0.55 USD millions per year and the exceptional maintenance at 10 years of operation with about 0.9 USD millions of costs. Making the total calculations of incomes and outcomes, we estimate a net profit before taxes of about 70.4 USD millions in the period of 20 years. Being the inversion return period lower than 5 years.

To finish this brief analysis, note that we obtain a Net Actual Value of about 33.8 USD millions, an Internal Return Tase if 25.5 %, and being the income-outcome relation of 9.3, which is a very good value, taking into account that all above 1 means good business. This numbers indicates that the projected WF is viable and it would give a financial net profit higher than 3,5 USD million per year on average before taxes.

Table IV. Costs and incomes of our project

Description	Unity	Proyect
Installed Power	MW	10
Plant Factor	%	60
Wind Farm with all components	USD/KW	2,200
Substation connection	USD	1,200,000
Interconnection line	USD/Km	17,000
O&M variable	USD/MWh	17
O&M Fix	% investment	2.50
Energy market prize	USD/MWh	100
Emisions reduction certificate	USD	486.89

7. Conclusions

We have planned a wind farm, WF, of 10 MW composed by six mills with 1.5 MW power each near an existing road in Cerro de Ambocas. Loja (Ecuador). The capacity factor of the plant is 0.6. which represents the possibility of very high production compared with majority of similar wind farms all over the world.

The bar voltage level in the electrical substation improves due to the injection of energy directly to the substation, which means a much better electricity quality system, minimising actual faults. The technical analysis shows that there is not any technical problem to install the WF. In addition, a brief economical study of the project gives net benefits higher than 3.5 USD million per year on average before taxes. So, it is a very good business as well its environmental and social positive implications. This last conclusion due to the improve of the electrical service quality for homes and industries in the area.

References

[1] Ali M. Eltamaly. A. Y.-K. (2021). Control and Operation of Grid-Connected Wind Energy Systems. Cham: pringer.

[2] Wind energy in Europe in 2019. Trends and statistics (2020). Wind Energy Organization. EDITOR: Colin Walsh. www.windeurope.org

[3] Ding. Y. (2020). Data Science Fig. 9. Turbina eólica incorporada al SEP

[4] Emeis. S. (2018). Wind Energy Meteorology. Garmish: Springer International Publishing.

[5] Harsh S. Dhiman. D. D. (2020). Supervised Machine Learning in Wind Forecasting and Ramp Event Prediction. Ahmedabad: Academic Press.

[6] Keyhani. A. (2019). Design of Smart Power Grid Renewable Energy Systems. New York: Wiley-Blackwell.

[7] García. M. A. (2017). Estudio del Potencial Eólico y Viabilidad de Parque Eólico en Andalucía. Sevilla: Escuela Técnica Superior de Ingeniería.

[8] Karimi. H. R. (2018). Structural Control and Fault Detection of Wind Turbine Systems. London: The Institution of Engineering and Technology.

[9] Kirkegaard. J. K. (2018). Wind Power in China: Ambiguous Winds of Change in China's Energy Market. Beijing: Routledge.

[10] Lorenzo Battisti. M. R. (2018). Wind Energy Exploitation in Urban Environment. Trento: Springer International Publishing.

[11] Cardemil, C.C. (2020). Energía Eólica: Sincronización a la red y topología de turbinas. Fundamentos de Energía Eólica (págs. 20-30). A Coruña: 3iE Energía