

## The impact of wind turbine noise on health

J Almeida<sup>1</sup>, M Alves-Pereira<sup>2</sup>, P Nossa<sup>3</sup>

<sup>1</sup>ESTeSC - Coimbra Health School, Instituto Politécnico de Coimbra, Portugal

<sup>2</sup>Universidade Lusófona, Portugal

<sup>3</sup>Universidade de Coimbra, Portugal

### Introduction:

Wind turbines are a well-established part of the electricity generation network of modern society, and are generally considered to be a positive benefit to society. However, the opinion of populations living near wind turbines are often negative, because this structures produces noise beyond human hearing - infrasounds and low frequency noise (IRBF).

### Objectives:

This study aimed to reflect on the IRBF, in particular what is produced by wind turbines.

### Methods:

In order to achieve the objectives, a bibliographic review was carried out. The IRBF is considered the superpower of the frequencies by: having less attenuation by walls and other structures; make walls and objects vibrate; hide higher frequencies; cross great distances with little loss of energy due to the atmospheric and soil attenuation; be able to produce resonance in the human body; triggering physiological reactions in humans.

### Results:

People living near wind farms may experience symptoms, which may be more or less severe depending on exposure time and sound pressure level. As non-auditory effects, the consequences were classified into two categories, taking into account the phenomena associated with wind turbine noise. The first category, related to Vibroacoustic Disease: a systemic pathology caused by excessive exposure to IRBF and is characterized by direct damage to tissues or organs; the second category is associated to Wind Turbine Syndrome: characterized by various symptoms related to organs of the vestibular system, which are manifested as sleep disturbances, headaches, tinnitus, vibrations, cardiac arrhythmia, nausea, irritability, etc.

### Conclusions:

It is evident the importance of investing in the determination of the cause-effect relation regarding the population exposure to IRBF from wind turbines. It is also important to invest in prevention policies concerned with public health and which define safe setbacks, as well as incentives for technological development in systems less producing this type of noise.