs), individual farmers and other stakeholders relative to irrigations systems/projects within the district.

*"In simple terms, this clustering program brought the services of NIA closer to the people as IAs/farmers/ other stakeholders who have issues/concerns about communal projects/systems need no longer go the CSIMO head office in Naga City. Instead they can go to the nearest NIA district office, which in turn can immediately act on their concerns",* FMT said.

For her part, Engr. Seema S. Gonzaga, acting manager of the Engineering and Operations Division believed that the clustering of offices in CSIMO is NIA Region 5's way of heeding the government's call for ease of doing business and efficient government service delivery. "It is very timely, especially now that we are all affected by the pandemic. It will also be easier for us to address their issues and concern."

The program is like an infant, barely a few months old since it was fully implemented only in June 2020. For sure, there will be birth pains just like any experiment in progress.

At the end of the day, FMT did what is expected of a good and true manager when faced with a big problem. He thought of a solution outside the box believing in what Albert Einstein said that: "Problems cannot be solved with the same mindset that created them."

# SMALL STEPS TOWARD A FOOD-SUFFICIENT COUNTRY

By: NIA UPRIIS Division I


Rising up to the challenge of food security and sufficiency at this time of pandemic, the "Irrigators Association (IA) Gulayamanan" Training Program was proposed and introduced by Division I to become part of the Capability Building Activities of the Institutional Development Program of NIA-UPRIIS with the aim of raising the agricultural production, not only with the production of palay but also with vegetables.

Acting Manager Engr. Felix L. Teaño, Jr. expressed his strong support and appreciation towards the training, as he pointed out the importance of having programs like this for our farmers especially now that we are facing a global problem. "I hope that this training will be one of the mediums for us to extend our support and assistance to our farmers," he said.

On July 17, 2020, a Training of Trainers for the IA Gulayaman Training was conducted at NIA-UPRIIS Division I Conference Room, Brgy. Malayantoc, Sto. Domingo, Nueva Ecija. The Development Management Officer I of the DA-ATI Regional Training Center-3, Mr. Jayson B. Nidua, discussed the topics on Introduction to Vegetable Production and Technologies on Sustainable Vegetable Production to the Institutional Development staff and other personnel who are potential facilitators of the training program.

The training module aimed to support the Food Self-Sufficiency Program and Plant, Plant, Plant Program of the government by enhancing the knowledge of the IAs regarding small-scale vegetable production that they could use for their own consumption as well as their source of additional income.

With the guidance and support of Acting Chief of OMID Section, Engr. Aldous Joseph S. Lamucho and Supervising IDO, Ms. Luisa A. Esplana, the Institutional Development Unit (IDU) Staff pioneered the training program that was participated by the officers and selected members of DALANGIRIN IA, CASANOVA IA, ATOM IA, BAKAVISA III IA and FLOVENBAR IA. All five participating IAs are currently doing the said program. The Division office now monitors and documents the progress of the IAs in their small-scale vegetable production.

Amidst the pandemic, NIA UPRIIS Division I will always aim to provide quality programs and services that could help uplift the lives of every IA member that it serves.


# Salamat sa NIA, taliwala sa PANDEMIA, Ikaw aNIA!

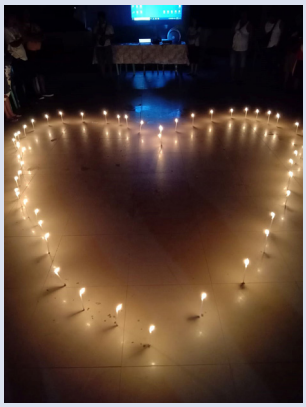
By: Rhea Mae F. Luspo and Charlito B. Ganayan, IDO, NIA Region IX

*"Salamat sa NIA, taliwala sa Pandemia, ikaw ania"* These are the words expressed by our dear farmers to convey their gratitude towards NIA for the services rendered amidst the pandemic.

This means "Thank you NIA, amidst the pandemic, you are here". A short and simple phrase but has deeply struck the hearts of our Irrigators Development Officers (IDOs) in NIA Region IX. The pandemic has undeniably affected several factors from the economy including the agricultural sector specifically farming. Thus, affecting our farmers, not only financially, but also socially and psychologically.

In order to temporarily breakout from the hurdles and to provide inspiration to our farmers, the Zamboanga del Sur Irrigation Management Office (ZDS IMO) Institutional Development Unit (IDU) headed by Ms. Ann N. Maligro together with her Institutional Development Officers (IDOs) conducted Team Building and Values Formation Seminar with the theme "God, People, Purpose and Passion: The Pathway to Success" on January 15-16, 2021. This was participated by NIA-ZDSIMO CIS-IDU Staff, Board of Trustees and Officers of ten (10) Irrigators Associations (IAs) of Zamboanga del Sur Communal Irrigations Systems (CIS) namely: Balocan IA, Inc., Kawayan-Guipos IA, Inc., Primatell IA, Inc., Sekabada IA, Inc., Bogwac Highway Communal IA, Inc., IA of Brgy Poblacion Guipos, Inc., Baking IA, Inc., Sagasan-Mialem IA, Inc., Culasian River IA, Inc., and Dongos-East MigPolao IA, Inc.

The activity aimed to provide realistic experiences which empowered the group spiritually and psychologically. It helped in promoting a stronger connection among IAs and united them towards one common goal which is to provide efficient water services to our irrigation water users. With the continuous existence of pandemic, the IDU of ZDS IMO remains dedicated to public good by reaching out to our famers in order to help alleviate their struggles especially during this time of crisis.

# Bulalo SIP to irrigate uplands in Tagaytay City

By: Public Affairs and Information Staff – Central Office
in coordination with NIA CALABARZON Public Relations Team


From left to right: Tagaytay City Councilor Rey Espiritu, NIA-CBIMO OIC Jaime De Jesus, NIA CALABARZON Regional Manager Romeo M. Lopez, NIA Senior Deputy Administrator Abraham B. Bagasin, Bulalo Damayan IA President Fernando Burazon, NIA CALABARZON AFD Manager Reynaria N. Tapia, and NIA CALABARZON EOD Manager Erwin M. Lucela during the Turnover Ceremony of SIP located in Barangay Iruhin East, Tagaytay City, Cavite

The National Irrigation Administration (NIA) conducted the Turnover Ceremony of the P6-million Bulalo Small Irrigation Project (Bulalo SIP) located in Barangay Iruhin East, Tagaytay City, Cavite on July 27, 2021. Presided by Senior Deputy Administrator Abraham B. Bagasin, the project was turned-over to the Bulalo Damayan Irrigators Association, Inc., headed by the IA President Fernando Burazon, for its operation and maintenance.

Bulalo SIP includes the construction of solar pump, solar pump facilities and accessories, two concrete water tanks, trash track, pipelines, and check structures. The project is expected to provide timely and reliable irrigation water supply to 15 hectares of agricultural lands in Tagaytay City, benefitting 34 farmers and their families.

In his message, Senior Deputy Administrator Bagasin shared the significant role of close inter-agency coordination in the completion of various irrigation projects nationwide. He emphasized that these projects are for the benefits of the farmers and contribution to agricultural development.

"Nagpapasalamat kami sa ating mga LGUs na talagang sumusuporta sa ating mga proyekto. Hindi magiging matagumpay ang mga ganitong proyekto ng pamahalaan kung wala ang suporta ng ating mga kasamahan sa Provincial, District, at Local Governments", said Senior Deputy Administrator Bagasin.

NIA CALABARZON Regional Manager Romeo M. Lopez highlighted the great contribution of agriculture to economic development. He also cited that the Agency is not only focusing on irrigating rice lands but also to our farmlands catering diversified/high value crops.

"Isa ang proyektong ito sa tinatawag nating modernization effort ng ating mga irrigation facilities. Ang solar irrigation project na ito ay malaki ang maitutulong sa ating mga magsasaka para mabawasan ang kanilang gastos sa pagsasaka, sapagkat hindi na sila gagastos pa sa gasolina para mapatakbo nila ang kanilang mga water pumps", said Regional Manager Lopez.

Officials from NIA CALABARZON Regional Office, Cavite-Batangas Irrigation Management Office (CBIMO), and Local Government Units (LGUs), IA officers, and farmers attended the ceremony.

Capping the event was the ceremonial turnover of the symbolic keys of five other irrigation projects in the Province of Cavite, namely, 1) Pacheco PCIP to Pacheco Agrarian Reform Cooperative, headed by IA President Filomino Hernandez, 2) Balayungan PIP to Malainen Luna Eco-Farm IA, represented by IA President Darwin Saloria, 3) Urdaneta PIP to Urdaneta Magallanes IA, headed by IA President Pablito Rogador, 4) Medina PIP to Magallanes Samahang Magsasaka ng Kay-Apas at Medina Agriculture Cooperative, represented by IA President Mariano Maligaya, and 5) Ramirez PIP to Ramirez IA, headed by IA President Rey Villaruel.

NIA Top Management Officials, headed by Administrator Ricardo R. Visaya, assure that the Agency will continue to develop solar power projects due to its environmental-friendliness, durability, resistance to corrosion, and long-term cost effectiveness, thus uplifting the lives of greater Filipino farmers.

# NIA turns over 2 irrigation projects in the Province of Rizal

By: Public Affairs and Information Staff – Central Office
in coordination with NIA CALABARZON Public Relations Team

Under the leadership of Administrator Ricardo R. Visaya, the National Irrigation Administration (NIA) turned over two irrigation projects to two Irrigators Associations (IAs) in the Province of Rizal on June 24, 2021 at Barangay Calawis Covered Court, Antipolo City, Rizal. These project are Calawis Small Irrigation System (Calawis SIS) located in Antipolo City and Palay-Palay Pump Communal Irrigation System (Palay-Palay PCIS) in the Municipality of Jala-Jala with an aggregate cost of P22.007 million.

Calawis SIS, whose water source comes from Calawis Creek, includes the construction of check structure and installation of pipeline with four water tanks and accessories. With a total cost of P15.007 million, the project is expected to provide timely and reliable irrigation water supply to 43 hectares of agricultural land in Antipolo City, benefitting 20 farmers and their families. Administrator Visaya led the turnover ceremony of the project to Calawis IA, represented by IA President Ronnie R. Idala.
On the other hand, Palay-Palay PCIS, whose water source come from Laguna Lake, includes the fabrication and installation of solar panel board, solar controller/inverter, and solar panel frame. With a total cost of P7,000,000.00, the project is expected to provide a year-round irrigation water supply to 142 hectares of agricultural land in the Municipality of Jala-Jala, benefitting 110 farmers and their families. The project was turned over by NIA Administrator Visaya to Palay-Palay IA, represented by IA President Eliseo SM. Inguito, Jr.

As part of its innovation and modernization platform, NIA ventures into solar-powered pump irrigation projects like Palay-Palay PCIS to replace diesel-powered pumps and generators which emit considerable quantities of carbon dioxide and greenhouse gases. In addition, diesel-powered projects are high in operations and maintenance costs. Hence, the Agency started developing solar-powered pump irrigation projects due to its environmental friendliness, durability, and long-term cost-effectiveness.

NIA Deputy Administrator for Administrative and Finance Sector Romeo G. Gan, NIA CALABARZON Regional Manager Romeo M. Lopez, Laguna-Rizal IMO Acting Manager Gerardo R. Perez, represented by Senior Engineer Leilani Dela Cruz, Antipolo City Mayor Andrea B. Ynares, represented by City Councilor Irvin Paulo C. Tapales, Barangay Captain of Calawis, Antipolo City Allan A. Abonio, other NIA Central Office and Regional Officials and employees, some uniformed personnel, and IA members attended the turnover ceremonies.

NIA is now looking forward to the development of more solar and floating solar power projects to cover more agricultural areas nationwide.


From left to right: Antipolo City Councilor Irvin Paulo C. Tapales, NIA CALABARZON Regional Manager Romeo M. Lopez, NIA Administrator Ricardo R. Visaya, Deputy Administrator for Administrative and Finance Sector Romeo G. Gan, and Engr. Leilani Dela Cruz, Senior Engineer of Laguna-Rizal IMO during the Ceremonial Turnover of Calawis SIS and Palay-Palay PCIS in the Province of Rizal

# NIA TURNS OVER 6 UNITS OF SOLAR POWERED IRRIGATION PROJECT IN FOUR MUNICIPALITIES OF ISABELA

By: Goldie Angeleen C. Turingan, Public Relations Officer A, NIA Region II

Another six units of solar powered irrigation project located in Calanigan Sur and Bagabag of Sto. Tomas, Cabannungan, Ilagan City, Malasin, Angadanan and San Pablo, Cauayan City, Isabela were turned over with a total project cost of P11,750,000.00 in a joint ceremony on August 3, 2021 held at MARIIS Covered Court, Minante 1, Cauayan City, Isabela.

Led by Senior Deputy Administrator Abraham B Bagasin, Regional Manager Raymundo B. Apil, Acting Engineering and Operations Division Manager Orlando R. Espejo, Isabela Irrigation Management Office (IMO) Manager Felipa S. Sumer, the ribbon cutting ceremony took place at the Solar Pump Irrigation Project in San Pablo, Cauayan City.

Followed by a formal program attended by Hon. Caesar S. Dy, Jr., Agriculture Sector Representative, East Tabacal IA President Col. Melecio B. Asis Jr. (Ret), Malasin Mallanao IA President Marlon B. Sales, Cabannungan IA President Christopher M. Siriban, Calanigan IA President Rodolfo Galasinao, Katalunan ti Asosasyon iti Bagabag IA President Richard Mamuad, and MARIIS Department Manager Josue A. Sabio

Isabela IMO Manager Sumer said, Solar powered irrigation systems (SPIS) provide reliable and affordable energy, potentially reducing energy costs for irrigation, suitable for remote watershed and rain fed areas and can be used continuously up to 10 hours.

Hon. JC Dy extended his appreciation to the National Irrigation Administration (NIA) for their continuous effort by providing sustainable irrigation service to the farmers even during the COVID-19 pandemic. Also, Col. Melecio B. Asis, Jr. expressed his gratitude to


the management through the ISAIMO for providing them this kind of project. Malaki ang maitutulong para sa aming sakahan dahil noon ay umaasa lamang kami sa tubig-ulan upang makapagtanim.

In closing, Senior Deputy Administrator Bagasin commended the partnership of NIA Region II and Local Government Units (LGUs) in Cagayan Valley towards the improvement of the farmers' quality of life.

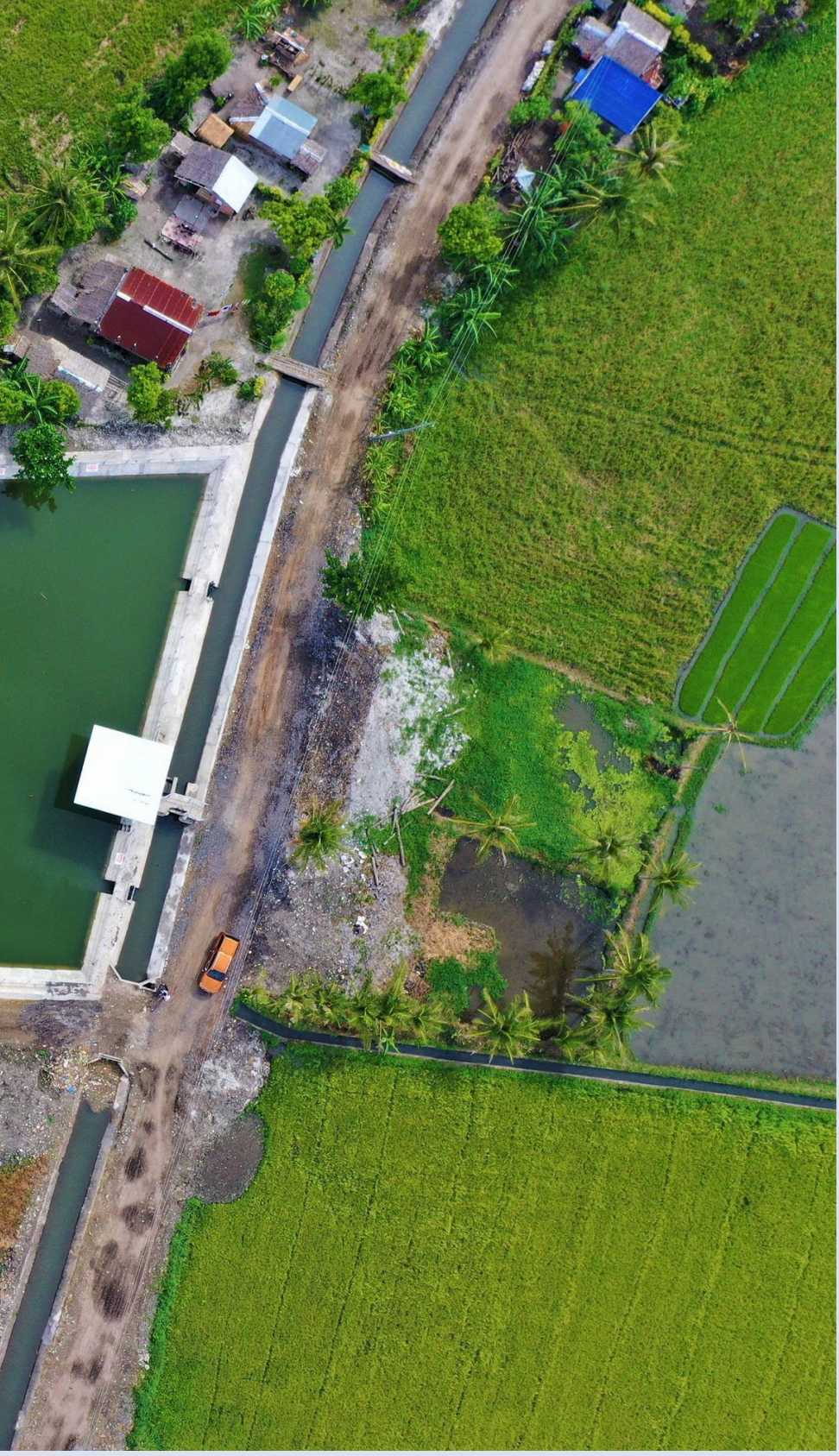

Senior Deputy Administrator Abraham B Bagasin giving his speech

# Farm Pond: Maximizing run-off water to irrigate rice farms

By: Ma. Cleofe B. Baraero Public Relations Officer A, NIA Region V

The recently inaugurated Farm Pond in Calabanga, Camarines Sur is the first of its kind in the Bicol Region. Constructed at the cost of P26.16 million, the Farm Pond Project of the District Office III (Tigman-Hinagyanan-Inarihan River Irrigation System or THIRIS) under the Camarines-Sur Irrigation Management Office (CSIMO) aims to irrigate some 50 hectares of rice lands benefiting some 60 farmer-beneficiaries in the tail-end portion of the area coverage of Inarihan RIS in Barangays Sto. Domingo and Dominorog, both in Calabanga, Camarines Sur.

During the inauguration and turn over of the completed project to the Division B Irrigators' Association on July 28, 2021, guests were surprised and curious about the unusual concept of the farm pond project as it is far from the typical irrigation dam, which is what is the National Irrigation Administration (NIA) is known for building all over the country. An article entitled "Mitigating drought through farm pond technology", published in May 2018, states that farm ponds are considered as one of the best mechanisms to mitigate drought in rain-fed rural areas.



According to Engr. Jessie D. Baynas who designed the farm pond project, the farm pond technology is a boon strategy that can be utilized in addressing water shortage, more so in climate change adaptation because of its potential to upturn availability of supplemental irrigation that brings either drought or flooding in erratic weather conditions.

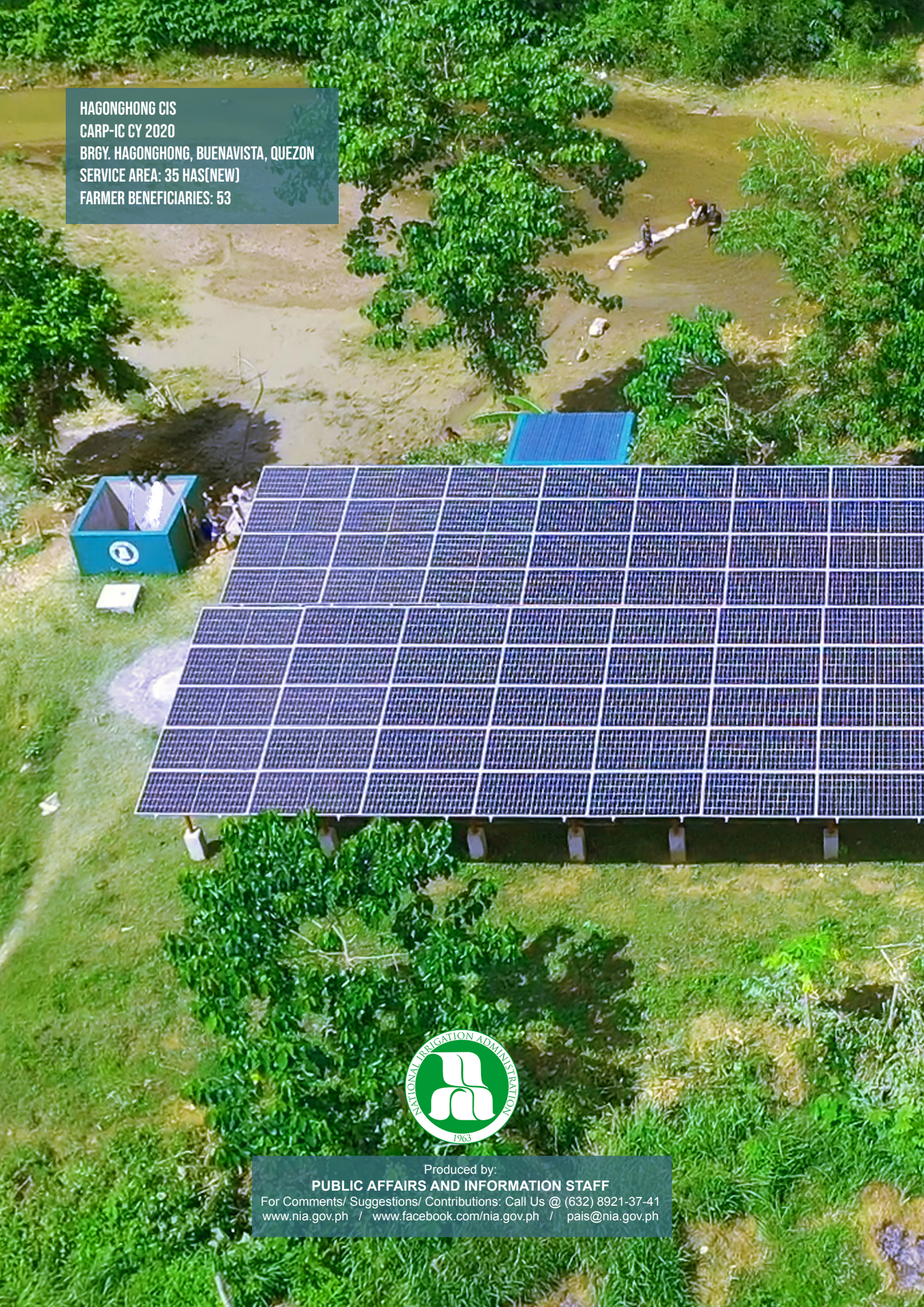
Engr. Baynas got the idea for the farm pond design when he attended a special training course for Irrigation and Drainage through Integrated Water Management in Japan in 2014. It was in the year 2016 when farmers of Calabanga requested the THIRIS office for assistance regarding the irrigation problem of farmers in the tail-end portion of Division B Irrigator's Association. To solve this problem, the Farm Pond Project was conceptualized, approved and funded. In October 2018, the project started. The project includes, repair of concrete canal lining, and construction of new canal, pump site, and farm pond, including the installation of pumps and engines. Works were completed in March 2021.

The farm pond itself measures some 830 square meter with a depth of 2.45 meters. It can store and collect a total volume of 5,840 metric tons of water, which will be distributed through a vertical mixed flow pump using 4.5 hp of diesel engine and 60 hp of right angle drive gear during dry season.

This farm pond addresses two major issues: Drought in the tail-end portion and monsoonal flooding in the farms nearby the structure, both of which are causing a decline in agricultural production that affects farmer's livelihood.Aside from providing supplemental irrigation service, the farm pond enabled the farm owners alongside the structure to plant even during wet season because of its ability to collect the run-off water though the intake gates.

NIA Region V Director Freddie M. Toquero, who has a doctorate in Water Management, says the farm pond is the first of its kind in Bicol, but it will not be the last.

*"In these times where climate change poses a great challenge and threat to our agricultural industry, it is high time that we adopt new technologies for our irrigation system and management for the benefit of our farmers. In the coming years, we are looking at a more resilient ways to combat drought and flooding and we will continue to explore the much-needed innovations and technologies which should be implemented if we want our agricultural industry to thrive."*



HAGONGHONG CIS
CARP-IC CY 2020
BRGY. HAGONGHONG, BUENAVISTA, QUEZON
SERVICE AREA: 35 HAS(NEW)
FARMER BENEFICIARIES: 53

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