# The Wobble: A Sustainable Noise Barrier Consisting of Noise Absorbing Materials and a Revolutionary Shape

Janssen, Bram
de Gier, Marie-Anne

Today 70 million people in the EU suffer from traffic noise pollution. On a global basis, this is much worse. Known effects on the wellbeing are sleep interference, deafness and irritation. But other effects come along too, such as cardiovascular diseases, stress, and it affects the performance at work and school. According to our research, a noise barrier is the best way to prevent traffic noise pollution. Other, existing measures are not effective. Our solution Our noise barrier improvement consists of two elements: we combined various absorbing materials on the noise barriers and developed a new shape. The materials consist of an absorbing part and an energy generating part. For the absorbing part, we tested materials, chosen for their absorption capability. Based on the results we chose to combine three materials: a layer of recycled tires, then a layer of PUR-foam and Acusticab and then again a layer of recycled tires. These layers absorb most of the noise. The energy generating part is made of solar panels and generates energy, which will fuel the streetlights and support houses in the surroundings. Based on our test's results we concluded that the 'Wobble' works best to keep the noise away from a sound sensitive area. The principles of the Wobble are as follows: when the noise reaches the noise barrier it is conducted upwards. Due to the many angles in the Wobble construction, it takes longer before the sound is launched into the sky: the parts that reflect will reflect more often compared to a normal noise barrier, in order to lessen the noise's energy. During the period the sound is conducted upwards, the sound waves will partly sink into the absorbing noise barrier layers and, therefore, reduce the remaining sound waves.

**Awards Won:**

Third Award of $1,000

Acoustical Society of America: Second Award of $1,500