

# HABeeTAT

## How to Adapt Beehive To climATe Change

### ABSTRACT

Honeybees is a central species for biodiversity and human nutrition because of its role played in mutualism with entomophilous plants, in the beekeeping industry and in pollination services (that critically support plant fruiting). Life sciences have proven that like others, honeybees are threatened by climate change because climate change affects the resources but also the hygrothermoregulation mechanisms of the colony inside the hive.

Therefore, beekeeping practices that promote bee resilience are a major challenge in the face of current and future climate change. Among the practices, the beehive features (form, volume, insulation, location in the apiary, etc. ) are a key element for honeybee colonies and beekeepers for adapting to climate change.

The 3 WPs of the HaBeeTAT project have the common objective of providing strategies adapted to the beekeeping sector to reducing the impact of climate change on colony health by working on the adaptation of beehives. The expected result is a proof of concept of new materials, new adapted hives obtained by combining quantitative data from numerical modeling of the hygrothermal climate in the hive with the practical knowledge of beekeepers (beekeepers, craftsmen) already involved in modifying their practices in the face of their current observation of climate change in their specific location.

HABeeTAT is an exploratory project to test multidisciplinary (technical and social sciences) concepts and methods and to lay the groundwork for a larger, international research project on beekeeping adaptation to climate change.

**Keywords :** Apis mellifera, Beehive thermal behaviour, Adaptation to climate change, Confrontation of scientific to practical knowledge, Pluridisciplinarity technical and social sciences

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**Project type :** AAP

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**Flagship project :** no

**Project leader :** Pascale Moity-Maizi

**Project leader's institution :** InstitutAgro

**Project leader's RU :** SENS

**Budget allocated :** 30000 €

**Total budget allocated ( including co-financing ) :** 30000 €

**Funding :** Labex

### GOAL

The HABeeTAT project aims to contribute to the maintenance of beekeeping activity in the face of major threats posed by climate change. It will test the possibilities of protecting bee colonies against specific local climatic changes by searching for strategies of adaptation of beehive and apiary characteristics. This project will build scientific knowledge on the beehive by combining two different methodologies: empirical surveys from beekeepers, and experimental modelling from numerical modeling of the thermal

behavior of hives on-site, using data on wood, hive construction materials, thermics and climate change.