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INTERNATIONAL WORKSHOP
ADVANCES IN CLEANER PRODUCTION

“CLEANER PRODUCTION TOWARDS A SUSTAINABLE TRANSITION”

Cleaner Energy Production and Sustainable Investments: A Portfolio Analysis in the Italian Electricity Market

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Abstract

The recent climate change, global warming, environmental disasters and the economic crisis are only the first signs of the failure of an economic system that, for too long, shows an uncontrolled utilization of the planet wealth. The Italian electricity market, which is strongly dependent on hydrocarbons, only in recent years has seen a first attempt to change towards renewable resources for electricity production aimed at self-consumption and for feeding into the grid. This paper presents an economic analysis whose purpose is to evaluate the sustainability of investments in renewable technologies for the production of electricity. Each renewable source has its own profitability dependent on a number of factors and subject to market fluctuations, cost and frequent changes on the incentive policies. Applying Portfolio Theory is it possible to select the right mix of renewable energy sources to be included within the renewable energy balance and simulate its evolution. Moreover the presented analysis can be useful for energy planners to select future green scenarios finalized to the reduction of emissions and energy imports through the increasing use of renewable energy.

Keywords: *Renewable Energy Sources, Portfolio Analysis, Sustainability, Sharpe Index.*