



ENERGY GUIDE 2020

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EUROPEAN CHAMBER OF COMMERCE IN MYANMAR

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This report serves as a guide for European small-to-medium sized enterprises interested in investing in Myanmar; it starts with a sector overview followed by entry-level information and relevant contact details.

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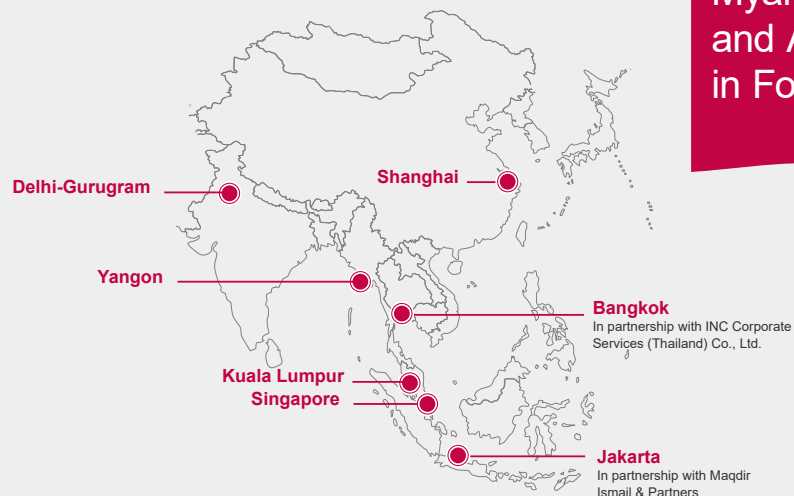
Yangon, November 2019



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Myanmar and Asia in Focus



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ACRONYMS

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit (Federal Ministry of Economic Cooperation)
DICA	Directorate of Investment and Company Administration
DRD	Department of Rural Development
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Society for International Cooperation)
IFC	International Finance Corporation
IMF	International Monetary Fund
JV	Joint Ventryre
KOGAS	Korea Gas Corporation
LPG	Liquefied Petroleum Gas
MAPCO	Myanmar Agribusiness Public Corporation
MIC	Myanmar Investment Commission
MIL	Myanmar Investment Law
MOGE	Myanmar Oil and Gas Enterprise
MOEE	Ministry of Electricity and Energy
MPA	Myanmar Port Authority
MPTA	Myanmar Petroleum Trade Association
NEP	National Electrification Plan
NGO	Non-Government Organisation
ONGC	Oil and Natural Gas Corporation
PPA	Power Purchase Agreement



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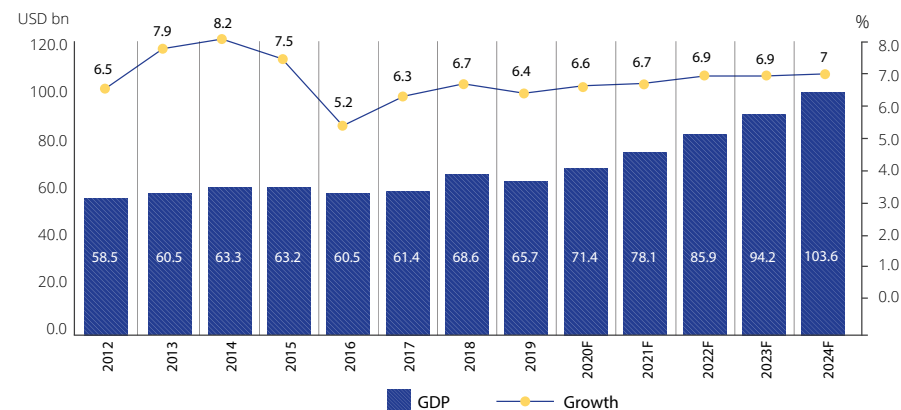
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1 COUNTRY OVERVIEW MYANMAR

1.1 MACROECONOMIC OVERVIEW

Myanmar is the second largest country in Southeast Asia in terms of land area at 676,578 square kilometres, and the fifth largest country in the region in terms of population with a size of 53 million as of 2019, estimated to grow to 54.7 million by 2024¹. The neighbouring countries of China, India, Bangladesh, Thailand and Laos, account for approximately 40% of the global population and approximately 20% of the global gross domestic product (GDP). Strategically located between China and India, with vast natural resources and a large coastline, Myanmar is expected to have the highest GDP growth rate at 6.8% till 2024 among the ASEAN countries and holds significant potential as a regional player, which remained largely untapped during almost five decades of economic isolation under a debilitating military rule.

Figure 1: Myanmar's Nominal GDP (USD billion) and GDP Growth Rates 2012–2024F



Source: IMF-World Economic Outlook Database, 2019

A series of economic and political reforms were started by the quasi-civilian government since March 2011, attracting foreign investment into the market. There was a slight decrease in growth rate in 2015, which has since recovered and is expected to stabilise in the next five years.

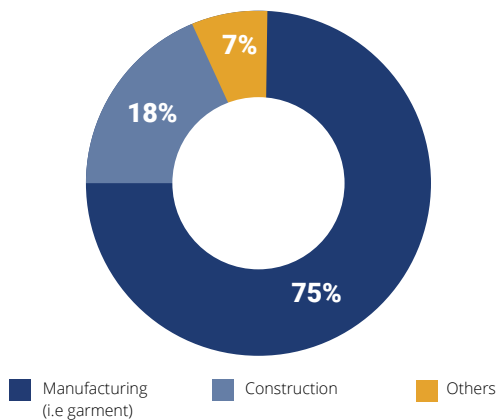
Table 1: Macroeconomic Benchmarking – ASEAN

	Population 2018 (mn)	Current GDP 2018 (USD bn)	GDP / Capita 2018 (USD)	GDP Growth (2018-2024)
Indonesia	261.9	1,022.4	3,870.6	5.2%
Philippines	106.6	330.8	3,103.6	6.6%
Vietnam	94.6	241.2	2,551.1	6.6%
Thailand	67.8	487.2	7,187.2	3.6%
Myanmar	52.8	68.6	1,297.7	6.8%
Malaysia	32.4	354.3	10,941.8	4.8%
Cambodia	16.2	24.5	1,508.8	6.6%
Laos	6.8	18.4	2,720.3	6.7%
Singapore	5.6	361.1	64,041.4	2.6%

Source: IMF-World Economic Outlook Database, 2019

With the further relaxation of regulations for foreign investment in Myanmar, a renewed sense of business optimism led to an influx of foreign firms and strong manufacturing led economic growth, primarily driven by foreign direct investment (FDI). Myanmar, being one of the last accessible frontier markets in the world, is experiencing an accelerated pace of development, similar to economic transformations experienced by its Asian peers such as Thailand and Vietnam.

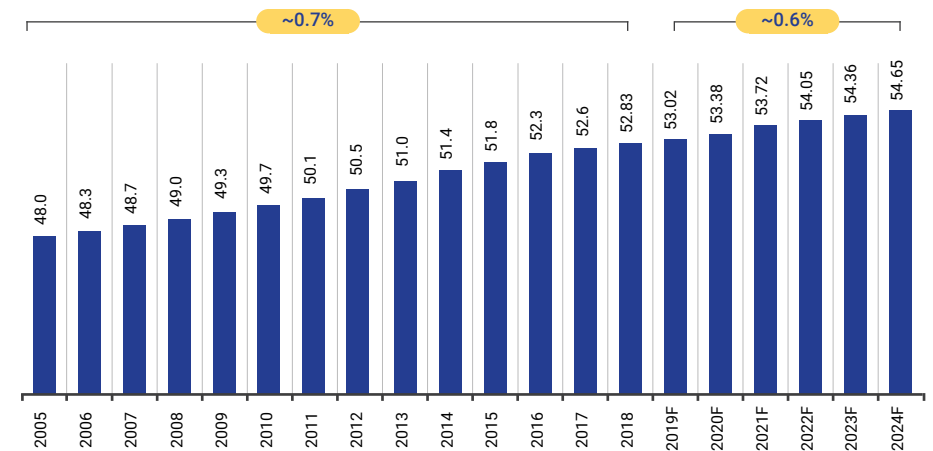
Figure 2: Industry Growth Contribution by Sector



Source: Asian Development Bank, 2019



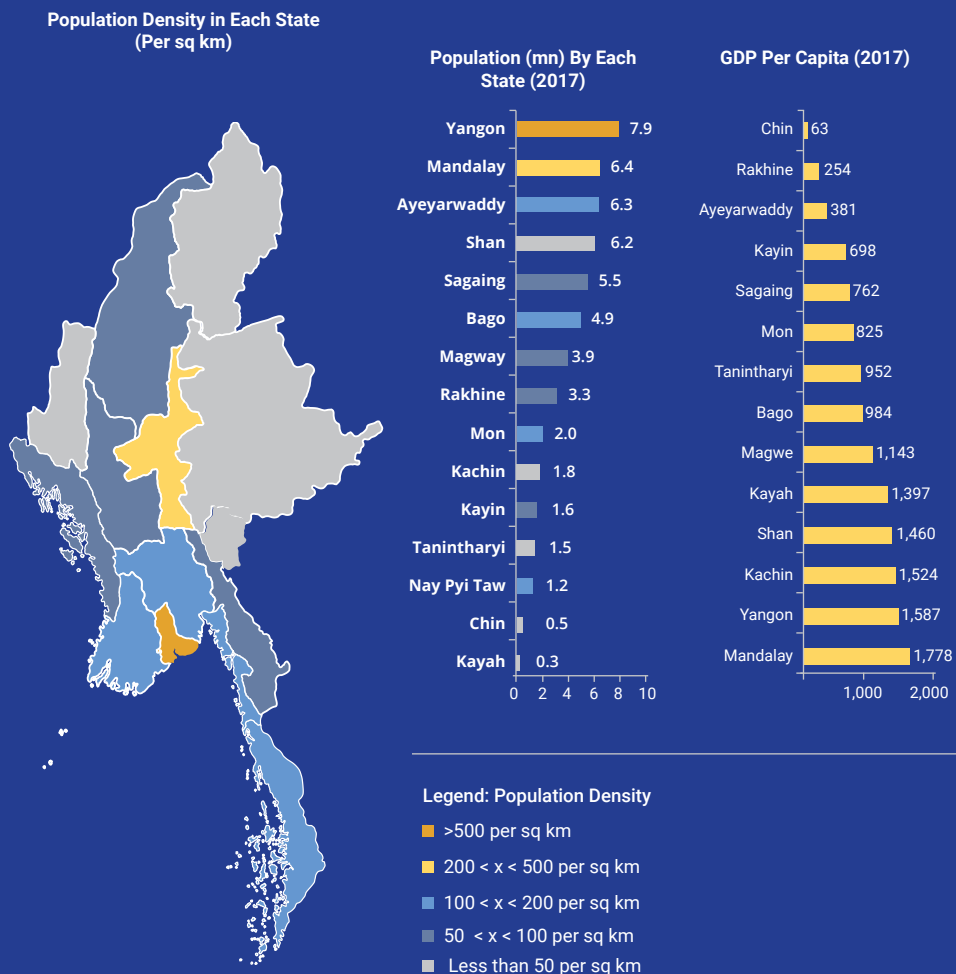
Figure 3: Myanmar's Total Population 2005–2024 (in million)



Source: IMF-World Economic Outlook Database, 2019

Myanmar's population as of 2019 is estimated to be 53 million with age groups below 24 years old accounting for 45% of the population. As the commercial centre of Myanmar, Yangon accounts for the highest population density in the country and approximately 15% of Myanmar's population at 7.9 million people with approximately 700 people per square kilometer (sq km).

Figure 4: GDP and Demographic Trend by States and Regions

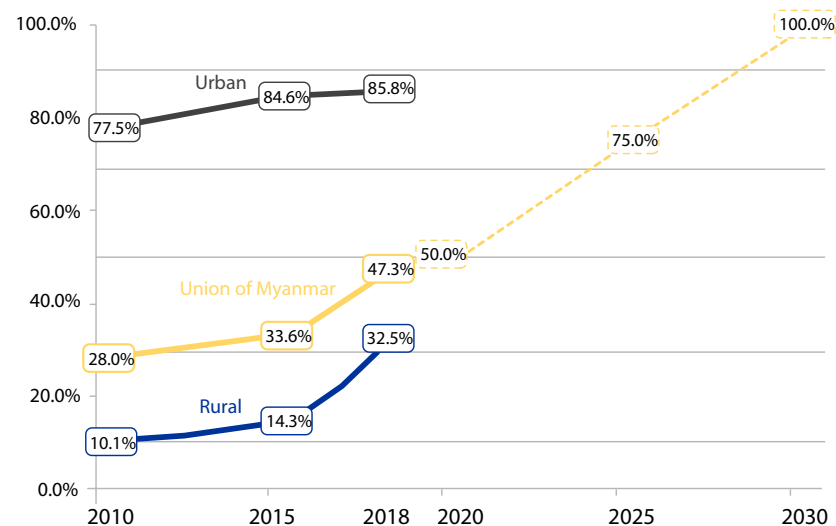


Source: Central Statistical Organisation, Myanmar Development Institute, 2019

1.2 ELECTRIFICATION IN MYANMAR

While Myanmar has succeeded in attracting significant foreign investment leading to rapid industrialisation, it has received limited private investment in energy infrastructure to keep up with rising demand. Consequently, meeting the country's power demand remains a substantial challenge for supporting the country's growth momentum. Current electrification rates are estimated at approximately 47% with the urban electrification rate of 86% being significantly higher than the rural electrification rate of 33%. This implies that approximately 60% of the population is not connected to the national grid and is relying on alternative solutions such as diesel generators and, increasingly, solar systems. The Ministry of Electricity and Energy is currently drafting the Electrification Master Plan with the aim to reach 100% electrification by 2030.

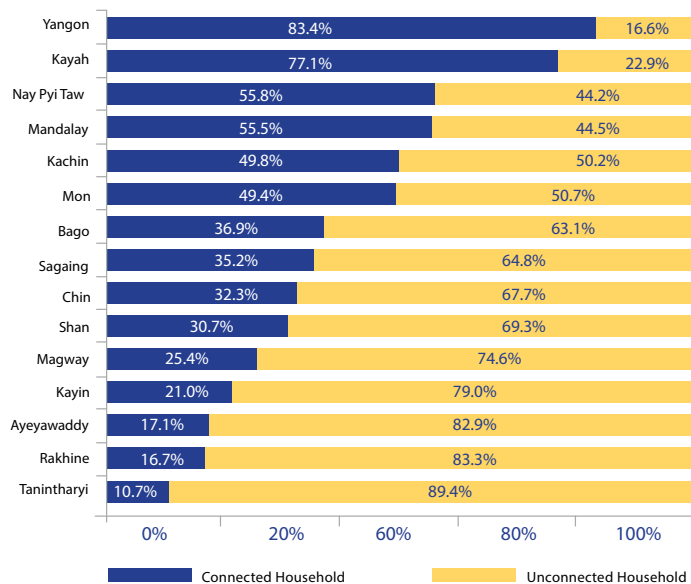
Figure 5: Electrification Rates in Myanmar



Source: World Bank, 2019

Myanmar remains predominantly a rural country, with 69.4% of the current population living in rural areas. The World Bank estimates that 7.1 million of its current rural population will move to cities by 2050, indicating the need for a more integrated power infrastructureⁱⁱ. Even in Tier 1 cities such as Yangon, electricity coverage does not extend over the whole city area. In Yangon, 16.6% of the households remain off the grid, while Mandalay is only able to provide electricity to half of its households.

Figure 6: Percentage of Households Connected to the Grid by State







Source: Central Statistical Organisation, 2019

1.2.1 CURRENT SOURCES OF ELECTRICITY

Traditionally, about half of the energy used in Myanmar comes from biomass - typically firewood - widely used for cooking in rural areas. The main forms of modern energy for generating electricity in the country are hydropower and natural gas, while diesel and gasoline are primarily used for transportation. In some cases, diesel generators are also used in mini-grids to produce electricity. Hydropower contributes to the largest share of electricity generation accounting for 55% , followed by natural gas at 42% and coal at 2%. Generation from diesel used in mini-grids is negligible

Table 2: Sources of Electricity Generation (in megawatt)

	 Hydro	 Gas	 Coal	 Diesel	Total	
INSTALLED CAPACITY (MW)	On Grid	3,221	2,163	120	n/a	5,504
	Off Grid	34	12	n/a	92	138
	Total	3,255	2,175	120	92	5,642
GENERATION (GWh)	11,190	8,344	451	69	20,055	

Source: Ministry of Electricity and Energy, The Asia Foundation: Decentralizing Power, 2019

HYDROPOWER

Myanmar’s four main rivers - Ayeyarwady, Thanlwin, Chindwin and Sittaung – have over 100-gigawatt (GW) reserves and represent a significant untapped natural energy source for hydropower generation. The country currently has an estimated 5,642-megawatt (MW) power generation capacity with the hydropower plants accounting for 55% of the power generated. Earlier in 2019, Myanmar faced frequent blackouts due to a decrease in hydropower production caused by high temperature-induced water shortages in dams during the summer. This led to a forced suspension of six hydropower plants in May 2019.

At the same time, the Government is undertaking initiatives to mobilise power projects and bridge the supply demand gap. Earlier in 2019, the Ministry of Electricity and Energy (MOEE) signed a power purchase agreement for the Upper BaluChaung hydropower project with Neo Energy Oasis Co Ltd under a BOT (build, operate, transfer) deal. The project is now approximately 50% complete. Once completed, the plant is anticipated to provide 134.5 million kilowatt-hours of annual power generationⁱⁱⁱ. The Myitgne River Basin is a major tributary entering the Ayeyarwady River just downstream of Mandalay. There are five hydropower projects currently in operation, one under construction, and a further five at various stages of planning as illustrated in Figure 8^{iv}.

Table3: Myitgne Hydropower Projects Overview

Areas	Project	Capacity (MW)	Stage
Upper Myitgne	Nam Tu (Hsipaw)	210	MOU, Feasibility report being received
	Nam Hsim	30	MOU, Preparing feasibility report
	Nam Lang	210	MOU, Preparing feasibility report
Lower Myitgne	Upper Yeywa	280	Under construction
	Middle Yeywa	735	MOU, Feasibility report being reviewed, EIA submitted
	Yeywa	790	Operational
	Deedoke	60	Notice to proceed, Feasibility study done, EIA being reviewed
Zawgyi	Kinda	56	Operational
	Myogyi	30	Operational
	Khen Hkam, Zawgyi I	6	Operational
	Zawgyi II	12	Operational

Source: International Finance Corporation, 2019



GAS POWER

Gas power application for domestic use has been limited by the recent decline of gas production as well as by most of the gas produced in Myanmar being exported to Thailand and China under existing contracts. In 2018, Gas fired power plants accounted for approximately 42% of the country's power generation. This number is expected to increase (sharply) due to hydropower capacities depletion and the need for more contribution of natural gas to the power generation mix. Myanmar relies on electricity generated from gas power plants primarily during the hot season between March and July when the demand peaks, but hydropower production declines. In May 2019, Power Kyaukse Company opened a 145MW gas fired power plant that will use domestically produced natural gas from the Shwe offshore gas field. Approximately 90% of the gas produced in this plant will be transmitted to dry zones in the Mandalay region.

In order to meet increasing power demand in the medium-term, the Government of Myanmar issued five emergency tenders in June 2019, with the tender winners announced in October 2019. Hong Kong-listed V-Power Group Holdings won four projects totaling 920MW. The company plans to set up three LNG power plants in Rakhine's Kyaukphyu Region as well as in Yangon's Thanlyin and Thaketa regions. The fourth project is a 20.54MW gas plant in the Kyun Chaung Region in Ayeyarwady*. The fifth project tender was awarded to a consortium led by the China Energy Engineering Group for the 151.54MW gas project in Yangon's Ahlone Township. The consortium also includes Hunan Electric Power Design Institute, China ITS (Holdings) and Shenzhen Shennan Power Gas Turbine Engineering Technique.

The emergency tender requirements remained highly stringent and led to a lack of participation from many leading industry players. Key contentious requirements included a limited implementation deadline of 210 days, a short five-year contractual term, as well as heavy penalties for missing the deadline.



COAL POWER

Myanmar generates an estimated 2% of its power supply from coal. Approved in 2002, the 120-megawatt Tigyit plant is the country's first and only coal-fired power plant. With rising complaints on negative impact on the nearby villages, the plant operated by Wuxi Huaguang Electric Power Energy Co. Ltd. was forced to shut down in 2014 when it ignored a waste management request issued by the Ministry of Electricity and Energy (MOEE). The plant was recommenced in the following year after the company agreed to upgrade the plant with necessary waste management procedures.

The Myanmar National Electricity Master Plan aims to increase the share of coal power from 2% as of 2018 to over 30% by 2030. However, there has been limited progress made in the face of strong public opposition. For instance, the Karen State Government and Toyo Thai Power Myanmar Co Ltd had signed a Memorandum of Understanding (MOU) to conduct a feasibility study for a proposed Hpa-An coal plant in Kayin State. However, the plant has been criticised by the locals who expressed serious concerns over harmful health consequences, air and water pollution, and forced relocation from their lands. As a result, in early 2018, the MOEE announced that the Government will not approve the proposed 1,280MW coal power plant project in Hpa-An. Apart from the existing Tigyit plant, the Government has not signed any major agreement for coal power plants in Myanmar^{vi}.



1.2.2 RENEWABLE MINI-GRID AND OFF-GRID SOLAR POWER

Bulk of the Myanmar population do not have access to electricity from the main national grid due to various challenges. For example, large power plants are usually stationed close to the location of the energy resource being utilised. Additionally, high development cost of building an extensive distribution grid that extends coverage to remote areas is a major roadblock for development. Transmitting long distance via an inefficient distribution network results in a distribution loss of approximately 25%; costing an estimated USD 200 million per year. The World Bank estimated that Myanmar requires USD 2 million in annual investment, double of the current investment level, to meet the expected peak demand of 8.6GW in 2025 and 12.6GW in 2030^{vii}.

With the extension of the main transmission line expected to be completed over a foreseeably long implementation period, off-grid solar solutions are anticipated to play a pivotal role in accelerating access to electricity in remote areas. A large number of international development organisations, NGOs, international financial institutions, and corporations are promoting various rural electrification projects with a focus on mini-grid and off-grid solutions. In 2017, the Asian Development Bank (ADB) funded 80% of the installation cost for the Off-Grid Renewable Energy Demonstration Project, while the remaining 20% was funded by the villagers^{viii}. This involved installation of solar mini-grid systems in 12 villages located in the Dry Zone Regions (Magway, Mandalay, and Sagaing). The ADB project however assessed that solar irradiance is anticipated to decline by as much as 50% in the rainy season. Thus, areas with heavy and prolonged rainy seasons may be less suitable for solar systems.

To support the design of the rural electrification policy, between 2016 to 2018, the German Society for International Cooperation (GIZ) completed a part of the National Electrification Plan (NEP) on behalf of Germany's Federal Ministry for Economic Cooperation and Development (BMZ)^{ix}. This part focused on identifying decentralised mini-grid solutions in rural areas. GIZ is also an active advisor to the Department of Rural Development (DRD), which is the focal body responsible for the implementation of decentralised mini-grids under the NEP. GIZ is currently advising the Myanmar Government on the legislation of selling power from mini-grids to the national grid. Together with the increased electricity tariff, this could enable further growth of decentralised renewable electricity solutions for Myanmar. In addition, in 2016, the International Finance Corporation (IFC) launched the Lighting Myanmar program which focuses on distributing solar lanterns, solar home systems as well as mini-grid solutions in the central regions of Myanmar^x.



Moreover, the first commercial solar power plant in Myanmar, the Minbu plant, was launched in July 2019 spearheading a large-scale nationwide effort to expand solar power penetration. Development of the 170MW solar power plant was agreed under a Build-Operate-Transfer (BOT) arrangement between the Government and Thailand-backed Green Earth Power. The plant will be built in four phases with the first phase being operational in July 2019. Another local firm, Synergy Business Development Co Ltd, has also submitted a proposal to the Ministry of Electricity and Energy (MOEE) to construct a 200MW solar power plant in Meiktila in the Mandalay Region.

Case Study: Mandalay Yoma Energy Mini-Grids

Given the current low electrification level in Myanmar, Mandalay Yoma Energy (MYE) has been one of the pioneers leading the efforts for sustainable rural electrification. Working with the DRD, the company firstly implemented fully renewable mini-grids in Magway and Sagaing regions in 2016, and subsequently moved to hybrid mini-grid solutions. Today, MYE is on track to operate 50 mini-grids across Magway, Sagaing, Tanintharyi and Shan states by Q1 2020. The solar diesel hybrid mini-grids enable reliable energy access for the local population, as well as create better opportunities for education, healthcare and economic development. The mini-grids are built using the latest technology and are able to operate in both on- and off-grid modes. MYE aims to reach 1,000 villages in the next five years, which will significantly contribute to the achievement of the Sustainable Development Plan and 100% electrification in Myanmar. MYE is a joint venture (JV) between ENGIE, the world's largest private utility company, and Sol Partners, a Singapore-based holding company investing into renewable energy in Asia and the Middle East.

Case Study: SolarHome Pay-As-You-Go

Most potential sites for mini-grid development are not highly attractive to private investors due to the lack of supporting regulatory frameworks (albeit under way) and the substantial amount of time taken to realise returns. The population in need of mini-grid solutions are predominantly from rural areas with very low disposable income.

Currently there are two main challenges for households using solar home systems: 1) lack of high-quality and efficient solar products, and 2) lack of affordability to deploy an integrated solar home solution. To address these key challenges, SolarHome, a company headquartered in Singapore with operations in Myanmar, introduced the Pay-As-You-Go energy service subscription to eliminate barriers to solar adoption for the bottom-of-pyramid customers. SolarHome offers an integrated system to customers which costs MMK 120,000 (USD 80) to MMK 500,000 (USD 333), with a monthly instalment plan ranging from MMK 6,000 (USD 4) up to MMK 27,000 (USD 18). This type of financing model uses a chip technology embedded in the battery to track time usage and monthly remaining days. If the customer fails to make the payment, the embedded chip will automatically switch off the battery. Payment can be easily made through either mobile money or SolarHome top-ups which customers can buy from the company's network of its own agents. By utilising this technology, SolarHome is able to extend financing to off-grid, unbanked customers with no formal credit history. At the same time, the subscription-based model makes electricity affordable.

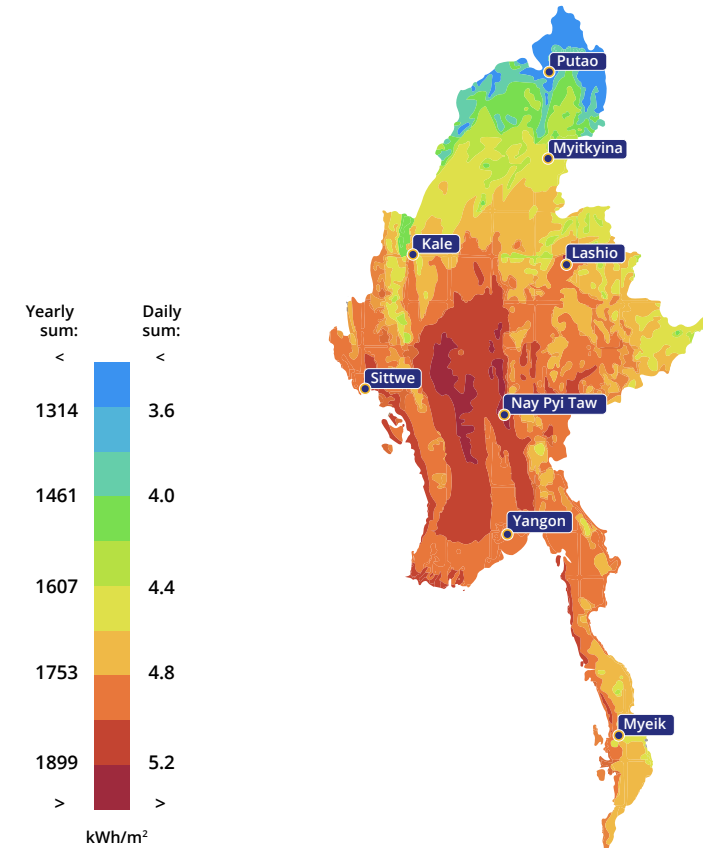


In order to cater to largely off-grid customers who are usually located at a distance from the traditional retail stores, SolarHome built up its own distribution network covering Ayarwaddy, Bago, Magwe, Mon, Tanintharyi and Mandalay regions. Currently, the company has more than 30,000 active customers from 4,000 villages. Up to 1,000 customers have already paid full instalments and are now enjoying access to solar power with the integrated systems at no cost. Apart from SolarHome, other firms such as Green Light Planet and OV Solar are also IFC Lighting Global Associates who engage in manufacturing and sale of Lighting Global certified solar home products.

1.2.3 SOLAR ENERGY POTENTIAL

According to the World Bank, Myanmar has an annual global horizontal irradiation of between 1,000 and 1,900 kilowatt-hours per square meter (kWh/m²). Central dry zone regions such as Magway, Mandalay and Bago have the strongest irradiation of more than 1,800 kWh/m² indicating promising solar energy potential, being among the highest in the world. The February to April months receive the most intense irradiation over dry zone regions, with the heat declining between July and August marking the rainy season in Myanmar.

Figure 7: Myanmar Irradiation Levels



Source: Solargis; World Bank, 2017

BIOENERGY

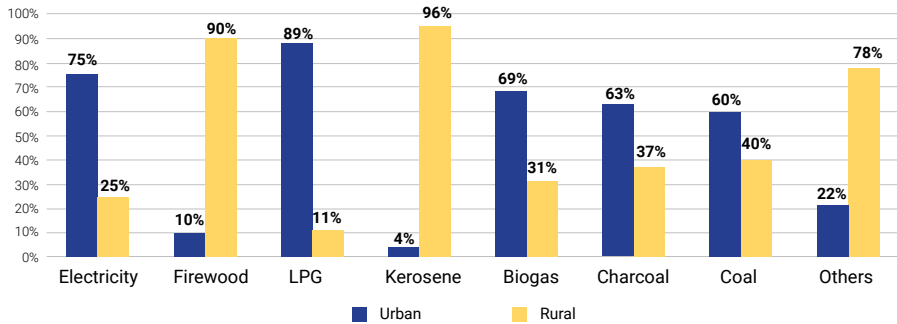
Traditionally, biomass such as firewood, charcoal, rice husk and other plant wastes are used as a main cooking fuel in rural areas. However, the Myanmar Agribusiness Public Corporation (MAPCO) has launched the first biofuel gasification 0.5MW power plant in Nay Pyi Taw and another 1.8MW plant in Myaung Mya, Ayeyarwady Region^{xii}.

The biofuel plants convert rice husk, which otherwise was discarded in the past, into electricity reducing on-grid power consumption. The usage is expected to grow in rice producing regions such as Ayeyarwady, Bago and Yangon, and dry zone regions where a large number of rice mills are located. The biofuel plants are expected to be a stable source of power generation due to steady raw material supply.

1.3 ENERGY SOURCES FOR COOKING

Myanmar's rural population continues to depend on traditional solid fuel for cooking. However, with low availability of dry firewood during the rainy season, households are increasingly exploring alternative fuels. On the other hand, electricity and liquefied petroleum gas (LPG) are preferred by urban households and commercial users due to its efficiency and widespread availability.

Figure 8: Energy Sources for Cooking



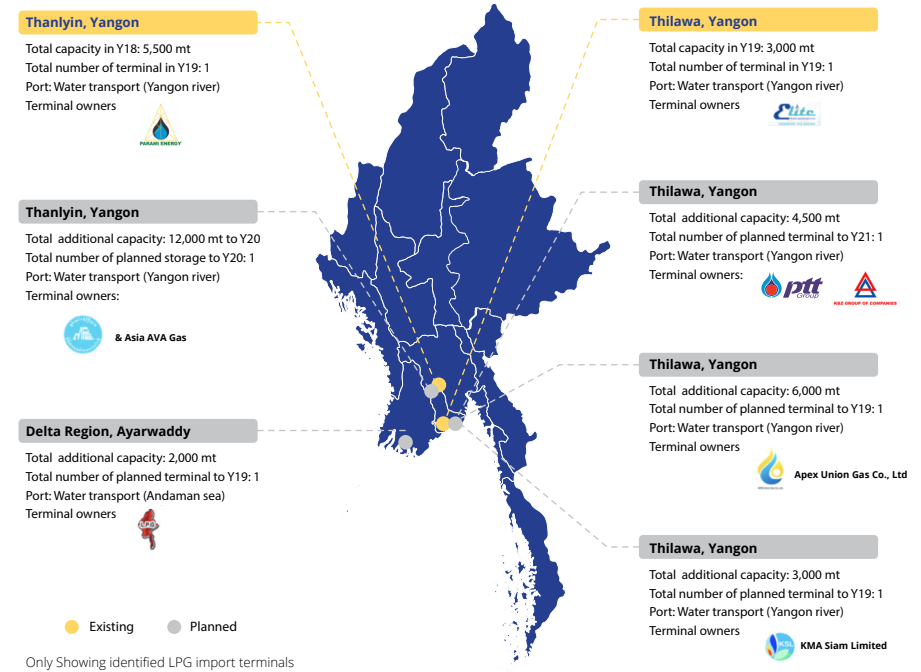
Source: Myanmar Population and Housing Census, 2014

LIQUEFIED PETROLEUM GAS

With no refrigerated terminals and insufficient government production, Myanmar households rely heavily on LPG imports from Thailand and other neighboring countries for their cooking needs. With increased urbanisation and electricity coverage, the share of traditional biomass usage in households is expected to decline in the coming years. Concurrently, the Government is promoting LPG as a clean alternative cooking fuel and aims to distribute LPG to 1.5 million households by 2020.

More than half of the LPG is consumed by the commercial sector at approximately 60%, followed by residential and industrial sectors. After a recent electricity tariff increase in June 2019, households are on the lookout for a cheaper alternative source of cooking energy. The rate of LPG uptake is anticipated to accelerate once LPG specific regulations are approved by the Government, supported by increasing awareness at the household level. A number of LPG import terminals are being built along the Yangon River and in the Delta Region facing the Andaman Sea, by both local and international players.

Figure 9: LPG Import Terminals



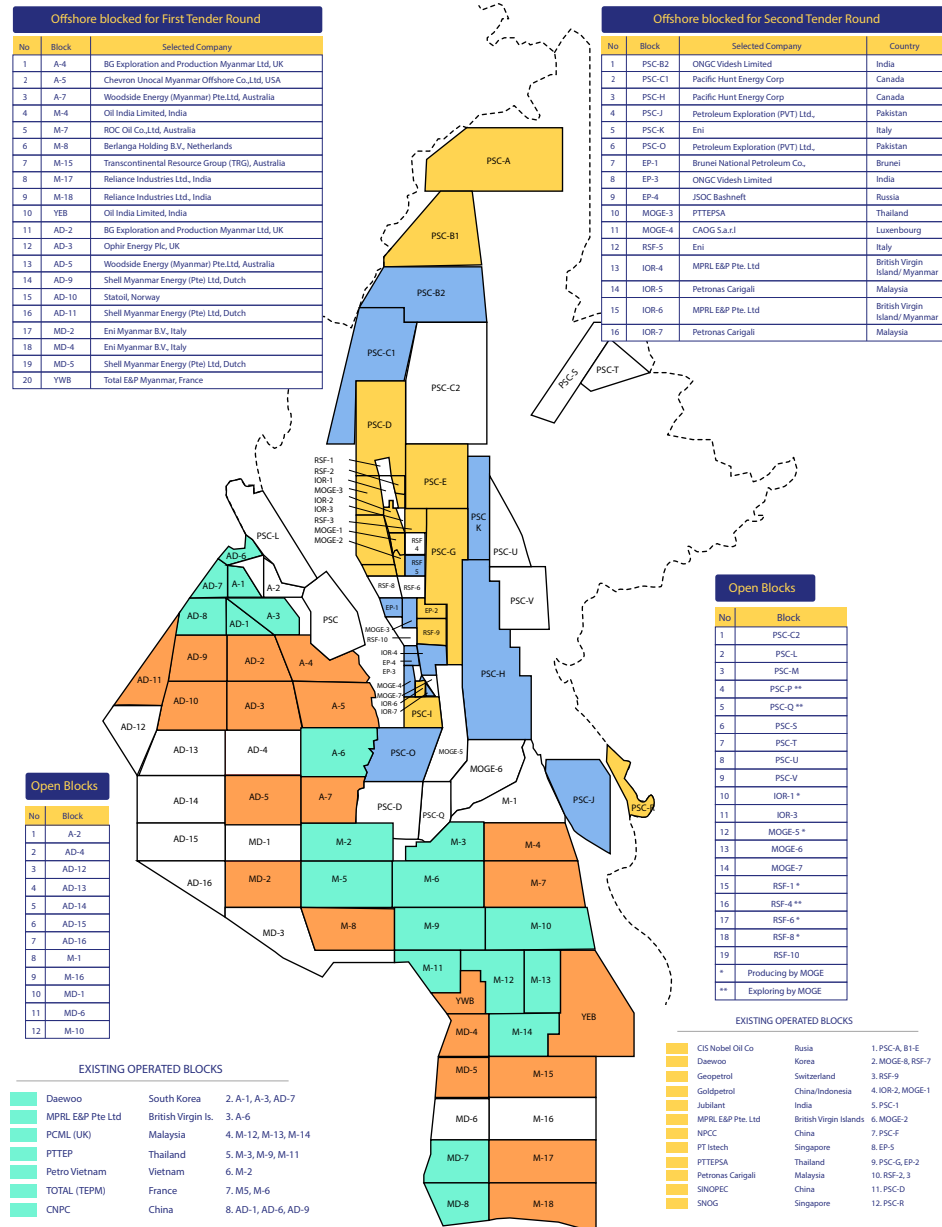
Source: DICA Permitted Investment; YCP Solidiance Analysis, 2019

1.4 OIL & GAS UPSTREAM ASSESSMENT

1.4.1 OFFSHORE PRODUCTION OVERVIEW

Myanmar is primarily a natural gas producer with most of the gas produced offshore being exported to Thailand and China. Despite the lower volume of gas exports compared to the last financial year, Myanmar earned over USD 3 billion in gas export revenue between October 2018 and August 2019. The export revenue was over USD 100 million higher than that of last fiscal year driven by favorable global prices.

Figure 10: Onshore and Offshore Blocks



Out of the country's 51 designed offshore blocks, 24 are classified as deep-water blocks with 18 currently in operation. From the current total daily production of 1,850 million cubic feet (Mcf), the largest natural gas field Yadanar contributes approximately 46%, from which 75% is exported, with the rest catering to almost half of the domestic supply. On the other hand, all of the natural gas produced from the Yetagon field is being exported to Thailand. The Shwe field has the second largest production from which 80% is exported to China via a pipeline. South Korea's Daewoo holds a majority stake in the Shwe field in partnership with two Indian state-owned companies namely Oil and Natural Gas Corporation (ONGC) and Gail Limited, as well as Korea Gas Corporation (KOGAS) and the Myanmar Oil and Gas Enterprise (MOGE). Additionally, with PTT Exploration and Production (PTTEP) being the majority equity holder of the newly operational Zawtika plant, two thirds of its gas production is exported to Thailand via a pipeline. Details on the four largest offshore natural gas fields and productions as of 2017 are highlighted below^{xiii}.

Table 4: Existing Offshore Natural Gas Fields and Production

No.	Project	Established	Partners	Daily Production Rate Million Cubic Feet (Mcf)
1	Yadanar	Discovered in 1980, production began in 1998.	Total (31.24%) Chevron (28.26%) PTTEP (25.50%) MOGE (15.00%)	850 Mcf; 650 Mcf for export 200 Mcf for domestic use
2	Yetagon	Discovered in 1992, production began in 2000.	Petronas (40.91%) Nippon (19.32%) PTT (19.32%) MOGE (20.45%)	200 Mcf; For export only
3	Shwe	Discovered in 2005, production began in 2013.	Daewoo (51%) ONGC (17%) GAIL (8.5%) Kogas (8.5%) MOGE (15%)	500 Mcf; 400 Mcf for export 100 Mcf for domestic use
4	Zawtika	Discovered in 1997 Production began in 2014	PTTEP (80.00%) MOGE (20.00%)	300 Mcf; 200 Mcf for export 100 Mcf for domestic use

Source: Ministry of Electricity and Energy, 2017

1.4.2 RECENT INDUSTRY DEVELOPMENT

Located at the sea depth of 2,300 meters and found in late 2018, the A-6 block near the western offshore is regarded as the potential first ultra-deep-water project for Myanmar. The project is operated by MPRL Exploration and Production and Australia's Woodside Energy for exploration appraisal phase, and Total Exploration and Production for the development phase^{xiv}. Upon production, the A-6 block will become the fifth natural gas offshore field, and will cater to both the domestic market as well as export demand.

Myanmar also has to anticipate the decline of its domestic natural gas production in the first half of the next decade due to existing fields' natural depletion. The MOEE is preparing for a new exploration acreage licensing round to spur more exploration investment in the country. It is expected that this licensing round will display improved fiscal terms for the contractors to enable Myanmar to compete more favorably in the global exploration capital allocation.

Also, in late 2018, the Government initiated to lay out a new legal framework with the introduction of a draft oil & gas law entitled "The Exploration Prospecting Development and Production of Petroleum Bill" to the parliament. The draft law aims to replace the 1957 Petroleum Resources Act with the objective to reform Myanmar's upstream sector. The timeframe for the adoption of the new law remains to be clarified. At present, projects in the upstream sector are governed by production sharing contracts (PSC) between the Myanmar Oil and Gas Enterprise (MOGE) and the interest-holders^{xv}. The last bidding round was held in 2014 under the former administration resulting in the award of 16 onshore and 20 offshore blocks. Subsequently that year, Myanmar's FDI soared to USD 8 billion of which more than 35% was generated by the energy sector. However, no international bidding has been rolled out under the current administration.



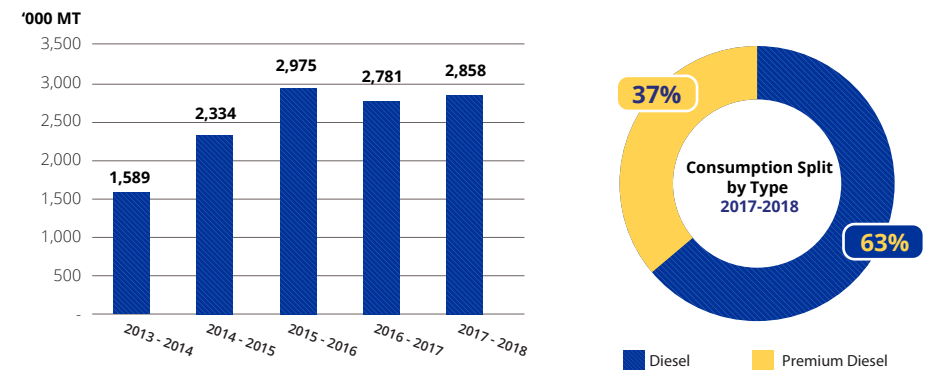
1.5 OIL & GAS DOWNSTREAM ASSESSMENT

1.5.1 OVERVIEW OF DIESEL AND GASOLINE SUB-SECTORS

DIESEL

Diesel consumption increased 2014 onwards driven by demand growth in power, construction, and transportation sectors. However, slowdown in construction and mining sectors led to a decline in the 2016-2017 period.

Figure 11: Diesel Consumption Volume



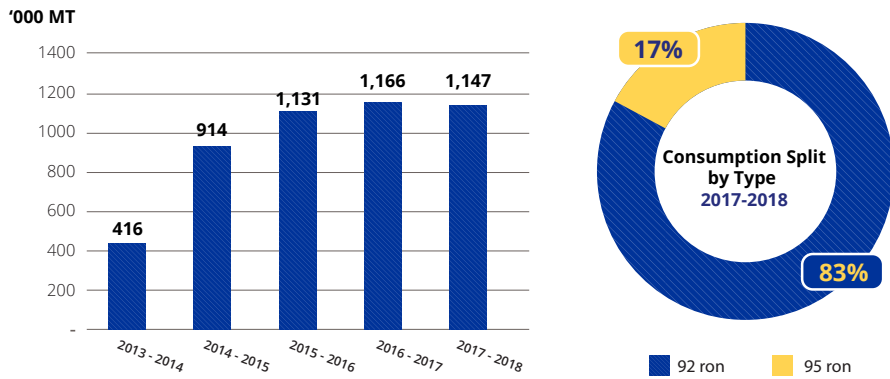
Source: Ministry of Electricity and Energy, 2018

Due to the limited government production, Myanmar relies heavily on diesel imported by the private sector. Normal diesel (500 parts per million of sulphur or 500 ppm) alone accounted for 90% of the consumption in financial year 2013-2014. However, demand for premium diesel (10 ppm) has grown from 10% in 2013-14 to 37% in 2017-18 driven by the need for higher quality fuel and new equipment.

GASOLINE

Gasoline consumption growth is driven mainly by the automotive sector with double-digit growth in the number of motorcycles, buses and truck since 2012. Only a small fraction of gasoline is produced by the Government, and is mostly used in government vehicles, old cars, trucks and motorcycle. Since automotive import liberalisation in 2012, gasoline imports have been increasing significantly, with imports accounting for over 90% of gasoline supply in Myanmar as of 2018.

Figure 12: Gasoline Consumption Volume



Source: Ministry of Electricity and Energy, 2018

Although 92 Ron still accounts for bulk of the consumption, demand for 95 Ron or better-quality fuel such as 97 Ron is expected to increase gradually in the future due to rising demand for new and luxurious cars.

1.5.2 FUEL STORAGE ASSESSMENT

While plots have been allocated to 14 players, only five terminals storing both diesel and gasoline are operational – those owned by Myat Myittar Mon, Apex Oil & Gas, Puma Energy, Green Asia and Max Myanmar. Gasoline is only stored in the Thilawa terminals and transported by road on bowsers, while diesel is stored in both the Thilawa terminal, as well as stored and transported in the barges.

Figure 13: Thilawa Fuel Storage Plot Overview

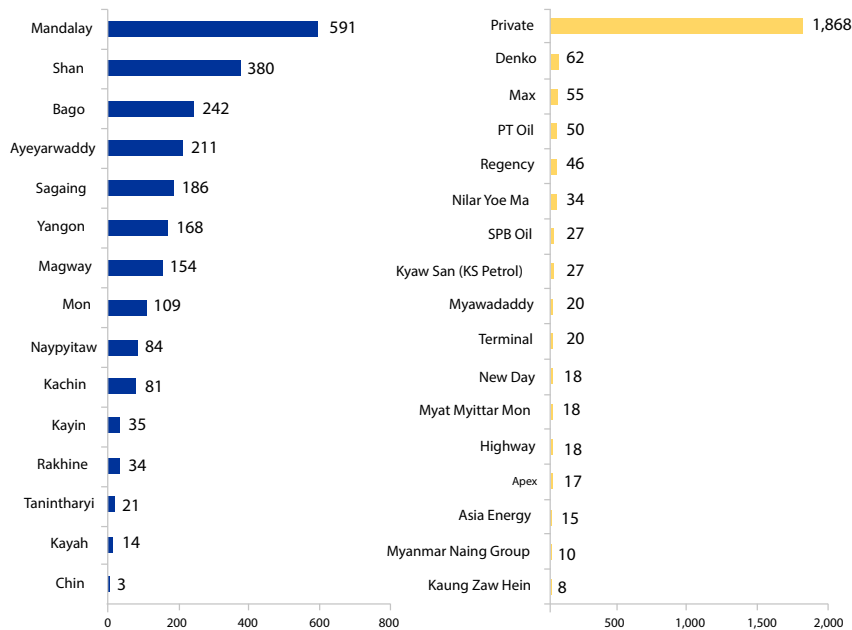


Source: Myanmar Port Authority, Myanmar Petroleum Trade Association, 2018



1.5.3 FUEL RETAIL LANDSCAPE

Figure 14: Myanmar Retail Station Network 2017 (number of stations)



In 2017, the Myanmar Investment Commission (MIC) abolished a requirement that foreign investors in the retail fuel station sector have to partner with the Ministry of Energy and Electricity to distribute and sell fuel. Almost two years later, in late March 2019, Singapore Petroleum Co (SPC), a subsidiary of the China National Petroleum Corporation (CNPC) together with the local partner, Shwe Taung Energy launched its first retail station and became the first international brand to enter the Myanmar fuel retail sector. The joint venture plans to upgrade the existing 18 stations currently operated by Shwe Taung Energy in the Yangon, Bago, Mandalay and Sagaing Regions, rebrand them to SPC, and sell fuel directly imported from its Singapore terminal. CNPC is a Chinese state-run oil & gas corporation and is already exporting fuel to Myanmar by land, which exceeded 10,000 tonnes over seven months as of October 2018^{xvi}.

Another international company which aims to enter into the Myanmar fuel retail market is PTT Oil and Retail Business Public (PTTOR), a subsidiary of the PTT Group. PTTOR and its local partner KBZ Group have signed two partnership agreements to develop fuel oil storage and distribution in Myanmar. Under the fuel oil storage agreement, a fuel oil storage tank and LPG filling plant will be constructed and completed by 2021. A separate retail business expansion agreement lays out the plan to open 70 petrol filling stations across Myanmar by 2023, with the aim to launch its first retail station by the second quarter of 2020.

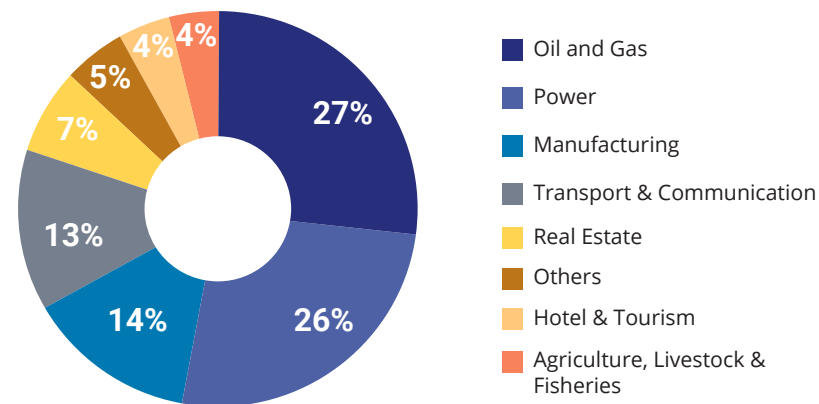
Another potential international player looking to enter Myanmar is Shell, in partnership with Max Energy. A deal made in 2017 to operate the existing Max Energy's petrol filling stations in Myanmar and rebrand under Shell is still under discussion^{xvii}.

2 INVESTMENT OPPORTUNITIES

2.1 KEY FOREIGN DIRECT INVESTMENTS SUB-SECTOR

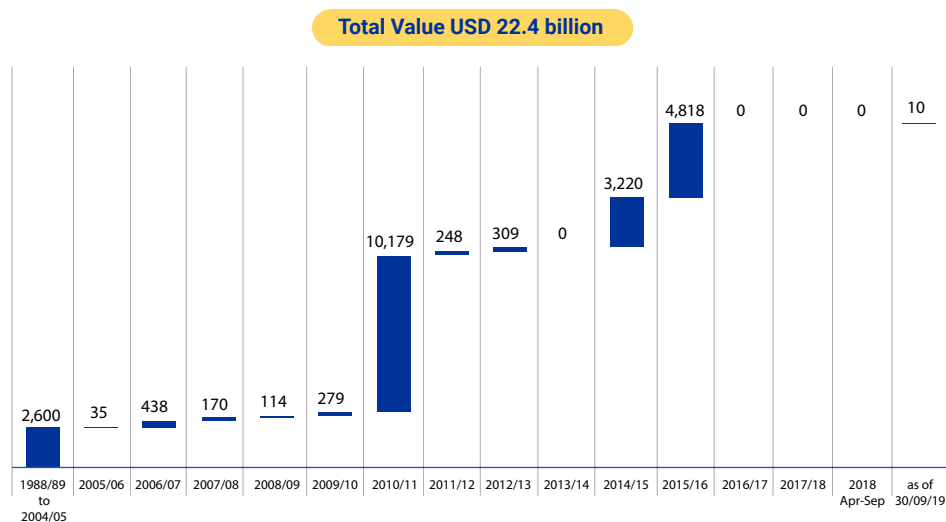
Approved investment in oil & gas and power accounts for the highest amongst all sectors at 27% and 26% respectively. As of September 2019, the oil & gas sector accounted for a cumulative approved FDI of USD 22.4 billion between 1988 and 2019. This is closely followed by the power sector with approved FDI of USD 21.4 billion as of September 2019.

Figure 15: Approved FDI into Myanmar (Cumulative 1988 – Sep 2019)



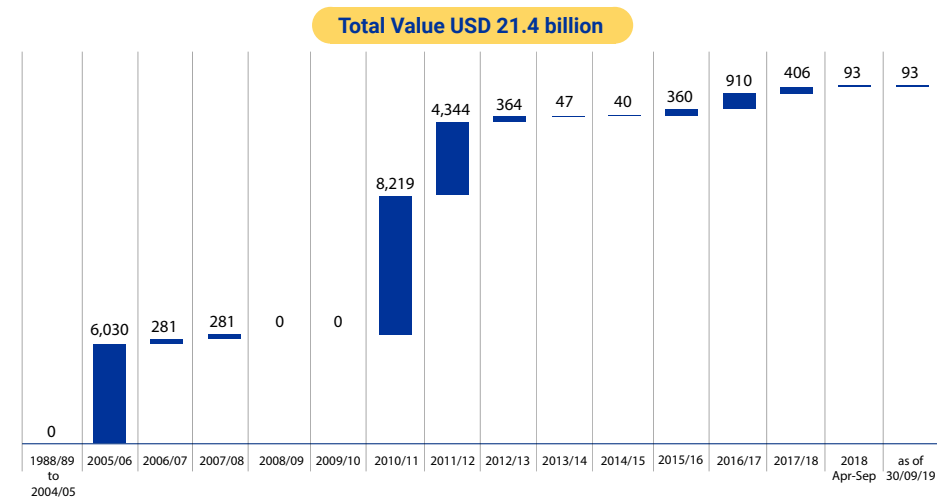
Source: Directorate of Investment and Company Administration, 2019

Figure 16: Approved FDI into Oil & Gas Sector (in USD million; 1988-Sep 2019)



Source: Directorate of Investment and Company Administration, 2019

Figure 17: Approved FDI into Power Sector (in USD million; 1988-Sep 2019)



Source: Directorate of Investment and Company Administration, 2019

2.2 INFORMATION ON TENDERS

The Ministry of Electricity and Energy is the key government body responsible to issue tender notices. They are generally published and updated at the following link: www.moee.gov.mm/en/ignite/page/411

The following tender awards for five emergency power projects were announced in October 2019 by the MOEE^{xviii}:

Table 5: Winners of Five Emergency Power Projects (October 2019)

Tender No.	No. of Participants	Garantee Output (MW)	Location	Winning Bidders	Letter of Acceptance Issue Date	Type of Project
65/EPGE/2018-2019	3 companies	20.54	Kyaun Chaung	Consortium of VPower Group Holdings Ltd and VPower Holdings Ltd	6.9.2019	Gas (Pass through basis)
66/EPGE/2018-2019	5 companies	151.54	Ahlong	Consortium of China Energy Engineering Group (Hunan Electric Power Design Institute Co.,Ltd, China ITS Holding Co.,Ltd and Shenzhen Shennan Power Gas Turbine Engineering Techniques Co., Ltd)	3.9.2019	
67/EPGE/2018-2019	2 companies	150	Kyauk Phyu	Consortium of China National Technical Import & Export Corporation, VPower Group Holdings Ltd and VPower Holdings Ltd	6.9.2019	LNG to Power
68/EPGE/2018-2019	4 companies	350	Thanlyin		6.9.2019	
69/EPGE/2018-2019	4 companies	400	Tharketa		6.9.2019	

3 GOVERNMENT RULES AND REGULATIONS FOR FOREIGN INVESTMENTS

3.1 GENERAL LEGAL/ INVESTMENT STRUCTURE INFORMATION

3.1.1 MYANMAR INVESTMENT LAW

The Myanmar Investment Law (MIL) was signed in October 2016 and has been effective since April 1, 2017. The MIL combines the Foreign Investment Law (FIL) 2012 and the Citizens Investment Law 2013. The new investment law was created to attract both foreign and local investors by simplifying the application process and offering tax breaks, incentives, rights, and protections for businesses.

The Investment Law is underpinned by the Myanmar Investment Rules 2017 (Investment Rules), and a variety of notifications including Notification 13/2017 dated 1 April 2017 and Notification 15/2017 dated 10 April 2017.



Table 6: Myanmar Investment Law - Key Regulatory Amendments

Key changes	Description
Ease of Foreign Investment	Foreign investors are permitted to own 100% of businesses which are not on restricted or prohibited lists.
Investment Screening	<p>An investor may submit an investment screening application to the Myanmar Investment Commission (MIC) for a non-binding guidance on whether a proposal investment:</p> <ul style="list-style-type: none"> • Requires an MIC permit application; • Requires Pyidaungsu Hluttaw (Union Parliament) approval prior to permit issuance; • Is prohibited or restricted under the MIL and related notifications; • In a promoted sector under the MIL and related notifications.
Devolution of Authority for Endorsement Application	Application with investments less than USD 5 million in non- strategic and non-restricted sectors will be handled at the state/regional level, with close involvement of the state/regional DICA officials.
Removal of Blanket Incentives	<p>Businesses may be granted tax exemptions if investments are in promoted sectors – the duration of tax exemption is contingent upon the areas in which businesses set up operations.</p> <ul style="list-style-type: none"> • Less developed regions (Zone 1) grant 7 years of tax exemption • Moderately developed regions (Zone 2) grant 5 years of tax exemption • Adequately developed regions (Zone 3) grant 3 years of tax exemption
Long-term Land Lease	Foreign investors that invest under the Myanmar Investment Law scheme can lease land from the government for 50 years and then extend it for another 20 years with two 10-year extensions.
Compensation for Expropriation	<p>Expropriation of investments is allowed under the following conditions:</p> <ol style="list-style-type: none"> necessary for the public interest carried out in a non-discriminatory manner carried out in accordance due to process of law; on payment of prompt, fair and adequate compensation.
Grievance mechanism	The MIC will establish and manage a grievance mechanism to inquire and resolve issues before escalation to legal disputes, and to prevent the occurrence of disputes.



The Myanmar Investment Commission (MIC) was formed under the Myanmar Investment Law. It is a government-appointed body which streamlines and approves investment proposals, and comprises high-level figures, senior officials and experts from government ministries and non-governmental bodies.

The MIC also issues investment-related notifications and orders. Investors must submit a proposal to the MIC only if the investments are:

- Activities essential to the national strategy.
- Large capital-intensive investment projects.
- Likely to cause a large impact on the environment and local community.
- Use state-owned land and buildings.
- Designated by the Government as necessary to submit the proposal the committee.

3.1.2. MYANMAR COMPANIES LAW

A new piece of legislation called the Myanmar Companies Law was approved by former president U Htin Kyaw on December 6, 2017, coming into effect in August 2018. The new law will replace an older version that was enacted in 1914. The act will improve corporate governance by allowing:

- More flexible capital structures and changes to capital share.
- Ability for foreign investors to purchase shares in the Yangon Stock Exchange.
- Eliminate the requirement for foreign firms to obtain a permit to trade from DICA.
- Possibility to incorporate a one-person company with a unique director.

Importantly, foreign investors will be able to hold up to 35% of ownership interest in a Myanmar company. Only if foreign stakes constitute more than 35%, the company is considered a foreign company. This will enable foreign investors to invest in companies in sectors that are currently closed to foreign investors, and thereby indirectly help to create foreign interest in companies listed on the Yangon Stock Exchange^{xix}.

3.2 ENERGY-RELATED RULES AND REGULATIONS



Foreign investment in the oil and gas industry is subject to the approval of the Union Government and to further terms and conditions imposed by the Ministry of Electricity and Energy. The drilling of shallow oil wells up to the depth of 150m is specifically prohibited. The venture may also be subject to environmental impact assessments^{xx}. The MIC Notification No. 15/2017 sets out the business activities based on their permitted forms of ownership.

3.2.1 ACTIVITIES PERMITTED FOR 100% FOREIGN OWNERSHIP

The types of economic activities which are not included in the categories below can be carried out with 100% foreign investment. This requires the approval of the relevant Ministry, except for investments reviewed by the Myanmar Investment Commission (MIC).

3.2.2 ACTIVITIES NOT PERMITTED FOR FOREIGN COMPANIES



Table 7: Activities Not Permitted for Foreign Companies

Sector	Activity	Description
 Oil & Gas	Prospecting, exploration, feasibility study and production of minerals for small- and medium-scale businesses in accordance with the Mines Law.	These investment activities are not permitted to be carried out by foreign investors.
	Refinement of minerals in medium-scale and small-scale	
	Drilling shallow oil wells (<150m of water)	
 Electricity	Control of electric power system	Only permitted to be carried out by the Union.
	Inspection of electrical business	

3.2.3 ACTIVITIES PERMITTED TO BE CARRIED OUT IN THE FORM OF A JOINT VENTURE WITH MYANMAR CITIZENS

The following activities can only be carried out in the form of a joint venture (JV) with Myanmar citizens.

Table 8: Activities Permitted to be Carried Out in a Form of a JV with Myanmar Citizens

Sector	Activity	Description
 Oil & Gas	Manufacturing and domestic distribution of chemicals based on available natural resources.	The foreign capital invested in a joint venture between a foreign and Myanmar citizen (as opposed to the state) must not exceed 80% of the total investment amount. This restriction does not expressly apply to joint ventures between a foreign investor and the state.
	Manufacturing and domestic distribution of flammable solid, liquid, gaseous fuels and aerosol (acetylene, gasoline, propane, hair sprays, perfume, deodorant, insect spray)	
	Manufacturing and distribution of industrial chemical gases including compressed, liquefied and solid forms	
 Electricity	Power projects below 30MW	Projects under 30MW are restricted for foreign investors, which means that the foreign investor can only hold up to an 80% ownership.
	Small- and medium-scale production of electricity	

Source: Directorate of Investment and Company Administration, 2019

3.2.4 ACTIVITIES PROMOTED BY THE MYANMAR GOVERNMENT

The MIC Notification 13/2017 lists several promoted sectors. Investors in these sectors may benefit from tax discounts including exemption from corporate income tax, customs duties and the right to deduct depreciation/expenses from assessable income. Sectors relevant to energy include^{xxx}:

- Power generation, transmission and distribution.
- Production of renewable energy.



4 CHALLENGES AND OUTLOOK

Myanmar has been experiencing a major political, economic and social transformation in recent years with accelerated growth across the telecom, industrial and service sectors. Maintaining the current growth momentum to achieve long-term sustainable growth supporting the development of much needed sectors remains crucial. The energy sector is the backbone of every country's economic and industrial development. Various efforts have been initiated by the Ministry of Electricity and Energy (MOEE) including the drafting of the Electrification Master Plan with a target to achieve a 100% electrification rate by 2030 using a mix of various energy sources.

With rising demand for energy, liquefied natural gas (NLG) was chosen as a strategic option. A recent announcement from the MOEE on five new emergency LNG-to-power project awards has been a target of criticism. Such development requires large investments, and the tight implementation deadline restricts financing options for investors. Coal, on the other hand, remains a highly disputed resource conflicting with the Government's plan to generate electricity using 30% coal from the energy mix by 2030. The proposed plan to develop a new coal project in Hpa-An, Karen State, had faced a strong public opposition, reflecting the prevalence of environmental and health hazard concerns. As a short-term solution until the main grid extension, the Government has made some headway in support of rural off-grid projects to electrify remote areas. The Department of Rural Development as an implementation partner of World Bank-funded National Electrification Project (NEP) takes on the role of issuing permits to developers with less than one megawatt generation facility.

The oil and gas upstream segment has been characterised by delays on part of the Government to meet the announced international bidding timeline for the remaining unoccupied 18 onshore and 15 offshore blocks. Additionally, while a new petroleum bill will be favourable for industry growth and investments, lack of a specified timeframe for adoption may create some uncertainty. The fuel retail market and the broader downstream oil and gas segment holds a positive outlook for foreign investors as Myanmar continues to face higher demand, driven by rising car ownership and a switch to new cars. In addition, Myanmar heavily relies on imported petroleum products with significant investment needed for mid-stream infrastructure development such as storage facilities. Further liberalisation of the fuel retail sector by abolishing the requirement for foreign investors to partner with the MOEE has encouraged investment from foreign players. Recent market entries of big players such as SPC (CNPC) and PTTOR to develop storage facilities and expand fuel retail stations nationwide reiterate opportunities in the fuel retail sector.

Overall, based on historical developments, regulatory reforms have been and will continue to be crucial to facilitate further investments in the energy sector.

5 INDUSTRY CONTACTS INFORMATION

5.1 GOVERNMENT OFFICES

MINISTRY OF ELECTRICITY AND ENERGY

The Ministry of Electricity and Energy is the focal body for the energy sector. Tender openings for public-private partnerships and other investment opportunities are made by the Ministry.

Mailing Address

Ministry of Electricity and Energy
Office No. 6, Nay Pyi Taw

Contact

(+95) 67 410202
(+95) 67 410599
(+95) 67 410236

YANGON ELECTRIC SUPPLY CORPORATION

Yangon Electric Supply Corporation (YESC) is a government body under the Ministry of Electricity and Energy for the electric supply of Yangon.

Mailing Address

Lower Kyee Myin Daing Road,
Ahlone Township, Yangon

Contact

(+95) 01 2302285
(+95) 01 2302286
(+95) 01 2302287

MYANMAR OIL AND GAS ENTERPRISE

Myanmar Oil and Gas Enterprise (MOGE) is Myanmar's state upstream company, also fulfilling some regulatory functions.

Mailing Address

Ministry of Electricity and Energy
Office No. 6, Nay Pyi Taw

Contact

(+95) 67 3 411 055

ELECTRIC POWER GENERATION ENTERPRISE

Formerly known as Myanma Electric Power Enterprise, the body was converted to the Electric Power Generation Enterprise (EPGE) in 2016. It plays a key role in power agreements for investors.

Mailing Address

Ministry of Electricity and Energy
Office No. 6, Nay Pyi Taw

Contact

(+95) 67 410056
(+95) 67 410067
(+95) 67 410347

MYANMAR PETROLEUM PRODUCTS ENTERPRISE

Under the Ministry of Electricity and Energy, it focuses on the downstream oil and gas industry.

Mailing Address

Ministry of Electricity and Energy
Office No. 6, Nay Pyi Taw

Contact

(+95) 67 411117
(+95) 67 411136
(+95) 67 411282

DEPARTMENT OF RURAL DEVELOPMENT, MINISTRY OF AGRICULTURE, LIVESTOCK AND IRRIGATION ENTERPRISE

Responsible for off-grid electrification efforts.

Mailing Address

Office No. 14,
Nay Pyi Taw

Contact

(+95) 67 409030
(+95) 67 409415

MINISTRY OF NATURAL RESOURCES AND ENVIRONMENTAL CONSERVATION

For some investment opportunities that require an Environmental Impact Assessment, the role of the Ministry of Natural Resources and Environmental Conservation is vital.

Mailing Address

Director General
Department of Forest
Ministry of Natural
Resources and
Environmental Conservation
Office No. 39, Nay Pyi Taw

Contact

(+95) 67 405004
(+95) 67 405007
(+95) 67 405084

MINISTRY OF COMMERCE

Exporting agricultural produce and importing products such as farm implements can only be done with an export/import license issued by the Ministry of Commerce. Trading licenses for most of the products are issued in Yangon.

Mailing Address

Director General
Department of Trade
Ministry of Commerce Office
No. 3, Nay Pyi Taw

Contact

(+95) 67 408265
(+95) 67 408485
(+95) 67 408266
(+95) 67 408252

The Customs Department plays a vital role in trading transactions and is also under an arm of the Ministry of Planning and Finance.

Mailing Address

No. 132, Strand Road,
Kyauktada Township,
Yangon

Contact

(+95) 1 379 423
(+95) 1 379 426

MINISTRY OF FOREIGN ECONOMIC RELATIONS

The Directorate of Investment and Company Administration (DICA) and the Myanmar Investment Commission (MIC) are the focal bodies for incorporation of foreign businesses. Both fall under the authority of the Ministry of Foreign Economic Relations. Companies need to be aware of procedural updates issued by the MIC in order to successfully navigate the legal aspect of investment.

Mailing Address

Office No. (1, 26, 32) Nay
Pyi Taw

Contact

(+95) 67 410046
(+95) 67 407023
(+95) 67 407017

DIRECTORATE OF INVESTMENT AND COMPANY ADMINISTRATION (DICA); MYANMAR INVESTMENT COMMISSION (MIC)

Mailing Address

Directorate of Investment and
Company Administration Ministry of
Planning, Finance and Industry
No. 1, Thitsar Road, Yankin Township,
Yangon

Contact

(+95) 01 - 658102
(+95) 01 - 658103

5.2 OTHER RELEVANT ASSOCIATIONS

RENEWABLE ENERGY ASSOCIATION MYANMAR (REAM)

Mailing Address Contact

No. 160, 5th floor (right),
2nd Thiri Avenue, Ahlone
Township, Yangon

Contact

(+95) 01 - 225305
(+95) 09 - 5075608

MYANMAR PETROLEUM TRADE ASSOCIATION

Most of the business associations are formed under the auspices of the Union of Myanmar Federation of Chambers of Commerce and Industry (UMFCCI) and are located at the UMFCCI building.

Mailing Address Contact

MPTA
UMFCCI Tower, 10th Floor,
No. 29, Min Ye Kyaw Swar
Street, Lamadaw Township,
Yangon

Contact

(+95) 01 - 2300092
(+95) 09 - 421006794

MYANMAR OIL AND GAS SERVICES SOCIETY

The Myanmar Retailers Association is the sectors' main advocacy body.

Mailing Address Contact

38th Street, 38th Street Plaza, 4th floor,
Ward 6, Kyauktada Township, Yangon

Contact

(+95) 09 - 768547600

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Get in touch with our Myanmar team

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