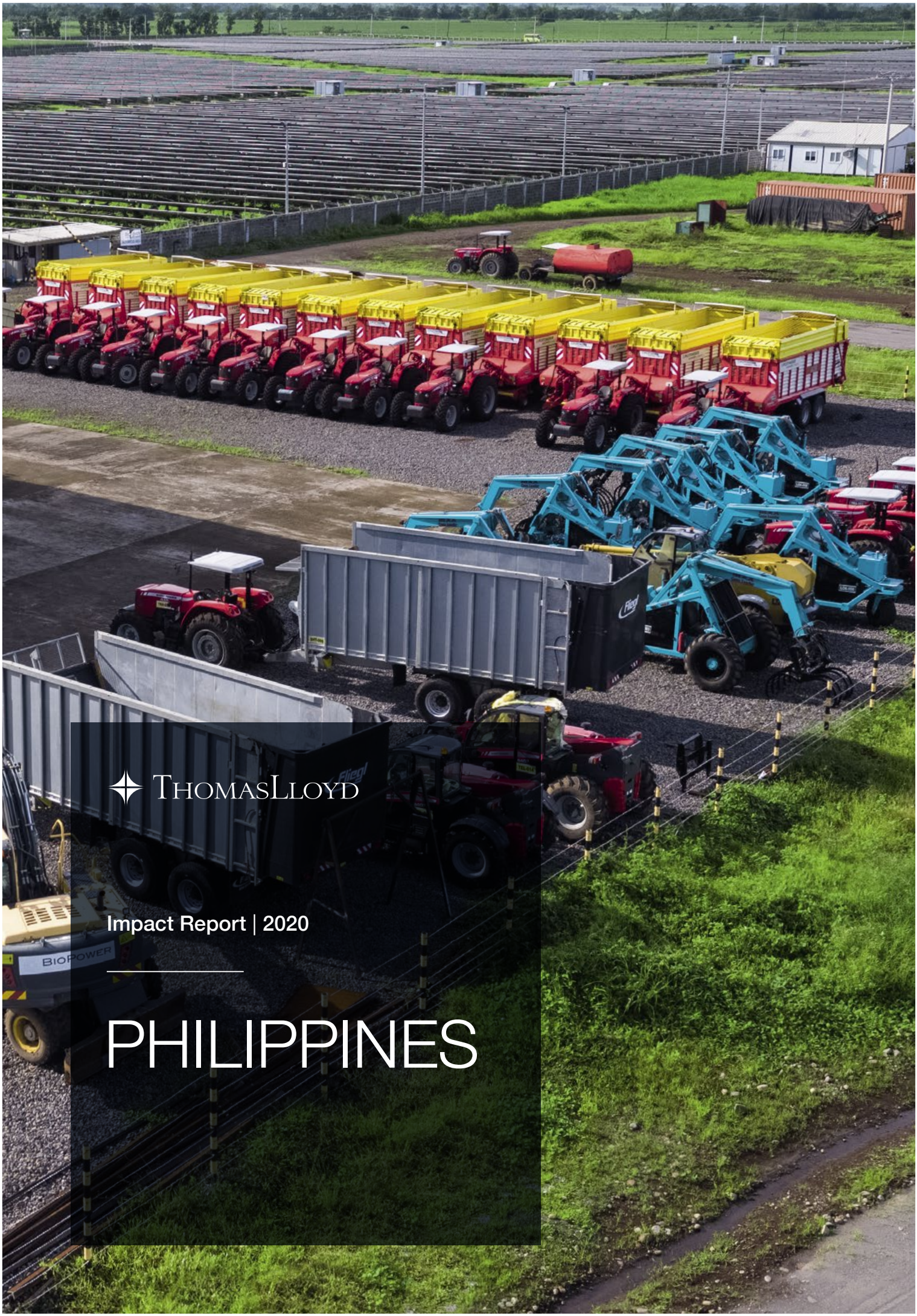


ThomasLloyd

Impact Report | 2020

PHILIPPINES

REALISING SUSTAINABLE VALUES

Anyone developing successful long-term solutions should always be a step ahead of the present day.

We at ThomasLloyd are not waiting for the future. We are shaping it – actively and sustainably. Our activities are always holistic and values-based, throughout our entire value chain.

Our promise:

Realising Sustainable Values.

As a pioneer of infrastructure expansion in developing and emerging markets, we undertake to add sustainable value – delivering ThomasLloyd's triple-return comprising financial, ecological and social returns.

For our investors, the environment, and the local people.


OCEANSIDE
MERMAIDS

Foreword

Our first Philippines Impact Report was a ground-breaking attempt to quantify and evidence the socio-economic improvements which our investments in renewable energy have made possible. We have been investors on the island of Negros since 2014 and have observed its progress with a mixture of pride and humility.

From a position in the years before Thomas-Lloyd's investment had an impact, when the province of Negros Occidental suffered frequent and unpredictable power outages as the electricity supply was interrupted, not only can it now meet its own energy requirement, but is a net exporter of electricity at times of peak solar irradiation and energy generation.

Led by politicians with vision, passion and determination, Negros Occidental has come to be recognised as the green capital of the country. Renewable energy, organic farming and sustainable investment provide a circular dynamic of role-model economic development.

In this second Impact Report, we look in more detail at how our investments in renewable energy are helping the development agenda by providing more and more jobs, increasing farmers' income, financing local and municipal infrastructure projects and securing the environmental benefits of cleaner air and naturally improved land fertility.

What sets us apart from the majority of investors is this commitment to real economic development and the creation of new and sustainable infrastructure. We believe passionately in what we do and why we do it and are constantly aware of the difference that can be made to the people and communities in which our money is invested.

It has become fashionable recently to brand investments with a badge of sustainablity, impact, ESG or SGD. We believe investors should look beyond the marketing and ask some serious questions about what is being claimed in the name of Socially Responsi-

ble Investment. There are still many contradictions, inconsistencies and mismatches between what is expected and what is offered, and it must surely mean more than reporting on a reduction in the use of paper towels in the company washrooms.

And, whilst the investment proposition of listed equities screened for their relative SRI credentials may appear attractive, it does not provide any fresh money to help solve the global issues of environmental degradation, income equality, poor healthcare and inadequate provison of education or housing. Changing the ownership of an existing stock of listed equity does not provide a single cent of new cash to a company which is traded in this way. It confers no control and no meaningful influence.

By contrast, the development of real infrastructure assets – whether the production of reliable and sustainable energy, the provision of pure and clean water, the disposal of sewage and waste materials, the ability to communicate digitally or to travel safely – provides new services, tangible benefits and improved quality of life for millions of people. This real investment is inherently more complicated than financial investment, requiring different skills across multiple disciplines.

From an investment perspective, the degree of difficulty should be matched with higher prospective returns. It is this ability to combine greater return with positive impact which is key to our philosophy of creating sustainable value.

Just as this cannot be done by trading listed equities in Frankfurt, London or New York, so it cannot be done without local knowledge and trusted partners. Together with our friends and colleagues Bronzeoak Philippies Inc. we have built deep relationships with political leaders, opinion formers, business leaders and multiple stakeholders in the public and private sectors. We have earned the trust of the communities in which we operate and we repay this with ongoing support for their health, welfare and well-being.

The best form of economic progress is that which creates employment whilst preserving or improving the natural environment. Without jobs, there is no financial security and no foundation on which to build a stable family life. This stability itself is our best defence against lawlessness and despair in challenging economic times and must form the heart of any development agenda.

Indeed, as governments around the world begin to face the twin challenges of a post-COVID economic recovery and net-zero carbon emissions by 2050, we believe strongly that spending on infrastructure and renewable energy should be at the very heart of their plans. This is not a 'green dream' but a practical reality. The improvements in air quality around the world as countries locked-down show what a healthier future can look like. The challenge, of course, is to do this whilst rebooting economic activity, creating millions of jobs and delivering sustainable growth. Not only do we believe it can be done, we have already done it.

In this report we hope to show how we are creating new jobs, literally in new fields. We will take an in-depth look at the biomass electricity plants we have developed and show how the physical infrastructure to provide the fuel for this new source of renewable energy has been planned and constructed. How 21st century technology has been harnessed to provide solutions to some of the problems of a sugar industry which dates back hundreds of years.

As developers of real physical assets, we have access to proprietary data on employment, salaries and all associated project spending. Much of this is commercially confidential but that which we can share will show the scale of our investment and commitment.

The continued support of the Provincial Government, City mayors and Barangay leaders for our investment is firmly acknowledged and we are grateful for all the assistance they and their offices provide. We share their positive vision for the future of Negros and are proud to help turn the dreams of today into the reality of tomorrow.

We hope this Impact Report shows what it really means when we invest together; our money makes a difference.

NICK PARSONS F.R.S.A.
Head of Research & ESG

Introduction

The ThomasLloyd Group is a global investment and advisory company, solely dedicated to the infrastructure sector. We raise money from investors, co-partner with international development agencies such as the World Bank's International Finance Corporation and the European Investment Bank and work alongside national and regional governments to advance sustainable social development through direct investment in physical infrastructure.

Our activities in Asia began in 2011 and over the past ten years we have financed, co-developed, constructed and subsequently grid-connected five solar plants on the island of Negros in the Philippines. The first of these in San Carlos City was also the very first utility-scale solar plant in South-East Asia and paved the way for the development of renewable energy across the region, winning multiple industry awards.

In addition to the five solar plants – two in San Carlos, the others in La Carlota, Bais City and the municipality of Manapla – ThomasLloyd has also financed, developed and constructed three biomass plants in the province of Negros Occidental, each one adjacent to a solar site. These biomass plants and the considerable logistical operation required to provide a constant source of fuel to power them are a key component in the island's sustainable development. Operating round the clock, they can produce the stable and consistent electricity which cannot come from solar alone and will provide permanent full-time employment across the island to more than a thousand people, sourcing and collecting the sugar cane trash to power the huge steam turbines.

Our circular model of production, employment and development is a great example of both vertical and horizontal integration. Our project companies control each element of renewable energy production from fuel collection to electricity generation, whilst improving farm incomes and the fertile capacity of the land. By turning waste into energy, creating employment and paying local taxes, our operations are fully integrated into the island's economy.

Negros Occidental is a role-model of economic development and public/private co-operation. It has a vision to become the food basket of the Philippines and the organic capital of South East Asia. ThomasLloyd has directly invested more than $600 million into the local economy and we have built strong relationships with its people and leaders.

We are proud to support the development of Negros island and happy to share the story of the impact our investments have made.

MORE INFORMATION

Infrastructure.
Indispensable.
Sustainable.
Profitable.

CAPACITY

272 Megawatt

INVESTMENT VOLUME (CAPEX)

698 Million USD

PERFORMANCE PHILIPPINES

REACH OF ELECTRICITY SUPPLY

1,204,000 People

CO_2-REDUCTION

212,720 Tonnes p.a.

As of: 31/12/2019

NEGROS

10° 3′ 28″ N, 123° 0′ 52″ E

Source: www.nasa.gov/multimedia/imagegallery/index.html

Geography & Demographics

Negros is the fourth largest island of the Philippines, with a land area of 13,309.60 km^2. For an international comparison, it is bigger than Jamaica but smaller than Kuwait and has a landmass roughly equivalent to the Bahamas. Placing it in a European context, it is roughly the size of Schleswig-Holstein in Germany, the three counties which historically comprised Yorkshire in the UK or the French regions of Ile-de-France.

As of 2015, Negros' total population was 4,414,131 people; around 4% of the total population of the Philippines. It is slightly less populous than New Zealand but greater than Croatia. The next census is due to be held in 2020 when, in addition to data on headcount, a survey of sample households should give new information on employment, land ownership, dialect spoken at home and a wide range of lifestyle issues.

The island of Negros is divided into two provinces: Negros Occidental on the western side of the island and Negros Oriental on the east.

INTERESTING TO KNOW

Top Philippines Model City

In September 2019, the Manila Times awarded Bacalod the title "Top Philippines Model City"

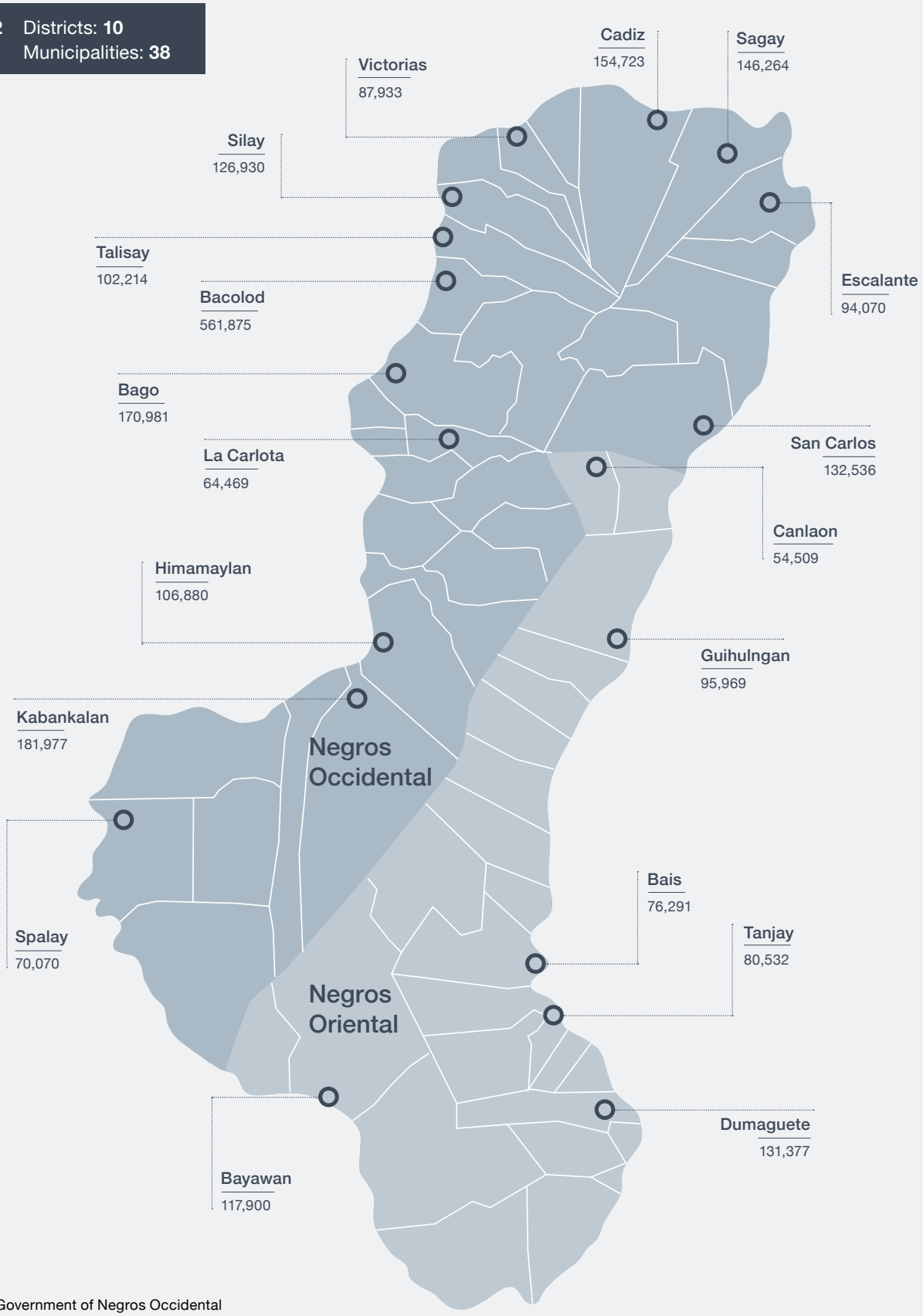
City of Smiles

The "city of smiles", as Bacolod calls itself, had previously been awarded the title in 2017.

Population Negros Island Region

Total Population: 4.4 million

Provinces: **2** Districts: **10**
Cities: **19** Municipalities: **38**



Source: Provincial Government of Negros Occidental

Negros Occidental

Negros Occidental is located on the western side of the island. It has a total land area of 792,607 hectares or 7,926.06 km², representing 59.3 % of the island's total. The province is approximately 375 kilometres long from north to south. It is bounded by the Visayan Sea in the north, Panay Gulf on the west, Tanon Strait and Negros Oriental province on the east and Sulu Sea on the south.

Negros Occidental has the most chartered cities amongst all the provinces in the Philippines. It comprises 13 cities and 19 municipalities, which are further subdivided into 601 barangays. Although Bacolod serves as the capital, it is governed independently from its corresponding province as a highly urbanized city.

Negros Occidental is the 8th most populous province in the country. The total population in the 2015 census was 2.49 m (excluding Bacalod City with 0.56m). The average annual growth in population from 2000 – 15 was 1.03 % for the province and 1.78 % for Bacolod City. This is the most populous city on the island and the centre of the Bacolod Metropolitan Area (which also contains the cities of Talisay and Silay), as well as being the 19th most populous city of the whole Philippines.

GEOGRAPHY

Region:	**Western Visayas**
Capital:	**Bacolod City**
Population density:	**320 / km²**
Total land area:	**7,926.06 km²**

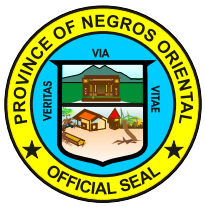
STRUCTURE

Cities:	**13**
Municipalities:	**19**
Barangays:	**601**

Negros Oriental

Negros Oriental occupies the south-eastern half of the island. It has a total land area of 5,385.53 km² and comprises 6 cities and 19 municipalities, with 557 barangays. Dumaguete City is the provincial capital and seat of government. It is also the province's most populous city, despite having the smallest land area among all component cities and municipalities of Negros Oriental.

The population of Negros Oriental in the 2015 census was 1,354,995 people. 34.5% of the population are concentrated in the six most populous component cities of Dumaguete, Bayawan, Guihulngan, Tanjay, Bais and Canlaon. Population growth per year is about 0.99% over the period of 2010-2015, lower than the national average of 1.72%.



GEOGRAPHY

Region:	**Central Visayas**
Capital:	**Dumaguete City**
Population density:	**252 / km²**
Total land area:	**5,385.53 km²**

STRUCTURE

Cities:	**6**
Municipalities:	**19**
Barangays:	**557**

Administration

The island of Negros has had a somewhat unsettled administrative history recently; partly as a result of geography and partly as a result of politics. The Philippines is the 73rd largest country in the world, with a total land area around 300,000km2 made up of 7,641 islands of which only around 2,000 are inhabited. The island of Luzon is the world's 15th largest and 4th most populated island whilst Mindanao is the world's 19th largest island by area.

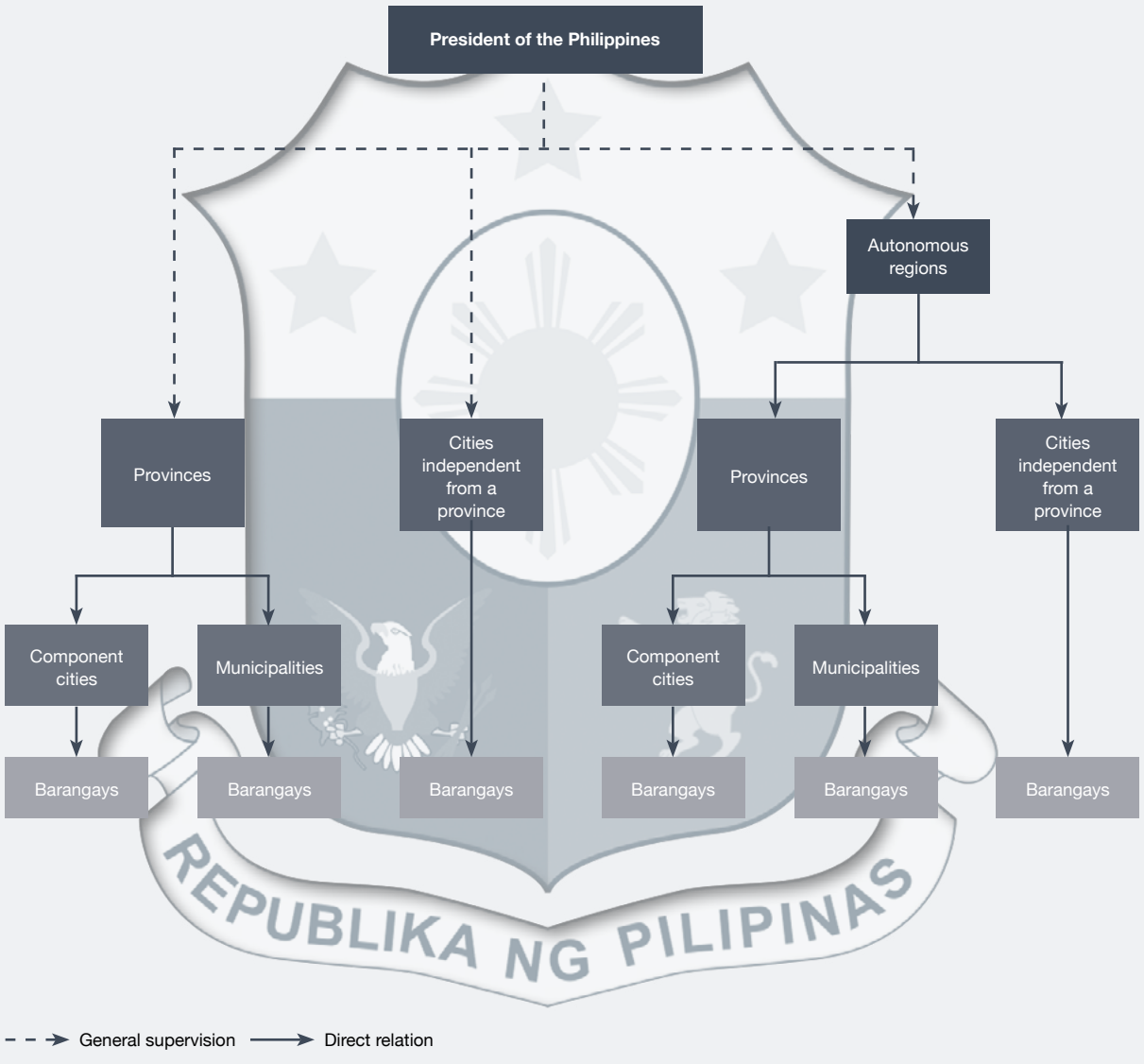
The three broad regions in the Philippines known as Luzon, Visayas and Mindanao have no specific administrative bodies or constitutional function. To facilitate the administration of such a disparate country of 2,000 inhabited islands, it is divided instead into 17 Administrative Regions and 81 provinces.

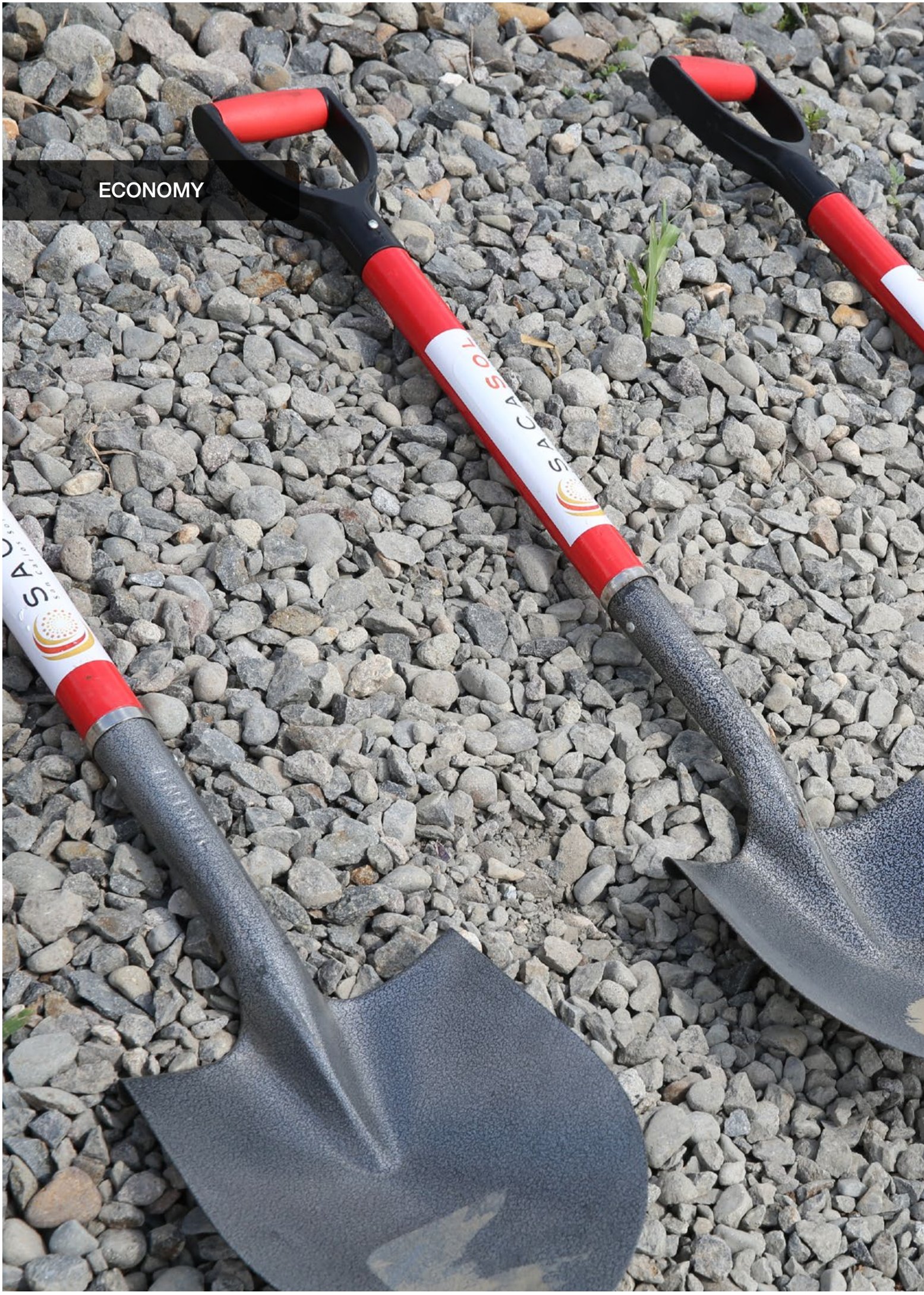
From May 2015 to August 2017, the whole island of Negros was governed as a separate Administrative Region officially named the Negros Island Region. This comprised the highly urbanized city of Bacolod and the two provinces of Negros Occidental and Negros Oriental, along with its outlying islands. It was created by virtue of Executive Order No. 183 issued by Benigno Aquino III, who was Pres-

ident in 2015. On August 9th 2017, however, new President Rodrigo Duterte signed Executive Order No. 38 which dissolved the Negros Island Region due to a lack of funds to fully establish it.

As of today, therefore, Negros is again divided across two Administrative Regions: Negros Occidental is designated as part of Western Visayas and Negros Oriental is designated as part of Central Visayas. They are the only provinces in the Philippines situated in the same island but which belong to two different Administrative Regions, with regional offices located in neighbouring Panay and Cebu. The island is composed in total of 1 highly urbanized city, 18 component cities, 38 municipalities and 1,219 barangays.

Philippines' local government hierarchy




ECONOMY

The Philippines

At the end of 2019, the Philippine economy was the 36th largest in the world. According to the International Monetary Fund, its annual GDP stood at USD356,814 million; slightly larger than Denmark but smaller than South Africa. Over the past decade, average annual growth has been 6.3%; one of the highest growth rates of any country in the whole Asia ex-Japan region and higher than the regional average of 5.9%. Indeed, the past 10 years have seen the strongest economic growth in modern Philippine history.

The growth in the Philippine economy has come at a time of rapid demographic change. Back in 1990, the total population stood at 61.9 million. By the end of 2019 it had risen by almost 75% to 108.1 million; an increase of 46.2 million in just over one generation making the Philippines the world's 13th most populous country.

According to the Philippine Statistics Authority, in 2019 the total number of persons aged 15 years and over was 72.9 million and the number of people in the labour force was 44.7 million. The total number of people in employment was 42.4 million with a total employment rate of 94.9%. Workers in the services sector comprised the highest percentage of the workforce with 58% of the total employed.

INTERESTING TO KNOW

In 2014, the population reached 100 million people for the first time. Today there are already 8 million more - and with 1.36% per year, it shows one of the highest growth rates in the world.

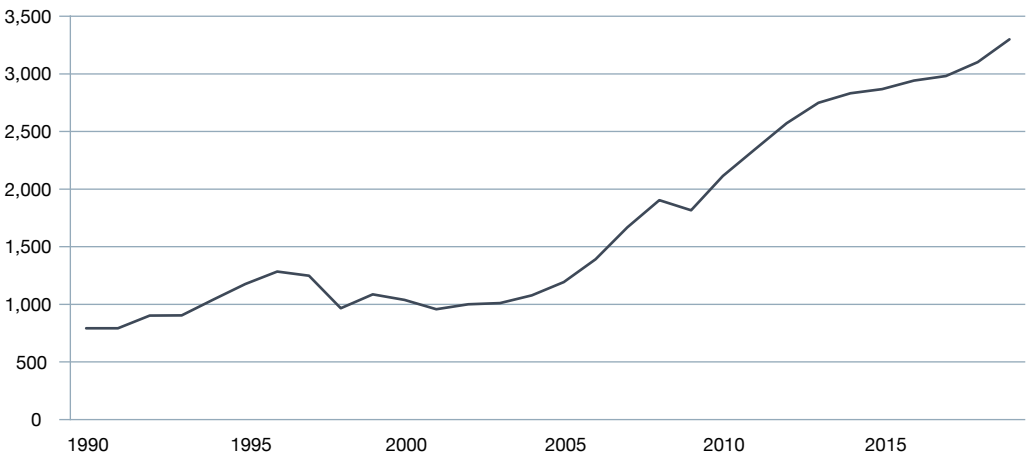
Source: United Nations

GDP growth in selected Asian countries (annual % change)

	11	12	13	14	15	16	17	18	19
Asia 30-country total	7.9	7.0	6.9	6.8	6.8	6.7	6.6	6.4	5.9
China	9.5	7.9	7.8	7.3	6.9	6.7	6.8	6.6	6.1
India	6.6	5.5	6.4	7.4	8.0	8.2	7.2	6.8	6.1
Indonesia	6.2	6.0	5.6	5.0	4.9	5.0	5.1	5.2	5.0
Thailand	0.8	7.2	2.7	1.0	3.1	3.4	4.0	4.1	2.9
Philippines	3.7	6.7	7.1	6.1	6.1	6.9	6.7	6.2	5.7
Malaysia	5.3	5.5	4.7	6.0	5.1	4.2	5.9	4.7	4.5
Pakistan	3.6	3.8	3.7	4.1	4.1	4.6	5.2	5.5	3.3
Bangladesh	6.5	6.3	6.0	6.3	6.8	7.2	7.6	7.9	7.8
Vietnam	6.2	5.2	5.4	6.0	6.7	6.2	6.8	7.1	6.5
Sri Lanka	8.4	9.1	3.4	5.0	5.0	4.5	3.3	3.2	2.7

Source: Philippine Statistics Authority

Per capita GDP of the Philippines (annual USD)



Source: International Monetary Fund


Manila

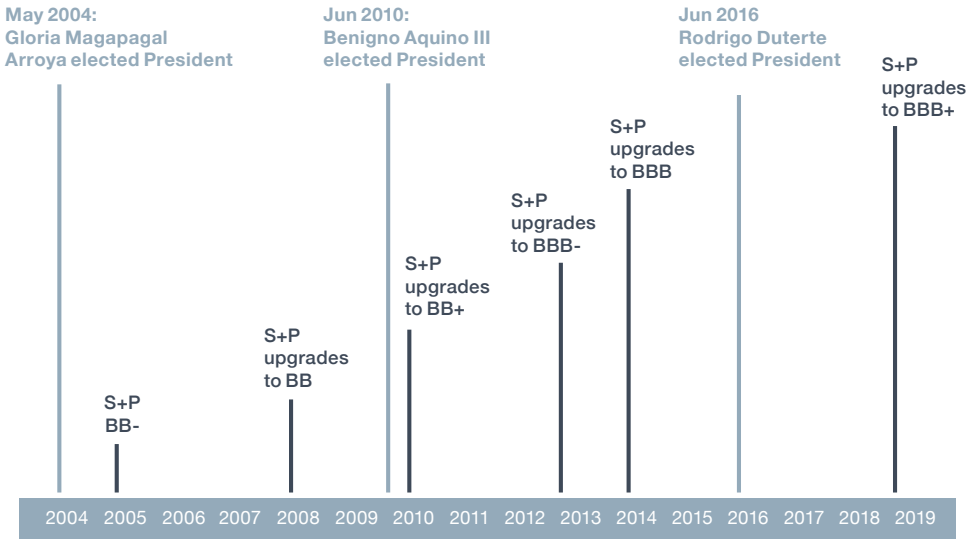
The agricultural sector comprised 22.9% and the industrial sector 19.1%.

Among the occupation groups, workers in the elementary occupations accounted for 26.7% of the total employed in 2019. Service and sales workers composed the second largest occupation group in with 18.4%, followed by skilled agricultural, forestry, and fishery workers (11.8%) and managers (11.4%).

At this time of rapid demographic change, the growth of the Philippine economy has nonetheless lifted per capita GDP. This has risen from just USD793 per annum in 1990 to USD3,300 today; a more than fourfold increase over the period.

The impressive performance of the Philippine economy has been recognised in a series of upgrades to its long-term credit rating. Since 2005, Standard & Poor's have upgraded the country's rating no less than five times and having achieved an 'investment grade' rating for the first time in 2013, the Philippines today stands at BBB+; on a par with Italy and Portugal and just one notch below Spain. Amongst its Asian peers, it is now above both Indonesia and India and on a par with Thailand.

Timeline of key credit events in the Philippines



Source: Standard & Poor's ratings, ThomasLloyd

INTERESTING TO KNOW

Seamen, domestic helpers, hotel staff, construction workers. More than 2.2 million Filipinos live and work abroad. They send their savings home to their families. A total of more than 30 billion US dollars flowed into the country in this way in 2019.

Source: Bangko Sentral ng Pilipinas

Western Visayas and the Island of Negros

Analysis of the economy is Negros is complicated by the fact that one part of the island (Negros Oriental) is covered by the statistics for the Administrative Region of Central Visayas whilst the other part (Negros Occidental) is covered by Western Visayas. ThomasLloyd's current operations are exclusively in the province of Negros Occidental and it is here that we attempt to evidence and quantify our socio-economic impact.

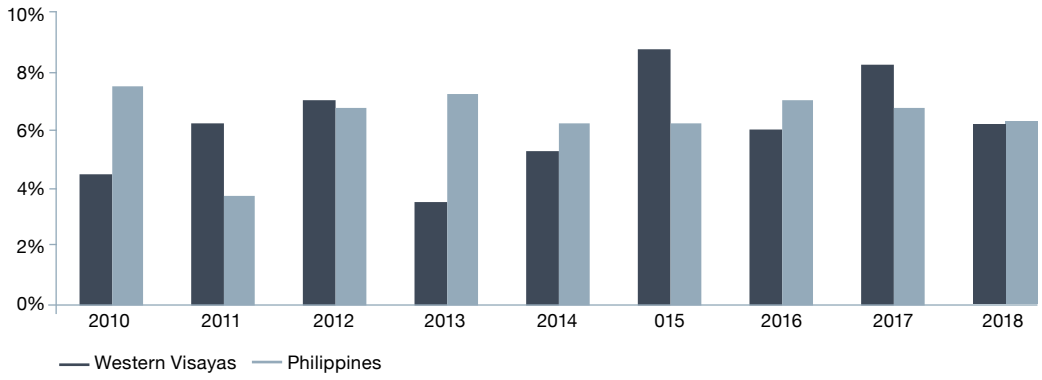
Our conversations with the local representative of the Philippine Statistics Authority in Bacolod City confirm that Negros Occidental accounts for approximately 40% of the total economic output of Western Visayas; Region VI of the seventeen Administrative Regions reported separately by the PSA.

When compared with all 17 Administrative Regions, in the period from 2009 – 13 Western Visayas' economic growth was generally below that recorded by its peers and below that of the whole country. Indeed, in 2013, it ranked 16th out of 17 regions nationally. In the last four years since ThomasLloyd began investing in Negros Occidental, economic growth in Western Visayas has outperformed the Philippines overall by a cumulative 3.5%. GDP has increased 32.5% compared to 29.5% nationally.

Whilst 2018's GDP growth of 6.1% slipped below the national average, this was largely attributed to a significant slowdown in the tourism industry as a result of the 6-month closure of Boracay Island. The National Economic and Development Authority (NEDA) reported the number of tourists in the Western Visayas region dropped by 15% to 4.9 million in 2018 from 5.8 million the previous year; a fall of almost 900,000. As a result, tourist receipts fell by 18.4%. As NEDA noted, "it also meant 900,000 fewer passengers for buses, and cars, fewer customers for hotels, groceries, and less orders for meat, fish, vegetables, foods, spices, and souvenir items." In the face of such a decline, a 6.1% growth in total GDP was actually a very solid outcome.

At the time of preparing this report, comparative regional data for 2018-19 are not yet available.

GDP growth in Western Visayas and Philippines (annual % change)



Source: Philippine Statistics Authority

INTERESTING TO KNOW

Crab processing industry

The crab industry on Negros is a fascinating blend of decentralised independence and highly organised processing. It has both benefitted from and is dependent upon a stable and secure source of electricity, not just in canning and refrigeration at the factory but also at the very local level of 'picking stations' which require electricity for cooling and illumination to extend working hours beyond those of natural daylight.

Crab-picking station, Manapla

Western Visayas: Gross Regional Domestic Product Distribution by Industrial Origin

Industry/Year	GRDP Percent Distribution						
	2012	2013	2014	2015	2016	2017	2018
I. Agriculture, Hunting, Forestry & Fishing	**25,2**	**23,5**	**21,9**	**20,0**	**20,6**	**20,7**	**20,2**
a. Agriculture and Forestry	19,7	18,4	17,2	15,9	17.0	17.3	16.9
b. Fishing	5,5	5,1	4,6	4,1	3.7	3.4	3.3
II. Industry	**17,8**	**18,8**	**20,3**	**22,9**	**24.0**	**24.0**	**24.5**
a. Mining and Quarrying	2,1	1,9	2,3	2,1	2,4	3.3	3.0
b. Manufacturing	7,4	7,9	8,3	7,9	6.7	6.3	6.2
c. Construction	7,3	8,0	8,7	11,8	13,8	13,2	14,2
d. Electricity, Gas and Water Supply	1,0	1,0	1,1	1,0	1,2	1,2	1,2
III. Services	**57,0**	**57,6**	**57,8**	**57,1**	**55,4**	**55,3**	**55,3**
a. Transport, Storage & Communication	11,0	11,2	11,6	11,5	9.0	8.7	8.2
b. Trade and Repair of Motor Vehicles, Motorcycles, Personaland Household Goods	13,4	13,7	13,6	13,3	14.0	13.7	14.4
c. Financial Intermediation	6,6	7,3	7,4	7,1	7,8	8.3	8.4
d. Real Estate, Renting & Business Activities	8,4	7,8	7,6	7,3	7,4	7,2	6.9
e. Public Administration & Defense; Compulsory Social Security	4,3	4,3	4,4	4,2	4,1	4,2	4,5
f. Other Services	13,4	13,2	13,3	13,7	13,0	13,1	12,9
Gross Regional Domestic Product	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**

Source: Philippine Statistics Authority

Agriculture, Fisheries & Livestock

The Provincial Government of Negros Occidental places a high priority on the protection, preservation and rehabilitation of the environment. It has two protected forest areas (Mt. Kanlaon and Northern Negros Natural Park) and two marine reservations (Sagay Marine Reserve and Danjugan Island Marine Sanctuary). Together with agencies such as the Provincial Environment Management Office (PEMO), successive Administrations have sustained programmes for conservation and have allocated funds to support its various programmes in upland, lowland and coastal areas. The conscious effort of the provincial government results in a development vision which balances resource utilisation with protection of the environment.

Eighty percent of all arable land on Negros is cultivated and 54% of its 531,016 hectares of agricultural land is sugarcane-based. Nationally, just over half of all sugar production is from Negros, with Mindanao accounting for around 20% and Luzon almost 17%.

The principal sugar-growing region is located in the north and west of the island, stretching along the coasts of the Visayan Sea and Guimaras Strait. It has 11 mill districts and 5 sugar refineries. After sugar, the main produce is rice and the island reached a rice sufficiency level of 94.35% in 2016. Negros also produces corn, cassava, coffee, coconuts, and fruits such as bananas, mangoes, and pineapples.

Negros Occidental is becoming known as the organic agriculture capital of the Philippines, with production expanding at an annual pace around 20% over recent years. It has at least 18,000 hectares of agricultural land – around 3% of the total - devoted to organic farming, with an estimated 18,000 organic producers. Genetically modified seeds (GMO) were banned as long ago as 2007 and in 2019 it was recognised as the outstanding province in the Western Visayas Department of Agriculture's Regional Organic Agriculture Achievers Awards. Founded in 2006, the Organik na Negros Organic Producers and Retailers Association (ONOPRA) is composed of more than 100 groups and organisations and posts annual gross sales of more than PHP1 billion. The island's vision is to become "The Organic Food Bowl of Asia" and its annual Organic Farmers Festival has been running for 14 years; the longest established organic festival in the country.

The livestock and poultry industry is vital to food security and economic prosperity. Its development was vigorously pursued by the former provincial government of Alfredo Marañon Jr. under the 'Negros First Development Agenda' and in his final State of the Province Report in June 2019 he highlighted the efforts in diversification through the Provincial Agri-Fishery Development program that promoted alternative crops, established livestock production facilities, and implemented a livestock and poultry dispersal program.

Sugar production by mill district

Mill District	Sugar production in metric tonnes				
	2012 – 13	2013 – 14	2014 – 15	2015 – 16	2016 – 17
La Carlota	205,940	186,748	144,745	142,907	207,144
First Farmers	68,031	94,190	89,559	83,719	86,705
Haw-Phil	104,856	108,615	110,470	130,715	134,137
Lopez	144,041	156,631	153,820	154,723	161,867
Victorias	351,091	343,114	351,209	310,570	301,553
Sagay	76,659	74,611	59,902	41,570	44,916
SONEDCO	144,666	162,700	140,650	133,661	167,640
BISCOM	192,056	212,969	196,810	184,441	213,446
OPTION	3,620	5,666	7,855	7,868	7,362
Negros Occidental Total	**1,290,960**	**1,345,247**	**1,255,020**	**1,190,174**	**1,324,770**
Philippines Total	**2,457,640**	**2,461,806**	**2,323,817**	**2,210,227**	**2,500,509**
Negros Occ as % of Philippines	**52,5%**	**54,6%**	**54,0%**	**53,8%**	**53,0%**

Source: NOSEPT

INTERESTING TO KNOW

With almost 15 million tons per year, the Philippines is the world's second-largest coconut producer.

Source: statista.de

Under a government-led, backyard-dominated livestock and poultry industry, the province has become the leading meat producer in the Philippines. Based on figures on Livestock & Poultry from the Philippine Statistics Authority, Negros Occidental ranks first amongst the provinces of the country in terms of backyard swine, producing 448,865 pigs in 2018. It is also the number one native chicken producer with 5,169,840 birds and is in second place for both goat (218,694 heads) and carabao (103,935 heads). Overall, the province runs a surplus in pork, chicken and carabeef, with deficits currently in both beef and eggs.

Negros Occidental has 483.3 kilometres of coastline, with a population of 604,533 people across its 181 coastal barangays. Twenty five out of thirty two local government units (LGU's) in the province are located in coastal areas. The latest available data show there are 3,650 fish farmers in the province as well as 31,819 municipal fishermen and women and 2,305 commercial fishers. There are also 2,461 fish processors and 6,294 fish vendors. Aquaculture production includes prawn, shrimp and blue shell crab as well as snapper, tilapia and catfish.

INTERESTING TO KNOW

Winter temperatures below 0 degrees are unknown in the Philippines. The lowest temperature ever measured was 6.3 degrees - on January 18, 1961.

Source: Philstar, PAGASA

Electricity Provision in Negros

Negros Occidental has three electric cooperatives; the Central Negros Electric Cooperative (CENECO), Northern Negros Electric Cooperative (NONECO) and Negros Occidental Electric Cooperative (NOCECO). Electricity consumption in Negros Occidental reached 1,184,724 megawatt-hours in 2017, a 6.2% increase from the previous year. 51% of this figure is attributed to residential use, 22% to industrial use, 23% to commercial use, and the final 5% is used for street lights, irrigation and other connections. 32 municipalities and cities, as well as all 662 barangays in the province have electricity provided by CENECO, NONECO or NOCECO. In 2017, 570,027 houses had electric connections.

Of the three co-operatives, CENECO has the largest peak demand as it covers the provincial capital, Bacolod City, along with the cities/municipalities of Silay, Talisay, Bago, Murcia, and Salvador Benedicto. As well as having the largest residential electricity sales, CENECO has the largest industrial electricity sales, with industries likewise being concentrated in its franchise area; and the largest commercial electricity sales, with the rise of business establishments in the cities of Bacolod, Talisay and Silay.

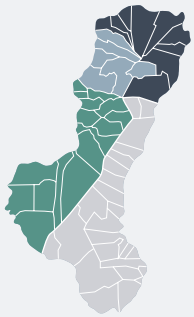
NONECO and NOCECO have comparable electricity sales, both are however lower than that of CENECO even if their franchise areas are larger. The service area coverage of NONECO includes the cities of Cadiz, Victorias, Sagay, Escalante and San Carlos, as well as several large towns and municipalities such as Manapla. NOCECO's franchise, by contrast, covers the largest area and encompasses the cities of La Carlota , Himamaylan, Kabankalan, Sipalay and many other large towns.

All three distribution companies purchase the bulk of their electricity supply from power plants owned by Kepco-Salcon Power Corp and Palm Concepcion Power Corp in Cebu and Iloilo. They also source electricity from Green Core Geothermal and Energreen Diesel Power. Peaking requirements are provided by the diesel plant of SPC Island Power Corp, while supply also comes from San Carlos Bioenergy, Inc. Additional requirements beyond the contracted capacity are sourced from the Wholesale Electricity Spot Market (WESM) which is the off-taker of the electricity generated by the enrolled renewable energy power plants. According to figures from the Department of Energy, solar power accounts for 19% of total energy supplied into the Negros sub-grid. Before other participating energy plants in the WESM are dispatched, the Feed-in-Tariff (FIT) enrolled plants have first priority.

In March 2019, Negros Occidental Governor Alfredo G. Marañon Jr. signed Executive Order 19-08, according to which, "The province of Negros Occidental shall continue to pursue clean and renewable energy projects, opposing the entry or establishment of any coal-fired power plant. The Governor said that, "Climate change is already wreaking havoc on weather conditions with devastating effects. We need to act now to prevent further damage by banning coal plants in Negros."
The Executive Order created a Provincial Renewable Energy Council (PREC), to formulate measures encouraging renewable energy programs for a greener and energy-sufficient province. Chaired by the governor and co-chaired by the provincial board's committee chair on energy, the PREC was tasked to recommend renewable energy programs, facilitate their implementation and ensure that these conform to the Renewable Energy Act of 2008.

In a Statement immediately ahead of taking office on July 1st 2019, Governor Eugenio Jose V. Lacson said, "I would like to clarify again that I will not be repealing Executive Order 19-08 which declares Negros Occidental as a source of clean and renewable energy and a coal-free province". Directly addressing controversial proposals to build a 300MW coal-fired plant at San Carlos City, he reiterated, "We would put all the related discussions on hold and would redirect the focus on maximizing the renewable energy sources that we have in the province. We will ensure that we uphold sustainable development and secure the welfare of the people in whole province of Negros Occidental."

Electricity Co-operatives in Negros Occidental



Distribution Utility	Demand Peak (MW)
NONECO	38.51
CENECO	142.35
NOCECO	46.92

Customer Classification	CENECO		NONECO		NOCECO	
	Captive Customer Connection	Sales (MWh)	Captive Customer Connection	Sales (MWh)	Captive Customer Connection	Sales (MWh)
Residential	170,632	344,434	129,842	111,059	149,354	145,048
Commercial	11,453	190,946	3,633	40,127	4,790	39,159
Industrial	172	205,492	110	27,902	25	26,839
Others	169	8,450	1,983	17,217	2,991	28,052
Total	182,926	749,322	135,568	196,305	157,160	239,098

Source: Bronzeoak Philippines Inc

INVESTMENTS

San Carlos Ecozone

Solar Power

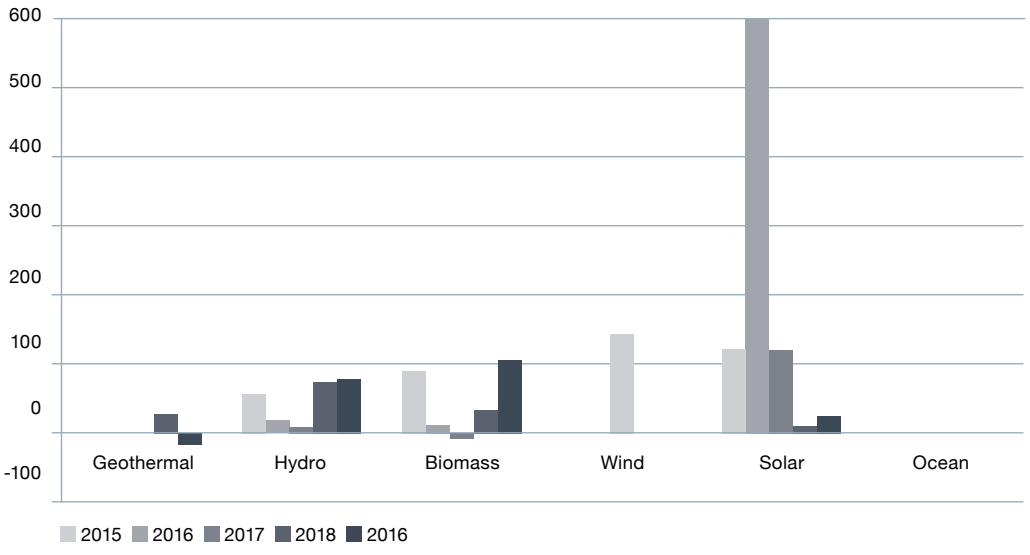
To address power capacity requirements to meet the needs of one of the fastest growing economies in Asia and to reduce power 'brownouts' across the country, the Philippine Government passed the Renewable Energy Act in 2008. This Act provided incentives to create attractive and viable investment opportunities, promoting the development of renewable energy resources and aiming to achieve greater reliance on domestic energy supply. Benefits included priority grid despatch for the electricity produced and a feed-in tariff ("FIT") guaranteeing the price for the renewable energy.

ThomasLloyd, together with its local partner Bronzeoak Philippines Inc, began the construction of the Philippines' first utility scale solar farm in September of 2013. San Carlos Solar Energy (SaCaSol) is a greenfield, standalone solar farm that supplies daytime peak power to the local grid throughout the entire year. It has a total gross capacity of 45 MWp, developed in four phases: Phase A with 13 MWp, Phase B with 9 MWp and Phase C & D at 13 and 10 MWp, respectively. The project sites are on a collective almost 70 hectare property within the San Carlos Ecozone, San Carlos City, on the eastern coast of the province of Negros Occidental.

Since its commissioning, SaCaSol received significant accolades throughout the industry. Named Green Company of the Year at the Asia CEO Awards for 2014 and Solar Power Project of the Year at the Asian Power Awards 2014, SaCaSol paved the way for solar energy in the Philippines and elsewhere in South-east Asia. Most immediately, the success of SaCaSol led to the joint development by ThomasLloyd and Bronzeoak Philippines Inc. of two more solar power plants in Negros Occidental – ISLASOL II in La Carlota and ISLASOL III in Manapla.

From an initial 13MW site on the country's fourth largest island, the solar industry has expanded to 921 MW of generating capacity by the end of 2019 and has been thus far the clear leader in terms of installation, operation and grid connectivity. Out of a total 1,502 MW of new installed capacity in the Philippines between 2015 and 2019, 878 MW came from solar energy; almost 60% of the entire amount.

Newly installed renewable energy capacity since 2015 (MW)



Source: Philippines Department of Energy

INTERESTING TO KNOW

SaCaSol / San Carlos Solar Energy Inc. received significant accolades throughout the industry.

- Solar Power Project of the Year | Charlton Media Group
- Sustainable Energy Finance Award 2014 | IFC
- Philippines Solar Photovoltaic System Integrator of the Year | Frost & Sullivan
- Green Company of the Year | Asia CEO Forum

MORE INFORMATION

Aerial view **SaCaSol**
Aerial view **ISLASOL I**
Aerial view **ISLASOL II**

Case Study **SaCaSol**
Case Study **ISLASOL**

Solar Portfolio

ISLASOL II

SaCaSol

Manapla

La Carlota City

San Carlos City

ISLASOL I

SacaSun

MONTESOL

Bais City

Total Portfolio

Size of project sites
2,709,253 m²

Capacity
202 MW

Reach of electricity supply
462,000 people

CO_2 reduction
155,040 tonnes p.a.

Investment volume (CAPEX)
395 million USD

As of: 31/12/2019

Biomass

ThomasLloyd together with Bronzeoak Philippines Inc. have also developed, constructed and now operate three renewable energy biomass plants on Negros island, each one adjacent to an existing solar plant. The plants are known as San Carlos BioPower Inc (SCBP), South Negros BioPower Inc (SNBP) next to IslaSol II and North Negros BioPower Inc (NNBP); the latter of which is on land next to ISLASOL III in Manapla. Each plant is a greenfield, stand-alone plant designed to provide base load power to the grid throughout the entire year, each with a planned 25-year lifespan. The Negros Biomass projects have been developed with the support of the International Finance Corporation (IFC), a division of the World Bank Group. Back in 2016, IFC signed loan agreements to provide $161 million to the three biomass power plants, which in aggregate will generate around 70 MW of electricity. The Manapla and La Carlota plants will each generate 24.99 MW whilst San Carlos plant's target capacity is 19.99 MW.

As we will now show, the Fuel Supply Division (FSD) is the largest logistics enterprise on the island. The introduction of industrial scale trash collection is key to economic viability of utility scale biomass on Negros.

Biomass on Negros

The development of utility-scale, solar-powered electricity has had a transformational impact on the island of Negros, helping it not only avoid frequent interruptions to supply but to then become a net exporter of power at peak hours of production. By its' very nature, however, solar irradiation is possible only during the hours of daylight and in the absence of large-scale battery storage capability, does not solve the problem of evening and nighttime demand.

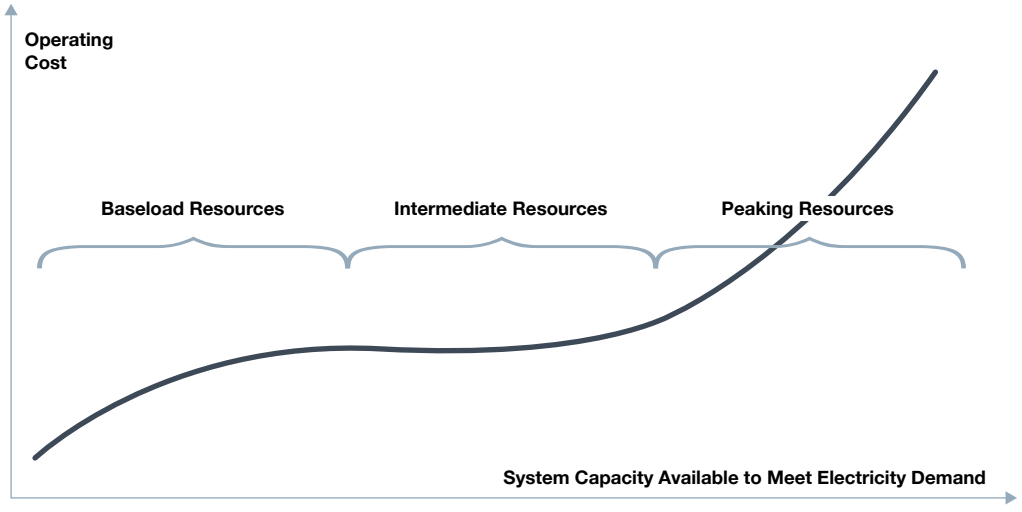
In traditional models of non-renewable power production, electricity has been supplied by so-called 'base power' producers with variable peak demand addressed by technologies which can be switched on relatively rapidly. Output from base load power stations such as coal or nuclear fuel cannot be varied quickly and nor can they be operated at very low capacity, although the power is reliable and constant. The electricity from base production was supplemented when and where possible by gas-fired or hydroelectric 'intermediate power', or 'peak plants' which could be scaled up or down more quickly and efficiently.

This diverse mix of production helped ensure grid stability and security, and reduce the overall risks of volatility. Traditionally, it had also been cheaper with coal often directly or indirectly subsidised as way of maintaining large-scale employment in mining areas. Unfortunately, the lower financial cost came at a very high environmental price with significant pollution in both mining and production

MORE INFORMATION

Current Projects

Hypothetical electricity market dispatch curve



Source: Benjamin Matek,Karl Gawell: The Electricity Journal Volume 28, Issue 2, March 2015

Biomass Portfolio

North Negros BioPower

South Negros BioPower

San Carlos BioPower

Total Portfolio

Size of project sites
810,000 m²

Capacity
70 MW

Reach of electricity supply
742,000 people

CO_2 reduction
57.680 tonnes p.a.

Investment volume (CAPEX)
303 million USD

As of: 31/12/2019

as well as considerable future risks in the safe disposal of waste fuel.

Solar, wind and hydro power now have their place along the spectrum of system capacity, whether base load, intermediate or peaking power and there has been substantial progress in the development of renewable energy at scale. What was once considered both an expensive and intermittent option, making it unattractive or impossible for utility-scale grid integration, is now available as a system-wide resource. From our perspective, however, the most exciting development is in the use of biomass in base power production. It is here that renewable energy can have the most powerful socio-economic impact; creating permanent jobs, sustaining economic development and driving the local and national growth agenda.

Operational overview

Biomass power production on Negros uses agricultural waste to generate reliable base load electricity. Specifically, the agricultural waste is the low or no-value trash which is left in the fields after sugar cane has been harvested. Traditionally, it was simply burned where it had been cut; thus contributing to worsening air pollution and environmental degradation. With the construction of the three biomass energy plants, the cane trash is used to provide a continuous and reliable source of fuel for the huge boilers which drive the steam turbines to produce electricity. The provision of this fuel is a vast and complex logistical operation described in more detail later and which is key to the employment and environmental gains which drive our impact investment.

ThomasLloyd takes development risk, not technology risk and we have therefore selected proven technologies for the plants' construction. San Carlos Biopower uses a low carbon-emitting process called a "circulating fluidised bed boiler", whilst the other two plants used water-cooled "vibrating plate boilers". The boilers were chosen for this project specifically for the purpose of being able to use as a fuel biomass that is not considered suitable in more traditional (moving grate) type boilers and are designed to accommodate a wide range of chlorides and alkalis in the fuel. The boilers, turbines and ancillary equipment are all sourced from established market-leading providers such as Siemens and Jinan.

The key advantages of this strategy are less restriction on the potential sources of fuel for the plant and the ability to utilise fuels which are unsuitable for other low-pressure bagasse-burning boilers elsewhere on Negros and can only be used by them in very low quantities to avoid boiler fouling. This has the twin advantages for our biomass plants of diversifying risk and keeping costs down by purchasing trash which would otherwise have literally zero value.

Environmental costs of trash burning

Field burning is in contravention of the Clean Air Act 2009 of the Philippines which recognises that it is the right of every citizen to breathe clean air. However, the waste material from a sugarcane crop is too voluminous – around 25 tons per hectare - to plough back into the field and it prevents the growth of new shoots – known as rattoons - from near the root or crown of the sugar plant. Moreover, leaving a blanket of trash often leads to rodent infestation which can damage or destroy the new rattoon crop. Farmers globally, not just in the Philippines, have therefore traditionally

INTERESTING TO KNOW

Schedule

Farmers normally allow 3 to 5 days from the time the field is harvested before burning and the mechanical collection operates within that same window of time.

resorted to burning the waste as what they perceived as the least bad option.

Academic research from Mendoza and Samson in 2000, published in the Journal of Environmental Science and Management, estimated the total area burned in the Philippines at 236,800 hectares of the total area planted at 370,000 hectares (or 64 %) from crop year 1998-99. Using the same burning coefficient, the estimated amount of trash burned for the 420,000 hectares of sugarcane harvested for CY2013–14 was about 1.94 Mt trash (0.64 ×7.12t/ha ×420,000ha).

Health hazards of trash burning

On the health side, Mendoza noted in a 2015 study, "Enhancing Crop Residues Recycling in the Philippine Landscape", that sugarcane workers have been observed to have significantly high rates of mortality due to illnesses attributed to burning canes. Due to stubble burning, large amount of pollutants like CO2, CO, NOx, SOx, PM10 and PM2.5 are released. A case-control study in the United States suggests that people engaged in sugarcane farm-related occupations have significantly higher rates of lung cancer (Mulvey and Rothschild 1983). According to the US Occupational Health Department (1999) sugarcane workers have an increased risk of lung cancer and this may be related to the practice of burning foliage at the time of cane cutting.

It is not only agricultural workers themselves who are directly at risk from crop burning. The World Health Organisation (WHO) reports that respiratory infections are the most common chronic disease of children globally, and a leading cause of death in developing countries. People living in low- and middle-income countries disproportionately experience the burden of outdoor air pollution with 91% (of the 4.2 million premature deaths) occurring in low- and middle-income countries, and the greatest burden in the WHO South-East Asia and Western Pacific regions.

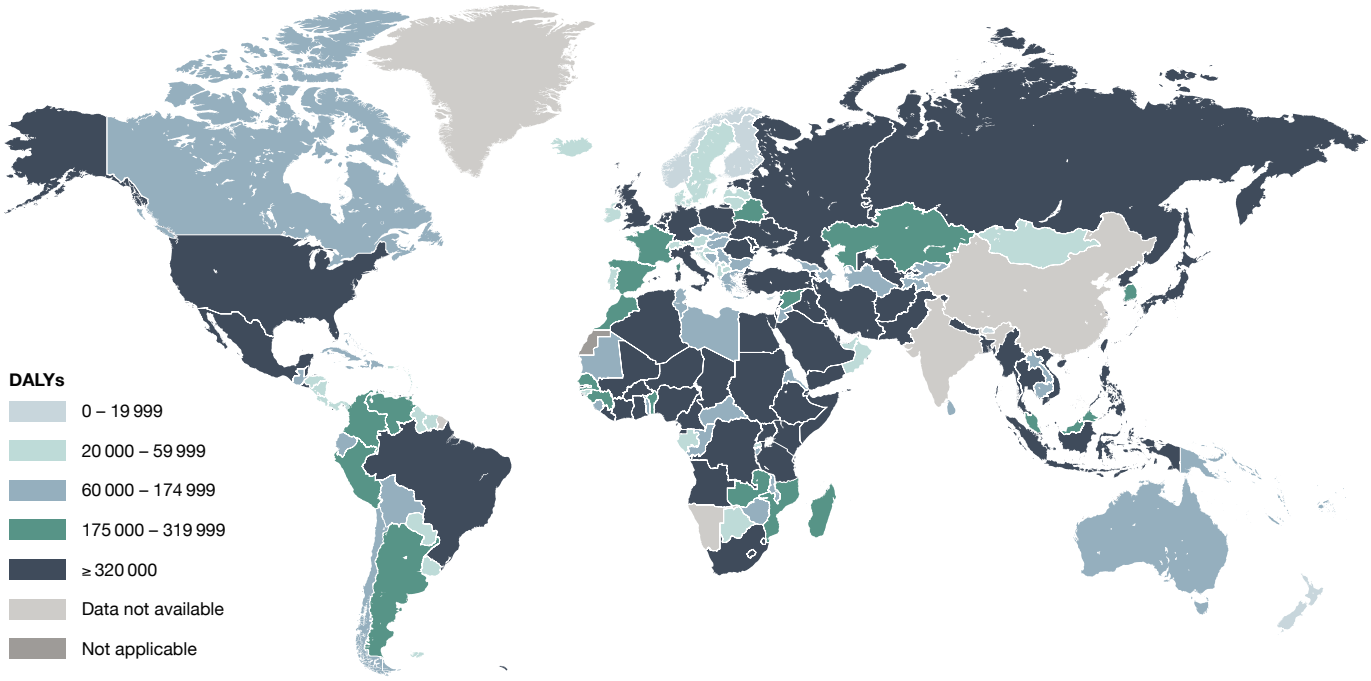
As research from the World Bank reveals, "The open burning of biomass releases a range of air pollutants that are known to contribute to the deterioration of air quality. This has especially harmful effects on human health and negatively affects crop growth, natural ecosystems, visibility (due to haze), and physical infrastructure… Overall, there is no greater source of primary fine carbonaceous particles than biomass burning [by farmers], and it is the second largest source of trace gases in the atmosphere."

INTERESTING TO KNOW

"Sugarcane Island"

Eighty percent of all arable land on Negros is cultivated and 54 % of its 531,016 hectares of agricultural land is sugarcane-based. Nationally, just over half of all sugar production is from Negros, with Mindanao accounting for around 20 % and Luzon almost 17 %.

Disability-adjusted life years (DALY) attributable to ambient air pollution 2016



Source: World Health Organisation (WHO) http://gamapserver.who.int/mapLibrary/Files/Maps/Global_aap_dalys_2016.png


Fuel Supply Division

Huge quantity of sugar cane trash available

Sugar cane trash is mainly composed of sugarcane leaves, with about 140–180 kg (dry matter) of sugar cane leaves left in the field for every ton of sugarcane stalk harvested. Research published in the January 2019 Energy Strategy Reviews estimated an annual 4.29 million tonnes of cane trash are produced annually in the Philippines. With Negros Island accounting for just over half of the country's total production, a 2.1m tonne estimate here is very much in line with Mendoza's 2014 figures.

The three biomass plants in Negros Occidental each consume around 25 tonnes of cane trash per hour. Operating 24 hours a day 7 days a week to produce baseload power for the island, the fuel requirements are substantial. Indeed, at normal operational capacity they will in aggregate require over 650,000 tonnes of cane trash; around 1/3 of the total waste which had previously been burned in the fields. This alone, is a significant contribution to cleaner air and improved health outcomes.

Fuel supply operations

The collection and delivery of 650,000 tonnes of cane trash is a vast and complex logistical operation, especially on an island whose transport infrastructure is still in need of significant upgrade. Even if the trash was only handled once (which it isn't), then assuming a payload of 20 tonnes per lorry it would require over 30,000 journeys. The task of keeping the three biomass plants fully and constantly stocked is the responsibility of our Fuel Supply Division (FSD) which has become one of the major employers in Negros Occidental and its largest logistics operator.

A very efficient mechanical collection system is used to collect cane trash. This system was selected from a number of options that were all field trialled on Negros Island, as part of the project developer's extensive research and development program over a ten year period. Although there is the potential to collect manually, it is not efficient and would in any case require a labour force that is increasingly disinclined to work in the fields. Indeed, sugarcane farmers themselves report difficulties in finding sufficient labour for harvesting and the additional workload of manual trash collection is even less appealing.

The process of mechanical collection involves the use of a number of specialised farm tractor-pulled implements which enter the sugarcane fields immediately or soon after harvest of the sugarcane. An initial raking operation to windrow the cane trash followed by the collection machinery allows rapid entry and extraction of the material with negligible disturbance to farmer's typical operations. Farmers normally allow 3 to 5 days from the time the field is harvested before burning and the mechanical collection operates within that same window of time.

Significant investment in plant and machinery

In total, the Fuel Supply Division has purchased over 100 Case tractors, 45 of these being ordered and delivered in Q4 2018 alone in what was said to be the biggest ever tractor order from a single Philippine company. As at end-2018, the biomass projects collectively also owned 17 excavators, 22 rakes, 18 tele-handlers, 25 wagons and 31 trailers. The machines which enter the sugar cane farmlands have to be capable of working 24 hours a day and the FSD has installed GPS-trackers and data loggers into the tractor fleet that identify each machine's location and provide

INTERESTING TO KNOW

Tons & tons

With a daily requirement of 25 tons of cane trash per hour, more than 90,000 tons of baled trash will be stored onsite at any one time; a considerable 5-month buffer to guard against any potential supply disruptions outside the control of project operations.

detailed information on what they're doing and how they're doing it at any given time.

The mechanical collection systems have proven to be very capable and efficient; far more productive and successful than attempts elsewhere (Brazil, Australia, Cuba and South Africa for example) to use combine-harvesters to separate waste from crops in one single operation and to bale the trash onsite in the fields. The FSD operators regularly comment on the ease of operation, power and speed of the tractors, and the technology features that make their job easier. These are new to the Philippines and are highly capital intensive; further demonstrating our commitment to a fully vertically integrated supply chain.

It is not only the post-harvest collection operations which have been mechanised and computerised. A GPS-based survey of existing cane crops across the entire collection area has been inputted to a real-time information system. The system shows for each field, ownership and farmer contact details, the hectarage, the nature of the land, equipment access information, cane varieties planted, time of harvest etc. This information is used to target day-to-day collection sites and optimise fleet utilisation around the island.

At the end of 2018, all of the central management team and central service providers – especially in the logistics management team for the FSD – were brought together in one office in Bacolod City, the capital of Negros Occidental.

Proprietary network of cane trash transloading stations

Collecting cane trash at scale and at pace has required substantial investment in people and machinery, in training and in development. It has also required the construction of a whole new physical infrastructure which did not previously exist; the trash cannot simply be transported direct to the biomass plants.

Instead, the sugarcane trash collected in the specialist vehicles is taken by road to a dedicated 'transloading' station where mechanical separating and baling technology is used to produce bales of raw fuel material which are either stored on-site or transported directly to the power plant. Each bale measures approximately 2.2 cubic metres and weighs around 1,000kg. With a daily requirement of 25 tonnes of cane trash per hour, more than 90,000 tonnes of baled trash will be stored onsite at any one time; a considerable 5-month buffer to guard against any potential supply disruptions outside the control of project operations.

In total, eight transloading stations have thus far been constructed on Negros to keep all the project's power plants fully supplied. Another four have obtained land leases and are in varying stages of construction. Equipment is directed day-to-day based on information received about cane harvesting activities, rainfall-affected soil conditions and field accessibility to try to maximise the productivity of the collection equipment across the entire collection area. A machine workshop has been established to develop basic vehicle maintenance capabilities in the vicinity of the

Byproducts from other areas of local agriculture that are left when the crop has been harvested. This includes, e.g. coconut shells, rice hulls and straw, as well as plants specially grown for power production, which are not suitable for use as food.

power plant whilst the fleet of new equipment for the majority of applications allows for vehicle operating and maintenance efficiencies.

Support from sugarcane farmers

It was important to demonstrate to the sugarcane farmers that the combination of equipment selected and the use of wide, high flotation balloon tyres on that equipment would not damage the new cane rattoon crop. Pictures and videos were made available to demonstrate both the equipment selected and the trash collection process. Farmer support for the collection method is evidenced by their willing and widespread agreement to allow our operators onto their fields to collect their trash in return for payment to them. This can equate to an increase in farmers' current net annual income of up to 5-10% without any effort or investment required on their part: effectively a second crop off the land.

There are many benefits to the farmer from the mechanical collection of their previously worthless sugar can trash. The most obvious are income from sale of cane trash and the removal of costs associated either with burning or raking, but they also profit from an improved rattoon crop by not burning, and soil nutrition improvement from mulch of the remaining uncollected trash. Potential fines from burning are also avoided, saving both money and reputational harm. Little wonder that farmers supported the biomass power proposals after their attendance at trash collection demonstrations held in various sugarcane co-operatives across the island. They, too, can see that converting agricultural waste to biomass power is a sustainable way of creating economic value and boosting local employment and incomes whilst improving the environment.

Commitment to labour retention and training

We will look at the employment data again in the Impact Results section but the importance of job creation in the biomass operations cannot be over-emphasised. Whereas the job gains from solar power are heavily concentrated in the construction, rather than the operational phase, biomass requires the ongoing involvement of thousands of workers to keep the plants running 24 hours a day, 7 days per week.

ThomasLloyd and its local partner Bronzeoak Philippines Inc. operate in Negros Occidental under the Biopower name and brand. Biopower has a very positive reputation locally and aims to be a highly rated employer of choice throughout the island community. Locally hired workers are provided with tailored in-house training to help address the skills shortage which is developing as the local economy expands; a phenomenon not confined just to the island of Negros, but to the Philippines more generally. Enhanced skills, higher local wages and greater employee retention will also help ease the so-called 'brain drain' and mitigate cost competition for

Fuel Supply Division (FSD) Employment

	2016				2017				2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SCBP																
Seasonal	3	3	4	5	10	24	21	17	20	47	47	60	71	69	69	60
Non-Seasonal	83	90	97	121	174	179	179	181	180	214	202	208	207	210	206	219
Total	86	93	101	126	184	203	200	198	200	261	249	268	278	279	275	279
SNBP																
Seasonal					6	12	12	12	19	21	21	73	133	133	133	84
Non-Seasonal					81	82	66	63	58	53	56	106	126	126	151	262
Total					87	94	78	75	77	74	77	179	259	259	284	346
NNBP																
Seasonal											0	0	0	0	10	84
Non-Seasonal											6	8	24	21	35	134
Total											6	8	24	21	45	218
Aggregate across FSD																
Seasonal	3	3	4	5	16	36	33	29	39	68	68	133	204	202	212	228
Non-Seasonal	83	90	97	121	255	261	245	244	238	267	264	322	357	357	392	615
Total	86	93	101	126	271	297	278	273	277	335	332	455	561	559	604	843

existing qualified engineers elsewhere in the Philippines.

Biopower takes its commitment to training very seriously indeed. Employee training and development is key to sustaining a co-ordinated and competent workforce to meet company standards in areas of administration, operations, logistics and supply chain management. Its purpose is to cultivate best practices to uphold Integrity, Professionalism, Teamwork, Health & Safety, Environment and Commitment in the work environment. Training programmes are conducted regularly through various channels including information campaigns, classroom seminars, workshops and employee engagement events.

Biopower's Employee Development Plan provides orientations on company policies, goals and corporate values. The Human Resources department consistently orients all employees – recently onboarded and senior employees alike – to ensure they adhere to company policy and embody corporate values in their work environment. This is done through:

- New employee orientations and refreshers
- Drug-free workplace seminars
- Orientation on compensation and benefits
- Anti-sexual harassment seminars
- Health insurance reorientations
- Company values seminar

Further training and employee development comes through interpersonal and intrapersonal skills formation. These programmes educate employees to uphold best practices in retaining a professional, respectful and co-operative work environment amongst colleagues, customers and stakeholders. Best practices are also nurtured for intrapersonal processes such as integrity towards work, decision-making and critical thinking. This development comes through:

- Leadership seminars
- Root cause analysis seminars
- Employee engagement activities
- Team-building activities
- Communication etiquette reminders
- Corporate Social Responsibility volunteer programmes

The scale and depth of the training is evidenced by the technical skills enhancement programme in the Fuel Supply Division. Knowledge and familiarisation of standard operating procedures when operating conventional and new technology is vital to employee development. In-house and outsourced training programmes are tailored to maximise the employee's existing skills whilst harnessing new skills suitable for biomass operations.

It is no exaggeration to say that that the biomass plants have almost become communities in their own right. They have become fully integrated into their local barangays, cities and municipalities but through education, health, welfare and even the provision of meals cooked, delivered and supplied by local residents, they have also become a focal point for engagement and social interaction. Onsite medical facilities at all three biomass plants are not only used in the event of workplace sickness or injury, but are staffed and equipped to deliver preventative healthcare programmes and to provide lifestyle events to workers and their families. It is a pioneering model of investment which makes a substantial contribution to the well-being of the island and its people.


IMPACT RESULTS

Impact Methodology

Negros is the fourth largest of more than 7,600 islands in the Philippines and the challenge for an Impact Report is to provide both information and context, making it as relevant to its people, leaders and businesses as it is to investors and stakeholders in our own company. Data gathering for this 2019 report has been complicated by the COVID-19 pandemic but with the support and assistance of many, many people on the ground locally, we hope to paint a thorough and well-evidenced picture of the impact our investment is making in the communities and municipalities in which we operate.

We highlighted earlier that macroeconomic data for the islands is split across the two Administrative Regions of Central and Western Visayas, and resource constraints at the Philippine Statistics Authority further cloud the bigger picture view. Nonetheless, we have access to an excellent annual publication "Negros Occidental Socio-Economic Profile and Trends" (NOSEPT) whose author – a PSA representative on the island based in Bacolod City – does an excellent job of compiling a comprehensive set of local indicators.

Additionally, and with the help of provincial and municipal officials, we are able to scrutinise audited budget programmes – both revenues and expenditures – to identify the flow of funds from our investments in renewable energy to the taxes which are paid locally and the expenditures in public works which these then finance. This detailed examination of publicly-available but rarely viewed information allows us to build an in-depth model of officially-audited taxation and spending decisions and to evidence here a robust framework of development impact and socio-economic progression.

Municipality of Manapla: Population Growth and Distribution

Population census of Manapla			Total Population of Manapla in 2015	
Year	Population	%change p.a.	LGU	Total Population
1903	10,123	-	Chamberry	3,094
1918	10,033	-0.06	Barangay I (Pob.)	2,620
1939	19,490	3.21	Barangay I-A (Pob.)	4,040
1948	35,218	6.79	Barangay I-B (Pob.)	1,437
1960	46,809	2.40	Barangay II (Pob.)	1,932
1970	31,097	-4.00	Barangay II-A (Pob.)	1,429
1975	38,357	4.30	Punta Mesa	8,535
1980	40,524	1.10	Punta Salong	5,076
1990	40,095	-0.11	Purisima	7,982
1995	44,301	1.89	San Pablo	8,964
2000	49,581	2.44	Santa Teresa	2,533
2007	52,428	0.77	Tortosa	7,203
2010	52,687	0.18		
2015	54,845	0.77	Manapla	54,845

Source: Philippine Statistics Authority

Unique access to proprietary data

Our role as a developer of infrastructure assets gives us unique insights into data on employment, wages, taxes, health and safety and a whole range of associated information which is simply not available to desk-bound third-party researchers. Not only can we evidence every peso of expenditure at each plant, but we have in-depth relationships with the workforce and the communities in which they live. Some of this information is commercially confidential, though our accounts are audited to the highest standards and any summary data provided is based on these numbers.

To keep the scope manageable and to provide continuity with the previous edition of this report, we will focus again on one location in which we have invested, though the conclusions to be drawn are replicable and scalable for the two others where we have developed and completed both solar and biomass power plants. In providing this comprehensive picture of social and economic impact, our main focus will be on the municipality of Manapla which, according to the 2015 census, has a population of 54,845 people; an increase of almost exactly 10% compared to the start of the new millennium.

Manapla is almost an hour's drive north-east from Bacalod City. Its eastern and southern boundaries are defined by Cadiz City and Victorias City respectively. The Guimaras Strait in the western and northern portion separates the town from the island of Panay. Manapla is politically subdivided into 12 barangays, of which the home to both ISLASOL III and North Negros Biopower is Barangay Santa Teresa which had a population in the 2015 census of just 2,533. This was an increase of 232 people from the previous total of 2,301 in 2010 but was marginally lower than the 2,581 recorded in the 2000 census. Santa Teresa is situated at approximately 10.9513 N, 123.1625 E, on the island of Negros. Elevation at these coordinates is estimated at 12.6 meters or 41.3 feet above mean sea level.

Solar plant timeline

Construction at the site of the solar plant in Manapla began in the second half of 2015 and was completed in 2016. For a 12-month period, this was a very labour-intensive project with groundworks, foundations, perimeter-securing and an exhaustive list of installation and pre-connection safety checks to be carried out. The workers hired directly at Manapla were all locals – though some contractors had expats in supervisory roles - and at the peak of activity in 2016, three eight-hour shifts per day were timetabled in a round-the-clock operation. Free transportation to and from the site was laid on, with meals provided by local caterers. The employment profile shows clearly the ramp in hiring in H1 2016 and at the very peak of activity there were almost 2,000 workers at the plant.

Employment at Manapla solar plant										
	2015		2016				2017			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Job Type										
Technical	12	26	38	28	20	10	17	16	17	10
Office Staffs	10	31	63	20	17	3	13	8	13	3
General Labor	47	96	747	472	123	83	92	81	96	83
Employment										
Direct Hires	6	6	6	3	3	1	1	1	1	1
Hired by Contractors	63	147	842	517	157	95	121	104	125	95
Total Employees										
Locals	69	153	848	520	160	96	122	105	126	96

North Negros BioPower (NNBP) timeline

Construction at the third of our biomass plants – known as North Negros BioPower (NNBP) – began at a site next to the solar plant in Q2 2018 and our main contractor, the Scandinavian international consulting and engineering company Poyry Oyj (now Afry) was given official 'Notice to Proceed' (NTP) on May 15th. Work began immediately on clearing, levelling and grading the site and building the core roads and drainage infrastructure. This was 90% finished by the end of the year and completed in January 2019; allowing for more efficient work and progress ahead of the rainy season.

Orders were placed in May 2018 for all of the key long-lead items such as the boiler and steam turbine, supplied respectively by Jinan Corporation of China and Siemens AG. The first of three boiler steel shipments arrived ahead of schedule in January 2019, with the second and third arriving in Q2.

Good weather continued until the end of March 2019, by which time the project had already achieved 75% of its completion target; significantly ahead of its planned 68% rate. An average of 350 construction workers on site 24 hours per day in Q4 2018 had ramped up to 620 workers in Q1 2019 and peaked in Q2 at 900.

In May 2019, Poyry hosted a party to celebrate the completion of 1 million man-hours on the NNBP project, which was joined by representatives from ThomasLloyd. Most notably, the million hours were completed with no report of any injury to the workers onsite; a remarkable health & safety record of which we are rightly proud. While accidents always are and remain possible, our partners and stakeholders share the same commitment to the quality of the working environment.

By the end of Q3 2019 and helped by some unseasonably fine weather, some 94% of all construction was completed and with more than 1,000 workers on site covering two shifts, the project had achieved 1.93 million safe working hours; a tribute to the safety and training protocols in operation. Not only NNBP, but also SNBP and SCB received visits under the International Finance Corporation's (IFC) independent review programme along with engineers from Sargent and Lundy. This visit was considered a great success.

Commissioning and construction continued at full pace throughout the final quarter of 2019. The boiler hydrotest was successfully completed in September and the first fire achieved on October 7th. The first fire of biomass trash took place on December 7th, with the first steam into the steam turbine generator on the 10th. The plant achieved export of power on December 12th and successfully completed its officially-required 72 hour test beginning on December 26th. No lost-time incidents were reported during the quarter, with the total safe man-hours recorded cumulatively by the project to December 31st a remarkable 2.5 million.

Fiscal Impact of Solar and Biomass plants

The completion and subsequent grid-connection of the solar plant had a transformative impact not only in terms of job creation but also on municipal and barangay finances. Former agricultural land that had now been developed was reclassified as an industrial site, which meant it was then subject to real property tax (RPT) and special education tax (SET).

In addition to the RPT and SET taxes, the solar plant also makes quarterly payments both to the host municipality and barangay. For the municipality this is computed as 45% of 40%

Employment at North Negros BioPower (NNBP)	2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Job Type								
Technical		13	30	77	144	176	249	157
Office Staffs		5	28	49	68	93	124	110
Skilled/Semi-skilled		24	83	217	361	442	665	518
General Labor		7	26	64	136	159	217	147
Employment								
Direct Hires		1	20	25	85	85	110	289
Hired by Contractors		48	147	382	785	785	1,145	643
Total Employees								
Locals		48	165	404	866	866	1,251	928

of 1% of its gross profit and for the barangay it is a slightly lower figure of 35% of 40% of 1%. These payments are in compliance with Implementing Rules and Regulations (IRR) of the Renewable Energy Act 9513 per DOE Circular No DC2009-05-0008. The IRR states that the benefits/incentives shall be allocated as follows:

1. Eighty percent (80%) of the local government share from the RE projects and activities shall be used directly to subsidize the electricity consumption of end-users in the RE host communities/LGU's whose monthly consumption does not exceed one hundred kilowatt-hours.
2. The subsidy may be in the form of rebates, refunds and/or any other form as may be determined by the DOE, DOF and ERC, in coordination with the NREB.
3. Twenty percent (20%) of the local government share shall be utilized to finance local government and livelihood projects.

Sources of income and tax raising powers of Local Government Units (LGU's)

The reclassification of former agricultural land and the associated upturn in tax revenues which we detail below has been a significant boost for the municipality and barangay. Previously, they had been highly dependent upon the Philippine national government via the Internal Revenue Allotment (IRA), which distributed cash to them under Section 284 of the Local Government Code of the Philippines (RA 7160). For many LGU's, the IRA can account for up to 90% of municipal revenues so locally-collected taxes have the potential to be a material supplement to budget plans, especially as they enjoy a significant degree of autonomy with their tax and spending decisions.

Under the local government code of 1991, municipalities can enact local policies and laws, enforce them, and govern their jurisdictions. They can enter into contracts and other transactions through their elected and appointed officials and can levy taxes. They are tasked with enforcing all laws, whether local or national. The municipal mayor is the chief executive officer of the municipal government who determines guidelines on local policies and directs formulation of development plans.

According to the Commission on Audit, "the LGU is mandated to actively participate in the implementation of national programmes and projects to enhance their capabilities. It is responsible for managing and maintaining ecological balance within their territorial jurisdiction. The Municipality is allowed to group itself with other LGU's, consolidate and co-ordinate its efforts, services and resources for purposes that are commonly beneficial to them in accordance with the law. It is also mandated to establish an accountable, efficient and dynamic organisational structure and operating mechanisms that meet the priority needs and service requirements of the community."

Audited figures on tax revenues

The Philippine Commission on Audit's figures for the municipality of Manapla do indeed show a substantial increase in revenues during the initial operating phase of the solar plant, though the biomass plant was of course not yet fully constructed as at end-2018.

Big increase in municipal tax receipts

In the two years since the Manapla Solar plant became fully operational, gross Real Property Tax payments jumped from a 5-year annual average of PHP3,448,800 and a starting point of PHP4,445, 216 in 2016 to an annual

IMPACT RESULTS

Direct employment

Manapla biomass plant

- Construction phase
  More than **1,000 jobs**
- Operational phase
  675 jobs

Manapla solar plant

- Construction phase
  850 jobs

Municipality of Manapla – Consolidated Statement of Financial Performance

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Community Tax				3,105,909	3,538,770	393,255	425,282	465,962	469,837
Real Property Tax – Basic	2,552,573	1,457,544	2,509,821	3,157,150	4,222,852	2,871,170	4,445,216	14,047,210	13,959,157
Discount on Real Property Tax – Basic						-569,572	-1,189,191	-4,831,102	-5,677,182
Special Education Tax		2,092,327	3,370,518	44,100		3,271,951	6,406,727	17,444,685	10,468,963
Discount on Special Education Tax – Basic						-565,638	-1,191,981	-4,825,596	-3,364,375
Business Tax	1,551,845	2,275,908	1,838,812	354,987	460,517	2,642,779	2,938,956	3,596,862	4,045,229
Tax on Sand, Gravel and Other Quarry Products						124,407	150,482	170,352	391,499
Tax on Delivery Trucks and Vans					900	600			
Other Taxes	8,646,255	6,233,836	4,251,204	1,925,574	2,179,832	4,011,942	9,932,391	810,874	1,114,288
Tax Revenue – Fines and Penalties – Property Taxes				1,882,436	1,660,855	1,146,551	2,258,929	2,106,175	1,757,197
Tax Revenue – Fines and Penalties – Other Taxes						603,699	47,666	113,828	
Tax Revenue	**12,750,672**	**12,059,616**	**11,970,356**	**10,470,156**	**12,063,726**	**13,931,146**	**24,224,478**	**29,099,250**	**23,164,655**
Share from Internal Revenue Collections – IRA	66,178,867	71,617,663	69,558,294	76,402,540	86,549,866	98,715,689	108,798,257	120,178,453	128,949,356
Service and Business Income				2,880,986	3,410,821	4,130,632	5,924,754	5,242,232	5,632,712
Shares, Grants and Donations				31,563	52,017	14,463	577,658	1,416,667	1,471,139
Other Income				512,363	347,176	120,000	351,894	519,403	292,506
Total Revenue	**78,929,539**	**83,677,279**	**81,528,650**	**90,297,608**	**102,423,606**	**116,911,930**	**139,877,041**	**156,456,005**	**159,501,358**

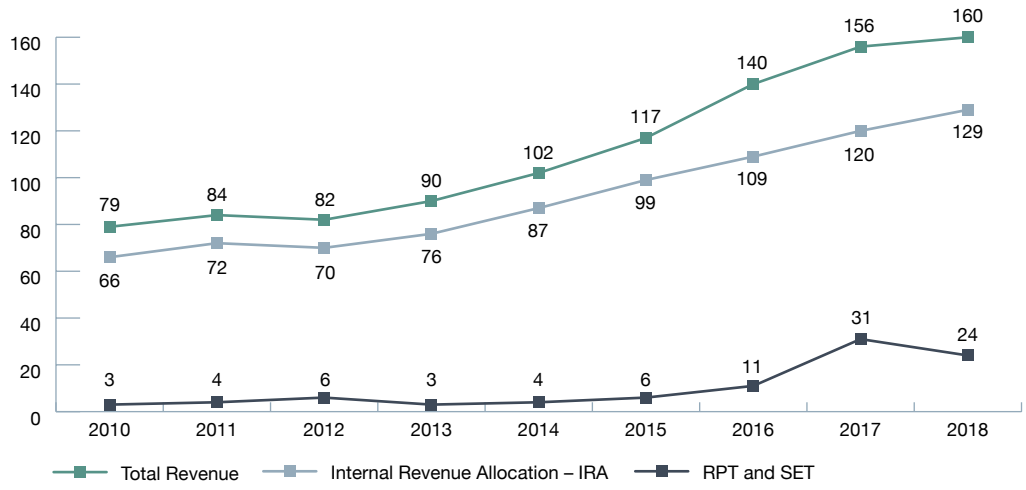
Source: Philippine Commission on Audit (COA)

average in 2017 and 2018 of PHP14,003,183; a more than fourfold increase. Special Education Tax payments, meantime, averaged PHP4,839,339 in 2015 and 2016 but jumped to average PHP13,956,824 in 2017 and 2018; an almost threefold increase.

Net of discounts applied to the headline totals, the respective increase in revenues for the two taxes in 2017 and 2018 compared to the prior two years were 115% for RPT and 150% for SET.

In the 5 years prior to the solar plant becoming operational, Manapla's Internal Revenue Allotment (IRA) from the Philippine government accounted for an average 83.4% of total municipal revenues (by way of comparison, the figure in La Carlota where another of our

Evolution of Manapla's Revenue (PHP mn)



Source: Philippine Commission on Audit

solar plants was constructed was over 90%). Manapla's average IRA share of total revenues fell to 79% in 2016 and 2017 and the then Mayor of La Carlota told us in 2018 that his city's IRA share was expected to be below 50% of the total in 5 years' time.

Higher tax revenues bring greater autonomy

Renewable energy is clearly bringer a greater degree of autonomy and self-sufficiency to the municipalities and cities which have successfully attracted inward investment. The higher tax revenues, in turn, give them greater power with respect to local government spending decisions; allowing them to invest to improve both the physical infrastructure and the quality of life for their residents.

In our report last year, we used audited records and publicly available municipal budget documents to identify 18 local infrastructure projects which were planned, underway or completed in Manapla in 2017 at a total cost of PHP40,966,851. These comprised not only general improvement works to develop the existing infrastructure in roads, footpaths, water supply and flood control, but specific new investments in the construction of a women's crisis centre, a rural health unit, a youth development centre, school clinic and school library.

Tax revenues finance local infrastructure improvements

In 2018, a further 52 local infrastructure projects were planned, underway or completed at a total cost of PHP23,638,071. As well as general improvement works to develop existing infrastructure, they included development at five barangay health centres, projects to support sustainable livelihood for fisherfolk, a day care centre and a women's crisis centre.

In addition to funding new investment in physical infrastructure, the municipality of Manapla also makes direct payments to its poorest citizens, many of whom are workers in the sugarcane industry who survive only on daily wages. Poverty is measured and eligibility determined using electricity consumption as a proxy for household incomes, and the additional payments to the poorest of the poor are a way of injecting greater spending power in to the local economy. The high multiplier effect of this demand boost is a significant social as well as economic benefit.

The benefits of tax revenue from renewable energy projects accrue not just at the level of the city or municipality. In Manapla, municipal leaders work together with the 12 local barangay captains to co-ordinate development initiatives and educational programmes for maximum mutual impact. Since the reclassification of land at the solar power plant from agricultural to commercial use, a levy on the gross margin of the solar power plant is paid directly to the barangay.

IMPACT RESULTS

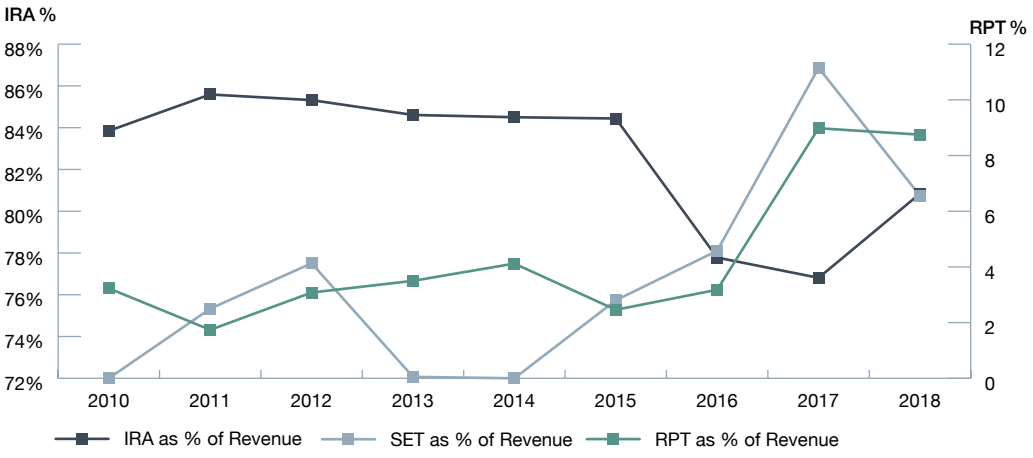
Manapla TOTAL tax revenues since end-2015

2016: **+19.6%**
2017: **+11.8%**
2018: **+1.9%**
2016-2018: +**36.7%**

Financed local infrastructure projects

2017: **18 projects**
2018: **52 projects** (+188%)

Evolution of IRA and RPT as % of Total Revenue



Source: Philippine Commission on Audit

Barangay Santa Teresa

Barangay Santa Teresa is one of a dozen Local Government Units (LGU's) in the municipality of Manapla. Under the leadership of Barangay Captain Ms. Mae Ann Joy S. Olavia, and with the help of funds paid directly from the solar plant, the barangay has become a thriving community with an active Local Youth Development Council and a refurbished school.

Before the construction of the solar plant in 2016, the Barangay received real Property Tax (RPT) income of less than PHP400,000 per annum. Since the reclassification of land from agricultural to commercial use, RPT revenues have risen substantially. Accounts prepared by barangay Treasurer Ms. Shery Rose A. Peduque, these amounted to PHP6,409,365

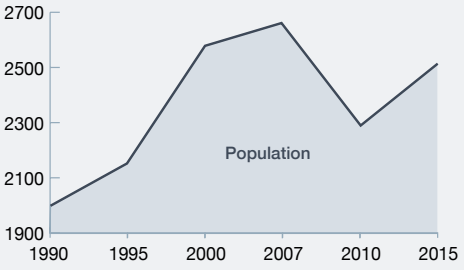
Schedule of Projects Implemented during CY2018

Programs / Projects / Activities	Location	Project Cost (PHP)
Rehabilitation of Municipal Roads	Barangay I-B	3,000,000
Fishery Development Programme	Coastal Barangays	1,350,000
Livestock Dispersal Programme	Rural Barangays	1,000,000
Concreting of Barangay Road	Had. Maja, Barangay San Pablo	2,000,000
Sustainable Livelihood for Fisherfolks	Coastal Barangays	1,000,000
Rehabilitation of Barangay Health Stations	5 Barangays	1,000,000
Construction/Refurb of Water Supply System	12 Barangays	1,000,000
Installation & Street Lighting System	Brgy. Punta Meas (Highway)	1,938,071
Construction of Day Care Centre	Sicaba Monte, Barangay San Pablo	850,000
Construction of Women's Crisis Centre	Barangay I-A	2,000,000
Environmental Programme	12 Barangays	900,000
Coastal Law Enforcement	Coastal Barangays	1,000,000
Farm Input Assistance	Rural Barangays	1,000,000
Flood Control Project	Barangay I-A	2,000,000
Barangay Development Assistance Programme	12 Barangays	3,600,000
TOTAL		23,638,071

Source: Philippine Commission on Audit

Barangay Santa Teresa

Census date	Population	Growth rate
1990 May 1	1,991	–
1995 Sep 1	2,159	1.53%
2000 May 1	2,581	3.90%
2007 Aug 1	2,672	0.48%
2010 May 1	2,301	-5.30%
2015 Aug 1	2,533	1.85%



Source: Philippines Statistics Authority 2015 census

in 2017 and in 2018 four quarterly payments were made totalling PHP4,904,248.

Transformative impact on barangay finances

The combination of direct payments to the very poorest citizens, targeted aid to the local fishing industry to help develop and embed sustainability, and social assistance programmes to improve the quality of life is a key factor in developing general community welfare. It is transparent and accountable, whilst at the same time establishing a direct link between the newly operational renewable energy plant and the benefits which accrue from it to the local citizens. New health and education facilities, a more skilled and productive workforce and improved rural connectivity are the tangible signs of the socio-economic transformation now underway.

Provincial Socio-Economic Trends

We've thus far used the detailed data available in Manapla to draw the direct link between infrastructure investment, jobs, welfare and improvements in the quality of life locally. The municipality is one of three locations in which are investments are physically concentrated, with a dozen other barangays hosting transloading stations and group head offices situated in Bacolod City.

Taken together, the significant increase in jobs and employment, taxes paid and collected and improvement works already completed have all contributed to substantial economic growth in the Western Visayas (VI) region and the province of Negros Occidental. In 2018, Western Visayas was the 5th largest region in the Philippines measured by GDP with PHP372,867,944. Figures from the PSA show that in the three years to 2018, the incidence of poverty amongst families nationally fell around 6 percentage points from 22.1% to 16.2%. The fall was much bigger in Region VI with a 9 percentage point drop to 15.9% whilst Negros Occidental enjoyed an 11% decline in poverty.

Poverty Incidence amongst families by Province and Region

Province	Poverty Incidence amongst families (%)	
	2015	2018
Philippines	**22.2**	16.1
Region VI	**25.0**	15.9
Aklan	25.4	14.6
Antique	27.0	18.3
Capiz	18.3	5.9
Guimaras	19.4	12.4
Iloilo	22.0	15.8
Negros Occidental	29.5	18.5

Source: Philippine Statistics Authority

Regional social welfare programmes expanded

Figures from the Region VI Department of Social Welfare and Development show the number of beneficiaries of the Sustainable Livelihood Program (SLP) significantly decreased from 22,770 with value of assistance of PHP396mn in 2017 to only 12,126 beneficiaries receiving PHP172mn in 2018.

Status of Anti-Poverty Programmes Region VI

Anti-Poverty Programmes	2017		2018	
	No of beneficiaries	Value of Assistance (PHP mn)	No of beneficiaries	Value of Assistance (PHP mn)
Sustainable Livelihood Programme (SLP)	22,770	396	12,126	172
Pantawid Pamalyang Pilipino Programme (4Ps)	315,253	4,349	310,997	5,868
Kalahi – CIDSS	252,760	359	252,760	1,227
Supplementary Feeding	189,849	302	192,927	254
Social Pension	365,203	2,174	365,971	2,022

Source: Philippines Department of Social Welfare & Development

The SLP aims to reduce poverty and inequality through capacity-building and providing access to opportunities that increase productivity and assets of the poor, vulnerable and marginalized communities. The DSWD reported that the decrease in beneficiaries served was due to social preparation already undertaken in the previous years.

Now in its 10th year, meantime, the Pantawid Pamilyang Pilipino Program (4P's) continues to invest in health and education of poor and vulnerable households in order to break the intergenerational cycle of poverty. The number of household beneficiaries decreased from 315,253 in 2017 with PHP4.349bn of assistance to 310,997 beneficiaries with an increased amount of assistance of PHP5.868bn in 2018. Its beneficiaries include homeless street families, victims of natural and man-made disasters, and indigenous peoples in geographically isolated and disadvantaged areas.

The Kalahi-CIDSS programme continues to empower communities in targeted poor and disaster-affected municipalities to improve access to social services. In 2018, it increased its value of assistance from PHP359m in 2017 to PHP1.227bn for the same 252,760 beneficiaries. The increase was due to program expansion in local government units.

Anti-poverty programmes extended

In line with the provisions of RA 9994 or the Expanded Senior Citizens Act, the DSWD implemented the Social Pension Program to augment the daily subsistence and medical needs of indigent senior citizens by PHP500 per month for senior citizens who have no regular income or support from their family and with no existing pension from private companies. As of 2018, a total of 365,971 indigent senior citizens have benefited from the program with a total monthly stipend amounting to PHP2.022bn.

The strength of the regional economy, and the continued support to the poorest members of the communities it has helped finance are clear evidence of how growth benefits everyone. With unemployment in the region falling from 5.4% in 2017 to just 5.3% in 2018, job creation remains at the heart of economic and social development in Western Visayas. Jobs bring security and prosperity to those who have them, but much wider community and social gains far beyond their direct impact.

Negros Occidental focus on employment and healthcare

As incoming Provincial Governor Eugenio Jose Lacson said in his inauguration speech in June 2019, "the Negros economy will move to the next mode of production. We will step up to create jobs, bring in investments, and create middle-class families. We will be happy to stand as movers of entrepreneurial leadership who work and create opportunities for our people."

Jobs and growth in the province have already directly alleviated poverty and have financed significant improvements in social welfare provision, healthcare and education. Negros Occidental Comprehensive Health Program (NOCHP) was inaugurated back in 2010 as a priority programme of the Provincial Government of Negros Occidental and its Congressional Districts in partnership with Philippine Health Insurance Corporation (PhilHealth), Department of Health (DOH), and local government units (LGUs). Created by former Negros Occidental governor Alfredo Marañon, it seeks to address hospitalization for Negrenses, particularly the poor and underprivileged with per capita incomes less than PHP12,500 and as at end-2019, some 326,868 were enrolled in the programme.

An NOCHP cardholder and their dependents are entitled to free outpatient care that includes consultations with full course treat-

IMPACT RESULTS

Socio-Economic development in the Western Visayas region

- 5th largest economy in the Philippines 2018 – was 16th in 2013.
- Unemployment has fallen from 5.4% in 2017 to 5.3% in 2018.
- Poverty decreased from 25% to 15.9% since 2015 whilst Negros Occidental enjoyed an 11% decline in poverty.

Number of private and elementary schools in Negros Occidental

	2012	2013	2014	2015	2016	2017
Elementary						
Government	924	925	922	924	929	923
Private	86	108	162	128	217	186
Secondary						
Government	209	198	212	213	213	214
Private	74	68	80	77	84	99
Total	**1,293**	**1,299**	**1,376**	**1,342**	**1,443**	**1,422**

Source: NOSEPT Report

ment and medicines, and subsidized in-patient care in provincial government-run hospitals and other participating government hospitals. From the programme's inception in 2010 until December 2019, NOCHP records indicate it spent P322,645,976.42 for 523,537 member-patients and their dependents.

Education has expanded, with greater number of teachers

As well as the significant improvements in welfare and healthcare, the provision of education has also expanded across the province. The total number of elementary and secondary schools has risen by 129 over the past 5 years for which data is available, whilst an extra 2,100 teachers have been employed taking the total number to 13,167. Back in 2012-13, the total number of graduates at the three state universities and colleges was 3,852 and this had risen to 4,147 in 2016; the latest number for which official statistics are available.

Substantial drop in serious crime

One further element of socio-economic progress and development is the incidence of criminal activity. In the Philippines, the Revised Penal Code (Republic Act No. 3815) serves as the basic law that defines criminal offenses and provides the penalties for the commission of such. For statistical purposes, and to create a standardised classification, crime is further divided into index and non-index crimes. Index crimes, as defined by the Philippine National Police (PNP), involve crimes against persons such as murder, homicide, physical injury and rape, and crimes against property such as robbery, theft, carjacking and cattle rustling. Non-index crimes, on the other hand, are violations of special laws such as illegal logging or local ordinances.

The very good news is that index crime in Negros Occidental has more than halved over the past four years, with notable declines in robbery and theft. Murder and homicide have registered smaller drops and though the incidence of rape increased 10% in the last year, it is still 20% down over the period. Serious crime, overall, is down significantly and every category has registered a decline.

Investment in education and a vibrant provincial economy have surely helped reduced the incidence of crime. Moreover, the increases in tax revenues from businesses and individuals have helped fund social welfare programmes, greater investment in health & education and local infrastructure improvements.
We know from first-hand experience that the

Number and type of crimes in Negros Occidental

Index Crime	2014		2015		2016		2017	
	Inc	%	Inc	%	Inc	%	Inc	%
Muder	213	3	243	5	213	6	185	6
Homicide	106	1	88	2	96	3	92	3
Physical Injury	1,712	24	1,519	28	1,278	34	1,056	36
Robbery	1,047	15	802	15	535	14	423	14
Theft	3,720	53	2,408	45	1,413	38	991	33
Rape	280	4	284	5	191	5	222	7
Total	**7,078**	**100**	**5,344**	**100**	**3,726**	**100**	**2,969**	**100**

Source: NOSEPT

IMPACT RESULTS

Development of education and crime in Negros Occidental province

- Number of elementary and secondary schools has risen by 129 between 2012 and 2017.
- Number of teachers increased by 19% (+2,100) to 13,167.
- Crime index has fallen from 7,078 to 2,969 (-58%).

Economic Impact

island of Negros is an exciting phase of economic growth. Every metric of development, from new businesses registered, payroll and consumption tax revenues, total employment and the number of vehicles registered shows a consistent and accelerating pace of change. A very small enterprise selling 50cc motorcycles from makeshift premises five years ago is now housed in a glass-fronted showroom with a full range of manufacturer-supported models. Female employees working unsocial shifts in the Business Process Outsourcing industry tell us how they feel physically much safer on their journeys to and from their offices. An island which used to suffer from frequent interruptions to its power supply is now a net exporter of electricity at times of peak solar irradiation. The physical, legal, commercial and cultural infrastructure which collectively supports business development is itself growing and maturing, whilst every level of government from the province to the smallest barangay is geared towards promoting employment and social welfare.

The development transformation is driven by employment and the key to delivering Impact is creating jobs. Employment brings income, security, responsibility and dignity. A dollar earned is a dollar then spent many times over. The development of infrastructure is both capital and labour-intensive. It requires a lot of money and creates a lot of jobs, multiplied well beyond the initial project investment. In addition to jobs, infrastructure spending also creates tax revenues: land value tax, corporation tax, payroll tax and sales tax. These tax revenues, in turn, help pay for improved public services: improved sanitation, better roads housing and improved outcomes for health, education and social welfare.

Our Impact Report last year focused on the construction and operational phases of the three solar plants in Manapla, La Carlota and San Carlos City and the increases in employment and tax receipts for which they were directly responsible. This latest edition has been able to report in detail on the extensive construction activities at our three biomass plants which each now adjoin a solar site and on the massive logistical support operations in our Fuel Supply Division which provides the sugarcane trash to keep all three plants continuously supplied.

Employment Impact

The World Bank's International Finance Corporation (IFC) notes there are two main categories of jobs created through infrastructure investments: Jobs associated with construction and maintenance and jobs associated with improved services and lower costs. Jobs in the first category can be direct, indirect, or induced. Construction and maintenance activities generate employment not only for those workers directly involved (direct effect), but also for the corresponding suppliers and distributors (indirect effect), and for the providers of goods and services that are consumed by the direct and indirect workers (induced effect).

In the second category of jobs, the IFC observes, "a reliable infrastructure has an even greater effect on employment, and this is often overlooked in studies and policy analyses. Access to power, information, and communications technologies, or improved trans-

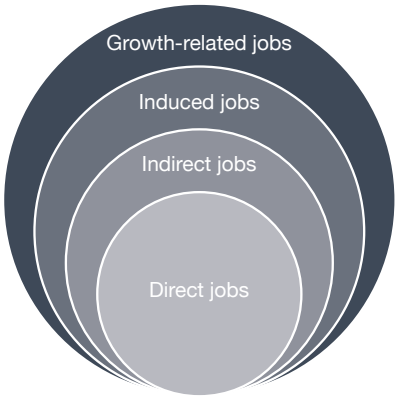
Registered motor vehicles by type

Vehicle Type	Poverty Incidence amongst families (%)				
	2013	2014	2015	2016	2017
Cars	12,265	12,466	12,305	13,680	14,483
Utility vehicles	33,397	33,895	34,665	40,287	42,217
Service Utility vehicles	5,762	6,371	6,596	7,746	8,654
Trucks	16,713	17,326	16,605	18,748	19,711
Buses	879	764	662	739	806
Motorcycles/Tricycles	82,554	68,073	63,965	73,829	83,091
Trailers	507	634	619	671	757
Negros Occidental Total	**152,077**	**139,529**	**135,417**	**155,700**	**169,719**

Source: NOSEPT

portation, can add significantly to job growth by allowing businesses to increase their output and hence create more jobs. This growth effect can be substantial.

The growth-related job effects on infrastructure investments are the largest and affect the overall economy



Source: http://siteresources.worldbank.org/CFPEXT/Resources/299947-1364681190360/IFC_Jobs_Report_Summary.pdf

We have focused on just one of the three sites – North Negros BioPower in Manapla – which was the third of three biomass plants to be completed. Whilst construction did not begin until the second quarter of 2018 and activity was ramped up very quickly, we have all the manpower construction data for full-year 2018 from SNBP and SCB as well as the island-wide activities from the FSD. These numbers are proprietary, no-one else has ever been able to access them and they are published here to evidence our considerable contribution to 'Impact'.

At its peak in Q4 2018, the total number of people employed across the solar and biomass sites plus the fuel supply division was just under 2,400. As construction of NNBP biomass did not begin until the second quarter, the average number of employees was around 1,750. Once operations are fully underway at all three biomass sites, it is estimated there will be a further considerable increase in the number of seasonal workers employed both onsite and in the FSD, although this will be to some extent be offset by the fall in construction employment.

Using a very conservative assumption (far less than the IFC estimate), it is plausible to expect a five to ten-fold increase in the number of all four types of jobs (direct, indirect, induced and growth-related) across the province over the next five years. Applying a multiplier of just five would give a total boost to employment in Negros Occidental of around 12,000 jobs whilst a 10 times multiplier would yield twice this amount.

Employment across three Biomass sites plus Fuel Supply Division

	2016				2017				2018			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SCBP												
Technical	91	117	126	122	99	98	126	122	147	163	112	142
Office Staffs	62	62	67	67	72	73	67	67	79	77	65	72
Skilled	1337	1986	2984	636	453	444	2984	636	264	382	420	350
General Labor	507	643	1008	235	131	128	1008	235	70	98	143	144
SNBP												
Technical					12	16	17	18	23	20	32	134
Office Staffs					28	29	30	28	28	25	34	67
Skilled					69	73	57	53	55	56	56	144
General Labor	2	2	2	2	51	55	56	57	68	71	90	154
NNBP												
Technical										13	30	77
Office Staffs										5	28	49
Skilled										24	83	217
General Labor										7	26	64
Fuel Supply Division					224	248	247	244	200	261	255	276
Solar plant operations												
Head Office support					21	22	24	21	23	23	25	28
TOTAL	**1,999**	**2,810**	**4,187**	**1,062**	**1,160**	**1,186**	**4,616**	**1,481**	**957**	**1225**	**1,399**	**1,918**

Construction site San Carlos BioPower

Impact on Municipal Tax Revenues

As well as the direct and indirect employment impact of our investments in renewable energy in the province, we should also consider their impact on city and municipal revenues and spending commitments. The reclassification of land from agricultural to industrial use provides an immediate impact to RPT and SET revenues, whilst the levies on the gross operating margins of the power plants provide a further supplement to municipal and barangay revenues. Gross Real Property Tax (RPT) in Manapla of almost PHP14 million in 2018 compares to just PHP2.8 million in 2015 whilst gross SET revenues have increased almost PHP7 million to PHP10.5 million over the same period.

Audited Financial Statements from the municipality of Manapla show a further PHP23.6 million of local improvement projects were authorised in 2018 after PHP40 million in 2017 when the first big inflow of new revenues was seen. The average annual increase in RPT and SET revenues directly attributable to the solar plant has been around PHP25 million in each of the past two years and is set to double when the biomass plant is grid-connected and fully operational.

A PHP25 million per annum boost to revenues from each solar and biomass plant equates to a permanent PHP150 million per year increase across all three sites which host a plant of each technology. As the whole of this is re-invested in infrastructure projects which require local labour, and again using a very conservative five-times multiplier, this would suggest a total demand injection around PHP750 million per annum across the province.

Impact on Economic Growth

In 2018, Western Visayas' annual GDP stood at PHP739 billion, of which an estimated 40%, or PHP295bn, came from Negros Occidental. Our proprietary knowledge on employment and salaries, along with publicly-available data on RPT and SET revenues as well as gross operating levies, delivers a mid-range estimate of 15,000 direct and indirect jobs plus PHP750m of extra municipal spending and induced demand. This is equivalent to just over 1% of Negros Occidental GDP once all three plants are operational; a considerable and permanent boost to aggregate provincial income.

IMPACT RESULTS

Impact of Renewable Energy investment in Negros

- Estimated increase of 15,000 jobs within the next five years across the province.
- Gross Real Property Tax (RPT) in Manapla has quintupled from PHP2.8 million in 2015 to PHP14 million in 2018.
- SET-Revenues have risen by 50% to PHP10.5 during that time span.
- The average annual increase in RPT and SET is set to double when the biomass plant is fully operational.
- Our investments have led to a full one percentage point boost to Negros GDP

Environmental Impact

The Philippines is vulnerable to climate change, given the heavy economic reliance on agriculture and natural resources. It already faces climate extremes every year, particularly floods and tropical cyclones, climatic impacts which can severely threaten the livelihoods of poor people living in rural areas with limited adaptive capacity.

In response to the urgency for action on climate change, the Philippines passed Republic Act 9729, also known as the Climate Change Act of 2009, anchored on the constitutional provision which states that, "it is the policy of the State to afford full protection and the advancement of the right of the people to a balanced and healthful ecology… to fulfil human needs while maintaining the quality of the natural environment for current and future generations."

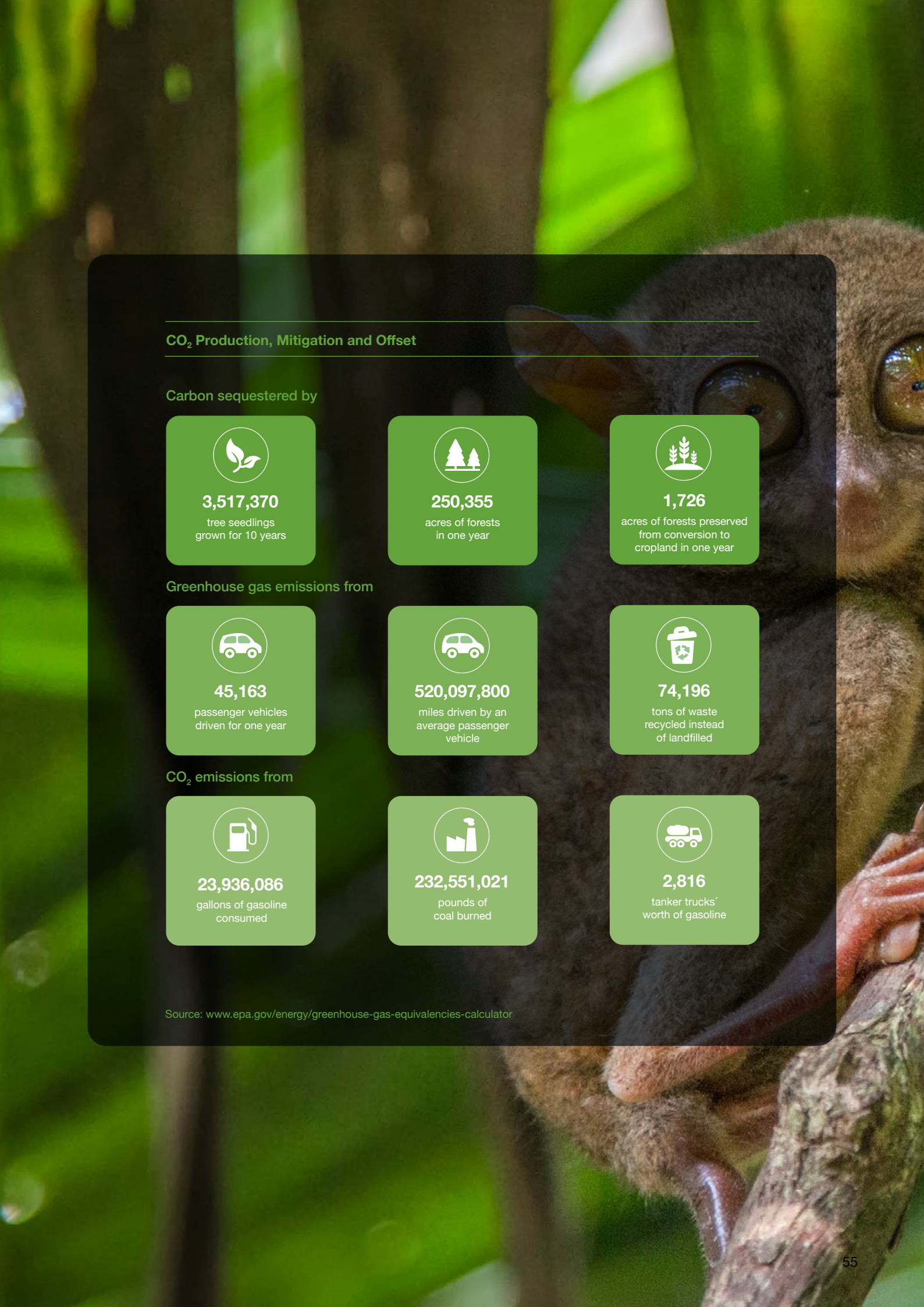
President Duterte signed the Paris Agreement on Climate Change in February 2017 and it was formally ratified by the Government and Senate on March 23rd that year. When the Philippines ratified the Paris Agreement, the Government set forth a country-defined timeline to submit the first Nationally Determined Contribution (NDC) before 2020.

The Instrument of Accession signed by the President was accompanied by a Declaration of State that the "accession to and implementation of the Paris Agreement by the Republic of the Philippines is for the purpose of supporting the country's national development objectives and priorities," which include:

- Sustainable industrial development
- Eradication of poverty and provision of basic needs
- Securing social and climate justice
- Energy security

At the time of writing, the NDC's have not yet been submitted, although ThomasLloyd is proud of the contribution it has already made to reduce greenhouse gases and provide clean, renewable energy to the people of Negros Occidental.

The electricity produced by the five ThomasLloyd built solar plants already reaches 462,000 people, with an overall CO_2 reduction of 155,040 tonnes per annum. The electricity produced by the three biomass plants will reach 742,000 people, with an overall CO_2 reduction of 57,680 tonnes per annum. According to the US Environmental Protection Agency (EPA), this total CO_2 reduction is roughly equivalent to the amount sequestered by 250,355 acres of mature forest or 3,517,370 tree seedlings grown for 10 years.



CO_2 Production, Mitigation and Offset

Carbon sequestered by

3,517,370
tree seedlings grown for 10 years

250,355
acres of forests in one year

1,726
acres of forests preserved from conversion to cropland in one year

Greenhouse gas emissions from

45,163
passenger vehicles driven for one year

520,097,800
miles driven by an average passenger vehicle

74,196
tons of waste recycled instead of landfilled

CO_2 emissions from

23,936,086
gallons of gasoline consumed

232,551,021
pounds of coal burned

2,816
tanker trucks' worth of gasoline

Source: www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Sustainable Development Goals

Seventeen Sustainable Development Goals (SDGs) were introduced at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012. The objective was to produce a set of universal goals that met the urgent environmental, political and economic challenges facing the world.

The SDGs replace the Millennium Development Goals (MDGs), which catalysed a global effort in 2000 to tackle the indignity of poverty. The MDGs established measurable, universally-agreed objectives for tackling extreme poverty and hunger, preventing deadly diseases, and expanding primary education to all children, among other development priorities.

- At least 80% of workers on site are locals.
- Taxes paid by TLG help local cities and poorest workers (measured by power usage).
- TLG buys trash from farmers, providing them with further revenue streams.
- TLG Charitable Foundation provided remote areas with access to electricity.

- Encouraging farmers / students to plant new crops. Cities are providing aid with RPT revenue received.
- Unemployment decreased in Manapla, San Carlos and La Carlota due to jobs created by TLG.
- Reliable energy is essential for the agriculture industry.

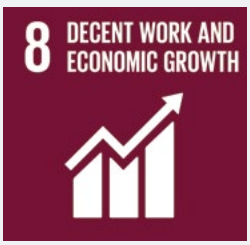
- TLG has built 45 houses for workers in Manapla with all amenities.
- 24 hour clinic on biomass project sites.
- 40% of the provincial budget is now invested in the health program.
- The RE plants provide residents with clean energy, reducing air pollution.

- Schools / roads / sanitation facilities built and improved with revenue received from RPT & SET, allowing more children access to education.
- ThomasLloyd charitable foundation: donated 6kw panel and lamps to help a school and community in the highlands. Day care centres were also built.
- Increased number of scholarships made available to students from elementary to university level, partly through revenue received from TLG.

- TLG ensures that women have the same access to leadership positions as men
- Women's livelihood programmes financed by tax revenues in barangay Santa Teresa

- Improved sanitation at school with the provision of toilets which were either non-existent or in very poor condition before TLG's arrival.

- TLG produces clean, renewable energy.
- Number of households with access to electricity increased substantially since the arrival of TLG.
- Taxes paid by TLG provide poorest households with power.



- At peak times, 1,800 employees on each biomass site.
- Power provided by TLG has attracted foreign investors and companies, including many call centres, resulting in more work and more people moving to these areas.
- We estimate GDP in Negros Occidental has been increased by over 1 percentage point

The UN describes the 17 Goals as “a bold commitment to finish what we started, and tackle some of the more pressing challenges facing the world today”. We highlight below how ThomasLloyd’s investments in renewable energy map across to the UN’s development agenda.

- Negros has been identified as the renewable energy centre of the Philippines.

- Proceeds from TLG used to build up / connect furthest Barangays and to improve lives of all residents.
- More opportunities available for women such as seafood and BPO industries.
- Jobs in the biomass plants are advertised all over Negros Island, providing all residents with the same opportunities.

- Biomass plants will contribute to the security and sustainability of the island’s power supply.
- RPT revenue has allowed cities to grow, increasing their urban populations.

- Negros has become known as the ‘bread basket’ of the Philippines and aims to become the organic capital of Asia

- The renewable energy plants offer the island a secure energy future without coal fired power stations.
- Decentralised power production enables the island to be more resilient in the face of natural disasters.

- Increased RPT revenues have allowed the municipality of Manapla to give fishermen boats, nets etc. to improve their livelihoods.
- Increasing investment in the implementation / enforcement of the Fishery Improvement Project.
- All TLG power plants lead to a substantial CO2 reduction, minimising the effects on oceans.

- TLG buys and collects sugarcane trash from farmers, preventing this from being burned which can create pollution related problems and is harmful to wildlife.
- Sustainable energy is crucial for ecosystems.

- The sustained increase in employment (in the construction and operation of solar and biomass plants) has resulted in record low crime rates, specifically in San Carlos.

- ThomasLloyd is a member of the United Nations Environment Programme Finance Initiative, a signatory of the United Nations Global Compact, a member of the GIIN and a supporter of the Task force on Climate-related Financial Disclosure (TCFD)

Covid-19 Support, Negros, Philippines

ThomasLloyd Foundation

As well as its considerable direct investments on the island of Negros which make it one of the biggest overseas providers of capital, ThomasLloyd has further increased its corporate and social responsibility activities under the banner of the ThomasLloyd Foundation. This is a charitable venture which is active in two areas which best correspond to local requirements – electrification of social infrastructure and emergency relief activities.

The foundation is dedicated to the initiation and realisation of concrete “off-grid solutions” in remote and underdeveloped districts, which are not likely to be connected to the electricity grid in the foreseeable future, and which without the off-grid solution would therefore be permanently cut off from the benefits of social institutions dependent on electricity (e.g. health centres, clinics and modern educational establishments).

The foundation is committed to emergency relief activities, which may include providing direct funding and suitable materials or equipment quickly and without ‘red tape’ in areas hit by natural disasters, as well as continuous support for regional aid organisations and projects that are dedicated to providing assistance to particular social groups

Covid-19 Support

After the outbreak of the COVID-19 pandemic on the island of Negros, ThomasLloyd and its local partner were prompt to join the fight against the virus. The main goal was and is to provide urgently needed medical supplies to hospitals and local government units.

For example, we were quickly able to donate to the governor of Negros Occidental a mobile test unit, which helps to speed up test procedures and protects medical staff from infection at the same time. Besides, medical equipment, protective clothing, and disinfectants were donated to clinics and quarantine centers to create additional laboratory capacities.

MORE INFORMATION

ThomasLloyd Foundation

Covid-19 Support, Negros, Philippines

Local Government Units Support

Cadiz City District Hospital

Manapla

Cadiz

Magalona

Bacalod City

San Carlos City

Hinigaran

Quarantine Center

Local Government Units Support

Beneficiaries of Transloading Stations Barangays

Prototype of Mobile Swabbing Unit

CONCLUSION

Putting jobs first does not mean putting the environment last. Sustainable development is growth where all stakeholders benefit and everyone is better off. This is ThomasLloyd's 'triple return' - social, environmental and financial. We are proud of the contribution we have made and humbled by its effect on the communities in which we operate.

The heart of the impact story is employment. Jobs bring income, security, and dignity not just to one person, but also to their family and community. Jobs hold the social fabric together and jobs are the key to mental and physical well-being. Our Fuel Supply Division (FSD) is one of the largest employers in Negros, and we have evidenced in detail in this report its policies on skills, welfare and diversity. Investing for impact means creating sustainable employment to drive recovery with significant multiplier effects beyond initial job creation.

Developing long-term real assets with reliable long-term revenue streams is an integral feature of our investment strategy. It is deliberate, intentional and carefully planned. Although we have a charitable foundation, we are a developer and investor, not a philanthropic donor. We seek attractive returns on capital in addition the development and ownership of the infrastructure assets. We financed and built the first utility scale solar plant in South-East Asia and our three biomass plants will play a key role in integrated agro-energy development.

Negros Occidental is a case study in renewable energy installation, organic food production and sustainable economic development. Its political leaders have long recognised the importance of employment and health in building stable families and resilient communities and the province has been a driver of growth in the Western Visayas region, which is today the fourth largest in the Philippines. We have shown there need be no trade-off between growth and environmental stewardship and that a sustainable future can be one which delivers prosperity for all. Growing businesses whilst preserving traditional culture and values is always a challenge, but the success is doubly rewarding.

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Memberships and
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