

ENVIRE: Interventions to control the dynamics of antimicrobial resistance from chickens through the environment



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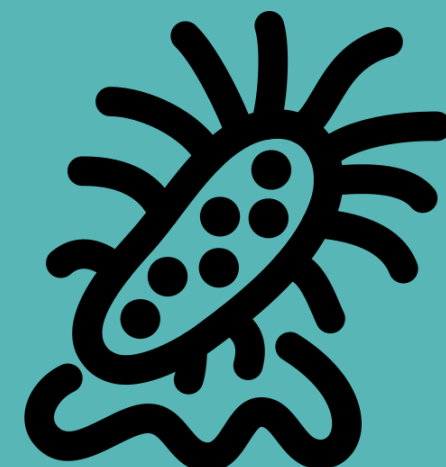
Introduction



Use of antibiotics in broiler chicken production results in the increase of antimicrobial resistance.



Our goal is to contribute to the reduction of the selection and the spread of antimicrobial resistance bacteria in broilers and from chicken farms to the environment, and ultimately to humans.



The focus will be laid on resistant *Enterobacteriaceae*, with a particular focus on ESBL *E. coli*.

Methodology

Different intervention studies will investigate the potential of various on-farm measures:



Antibiotic free chickens raising



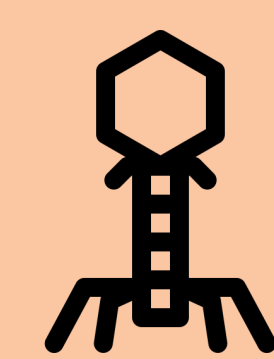
Treatment or storage of manure



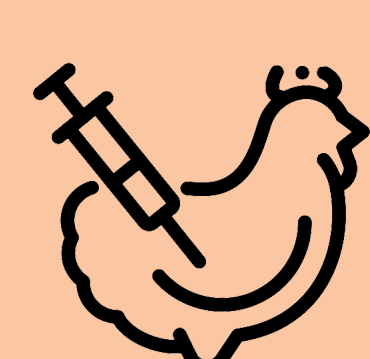
Depollution of farm effluents



Phytotherapy as alternative for antibiotics



Application of bacteriophages



Vaccination

The results of these studies will be applied to the Quantitative Microbial Risk Assessment (QMRA) model (WP3), to evaluate their impact on human exposure.

Project structure

WP1
Intervention studies

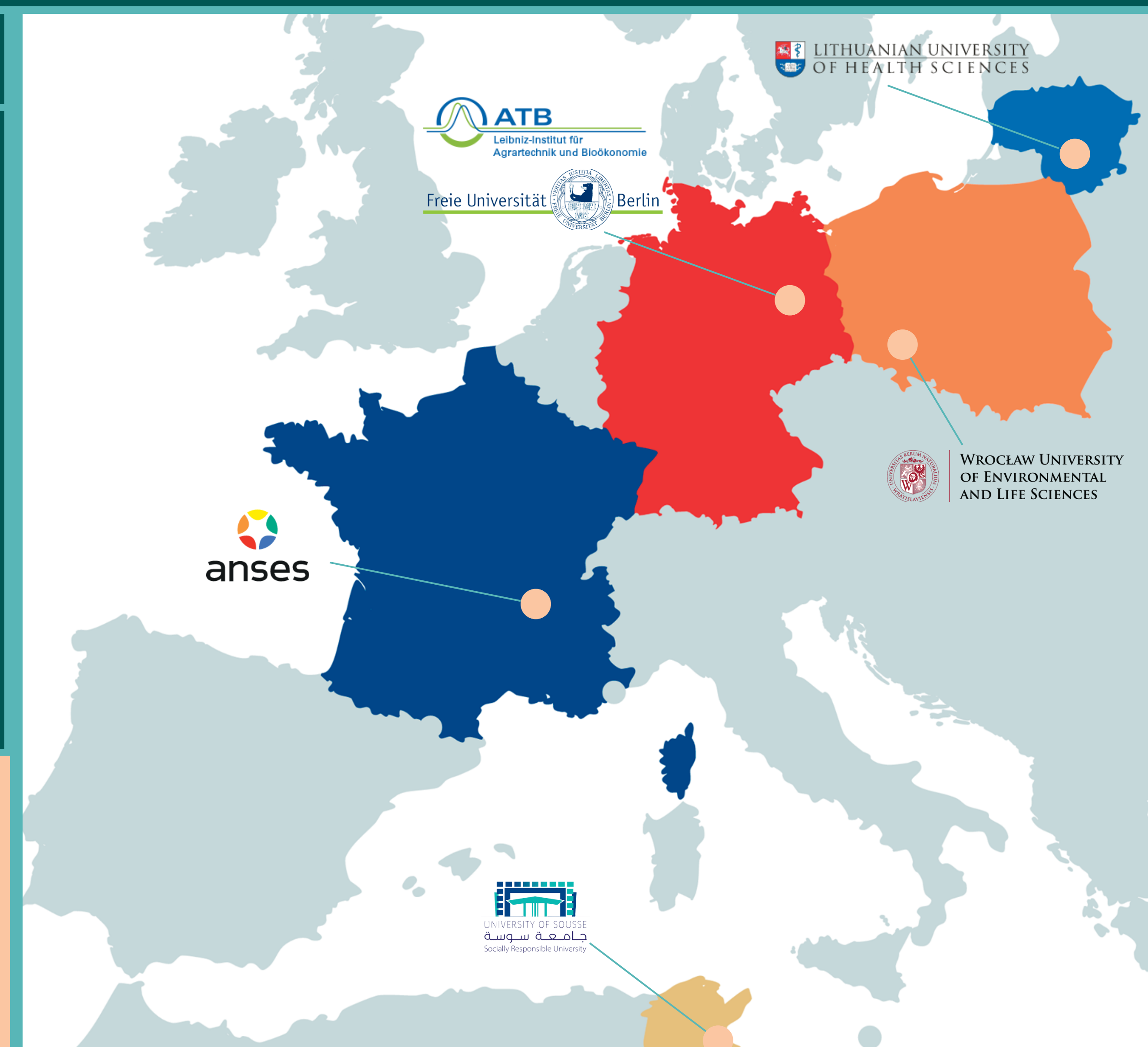
WP3
Risk Assessment modeling

WP2
Existing knowledge synthesis

WP4
Knowledge transfer and dissemination

Project partners

- **Germany:**
 - Freie Universität Berlin¹
 - Leibniz Institute for Agricultural Engineering and Bioeconomy e.V.²
- **France:** French Agency for Food, Environmental and Occupational Health & Safety (ANSES)³
- **Lithuania:** Lithuanian University of Health Sciences⁴
- **Poland:** Wrocław University of Environmental and Life Sciences⁵
- **Tunisia:** University of Sousse⁶



WP3 - Quantitative Microbial Risk Assessment model

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Foodborne pathway



Occupational pathway



Environmental pathway

A Quantitative Microbial Risk Assessment model is being developed to evaluate the effect of the selected interventions and to acknowledge the process of antimicrobial resistance selection, release, spread, and human exposure, via three pathways:

I. **foodborne** - via consumption of chicken products,

II. **occupational** - via direct contact with positive flocks,

III. **environmental** - via recreational swimming, consumption of contaminated drinking water and fresh produce contaminated through chicken manure spread.

