

The Probability of Converting Fort Magsaysay Military Reservation to Solar Farms: Towards Generating Funds for the Armed Forces of the Philippines (AFP)

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Received: 11 Nov 2023; Received in revised form: 09 Dec 2023; Accepted: 19 Dec 2023; Available online: 28 Dec 2023

Abstract— *The Armed Forces of the Philippines (AFP) currently is facing a challenge in its fiscal budget due to the significant percentage of the allocation going to the pension of retired military personnel and the figure continues to grow due to the automatic indexation system. However, the service of retired soldiers should not be set aside considering the time they have spent for the service to the country. There have been related studies conducted to help with this problem and help the AFP obtain funds that can support its budget needs. One of which is the leasing of its vast lands and converting it to higher economic purposes and several moves by the AFP leadership have been made to start with this effort. The previous experience related to this kind of scheme was done through the Bases Conversion and Development Authority (BCDA). This however includes the leasing and sale of defense land specifically identified under the law. The leasing and sale of defense real estate under the management of BCDA are located within the proximity of urban areas like FBGC, Subic, and Clark which in the case of other military lands cannot follow a similar land use due to their location. Conversion of military base lands for higher economic purposes can however take a different turn by converting them as industrial sites and with that the researchers see fit the erection of solar power plants, especially in the Fort Magsaysay Military Reservation which is by far the largest military reservation the AFP now has. Based on research, the Fort Magsaysay Military Reservation is within the area with the highest solar radiation as compared to other areas tested. Besides that, with the current thrust of the government to increase the contribution of green energy to the energy mix of the country, this is an opportunity for the AFP to open such possibilities of using military lands for higher economic purposes as a source of additional funding.*

Keywords— *Armed Forces of the Philippines (AFP), Economic Purposes, Funds, Military Reservation, Solar Farms*

I. INTRODUCTION

The Department of National Defense (DND) under which the AFP is under its umbrella increases its budget annually. In 2019, the proposed budget for 2020 climbed up to P258 billion, an increase of 1.43%. However, much of it will go to the pension of retired personnel which represents 29% and continues to grow because of the automatic

indexation system, which adjusts the retiree's pension to the prevailing salary of active personnel of the same rank. From the said budget, 46% will go to personnel services, 16% to maintenance and other operating expenses, and 11% to capital outlay. Not to mention the capability development program which also needs a separate budget that is outside of the said allocation.

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This matter sounded an alarm and lawmakers are now looking into some solutions to address the problem because mere dependence on the General Appropriations Act (GAA) is not sustainable and could lead to fiscal collapse. Given the situation, DND, the AFP in particular, needs another source of funds to support its financial needs. One option generated was leasing its numerous idle lands for other economic purposes.

The DND has already issued a Department Circular allowing the lease of the agency’s real estate property to raise funds. Besides that, a memorandum of agreement has also been signed between the AFP and PEZA for the future use of military reservations as defense industrial ecozones.

Recently the Department of Energy in its circular No. 2022-11-0034 stated that 100% foreign ownership of businesses engaged in the exploration, development, and utilization of solar, wind, hydropower, and ocean energy is allowed. Besides that, one of the top priorities of President Marcos is renewable energy wherein policy reforms have been implemented aimed at helping the country increase its share of renewable energy in the energy mix. (Ruth Abbey Gita-Carlos, PNA, 2023).

With all these coming into place, there is now a probable demand for available real estate for building potential investors' energy facilities. Any venture that would involve this will require a vast area of land to build the required infrastructure. This is now where Fort Magsaysay Military Reservation fits in in conversion, utilizing idle lands for energy production.

II. METHODOLOGY

This research is descriptive in type. It was made to provide a study to determine the probability of converting Fort Magsaysay Military Reservation for higher economic uses, the construction of solar farms in particular for emergency needs of AFP personnel and Novo Ecijanos (Subia, Mangiduyos & Turgano, 2020). Fort Magsaysay is situated in Palayan City, Nueva Ecija.

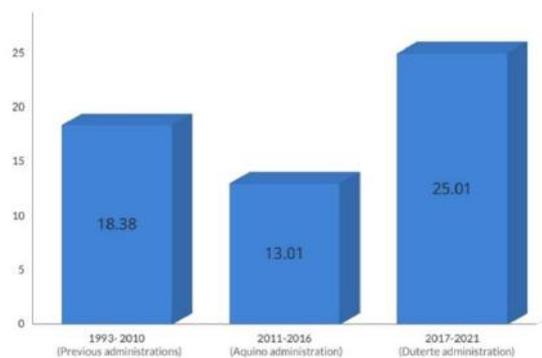
Data gathering focused primarily on document analysis of information related to the possible conversion of the military reservation and the basic requirements that the location should meet to consider it a viable location for its intended purpose. Adding to that is the interview with concerned people who have direct knowledge regarding the case of the military reservation and focus group discussions.

III. RESULTS AND DISCUSSION

Military Reservation Conversions for Economic Uses.

Several military reservations have been converted for higher economic uses that now generate income. In the case of Fort Bonifacio, Subic, and Clark which were converted into a metropolis and Freeport zones under the management of the Bases Conversion and Development Authority (BCDA). The BCDA has contributed to the AFP PhP 56.4 billion from the disposition of its assets proceeds from 1993 to 2021. Table 1 shows the comparative contribution of BCDA to the AFP.

Table 1. Contributions of BCDA to the AFP



Note: Reprinted from <https://www.bcda.gov.ph/news/bcda-contributes-record-p25-b-afp-during-duterte-admin>

Probability for other land use

In 2022, the Department of Energy issued circular DC2022-11-0034, which removes the nationality requirement for businesses that explore, develop, and use

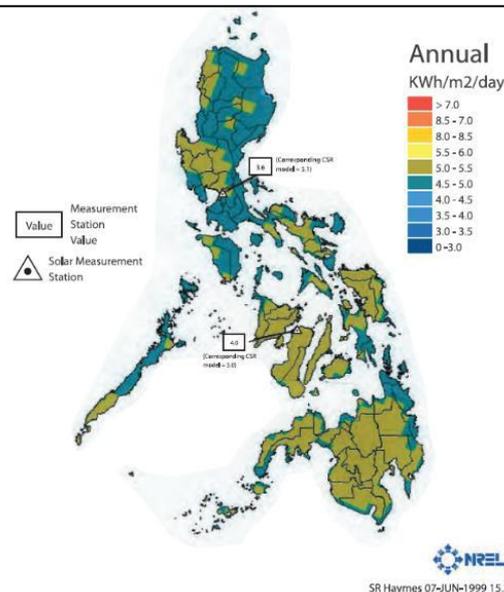
solar, wind, hydropower, and ocean energy and allows foreign capital to flow into the RE industry of the country. Relatively, the Department of National Defense issued Department Circular Number 13 in 2020 which amends Circular No. 23 thereby providing additional guidelines on

the lease of real estate properties of the Department of National Defense. This now provides a basis for allowing the Fort Magsaysay Military Reservation to be leased to prospective investors who may utilize the land for the possible erection of renewable energy facilities subject to the provisions of the circular and existing laws.

The viability of the Province of Nueva Ecija as a site for solar farms is proven to be promising because based on the study of the US- National Renewable Laboratory (NREL) using Climatological Solar Radiation (CSR) model, the Philippines has an average daily insolation of 5 kilowatt-hour per square meter. Figure 1 illustrates the CSR model.

On a similar note, the study on Solar Energy Resource Assessment Using R. Sun in GRASS GIS and Site Suitability Analysis Using AHP for Ground-mounted Solar Photovoltaic (PV) Farm in the Central Luzon Region (Region 3), Philippines concluded that there is a good amount of solar energy resource potential in the region (Region 3). Further, the suitability of the region according to the criteria established in the study (Physical, Environmental, Socioeconomic, and Risk) indicates that almost the entire region is good for installing ground-mounted solar PV farms, except protected areas, flood-prone areas, and other places where it's not possible. Figure 2 shows the site suitability for ground-mounted solar PV Farms in Region 3.

Figure 1. Climatological Solar Radiation Model



Note: Reprinted from https://policy.asiapacificenergy.org/sites/default/files/NREP_red.pdf

Power Demand

The establishment of RE energy facilities is expected to continue because of the government's desire to increase its share in the energy mix of the country. Targets established from NREP state that RE-based capacity installation targets, in Luzon, is 228.05 MW in 2015 from zero in 2010 wherein the total capacity addition aimed until 2030 is as mentioned.

Solar Farm Estimated Electricity Generated and Gross Profit

Based on the research entitled Cost-Benefit Analysis of Converting Agricultural Land into Solar Farm Using RS & GIS: Case of Tarlac Province by A. D. de Luna

et al. (2021), in the study by Pojadas et al., the amount of energy made was estimated using values that were not special to Bohol but instead were for the whole of the Philippines. This is because there aren't enough facts. The values they used to estimate were the capacity factor (CF), which is the ratio of the maximum output to the actual output over a period (Understanding Energy Capacity and Capacity Factor, 2021). It was estimated to be 14.6% using data from the only weather station in the Philippines, which is in Manila. In their study, they took the average of power density (PD) of the 30 current solar farms in the country and found that it was 100MW/km².

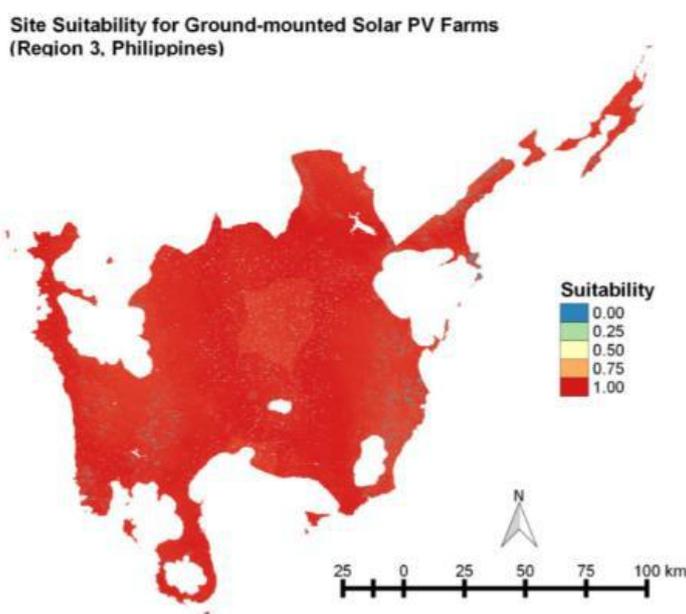
Further, according also from the same research, Agaton (2018) compared renewable energy sources against

coal as a means of generating electricity in the Philippines. The local energy price in the Philippines was utilized in the calculation of the gross profit from a solar farm, which came to Php 9045.05 per MWh.

Income generated by RE plants is assured based on the ERC-approved Feed-in Tariffs (FIT) rates. If the market operator's payments are insufficient, the remaining FIT cost of generated electricity will be paid by consumers through the FIT-allowance (FIT-All) charge per kilowatt-hour (kWh) on our electricity invoices, in other words, there is assurance on the purchase of energy generated.

Comparing the different companies that have revenues from the sale of electricity generated from solar power is very promising as the RE industry continues to grow. Shown in Table 1 is the comparative revenue of identified companies out of the sale of electricity. Although there was a slight decline in revenue between the years 2020 and 2021, experts recognize the effects of COVID-19 that significantly reduced the consumption of electricity during lockdowns.

Figure 2. Site Suitability for Ground-mounted Solar PV Farms (Region3)



Note: Reprinted from <https://scholarworks.umass.edu/foss4g/vol15/iss1/3/>

Table 1. Revenue of Companies from the Sale of Solar-Generated Electricity

Revenue of Companies from the Sale of Electricity from Solar Energy			
Company	Annual Revenue from Sales of Electricity		
	2021	2020	2019
Citicore Energy REIT Corp	334,519,230	269,076,808	248,010,727
Kirahon Solar Energy Corporation	172,441,291	180,702,522	181,679,438
Raslag Corp	291,762,524	395,881,509	284,305,500

IV. CONCLUSION

In conclusion, the gathered data provide a reasonable basis for considering Fort Magsaysay Military Reservation to be used for higher economic purposes that will become an additional source of funds for the AFP.

Based on the results and discussion the following conclusions were made:

1. The inclusion of Nueva Ecija as a suitable place for solar farms makes the location more attractive considering the maximum power that can be generated.

2. The government's program of increasing the share of RE energy in the country's energy mix considering the growing electricity demand would later on require vast areas to erect RE energy sources solar farms in particular in places where it is highly suitable.

3. There is a probability for the Fort Magsaysay Military Reservation to be converted for higher economic purposes, particularly as an RE production site, and if leased to potential investors could contribute a source of additional funds for the AFP.

4. The financial performance of RE companies is promising, hence a probable source of income for the AFP in the form of a lease.

On the other hand, the study has primarily emphasized the climatic suitability of the Military Reservation and the laws allowing its use for economic purposes, hence it is proposed that additional study be made in the following areas:

1. A detailed survey to identify the exact suitable location and extent of usable area based on land requirements for solar farms.

2. Additional study about the profitability analysis of solar farms about the leasing of lands for such industry.

3. A study on the terms of an agreement on the lease of land that could bring a win-win situation for the AFP and the potential investor.

4. A study on mitigation initiatives and economic loss prevention could be conducted by future researchers (Subia, Jocson, & Florencondia, 2019).

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