


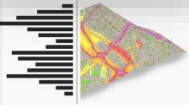


# New developments in the NoiseModelling tool for nature-based solutions (NBS) assessment in an urban context




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## Societal issues and scientific challenges

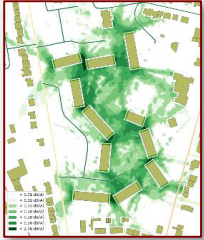
- EU-H2020 funded project (2018-2021)  Horizon 2020 European Union Funding for Research & Innovation
- “A Nature Based Solutions (NBS) knowledge diffusion and assessment platform for re-naturing cities” <https://www.nature4cities.eu> 
- NBS impact on sound environment in urban medium ? <https://noise-planet.org/noisemodelling.html>  

## New developments and case study

- Numerical simulation of green façades effects on sound propagation >> now available using NoiseModelling, see <https://github.com/lfsttar/NoiseModelling>
- Sound absorption coefficient is frequency dependent, and adjustable for each vertical façade characteristics *via* the substrat impedance value: *in situ* measurements of air flow resistivity ( $\text{kN.s.m}^{-4}$ ) using an exp. prototype 
- Qualitative validation (“feasibility”) using a case study in a district of Nantes city, France: Open Street Map + road traffic counts (=sound source in this case)



## Results and discussion

- **Qualitative approach**
  - Sound map of acoustic gain (relative to existing characteristics) in dB(A)
  - Impact of NBS on sound environment: high dependence on location
  - Feasibility of NBS impact study using NoiseModelling: OK 
- **Quantitative approach**
  - Various scenarios of horizontal (ground impedance) and vertical (building facades) characteristics, from reflective/mineral to absorptive/vegetal (3 levels of gradation for each ground and facade)
  - SPL gain histograms in dB(A) for receivers horizontally / vertically distributed:

*Horizontally (2m high in the studied zone)*

*Vertically (2m in front of the facades)*

