Life-MEGA

Smart computing system to monitor and abate the indoor concentrations of NH_3, CH_4 and PM in pig farms

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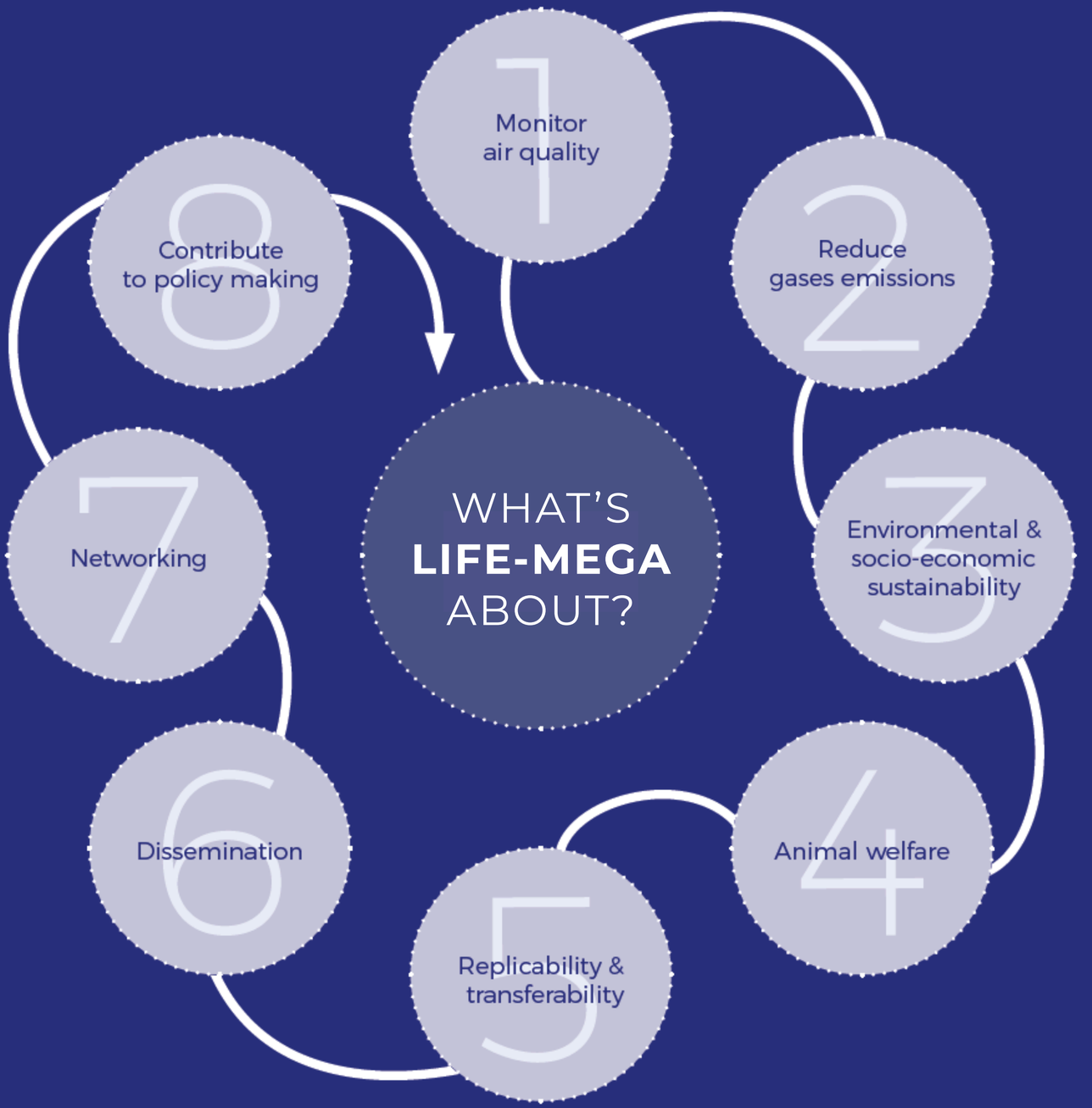
The LIFE-MEGA project has received funding from the LIFE programme of the European Union



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Smart computing system to monitor and abate the indoor concentrations of NH_3, CH_4 and PM in pig farms

Intensive pig farming makes up the majority of European swine production, producing a heavy impact in terms of water, soil and air pollution. Air inside pig barns is characterised by **high concentration of NH_3, CH_4 and PM**, posing a health risk to animals and workers. The same poor-quality air then dumps into the environment, causing pollution in the surrounding areas. The awareness about environmental issues related to livestock production has grown in the last decade and this sector has been acknowledged as a major responsible of **environmental pollution and climate change**.

The Life-MEGA project started on 1st October 2019 and, within an expected duration of 3 years, its core actions aim at demonstrating the application of innovative techniques to monitor and reduce NH_3, CH_4 and PM emissions in large scale pig farms. The key feature of the proposed solutions is the **conjunction between monitoring and treatment of the air inside pig barns**. This will enable to improve the air quality that animals and farmers breathe daily, with positive effects on animals and workers' health and thus on farm performance and profitability.

The equipment - the online microclimatic tools and emission-abating technologies, i.e. a wet scrubber prototype and a dry scrubber - **will be tested in 2 Italian farms** (fattening period) **and 2 Spanish farms** (farrowing, weaning period). Life-MEGA will test and develop a system based on an **online monitoring tool able to activate a selected emission-abatement system** when the concentration of pollutants inside the pig barn exceeds threshold values. During the third year of the project, after the identification of the best technology to reduce NH_3, CH_4 and PM emissions, further developments will enable the online tool to autonomously communicate with the abatement system.

A **holistic assessment of the potential environmental effects** of the demonstrated techniques will be provided, based on Life Cycle Assessment (LCA) analysis. The evaluation will focus on the reduction of emissions from pig farming to analyse a **wide range of impacts** including air and water pollution, biodiversity loss, and climate change.

Demonstration and communication activities will be mainly implemented at local level. **Networking and dissemination** activities will also be organised at the European level to involve farms and associations from different EU Countries. Furthermore, the two commercial companies involved in the project will have a fundamental role in the dissemination of the project results, with an eye to **foster the replicability and transferability** of the tested solutions.

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ABOUT THE CONSORTIUM

The **UNIVERSITY OF MILAN - Dept. of Environmental Science and Policy (ESP)** coordinates the partnership and is in charge of the overall project management. The research team will carry out the sampling campaigns, monitoring and evaluation of the abatement systems' efficiency, LCA analysis and economic evaluation of the proposed techniques.

The **Institute of Agrifood Research and Technology - IRTA** is in charge of the animal performance and welfare monitoring and measurements. Furthermore, IRTA will organise the study visits and the demonstration days for Spanish farmers, contribution to technical reference and policy making documents, and will take part in the LCA analysis.

ROTA GUIDO S.r.l. - founded in 1964 and specialised in the realisation of innovative zootechnical equipment and solutions - provides for the design, supply and installation of the wet scrubber prototypes. Moreover, the company will take part in dissemination and contribute to the plan for the market replicability and transferability of the tested technical solutions.

NUVAP S.r.l. - founded in 2014 and specialised in monitoring indoor pollutants through its innovative platforms - is responsible for the development of an online microclimatic tool able to monitor key emissions levels in pig barns and activate the abatement systems accordingly through a dedicated AI.

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