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Effect of Environmental Factors on the Performance of Photovoltaic Solar Modules Arrays

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Abstract: Identifying how soiling affects the performance of photovoltaic systems, would help us to optimize their cleaning cycles and reduce their indirect carbon footprint. For this reason, a photovoltaic system installed in Barranquilla (Colombia) was analyzed; calculating their performance considering the climatic factors and comparing it with the real performance of the system. Differences were noted between actual and calculated performances referable to soiling, what increase the system's indirect carbon footprint because the non-generated energy must be supply by a conventional energy source (fossil fuels); these differences change depending on the rains. The characterization of the rains would allow to know a model to estimate the soiling.
Key words : Solar irradiance, environmental factors, photovoltaic (PV) solar module, soiling, indirect carbon footprint.

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