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WENERGY GLOBAL PTE LTD

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At the same time, RE can also accelerate access to energy for the un-electrified population around the world and promote sustainable economic development.

According to a report published by the World Energy Council (WEC) in 2016, RE currently contributes about 23% in global electricity generation and is estimated to provide half of global electricity generation by 2025. The RE sector has achieved exponential growth in the last three decades, largely due to falling costs and aggressive increase in production capacity of solar energy. Technological advancements in solar photo-voltaic (PV) panel manufacturing and distribution systems have greatly aided this tremendous growth.

In the context of electrification in the Association of Southeast Asian Nations, (ASEAN), which is made up of 10 countries, an approximate 120 million people out of 630 million live without access to electricity. The enormity of this figure reflects the potential of RE opportunities for a region which is also the third largest market after India and China. Due to the size of the market, ASEAN can truly utilise RE to achieve multiple benefits such as mitigate climate change impacts, connect the rural communities with electricity and nurture sustainable development.

WEnergy Global (referred to as WEnergy), an RE solutions company, is poised to be a part of this energy landscape transformation by offering its expertise product solutions and investment capital. The company’s proposition is to tackle the issue of off-grid populations of ASEAN and work with like-minded organisations to provide energy using renewable sources, smart infrastructure technologies and capital in a way that it is affordable and reasonable for those connected.
energy by combining a mix of renewable and diesel powered gen-sets to achieve best possible outcomes. WEnergy’s work portfolio functions in cohesion with a team of technical specialists based in Singapore, the Philippines, Indonesia, Malaysia, Germany and the Netherlands. The company’s largest presence is in the Philippines where it is part of three Joint-Ventures; Sabang Renewable Energy Corporation (SREC), Culna Renewable Energy Corporation (CREC), and WEnergy Power Pilipinas Inc (WPPI).

VISION AND MISSION
WEnergy’s vision is to become a quality solutions provider of RE energy systems and solutions which offers a fair and attractive return on investment. The path towards RE is inspired from the broader principles of sustainability, as the company wants to make RE investments a fair and meaningful investment.

The company’s mission is to develop, plan, design, co-own and finance, build and operate RE systems for end-users at national, local and industrial scales, both off-grid and on-grid. WEnergy aims to deliver over 800 mega-watts of clean energy to emerging economies in the next years through PV systems, tidal energy and wind with the use of energy storage technologies backed up by innovative financing and business models.

The company prides in its founding principles on:
- Responsible business
- Excellence and integrity
- Customer’s performance focus
- Smart global operations
- Collaboration and learning
- Global citizenship

WEnergy’s sustainability approach
The company adopts a life-cycle approach in all aspects of developing its hybrid power systems. Prompted from the principles of circular economy and zero waste, WEnergy takes pride in innovating clean energy solutions with minimum harm and maximum benefit. Hence, the push for sustainability flows through company practices where the end goal is to provide sustainable electrification in off-grid areas affordable for consumers, with an aim to enhance local productivity.

Sustainability considerations are also promoted within company practices and procedures as well as through its value chain at WEnergy. The company recognises the effectiveness of deepening employees’ awareness on sustainability issues, and in turn their contribution to sustainability initiatives. As such, WEnergy views employee training as a key investment the company undertakes for its long-term benefit. With environment-friendly practices that reduce cost and resources, the company promotes a ‘how-to-do-it-Green-Clean-Quick’ method where staff input and feedback help to shape efficient ways of creating its products.

CLEAN TECHNOLOGY PROJECTS
WEnergy’s clean technology solutions have enabled the company to test out their belief in sustainability. The objective of providing energy solutions from a clean energy source has been met appropriately in their key projects discussed below. These projects have made the company rise through the ranks in comparison with their peers. At the same time, these projects showcase the company’s capabilities in attracting potential future clients.
The 2.6 megawatt Sabang Hybrid Power Plant is WEnergy’s flagship project to date. Located in the island of Palawan in Philippines, Sabang is a village situated on the western coast within the city of Puerto Princesa. The village is right next to the Puerto Princesa Subterranean River National Park, which is a UNESCO-listed national park with a 5-mile subterranean river. The Puerto Princesa Underground River is also the 7th World Wonder as one of the longest underground rivers of the world, and brings in over 350,000 tourists to the region from all parts of the world.

The power plant’s proposed location was given due importance in order to keep intact the picturesque and serene landscape. As such, a clean energy source was the most relevant choice to keep with the beauty of the national park. Expected to be commissioned in October 2018, the Sabang project comprises of the following hybrid power sources:

- Solar PV power plant capacity of 1.4 megawatts
- Durable battery pack of 2.3 MWh
- Diesel generator capacity of 1.2 megawatt,
- A 14 kilometer smart-grid

These power sources work in sync to provide electricity to approximately 650 households and commercial off-takers in the region. Such a hybrid power system results in a multitude of savings ranging from almost 25,700 tons of CO₂ emissions in 20 years to an equivalent of saving 9.1 million litres of gasoline, or 7,000 hectares of carbon sequestering forests. Besides environmental benefits, the project created various jobs which were prioritised for the local community, and contributed to the overall social development of the region in terms of better healthcare and communication due to the round-the-clock availability of electricity. This hybrid power plant is expected to reduce government subsidies between USD 2 – 15 million over 20 years depending on the increase of diesel prices.

WEnergy, a 40% shareholder of the Sabang Renewable Energy Corporation (SREC), worked tirelessly with the Barangay Council, the City Government, the National Government Agencies, the Protected Area Management Board, the Palawan Chamber of Commerce & Industries and other stakeholders to bring this project to fruition. The hybrid power plant system is designed in a way to encourage co-existence of local architecture and renewable electricity generation. One of the unique aspects of the project is its Expo Centre, which demonstrates various features about the hybrid power system and the role of renewable energy in the region’s energy mix. SREC will open its doors for tourists to visit the Expo Centre in addition to the national park.

**Renewable Energy Investment**

The Sabang project derives on average over its 20-year lifetime over 50% of its energy needs from the solar PVs, with the additional requirement alternating between the diesel gen-sets. The solar energy helps to reduce costs and deliver relatively clean energy to boost green growth. WEnergy worked with Singapore’s A*Star Energy and Power Grid Centre (EPCG) and developed its own algorithms for power management, based on which the system regulates the demand and utilises the mix of solar and diesel in a way to keep diesel costs at the bare minimum. The company prides in developing such an algorithm design, as the company’s intellectual property. Such a hybrid model is easily scalable to other locations of ASEAN, which is what WEnergy is actively trying to do.

**BANGKOK INTERNATIONAL AIRPORT CYCLE TRACK LIGHTING PROJECT**

WEnergy won the bid for this project for their innovative design and engineering of a clean solar PV (300 kWp) powered lighting system. The lighting system is unique and a first for a 23.5 km bicycle track – called Sky Lane - around the Bangkok International Airport in Thailand. The project was launched by the Siam Commercial Bank of Thailand and the Airport of Thailand Authority as a corporate social responsibility initiative between the two organisations. The initiative’s focus is to provide locals and tourists with an alternate recreational and commute mode which is environment-friendly and promotes a healthy lifestyle.

Comprising a total of 820 lighting poles which covers a distance of 23.5 kilometres, the bicycle track is one of WEnergy’s distinctive solar-powered projects. The
lighting system also covers a 1.6 kilometer training track and an adjacent car park area. The company proposed this unique solution to the building team; a sustainable lighting system using aqueous batteries (containing no lead acid or lithium-ion) and mesopic LED lights, which consumes less energy and is also better for the eyes. Along with the lighting, a special power management system comes equipped with the system which enables smooth charging and discharging of these batteries, with a total of 1,640 kWh.

The mesopic LED lights enabled the company to use 150 less lighting poles, thus saving costs and resources for reduced energy use. The lights and batteries function longer than others available in the market as they come with an average life span of about 5-7 years and 10 years respectively. For the project, WEnergy collected data from five poles for six months to analyse the charging and discharging ratios, and the impact of temperature on the performance of batteries.

Five poles were equipped with data-loggers which provided key information to monitor battery and light performance, as this was critical to ensure the optimum performance and reliability of the integrated system. Prior to the launch of this project, WEnergy tested a prototype on its office rooftop in Singapore to better understand the technology and its implications.

**FEASIBILITY STUDY ON FLOATING SOLAR PVs**

A WEnergy led consortium was successful in winning the tender awarded by the Singapore Public Utilities Board (PUB) to conduct a feasibility study to deploy solar PVs in its reservoirs and facilities. The study took more than 9 months to complete and assessed the extent to which solar PVs can be installed on floating platforms in water reservoirs and the potential solar yield available, before a business model and implementation can be proposed.

As solar energy is increasingly becoming popular in Singapore, it is being recognised as a key renewable energy source with high potential for mid to large scale deployment. The PUB uses various water treatment facilities which consume a lot of energy, so the need to actively seek diversified energy sources is of paramount importance. Singapore’s sunshine is as good as most temperate countries. This engineering feasibility study looked into the possibility of installing solar PVs on floating platforms in the water reservoirs, both from a technical and financial business model perspective. WEnergy crafted a 15-year roadmap for deployment of solar PV on land and water sites of PUB.

The 10 identified reservoirs are: Sarimbun, Murai, Poyan, Tengeh, Kranji, Pandan, Upper Peirce, Lower Peirce, Upper Seletar and Lower Seletar. Apart from reservoirs, the study also investigated the potential of solar PVs on top of land-based facilities such as waterworks buildings and reclamation plants. The project was completed in May 2017 and a report has been provided to the PUB by the consortium which has not been made public, as PUB plans to share more information about the feasibility of this project in the near future.

**INNOVATION AND FUTURE PLANS**

WEnergy believes in a process of continuous innovation. The design and architecture of the power plant system is made in such a way that it is easy to scale to a bigger project without much difficulty. From the success of the Sabang RE-hybrid project, the company secured another successful bid for the neighbouring islands of Culion and Linapacan, Palawan, Philippines. This project is to be scaled to twice the size of the Sabang project and will function as a feed-in island grid power plant. The company’s investment portfolio covers almost US$200 million in decentralised power plants in the Philippines.
GROWTH OF CLEAN-TECH SOLUTIONS

The International Energy Association (IEA) estimates that the demand for renewable energy solutions for ASEAN alone will result in major push towards adoption of these technologies. Besides solar power, there is potential in harnessing tidal and wave energy particularly in island locations in the Philippines. WEnergy is studying the use of turbines for the generation of energy from tidal (Philippines) and river flows (Lao PDR) as they believe that this market is worth at least $1 billion in the next 5 to 10 years for this region. A study of WEnergy Global, with support of the Dutch Ministry of Economic Affairs, showed a potential for deployment of 1,000 MW of river flow turbines in spillway and outflow canals of existing and new hydropower dams in Lao PDR, worth an investment of over USD 1.2 billion. For the developed nations in ASEAN, there is potential in energy storage solutions which will reduce their dependence on natural gas for power generation. As such, WEnergy is committed to differentiate itself from competitors and target different power needs in ASEAN as the company’s goal is to become an asset owner and work with partners in long-term arrangements.

FOCUS ON ASEAN

The company is on track to increase its focus on ASEAN with deployment of more off-grid, micro-grid and LED lighting solutions powered from clean energy sources. WEnergy considers itself to be an early mover in the clean technology landscape and is dedicated to push into potential markets in Myanmar, Vietnam, Indonesia, Cambodia and Laos in ASEAN. As these nations are home to millions of people, the growing market for clean energy and micro-grid solutions is expected to reach US$30 billion a year, according to company estimates. As such, it presents a timely opportunity for WEnergy to further venture and connect with remote communities.

CONCLUSION

Despite advancements in modern technology, access to basic needs such as electricity is still a challenge for some developing ASEAN nations. With many areas and neighbourhoods being far from the national grid, off-grid and micro-grid power systems present the most ideal and cost effective solutions of providing electricity as showcased by WEnergy. The benefits cannot be ignored as these power systems rely on renewable energy and hybrid energy mixes, further increasing their utility, value and contribution to sustainability. These technologies also play an important role in inspiring social development and connecting people to the larger world.

With this in mind, WEnergy is set to expand its operations and is inviting investors to invest in its projects. WEnergy Global collaborates with two Dutch crowd-funding companies in The Netherlands and is exploring fundraising through the Malaysia Sukuk system. WEnergy’s objective is to make RE technologies commercially viable for investors who see potential in funding clean energy and making these a preferred choice for various energy uses for different regions in the future.


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