

## CLIMOS project - Implications of climatic and environmental factors in sandflies-borne diseases

V. Foglia Manzillo\*<sup>1</sup>, M. Maia<sup>2</sup>, D. San Martin<sup>3</sup>, O. Courtenay<sup>4</sup>, Blesic<sup>5</sup>, N. Gligoric<sup>6</sup>, C. Maia<sup>7</sup>

1. University of Naples Federico II, Naples, Italy. 2. Karlsruhe Institute of Technology, Karlsruhe, Germany. 3. Predictia, Santander, Spain. 4. University of Warwick, Coventry, UK. 5. Institute for Medical Research, University of Belgrade, Serbia. 6. Zentrix Lab, Pancevo, Serbia. 7. University Nova of Lisbon, Lisbon, Portugal.

\*[valentina.foglia@unina.it](mailto:valentina.foglia@unina.it)

### Background.

Over the last two decades, three successive research consortia (EDEN, EDENext and VectorNet) aimed at improving knowledge, surveillance, and control of vector-borne diseases in Europe and neighboring countries. Among these, sand fly-borne diseases (SFBs) including leishmaniasis and phlebovirosis represent an important public health and veterinary concern.

In this context, CLIMOS project – Climate Monitoring and Decision Support Framework for Sand Fly-borne Diseases Detection and Mitigation with Cost-benefit and Climate-policy Measures – aims to complement and build on previous efforts, bringing together researchers, health-care and veterinary practitioners, technology platform designers and at-risk communities, to conduct innovative and applied research seeking to better prepare for current and future impacts of climate and environmental changes on human and animal health, using sand flies and the diseases they transmit as a model system.

### Materials and methods.

The CLIMOS project started in 2022, involving Universities, Institutes, Research Centers and Health Ministries from 16 European Countries. In particular, the program will develop a general public health risk assessment method for SFBs through the integration of climate, environmental and One Health disciplines and data sciences; provide new epidemiological data on SFBs; utilize big data from Earth-observing satellites and ground-level surveillance records, to map the locations of disease-carrying insects and provide health, climate and environmental services to keep communities safe, and integrate economic and social sciences, to enable socio-economic assessments of impacts of the incidence and spread of SFBs on individuals and societies

### Results.

Results will be available at the end of the project scheduled for early 2025. The expected results are summarized below:

- Establishment of an Early Warning System for sand fly-triggered health infections and potential diseases, including all endemic sand fly vectors and the main pathogens, provided as ISA JoinUP open-source tool.
- Implementation of enhanced surveillance networks in 10 European and neighbouring countries: Austria, Czech Republic, Croatia, France, Germany, Portugal, Spain, Italy, Israel, and Turkey.
- Predictions to assist policy recommendations; interactive maps for risk management; cost and benefit assessments of adaptation; a comprehensive assessment of the SFBs in Europe; new product: a low-cost, easily accessible, standardised, semiochemical-based trap for usage for detection and fast screening of sand fly species.
- Surveillance of the sand fly vectors combined with monitoring of infected domestic dogs for canine leishmaniasis and Phleboviruses; prototypes of microclimate and environment sensors and sensing framework components.

**Funding:** Co-funded by European Commission grant 101057690 and UKRI grants 10038150 and 10039289 and catalogued by the CLIMOS Scientific Committee as CLIMOS number XXXX ([http:// www.climos-project.eu](http://www.climos-project.eu)).

**Conflict of interest:** The contents of this publication are the sole responsibility of the Authors and the funders had no role in study design, data collection and analysis, decision to publish, or abstract preparation.