TECHNICAL UNIVERSITY OF CLUJ-NAPOCA

ACTA TECHNICA NAPOCENSIS

Series: Applied Mathematics, Mechanics, and Engineering
Vol. 67, Issue II, June, 2024

TECHNICAL-ECONOMIC EVALUATION OF THE FLOATING PHOTOVOLTAIC PLANT IN THE THANA RESERVOIR, LUSHNJE, ALBANIA

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Abstract: *This article explores the potential for installing floating photovoltaic plants on water surfaces in Albania. The Thana Reservoir in the Lushnjë district is in a Mediterranean plain area. The reservoir covers an area of approximately 850 hectares, providing ample space for a large-scale photovoltaic installation. In this study, a preliminary analysis has been conducted, assuming an installed capacity of around 150 MWp. The economic-financial performance projection and the main preliminary economic indicators of PV floating plant (150 MWp) as: EBITDA (Earnings before Interest-Tax-Depreciation-Amortization), Free Cash Flow (FCF), Net Profit, Payback Time, Internal Rate of Return (IRR), Return on Investment (ROI) show an operative performance which is favorable for a PV investment.*

Key words: Floating solar photovoltaic, Solar energy, Renewable energy

1. INTRODUCTION

Albania is classified as one of the richest countries in the world in terms of the number of artificial reservoirs relative to its population. Since 1957, 682 large and small dams have been constructed in our country [1], intended for electricity production, irrigation of agricultural lands, and some for supplying urban centers with drinking water. According to the National Register of the International Commission on Large Dams (ICOLD), Albania ranks among the top 20 countries in the world for the number of large dams and is first in Europe for the number of large dams per 1,000 km² and per million inhabitants. Currently, Albania has 10 very large dams over 60 meters in height used for hydroelectric power generation, water supply, and irrigation [1].

Additionally, after the 1990s, the change in the political system led to the privatization of agricultural land. This privatization resulted in extreme fragmentation of agricultural land, accompanied by numerous ownership issues. Today, land parcels are highly fragmented. Based on this data and considering the issues related to the scarcity of agricultural land and the problems in the electricity sector, this paper analyzes the potential for utilizing existing reservoir surfaces for installing floating photovoltaic plants.

Floating photovoltaic (FPV) systems represent a cutting-edge approach in renewable energy, involving the installation of solar panels on water bodies such as reservoirs, lakes, and oceans. This technology offers several advantages over traditional land-based solar farms, making it a promising alternative for sustainable energy production.

FPVs benefit from the natural cooling effect provided by water, which can increase their efficiency by up to 10% compared to land-based systems. This cooling effect reduces the thermal stress on the panels, allowing them to operate more effectively and generate more electricity. For instance, Spencer and Nagarajan [2] have documented that this increased efficiency is a significant advantage of FPVs, particularly in hot climates where traditional solar panels can suffer from decreased performance due to high temperatures.

By utilizing water surfaces instead of land, FPVs help preserve valuable land resources for other critical uses such as agriculture and urban development. This is particularly beneficial in

Received: 30.04.24; **Similarities**: 22.06.24: **Reviewed**: 19.06./19.06.24: **Accepted**:22.06.24.

densely populated or agriculturally intensive regions where land availability is limited. According to Trapani and Redón-Santafé (2015) [3], this conservation of land resources is one of the primary drivers behind the adoption of FPV systems, especially in countries like Japan and South Korea where land is at a premium.

FPVs can significantly reduce water evaporation from reservoirs and lakes. By covering the water surface, they minimize the exposure of water to sunlight and wind, thus conserving water resources. This is especially important in arid regions where water conservation is crucial. Sahu et al. (2016) [4] highlighted that the reduction in evaporation not only conserves water but also helps in maintaining the water quality by preventing excessive concentration of minerals and other substances.

Despite their benefits, FPVs face unique challenges. The installation and maintenance of these systems involve addressing issues such as bio fouling and corrosion. Additionally, the design and implementation of stable floating structures and secure mooring systems are critical for ensuring the durability and reliability of FPVs in various water conditions. Cazzaniga et al. (2018) [5] emphasized that innovative design solutions and materials resistant to corrosion and bio fouling are essential for the long-term success of FPVs.

Countries like Japan, South Korea, and China have pioneered the adoption of FPVs, demonstrating their feasibility and potential. Large-scale FPV projects in these regions have shown that these systems can perform reliably and efficiently, even under challenging environmental conditions. Supportive government policies and subsidies for renewable energy projects play a crucial role in the successful implementation and scaling of FPVs. Li et al. (2019) [6] pointed out that governmental support is often a decisive factor in the deployment of FPVs, providing the necessary financial incentives and regulatory frameworks.

The initial investment costs for FPVs can be higher due to the specialized equipment and installation techniques required. However, the operational and maintenance costs can vary, and the overall financial viability is enhanced by higher efficiency and potential governmental incentives. Bastos et al. (2021) [7] conducted a performance and cost analysis in Brazil, concluding that while FPVs may require a higher initial investment, their long-term economic benefits make them a viable option for large-scale deployment.

PVs offer the potential for integration with other renewable energy sources, such as hydropower, to enhance overall energy production and efficiency. By combining different renewable technologies, it is possible to create more resilient and efficient energy systems. Rosa-Clot and Tina (2018) [8] discussed the benefits of integrating FPVs with hydroelectric systems, noting that such hybrid systems can provide a more stable and reliable energy output by balancing the intermittency of solar power with the consistency of hydropower.

While FPVs can have positive environmental impacts, such as water conservation and potential habitat creation for aquatic life, careful assessment is needed to avoid disrupting aquatic ecosystems and affecting water quality. Properly designed FPVs can mitigate negative impacts and contribute to environmental sustainability. Nunes and Caamaño-Martín (2019) [9] examined the environmental impacts of FPVs and suggested that with appropriate planning and implementation, the ecological benefits can outweigh the potential drawbacks.

Combining FPVs with aquaculture can optimize the use of water resources, providing energy while supporting fish farming. This approach can offer economic benefits and reduce the environmental footprint of both energy and food production. Pringle et al. (2017) [10] explored the concept of "aquavoltaics" and found that the synergistic use of water surfaces for both solar energy and aquaculture can be highly beneficial, particularly in regions where space is limited.

Understanding and mitigating hydrodynamic effects is crucial for the structural integrity and performance of FPVs. Advanced designs and mooring systems can enhance the stability and durability of FPVs in dynamic water environments. Liu et al. (2019) [11] emphasized the importance of considering hydrodynamic forces in the design of FPV systems, noting that improper mooring can lead to significant structural failures.

The Mediterranean region has significant potential for FPVs due to abundant sunlight and suitable water bodies. FPVs can contribute to regional climate goals by providing a clean and efficient energy source. Kougias et al. (2021) [12] highlighted that the climatic conditions in the Mediterranean are ideal for FPVs, and their deployment can play a crucial role in the region's transition to renewable energy.

PVs are particularly suitable for islands, where land is scarce and energy needs are high. Despite higher initial costs, FPVs offer long-term economic benefits through efficient energy production and reduced environmental impacts. Pierro et al. (2020) [13] conducted an analysis of FPVs on Mediterranean islands, concluding that these systems are not only feasible but also economically viable in the long term.

FPVs on water reservoirs in India show high performance and economic feasibility, making them a viable option for the country's energy needs. Policy support and incentives are crucial for the wider adoption of FPVs in India. Yadav et al. (2020) [14] pointed out that India's vast network of water reservoirs provides an excellent opportunity for the deployment of FPVs, which can help meet the growing energy demand while preserving land for agriculture and other uses.

The global trend towards FPVs is growing, with increasing investments and technological advancements. The market potential for FPVs is expanding, driven by the need for renewable energy and efficient land use. Fichaux and Tardieu (2019) [15] discussed the emerging trends in FPVs, highlighting the increasing interest from both private and public sectors in investing in this technology.

South Korea's FPV projects demonstrate the technical feasibility and benefits of FPVs in diverse water environments. Effective policy frameworks and stakeholder engagement are key factors in the successful deployment of FPVs. Lee et al. (2018) [16] provided case studies from South Korea, showcasing the practical applications and benefits of FPVs in the region.

PVs contribute to sustainability by optimizing resource use, reducing environmental impacts, and providing clean energy. Comprehensive lifecycle analysis indicates that FPVs have a lower environmental footprint compared to traditional PV systems. Beluco et al. (2020) [17] emphasized the sustainability benefits of FPVs, noting that their lower impact on land and water resources makes them an attractive option for renewable energy generation.

Floating photovoltaic plants present a viable and advantageous alternative to traditional land-based solar farms. They offer higher efficiency, land and water conservation benefits, and potential environmental advantages. However, addressing the unique technical and environmental challenges associated with FPVs is essential for their successful implementation. Continued research, technological advancements, and supportive policies will be key in realizing the full potential of FPVs as a sustainable energy solution.

2. MATERIAL AND METHODS

2.1 Current Problems in Albania's Energy Sector

Electricity production in Albania is currently almost 100% based on hydropower sources, making national energy supply security highly dependent on hydro-meteorological conditions (rainfall amounts) . In dry hydrological years, Albania imports energy from neighboring countries to meet domestic demand. According to the Energy Regulatory Authority (ERE) report, during 2023, the total electricity production in Albania was 8,795,635 MWh, of which only 80,874 MWh was produced from renewable sources (photovoltaic plants).

The increasing demand for energy, the unregulated use of fossil fuels, and associated environmental pollution issues globally have heightened the demand for renewable energy production capacities. Given Albania's geographic position, the country offers optimal conditions for solar energy utilization. High solar radiation intensity, duration, temperature, and humidity are at very favorable values, ensuring effective solar energy use. Our country is considered to have a good solar energy regime and a high potential for solar radiation.

Table 1

Eletricity production in Albanian in 2023 (MWh)

HPPs (concession) cenection in OSHEE sh.a grid	982,392
HPPs (concession) cenection in TSO sh.a grid	1,085,256
Independent HPPs conection in TSO sh.a grid	1,204,759
HPP Lanabregas	23,244
HPP Ashta	287,628
PV Plant (Sales contract with Free Market Supplier)	61,989
PV Plant (in the free market)	18,885
Production from the HPPs of KESH sha (Public company)	5,131,482
TOTAL PRODUCTION	**8,795,635**

Referring to results from the Hydrometeorological Institute based on climatological-statistical treatment of actinometric and heliographic data, Albania offers optimal conditions for solar energy use. The country's solar energy potential is considerable, with many areas exposed to radiation ranging from 1,185 kWh/m² per year to 1,700 kWh/m² per year [18]. The territorial distribution of sunshine (the number of sunny hours) is around 2,400 hours across the country, with over 2,500 hours in the western part and over 2,700 hours in the Myzeqeja plain [18].

Given these favorable conditions and the need to diversify the electricity production portfolio, constructing solar energy production plants is an effective solution.

3. ANALYSIS FOR LARGE-SCALE FLOATING PHOTOVOLTAIC PLANT CONSTRUCTION IN THANA RESERVOIR

Floating PV plants have experienced exponential growth in many countries, especially in Asia. The first and only floating PV plant in Albania is in the Banja Hydropower Reservoir, operated by Statkraft, which has an installed capacity of 72 MW. Statkraft's investment in the Banja Floating Photovoltaic Plant is an innovative research and development project with an installed capacity of 2 MWp and an expected annual production of about 2.6 GWh.

The Albanian Power Corporation is developing a project for constructing a floating photovoltaic plant in the Vau i Dejës Hydropower Reservoir with an installed capacity of approximately 13 MWp. However, this project is small-scale and is part of a pilot project, not expected to significantly impact the energy situation in Albania.

Given Albania's large number of reservoirs, the potential for installing floating photovoltaic plants is substantial. However, not all reservoirs are suitable for photovoltaic plant installation due to accessibility, radiation levels, surface area, and grid connection possibilities.

This article's analysis is based on the criterion of large-scale photovoltaic plant. The analysis indicates that the Thana Reservoir meets several important criteria for constructing a large-scale floating photovoltaic plant. The Thana Reservoir was built in 1962. The reservoir's surface area is approximately 850 hectares, with a capacity of about 66 million m³. It serves solely for irrigating agricultural lands in the Myzeqeja plain [1].

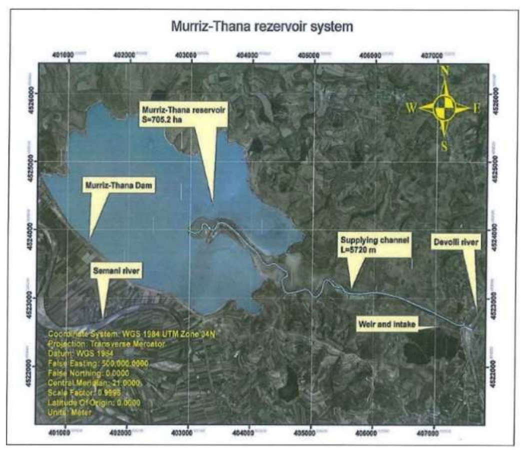

Fig.1. Plan of the Thana reservoir

3.1 Climatic Conditions of the Area

The Thana Reservoir in the Lushnjë district is in a Mediterranean plain area. This climate is influenced by winds coming from the coast, entering the hilly and mountainous areas (ascending through river valleys). Such a climate is characterized by similar features to the southern mountainous areas but with hotter summers and not very cold winters. July and August are typically dry months with few rainfall events.

3.2 Rainfall

The average rainfall in this area is 1,002 mm throughout the year. The maximum monthly rainfall is 146 mm in December, and the minimum monthly rainfall is 21 mm in July [19]. Most rainfall occurs during the months of October to March, while the recorded rainfall is very low in June and July.

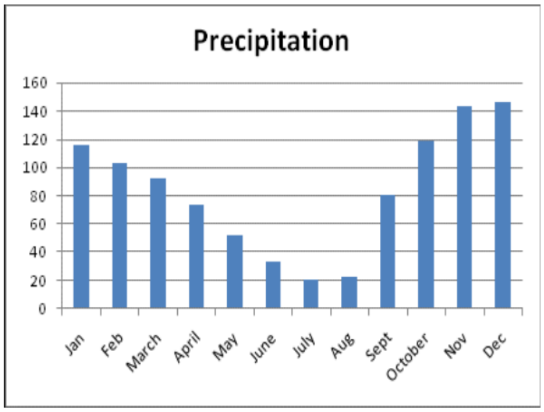

Fig. 2. Average annual rainfall distribution

3.3 Temperature

The average annual temperature in Murriz Thana is 15.6°C. July and August are the hottest months, with average maximum temperatures of 31.2°C and 31.4°C, respectively. January is the coldest month, with an average minimum temperature of 2.6°C [19]. Temperatures rarely fall below zero. Throughout the year, temperatures are mostly influenced by the Adriatic Sea.

3.4 Wind

In the western lowland area, where the Thana catchment is located, winds are influenced by air movements from the sea to the land and vice versa. These winds, conditioned by temperature changes from the sea (west) to the land (east), have a general west/east/west direction. 1.
However, in each area, the dominant winds are 2.
those with local characteristics. The most dominant winds are horizontal winds moving towards the valley. Stable winds are low in intensity, but vertical winds, caused by temperature changes in low mountainous or hilly areas, are more frequent.

3.5 Solar Radiation

Lushnja is located between the isolines of 1,660-1,550 kWh/m² per year. The daily average global radiation distribution at the Lushnjë meteorological station ranges from 1,579 kWh/m² in December to 6,834 kWh/m² in July [18]. Nationally, the number of sunny days varies from 240 to 260 days, with a maximum of 280 days. The number of sunny hours ranges from 2,100 to 2,700 throughout the year

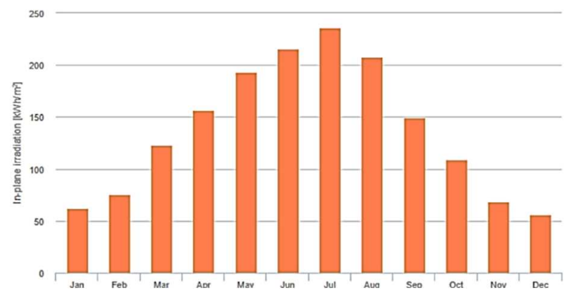

Fig. 3. Annual distribution of average solar radiation on the horizontal surface in the reservoir

4. PROJECT CONCEPT

4.1 Installed Capacity

The reservoir's surface area is approximately 850 hectares, providing ample space for a large-scale photovoltaic installation. In this study, a preliminary analysis has been conducted, assuming an installed capacity of around 150 MWp.

4.2 Grid Connection Possibilities

According to the grid code, the photovoltaic plant connection will be made to the transmission network at the 110 or 220 kV level. Additionally, a direct connection to the 220 kV line, which runs very close to the project area, can be established.

5. TECHNICAL-ECONOMIC ANALYSIS

5.1 Electricity Production

Taking into consideration the radiation data of the Thana area and the installed capacity simulation, in the following chart are summarized the forecasted production indicators of PV floating in Thana reservoir plant for installed capacity 150 MWp. The monthly energy production in first year of Commercial Operation Date (COD) is shown in the figure below, considering terrain shadings:

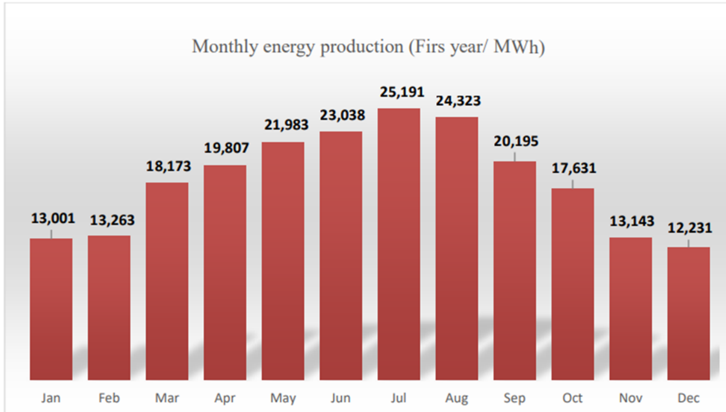

Fig. 4. Monthly energy production (MWh)

During the first year of COD, the PV Plant is predicted to generate up to 221,979 MWh, with a satisfied capacity factor of 17%.
The evolution of generation during the lifetime of PV plant is calculated based on the standard indexes of IRENA for large-scale PV units referring to 2021 data, as following:

- The Operational lifetime of the plant is considered to be up to 25 years.
- The degradation of efficiency production rate during the first year of activity is 2%.
- The degradation of efficiency production rate after the first year of activity will be escalated in 0.5%/year in progression and calculated over the first year of production.

Considering these assumptions, the lifetime energy production is shown in the figure below:

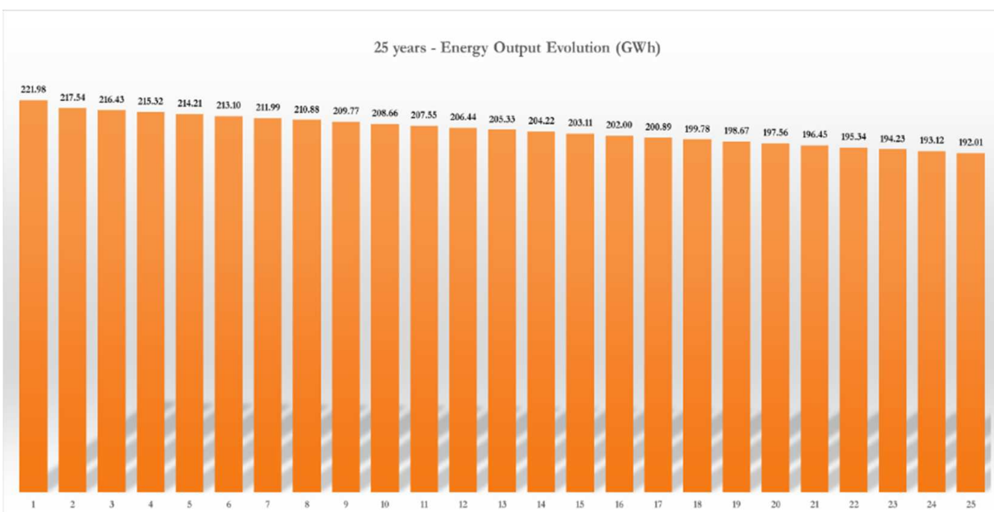

Fig. 5. Average production for 25 years (GWh)

In the chart as above is shown the expected production performance during the 25 years of the project lifetime. Throughout the lifetime of the installation, PV module performance progressively decreases due to physical deterioration and degrading of the module materials.

- The expected total production during operational lifetime is calculated to be around 5,137 GWh.
- The lifetime average capacity factor reaches a satisfactory rate of 15.6%.

5.2 Preliminary Project Cost Evaluation

The first step is to estimate the capital investment costs (CAPEX) and all costs related to the operation of the PV plant (OPEX). The total PV plant lifecycle cost is obtained by adding the CAPEX and OPEX, which is then divided by the total energy yield of the PV plant over its lifetime to derive the Levelized Cost of Electricity (LCOE) for this conceptual project. The analysis is based on the conceptual PV plant simulation and standard updated drivers derived by IRENA, IEA, and other international references on PV Technology. Considering the increase in prices for many raw materials, industrial materials, and freight costs, including civil works and the connection to the transmission network, it is estimated that the total cost of the investment (CAPEX) in PV technology has increased by 20-25% compared to 2020. However, considering that the conceptual Thana plant is designed to have a capacity of 150 MW, being categorized as a very large-scale power generation source, the CAPEX is assumed with a preliminary evaluation to reach 700 EUR/kWp. installed unit. Total CAPEX 105,000,000 EUR.

The financing structure of the conceptual investment is assumed to be provided by own capital. O&M costs are impacted by many factors such as the technology used, inflation rate of a country, natural effects, and the topography of the area where the plant is planted. It is calculated that the cost per unit of operation and maintenance is expected to be on average 9 EUR/kWp/year. This value also includes asset/plant insurance, asset management, balancing effects, and possible annual taxes/fees.

In OPEX, the annual reserve fund allocation of 375,000 EUR/year (with a coefficient of 30 EUR/kWp) applied up to the 12th year of activity is considered for the replacement of inverters (which will be replaced after half of the plant's active life). The average change of inflation rate in Albania for a long period (January 2009 - December 2022) is estimated at 1.3%, applied as a progressive scaling rate on yearly OPEX throughout the plant's lifetime.

The average annual OPEX parameters projected for the 25-year activity of the conceptual plant in the Thana area are summarized below:

Table 2

The average annual OPEX

Yearly Average OPEX/kWp installed unit	11.8	EUR/kWp/year
Average yearly OPEX	1,776,621	EUR/year

5.3 Average Levelized Cost of Electricity (LCOE) Calculation

To calculate LCOE, it is necessary to include as many factors constituting the costs associated with the project throughout its lifetime. The LCOE represents the actualized cost of energy/production unit basis. Financing expenses and inverters replacement in half of their lifecycle are considered. The analysis is based on typical average changes in inflation (1.3%) to predict future OPEX accurately.

Weighted Average Cost of Capital (WACC) plays a key role in LCOE calculation. Based on Decision of Council of Ministers No. 369 (26.04.2017) and updated data from IRENA and changes in inflation rate, the WACC is assumed to be 6%.

The LCOE formula:

$$\text{LCOE} = \frac{\sum_{t=1}^{n} \frac{I_t + M_t + F_t}{(1+r)^t}}{\sum_{t=1}^{n} \frac{E_t}{(1+r)^t}}$$

Where:

LCOE = the average lifetime levelised cost of electricity generation

It = investment expenditures in the year t

Mt = operations and maintenance expenditures in the year t

Ft = fuel expenditures in the year t *(for PV technology power generation Ft = 0)*

Et = electricity generation in the year t

r = discount rate (WACC)

n = life of the system

Table 3

Aggregate Indicators - Conceptual Project PV Floating in Thana reservoir 150 MWp

Indicator	Unit	Value
Installed Capacity	*MWp*	150
Estimated lifetime	*Year*	25
Annual Production (year 1)	*MWh/y*	221,979
Capacity Factor (year 1)	*%*	17

Total Production during lifetime	*GWh*	5,136
Capacity factor during lifetime	*%*	15.6
CAPEX	*k€*	105,000
Average annual OPEX	*k€/y*	1,777
WACC (discount rate)	*%*	6
Inflation change rate/OPEX Escalator	*%*	1.3
Efficiency degradation (year 1)	*%*	2
Progressive efficiency degradation (after 1)	*%*	0.5
Inverter replacement costs in ½ of the lifecycle	*€/KWp*	30
Annual asset depreciation rate for fiscal calculation	*%/y*	5
Residual value of the asset after operational lifetime	*€*	0
Exchange rate for calculation purpose	*€/ALL*	105

The table below shows the calculated LCOE:

Table 4

Average Levelised Cost of Electricity (LCOE)

LCOE (€/kWh)	**0.0479**
LCOE (€/MWh)	**47.9**

5.4 Preliminary Economic and Feasibility Analysis

The base scenario of the preliminary economic and feasibility analysis will be performed on the assumption of the Average Electricity Selling Price = 8 ALL/kWh or 0.0762 EUR/kWh (VAT excluded).

For a life cycle period of 25 years, the economic-financial performance projection and the main preliminary economic indicators of the conceptual PV floating plant (150 MWp) are presented below:

EBITDA (Earnings before Interest-Tax-Depreciation-Amortization): Projected to reach a total of around 347 million EUR with an average of 13.9 million EUR/year.

Free Cash Flow (FCF): Projected to reach around 311 million EUR with an average of around 12.43 million EUR/year.

Net Profit: Expected total net profit of 206 million EUR with an average of approximately 8.2 million EUR/year.

Payback Time: The payback time of the investment is approximately 8 years, ensuring a satisfactory and short return period.

Internal Rate of Return (IRR): IRR of the free cash flow on the investment is calculated at 11.9%, indicating the investment as feasible.

Return on Investment (ROI): ROI, defined as the ratio of free cash flow to CAPEX, is projected to be 2.96x at the end of the lifetime activity.

5.5 Sensitivity analysis

During 25 years of lifetime activity, by default the selling price of the energy produced by the plant will change. Taking into consideration that the selling price of energy is the key driver that affects the economic-financial performance of the PV Plant, a brief preliminary sensitive analysis is necessary. So, the sensitivity analysis refers to the measurement of the profitability of the PV plant activity, in case of change of the selling price of energy, with condition the other parameters remain unchanged during the lifetime.

Based on the above preliminary assessments, for the selling price of base scenario 8 ALL/kWh = 76.19 Eur/MWh, the investment is classified as satisfied profitable/feasible.

The sensitivity analyses aim to measure the reaction of the key profitability/return indicators in case of movement of the selling price up/down, related to the reference price of 8 ALL/kWh = 76.19 Eur/MWh.

As per the tables 5, and 6 as above, the movement of the selling price of energy along the interval 11 ALL/KWh – 6.5 ALL/KWh, it results that IRR will respectively moves along the interval 17.8% - 8%, decreasing the feasibility of the investment.

Referring to the table as above, the movement of the selling price of energy along the interval 11 ALL/KWh – 6.5 ALL/KWh, it results that the payback time of the investment will be extended respectively along the interval 5.7 years – 11.8 years, increasing payback time of investment.

Further decrease of the selling price of energy, it goes straight to the break-even point in which for selling price of the electricity = LCOE = 47.9 Eur/MWh, it results IRR = 0.4% ≈ 0% and Payback time of the investment in 24.6 years ≈ 25 years of the activity lifetime of the PV plant.

Table 5

IRR on Investment

Price Variance				
ALL 11.00/KWh	ALL 9.50/KWh	ALL 8.00/KWh	ALL 7.50/KWh	ALL 6.50/KWh
Eur 104.76/MWh	Eur 90.48/MWh	Eur 76.19/MWh	Eur 71.43/MWh	Eur 61.90/MWh
17.8%	14.9%	11.9%	10.2%	8.0%

Table 6

PAYBACK on Investment

Price Variance				
ALL 11.00/KWh	ALL 9.50/KWh	ALL 8.00/KWh	ALL 7.50/KWh	ALL 6.50/KWh
Eur 104.76/MWh	Eur 90.48/MWh	Eur 76.19/MWh	Eur 71.43/MWh	Eur 61.90/MWh
5.7 years	6.8 years	8.0 years	9.5 years	11.8 years

5. CONCLUSION

This study highlights the potential for utilizing Albania's vast reservoir surfaces for floating photovoltaic plants, focusing on the Thana Reservoir in Lushnjë. The technical-economic analysis shows that a large-scale floating photovoltaic plant in the Thana Reservoir can provide substantial renewable energy, contributing to Albania's energy diversification and sustainability goals.

The expected total production during operational lifetime is 5,137 GWh.and the lifetime average capacity factor reaches a satisfactory rate of 15.6%.

For a life cycle period, the economic-financial performance projection and the main economic indicators as: EBITDA is projected to reach a total of around 347 million EUR with an average of 13.9 million EUR/year, Free Cash Flow (FCF) is projected to reach around 311 million EUR with an average of around 12.43 million EUR/year. The payback time of the investment is approximately 8 years, ensuring a satisfactory and short return period. Internal

Rate of Return (IRR) of the free cash flow on the investment is calculated at 11.9%, indicating the investment as feasible. Return on Investment (ROI), defined as the ratio of free cash flow to CAPEX, is projected to be 2.96x at the end of the lifetime activity.These indicators show an operative performance which is quite favorable for a PV investment.

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EVALUARE TEHNICO-ECONOMICĂ A CENTRALE FOTOVOLTAICĂ PLUTITORĂ DIN BAZCARUL THANA, LUSHNJE, ALBANIA

Rezumat: Acest articol explorează potențialul instalării de centrale fotovoltaice plutitoare pe suprafețele de apă din Albania. Rezervorul Thana din districtul Lushnjë se află într-o zonă de câmpie mediteraneană. Lacul de acumulare se întinde pe o suprafață de aproximativ 850 de hectare, oferind spațiu amplu pentru o instalație fotovoltaică de anvergură. În acest studiu a fost efectuată o analiză preliminară, presupunând o capacitate instalată de aproximativ 150 MWp. Proiecția performanței economico-financiare și principalii indicatori economici preliminari ai centralei fotovoltaice flotante (150 MWp) ca: EBITDA (Câștiguri înainte de dobândă-Impozit-Depreciere-Amortizare), Flux de numerar liber (FCF), Profit net, Timp de amortizare, Rată internă of Return (IRR), Return on Investment (ROI) prezintă o performanță operativă favorabilă pentru o investiție PV.

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