

New software brings the right wind farm to the right spot

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Wind farms are springing up all across Europe, covering some 8 % of the EU's electricity needs in 2013 according to the European Wind Energy Association (EWEA). But several drawbacks have so far prevented this share from growing as much as it could: most notably, citizens have complained about the noise, disturbances in telecommunications or the impact on ecosystems. But what if a single piece of software could solve all these problems?

The SOPCAWIND project has developed new software to optimize wind farm placement in Europe, taking into account criteria as varied as wind power, local environment characteristics, potential interference with communication systems, noise, nearby housing exposure to the sun,

visual impact or even the existence of archaeological artifacts on site.

The software -the first ever to integrate such a complex and multidisciplinary database - was presented recently at the EWEA 2014 Annual Event. It aims to facilitate the design of wind farms by ensuring that all the above-mentioned aspects are taken into consideration in the wind farm design process, thus avoiding post-construction trouble and reducing cost. Multiple stakeholders from both the public and private sectors provided precious data to feed the system.

'Thanks to this tool, firstly the design process of the wind farm is much more fluid, and secondly, the developer knows in advance if there is any trouble and can include modifications in the wind farm in order to avoid it, which is a key aspect,' explained Daniel de la Vega from Tecnalia's Signal Processing and Radiocommunications Group (TSR). Screening development opportunities and optimising wind farm design indeed require extensive knowledge of the local legislation, development constraints and an extensive knowledge of the trade-off between capital cost and production yield. SOPCAWIND accelerates the process and makes it less costly by performing tasks which previously required the combination of expensive software tools.

Tecnalia led the project, while TSR particularly helped create the algorithms that enable a thorough evaluation of possible impact on radars, air navigation system aids and other [telecommunications](#).

'Although interference is not common, a wind farm can alter a radar signal that is 10-20 kilometres away,' De la Vega stressed. 'Because these impact studies are conducted before the wind farm is built, they allow potential interference to be detected if it does in fact exist, and so the wind farm developer will be able to include modifications in the design of the wind farm in order to prevent such trouble.'

In addition to optimising the design of [wind farms](#) and reducing the time

necessary to undertake viability studies, the project is expected to impact future legislation in the field of telecommunication [interference](#). The characterization of the signal emitted by wind turbines over the UHF waveband and its influence on the quality of the television signal could be used for drafting future international regulation, TecNALIA noted.

Provided by CORDIS

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