



Impact Report | 2021

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# PHILIPPINES



## Foreword

**Raising money from a broad range of investors across Europe and the world, ThomasLloyd invests exclusively in the fast-growing countries of Asia where the deployment of investment capital makes the greatest difference.**

Whilst the G7 nations collectively grew by 40% over the last 20 years, the 30 countries which together comprise 'Emerging & Developing Asia' expanded by an astonishing 325%; more than quadrupling their GDP over the period.

Economic growth and the rapidly increasing urbanised populations across the Asian continent have boosted demand for energy and electricity across the region, but this economic growth has not been without environmental cost. With almost 60% of the world's population and a 'carbon cost of GDP' more than four times greater than the largest countries in Europe, the problem of CO<sub>2</sub> emissions requires urgent solutions in order to mitigate climate change.

With almost 110 million people, the Philippines is one of the fastest growing economies in the region with a very youthful population whose median age is just 25.7 years. Currently the world's 13<sup>th</sup> most populous nation, the United Nations estimates the population will increase by almost 45 million by 2050, equivalent to adding the current total population of Spain. This rapid pace of demographic change, allied to strong economic growth, is driving demand for electricity and though total installed generating capacity has risen 65% over the past 15 years, substantially greater investment is needed over the coming years.

The Philippine Energy Secretary, Alfonso G. Cusi, has announced a moratorium on greenfield coal power plants which means that new planned coal projects will no longer receive permits, affecting over 10 GW of greenfield coal power plants. Secretary Cusi has said, "As the Philippines Department of Energy re-evaluates the appropriateness of our country energy

mix vis-à-vis our energy goals, I am optimistic that this would lead to more opportunities for RE to figure prominently in our country's energy future".

Together with our local development partner, Bronzeoak Philippines Inc, ThomasLloyd has financed and developed five utility scale solar plants on the island of Negros, and has also developed and constructed three biomass energy plants, each one adjacent to an existing solar plant.

We have consistently demonstrated our commitment to the Philippines' economic, social and environmental welfare and are proud to help realise its ambitious future goals for the transformation of its energy supply which is vital for future development.

The right kind of growth in a post-COVID world involves building safe and secure communities, enhancing human capital and growing businesses whilst preserving traditional values. It requires also the right kind of energy – renewable, sustainable and local. The Negros story is the perfect template of how our investment philosophy delivers this positive change:

- Realising sustainable value for investors and for the people and communities in which we operate.
- Building long-term sustainable businesses, which provide employment and economic growth in partnership with social transformation and environmental protection.



NICK PARSONS F.R.S.A.  
Head of Research and ESG Policy



## Executive Summary

**Investor appetite has historically been driven by two factors – risk and return. In recent years, however, a growing awareness of environmental, social and governance issues has begun to change the investment landscape. Whilst a focus on ESG factors can be helpful to understand a company's values, processes and policies, we believe these should be viewed as behaviours on a journey, not the outcomes at its destination. Although ESG matters, impact matters a great deal more, and our 2021 Impact Report is further evidence of the difference that socially-responsible investment can make.**

Investors want their money to be invested where it makes a positive and measureable social and environmental difference and to avoid industries, technologies and sectors which contribute to global warming, poor health outcomes, income inequalities or the restriction of political freedoms. At ThomasLloyd, we believe there need not be a trade-off in achieving these goals whilst simultaneously delivering long-term attractive returns.

In order to demonstrate impact, one must first outline both what impact is, and how it is measured. Impact is centred on the concept of 'additionality'; the extent to which an investment has brought about change – both positive and negative – which would not otherwise have occurred. The subsequent measurement of that impact is neither an art, nor a science, and requires a carefully considered blend of qualitative and quantitative metrics. Through our unique access to proprietary data on factors such as employment, wages and taxes, we are able to analyse

information that is simply not available to desk-bound third-party researchers. We draw on publicly available, but rarely accessed data on municipal tax revenues and expenditures; thus enabling a direct link to be drawn between our investment spending, job creation, and taxes paid. Furthermore, we can evidence the public works projects that are subsequently financed at both the municipal and the barangay levels.

Our activities in Asia began in 2011 and over the past ten years – together with our friends and partners Bronzeoak Philippines Inc. – we have financed, co-developed, constructed and subsequently grid-connected five solar plants on the island of Negros in the Philippines. 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. The development in San Carlos City was the very first utility-scale solar plant in South-East Asia and paved the way for the development of renewable energy across the region – an occurrence whose importance is increasingly beginning to be realised.

As with a portfolio of investments, the diversification of energy generation is a key success factor. The variability of solar and wind must be counteracted with stable and consistent sources of base-load electricity. Our biomass plants will do just that, operating round the clock and providing 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.



North Negros BioPower

In our 2021 Philippines Impact Report, we continue to evidence the direct and indirect impacts of the renewable energy projects, and how they have helped contribute to job creation, environmental protection, CO<sub>2</sub> reduction and the achievement of the United Nations seventeen Sustainable Development Goals (SDG's). For consistency, and to further develop our 'impact story', we continue to focus our tax and spending analysis on the municipality of Manapla; the home of one of our operational solar plants, as well as the North Negros BioPower plant.

The Philippine Commission on Audit's figures for the municipality of Manapla show the impact our investments can have. 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 PHP2,729,793 and a starting point of PHP2,301,559 in 2015 to an annual average in 2016–2020 of PHP8,310,490. Special Education Tax payments, meantime, averaged PHP1,642,652 in the five years to 2015 but jumped to average PHP8,061,418 in 2016–2020. Manapla is heavily dependent on its Internal Revenue Allotment (IRA) from the Philippine Government. In the five years prior to the solar plant becoming operational, IRA accounted for an average of 84.9% of total municipal revenues. Upon project completion, Manapla's average IRA share fell to 76.8% in 2017, clearly evidencing the revenue-generating capabilities of our investments.

Whilst municipal tax revenues have been significantly boosted, the biggest economic impact comes through job creation; a dollar earned is a dollar then spent many times over. As of Q4 2020, 1152 people were permanently employed across our

three biomass plants. With employment across the solar plants standing at 180 people, total operational employment stood at 1,330 people.

Various studies have aimed to quantify the job creation impact of infrastructure investment, with the direct employment associated with construction and operation merely the starting point. Using a very conservative assumption, we model a five to ten-fold increase in total permanent employment. Based upon the projects' operational employment, a mid-point 7.5 times multiplier would yield a permanent boost to Negros Occidental's employment of 9,975 jobs.

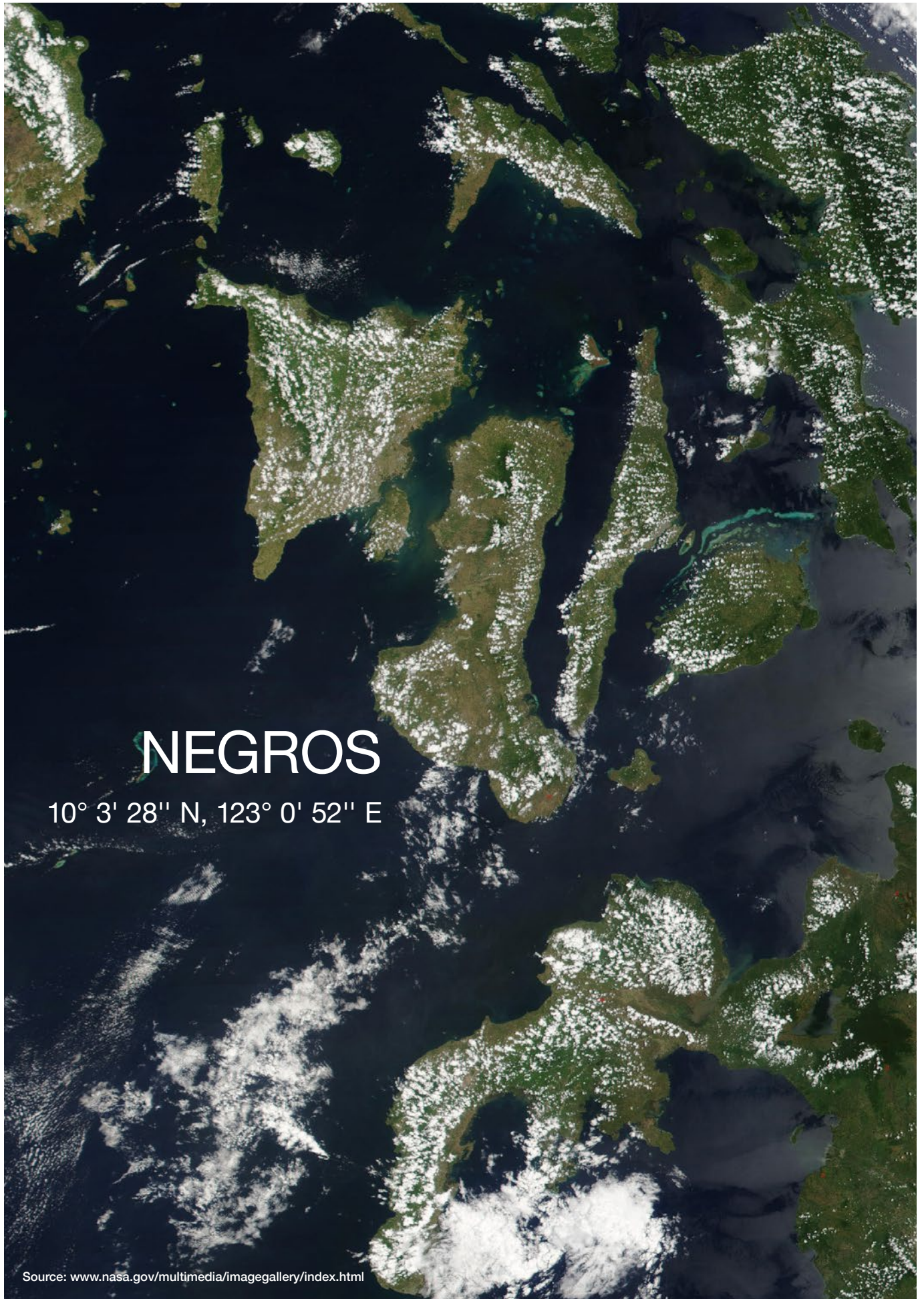
Audited Financial Statements from the municipality of Manapla show a continuing trend of local improvement projects. A further PHP39.3million of local improvement projects were authorised in 2020 after PHP39.8 million in 2019. The average annual increase in RPT and SET revenues directly attributable to the solar plant has been around PHP5.3 million in each of the past four years and is set to double when the biomass plant is grid-connected and fully operational.

A PHP5.3 million per annum boost to revenues from each solar plant equates to a permanent PHP16 million per year increase across all three sites. As the whole of this is re-invested in infrastructure projects which require local labour, and using a conservative 5 times multiplier, this would suggest a total demand injection of around PHP80 million per annum across the province. That injection will double to PHP160 million once the three biomass plants begin exporting power to the grid.

In 2020, Western Visayas' annual GDP stood at PHP850 billion (USD17 billion), of which an estimated 40%, or PHP336bn, 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 9,975 direct and indirect jobs plus PHP160m of extra municipal spending and induced demand. This is equivalent to roughly 0.8% of Negros Occidental GDP once all three plants are operational.

The electricity produced by the five ThomasLloyd built solar plants already reaches 406,313 people, with an overall CO<sub>2</sub> reduction of 170,453 tonnes per annum. The electricity produced by the three biomass plants will reach 540,468 people, with a further overall CO<sub>2</sub> reduction of 345,274 tonnes per annum. According to the US Environmental Protection Agency (EPA), this total CO<sub>2</sub> reduction is roughly equivalent to the amount sequestered by 423,022 acres of mature forest or 5,709,179 tree seedlings grown for 10 years. Given the long-term operational life of our assets, as well as the secure and reliable revenue-streams associated with them, the impact evidenced above is substantial. The local communities in which we operate will continue to benefit from the investments, both directly and indirectly.

Sustainable development is growth where all stakeholders benefit and everyone is better off. This is ThomasLloyd's 'triple return' – social, environmental and financial – and the growth of renewable energy helps secure its potential for current and future generations of Negrenses.



# NEGROS

10° 3' 28'' N, 123° 0' 52'' E

Source: [www.nasa.gov/multimedia/imagegallery/index.html](http://www.nasa.gov/multimedia/imagegallery/index.html)

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# Introduction

**On behalf of all my colleagues at ThomasLloyd, I am very pleased to present here the 2021 edition of our Philippines Impact Report. It describes the social, economic and environmental impact of the investments we have made in renewable energy on the island of Negros; the fourth largest of more than 7,000 islands in the country.**

As an impact investor, we set out deliberately and intentionally to have a positive social and environmental impact through our investments and we are committed to regularly measuring and reporting this performance. In so doing, we fully comply with the disclosure requirements defined under Article 9 of the EU Sustainable Finance Disclosure and the LuxFlag Environmental label.

Measuring impact is neither an art, nor a science, and requires a carefully considered blend of qualitative and quantitative metrics to judge the 'additionality' of an investment; the extent to which it has brought about change – both positive and negative – which would not otherwise have occurred.

It follows from this that impact must necessarily involve the injection of new money into the economy. In this important respect, the development of real assets is crucially different to the trading of financial assets. The former provides new funds, creates real jobs and builds new infrastructure. The latter merely changes the ownership of a share certificate; with no new money for investment and no effect on employment, economic growth or wider social and environmental outcomes.

We cannot state often enough this fundamental difference between real assets and financial assets. Indeed, it may be no exaggeration to say that investors are currently being seriously misled by the aggregators and promoters of purely financial assets who sell so-called 'sustainable' investment products on the basis of questionable claims about their social and environmental effects.

Our Impact Reports, instead, draw on real-life experience and evidence. As developers of sustainable infrastructure assets and in conjunction with our trusted local partners, we have access to proprietary information on employment, salaries, human resource policies and health & safety records, which allows us to show the real-world impact of our investment spending. We can account for every dollar or peso spent, and though disclosure is necessarily constrained by commercial confidentiality, we are happy to evidence and share information on employment at project level.

At ThomasLloyd, we have consistently demonstrated our commitment to the Philippines' economic, social and environmental welfare and are proud to help realise its ambitious future goals for the transformation of its energy supply which is vital for future development.

We believe strongly that the key to delivering impact is creating jobs. Employment brings income, security, responsibility and dignity. It brings family stability and fosters respect for institutions and justice. 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. A dollar earned is a dollar then spent many times over. 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.

The COP26 meeting in Glasgow showed how governments around the world are facing the multiple challenges of a post-COVID economic recovery, significantly higher energy prices, and net-zero carbon emissions targets. We believe passionately 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.

Fortunately, the visionary political and civic leaders in Negros share our approach and have been consistent in their support for our projects. In this report we take an in-depth look at the biomass electricity plants we have developed and show how the physical infrastructure for this new source of renewable energy has been planned and constructed. How 21<sup>st</sup> century technology has been harnessed to provide solutions to some of the problems of a local sugar industry which dates back hundreds of years.

We are very grateful for the help from past and current leaders of the Provincial Government, City and Municipal mayors and barangay leaders and for all the assistance their offices provide. Our partners at Bronzoak Philippines Inc have provided data on employment, health & safety and staff training, and local representatives of the Philippine Statistics Authority have kindly offered their own support to this report.

Pooling these resources, we provide more evidence of how we are turning the positive vision of Negros into a practical reality. We have always known that our investment would make a real difference to the quality of life through employment and clean energy. I am proud on behalf of all the team at ThomasLloyd once again to present this impact here.

## CURRENT PORTFOLIO

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CAPACITY

272 MW

INVESTMENT VOLUME (CAPEX)

698 Million USD

## PERFORMANCE

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ELECTRICITY REACH

946,781 People

CO<sub>2</sub> AVOIDED

515,727 Tonnes p.a.

As of: 31/10/2021



## Geography & Demographics

**Negros is the fourth largest island of the Philippines, with a land area of 13,309.60 km<sup>2</sup>. 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 region of Ile-de-France.**

As of 2020, Negros' total population was 4,656,945 people; around 4% of the total population of the Philippines. It is slightly less populous than New Zealand but greater than Croatia. The island's population has increased by 5.5% when compared to the previous Census' (2015) findings. Since 2000, Negros has added roughly a million people to its population; a CAGR of 1.2%.

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

### Negros Occidental

Negros Occidental is located on the north and western sides of the island. It has a total land area of 792,607 hectares or 7,926.06 km<sup>2</sup>, 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; the native Filipino term for a village, district or ward – which are the smallest administrative divisions or Local Government Units (LGU's) in the country. Although Bacolod serves as the capital, it is governed independently from its corresponding province as a highly urbanized city.

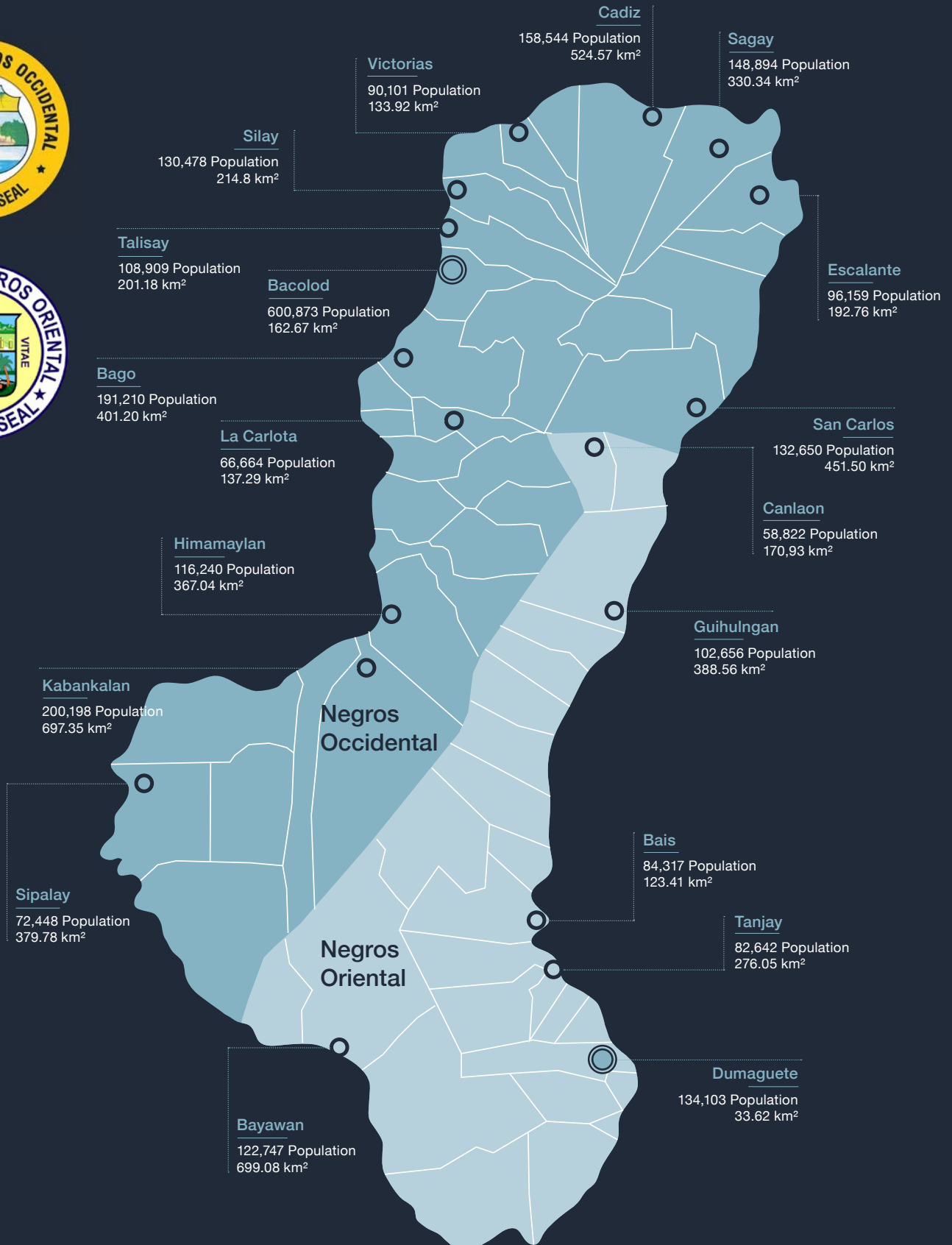
With the exclusion of Bacolod City, Negros Occidental is the 9<sup>th</sup> most populous province in the country. The total population in the 2020 census was 2.62m (excluding Bacolod City with 0.6m). The average annual growth in population from 2000 – 20 was 1.03% for the province and 1.69% for Bacolod 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 19<sup>th</sup> most populous city of the whole Philippines.

In 2020, the Department of Trade & Industry ranked Bacolod City in 11th place on its list of most competitive urbanised cities. With the exclusion of cities in the Philippines' National Capital Region (Metro Manila), Bacolod City ranks 3<sup>rd</sup> in the country

## Cities on the island of Negros

Total Population: 4.4 million

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





and is the only city based on Negros to feature. The award is based on the following four pillars: economic dynamism, government efficiency, infrastructure and resilience. With a ranking of 9<sup>th</sup>, the city scored highest for its infrastructure.

In recent years, Bacolod City has won numerous awards. On two occasions and most recently in 2019, the city has been awarded top Philippine Model City by The Manila Times in “The Philippine Model Cities” search for the most liveable urban centres in the country. Bacolod City beat 37 other cities shortlisted in the search to gain top-spot and is yet to lose its title, with the 2020 award having understandably been postponed due to COVID-19. The city of Bacolod also received awards in the categories of Business-Friendly/High Returns and Retirement Haven.

Bacolod City has a skilled and English-proficient workforce, a favourable business environment and good quality digital infrastructure, which are key requirements of the fast-growing Business Process Outsourcing (BPO) industry.

## Negros Oriental

Negros Oriental occupies the south-eastern half of the island. It has a total land area of 5,385.53 km<sup>2</sup> 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. In fact, with a population density of 3,989 people per km<sup>2</sup>, Dumaguete City is the most densely populated city on the Island of Negros.

The population of Negros Oriental in the 2020 census was 1,432,990 people. 40.8% of the population are concentrated in the six most populous component cities of Dumaguete, Bayawan, Guihulngan, Tanjay, Bais and Canlaon. Population growth per year was about 1.18% over the period of 2015 – 2020, lower than the national average of 1.63%.

## 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 73<sup>rd</sup> largest country in the world, with a total land area around 300,000km<sup>2</sup> made up of 7,641 islands of which only around 2,000 are inhabited. The island of Luzon is the world’s 15<sup>th</sup> largest and 4<sup>th</sup> most populated island whilst Mindanao is the world’s 19<sup>th</sup> largest island by area.

The three broad regions in the Philippines known as Luzon,



SaCaSol

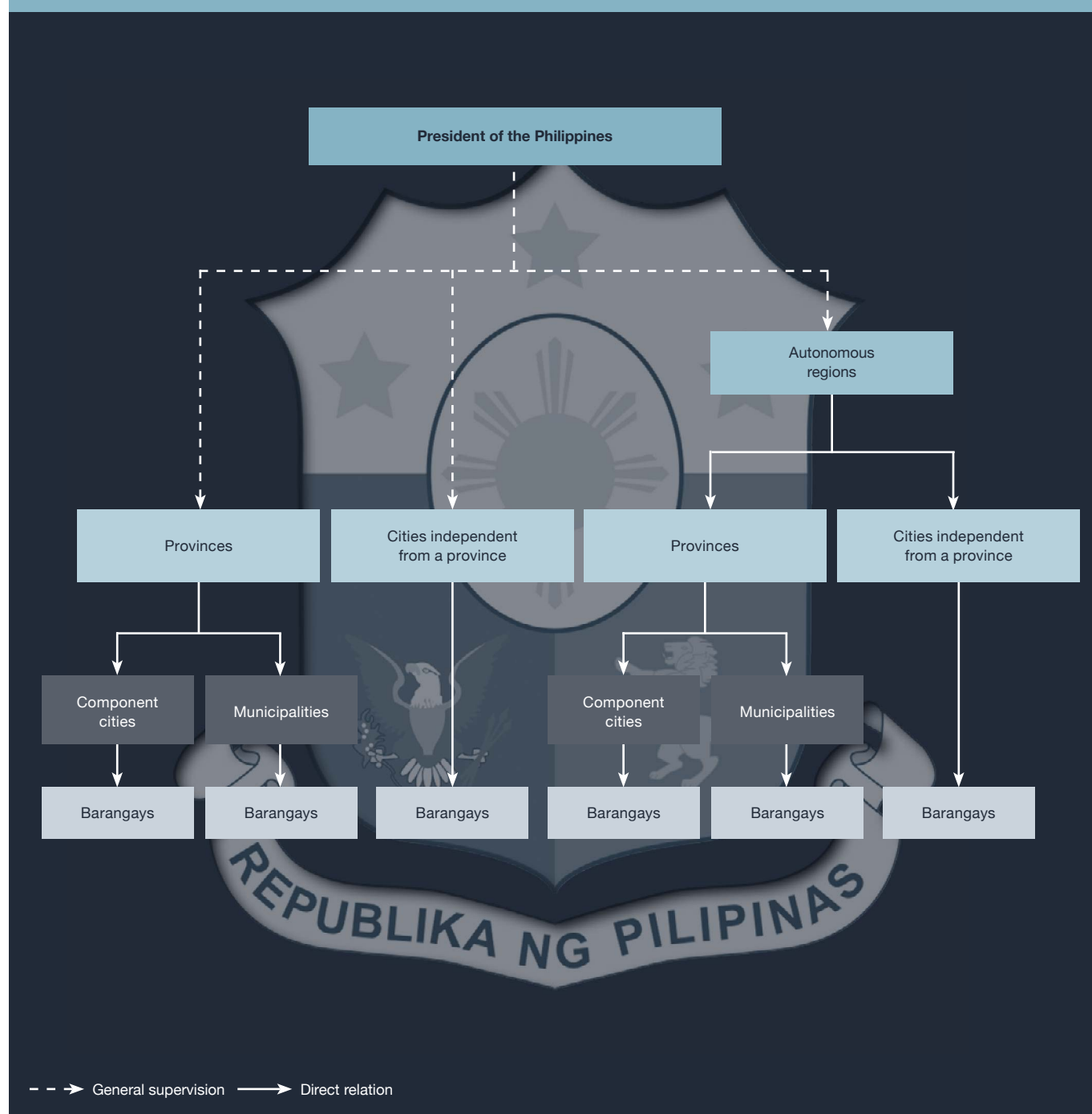
Visayas and Mindanao have no specific administrative bodies or constitutional function. To facilitate the administration of such a disparate country of 2,000 inhabited islands, it is divided instead into 17 Administrative Regions and 81 provinces.

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 President in 2015. On August 9<sup>th</sup> 2017, however, new President Rodrigo Duterte signed Exec-

utive 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



# The Philippines

At the end of 2020, the Philippine economy was the 34<sup>th</sup> largest in the world. According to the International Monetary Fund, its annual GDP stood at USD361,489 million; slightly larger than Denmark and essentially the same size as Norway. Over the past decade, average annual growth has been 4.7%, just shy of one percentage point higher than the 30-country average listed below. It is worth considering however, the impact of COVID-19, with the Philippines having been particularly affected. The country's economy contracted by 9.6% in 2020, more than double the Asian average. With the exclusion of 2020, the Philippines' average annual growth rate stands at 6.3% (2011 – 19). Indeed, the years before COVID-19 marked 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 13<sup>th</sup> most populous country. Having conducted its most recent Census in 2020, the Philippines Statistics Authority (PSA) revealed in 2021 that the country's population stood at roughly 109 million people.

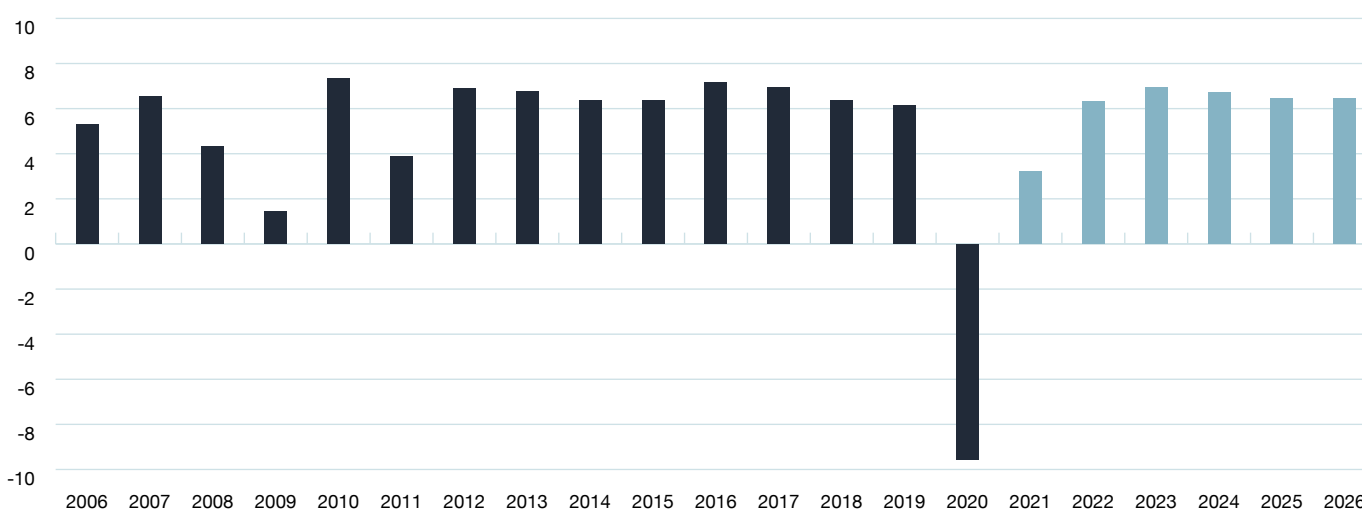
According to the Philippine Statistics Authority, in 2020 the total number of persons aged 15 years and over was 73.7 million and the number of people in the labour force was 43.8 million. The total number of people in employment was 39.4 million with a

GDP growth in selected Asian countries (annual % change)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Asia 30-country total	5.5	4.3	5.0	5.2	5.0	4.6	4.2	4.1	4.5	-3.9
Bangladesh	6.5	6.5	6.0	6.1	6.6	7.1	7.3	7.9	8.2	3.5
China	9.6	7.8	7.8	7.4	7.0	6.9	6.9	6.8	6.0	2.3
India	6.6	5.5	6.4	7.4	8.0	8.3	6.8	6.5	4.0	-7.3
Indonesia	6.2	6.0	5.6	5.0	4.9	5.0	5.1	5.2	5.0	-2.1
Malaysia	5.3	5.5	4.7	6.0	5.0	4.5	5.8	4.8	4.4	-5.6
<b>Philippines</b>	<b>3.9</b>	<b>6.9</b>	<b>6.8</b>	<b>6.3</b>	<b>6.3</b>	<b>7.1</b>	<b>6.9</b>	<b>6.3</b>	<b>6.1</b>	<b>-9.6</b>
Sri Lanka	8.4	9.1	3.4	5.0	5.0	4.5	3.6	3.3	2.3	-3.6
Thailand	0.8	7.2	2.7	1.0	3.1	3.4	4.2	4.2	2.3	-6.1
Vietnam	6.4	5.5	5.6	6.4	7.0	6.7	6.9	7.2	7.2	2.9

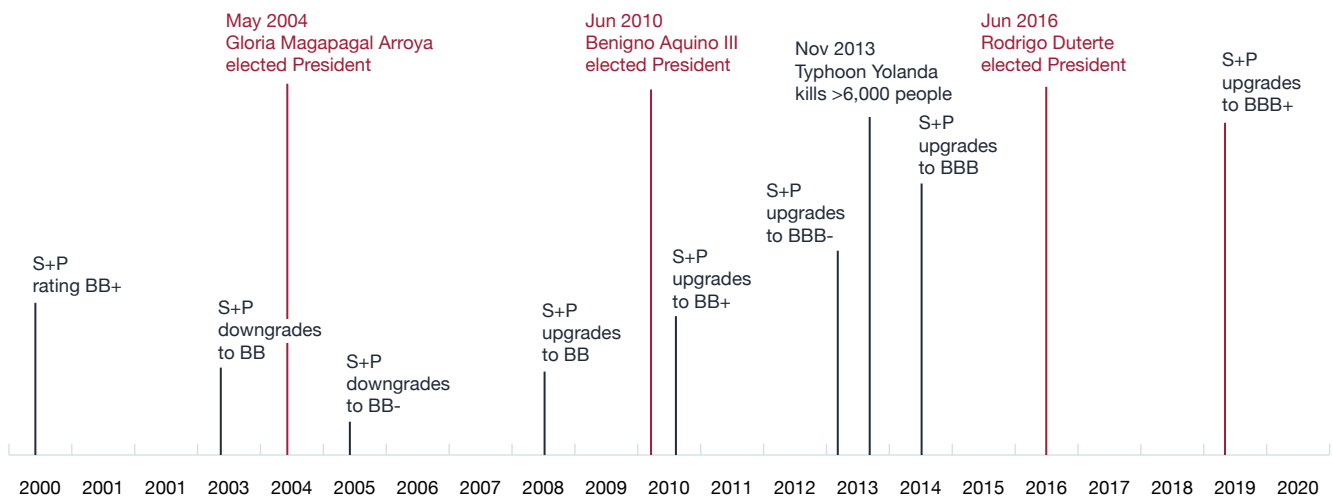
Source: Philippine Statistics Authority

GDP growth in Philippines (annual % change)



Source: International Monetary Fund

## Timeline of credit events in the Philippines



total employment rate of 89.7%. The emergence of COVID-19 has had significant implications for worldwide employment and the Philippines is no exception; the country's unemployment rate has roughly doubled in a year to 10.3%, meaning 7.6 million people are currently out of work. On a more encouraging note, the latest monthly employment data (August 2021) highlights an improvement in employment, with a fifth of those unemployed now back in work.

Workers in the services sector comprised the highest percentage of the workforce with 56.9% of the total employed. The agricultural sector comprised 24.8% and the industrial sector 18.3%. Employment in the agricultural sector was up nearly three percentage points on the previous year, with both the industrial and services sectors having seen declines.

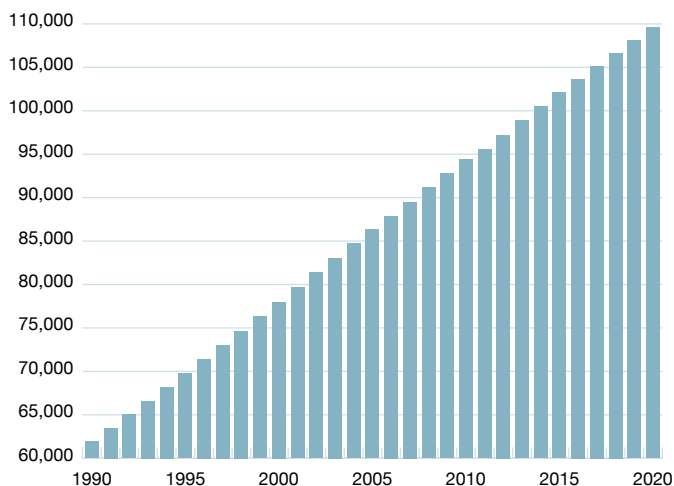
Among the occupation groups, workers in the elementary occupations accounted for 27.2% of the total employed in 2020. Service and sales workers composed the second largest occu-

pation group with 19.3%, followed by skilled agricultural, forestry, and fishery workers (13.4%) and managers (9%). Around a quarter of the country's workers are classified as self-employed, whilst 55.9% are down as working 40+ hours a week.

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 USD3,299 today; a more than fourfold increase over the period.

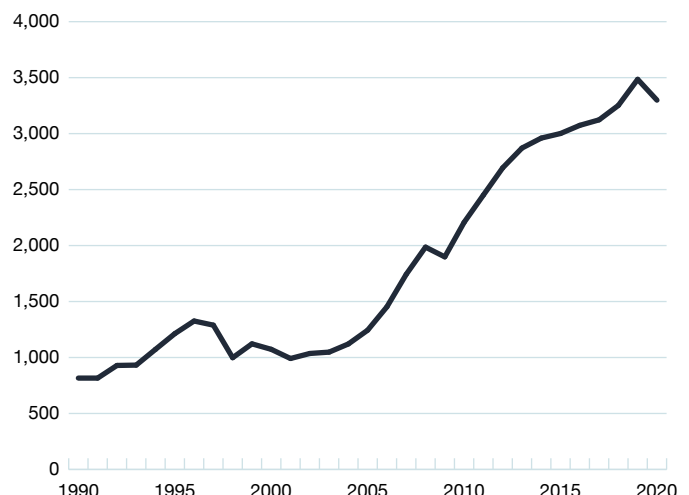
The impressive performance of the Philippine economy has been recognised in a series of upgrades to its long-term credit rating. Since 2005, Standard & Poor's have upgraded the country's rating no less than five times and having achieved an 'investment grade' rating for the first time in 2013, the Philippines today stands at BBB+, above both 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.

Population of the Philippines (000's)



Source: Philippine Statistics Authority

Per capita GDP of the Philippines (annual USD)



Source: IMF, United Nations, ThomasLloyd

## Western Visayas and the Island of Negros

**Analysis of the economy in 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.

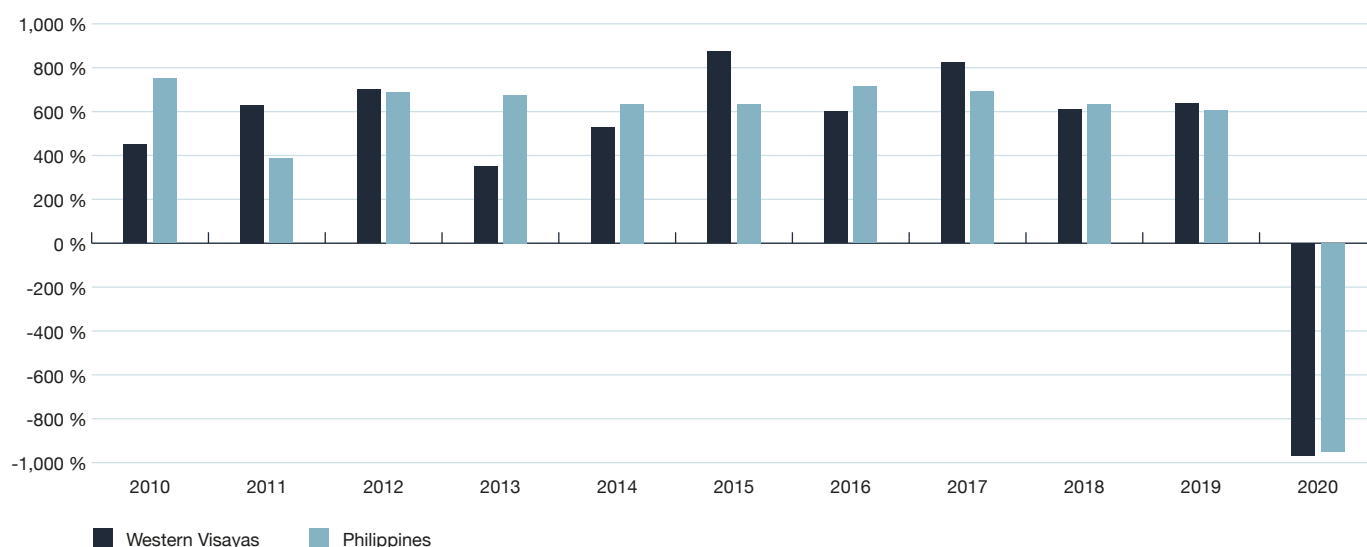
When compared with all 17 Administrative Regions, in the period from 2009 – 13 Western Visayas' economic growth was generally below that recorded by its peers and below that of the whole country. Indeed, in 2013, it ranked 16<sup>th</sup> out of 17 regions nationally. In four years post-ThomasLloyd's initial investment in Negros Occidental, economic growth in Western Visayas outperformed the Philippines overall by a cumulative 3.5%. The region's GDP increased by 32.5% over the same time-period, roughly three percentage points higher than the national increase.

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. The region's GDP growth again exceeded that of the whole country in 2019.

When publicising the region's economic performance in 2020, the PSA's Western Visayas regional director was quoted as saying "Region 6 has the fastest growth rate in AFF among the regions in the country". Having witnessed the growth of AFF in the Western Visayas, the NEDA acknowledged a possible need to assign further resources to the sector. Given our biomass plants utilise agricultural residues as feedstock, the stability, and perhaps strengthening, of the sector provides further reassurance of fuel security. In terms of monetary value, the region now ranks as the fifth-largest economy outside of the National Capital Region, whilst in terms of growth rate, the region is ranked 11<sup>th</sup> in the Philippines.

GDP growth in Philippines (annual % change)



Source: Philippine Statistics Authority



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	2019	2020
<b>I. Agriculture, Hunting, Forestry &amp; Fishing</b>	<b>24,1</b>	<b>22,8</b>	<b>21,4</b>	<b>20,0</b>	<b>18,6</b>	<b>18,8</b>	<b>17,8</b>	<b>16,9</b>	<b>19,9</b>
<b>II. Industry</b>	<b>19,7</b>	<b>19,9</b>	<b>20,7</b>	<b>21,7</b>	<b>21,5</b>	<b>20,7</b>	<b>21,1</b>	<b>21,1</b>	<b>21,3</b>
a. Mining and Quarrying	1,8	1,6	1,9	1,9	2,4	3,1	2,9	3,4	3,2
b. Manufacturing	12,6	12,6	12,6	12,2	11,3	10,2	10,5	10,5	11,3
c. Construction	4,3	4,6	4,9	6,5	6,4	5,9	6,1	5,7	5,2
d. Electricity, Gas and Water Supply	1,0	1,1	1,2	1,2	1,4	1,5	1,5	1,5	1,7
<b>III. Services</b>	<b>56,1</b>	<b>57,3</b>	<b>58,0</b>	<b>58,2</b>	<b>59,9</b>	<b>60,6</b>	<b>61,1</b>	<b>62,0</b>	<b>58,9</b>
a. Transport, Storage & Communication	9,1	9,7	10,6	10,4	11,0	11,3	11,2	11,5	9,3
b. Trade and Repair of Motor Vehicles, Motorcycles, Personal and Household Goods	18,5	18,8	18,5	18,1	18,1	17,8	18,4	18,1	19,3
c. Financial Intermediation	4,6	5,2	5,3	5,2	5,2	5,6	5,8	6,4	7,3
d. Real Estate, Renting & Business Activities	9,3	8,9	8,5	8,4	8,3	8,3	8,3	8,0	7,9
e. Public Administration & Defense; Compulsory Social Security	2,9	2,9	3,0	2,9	3,0	3,0	3,3	3,5	4,0
f. Other Services	11,8	11,9	12,1	13,1	14,3	14,5	14,0	14,6	11,1
<b>Gross Regional Domestic Product</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>

Source: PSA - VI

## 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 sugar-cane-based. Nationally, around 60% 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. Founded in 1919, Victorias Milling in Negros Occi-

dental is the largest sugar producer in the country and one of the largest sugar millers and refiners in Asia. It supplies about 30% of the country's daily need for refined sugar. 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 16,000 hectares of agricultural land – around 3% of the total – devoted to organic farming, with over 17,000 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 15 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. This work has been carried on by the current Administration under the governorship of Eugenio Jose V. Lacson, popularly known as 'Bong.'

Negros Occidental has become the leading meat producing province in the Philippines. Based on the latest available 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 2019. It is also the number one native chicken producer with 5,148,622 birds and is in second place for both goat (218,831 heads) and carabao (103,064 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.



Crab-picking station, Manapla





## 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). The latest available figures show that electricity consumption in Negros Occidental reached 1,247,858 megawatt-hours in 2018, a 5.3% increase from the previous year. 50.3% of this figure is attributed to residential use, 22.5% to industrial use, 22.7% to commercial use, and the final 4.6% 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.**

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 coal-fired power plants owned by Kepco-Salcon Power Corp and Palm Concepcion Power Corp. They also source electricity from Green Core Geothermal and Energreen Diesel Power. Peaking requirements are provided by Panay Power Corporation. 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. 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.”

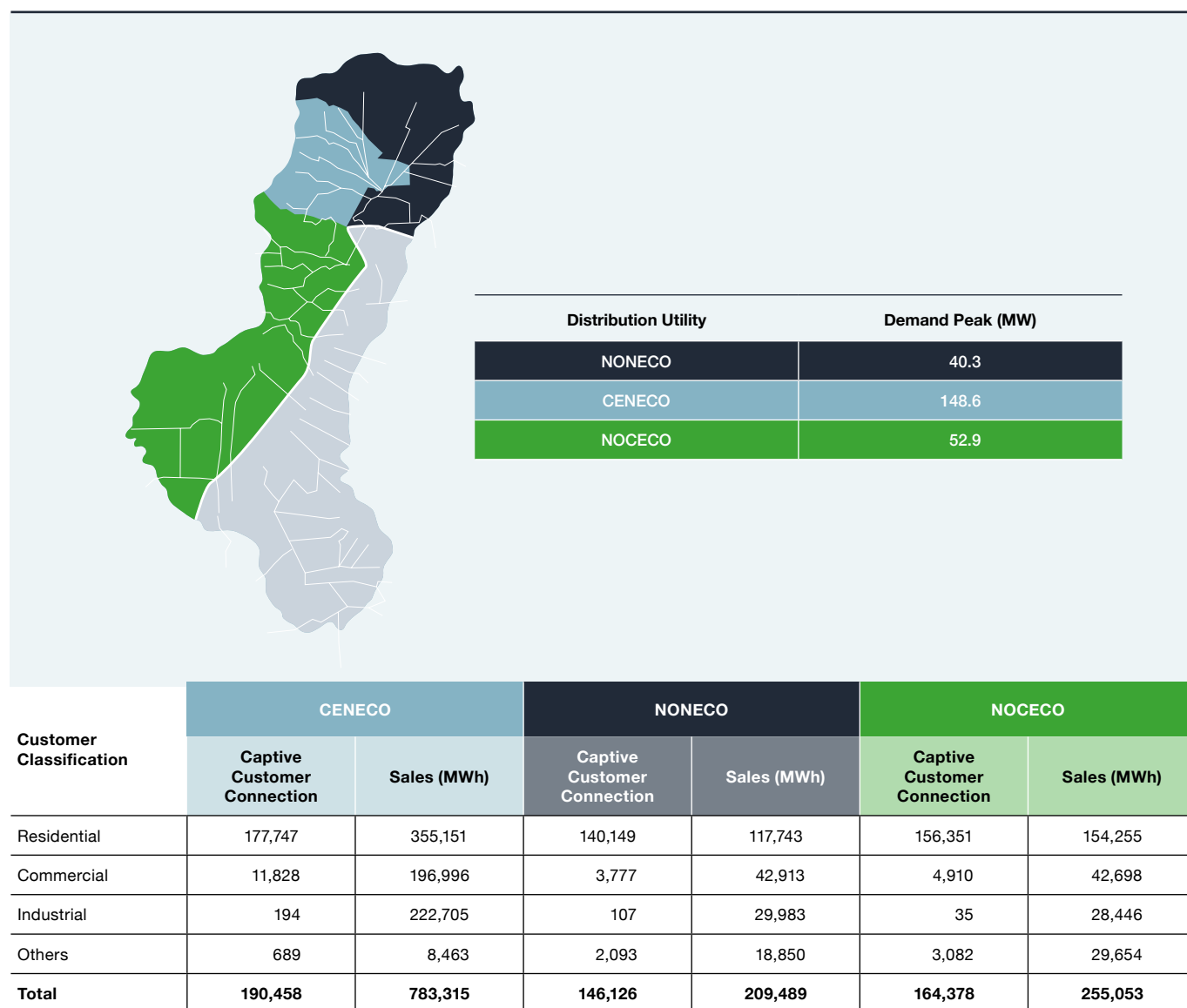
The Executive Order created a Provincial Renewable Energy Council (PREC), to formulate measures encouraging renewable energy programs for a greener and energy-sufficient province. Chaired by the governor and co-chaired by the provincial board’s committee chair on energy, the PREC was tasked to recommend 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 1<sup>st</sup> 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.”

It was announced in August 2021 that Philippine conglomerate San Miguel’s power generation arm SMC Global Power would convert its’ 300MW San Carlos coal plant into an LNG-fired power plant. This follows Governor Lacson’s announcement in early February that he is creating an Energy Council that will draw up a roadmap for renewable energy in Negros Occidental. “I will have to decide who can help us lead this energy council, most likely from the private sector, and then we will decide on the membership”, said the Governor.

#### Electricity Co-operatives in Negros Occidental



Source: Bronzeoak Philippines Inc

# Investments

## Solar Power

The Philippine Government passed the Renewable Energy Act in 2008 in order 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 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 Bronzeroak 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, stand-alone 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 Bronzeroak Philippines Inc. of two more solar power plants in Negros Occidental – ISLASOL II in La Carlota and ISLASOL III in Manapla.

As at end-2020, the installed capacity of solar electricity in the Philippines was 1,019 MW, almost 4% of the total but more than six times greater than just five years’ previously. As of May 2021, the Department of Energy’s website lists a total of a further 11,774 MW in potential capacity either at the pre-development or development phase, although there is no certainty or time horizon upon which these will proceed. Out of a total 495 MW of new installed capacity in the Philippines between 2016 and 2020, 254 MW came from solar energy, over 50% of the total.

Total installed electricity generation capacity in the Philippines

Year	Thermal (MW)			Sub-total Thermal	Renewable (MW)					Sub-total Renewable	Total (MW)
	Coal	Oil Based	Natural Gas		Geo-thermal	Hydro	Wind	Biomass	Solar		
2006	4,177	3,602	2,763	10,542	1,978	3,257	25	0	1	5,261	15,803
2008	4,213	3,353	2,831	10,397	1,958	3,291	33	0	1	5,283	15,680
2010	4,867	3,193	2,861	10,921	1,966	3,400	33	38	1	5,438	16,359
2012	5,568	3,074	2,862	11,504	1,848	3,521	33	119	1	5,522	17,026
2014	5,708	3,476	2,862	12,046	1,918	3,543	283	131	23	5,898	17,944
2016	7,419	3,616	3,431	14,466	1,916	3,618	427	233	765	6,959	21,425
2018	8,844	4,292	3,453	16,589	1,944	3,701	427	258	896	7,226	23,815
2020	10,944	4,237	3,453	18,634	1,928	3,779	443	483	1,019	7,652	26,286

Source: Department of Energy

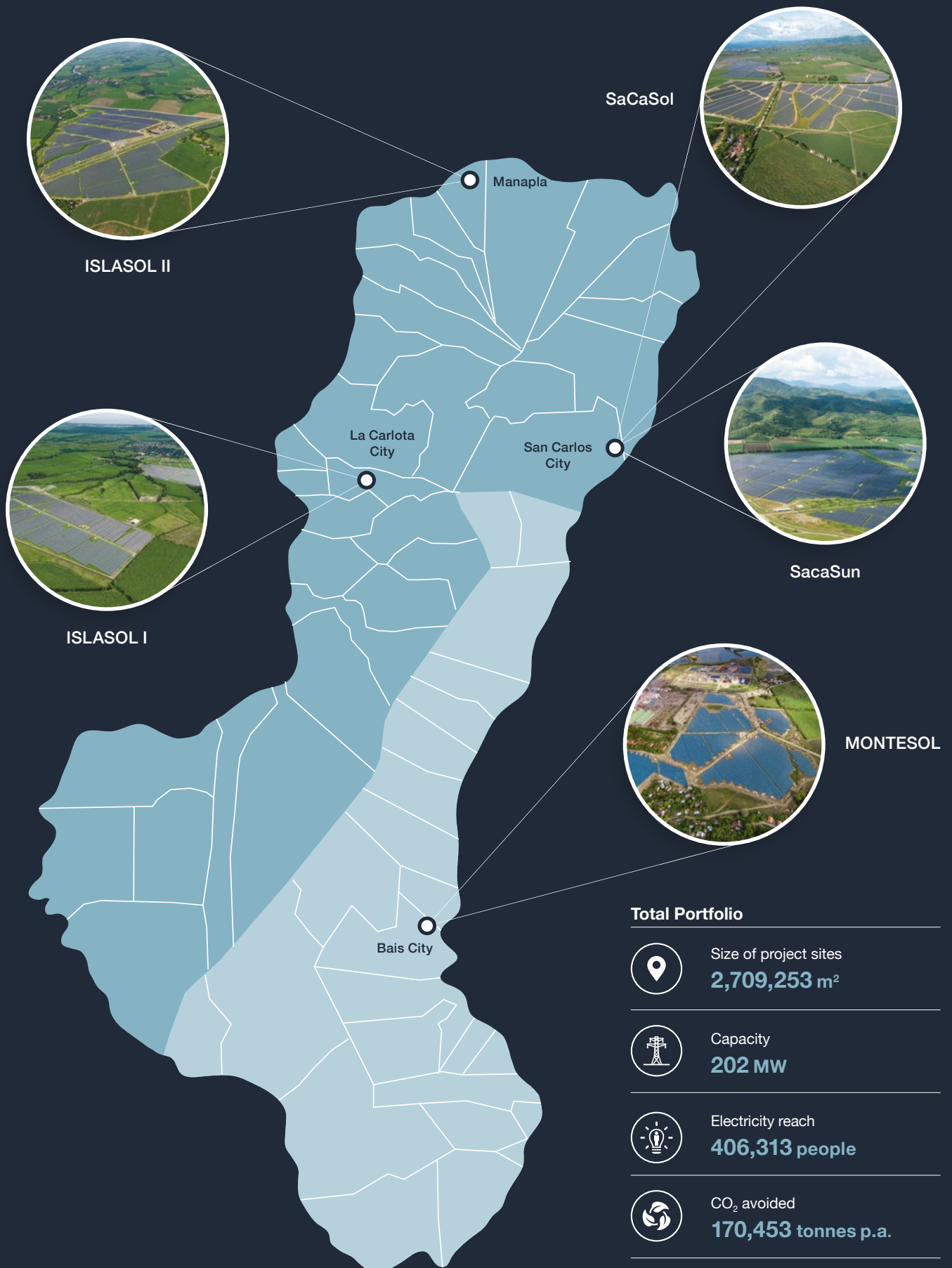
## Biomass

ThomasLloyd together with Bronzeroak 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.

## Solar Portfolio



# 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 night-time 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 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

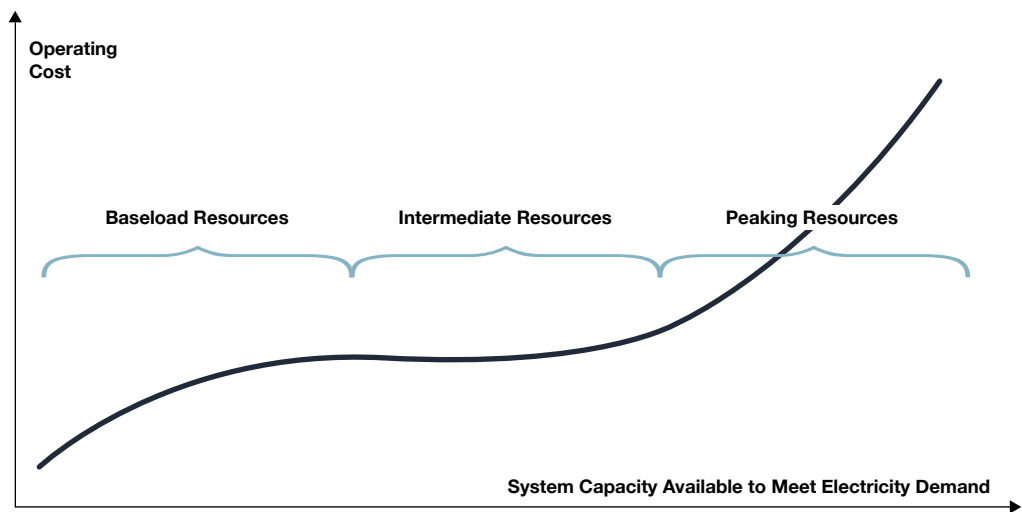
considered both an expensive and intermittent option, making it unattractive or impossible for utility-scale grid integration, is now available as a system-wide resource. From our perspective, however, the most exciting development is in the use of biomass in base power production. It is here that renewable 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

Hypothetical electricity market dispatch curve



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

## Biomass Portfolio



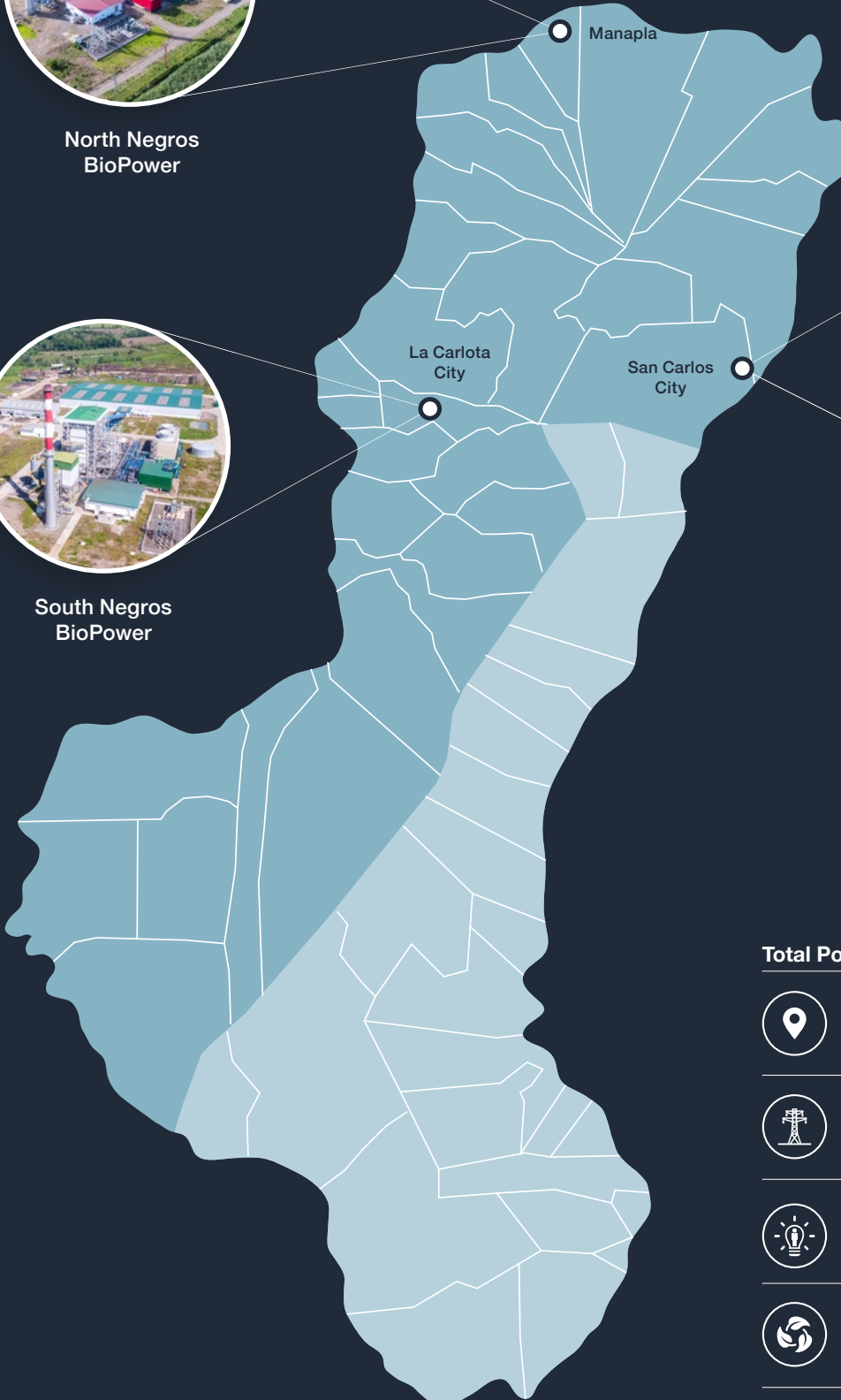
North Negros  
BioPower



South Negros  
BioPower



San Carlos  
BioPower



### Total Portfolio



Size of project sites  
**552,900 m<sup>2</sup>**



Capacity  
**70 MW**



Electricity reach  
**540,468 people**



CO<sub>2</sub> avoided  
**345,274 tonnes p.a.**



Investment volume (CAPEX)  
**303 million USD**



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 ratoons – 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 ratoon crop. Farmers globally, not just in the Philippines, have therefore traditionally 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 ( $0.64 \times 7.12\text{t/ha} \times 420,000\text{ha}$ ).

### 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  $\text{CO}_2$ , CO, NO<sub>x</sub>, SO<sub>x</sub>, 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.”

### 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 will 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.

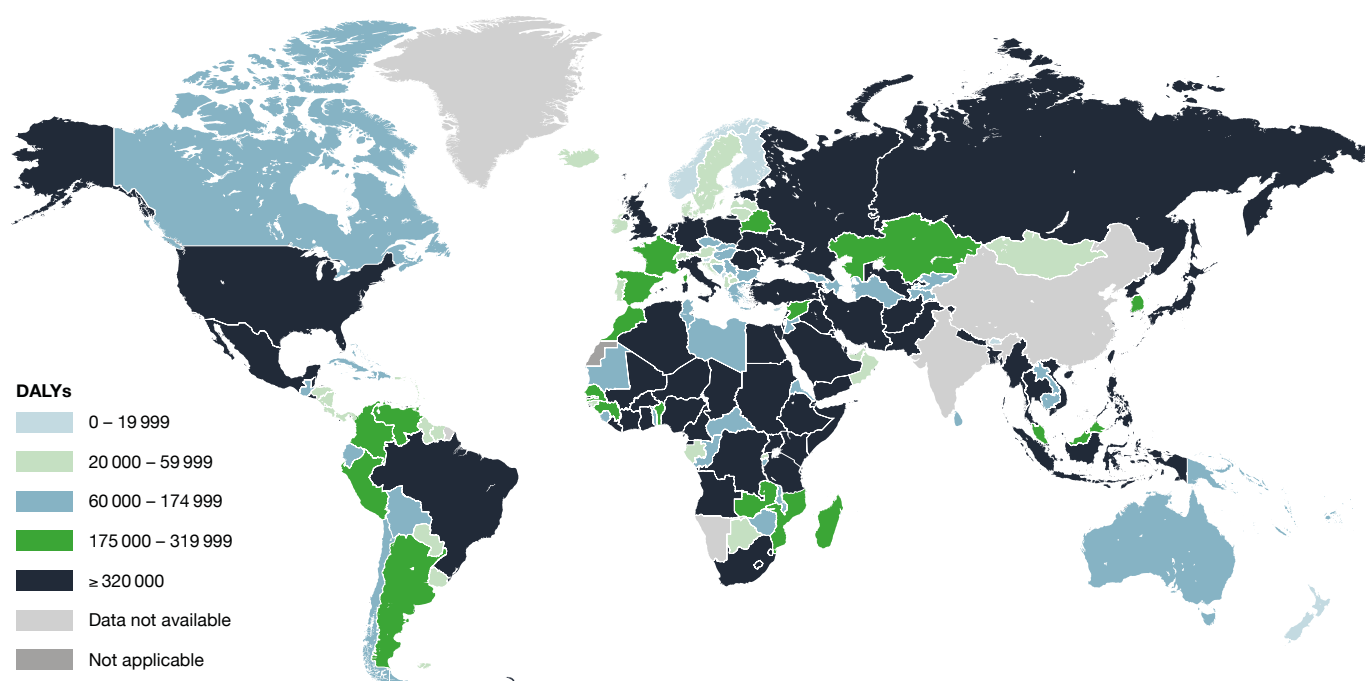
The process of mechanical collection involves the use of a number of specialised farm tractor-pulled implements which enter the sugarcane fields immediately or soon after harvest of the sugarcane. An initial raking operation to windrow the cane trash followed by the collection machinery allows rapid 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

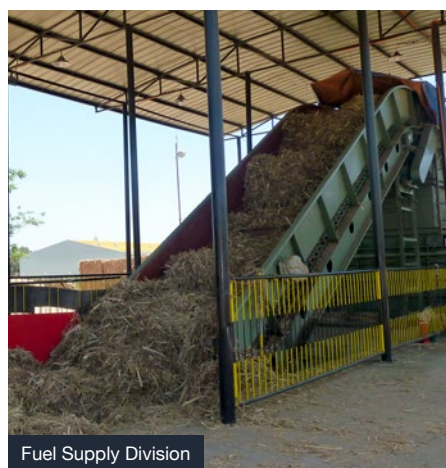
In total, the Fuel Supply Division has purchased over 100 Case tractors, 45 of these being ordered and delivered in Q4 2018 alone in what was said to be the biggest ever tractor order from a single Philippine company. As at end-2020, the biomass projects collectively also owned 25 excavators, 54 rakes, 30 tele-handlers, 51 wagons and 54 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 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

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](http://gamapserver.who.int/mapLibrary/Files/Maps/Global_aap_dalys_2016.png)



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 hectareage, 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, nine transloading stations have thus far been constructed on Negros to keep all the project’s power plants fully supplied. Another three are to be constructed in the future, of which one has land secured.

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 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 ratoon 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 cane 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 ratoon 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 existing qualified engineers elsewhere in the Philippines.

BioPower takes its commitment to training very seriously indeed. Employee training and development is key to sustain-

ing 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 pro-

### Fuel Supply Division (FSD) Employment

	2016				2017				2018				2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>SCBP</b>	86	93	101	126	184	203	200	198	200	261	249	268	278	279	275	279	269	264	265	187
<b>SNBP</b>					87	94	78	75	77	74	77	179	259	259	284	346	371	362	362	253
<b>NNBP</b>															284	346	315	313	310	198
<b>Aggregate across FSD</b>																				
<b>Total</b>	<b>86</b>	<b>93</b>	<b>101</b>	<b>126</b>	<b>271</b>	<b>297</b>	<b>278</b>	<b>273</b>	<b>277</b>	<b>335</b>	<b>326</b>	<b>447</b>	<b>537</b>	<b>538</b>	<b>843</b>	<b>971</b>	<b>955</b>	<b>939</b>	<b>937</b>	<b>638</b>



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.



grammes 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 pro-

grammes are tailored to maximise the employee's existing skills whilst harnessing new skills suitable for biomass operations.

#### Technical skills development 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.

Parts and manual training for rake & wagon	Tractor basic maintenance training	Microsoft Office Software Skills training
Pottinger training	Depot operation training	AGTRIX software training
Telehandler training	Case farmlift 633 operations	Location intelligence events
Long haul training	Case tractors maintenance	Agricultural and engineering conventions
Foton ginder and roller training	Massey tractors maintenance	
FSD Operational Procedure and Accountabilities (Volvo Driver's training)	Sheet metal arc-welding (SMAW) national certificate 1 and 2 (NC1 and NC2) Welding	
Preparatory training and assessment for long-haul drivers	Biomass collection equipment operator's training (Pottinger, Minos, Massey, Volvo, Fliegl)	
Training and assessment for long-haul drivers	UD Questor dumptruck operations	
	Kawasaki KLX 150J motorcycle safe driving	



## Impact Methodology

**The challenge for this Impact Report is to provide both information and context, making it as relevant to the people, leaders and businesses on the island of Negros as it is to investors and stakeholders in the company. Data gathering for this 2021 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.**

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.

### 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 2020 census, has a population of 55,083 people; an increase of 11% compared to the start of the new millennium.

**Municipality of Manapla: Population Growth and Distribution**

Population census of Manapla			Total Population of Manapla in 2020	
Year	Population	%change p.a.	LGU	Total Population
1903	10,123	–	Barangay I	2,151
1918	10,033	-0,06%	Barangay I-A	4,242
1939	19,490	3,21%	Barangay I-B	1,256
1948	35,218	6,79%	Barangay II	1,461
1960	46,809	2,40%	Barangay II-A	908
1970	31,097	-4,01%	Chamberry	2,999
1975	38,357	4,29%	Punta Mesa	7,529
1980	40,524	1,11%	Punta Salong	5,962
1990	40,095	-0,11%	Purissima	9,306
1995	44,301	2,02%	San Pablo	8,785
2000	49,581	2,28%	Santa Teresa	3,476
2007	52,428	0,80%	Tortosa	7,008
2010	52,687	0,16%	Total	55,083
2015	54,485	0,67%		
2020	55,083	0,22%		

Source: Philippine Statistics Authority

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 2020 census of just 3,476. This was a significant increase of 943 people or 37.2% on the previous total of 2,533 in 2015. 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.

Whilst significant employment is generated through the construction of projects, our impact doesn't end there. The operational phase requires continued employment – particularly for BioPower – and thus, a long-term and sustainable source of income is available for the local community. As of 2017 Q4, a total of 96 locals were employed at the Manapla solar plant. As of 2020 Q4, 354 locals were employed at North Negros BioPower, of which over half were classified as skilled or semi-skilled. In addition, roughly 20% of the staff were classified

as 'technical'. The 'quality' of employment is key; increased knowledge and experience in a skilled operation provides further reassurance of continued employment. The BioPower plant remained a continued source of employment throughout 2020, highlighting the sector's resilience in the face of COVID-19.

### 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 15<sup>th</sup>.

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.

Commissioning and construction continued at full pace throughout the final quarter of 2019. The plant achieved export of power on December 12<sup>th</sup> and successfully completed its officially-required 72 hour test beginning on December 26<sup>th</sup>. No lost-time incidents were reported during the quarter, with the total safe man-hours recorded cumulatively by the project to December 31<sup>st</sup> that year 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

#### Employment at Manapla solar plant

	2015		2016				2017				2018				2019				2020			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Job Type</b>																						
Technical	12	26	38	28	20	10	17	16	17	10	6	7	7	7	6	7	6	6	7	6	6	6
Office Staffs	10	31	63	20	17	3	13	8	13	3	4	4	4	4	3	3	3	3	3	3	3	3
General Labor	47	96	747	472	123	83	92	81	96	83	62	63	62	59	67	56	40	45	69	49	59	51
<b>Employment</b>																						
Direct Hires	6	6	6	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hired by Contractors	63	147	842	517	157	95	121	104	125	95	71	73	72	69	75	65	48	53	78	57	67	59
<b>Total Employees</b>																						
Locals	69	153	848	520	160	96	122	105	126	96	72	74	73	70	76	66	49	54	79	58	68	60

## Employment at North Negros BioPower (NNBP)

	2018				2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Job Type</b>												
Technical	–	13	30	77	144	176	249	157	67	65	64	66
Office Staffs	–	5	28	49	68	93	124	110	72	73	73	73
Skilled/Semi-skilled	–	24	83	217	361	442	665	518	286	278	275	179
General Labor	–	7	26	64	136	159	217	147	73	62	56	40
<b>Employment</b>												
Direct Hires	–	1	20	25	85	85	110	289	400	395	393	295
Hired by Contractors	–	48	147	382	785	785	1145	643	98	83	75	63
<b>Total Employees</b>												
Locals	–	48	165	404	866	866	1251	928	495	474	465	354

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% 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 sup-

plement 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 until end-2019.

### 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 PHP2,729,793 and a starting point

**Municipality of Manapla – Consolidated Statement of Financial Performance**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Community Tax				3,105,909	3,538,770	393,255	425,282	465,962	469,837	545,243,10	390,188,21
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	17,275,095,68	12,992,597,28
Discount on Real Property Tax – Basic						-569,572	-1,189,191	-4,831,102	-5,677,182	-4,119,831,10	-2,093,493,95
Special Education Tax		2,092,327	3,370,518	44,100		3,271,951	6,406,727	17,444,685	10,468,963	14,059,378,09	10,399,801,91
Discount on Special Education Tax – Basic						-565,638	-1,191,981	-4,825,596	-3,364,375	-2,427,135,44	-1,448,633,37
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	4,303,162,70	4,659,071,55
Tax on Sand, Gravel and other Quarry Products						124,407	150,482	170,352	391,499	414,093,29	432,365,82
Amusement Tax											27,718,80
Tax on Delivery Trucks and Vans					900	600				0,00	0,00
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	605,114,58	1,849,168,14
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	970,137,16	673,858,60
Tax Revenue – Fines and Penalties – Other Taxes						603,699	47,666	113,828			0,00
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	31,625,258,06	27,882,642,99
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	128,940,356	141,310,263,57	158,942,769,05
Other Share from National Taxes											40,32
Service and Business Income				2,880,986	3,410,821	4,130,632	5,924,754	5,242,232	5,632,712	5,539,951,51	5,512,472,17
Shares, Grants and Donations				31,563	52,017	14,463	577,658	1,416,667	1,471,139	43,249,47	48,846,21
Other Income				512,363	347,176	120,000	351,894	519,403	292,506	351,054,41	306,249,70
<b>Total Revenue</b>	<b>78,929,539</b>	<b>83,677,279</b>	<b>81,528,650</b>	<b>90,297,608</b>	<b>102,423,606</b>	<b>116,911,930</b>	<b>139,877,041</b>	<b>156,456,005</b>	<b>159,501,368</b>	<b>178,869,777,02</b>	<b>192,693,020,44</b>

Source: Philippine Commission on Audit

of PHP2,301,559 in 2015 to an annual average in 2016–2020 of PHP8,310,490; an almost fourfold increase. Special Education Tax payments, meantime, averaged PHP1,642,652 in the five years to 2015 but jumped to average PHP8,061,418 in 2016–2020; an almost fivefold increase.

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 84.9% of total municipal revenues (by way of comparison, the figure in La Carlota where another of our solar plants was constructed was over 90%). Manapla's average IRA share of total revenues fell to 76.8% in 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 bringing 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.

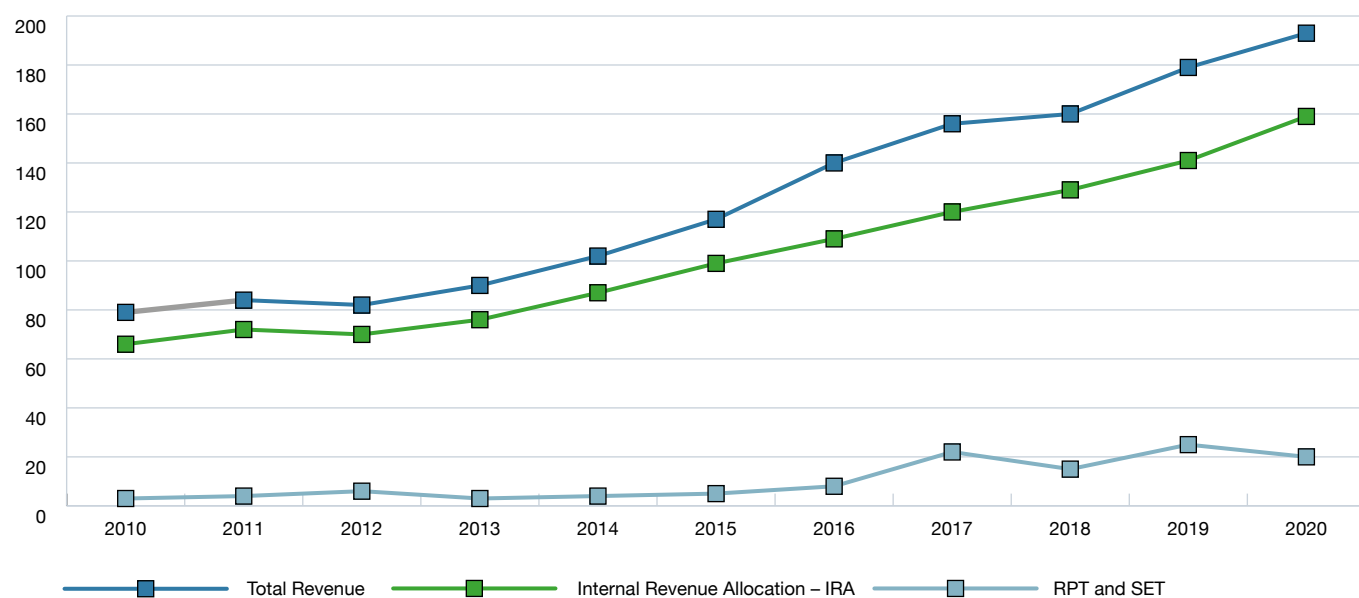
In our previous reports, we used audited records and publicly available municipal budget documents to identify 70 local infrastructure projects which were planned, underway or completed in Manapla in 2017 and 2018 at a total cost of PHP64,604,922. These comprised not only general improvement works to 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, a day care centre, school clinic and school library as well as projects to support sustainable livelihood for fisher folk.

### Tax revenues finance local infrastructure improvements

In 2020, a further 16 local infrastructure projects were planned, underway or completed at a total cost of PHP39,265,324. As

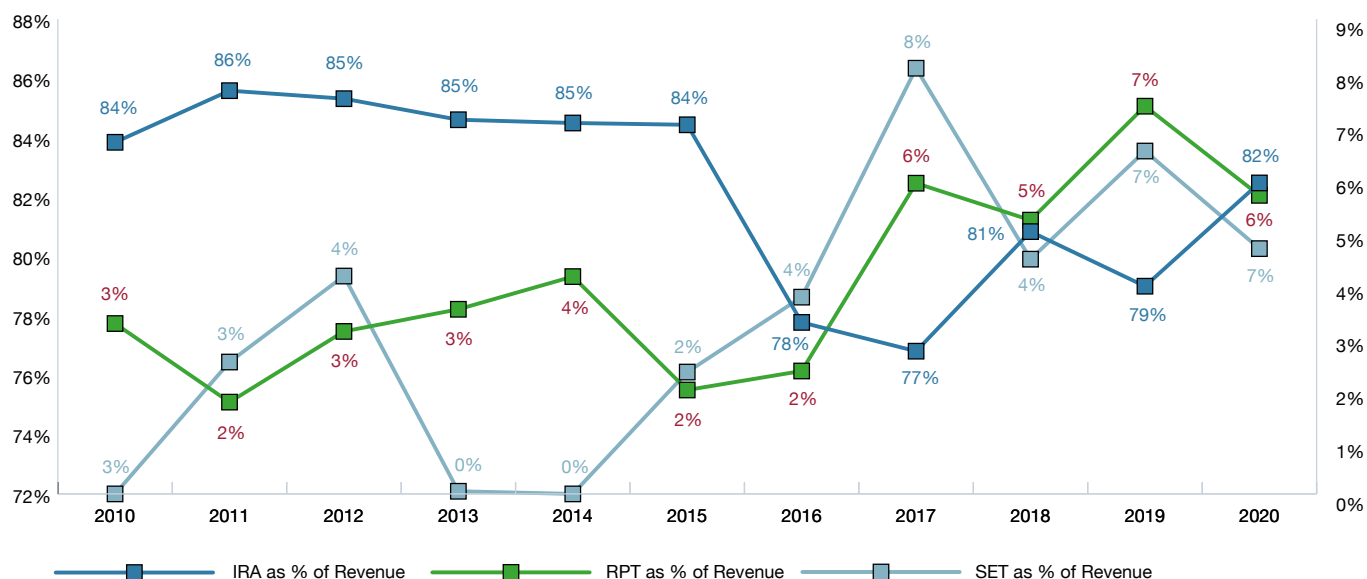


Evolution of Manapla's Revenue (PHP mn)



Source: Philippine Commission on Audit

## Evolution of IRA and RPT as % of Total Revenue



Source: Philippine Commission on Audit

well as general improvement works to develop existing infrastructure, they included a fishery development program, installation of a street lighting system and a sustainable livelihood program.

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.

### Schedule of Projects Implemented in Manapla during CY2020

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.

### Barangay Santa Teresa population growth

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 and signed by barangay Treasurer Ms. Shery Rose A. Peduque, show these amounted to PHP5,432,053 in 2020, paid in four quarterly instalments

### Transformative impact of 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.

#### Schedule of Projects Implemented in Manapla during CY2020

Programs / Projects / Activities	Location	Project Cost (PHP)
Construction of new Municipal Road	Barangay II-IIA	5.000.000
Construction of Fish Pala-pala	Barangay II	2.500.000
Construction of Pta. Mesa – Tortosa road	Brgy. Pta. Mesa – Tortosa	5.000.000
Sustainable livelihood programme	Brgy. San Pablo, Tortosa, Purisima, Pta. Mesa, Sta. Teresa & Pta. Salong	1.000.000
Organic Agriculture Program		500.000
Support to Agri-Fishery Development Program	Coastal Barangays	500.000
Construction of Drainage (Bliss to RHU)	Barangay I-A	1.000.000
Installation of Street Lighting System	Barangay II-A, I-B & I	1.000.000
Construction & Rehab of Water System	Municipal Wide	1.000.000
Development of Relocation site	Barangay I-A	2.000.000
Rehab of Multi-Purpose Gym (Phase 2)	Barangay I-B	1.065.925
Fishery Development Program	Barangay Tortosa, Pta. Mesa, II-A, II, Chambery & Pta. Salong	1.500.000
Solid Waste Management Program	Municipal Wide	500.000
Clean & Green Program	Municipal Wide	100.000
Upgrading of Laguda-Anecita Road	Barangay San Pablo	11.897.000
Concreting of Lauron FMR	Barangay San Pablo	4.702.399
<b>TOTAL</b>		<b>39.265.324</b>

#### Schedule of Projects Implemented in Barangay Sta. Teresa CY2020

Programs / Projects / Activities	Location	Project Cost (PHP)
Replacement of Jetmatic Pump		30.000
Construction of Street Lights	Proper	50.000
Construction of Jetmatic Pump	Purisima	36.000
Construction of Jetmatic Pump	Hacienda Unson	36.000
Office Equipment		99.000
Rehabilitation of multi-purpose foot-walk		35.000
Construction of Storage Room		70.000
Construction of Barangay Hall Fence		85.000
Rehabilitation of Barangay Hall Kitchen		35.000
<b>TOTAL</b>		<b>476.000</b>

## Economic Impact

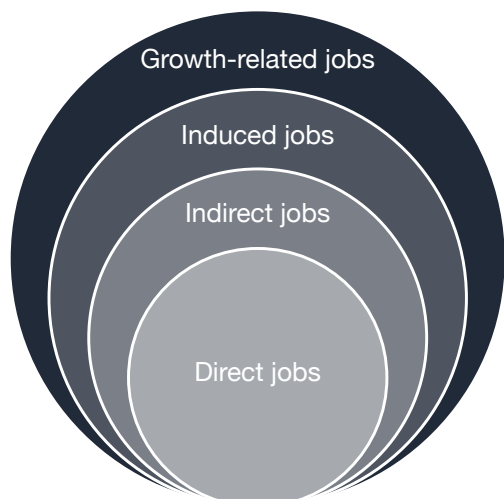
**We know from first-hand experience that the island of Negros is in an exciting phase of economic growth. Every metric of development, from new businesses registered, payroll and consumption tax revenues, total employment and the number of vehicles registered shows a consistent and accelerating pace of change. A very small enterprise selling 50cc motorcycles from makeshift premises before our solar plants were developed 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.

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

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Source: Worldbank

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This latest Impact Report 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 provide 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). A study of a power transmission line that IFC financed in India, for example, showed that many more indirect and induced jobs were created than direct jobs.

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 transportation, 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 IFC estimated that electricity provided by the new power transmission lines in India generated a total of about 75,000 jobs from 2006-12, a much larger number than the direct creation of about 2,000 jobs associated with construction and maintenance of the lines".

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 2019, the total number of people employed across the biomass sites plus the fuel supply division was 4,140. Once operations are fully underway at all three biomass sites, it is estimated there will be a further increase in the number of seasonal workers employed both onsite and in the FSD, although this will to some extent be offset by the fall already observed 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 as all solar and biomass plants will then be in the operational stage. Applying a multiplier of just five would give a total permanent boost to employment in Negros Occidental of around 6,650 jobs ( $1150 + 180 \times 5$ ) whilst a 10 times multiplier would yield twice this amount.

### 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. Net Real Property Tax (RPT) in Manapla of almost PHP11 million in 2020 compares to just PHP2.3 million in 2015 whilst net SET revenues have increased more than PHP6 million to PHP8.9 million over the same period.

Audited Financial Statements from the municipality of Manapla show a further PHP39.3million of local improvement projects were authorised in 2020 after PHP39.8 million in 2019 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 PHP5.3 million in each of the past four years and is set to double when the biomass plant is grid-connected and fully operational.

A PHP5.3 million per annum boost to revenues from each solar and biomass plant equates to a permanent PHP16 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 using a conservative 5 times multiplier, this would suggest a total demand injection around PHP80 million per annum across the province.

### Impact on Economic Growth

In 2020, Western Visayas' annual GDP stood at PHP850 billion (USD17 billion), of which an estimated 40%, or PHP336bn, 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 9,975 direct and indirect jobs plus PHP80m of extra municipal spending and induced demand. This is equivalent to almost 0.8% of Negros Occidental GDP once all three plants are operational; a permanent and substantial boost to aggregate provincial income after the even greater boost which was already provided during the construction phase of all the renewable energy plants.

#### Employment across three Biomass sites plus Fuel Supply Division

	2016				2017				2018				2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>SCBP</b>																				
Technical	91	117	126	122	99	98	126	122	147	163	112	142	169	170	164	151	136	132	128	118
Office Staffs	62	62	67	67	72	73	67	67	79	77	65	72	69	68	67	59	55	50	48	46
Skilled	1337	1986	2984	636	453	444	2984	636	264	382	420	350	425	441	615	500	296	252	219	143
General Labor	507	643	1008	235	131	128	1008	235	70	98	143	144	141	124	185	156	100	84	69	69
<b>SNBP</b>																				
Technical					12	16	17	18	23	21	33	135	317	340	508	621	399	185	99	99
Office Staffs					28	29	30	28	28	25	34	67	88	96	113	147	140	104	65	65
Skilled					69	73	57	53	55	56	56	144	221	221	236	365	331	310	306	197
General Labor	2	2	2	2	51	55	56	57	68	71	90	154	367	499	778	1209	590	189	56	57
<b>NNBP</b>																				
Technical										13	30	77	144	176	249	157	67	65	64	66
Office Staffs										5	28	49	68	93	124	110	72	73	73	73
Skilled										24	83	217	361	442	665	518	286	278	275	179
General Labor										7	26	64	136	159	217	147	73	62	56	40
<b>of whom, Fuel Supply Division</b>	<b>86</b>	<b>93</b>	<b>101</b>	<b>126</b>	<b>271</b>	<b>297</b>	<b>278</b>	<b>273</b>	<b>277</b>	<b>335</b>	<b>326</b>	<b>447</b>	<b>537</b>	<b>538</b>	<b>843</b>	<b>971</b>	<b>955</b>	<b>939</b>	<b>937</b>	<b>637</b>
<b>TOTAL</b>	<b>1999</b>	<b>2810</b>	<b>4187</b>	<b>1062</b>	<b>915</b>	<b>916</b>	<b>4345</b>	<b>1216</b>	<b>734</b>	<b>942</b>	<b>1120</b>	<b>1615</b>	<b>2506</b>	<b>2829</b>	<b>3921</b>	<b>4140</b>	<b>2545</b>	<b>1784</b>	<b>1458</b>	<b>1152</b>

# ESG Integration

## ESG Policy

We are committed to the integration of material ESG factors into all corporate and investment decisions, so as to deliver transparency, mitigate investment risk and to enhance investment returns in the best interests of our clients, other stakeholders and investee communities.

We believe that ESG issues impact the value and reputation of ThomasLloyd, in addition to driving systemic risks and opportunities. An ESG framework embeds our philosophy of 'Realising Sustainable Value' in all our processes and investments, keeping us on track to deliver the impact our investors demand.

We fully comply with all laws and regulations, at all times and in all jurisdictions, following industry standard environmental, social and corporate governance ('ESG') guidelines and best practices. Acting with integrity in all our operations, we avoid all forms of discrimination and embed equality and diversity in our employment policies. We respect human rights and avoid exploitation of child labour, ensure no bribery or corruption and actively manage investment projects to deliver ESG and Impact outcomes in the communities and countries in which we operate.

- In the environmental domain, we must adhere to the legal, regulatory and governance frameworks of the investment jurisdiction and to regulatory compliance. We must also adhere to the IFC/World Bank performance standards and to the eligibility criteria of the LuxFlag Environment Label. We must evidence plans to prevent, mitigate and control serious environmental damage resulting from accidents and incidents related to all activities, including immediate reporting to the relevant authorities.
- In the social domain, we must respect and secure labour rights, maintain safe working conditions and develop diverse human capital through training and education programmes. We must also avoid exploitation of child labour, reject all forms of discrimination and embed equality and diversity in our employment policies.
- In the governance domain, we must evidence a code of conduct and a risk management system to prevent all forms of bribery, corruption and money laundering.

The EU Sustainable Finance Disclosure Regulation (SFDR) which was introduced in early 2021, is designed to improve and standardise ESG disclosure. SFDR requires investment managers with financial products targeting sustainable invest-

ments as part of their investment objective to disclose how the sustainable investment objective is met and provide details on the "Sustainability Indicators" used to measure this. ThomasLloyd reports under Article 9 regulation which is the most stringent in terms of pre-contractual disclosures and ongoing transparency. We have adopted the Principal Adverse Impacts framework and a set of sustainability indicators which are used to measure the ESG performance of our investee companies and the attainment of the sustainable investment objectives of our financial products. We work with management teams to analyse and monitor the risks in a framework which is directly aligned to SFDR. We will be reporting our progress against these sustainability indicators from 2022-onwards.

## ESG Risk Management Framework aligned with SFDR

In the Philippines, ThomasLloyd's local partners define standards, protocols, procedures and systems for managing environmental, health and social (EHS) risk. These are formulated as per the requirements of the International Financial Corporation (IFC) and the Japan Bank for International Cooperation (JBIC). Our partners engage specialist contractors IndusEnviro for implementing EHS methods and policies and detailed site assessments are produced to show compliance with the strictest standards of safety and governance.

## ESG vs Impact

Whilst our ESG reporting framework will be aligned to the most demanding requirements of the EU's SFDR Article 9, we do not believe that ESG is itself the defining feature of our investment approach. ESG can conceptually be seen as describing behaviours and processes along the investment journey.

In this regard, ThomasLloyd is a signatory to UN Principles of Responsible Investment and supporter of the Task force on Climate-related Financial Disclosures (TCFD). We map our impact outcomes against the UN's 17 Sustainable Development Goals (SDG's) and measure our contribution to environmental improvements using internationally agreed standards. We play an active part in the transition to a low-carbon future and fully support the aims of the Intergovernmental Panel on Climate Change (IPCC).

The ultimate goal of our investments is impact; the difference we have made to the economies, societies and communities where our money and that of our clients is put to work. We take our ESG reporting very seriously, but this alone will not drive transformational change. It is impact which is at the heart of our investment philosophy.

Indicators applicable to investments in investee companies						
Adverse sustainability indicator		Metric	Impact {year n}	Impact {year n-1}	Explanation	Actions taken
Climate and other environment related indicators						
Greenhouse gas emissions	1. GHG Emissions	Scope 1 GHG Emissions				
		Scope 2 GHG Emissions				
		From 1 January 2023 Scope 3 GHG Emissions				
		Total GHG Emissions				
	2. Carbon Footprint	Carbon Footprint				
	3. GHG Intensity of Investee Companies	GHG Intensity of Investee Companies				
	4. Exposure to companies active in the fossil fuel sector	Share of investments in companies in the fossil fuel sector				
	5. Share of non-renewable energy consumption and production	Share of non-renewable energy consumption and non-renewable energy production of investee companies from non-renewable energy sources compared to renewable energy sources, expressed as a percentage				
6. Energy consumption intensity per high impact climate sector	Energy consumption in GWh per million EUR of revenue of investee companies, per high impact climate sector					
Biodiversity	7. Activities negatively affecting biodiversity sensitive areas	Share of investments in investee companies with sites/operations located in or near to biodiversity sensitive areas where activities of those investee companies negatively affect those areas				
Water	8. Emissions to water	Tonnes of emissions to water generated by investee companies per million EUR invested, expressed as a weighted average				
Waste	9. Hazardous waste ratio	Tonnes of hazardous waste generated by investee companies per million EUR invested, expressed as a weighted average				
Social and employee, respect for human rights, anti-corruptionand anti-bribery matters						
Social and employee matters	10. Violations of UN Global Compact principles and Organisation for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises	Share of investments in investee companies that have been involved in violations of the UNGC principles or OECD Guidelines for Multinational Enterprises				
	11. Lack of processes and compliance mechanisms to monitor compliance with UN Global Compact principles and OECD Guidelines for Multinational Enterprises	Guidelines for Multinational Enterprises				
	12. Unadjusted gender pay gap	Average unadjusted gender pay gap of investee companies				
	13. Board gender diversity	Average ratio of female to male board members in investee companies				
	14. Exposure to controversial weapons (antipersonnel mines, cluster munitions, chemical weapons and biological weapons)	Share of investments in investee companies involved in the manufacture or selling of controversial weapons				
Indicators applicable to investments in sovereigns and supranationals						
Adverse sustainability indicator		Metric	Impact {year n}	Impact {year n-1}	Explanation	Actions taken
Environmental	15. GHG Intensity	GHG intensity of investee countries				
Social	16. Investee Companies subject to social violations	Number of investee countries subject to social violations (absolute number and relative number divided by all investee countries), as referred to in international treaties and conventions, United Nations principles and, where applicable, national law				
Indicators applicable to investments in real estate assets						
Adverse sustainability indicator		Metric	Impact {year n}	Impact {year n-1}	Explanation	Actions taken
Environmental	17. Exposure to fossil fuels through real estate assets	Share of investments in real estate assets involved in the extraction, storage, transport or manufacture of fossil fuels				
Social	18. Exposure to energy-inefficient real estate assets	Share of investments in energy inefficient real estate assets				

## Environment

**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 23<sup>rd</sup> that year. 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

The Philippines submitted its first official Nationally Determined Contribution on the 15<sup>th</sup> April 2021. The NDC highlights the country’s awareness regarding its “exposure and vulnerability to climate change impacts” and outlines several targets aimed at mitigating this problem. “The Philippines, in line with its national security policy and its sustainable development aspirations and in solidarity with ASEAN Member States, shall endeavour to peak its emissions by 2030.” In addition, “The Philippines commits to a projected GHG emissions reduction and avoidance of 75%, of which 2.71% is unconditional and 72.29% is conditional, representing the country’s ambition for GHG mitigation for the period 2020 to 2030 for the sectors of agriculture, waste, industry, transport and energy”. The reduction in GHG emissions is benchmarked against a projected business-as-usual scenario, in which 3,340.3 million metric tons of carbon dioxide equivalent would be produced. According to the submission, the Philippines per capita emission of carbon dioxide equivalent stood at 1.98 metric tons in 2020. Based upon the projected BAU scenario, and the Philippines’ 2020 Census population, a 75% reduction in GHG emissions would equate to an annual 0.8 metric tons per capita – less than 40% of the figure in 2020.

The Philippines’ submission highlights a pursuit of forest protection, forest restoration and reforestation and access to results-based finance in forest conservation. It also outlines a belief that the NDC will induce local and foreign direct green investments, whilst also recognising the “private sector as the country’s main engine of economic growth and transformation”.

In the context of the NDC, 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 406,313 people, with an overall CO<sub>2</sub> reduction of 170,453 tonnes per annum. The electricity produced by the three biomass plants will reach 540,468 people, with an overall CO<sub>2</sub> reduction of 345,274 tonnes per annum. According to the US Environmental Protection Agency (EPA), this total CO<sub>2</sub> reduction is roughly equivalent to the amount sequestered by 423,022 acres of mature forest or 5,709,179 tree seedlings grown for 10 years.

## CO<sub>2</sub> Production, Mitigation and Offset

### Carbon sequestered by



**5,709,179**

tree seedlings  
grown for 10 years



**423,022**

acres of forests  
in one year



**2,361**

acres of forests preserved  
from conversion to  
cropland in one year

### Greenhouse gas emissions from



**75,090**

passenger vehicles  
driven for one year



**867,741,882**

miles driven by an  
average passenger  
vehicle



**117,440**

tons of waste  
recycled instead  
of landfilled

### CO<sub>2</sub> emissions from



**38,851,581**

gallons of gasoline  
consumed



**381,625,653**

pounds of  
coal burned



**4,571**

tanker trucks'  
worth of gasoline

Source: [www.epa.gov/energy/greenhouse-gas-equivalencies-calculator](http://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, universal-

ly-agreed objectives for tackling extreme poverty and hunger, preventing deadly diseases, and expanding primary education to all children, among other development priorities.

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.

## SUSTAINABLE DEVELOPMENT GOALS

### 1 NO POVERTY



- 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.

### 2 ZERO HUNGER



- 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.

### 3 GOOD HEALTH AND WELL-BEING



- 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.
- TLG provided sanitation trucks during the COVID pandemic.

### 4 QUALITY EDUCATION



- 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.

### 5 GENDER EQUALITY



- 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

### 6 CLEAN WATER AND SANITATION



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

### 7 AFFORDABLE AND CLEAN ENERGY



- 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.

### 8 DECENT WORK AND ECONOMIC GROWTH



- At the peak of the construction phase, more than 4,000 workers were employed across all our sites.
- In the operational phase, there will be ~1,200 permanent employees.
- 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 will have a permanent increase of around 0.8% as a direct result of our investments.



- 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) resulted in record low crime rates, specifically in San Carlos.



- ThomasLloyd is a signatory to UN Principles of Responsible Investment and supporter of the Task force on Climate-related Financial Disclosures (TCFD). We measure our contribution to environmental improvements using internationally agreed standards. We play an active part in the transition to a low-carbon future and fully support the aims of the Intergovernmental Panel on Climate Change (IPCC).

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# CONCLUSION

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With almost 110 million people, the Philippines is one of the fastest growing economies in the Asia region with a very youthful population whose median age is just 25.7 years. Currently the world's 13<sup>th</sup> most populous nation, the United Nations estimates the population will increase by almost 45 million by 2050, equivalent to adding the current total population of Spain.

President Duterte signed the Paris Agreement on Climate Change in February 2017 and the Philippines submitted its first official Nationally Determined Contribution in April 2021 with a commitment to a projected GHG emissions reduction and avoidance of 75%. In addition, the Department of Energy has announced a moratorium on greenfield coal-fired power plants. The then Governor of the Province of Negros Occidental had already signed an Executive Order opposing the establishment of coal-power plants in 2019 and current Governor Eugenio Jose V. Lacson announced his intention to uphold this Order immediately after taking office in July that year.

Negros Occidental is a case study not just in renewable energy installation, but also in 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. As this reports shows, we estimate that our investments in renewable energy have led to an operational 1% increase in annual GDP and will continue to do so throughout the plants' operational lifespan.

The heart of our impact story is employment. Jobs bring income, security, and dignity not just to one person, but also to families and communities. Jobs hold the social fabric together, bring respect for civic institutions and 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 well beyond initial job creation.

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.

With ESG firmly embedded in our responsible investment policy and throughout our investee companies, we have been granted the use of the LuxFLAG Environment Label and report under Article 9 of the EU's Sustainable Finance Disclosure Regulation (SFDR). This Impact Report forms part of our regulatory compliance and we look forward to developing this compelling story of sustainable infrastructure investment in the coming years.

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# Bibliography

## Centre for Community Transformation – Crab Picking

<http://cctgeneralnews.blogspot.com/2017/06/mimosa-cortez-crab-picker-with-heart.html>

## Department of Environment and Natural Resources (DENR)

<https://www.denr.gov.ph/>

## Department of Trade & Industry Philippines (DTI)

<https://www.dti.gov.ph/18-main-content/static/108-sme-development-council>

## Enhancing Crop Residues Recycling in the Philippine Landscape

[https://www.researchgate.net/publication/300555447\\_Enhancing\\_Crop\\_Residues\\_Recycling\\_in\\_the\\_Philippine\\_Landscape](https://www.researchgate.net/publication/300555447_Enhancing_Crop_Residues_Recycling_in_the_Philippine_Landscape)

## Filipino 2040: Energy, power security and competitiveness working paper; Energy Policy and Development Programme EPDP

[http://icsc.ngo/sites/default/files/resources/EnergyPDF\\_FAPage-for-up-loading-compressed.pdf](http://icsc.ngo/sites/default/files/resources/EnergyPDF_FAPage-for-up-loading-compressed.pdf)

## Global Impact Investing Network (GIIN)

<https://thegiin.org/impact-investing/>

## IDS: Evidence report 222: Evaluation and Impact Investing: A Review of Methodologies to Assess Social Impact

[https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/12835/ER222\\_EvaluationandImpactInvestingAReviewofMethodologiestoAccessSocialImpact.pdf?sequence=1&isAllowed=y](https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/12835/ER222_EvaluationandImpactInvestingAReviewofMethodologiestoAccessSocialImpact.pdf?sequence=1&isAllowed=y)

## IFC Jobs Study

[http://siteresources.worldbank.org/CFPEXT/Resources/es/299947-1364681190360/IFC\\_Jobs\\_Report\\_Summary.pdf](http://siteresources.worldbank.org/CFPEXT/Resources/es/299947-1364681190360/IFC_Jobs_Report_Summary.pdf)

## Implementing Rules and Regulations (IRR) of the Renewable Energy Act 9513

[http://notocoal.weebly.com/uploads/8/3/4/2/8342315/irr\\_republic\\_act\\_no.\\_9513.pdf](http://notocoal.weebly.com/uploads/8/3/4/2/8342315/irr_republic_act_no._9513.pdf)

## International Monetary Fund

<https://www.imf.org/external/pubs/ft/weo/2019/02/weodata/index.aspx>

## International Renewable Energy Agency (IRENA) – South East Asia Energy Outlook 2019

<https://www.iea.org/reports/southeast-asia-energy-outlook-2019>

## Map of Negros

<https://hinobaan.wordpress.com/maps/>

## Mulvey and Rothschild 1983: Sugarcane farming – Is there a link with cancer?

<https://www.ncbi.nlm.nih.gov/m/pubmed/6681157/>

## National Economic and Development Authority (NEDA) – Western Visayas Regional Development Plan 2017-2022

<http://www.neda.gov.ph/wp-content/uploads/2018/02/6-Western-Visayas-RDP-2017-2022.pdf>

## National Economic and Development Authority (NEDA) – Region VI – Western Visayas

<http://nro6.neda.gov.ph/>

## Negros Oriental articles State of Nature Assessment (SONA)

<http://manilastandard.net/business/power-technology/273655/negros-oriental-backs-renewables.html>

<http://pageone.ph/negros-oriental-bats-for-renewable-energy-vows-against-coal-in-green-sona/>

## Negros Occidental Comprehensive Health Plan (NOCHP)

<https://www.negros-occ.gov.ph/official-offices/>

## Negros Occidental Renewable Energy council

<https://digicastnegros.com/governor-to-create-energy-council-roadmap-to-renewable-power-seen/>

## Organik na Negros Organic Producers and Retailers Association (ONOPRA)

<https://www.sunstar.com.ph/article/1912450/Bacolod/Business/Pangilinan-pushes-for-accreditation-of-more-organic-farmers-in-Negros-Occidental>

## PhilAtlas

<https://www.philatlas.com/luzon/r04a/rizal/teresa/poblacion.html>

## Philippine Association of Crab Processors

<https://www.philcrab.com/>

## Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)

<http://bagong.pagasa.dost.gov.ph/>

## Philippine News Agency – Bacolod City

<https://www.pna.gov.ph/articles/1081532#:~:text=BACOLOD%20CITY%20%2D%2D%20The%20City,Philippine%20Model%20Cities%20and%20Municipalities>

## Philippine Statistical Yearbook

<http://psa.gov.ph/products-and-services/publications/philippine-statistical-yearbook>

[http://psa.gov.ph/sites/default/files/PSY\\_2017\\_Jan%2016%202018.pdf](http://psa.gov.ph/sites/default/files/PSY_2017_Jan%2016%202018.pdf)

## Philippine Statistics Authority (PSA)

<http://psa.gov.ph/>

## PSA Annual Livestock & Poultry Report

[https://psa.gov.ph/sites/default/files/L\\_P%20stat%20of%20the%20Phil\\_signed.pdf](https://psa.gov.ph/sites/default/files/L_P%20stat%20of%20the%20Phil_signed.pdf)

## Philippines Commission on Audit

<http://coa.gov.ph/>

<https://www.coa.gov.ph/index.php/component/phocadownload/category/9158-negros-occidental>

## Philippines renewable energy programme 2011-30

[https://www.doe.gov.ph/sites/default/files/pdf/nrep/nrep\\_books\\_021-087\\_re\\_plans\\_programs.pdf](https://www.doe.gov.ph/sites/default/files/pdf/nrep/nrep_books_021-087_re_plans_programs.pdf)

## Provincial Economic Development and Investment Centre (PEDIC)

<http://investment.negros-occ.gov.ph/>

## Provincial Government of Negros Occidental official website

<http://www.negros-occ.gov.ph/about-negros-occidental>

## PSA – regional GDP accounts

<http://psa.gov.ph/grdp>

## Rediscovering Negros

<http://www.rediscoveringnegros.com/january-june-2018/promise-fulfilled>

## SaCaSol project document

<http://www.sacasol.com/about.html>

## San Carlos City official website

<http://www.sancarloscity.gov.ph>

## Standard & Poor's Global ratings

[https://www.spglobal.com/ratings/en/Sugarcane\\_Trash\\_as\\_Biomass\\_Resource](https://www.spglobal.com/ratings/en/Sugarcane_Trash_as_Biomass_Resource)

[https://www.bioenergyconsult.com/sugarcane-trash-biomass/Sugarcane\\_production](https://www.bioenergyconsult.com/sugarcane-trash-biomass/Sugarcane_production)

<https://ap.iftc.org.tw/article/1841>

## The Electricity Journal

<https://www.journals.elsevier.com/the-electricity-journal>

## United Nations – Sustainable Development Goals

<https://sustainabledevelopment.un.org/?menu=1300>

[http://www.undp.org/content/undp/en/home/sdgoverview/mdg\\_goals.html](http://www.undp.org/content/undp/en/home/sdgoverview/mdg_goals.html)

## United States Environmental Protection Agency (EPA)

<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

<https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

## World Bank Philippines Overview

<http://www.worldbank.org/en/country/philippines/overview#1>

## World Bank – Transforming Philippine Agriculture

<https://openknowledge.worldbank.org/handle/10986/34012>

## World Health Organisation (WHO)

<https://www.who.int/>

Memberships and  
voluntary commitments

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