

Dagupan City, Philippines

Bonuan Buquig National High School

**Why a school stepped in to save
the mangroves**



**WORLD'S
BEST SCHOOL**
Environmental
Action

accenture

**AMERICAN
EXPRESS**



**WORLD'S
BEST SCHOOL
PRIZES**

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Introduction

Bonuan Buquig National High School (BBNHS) has proven that collaboration, perseverance, inclusivity and love – for students, staff, the community and the environment – can help overcome even the toughest of adversities. The school sits in an area highly prone to typhoons, flooding and strong winds, which resulted in the government stripping riverbanks of mangrove trees as a flood mitigation measure. These trees are critical players in the local system and thus the fishing communities most students live in and rely on. As such, the school took it upon itself to restore the trees and aquatic life by creating the Mangrove Planting Project and other parallel initiatives. Enduring extreme conditions, financial hardships and a global pandemic, the school has continued to expand the project with undeniable passion.



School Profile



Country:
Philippines



Region:
Dagupan



School type:
Public school



Location area:
Rural



Student population:
2000+



Prize Category:
Environmental Action

“If we have enjoyed so much before than the youth of today, then I think we should give back. We are where we are now because we are fed by the best milkfish. The best thing we can give our children is the fish that we had in our youth”

– Maria Linda Ventenilla,
Chief of the Curriculum
Implementation Division &
Former Principal, BBNHS



In-depth look

CONTEXT AND CHALLENGE

Bonuan Buquig National High School (BBNHS) is a public secondary school that is located between rivers and the coastal areas of Bonuan, in the city of Dagupan, Pangasinan, Philippines.

The school motto is 'no-one student gets left behind' which already speaks of the inclusivity and profound care the school provides the students. Founded in 1968, BBNHS is roughly 5km away from Dagupan and provides free access to education, particularly for learners who live far from the city and cannot afford travel costs. BBNHS works with a K-12 basic education programme which offers both junior and senior school education, with 3,221

students currently enrolled. Graduates from the school have gone on to work in local establishments, government offices and abroad. The school stands out for its consistent hard work and a shift in thinking around the social and ecological protection of the community.

As an area prone to flash floods during rainy seasons, in 2009 the community was struck by a particularly devastating event: Typhoon Pepeng. The storm left 67% of Dagupan City underwater.

Fishponds, rice fields and other crucial parts of the community were heavily damaged. As a measure for flood mitigation, the local government carried



out a mass dredging project where mangrove trees, key players in the local aquatic ecosystem, were stripped from the riverbanks and coastal lines. After the trees were removed, a ripple effect occurred – rates of native fish, crabs and other shellfish began decreasing dramatically. BBNHS became concerned when many students began to skip classes. Former Principal Maria Linda Ventenilla mentions how she was devastated by the effects of Typhoon Pepeng.

The school went on to discover that these students skipping classes belonged to families who live off the local Longos river resources, as well as surrounding fishponds and fish farms. As dredging began impacting access to fish and other aquatic life, students started replacing school with work to help their families generate an income. To this, Ventenilla adds that as “most students live in coastal areas... in my heart I saw that there was a calling. We felt the fish

we were raising was not the quality that it was before – how would people raise their family and send their kids to school?” This is what drove the school to take action.



“If there is one thing that is at the heart of all of this, it is our very own ethos. We always have this expression at the school where we say a Buquig, may pay big, which means In Buquig, there is love – love of God, love of Nature, love of fellow man, and love of country –. Even if we were not baling to be a part of more progressive countries, what we are so happy about is that we have sown seeds of love in our school children and that itself cannot compare to money or success that we could have. That is one thing that we are so happy and proud of.”

-Maria Linda Ventenilla, Chief of the Curriculum Implementation Division and Former Principal at Bonuan Buquig National High School.



EXPERTISE AND APPROACH

After seeing the immense loss following Typhoon Pepeng – of livelihoods, homes, family and friends – Mrs. Ventenilla mentions how the school told themselves “We will never, ever let that happen again”. Facing the challenges that come with flooding and dredging, and the damage on the local ecosystem, the school implemented the Ilog Ko, Aroen Ko (I Love My River) Mangrove Planting project. This project sought to rehabilitate mangroves in areas where they were unable to recolonise naturally. In so doing, the aim was to restore balance to the local aquatic system and stabilise the riverbanks along the Longos River. Mrs. Ventenilla admits “it was a humble beginning.” – Willy U. Guieb, a science teacher at the school both during and after the 2009 typhoon, took his science class with him to one of the dredging sites where they conducted a visual inspection of the riverbanks. They noticed that some of the pathways between the river and fishponds had eroded.

After some research, BBNHS discovered just how important mangrove trees and other native species such as Salisay were to the ecosystem, with their roots holding the soil together and their capacity to store and release nutrients back into the ground and water. Inspired by what they had learned, the faculty, led by Guieb and Principal Juan Reyes, conducted more research on mangrove trees and designed a rehabilitation programme to be implemented at the school.

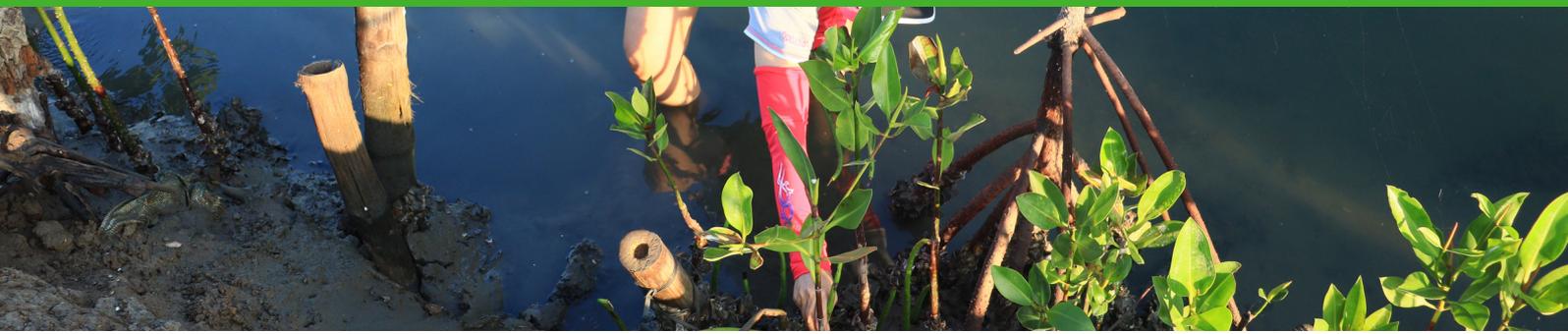
BBNHS began integrating the programme into the curriculum, teaching students about native trees. In science class, students were taught how to create propagules, seedlings that would readily adapt to the riverbanks.



They also learned about the local ecosystems and why the native trees were so important, later taking this knowledge back into their homes and the local community. Ventenilla, who joined as principal in 2012, forming a critical role in the development of the Mangrove Planting Project, says all the subjects have integration of environmental action within them. For example, in Art class, instead of using new resources, the students made use of the leftovers from a "survival cooking course" they attended and created "trash art". To add to this, teacher Salvacion Malanum mentions how "the staff started planting seeds of interest in the students, teaching them about soil types, the proper way of planting Mangroves, starting recycling programmes within class time."

The president of the school's student council (SSU), who joined the school in 2016, also shared her experience. She expresses how eager student leaders and teachers were about the Mangrove Tree Planting Project and how unique her experience in science class was, compared to other classes. She expresses how she "wasn't aware of anything about Mangroves, but I joined because student leaders were very encouraging and were motivating students to learn about the mangroves. I saw them planting propagules and for me, it was very different [because of the planting process]: I realised we are not just doing this for the student project, but we are doing this for the students themselves. That's why those student leaders are eager to share and encourage other students to participate. Our school is true to the words no children will be left behind." For the next years of participating I never thought I would be the one advocating these benefits and encouraging others. We have a lot of participation from our classmates because they want to join our fight against environmental degradation."





Teacher Malanum explains how students were motivated to start recycling projects in class and how mangroves benefit the community and the school, teaching them how to create mangrove propagules, as well as how to plant them correctly before going on site.

Over time, the school created volunteering groups, composed of staff and learners. Eventually, parents and community members began joining the planting initiative. The groups would walk from the school to the sites at 5 am, early enough to avoid the heat of the day. They would then spend hours on the riverbanks planting, speaking, learning, and eating together. Ventenilla expresses how students never complained, they never said they wouldn't go, they always had a smile on their faces seeing that they'd have another adventure. It is not only the love for the environment, rather "this is the kind of character [they] form in the children." For Ventenilla this is a priceless result that has arisen from the project. She explains how "we will all come to pass but the children will continue". She mentions that community members were reluctant to join at first as they didn't understand why the project was so critical for the area. Once people saw the restoration their local ecosystem was undergoing, however, a radical shift in attitude occurred. Nowadays, community members regularly and eagerly participate in the programs being run by the school.



The background of the page is a photograph of a school building with a white facade and green accents. A person in a white shirt and khaki pants is walking away from the camera in the foreground. The text is overlaid on a semi-transparent white box.

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Student & President of Student Council,
Bonuan Buquig National High School



OUTCOMES AND RESULTS

The early years of implementation

In 2010, 2,000 Mangrove propagules were planted. Six months later, the site was monitored and only about 200 had grown successfully, which fell far from the initial expectations of the faculty. Year 2 implementation was carried out in 2011 in which roughly 300 trees grew. In 2012, Principal Reyes retired, and the programme was taken over by then-new principal Maria Linda Ventenilla, who propelled the programme substantially. The school faculty began to study the mortality rate of the plants, analysing the conditions of the seedlings and how to reduce deaths. The rates dropped substantially, from 70% at the onset to 30% today. In Linda's first year, there were around 1,000 grown mangroves over one kilometre of the river dike. The planting continued every year, and in 2016 there were about 10,000 documented mangroves.

Spreading the word: what happened next

In 2017, through the strong recommendation of the Division Disaster Risk Reduction Management Coordinator, Marjorie Rodriguez, other schools such as Pugaro Integrated School and Salisay Elementary School adopted the project. Today, more than 20,800 full-grown Mangrove trees form part of both national and local programmes like National Resilience, City Flood Mitigation Programme, Sustaining of Breeding Site for Native Fish and Preservation of Sanctuary to Migrant and Native Birds, all inspired by the Longos River Mangrove Planting Project at BBNHS.

At the present, BBNHS planted 7400 propagules last February (2022) in vacant areas and spaces where there



is a need for mangroves to hold the soil in the pathway that divides rivers from fishponds. One of the schools reported to BBNHS earlier this year that levels of aquatic life are returning to normal, mentioning that the quality levels of the fish are even higher than before the 2009 Typhoon Pepeng struck. Principal Reyes speaks of how he was shocked at how long it had been since they had seen this level of quality in aquatic life. Mrs. Ventenilla mentions how “aside from the fact that it was established here, we have already stretched our arms out to 5 or 6 more schools that have benefitted (from the programme). The quality of marine life of the fish they raise in their ponds are already of very good quality and the mortality rate is going down.” The community of Bonuan Buquig has seen a similar result in rivers and ponds, as well as the local fish farms.

PISH Project: responding to the COVID-19 Pandemic

In response to the COVID-19 pandemic, the Mangrove Planting Project took a turn towards the home front. As students were no longer able to attend the tree-planting sessions, tend to the school gardens or participate in clean-ups, the PISH project was introduced. Students were taught how to grow their own food and herbs at home, similar to how they had learned to make propagules in science class. Many learners who attend school often lack essential resources in their own homes and rely on the school for more than just education.



As such, the faculty felt a responsibility to teach the students and their families how to become more self-sustaining and produce their own food and medicine at home. Many learners later approached teachers and expressed how they were successfully able to plant and grow food and medicine with their families.



Key Steps



ASSESSMENT

As a partner of the community, BBNHS decided to assess for themselves the effects of the mass dredging of mangroves. As mentioned above, in 2009, the school personnel conducted visual assessments along the riverbank. The clear sign of erosion created a need for the planting of the mangroves. However, this would require research and collaboration.



PLANNING

The initial project plan was made by science teacher Guieb, the proponent of this venture, who worked together with the former Principal Reyes to create a school council in BBNHS in 2010. It consisted of school personnel (both teaching and non-teaching staff) and students, who worked on planning how to implement the massive mangrove planting.



When Mrs. Ventenilla joined the school, she reached out to Guieb and sought to restore the vitality and push of the programme. Students and staff were involved in crafting a project proposal: where they first introduced their research on the importance of restoring Mangroves in the area. This one was disseminated to interested parties, such as the local office for the Department of Environment and Natural Resources (DENR), as well as the Community Environment and Natural Resources Office (CENRO), to gain support. In the hopes of taking this project to a higher level, gaining funding and being able to continue growing and improving, Ventenilla took what teacher Guieb had started and began building camaraderie and connections with groups, sectors, and communities.



IMPLEMENTATION

During the first year of the project, the number of the 2000 planted propagules did not reflect the expected number of full-grown mangroves after a year, which sat at a mere 200. So, students and faculty then studied the mortality rate of the mangroves. They discovered that the propagules have at least 30 to 50% chance of sprouting and growing



With this data in mind, the team aimed to target 4000 mangrove propagules to plant each year during the initial five-year course. The team sourced propagules from the community and harvested the seedpods from the remaining trees. They studied how to grow mangroves by doing trials and experiments at school. They observed that these unusual trees start growing from seeds while they are still attached to the tree and that if the mangroves were to be grown from a seed, the seed pods needed to be soaked in water for 24 hours beforehand.



MONITORING

The school organised yearly community gatherings with different stakeholders to educate them on the matter and incentivise them to join the cause. Students, parents, PTA officers, Local Government Units like 4Ps members and the Knights of Columbus gathered. Experts from the Bureau of Fisheries and Aquatic Resources (BFAR) and the Department of Environment and Natural Resources (DENR) also partook and helped to guide the meetings. Attendees were grouped and assigned to visit the sites through a schedule and would monitor the seedlings' growth in a target time. Because of the slippery nature of the wet soils of the riverbeds, and the delicate nature of the ecosystem in restoration,



each group that visits has a step-by-step procedure to ensure the safety of the protected sites. With the support of the local office from the DENR as well as the Community Environment and Natural Resources Office (CENRO), the planting activity was monitored, and the number of full-grown mangroves was continuously reported. BBNHS planted 4000 mangroves every year for more than a decade from 2010. The initiative was conducted and recorded in 2011, declaring an Interdepartmental Convergence Initiative for a National Greening Programme 2011. According to the DENR, there are more than 20,800 full-grown mangroves that have been part of both national and local programmes like National Resilience programs, City Flood Mitigation Program, Sustaining of Breeding Site for Native Fish and Preservation of Sanctuary to Migrant and Native Birds. In 2022, BBNHS planted 7400 propagules in vacant areas and spaces where there is a need for mangroves.

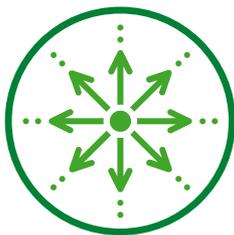


REPORTING

The groups of attendees visiting the sites are required to prepare a quarterly report on the development of the propagules, including survival and mortality rate and the reasons behind these.



The project site is also a wildlife sanctuary, so the landowners were also encouraged to prepare quarterly reports on how the propagules planting helped to restore and conserve the aquatic habitat and on how it supported their livelihoods, such as in the form of firewood and marine products such as oyster, crabs, and fish. All data gathered was assessed on a yearly basis to plan for the next school year's Projects, Plans and Activities (PPAs) and School Improvement Plan (SIP) with the school head's management. Aside from this, DENR continues to update the school with the data on the survival rate of the propagules every six months.



EXPANSION

The Mangrove planting initiative specifically addresses the needs of the community and has thus extended to many other environmental aspects of the community. In 2012, with the leadership of the former Principal, BBNHS started a concrete and sustained partnership with The Youth for Environment in School Organisation (YES-O), the school's internal Supreme Student Government (SSG) and the Dagupan Earth Savers Group - the City Government's Waste Management Division's allied organisation.



Aside from the Mangrove planting activity, the partnership has ensured the construction and operation of a school-based material recovery facility. Moreover, clean-up drives and tree plantings organised by the school and its partners took place in coastal areas. The school has also provided propagule to other schools located on nearby islands. Moving forwards, there are hopes to secure enough funding for BBNHS to construct its own nursery to grow seedlings of mangroves and other trees to provide to the whole city.

The “Ilog Ko, Aroen Ko” (I Love My River) project began to expand and gained support from many organisations from 2012 to 2022.

Ventenilla proposed that propagule planting would be conducted by students and teachers every semester from then on. She spearheaded the signing of a Memorandum of Agreement (MOA) on Environmental Protection among private organisations and Local Government Units (LGU) like the Knights of Columbus, the Supreme Student Government (SSG), the School Governing Council (SGC) Parents Teachers Association (PTA) with the barangay, Knights of Columbus, Department of Environment and Natural Resources (DENR) and, as aforementioned, (BFAR). BFAR supported the project by giving free seedlings for private fishpond owners who allowed the school to conduct planting.



Aside from the Mangrove Planting Project, the school began expanding their initiatives within the school and community. They went on to organise school beach clean-ups, programmes for providing malnourished students with proper meals, integrating recycling into the school's infrastructure and an exciting international initiative 'enviro-camp'. The camp hosted 3 other schools from Indonesia.



Advice and Guidance

Mrs. Ventenilla mentions “if there is one thing that is at the heart of all of this, it is our very own ethos. We always have this expression at the school where we say a Buquig, may paibig – In Buquig, there is love – love of God, love of Nature, love of fellow Man, and love of Country”. She expresses how even though the Philippines don’t sit amidst the more economically stable nations in the world, the school has “sown seeds of love in our students and that itself cannot compare to money or success that we could have. That is one thing that we are so happy and proud of”.

They mention the importance of a strong school ethos, and how the same sits at the centre of everything they have achieved – an emphasis on love for the students but also love for the school, the community, and for the environment. This, for them, is what drives all of the ecological and social actions the school has undertaken over the years. Teachers at the school often speak of gratitude and how fundamental this was to integrate into the programme, celebrating each success along the way. Principal Ventenilla highlights that what the school is most recognised for, however, is how they model what they teach. For BBNHS, the most critical aspect of starting a movement such as the Mangrove Planting Project, or any initiative that promotes ecological awareness, is to be a role model for your students. She mentions how it is not enough to just tell the students about ecological awareness and about ideas such as the planting of mangroves in Bonuan Buquig – rather that we must show them how these changes can be made.



More information

 [Bonuan Buquig National High School-
BBNHS](#)

 [BBNHS Daluyon TV](#)

Watch the [school's video](#)

