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AGRICULTURAL RESEARCH FOR DEVELOPMENT

Epidemiological challenges in EU and Research Needs

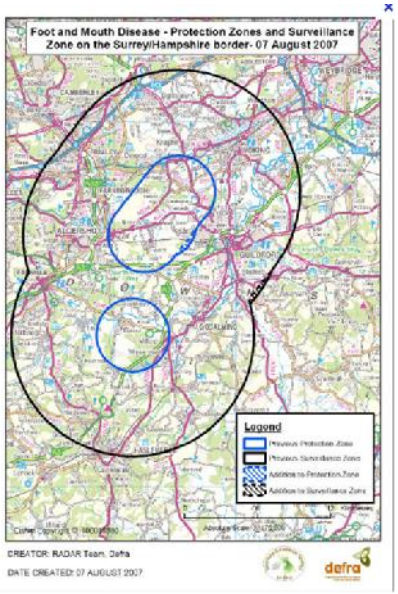
Marisa Peyre, CIRAD-AGIRs

EU-China expert seminar on identifying potential joint priorities for research and innovation in food, agriculture and biotechnology'

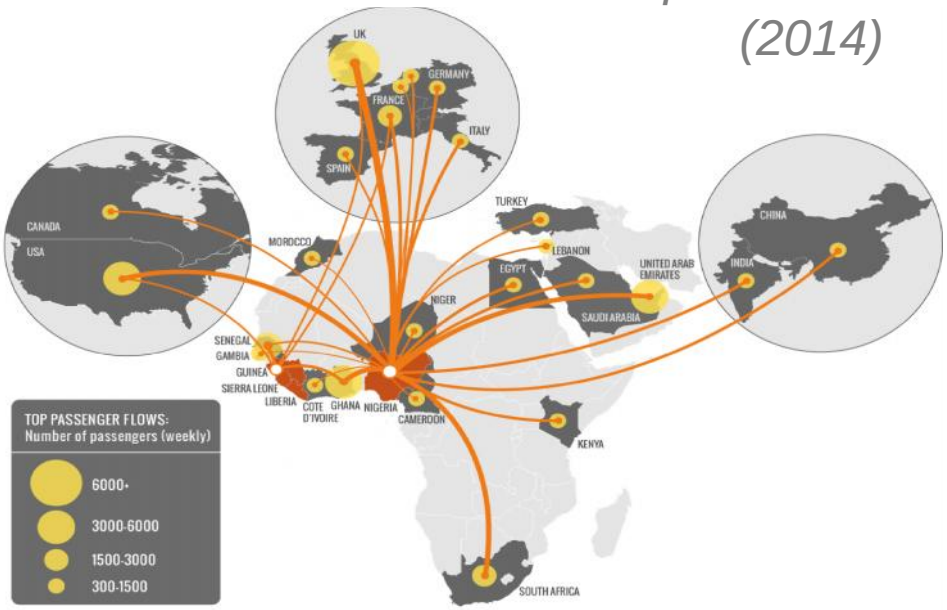
General context (1/2)

- Detecting emergences, managing uncertainties, optimising ressources
- **Which priorities?** Risk-assessment; relevance, benefits and utility
- **How?** Which protocols; acceptability; participatory approaches
- **How much?** Economic evaluation; cost-minimisation

FMD surveillance zoning

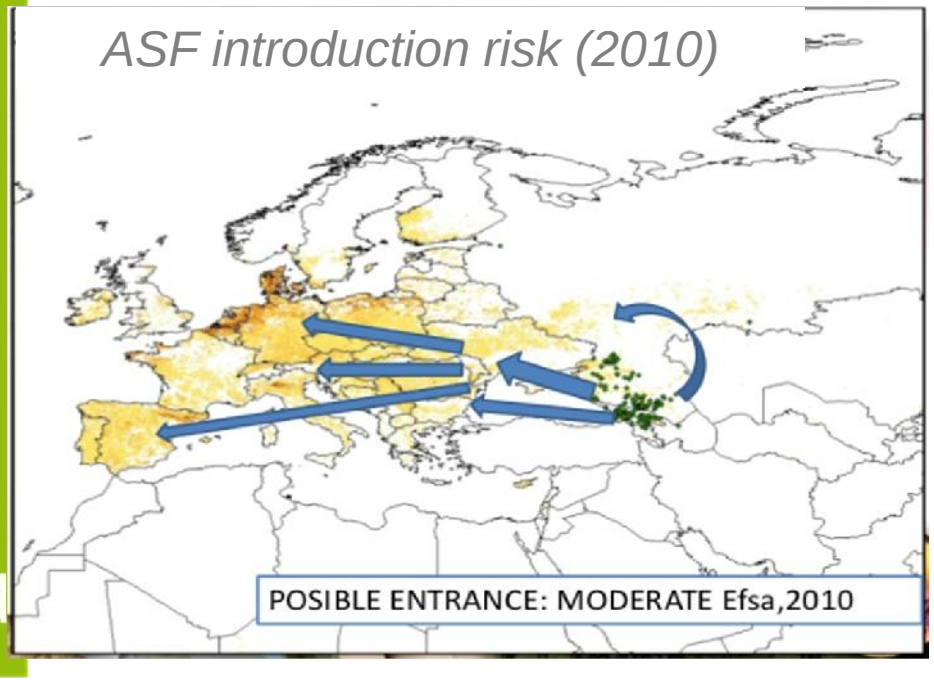


Ebola virus international spread risk (2014)



Marcelo et al. PLOS Current Outbreaks, Sep 2 2014

ASF introduction risk (2010)



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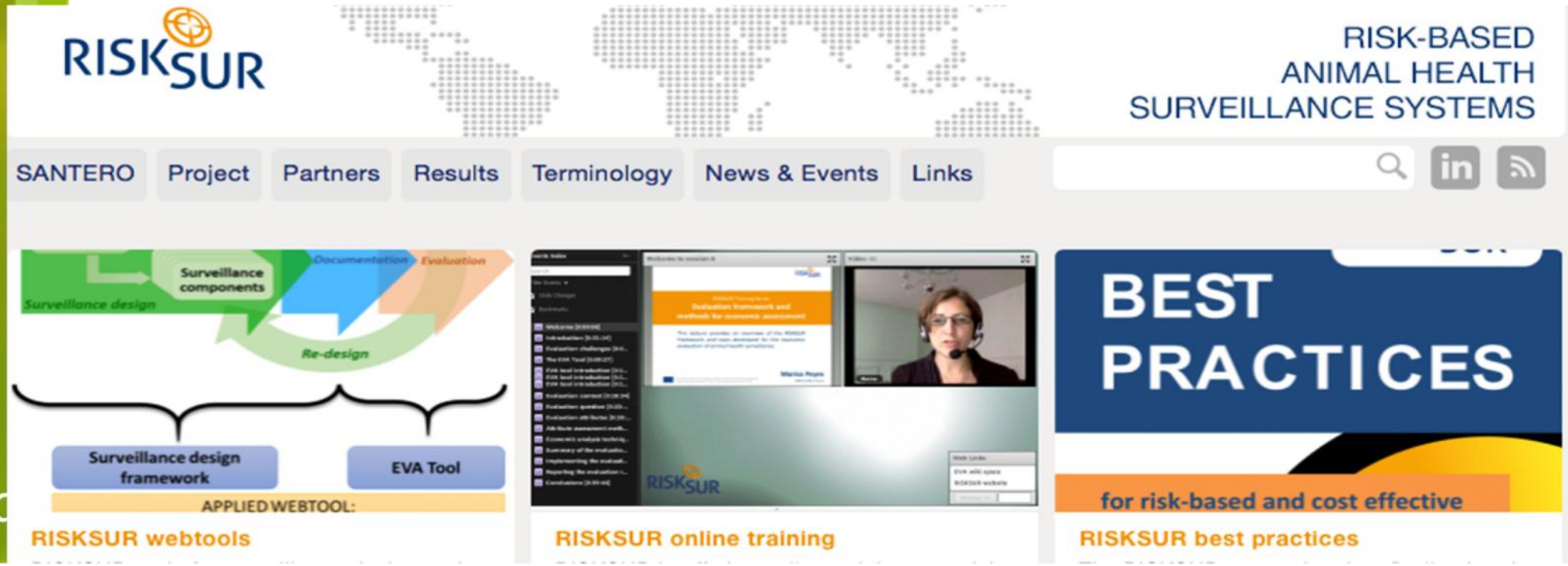
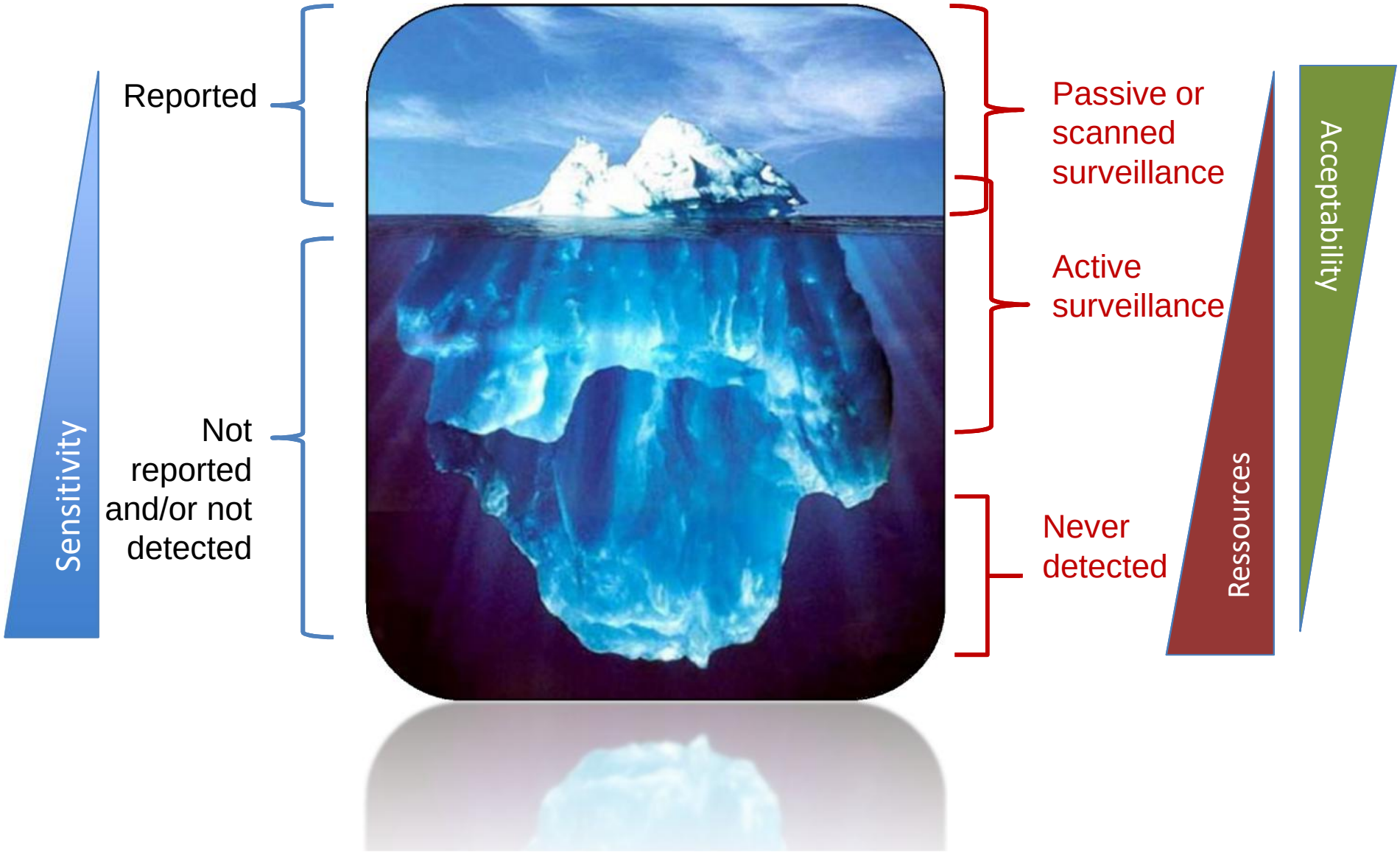
General context (2/2)

- **Institutional challenges**
  - Standardisation/harmonisation of surveillance protocols, evaluation approaches
  - Inter-sectoriel collaboration (One Health: animal, public, environmental health)
  - Private/public partnership (surveillance responsibilities and management)



Improvement of surveillance/control programs



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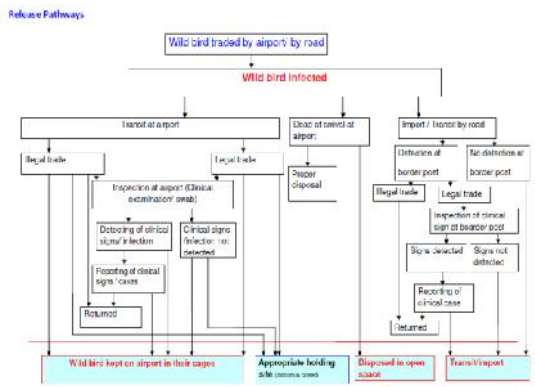
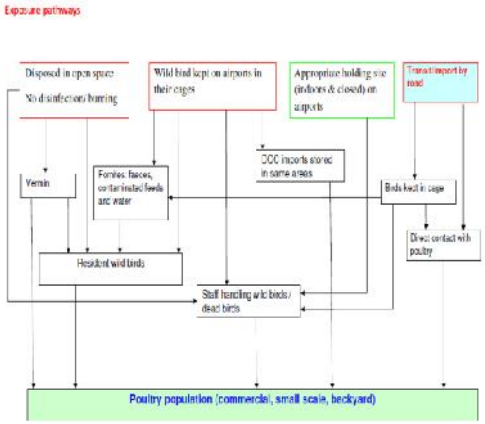
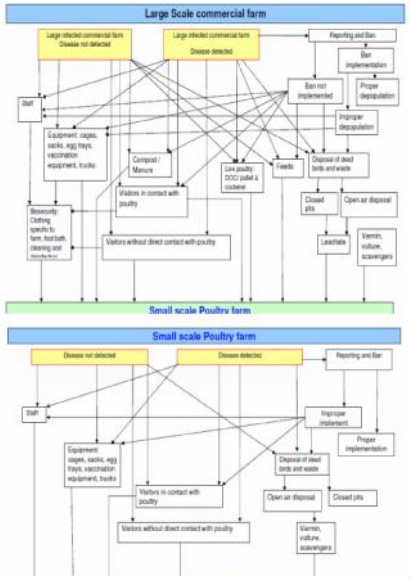
Priorities / Risk assessment (RA) / modeling



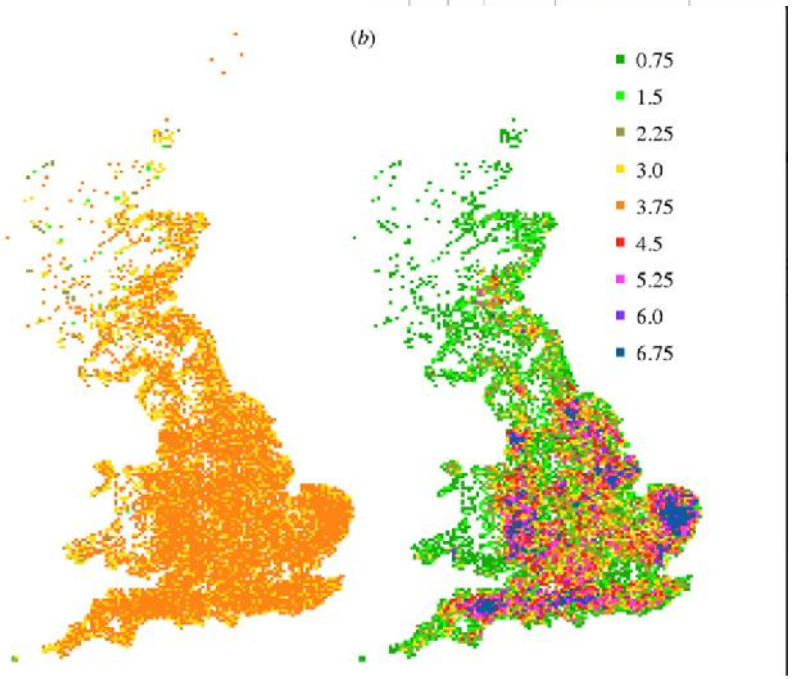




Release Risk

Exposure Risk

Likelihood of introduction



PROCEEDINGS OF THE ROYAL SOCIETY B

Proc. R. Soc. B (2007) **274**, 2287–2295
doi:10.1098/rspb.2007.0542
Published online 20 July 2007

Control of a highly pathogenic H5N1 avian influenza outbreak in the GB poultry flock

James Truscott[1,*,†], Tini Garske[1,2,†], Irina Chis-Ster[1], Javier Guitian[3], Dirk Pfeiffer[3], Lucy Snow[4], John Wilesmith[2,5], Neil M. Ferguson[1] and Azra C. Ghani[2]

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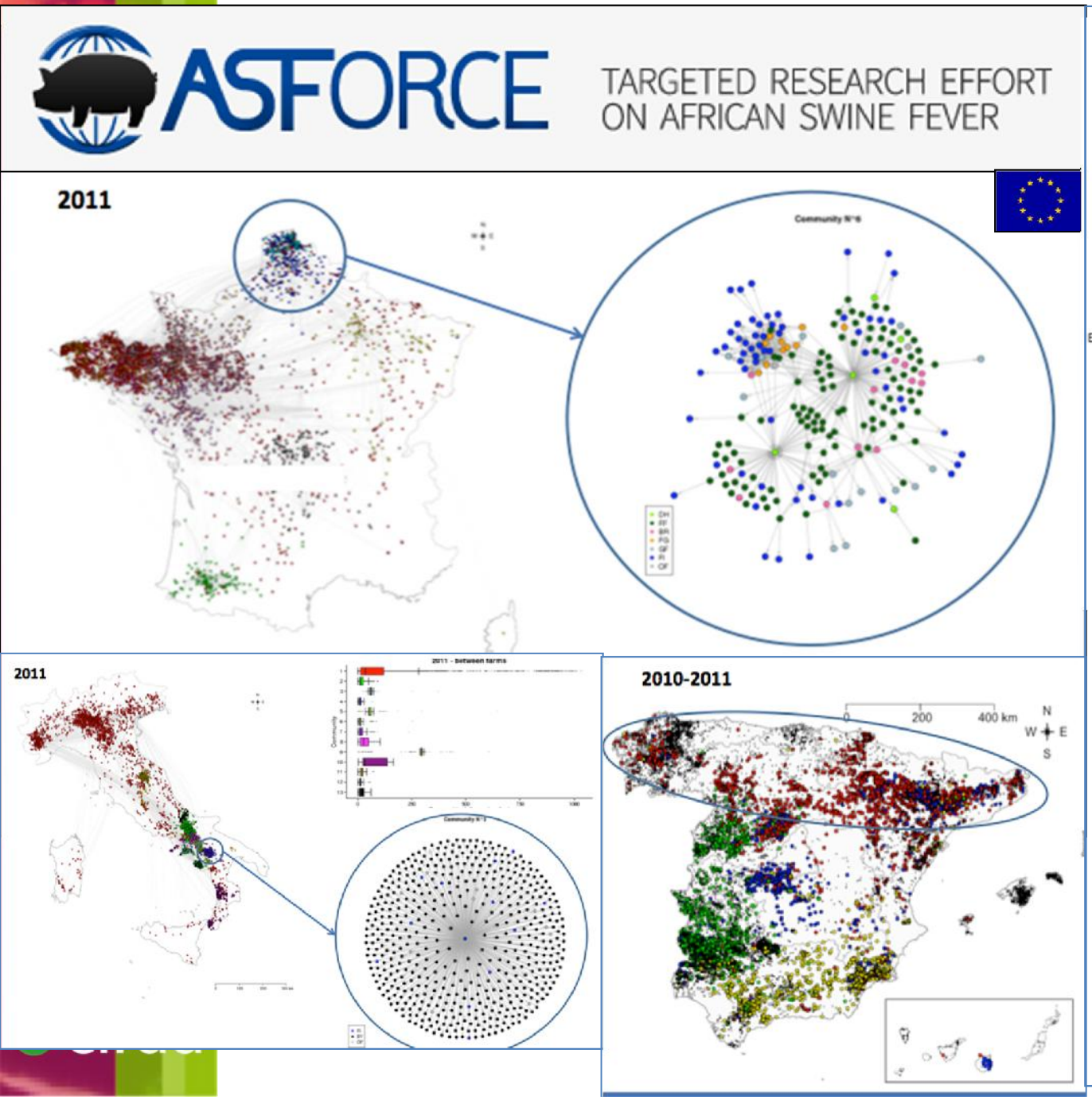
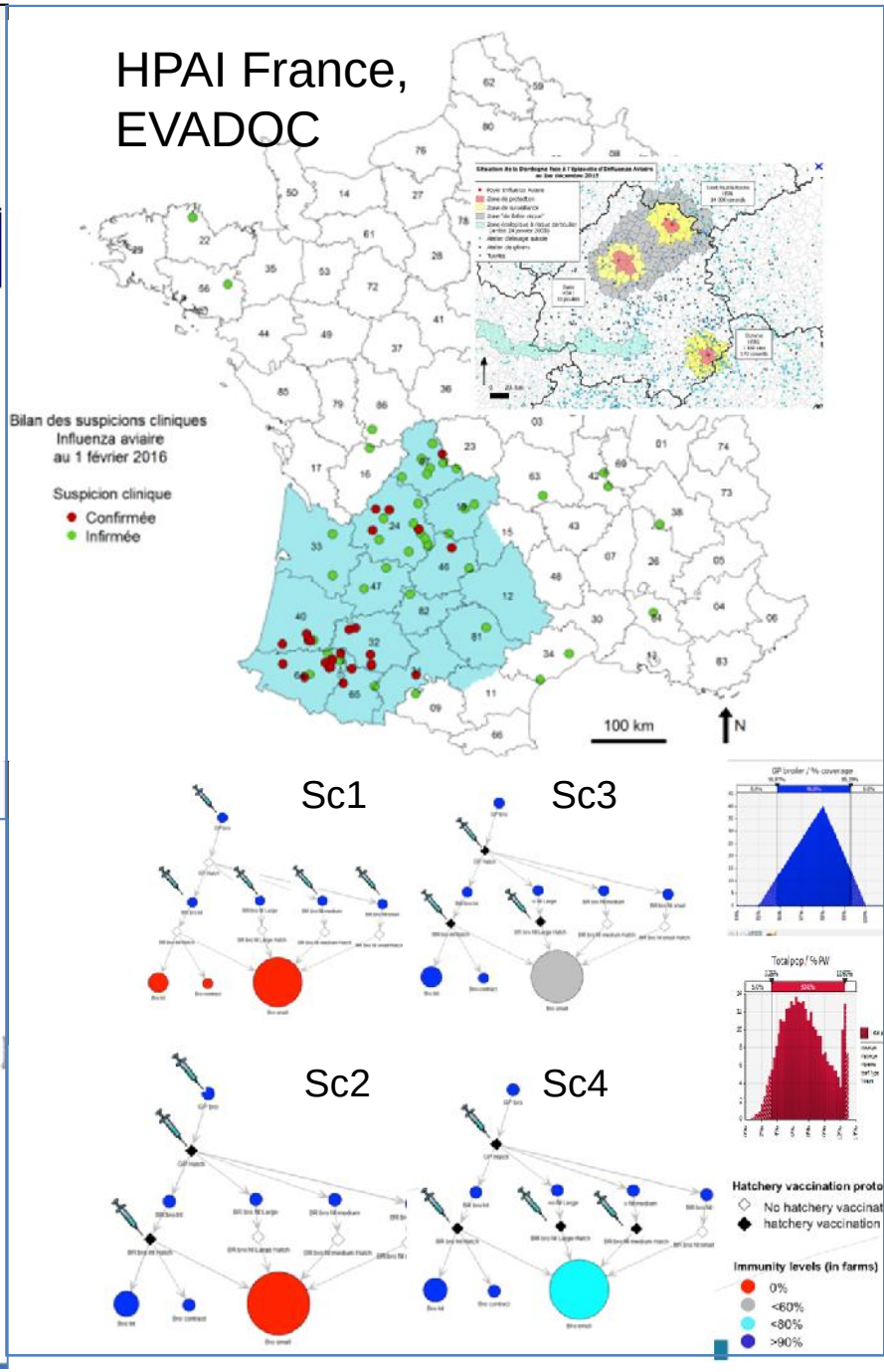
Network analysis/RA and surveillance/control designs





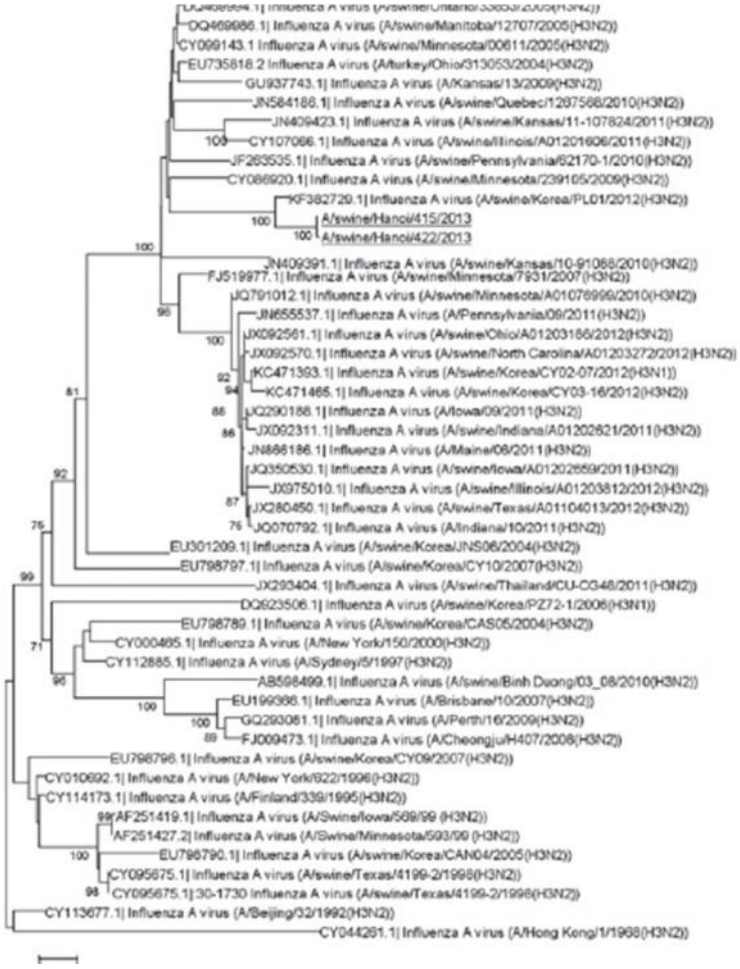
Information sharing accross EU member states and with international partners

Spatial epidemiology

- Towards a joint epidemiological database for spatial risk assessment?
- EU level spatial analysis and risk assessment
- Collaboration between health research and spatial research institutes

Molecular epidemiology

- Improving molecular epidemiology analysis accross EU and with international partners



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Economic evaluation

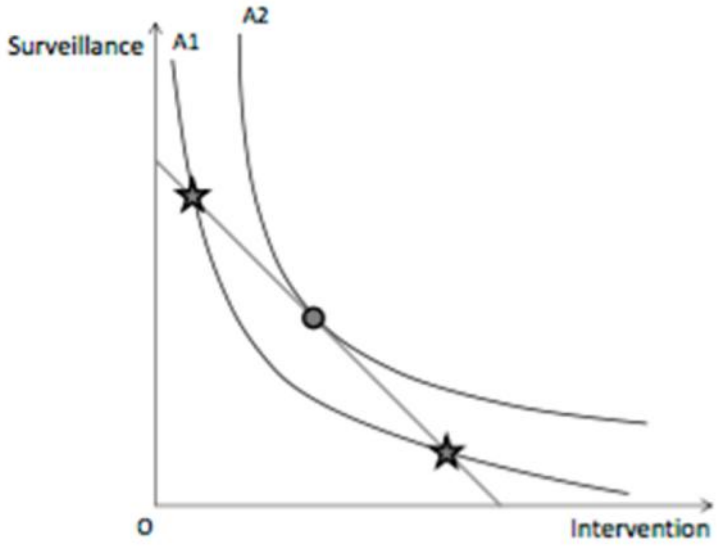

Figure 21. A higher level of loss avoidance (curve A2) can be achieved with the ideal combination of resource use (where the budget line touches the loss avoidance curve, marked with a dot)

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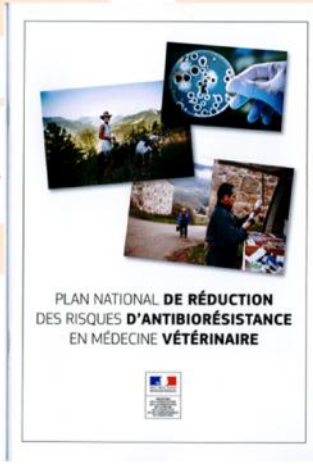
One Health Surveillance and Evaluation

Network for Evaluation of One Health

cost
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

COST is supported by the EU Framework Programme Horizon 2020

National Strategic Action Plan in animals in France (2012-2017)



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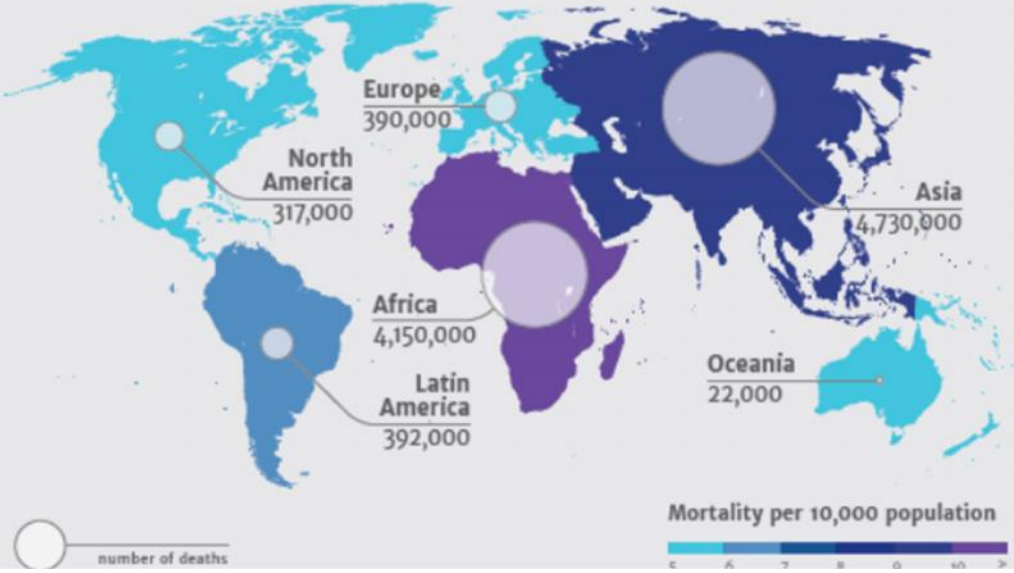
Food safety

Source: JY Madec

Deaths attributable to AMR every year by 2050



Added value of Participatory approaches

- Take into consideration stakeholders' **perception / expectations** *(Hoischen-Taubner et al., 2014)*
  - Better understanding of the system
  - Social and economic constraints
  - Context-dependant recommendations
- **Direct involvement** in the process
  - Identification of potential locking points
  - Better acceptability of the surveillance/evaluation
  - Feeling of belonging in the system
- **Indirect advantages**
  - Information related to the general context and external factors

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  - Context-dependant recommendations

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Federal Research Institute for Animal Health

Surveillance in wild boar - without hunters' acceptability a difficult task. A participatory study.

Katja Schulz[1*], Clémentine Calba[2], Marisa Peyre[2], Christoph Staubach[1] & Franz J. Conraths[1]

[1]Friedrich-Loeffler-Institut (FLI), Institute of Epidemiology, Insel Riems, Germany, [2] Le Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), Montpellier, France

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Katja Schulz; Clémentine Calba; Marisa Peyre; Christoph Staubach; Franz Josef Conraths. 2016. Hunters' acceptability of the surveillance system and alternative surveillance strategies for Classical Swine Fever in wild boar - a participatory approach. BMC Vet Research 2016 **12**:187 **DOI:** 10.1186/s12917-016-0822-5

Summary of Challenges and Research needs

- **Towards improved surveillance and control strategies**
  - Understanding the risks of disease emergence, introduction, endemic cycle
  - Understanding the constraints of current strategies (technical, social and economical)
  - Innovative surveillance design (risk-based; syndromic etc…)
  - Evidence based strategies
- **Promoting economic evaluation**
  - innovative and adapted methods;
  - development of decision tools
- **Promoting OH approaches**, how to integrate animal and public health surveillance? How to implement OH actions in the field? Understanding its added value?
- **Promoting participatory approaches**, interdisciplinary research (epidemiology, sociology, economy)
- **Improving information sharing and regional approaches**, standardised epidemiological approaches (spatial, molecular…)
- **Training needs** adapted to new development in epidemiology: post-graduate curriculum

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- François Roger

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THANK YOU !

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