

# **Modernisation of meat inspection in the EU**

Pablo Romero Barrios

Industry Day, Nisku – 9 April 2016

# Outline

- How does EFSA and the biological hazards (BIOHAZ) panel operate?
- Biological hazards in meat inspection
- Impact of proposed changes on animal health and welfare
- Technical Reports defining harmonised epidemiological criteria
- Impact of this assessment

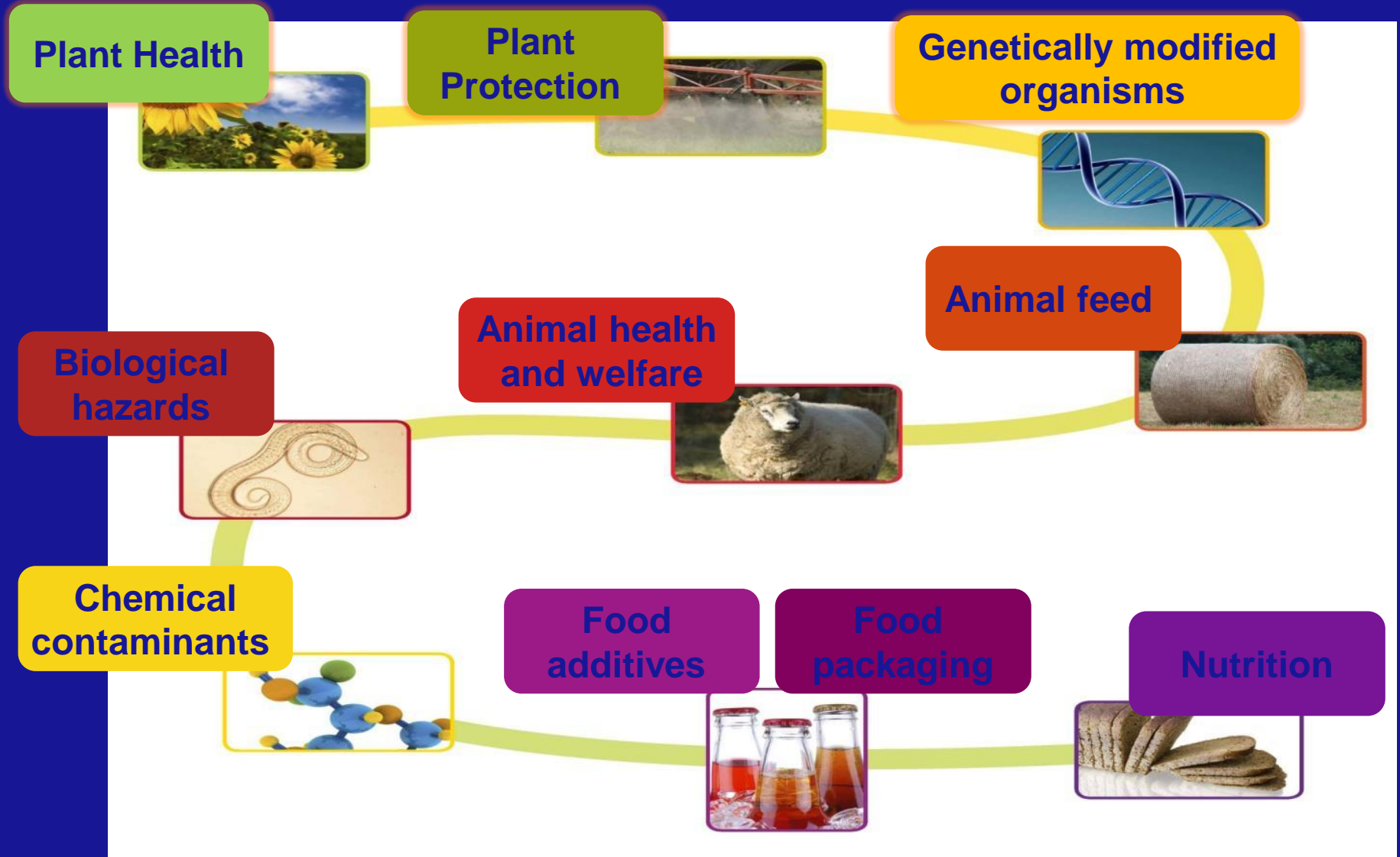
# How does EFSA/BIOHAZ operate?



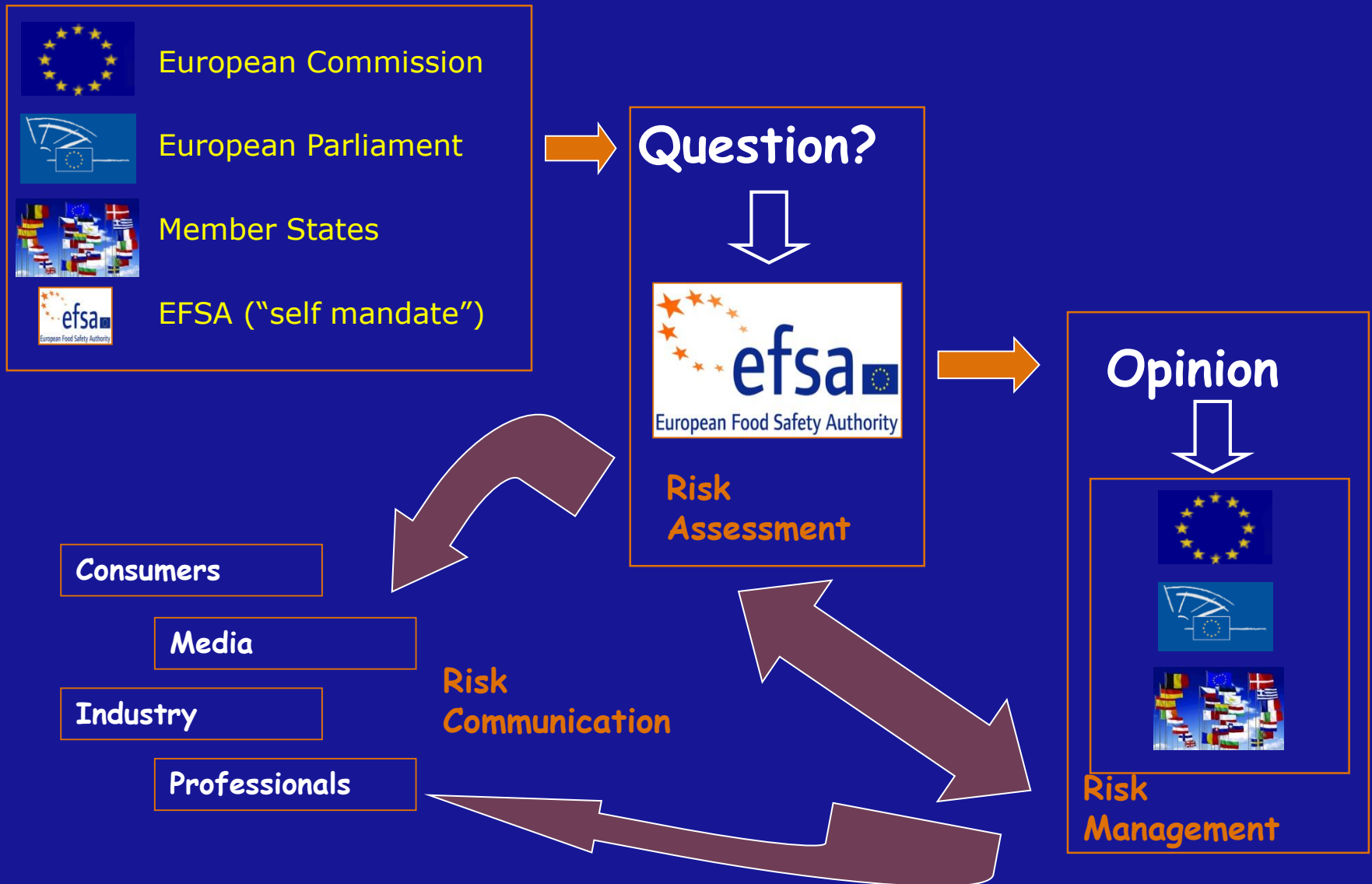
# The European Food Safety Authority (EFSA)

- Keystone of European Union (EU) risk assessment (RA) regarding food and feed safety
- EFSA provides independent scientific advice and clear communication on existing and emerging risks
- Supports the European Commission, European Parliament and EU Member States in taking effective and timely risk management decisions
- In close collaboration with national authorities and in open consultation with its stakeholders

# EFSA: providing scientific advice from farm to fork



# From the “question” to the “answer”



# BIOHAZ Panel

The Panel on Biological Hazards (BIOHAZ) deals with questions on biological hazards relating to food safety and food-borne diseases, including:

- ❑ Food-borne zoonoses;
- ❑ Food hygiene;
- ❑ Microbiology;
- ❑ Transmissible spongiform encephalopathies (TSE);
- ❑ Animal by-products.

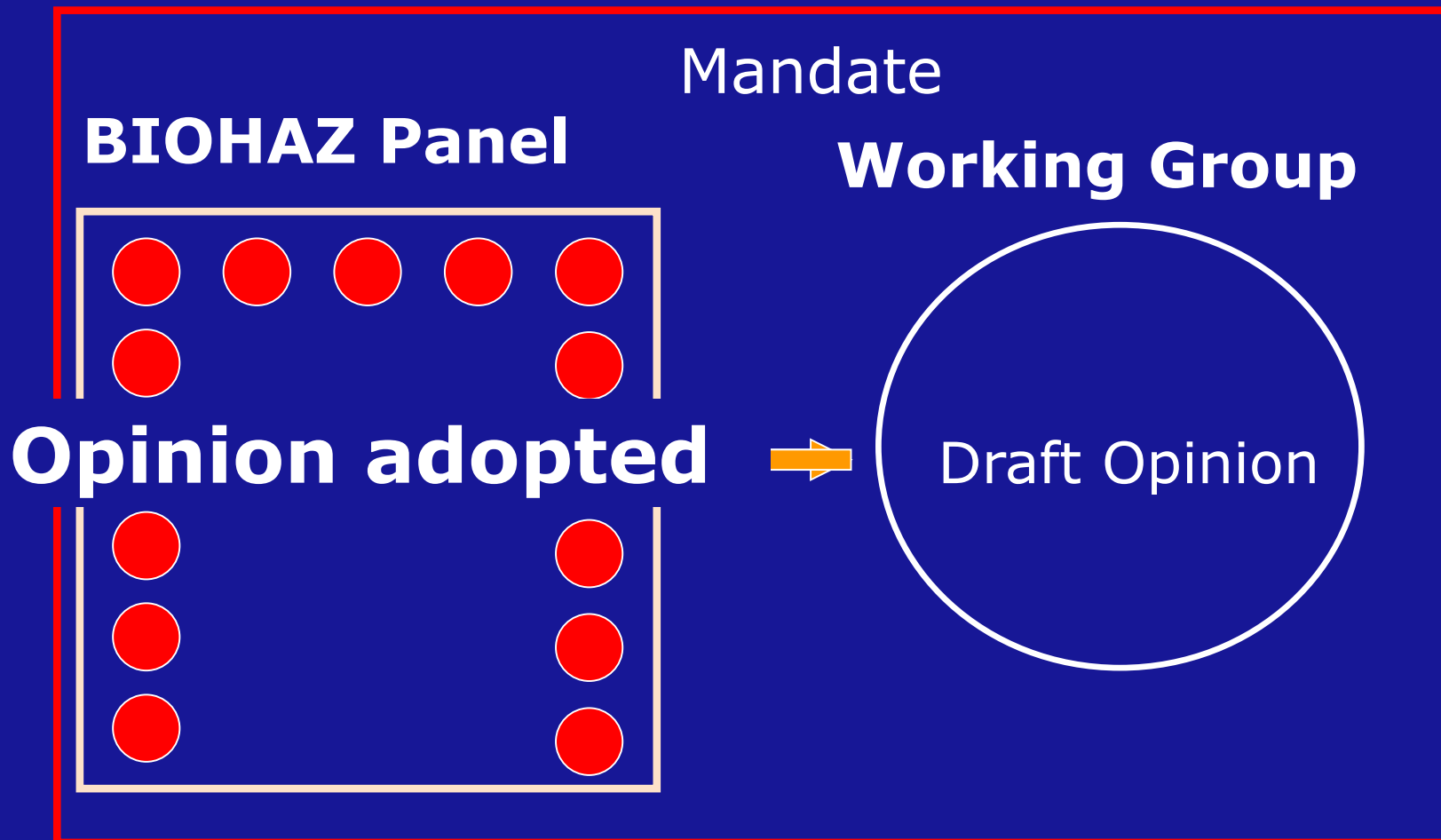
Independent scientific experts

BIOHAZ Panel + *ad hoc* Working Groups

EFSA staff

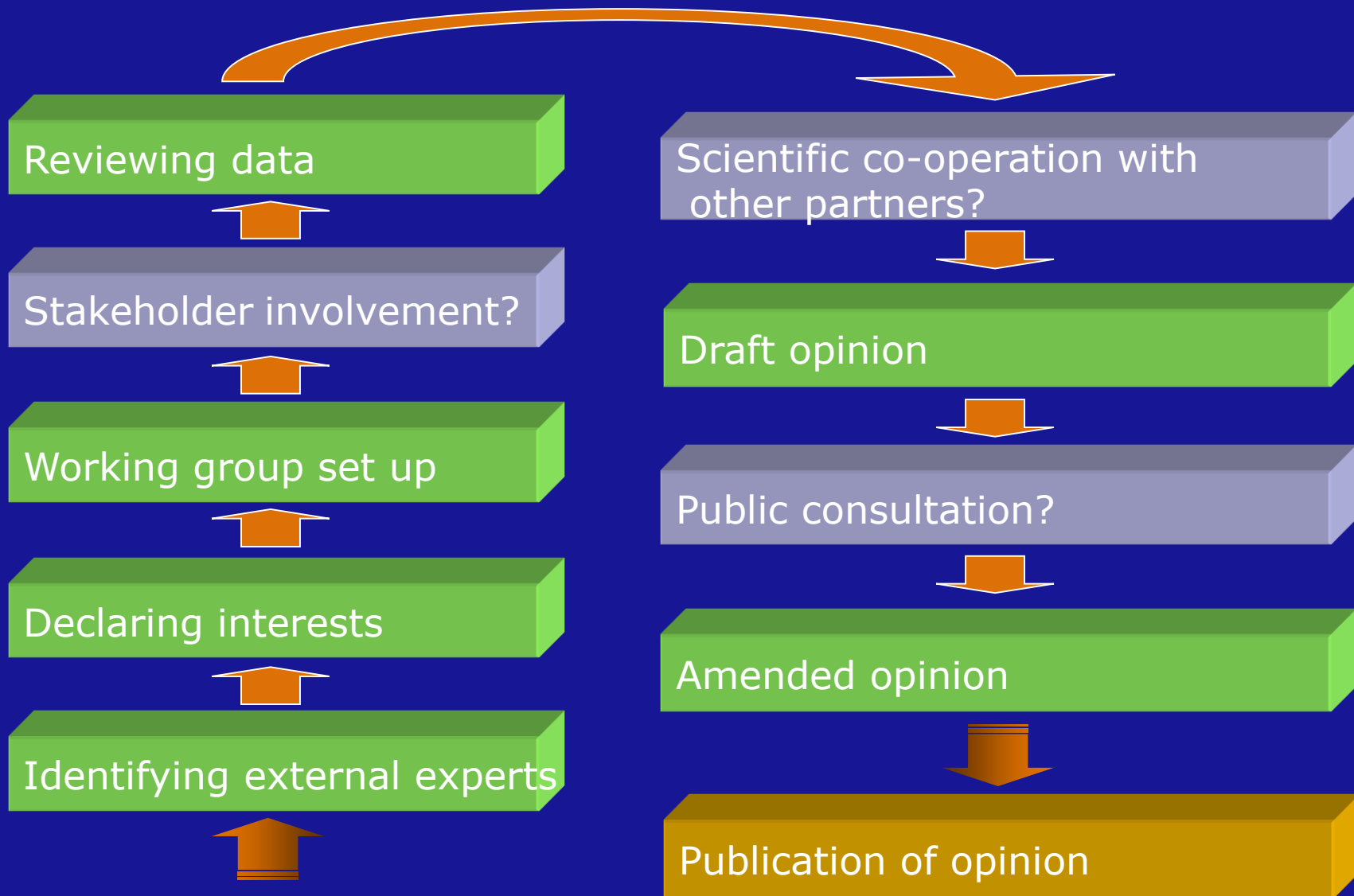
BIOHAZ Team: Scientific and administrative secretariat

# From the “question” to the “answer”





# Detailed steps in BIOHAZ risk assessments





Meat inspection mandate

# Meat inspection mandate

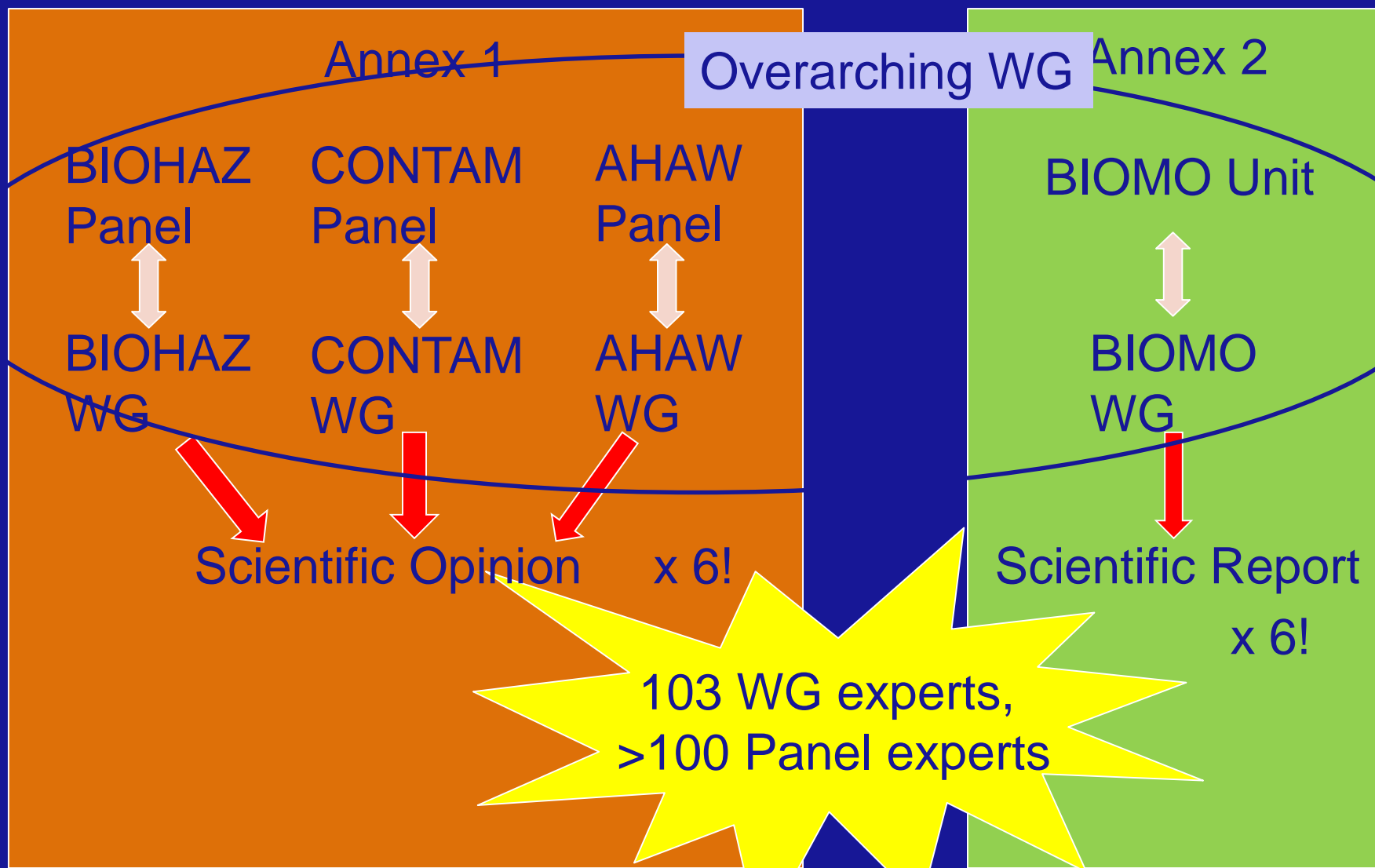
In May 2010 EFSA received:

- Mandate from the European Commission (EC)
  - Annex 1 – Provision of Scientific Opinions
  - Annex 2 – Provision of Technical Reports
- Considering: domestic swine, poultry, bovine, domestic sheep and goats, farmed game and domestic solipeds

# Meat inspection mandate

- Annex 1:
  - Addressing biological and chemical hazards, as well as the potential impact on animal health and welfare of any proposed changes to meat inspection
  - EFSA asked the BIOHAZ, CONTAM and AHAW Panels to deliver these Scientific Opinions
  - Each Panel set up *ad hoc* working groups (WG) to assist developing the draft Opinions
  - An overarching WG coordinated the work
- Annex 2:
  - EFSA asked the Biological Monitoring Unit to deliver the Technical Reports defining harmonised epidemiological criteria

# Organisation of the mandate



# Timeline for the Opinions/Reports

<b>Species</b>	<b>Adoption</b>
<b>Swine</b>	September 2011
<b>Poultry</b>	June 2012
<b>Bovine/ Small Ruminants</b>	June 2013
<b>Domestic solipeds and farmed-game</b>	

Meat inspection

Annex 1

**SCIENTIFIC OPINIONS**

# Terms of reference

- Identify and rank the main risks for public health that should be addressed by meat inspection at EU level.
- Assess the strengths and weaknesses of the current meat inspection methodology and recommend possible alternative methods, taking into account implications for animal health and welfare.
- Recommend additional inspection methods in case other previously not considered hazards have been identified above (e.g. salmonellosis, campylobacteriosis).
- Recommend possible alternative methods and adaptations of inspection methods and/or frequencies of inspections that provide an equivalent level of protection within the scope of meat inspection or elsewhere in the production chain that may be used by risk managers in case they consider the current methods disproportionate to the risk.
  - e.g. based on the risks or on data obtained using harmonised epidemiological criteria. When appropriate, food chain information should be taken into account.



# Terms of reference

- Issues outside the scope of the mandate:
  - Transmissible Spongiform Encephalopathies (TSEs)
  - Issues other than those of public health significance that compromise fitness of meat for human consumption (e.g. sexual odour)
  - Impact of changes to meat inspection procedures on occupational health of abattoir workers, inspectors, etc
  - The definition of the responsibilities of the different actors (official veterinarians, official auxiliaries, staff of food business operators) is excluded from this mandate

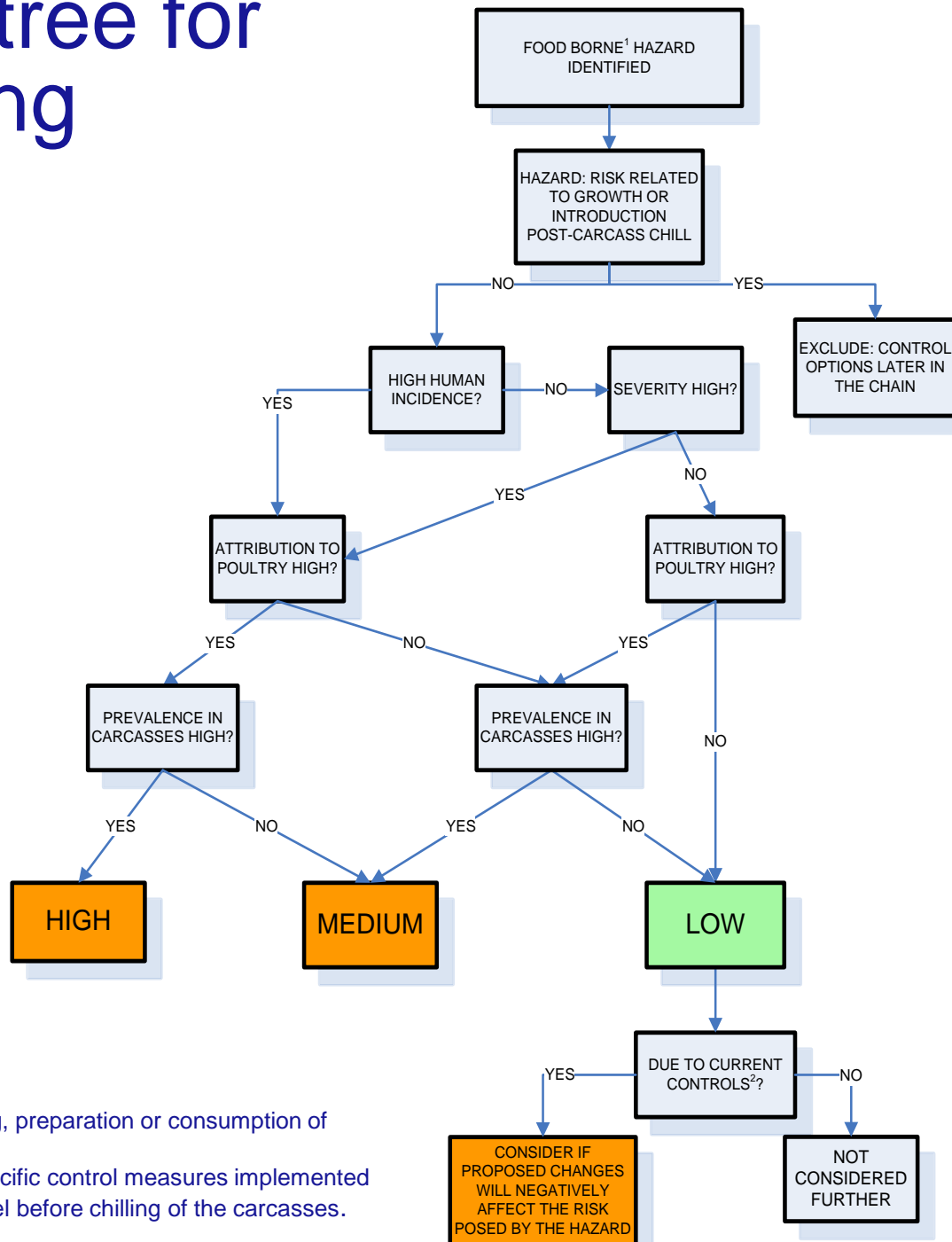
Main conclusions on biological hazards in the opinions on meat inspection

# Approach taken by BIOHAZ Panel

- Hazards from scientific literature were ranked qualitatively using a decision tree, based on:
  - incidence and severity in humans,
  - prevalence in carcasses,
  - attribution of human cases to meat from species considered

→ **Resulting in a shortlist of hazards**
- Following an assessment of current methods of meat inspection, alternatives / improvements were recommended
  - Including how to address hazards not covered by current methods:
    - At farm level
    - During processing at abattoir, if possible

# Decision tree for risk ranking



<sup>1</sup> Risk of infection through handling, preparation or consumption of poultry meat.

<sup>2</sup> Current controls: any hazard-specific control measures implemented at farm and/or slaughterhouse level before chilling of the carcasses.

Species	Main biological hazards
Swine	<i>Salmonella, Toxoplasma, Trichinella</i> and <i>Yersinia</i>
Poultry	<i>Campylobacter, Salmonella</i> , ESBL-AmpC <sup>1</sup> carrying <i>Escherichia coli</i> and <i>Salmonella</i>
Cattle	Verocytotoxin-producing <i>E. coli</i> (VTEC), <i>Salmonella</i>
Sheep and Goats	VTEC, <i>Toxoplasma</i>
Solipeds	<i>Trichinella</i>
Farmed game (Deer)	<i>Toxoplasma</i>
Farmed game (Wild boar)	<i>Salmonella, Toxoplasma</i>
Farmed game (Reindeer, rabbits and ostriches)	None

<sup>1</sup> Bacteria carrying extended spectrum  $\beta$ -lactamase /AmpC genes

# Selected conclusions on strengths of current meat inspection

Food chain information (FCI) provides information on disease occurrence and veterinary treatments, enabling a focused inspection of animals with problems.

*Ante-mortem* inspection allows the detection of observable abnormalities and of animals heavily contaminated with faeces.

*Post-mortem* inspection enables the detection of faecal contamination of carcasses, which is an indicator of slaughter hygiene.

# Selected conclusions on weaknesses of current meat inspection

The use FCI for food safety purposes is limited because the data that it contains is very general and doesn't address specific hazards of public health importance

Current *ante-* or *post-mortem* visual inspection are not able to detect any of the public health hazards identified as the main concerns for food safety

Palpation and incision techniques used during *post-mortem* inspection can cause bacterial cross-contamination

# Selected conclusions on hazards currently not covered by meat inspection

- To ensure effective control of the hazards of relevance, a comprehensive meat safety assurance, combining measures applied on-farm and at-abattoir, is necessary.
- A prerequisite for this system is setting targets for these hazards to be achieved by food business operators at carcass level.
  - Targets in primary production can be considered if intervention methods at the farm level exist.
- The setting of targets is not recommended for those hazards for which significant uncertainties and data gaps exist.
- To meet these targets, a variety of control options for the main hazards are available, at both farm and abattoir level.

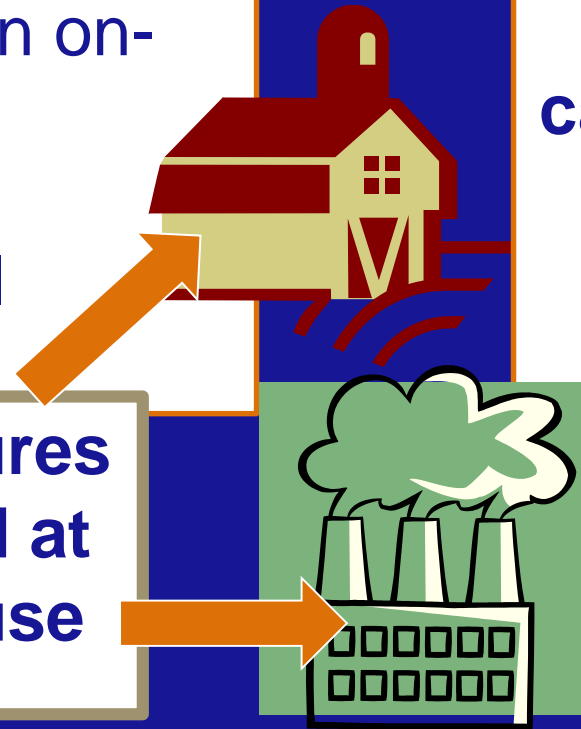


# Integrated Meat Safety Assurance System

**1. Risk-Categorisation of batches/herds/flocks /farms for the main hazards:** based on on-farm harmonised epidemiological indicators and FCI

**3. Control measures both on farm and at the slaughterhouse**

**2. Risk-Categorisation of slaughterhouses according to their capacity to control the hazard:** based on on trends of data derived from process hygiene assessments, HACCP

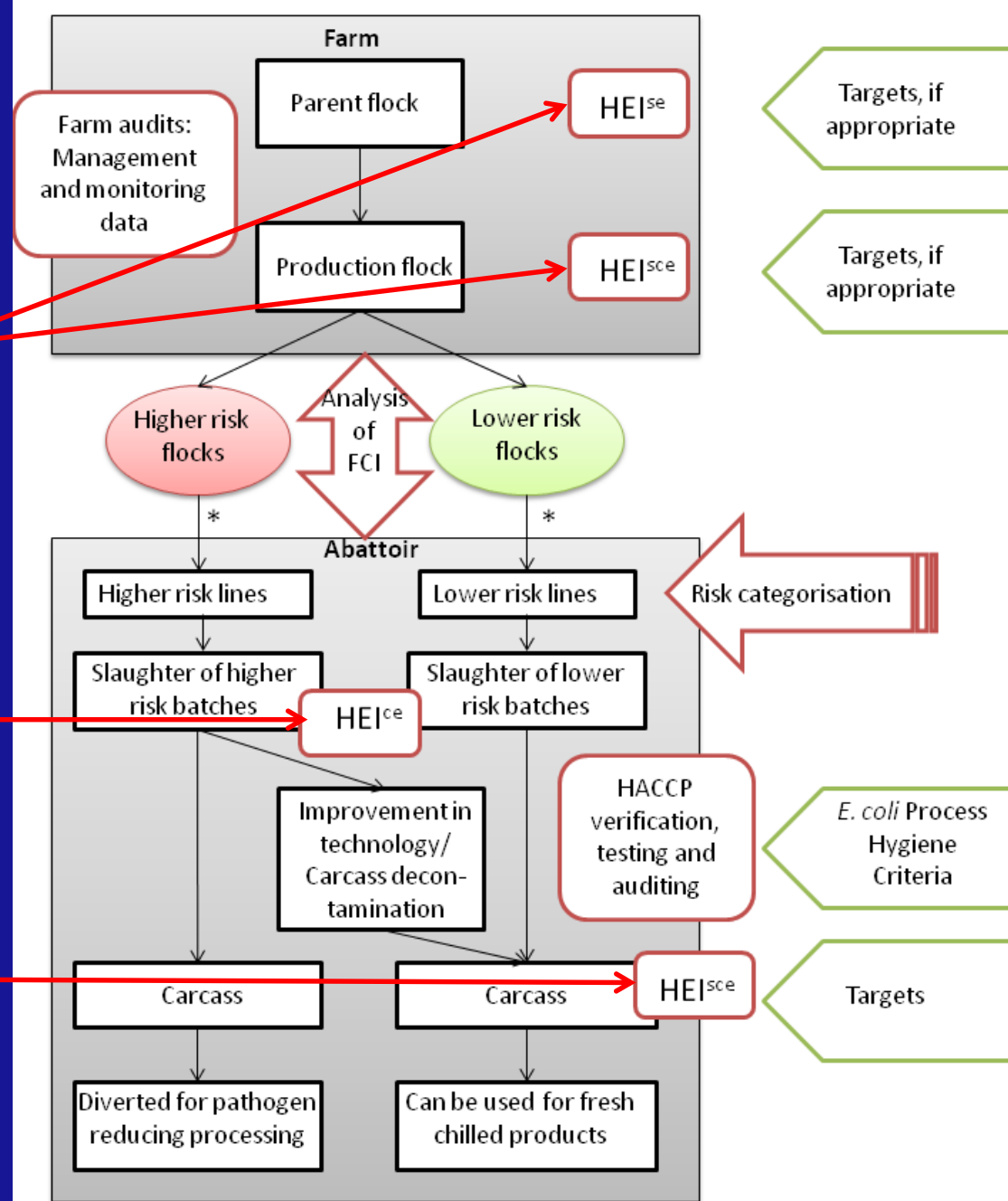


# Example of a generic meat safety assurance system (poultry)

HEIs<sup>1</sup>: eg. *Salmonella*  
- testing of faecal samples collected on farm;

HEIs<sup>1</sup>: eg. *Salmonella*  
- auditing of controlled housing conditions

HEIs<sup>1</sup>: eg. *Salmonella*  
- testing of neck and breast skin after chilling



\*Other ways of balancing risk categories of batches or abattoirs are also possible

<sup>1</sup> HEI: Harmonised epidemiological indicators; s: *Salmonella*; c: *Campylobacter*; e: ESBLs

# Selected conclusions on adaptation of current meat inspection methods

- FCI could be used for risk categorisation of farms/batches. To achieve this, the system needs further development to include additional food safety information, e.g. appropriate indicators for the main public health hazards.
- *Ante-mortem* inspection can help to detect animals heavily contaminated with faeces and to assess their general health status, therefore no adaptations to the existing *ante-mortem* inspection are found to be required.
- It is proposed that palpation and incision used in current *post-mortem* inspection should be omitted in animals subject to routine slaughter, as they don't contribute to control the main meatborne hazards, and because of the potential risk of microbial cross-contamination
  - For poultry, the current *post-mortem* visual inspection could be replaced by setting targets for the main hazards on the carcass and by verification of the Food Business Operator's own hygiene management through the use of Process Hygiene Criteria.
- Elimination of abnormalities on aesthetic/meat quality grounds can be ensured through meat quality assurance systems.

# Key recommendations

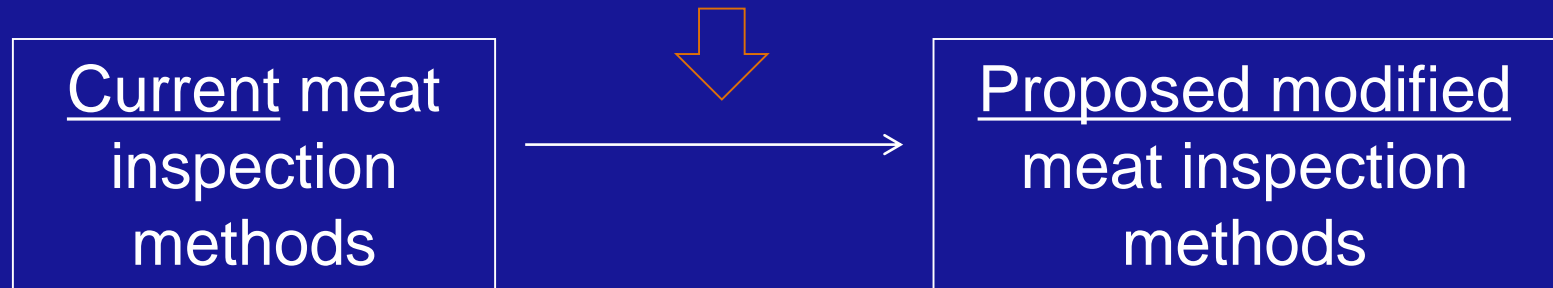
- **Regular revision** of hazard identification and ranking of hazards, taking into account **EU regional variability**.
- Further **data** are needed for better evidence-based rankings (e.g. *Toxoplasma gondii*, ESBL-AmpC *E. coli*).
- Investigate approaches and further data for **risk categorisation** of slaughterhouses and farms/batches.
- Assess **extent** (quantify) to which manual manipulation during *post-mortem* inspection contributes to spreading and cross-contamination with important enteric pathogens.
- Assess **effect of the omission of palpation and incision** on meat safety risk of 'low-priority' hazards such as *Taenia saginata* cysticercosis and *Echinococcus granulosus*.

Impact of proposed changes on  
animal health and welfare

**ANIMAL HEALTH AND ANIMAL WELFARE  
PANEL (AHAW)**

# Focus of AHAW Panel

*BIOHAZ & CONTAM*  
*Proposed changes to meat*  
*inspection in the light of*  
*public health risks*



Given the need for equivalent achievement of objectives, what are the implications of the proposed changes for:

- Surveillance and monitoring of animal health and welfare, and
- (Individual) animal health and welfare.

# Proposed changes with possible implications for AHAW

- Omission of palpation and incision at *post-mortem* inspection in animals subjected to routine slaughter
- Removal of visual *post-mortem* inspection and substituting it by methods of detection of food borne pathogens (poultry)
- Improved use of Food Chain Information (FCI) system
- Improvement of the traceability system (solipeds)

# Assessment of possible implications from a change in the *post-mortem* inspection procedures

**Selection of diseases and welfare conditions** by the AHAW WG experts according to the following criteria (approximately 20 conditions/species or animal grouping):

- High likelihood of detection of the disease or welfare condition at meat inspection at the slaughterhouse.
- The disease or welfare condition was considered relevant to the EU and to animal health and welfare (not public health).
- The slaughterhouse surveillance component provided by meat inspection is significant for the overall surveillance of the disease or welfare condition.



# Assessment of possible implications from a change in the *post-mortem* inspection procedures

**Assessment** - two broad methods used:

- **Quantitative analysis** (outsourced activity) involving a 3 stage epidemiological modeling approach on the selected diseases and welfare conditions.
- **Qualitative analysis** - review of international literature, WG expert opinion.
- In the bovine opinion additional modeling was performed on the impact of a change in meat inspection sensitivity on the surveillance of bovine tuberculosis at country level.

# Assessment of possible implications from a change in the *post-mortem* inspection procedures

## Conclusions

- A shift to a 'visual only' *post-mortem* inspection would have a negative impact on the surveillance & control of the following diseases:

### Cysticercosis - Bovine

### Tuberculosis - Bovine, goats, farmed deer, farmed wild boar

- It is recommended that palpation and incision is retained in *post-mortem* inspection.
- **Swine**
  - Minimal difference for diseases/conditions that affect several organs.
  - Substantial for early cases of a range of diseases or where pathology is limited to one or a small number of organs (such as ***Taenia solium* cysticercosis** or early cases of **tuberculosis**).

# Assessment of possible implications from a change in the *post-mortem* inspection procedures

## Conclusions

- **Poultry**

- Two key consequences from the omission of visual only *post-mortem* inspection on surveillance and monitoring and welfare were identified:

- The loss of opportunities for data collection about occurrence of new disorders or disease syndromes or welfare conditions
- The potential for carcasses with pathological changes, currently condemned during visual *post-mortem* inspection, to be further processed without data being collected.

Meat inspection

Annex 2

**SCIENTIFIC REPORTS ON  
TECHNICAL ASSISTANCE**

# Terms of reference for technical assistance

- Define **harmonised epidemiological criteria** (e.g. prevalence, status of infection, production systems) for specific hazards already covered by current meat inspection (trichinellosis, tuberculosis, cysticercosis, ...) and for possible additional hazards identified in a scientific opinion on the hazards to be covered by inspection of meat (see Annex 1), which can be used to consider adaptations of meat inspection methodology.
- Provide **a summary of comparable data** from Member States based on the above defined harmonised epidemiological criteria, if existing, e.g. from ongoing monitoring in humans, food or animals.
- Recommend **methodologies and minimum monitoring/inspection requirements** to provide comparable data on such harmonised epidemiological indicators, in particular if comparable data are missing.

# Technical assistance to EC on epidemiological indicators (criteria)

- **Harmonised epidemiological indicator (HEI) =** prevalence or incidence of the (biological) hazard at a certain stage of food chain or an indirect measure of the hazards (such as audits of farms) that correlates to a human health risk caused by the hazard.
- **HEIs** to be used by the Commission and Member States in order to
  - Consider if adaptations in meat inspection methods may be applied (e.g. use in risk analyses)
  - Help to classify farms/slaughter batches/ slaughterhouses according to risks and for setting targets in the proposed new food carcass safety assurance framework
- Hazards covered by the HEI: those identified previously, plus hazards previously covered by meat inspection (e.g. *Mycobacterium bovis*)

# Technical assistance to EC on epidemiological indicators (criteria)

- HEIs proposed include
  - Prevalence of the hazard in animal populations or on carcasses
  - Auditing of farms (controlled housing conditions) or animal transfer or slaughterhouse conditions
- A set of HEI suggested for each hazard, which can be used by risk managers for different purposes, alone or in combinations, at national, regional or at herd/ farm level
- HEI selected through harmonised approach, including:
  - Listing the most important risk factors related to the hazard throughout the entire meat chain (farm to fork)
  - Identifying the possible indicators for public health and related to changes in meat inspection
  - Evaluating the possible HEI based on their quality, appropriateness, data availability and feasibility, using a scoring system

# Example of suggested indicators: *Salmonella* in poultry

Hazard: *Salmonella*

Indicators (animal/ food category/other)	Food chain stage	Analytical method	Specimen
HEI 1 <i>Salmonella</i> in breeding parent flocks <sup>a</sup>	Farm	Microbiology (detection and serotyping)	Pooled faeces (e.g. boot swabs) possibly combined with dust samples
HEI 2 <i>Salmonella</i> in poultry flocks prior to slaughter <sup>a</sup>	Farm	Microbiology (detection and serotyping)	Pooled faeces (e.g. boot swabs)
HEI 3 Controlled housing conditions at farms for laying hens and fattening flocks (including biosecurity)	Farm	Auditing	
HEI 4 <i>Salmonella</i> in carcasses after slaughter process and chilling	Slaughterhouse	Microbiology (detection and serotyping)	Neck and breast skin

<sup>a</sup> In accordance with the *Salmonella* control programmes laid down by EU Regulations for breeding flocks of *Gallus gallus*, laying hens, broilers and turkeys



## COMMISSION REGULATION (EU) No 217/2014

of 7 March 2014

amending Regulation (EC) No 2073/2005 as regards *Salmonella* in pig carcasses

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs<sup>(1)</sup>, and in particular Article 4(4) thereof,

Whereas:

(1) Commission Regulation (EC) No 2073/2005<sup>(2)</sup> lays down the microbiological criteria for certain micro-organisms and the implementing rules to be complied with by food business operators in respect of the general and specific hygiene requirements referred to in Article 4 of Regulation (EC) No 852/2004, and in particular a process hygiene criterion for *Salmonella* on pig carcasses in order to control contamination during slaughter.

(2) The European Food Safety Authority (EFSA) adopted on 3 October 2011 a Scientific Opinion on the public health hazards to be covered by inspection of meat (swine)<sup>(3)</sup>, which identifies *Salmonella* as a high risk for public health related to the consumption of pigmeat, and recommends prevention of contamination of pig carcasses with *Salmonella*. EFSA recommends, inter alia, to strengthen the process hygiene criterion for *Salmonella* on pig carcasses.

(3) In order to reduce the *Salmonella* prevalence on pig carcasses, the control on hygiene during slaughter should be strengthened in accordance with the provisions in Commission Regulation (EU) No 218/2014 of 7 March 2014 amending Annexes to Regulations (EC) No 853/2004 and (EC) No 854/2004 of the European Parliament and of the Council and Commission Regulation (EC) No 2074/2005<sup>(4)</sup> and consequently the number of positive samples should be reduced.

(4) The requirements provided for in the Regulation involve the adaptation of current practices for food business operators. It is therefore appropriate to allow a delayed application of this Regulation.

(5) Regulation (EC) No 2073/2005 should therefore be amended accordingly.

(6) The measures provided for in this Regulation are in accordance with the opinion of the Standing Committee on the Food Chain and Animal Health and neither the European Parliament nor the Council has opposed them.

HAS ADOPTED THIS REGULATION:

## Article 1

In Chapter 2 of Annex I to Regulation (EC) No 2073/2005, row 2.1.4 is replaced by the following:

2.1.4 Carcasses of pigs	<i>Salmonella</i>	50 <sup>(*)</sup>	3 <sup>(*)</sup>	Absence in the area tested per carcasse	EN/ISO 6579	Carcasses after dressing but before chilling	Improvements in slaughter hygiene and review of process controls, origin of animals and of the biosecurity measures in the farms of origin'
-------------------------------	-------------------	-------------------	------------------	---	-------------	--	---

<sup>(1)</sup> OJ L 226, 25.6.2004, p. 3.

<sup>(2)</sup> OJ L 338, 22.12.2005, p. 1.

<sup>(3)</sup> EFSA Journal 2011; 9(10):2351.

<sup>(4)</sup> See page 95 of this Official Journal.

# Impact of this assessment

## Policy developments

- Meat inspection of pig meat - Changes introduced in legislation:
  - Shift to visual inspection only: palpation and incision no longer required in normal pigs
  - More stringent *Salmonella* testing of carcasses
  - Risk-based *Trichinella* testing instead of blanket testing
- Other species:
  - Proposals for poultry meat inspection are under discussion
  - Other species will follow

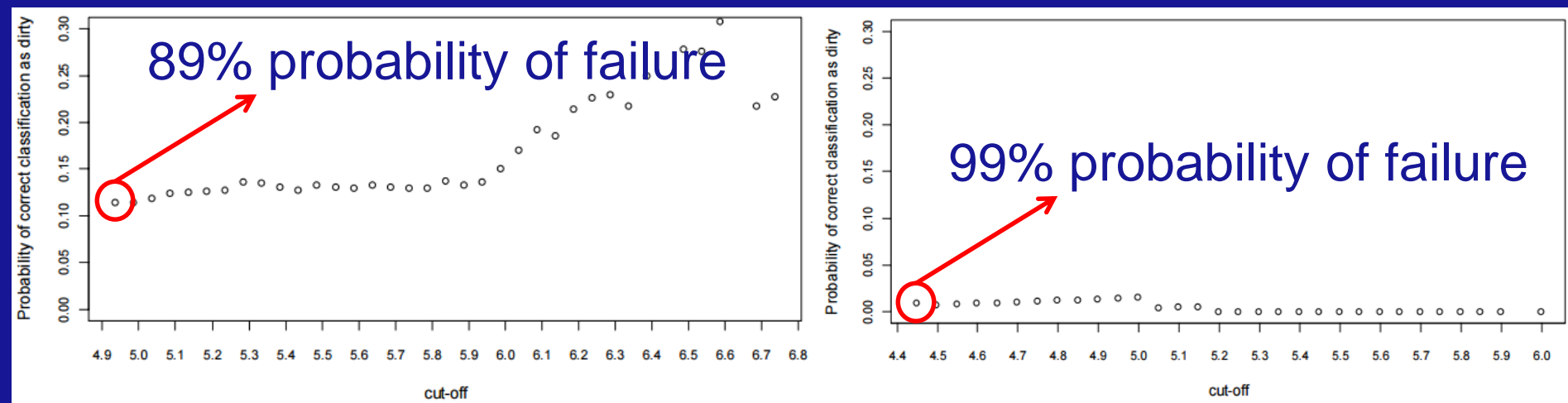
## Follow up in EFSA activities

Calls for proposals launched, which helped generating information and data for addressing some of the key recommendations and uncertainties identified during the assessments:

- Usefulness of *Escherichia coli* and *Enterobacteriaceae* as Process Hygiene Criteria in poultry (CFT/EFSA/BIOHAZ/2012/03).
- Relationship between seroprevalence in the main livestock species and presence of *Toxoplasma gondii* in meat (GP/EFSA/BIOHAZ/2013/01).

# Usefulness of *E. coli* and *Enterobacteriaceae* as Process Hygiene Criteria in poultry

- Literature review and experimental study
  - The inspector has an extremely low probability of success in classifying a carcass with high bacterial counts as dirty simply by evaluating the visual faecal contamination level. Moreover, this ability is limited to the post evisceration stage



<http://www.efsa.europa.eu/en/supporting/pub/635e>  
<http://www.efsa.europa.eu/en/supporting/pub/636e>

# Acknowledgments

- Members of the EFSA Panel on Biological Hazards and its meat inspection working groups.
- Members of the EFSA Panel on Contaminants in the Food Chain and its meat inspection working groups.
- Members of the EFSA Panel on Animal Health and Welfare and its meat inspection working groups.
- EFSA staff from the BIOHAZ, CONTAM, AHAW, BIOMO and SAS Teams.
- Stakeholders that provided data on request.
- European Commission colleagues who helped with this mandate.

# ANY QUESTIONS?



**THANKS FOR YOUR ATTENTION!**  
[www.efsa.europa.eu](http://www.efsa.europa.eu)