A new study has developed a scoring system that could help authorities approve proposals for onshore wind plants. It considered four aspects of a wind farm: the technical properties, the social impact, the environmental impact and the share of earnings offered as compensation for any negative effects.

The EU climate change and energy package has set a number of targets to be met by 2020, including 20 per cent of EU energy consumption to come from renewable resources. Wind power is an important source of renewable energy but onshore wind farms are also associated with negative effects, such as their visual and sound impact. Before approving a wind farm, public bodies evaluate its benefits and costs through a form of Environment Impact Assessment (EIA). However, EIAs do not tend to capture the interaction of the different impacts.

The research established a single scoring tool to measure the net benefit associated with the building and running of wind plants. It considered the local environmental impact, the economic compensation for local communities, the technical characteristics of the plant, the social impact of the project and the interaction between these four elements.

As environmental impacts are very complex, the research proposed that they should be evaluated by a committee who assess impacts on a given scale that would be converted into a numerical score. The economic compensation could be expressed as a percentage of the expected income from the wind farm, based on the forecast of the wind supply. The technical impact indicates whether it can guarantee a certain amount of power for a given wind supply and is represented by the full ‘load hours’ of each turbine. A load hour is an hour in which a wind turbine produces energy at full capacity and represents annual production. Lastly, the social impact of the plant is represented by the number of new employees hired by each wind farm.

The research devised an equation to score the wind farm proposals from these four elements. Depending on the context of the decision, the public body could place different emphasis on different elements. The method was investigated in the case of a proposed wind farm in Southern Italy with 15 wind turbines, each with a maximum power of 2 MW. The study assumed a green energy price of 180 per MWh, which gave the project an annual cash flow of €11,340,000. It put the threshold at which a farm would be accepted at 80 per cent of the maximum score of 100.

The research explored the trade-off between the different aspects of the score. If the social impact or number of employees hired scored the maximum five points, the research indicated that a wind plant would require a minimum of 30 points from the environmental impact in order for it to be accepted. If this was acquired, €347,004 would be needed in economic compensation. The researchers noted that both the economic and environmental impacts of a wind farm tended to fall as social impact increased.

By calculating the number of points scored by a wind farm the index can compare proposals or use a threshold to evaluate the acceptability of projects.

See: http://ec.europa.eu/environment/climat/climate_action.htm


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