

# **The economical sense of “Prevention is better than cure”**

**(outcome OIE/World Bank study)**

*TAIEX/FVE Workshop on Strengthening livestock health  
and Veterinary Services in Ukraine*

**Kiev, Ukraine, 2-3 November 2010**

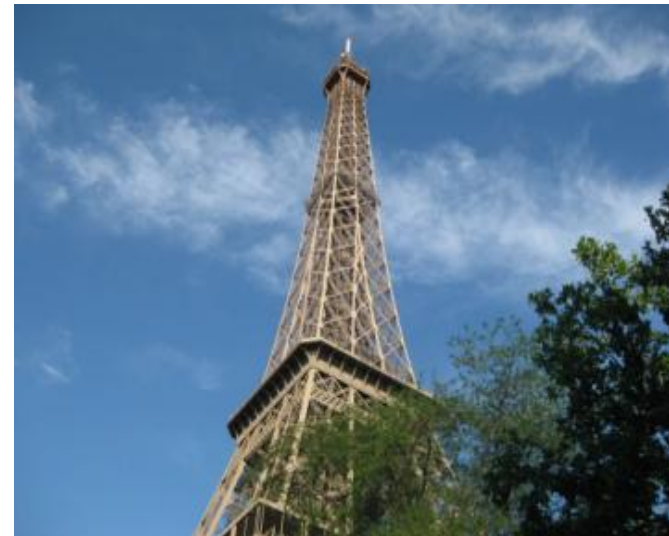
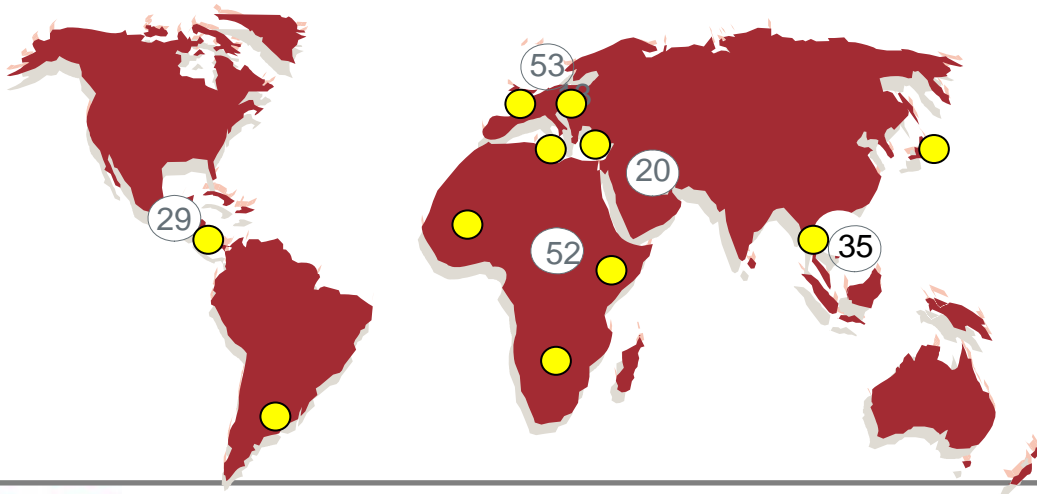
**Dr Caroline Planté,**  
OIE Sub-Regional Representative in Brussels

**Based on Dr Frank Alleweldt presentation, Managing Director of Civic Consulting**

# Background

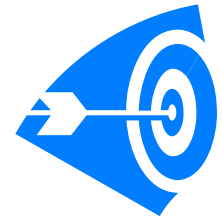
## World Organisation for Animal Health (OIE)

- An intergovernmental organisation, founded in 1924
- 177 Members Countries (Nov. 2010)
- Headquarters in Paris, France
  - 5 Regional offices
  - 6 Regional sub offices



# Background

## *OIE's Objectives*



### ***ANIMAL HEALTH INFORMATION:***

to ensure transparency in the global animal disease and zoonosis situation

to collect, analyse and disseminate scientific veterinary information

### ***ACTIVITIES OF VETERINARY SERVICES***

to provide expertise and encourage international solidarity in the control of animal diseases

to improve the legal framework and resources of national Veterinary Services

# Background



## *INTERNATIONAL STANDARDS*

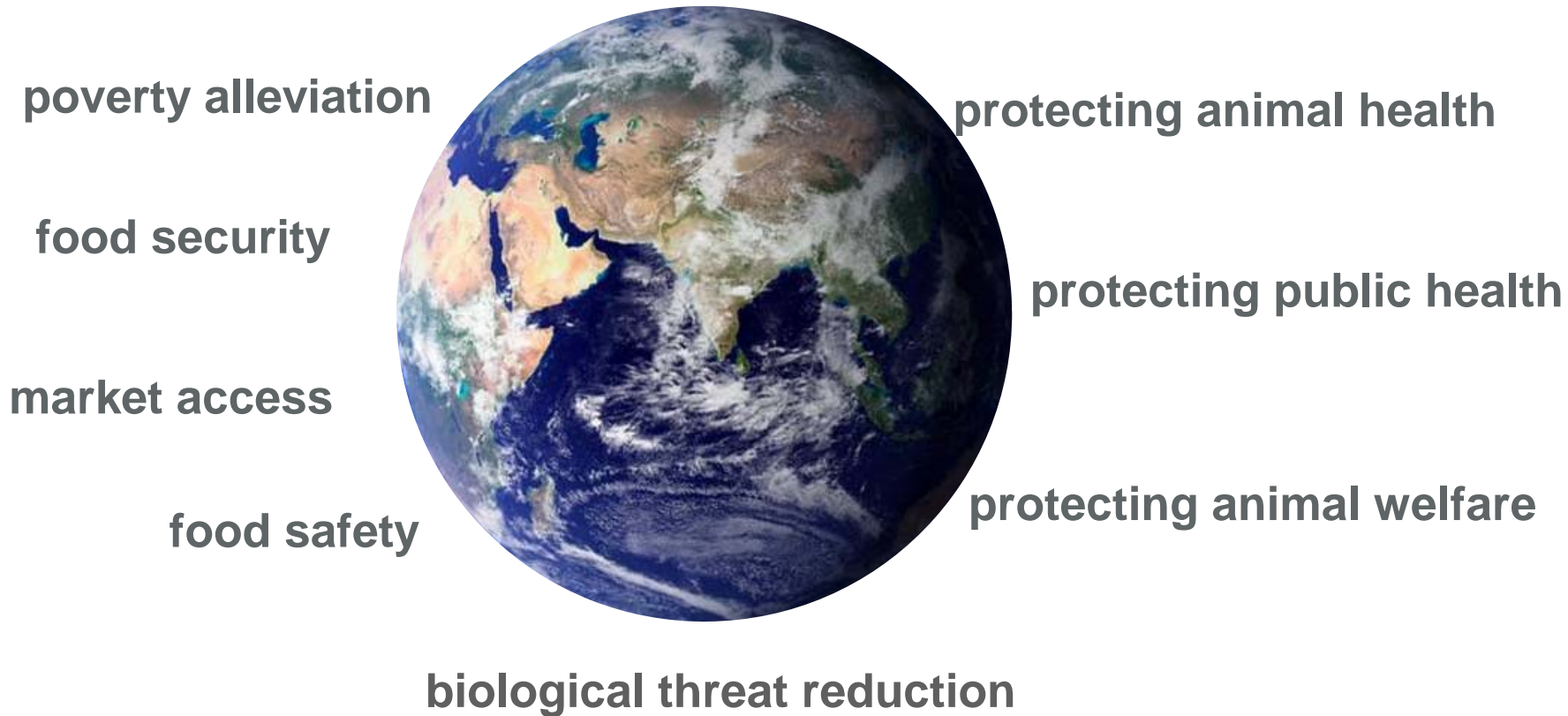
within its WTO mandate, to safeguard world trade by publishing **health standards** for **international trade in animals and animal products**

to provide a better guarantee of the **safety of food of animal origin**,

and to promote **animal welfare**, through a science-based approach

# Background

## Veterinary Services are global public goods



# Background

**Since 2006, OIE commissioned a series of economic studies in order to provide tools/arguments in support of VS**

- **Presentation in Oct. 2007 in a World Bank/OIE Conference** : economic studies on the prevention and control of animal diseases worldwide
  - **Part I. Economic analysis – Prevention versus outbreak costs**
  - Part II: Feasibility study – A global fund for emergency response in developing countries
  - Part III: Pre-feasibility study – Supporting insurance of disease losses
  
- **End of 2009, the OIE published a new study :**
  - Cost of National Prevention Systems for Animal Diseases and Zoonoses in Developing and Transition Countries

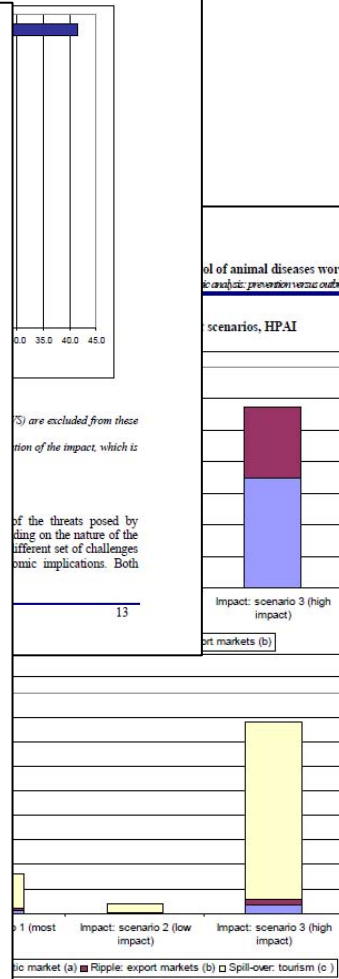
# Key questions

- *What are the costs of crisis compared to the costs of prevention? Does prevention pay?*
- *Is there a need for a global fund for emergency response in developing countries? How could it operate?*
- *Is private insurance part of the solution for covering epidemic disease losses? Are there preconditions?*
- *What are the 'peacetime' costs of a National Prevention System? How do we measure and compare them to be effective and efficient?*

**Question 1:** *What are the costs of crisis compared to the costs of prevention? Does prevention pay?*

excluding consequential on-farm losses and US\$ 23.5 billion if these losses are included. Moving towards scenarios B and C these costs increase further to US\$ 12.3 billion and US\$ 26.9 billion respectively (in the case of scenario B) and to US\$ 19.4 billion and US\$ 42.7 billion respectively (in the case of scenario C). Before even considering the indirect impacts the benefits of improved prevention therefore by far outweigh the potential outbreak costs and losses.

Figure B: Prevention versus outbreak costs: comparison under various scenarios, HPAI



# The study Prevention vs. outbreak costs

- *Aim:* Assessment of costs and benefits
- *Diseases:* TADs, mainly HPAI
- *Countries:* All developing and transition countries (OIE members)
- *Conducted by* Agra CEAS

# Main methodological tools

- Desk research: identification of relevant literature/data;
- Literature review: analysis of available literature/data;
- Consultations with key relevant institutions/authorities and experts;
- Case studies in 4 countries: Argentina, Vietnam, Nigeria and Romania;
- Development of an analytical model to provide detailed estimates of the costs of outbreaks (e.g. HPAI);
- Analysis and synthesis of costs and benefits: comparison of prevention versus outbreaks costs.

# Definition: prevention costs

*For the purposes of the analysis:*

- **Prevention and control costs** have been defined as those incurred by governments during 'normal' times, i.e. in advance of outbreaks;
- These include:
  - **Veterinary System:** surveillance (including diagnostic capacity/laboratories); veterinary border inspection / customs; human resources; training and simulation exercises;
  - **Preventive vaccination:** vaccine stocks / storage (cold chain); human resources;
  - **Bio-security measures:** to the extent there is public intervention (e.g. animal identification, guidelines on animal movement etc.).

# Definition: outbreak costs

*For the purposes of the analysis, differentiation between:*

➤ **Direct impact.** Includes:

**direct losses** (loss from the value of culled/lost animals, culling and disposal costs);

**control costs** during and after the outbreak (e.g. equipment, facilities, (ring) vaccination where appropriate, etc.);

**consequential on-farm losses** (due to fall in stock, movement restrictions etc.);

➤ **Indirect impact.** Includes:

**ripple effects** (on product prices and on upstream/downstream activities along the livestock value chain);

**spill-over effects:** tourism and services are two sectors most severely affected;

**wider society:** other economic losses due *inter alia* to effects on public health, particularly in case of a human pandemic.

# Literature review: prevention costs

- Assessment of costs at **international** level:
  - review and analysis of financing framework under global/ regional programmes for the fight against diseases (e.g.: WB global financing needs and gaps for HPAI; FMD campaigns in SE Asia (SEAFMD), the Americas (PANAFTOSA); Pan-African programme for control of epizootics (PACE); etc.)
- Assessment of costs at **national** level:
  - review and analysis of national emergency and preparedness plans for AI and of WB projects under the GPAI (covered 47 countries in total);
  - for Africa, ALIVE needs assessment for HPAI (covered 54 African countries in total)

# Literature review: outbreak costs /1

## *Key conclusions:*

- The economic costs of major TADs are largely under-studied, particularly in developing/ transition countries (with the notable exception of some studies of CBPP, RVF and Rinderpest in African countries);
- In recent years, following major outbreaks (FMD, HPAI) and mounting concern worldwide on their potential repercussions, more examples of such analysis have started to emerge;
- Wide consensus that **indirect or longer term impacts** (such as loss of consumer confidence or the effects on trade and tourism) are far greater than the direct or shorter term impacts (loss of poultry value, consequential on-farm losses);

# Literature review: outbreak costs /2

Key conclusions (cont'd):

- Beyond this broad observation, on a worldwide level there is a need to determine the extent and relative importance of the various impacts in more detail;
- The analysis seeks to address this gap by estimating the various impacts for individual countries and on a world scale;
- Determining the **relative scale of the range of impacts**, and therefore the potential benefits involved in addressing these, is essential for policy-making.

# Economic analysis of global outbreak costs

- A specific analytical tool was developed to estimate the potential global impact of an animal disease;
- This incorporates a baseline, scenarios and assumptions on key parameters from which to estimate the detailed **direct and indirect costs** of a disease outbreak;
- This tool has been specifically applied to the case of **HPAI** (see Annex 5 of Report), but it has the potential to be adapted for application in the case of other TADs.

# Economic analysis of global outbreak costs (HPAI) /1

## Key parameters:

<u>Direct production costs and losses:</u>	
Direct losses	<ul style="list-style-type: none"> <li>a) Number of poultry lost (died from the disease or culled)</li> <li>b) Average market value per head of poultry (pre-outbreak)</li> <li>c) Culling and disposal costs per head of poultry</li> <li>d) Control costs per head of poultry</li> </ul>
Consequential on-farm losses	<ul style="list-style-type: none"> <li>a) Farm income from activity per head of poultry</li> <li>b) Duration of farm business disruption</li> </ul>
<u>Indirect costs:</u>	
Ripple	<ul style="list-style-type: none"> <li>• Fall in domestic poultry prices</li> <li>• Fall in domestic sales</li> <li>• Fall in world poultry prices</li> <li>• Fall in world poultry trade (exports)</li> <li>• Duration of the above impacts</li> </ul>
Spill-over	<ul style="list-style-type: none"> <li>• Loss in world tourism income value</li> <li>• Duration of the above impact</li> </ul>
Wider society	<ul style="list-style-type: none"> <li>• Loss in global GDP in the event of a human pandemic.</li> </ul>

# Economic analysis of global outbreak costs (HPAI) /2

## Assumptions:

Include at general level

- **duration** of the impact (which depends on the duration and re-occurrence of the epidemic),
- rate of disease **spread**
- **coverage** (in terms of countries);

In the case of direct production costs and losses, these include

- extent of poultry **population loss**,
- **market** value,
- **culling/disposal** costs,
- **control** costs per head of poultry,
- **loss of income** from business disruption (as indicated above).

# Economic analysis of global outbreak costs (HPAI) /3

**Scenarios:** 6 scenarios were formulated:

- At country level, the scenarios vary in terms of the **duration** of the impact of the epidemic and the **intensity** of disease spread within countries, as follows:
  - Scenario 1 (“most likely”)
  - Scenario 2 (“low impact”)
  - Scenario 3 (“high impact”)
- At a global level, scenarios have been formulated on the basis of the **geographical coverage** of the disease worldwide, as follows:
  - Scenario A includes only H5N1 infected countries;
  - Scenario B includes the countries of scenario A and in addition infected and ‘non infected at immediate risk’ countries;
  - Scenario C includes all developing/transition countries that are members of the OIE.

# Economic analysis of global outbreak costs (HPAI) /4

Estimated global impact: **direct costs and losses** (in billion US\$)

	Impact: scenario 1 (most likely)			
	Poultry value losses	Culling/ Disposal costs	Control costs	Total impact (a)
<i>Direct production costs/losses: Global impact, annual</i>				
<i>Scenario A</i>	4.27	0.75	0.32	5.34
<i>Scenario B</i>	4.90	0.86	0.37	6.12
<i>Scenario C</i>	7.76	1.36	0.58	9.71
<i>Direct production costs/losses: Global impact, total</i>				
<i>Scenario A</i>	8.54	1.50	0.64	10.68
<i>Scenario B</i>	9.80	1.71	0.73	12.25
<i>Scenario C</i>	15.53	2.72	1.16	19.41

(a) Includes animal value losses, culling/disposal and control costs

# Economic analysis of global outbreak costs (HPAI) /5

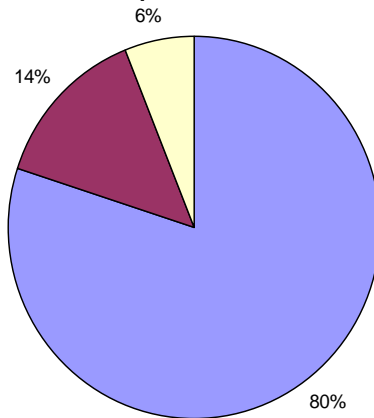
**Estimated global impact: total direct costs including consequential on-farm losses (in billion US\$)**

	Impact: scenario 1 (most likely)		
	Direct production costs/losses, total impact (a)	Consequential on-farm losses	Total direct impact, including consequential on-farm losses
<i>Global impact, annual</i>			
<i>Scenario A</i>	5.34	6.41	11.75
<i>Scenario B</i>	6.12	7.35	13.47
<i>Scenario C</i>	9.71	11.64	21.35
<i>Global impact, total</i>			
<i>Scenario A</i>	10.68	12.81	23.49
<i>Scenario B</i>	12.25	14.70	26.94
<i>Scenario C</i>	19.41	23.29	42.70

(a) Includes animal value losses, culling/disposal and control costs

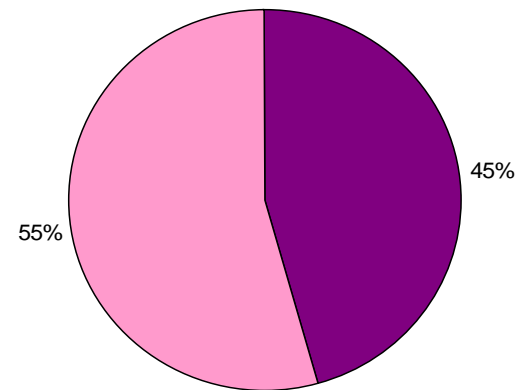
# Economic analysis of global outbreak costs (HPAI) /6

Structure of direct production costs and losses



■ Poultry value losses    ■ Culling/Disposal costs    □ Control costs

Structure of total direct costs including consequential losses



■ Direct production costs and losses    ■ Consequential on-farm losses

# Economic analysis of global outbreak costs (HPAI) /7

Estimated global impact: **indirect costs**, HPAI (in billion US\$)

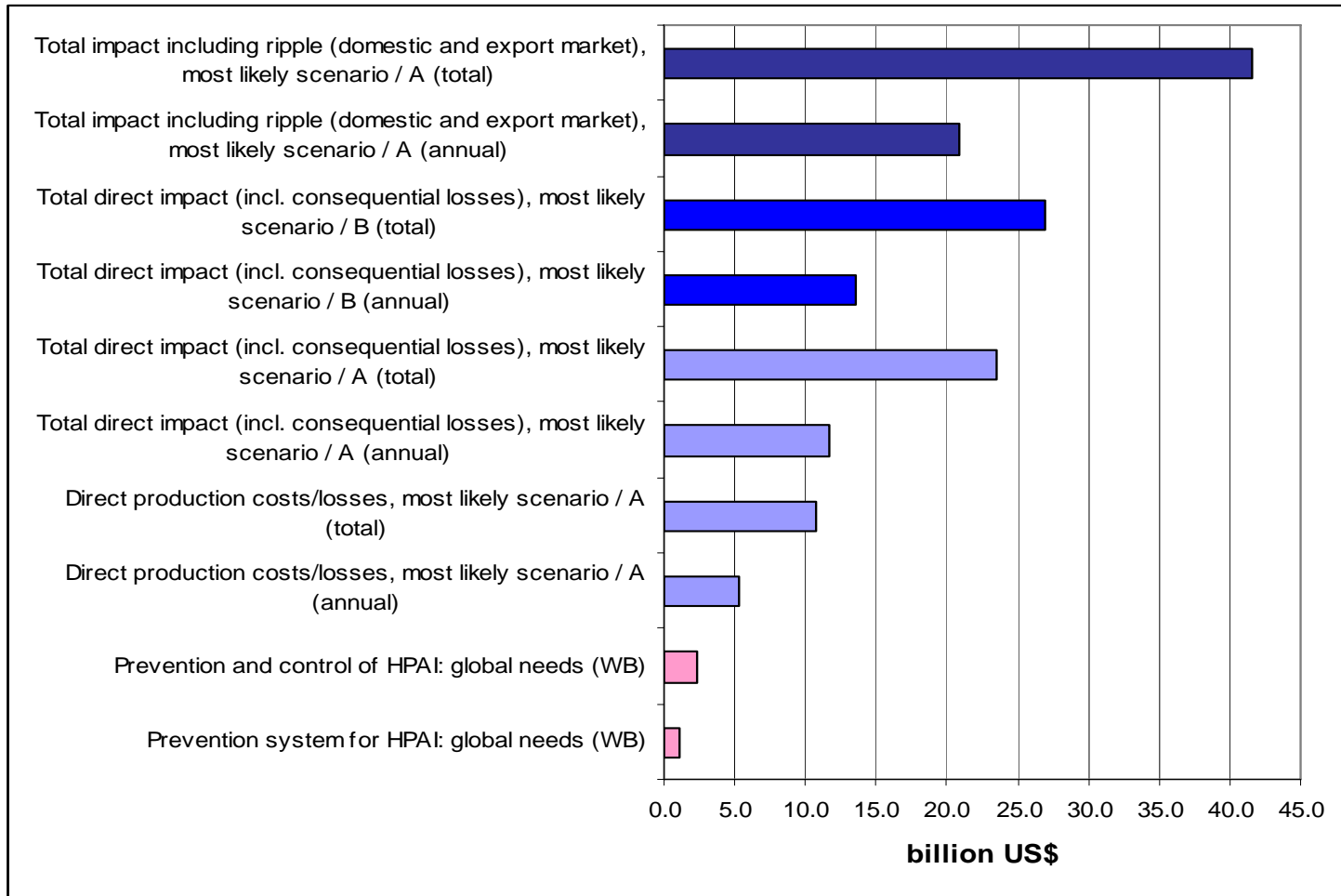
	Impact: scenario 1 (most likely)				
	Ripple: domestic market	Ripple: export markets	Spill-over: tourism	Wider society	<i>Total impact</i>
<i>Indirect costs/losses: Global impact, <b>annual</b></i>	5.28	3.77	72.00	311.15	<b>392.20</b>
				711.20	<b>792.25</b>
<i>Indirect costs/losses: Global impact, <b>total</b></i>	10.56	7.55	144.00	622.30	<b>784.41</b>
				1,422.40	<b>1,584.51</b>

# Economic analysis of global outbreak costs (HPAI) /8

## Results - indirect impact (cont'd):

- These costs exclude certain types of indirect impacts for which it has not been possible to provide estimates on a global scale (e.g. ripple effects on upstream/downstream industries, spill-over effects on services and other wider society costs such as environmental effects);
- In this context, the estimates of total indirect impact provided here should be considered as the minimum potential outcome.

# Global comparison of prevention to outbreak costs (HPAI) /1



# Global comparison of prevention to outbreak costs (HPAI) /2

- The most recent global needs assessments of prevention and response to HPAI suggest that some US\$ 2.27 billion would be required over a 3-year period;
- Of this amount, prevention and preparedness costs as such account for just over US\$ 1 billion (excluding operational costs);
- Against this assessment, outbreak costs under the 'most likely' scenario and for H5N1 countries only are estimated at US\$ 5.34 billion per year for the direct production costs and losses alone (excluding consequential losses);

# Key conclusions of comparison of prevention to outbreak costs

- Results of this type of analysis depend heavily on the underlying scenarios/assumptions;
- The implication is that a) they often need to be interpreted within the context in which they have been generated; and b) comparison and extrapolations from individual case studies are constrained and should be treated with caution;
- Nonetheless, a **common observation** may be made: **in all the cases reviewed** here, existing studies conclude that the **significant benefits that accrue from improved prevention and control measures outweigh the cost of investment.**

**Answer 1:** *Before even considering the indirect impacts, the **benefits of improved prevention by far outweigh the potential outbreak costs and losses of TADs** such as HPAI. The potential impacts of TADs call for a global approach in the fight against animal diseases, and it is clear that the VS have a crucial role to play as the providers of Global Public Goods*

# More information...



Organisation  
Mondiale  
de la Santé  
Animale

World  
Organisation  
for Animal  
Health

Organización  
Mundial  
de Sanidad  
Animal

[\[Español\]](#) [\[Français\]](#)

- Site map
- Search
- The OIE
- The Veterinary Services
  - [The Veterinary Services](#)
  - Economic Studies
  - PVS
- Press releases/Editorials
- International meetings
- World animal health situation
- Official country disease status
- Animal diseases data
- OIE Expertise
- Certification of diagnostic assays
- Health standards
- Publications and Documentation

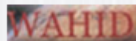
## Alerts - Disease Information



[Latest news on animal diseases](#)



[Update on avian influenza in animals](#)



[World Animal Health Information Database](#)

[Bovine spongiform](#)

## Highlights

[13/10/10](#)

Glanders poses a serious health risk to both animals and humans in the Middle-East

[24/09/10](#)

Veterinary controls must be enhanced to control the spread of animal diseases including at border and importation checkpoint controls

[02/09/10](#)

Links between animal production systems, climate change and emerging diseases

[previous press releases ...](#)

## Editorial from the Director General



[78th General Session of the World Assembly of Delegates of the OIE : A fresh impetus to the Organisation's outreach and visibility](#)

Last May, as every year, the national Delegates of the World Organisation for Animal Health (OIE) held their World Assembly at the Headquarters of our Organisation in Paris. As of September 2010, the OIE has 177 Members and several other countries are already engaged in the process of accession.

## OIE Publications



■ [Online Bookshop](#)

■ [Bulletins online](#)

■ [OIE working methods](#)

■ [The OIE and its network](#)

## Scientific and Technical Review

Most recent issues:

■ [Invasive species – Part 2: concrete examples, 29 \(2\), August 2010](#)

■ [Invasive species – Part 1: general aspects and biodiversity, 29 \(1\), April 2010](#)

# Thank you for your attention

Organisation mondiale  
de la santé animale

World Organisation  
for Animal Health

Organización Mundial  
de Sanidad Animal