



LSE AIDS/ LSE Health/ DFID public lecture

The Global State of Influenza Pandemic Preparedness

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The Global State of Influenza Pandemic Preparedness

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January 10th 2007

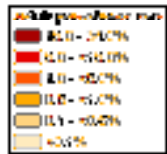
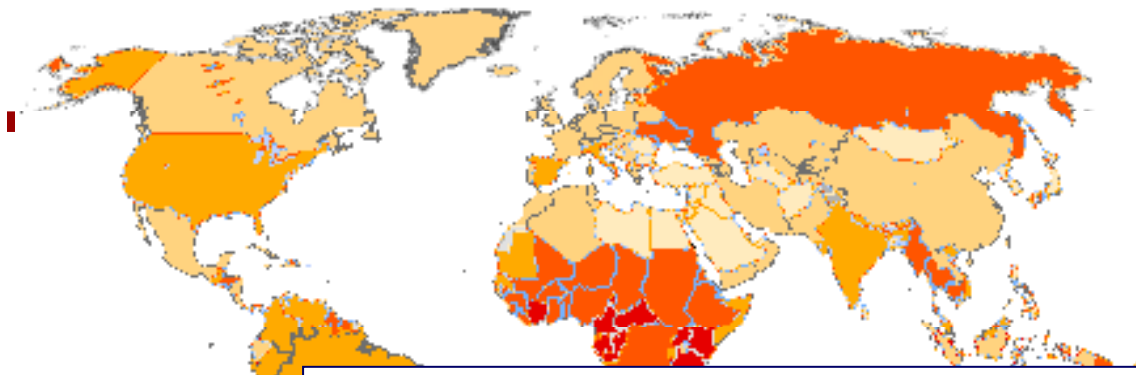


History: Disease Outbreaks and Pandemics

Consequences for societies, economies and human
security

(Slides courtesy of WHO)

The HIV/AIDS pandemic



**Human suffering,
+ Economic cost in US\$ Billions**



**A new virus recognized in
the early 1980s**

December 2007

- 33.2 Mo HIV infected
- 2.5 Mo deaths in 2005
- Continued spread in Africa
- Challenge for young women
- Drug-Resistance
- No vaccine

Risk Distribution of Bovine Spongiform Encephalopathy (BSE) worldwide



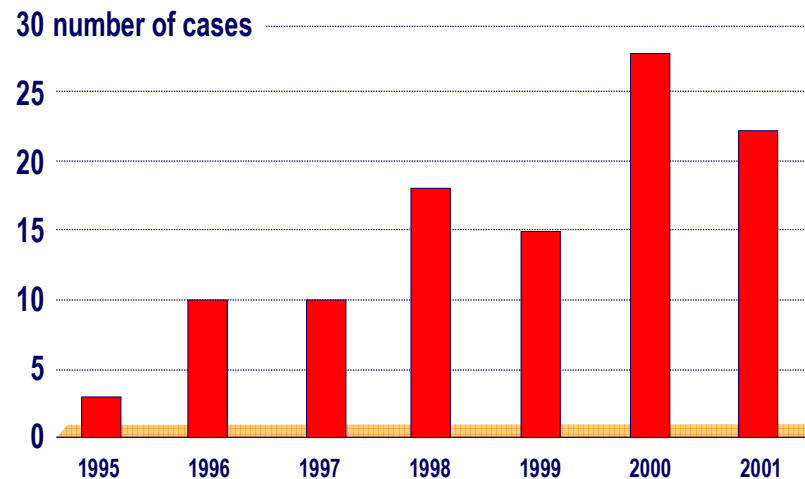
- Category I**
(highly unlikely)
- Category II**
(risk of BSE is unlikely but cannot be excluded)
- Category III**
(likely to present a BSE risk, even if not confirmed, or pre)
- Category IV**
(confirmed, at a higher level)

**Human suffering,
+ Economic cost in US\$ Billions**



over time

n = 122 deceased (11 probable/alive)



France (5/2) Italy (1/1)
Republic of Ireland (1)

Source: UK, France

- A new prion disease
- crossed the species barrier
- spread through the food-chain

March 2003: a new and severe acute atypical pneumonia emerges in Hanoi, Hong-Kong, Singapore and Toronto.

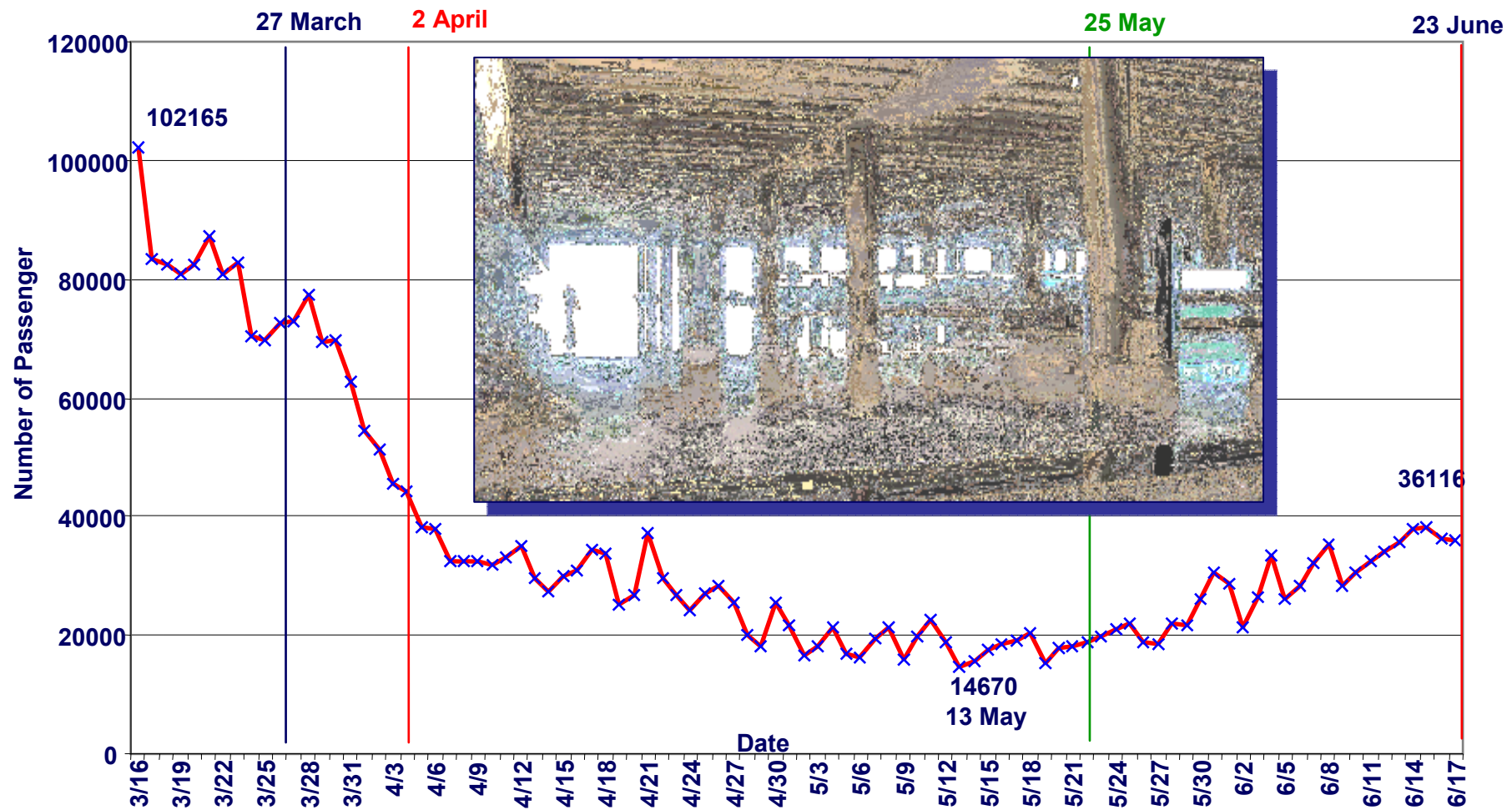


SARS: Trends in airline passenger movement Hong Kong, March - June, 2003



Screening of exit passengers WHO travel recommendations

WHO travel recommendations removed



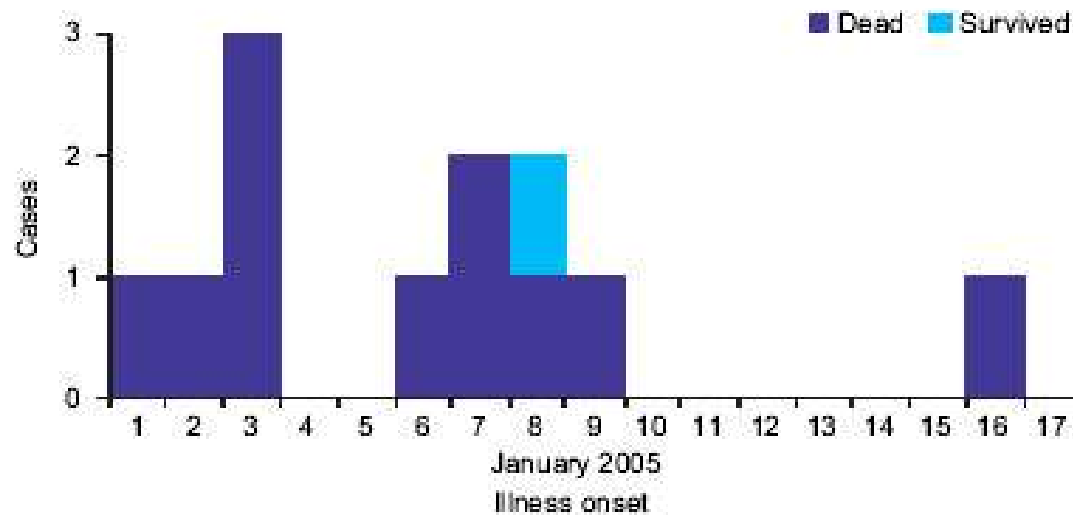
Nipah Virus, Malaysia, 2001; Bangladesh, Feb 2004, Jan 2005



Nipah outbreak Bangladesh 2004. Epicurve by week of onset January February 2004 (N=22)



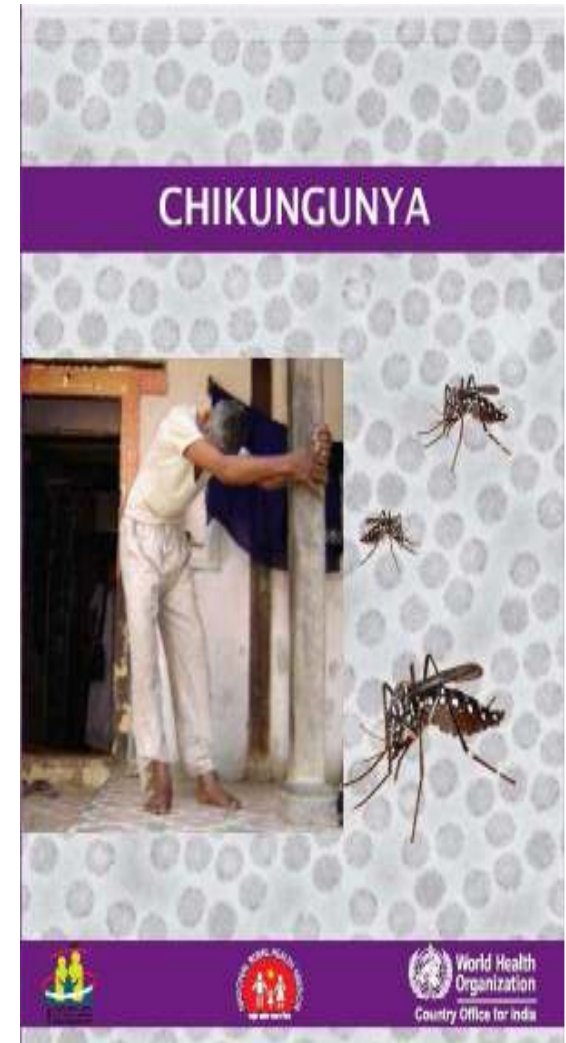
Figure 1: Dates of illness onset-encephalitis outbreak, Habla Union, Bangladesh.





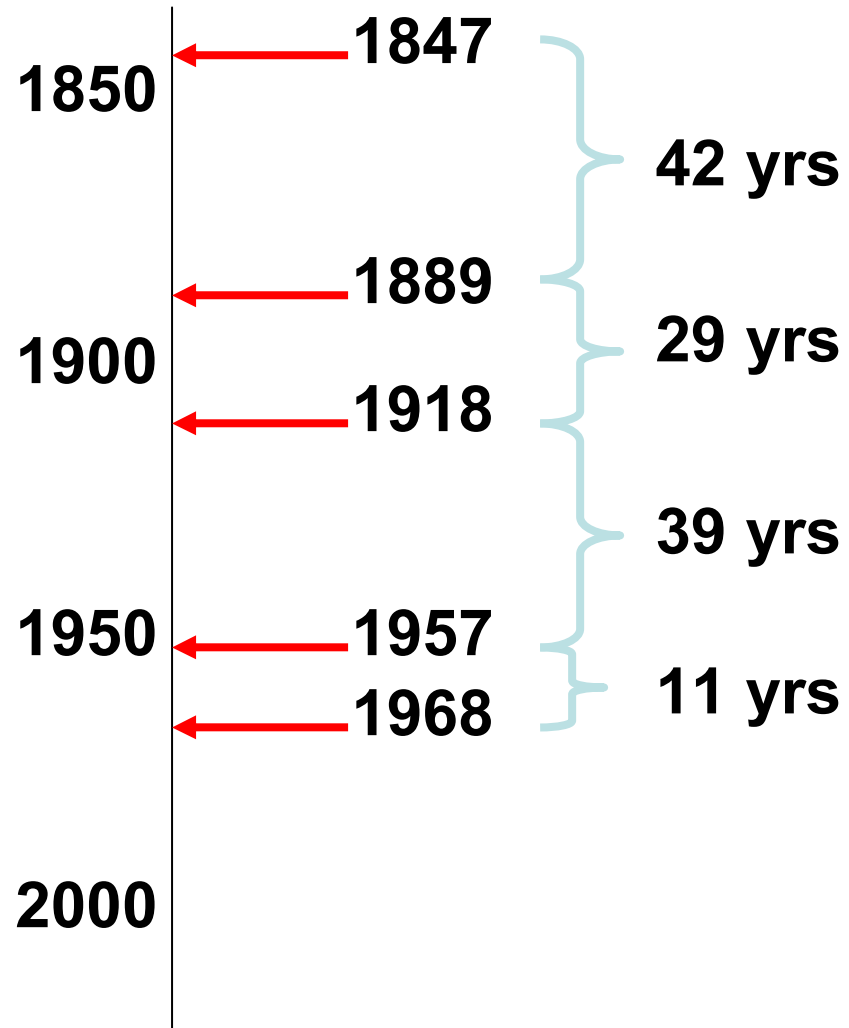
Chikungunya

- Debilitating: high fevers, joint pain and deep fatigue. Only rarely lethal.
- 2004 – outbreak off the shore of Kenya, spread along the Indian Ocean coast of Africa.
- 2005 - serious epidemics in Comoros, La Réunion and the Seychelles. Also N Italy.
- Peak in La Réunion 266,000 people sick (32% of the nation's population).
- Further spread through infected travelers especially where there are large populations of albopictus mosquitoes. NB key mutation in 2004....

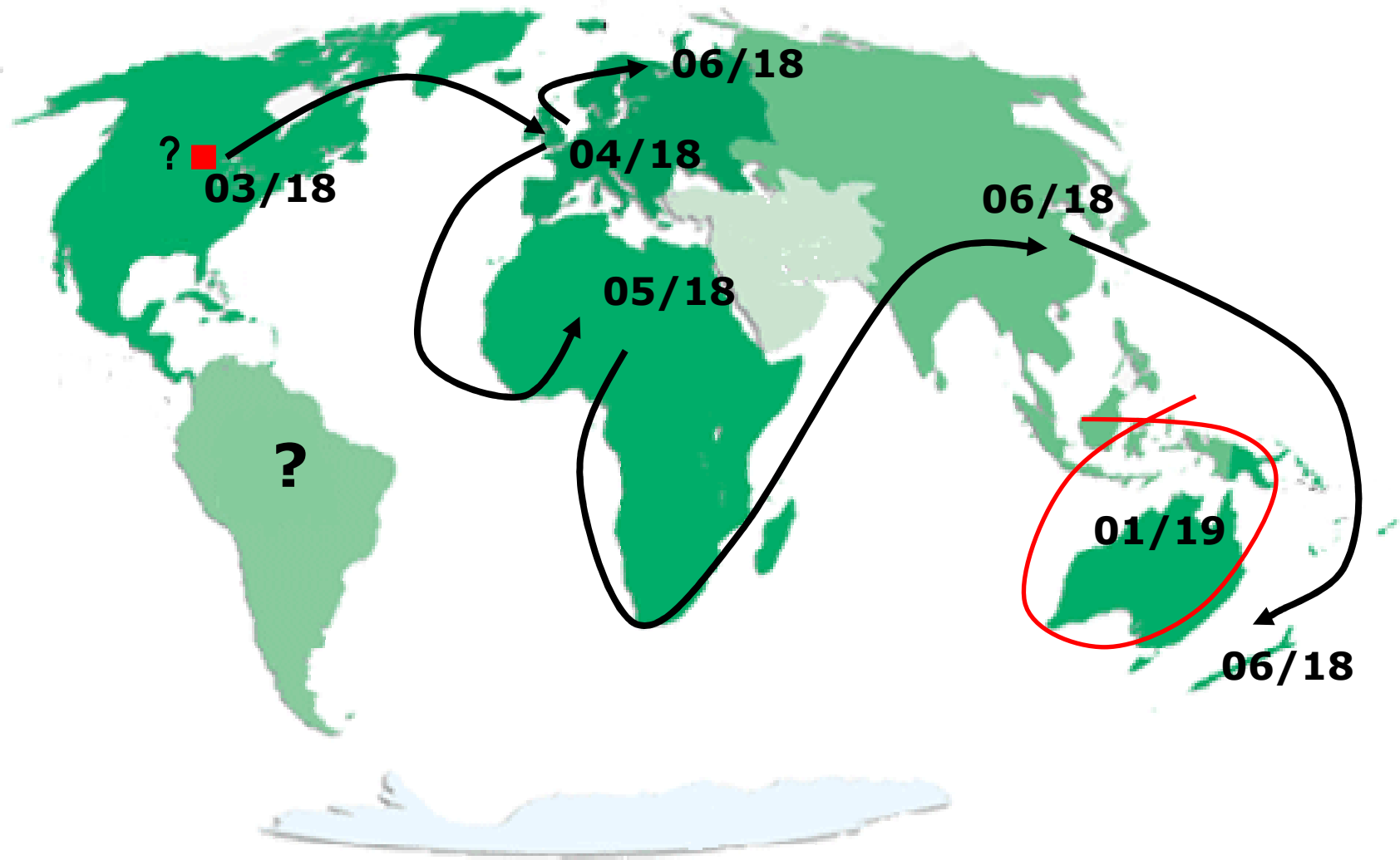




Past Influenza Pandemics



Geographic spread: 1918-19



C.W. Potter, Textbook of Influenza, 1998

Infectious diseases thrive when systems break down



- Floods, storms, earthquakes, heat waves, deep cold
- A challenge to public health systems
- Put public health within preparation and response plans

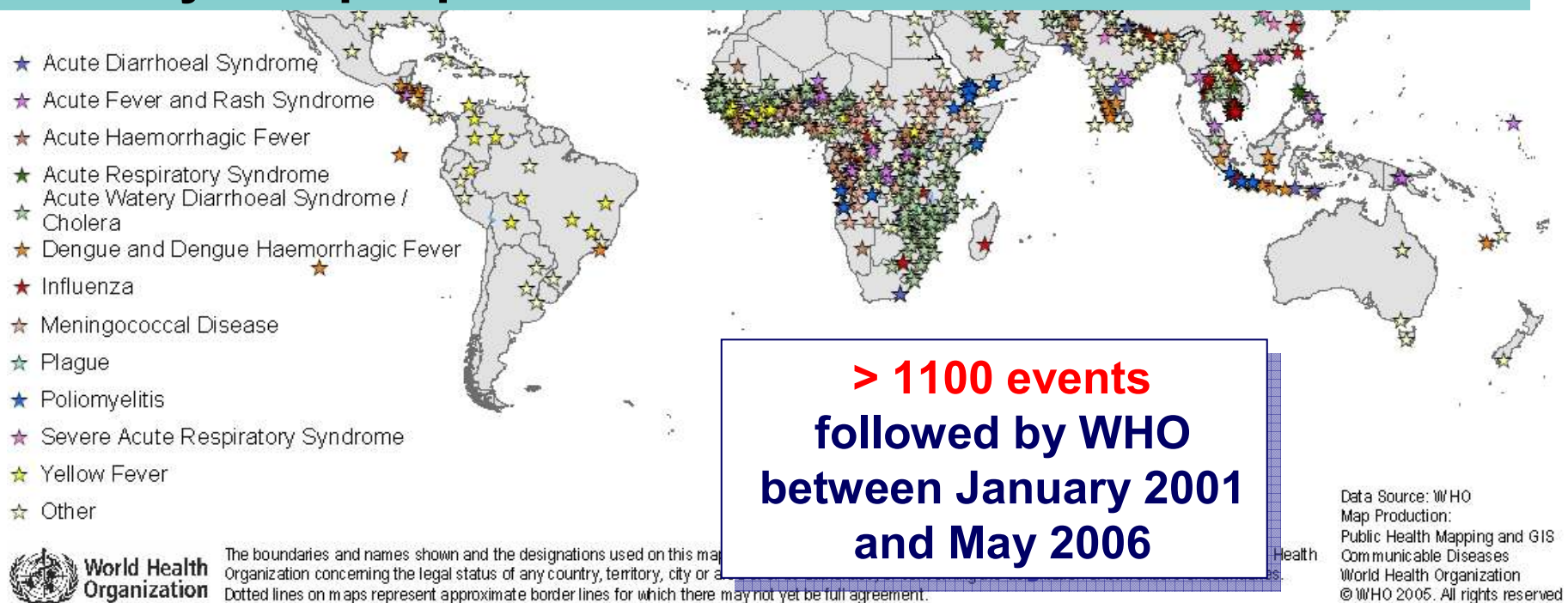


They threaten human security..

...they place sudden intense demands on national and international health systems

....they demand effective action by governments, private entities, voluntary organizations

....they test people's resilience



- **Our societies are threatened by microscopic adversaries (microbes, pathogens) that invade, evade, surprise**
- **Increased demand for meat, changes in ecosystems and global warming will drive an increase in rate of emergence**
- **70% of them come from the animal kingdom: 2 new emerge each year**
- **Countries and global institutions are starting to mount defences, responding to threats and preparing to do betterthreat in any one country a threat for the world**
- **Who takes responsibility for financing, management, coordination and protecting poor people's livelihoods?**



Limiting the destruction and damage caused by a pandemic

The threat from Highly Pathogenic
Avian Influenza H5N1

GLOBAL AVIAN INFLUENZA SITUATION

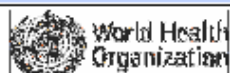
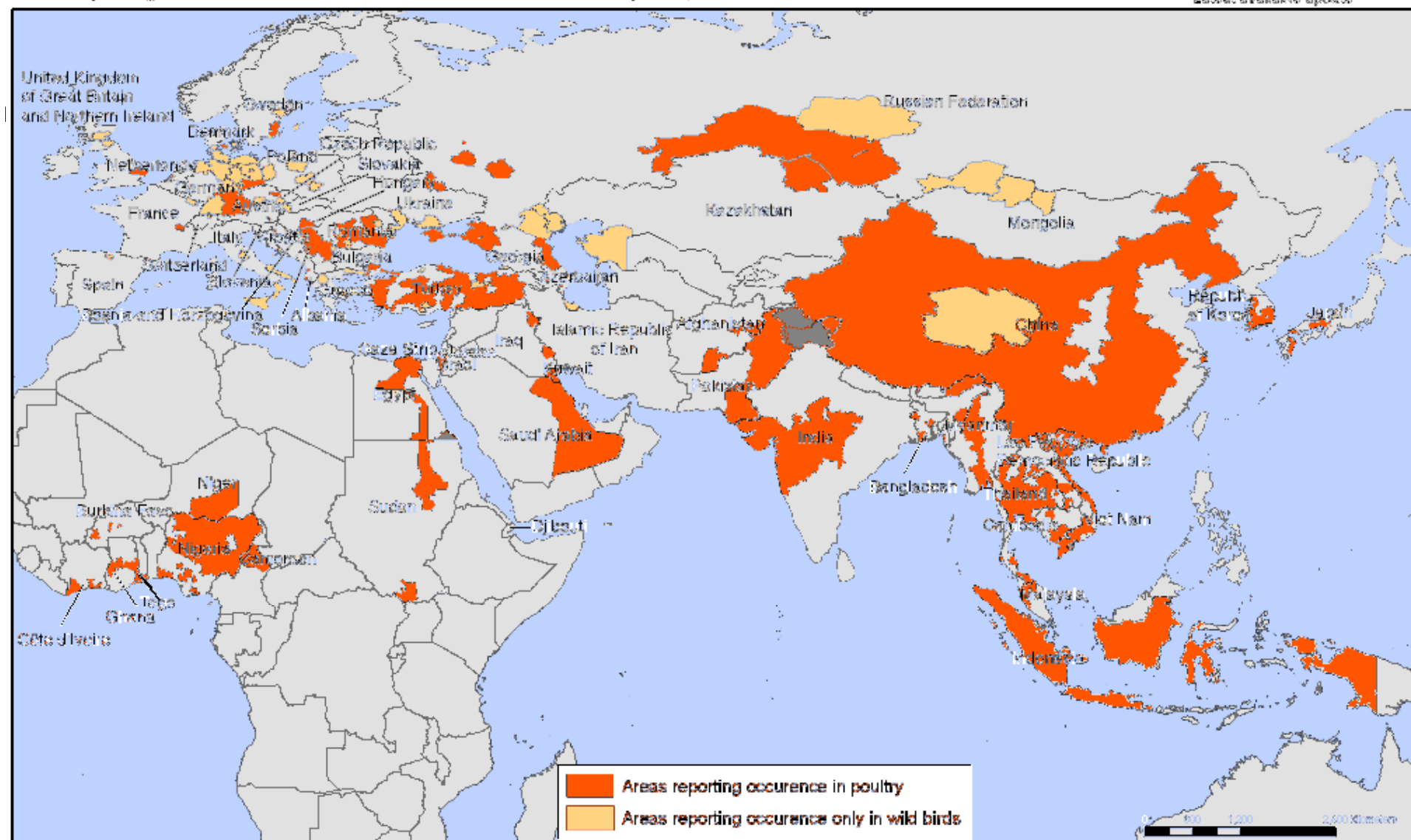
- **Continued H5N1 infections in bird population in parts of Indonesia, Egypt, Nigeria, Bangladesh, China and Vietnam (enzootic)**
- **Several countries worldwide newly infected in 2007**
 - **Some countries may not report all outbreaks**
 - **Insufficient bio-security in poultry plants**
 - **Contribution of migrating birds unclear**
 - **Clear contribution of in-country and cross-border trade**
 - **Potential importance of Human H5N1 infection**

SPORADIC HUMAN CASES OF AVIAN INFLUENZA

- **Human infection with H5N1 is rare, and usually the result of virus transmission from birds to humans**
- **H5N1 infected over 300 people since 2003**
- **Over 200 have died, mostly children and young adults**
- **Genetic make-up of virus evolves but there is no evidence of sustained human to human transmissibility**

Areas reporting confirmed occurrence of H5N1 avian influenza in poultry and wild birds since 2003

Status as of 31 August 2007
Latest available update



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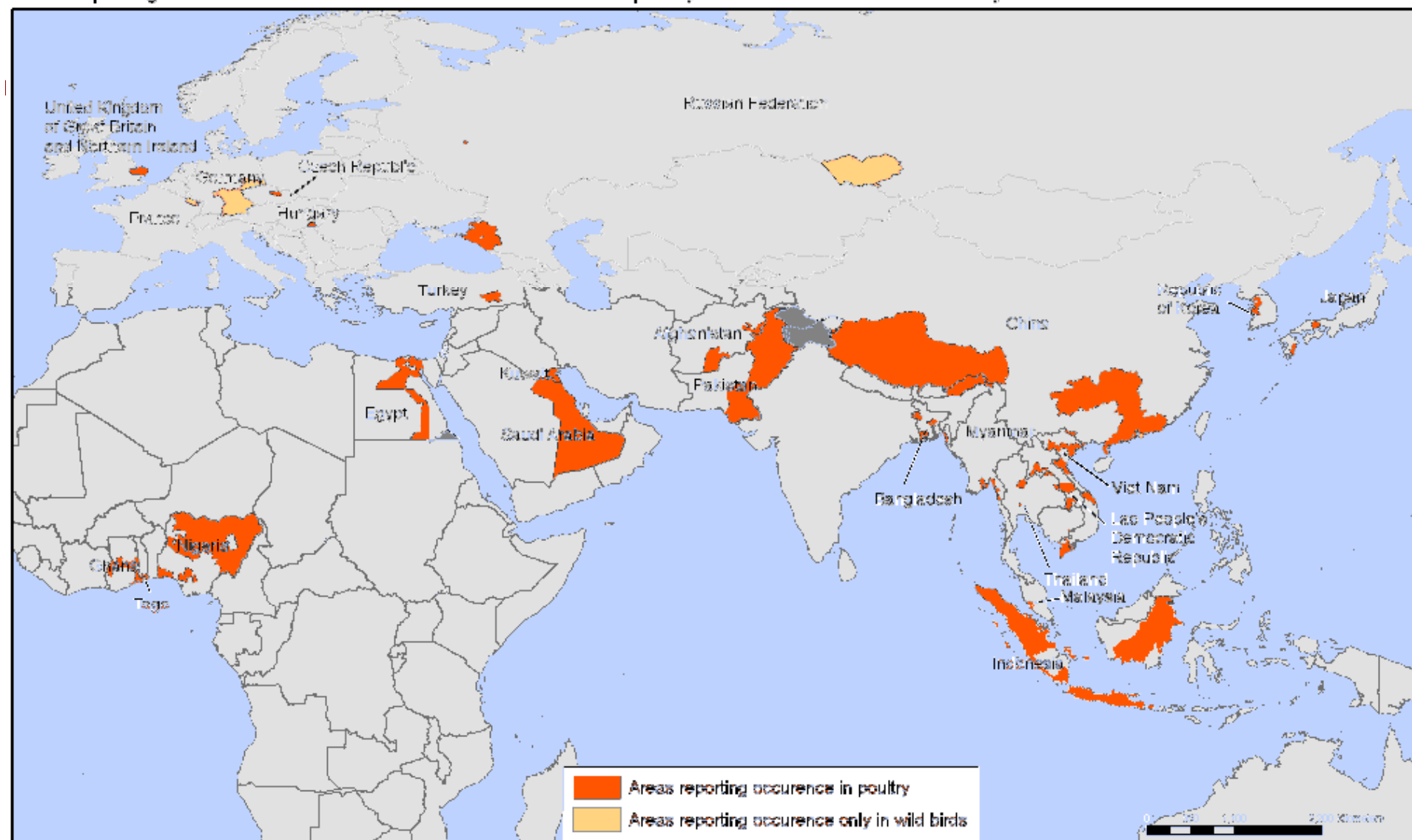
The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Organisation for Animal Health (OIE) and national governments

Map Production: Public Health Mapping and GIS

Communicable Diseases (CD3) World Health Organization

Areas reporting confirmed occurrence of H5N1 avian influenza in poultry and wild birds between January and June 2007



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Threat of Human Influenza Pandemic



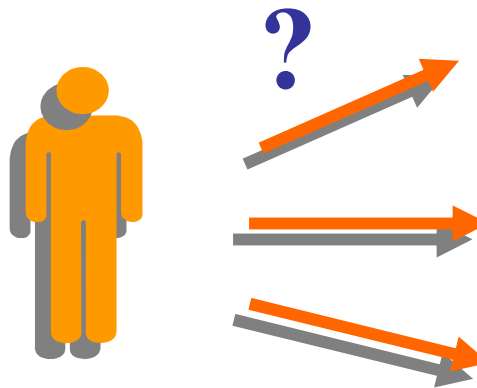
Inter-pandemic Period



H5N1:

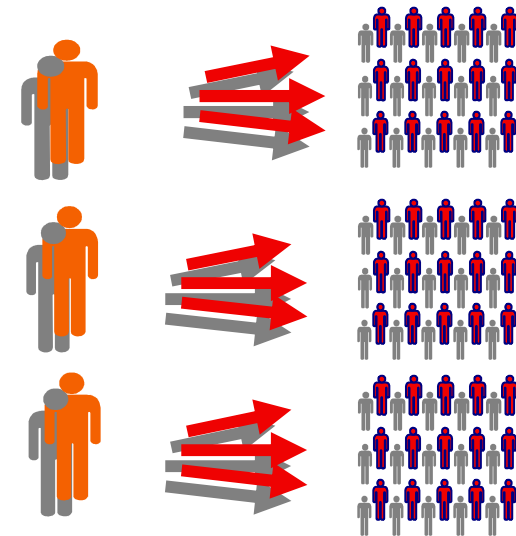
- Circulating in wild birds and poultry since 2003
- Highly contagious / deadly among birds
- Spreading from Asia to Europe, Middle East and Africa

Pandemic Alert Period



- Has infected humans in rare instances - resulting from close exposure to sick birds and/or their droppings

Pandemic Period



- If H5N1 evolves into a human virus it could cause a human influenza pandemic
- Also possibility that H5N1 never evolves into a human virus

DETERMINANTS OF PANDEMIC INFLUENZA



A new influenza virus emerges to which the general population has little/no immunity



The new virus must be able to replicate in humans and cause disease



The new virus must be efficiently transmitted from one human to another

**NOT TO
DATE**

THE CURRENT THREAT LEVEL?



Inter-pandemic period	Phase 1	No new influenza virus detected in humans. If a new influenza virus presents in animals, the risk of human infection is considered to be low.
	Phase 2	No human infections, but a circulating animal influenza virus poses a risk to humans.
Pandemic alert period	Phase 3	<i>Human infection(s) with a new virus, but no (or very infrequent) human-to-human spread.</i>
	Phase 4	Small cluster(s) with limited human-to-human transmission but spread is highly localized.
	Phase 5	Larger cluster(s) but human-to-human spread still localized
Pandemic period	Phase 6	Increased and sustained transmission in general population.

IMPACTS OF AVIAN & PANDEMIC INFLUENZA



Livelihoods

- Income loss due to market changes

Human Health

- High illness & potentially higher death rates
- Overstretched health facilities
- Disproportionate impact on vulnerable

Governance & Security

- Higher public anxiety
- Increased demand for governance & security
- Reduced capacity due absence and illness

Social & Humanitarian Needs

- Deterioration of coping & support mechanisms
- Interruption in public services
- Quarantine policies

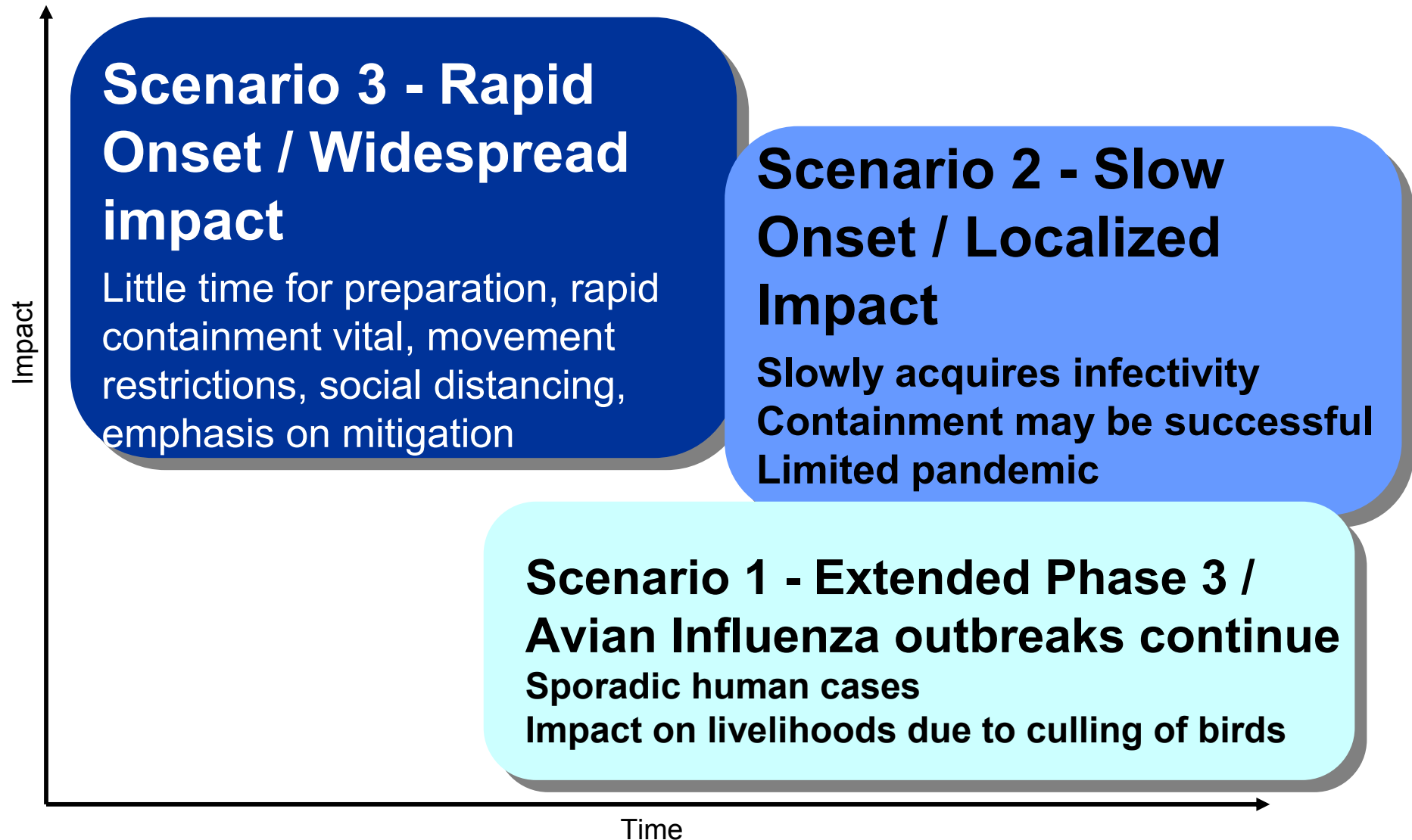
Economic Systems

- Trade & commerce disruptions
- Labour shortages
- Interruption of regular supply systems

Economic Impact of Next Pandemic

- The next influenza pandemic will start with local outbreaks.
- If not contained it will quickly have a global impact - millions of deaths, up to \$2 trillion of economic consequences and as much as 5% reduction in GDP
 - Compare with SARS - <1000 dead, \$50 billion economic loss.
- Deaths, absenteeism and attempts to avoid infection have consequences for supply and demand side of economy
 - Markets close, utilities unreliable, telecoms break, cash in short supply
 - Travel and leisure travel reduces, demand for food changes
- There may be threats to Rule of Law and Security
- Should be a temporary shock: recovery will be painful

THREE PANDEMIC SCENARIOS





Multi-sectoral Pandemic Preparedness

Being ready to detect, contain, control, mitigate

Global Strategy Agreed Nov 2005



- 1 Stop influenza in animals through stamping out the disease at the place where the infection starts**
- 2 Prevent emergence of pandemic by limiting human exposure;**
 - if pandemic does start, contain it quickly;**
 - if containment is not possible, mitigate pandemic consequences.**

**Leadership from countries: International Support
(WHO, FAO, UNICEF, Red Cross, World Bank)**

Enabling Factors for Success



1. **Good information**: Prompt and precise
2. **Effective interventions**: Right actions, right place, right time evidence-based
3. **Political direction**: From the Top
4. **Rapid Scale Up**: capacities, cash, people, management well tested
5. **Social Mobilization**: around risks & actions
6. **Incentives**: for prompt reporting
7. **Alliances**: all of government & partners
8. **Management**: information, analysis, change

SUCCESS DEPENDS ON SEVERAL SECTORS



- 1 **Human Health** *Containing the pandemic*
Medicines, Commodities, Equipment, R and D, Patient Care, Lab services
- 2 **Financial Services** *Keeping financial systems going*
Banking (cash and settlements), financial regulation, risk management and insurance
- 3 **Utilities, Personal Services** *Basic needs*
Electricity, Water, Food, Telecoms, Postal services, Retailing (Catering for the needs of the most vulnerable)
- 4 **Travel – Logistics, Business, Leisure** *Moving goods and people*
Supply systems; Air, sea, rail; Ports; Pilgrimages; Sports and other events; Tourism
- 5 **Government, Security, Military** *Rule of law, respect for rights*
Public Services, Judiciary and Correction, Private Security,
- 6 **Information Management** *Transparency*
Strategic communication; Broadcast and print; Good use of www
- 7 **Environment and hygiene** *Focus on biosecurity*
Cleaning, Maintenance, Refuse management, wildlife,
- 8 **Food and Livestock Production** *Preventing the next influenza pandemic*
Growing, Processing, Marketing and Distribution of animal meat for human consumption



Getting Ready for Pandemic Response

GETTING PREPARED



- **GOAL**

- Early Detection, Investigation and Confirmation, Containment
- Social distancing, personal protection, movement restriction, maintenance of essential infrastructure
- Systematic use of anti-viral therapy (oseltamivir)
- Rapid development and equitable distribution of effective vaccines (Major controversy: will poor countries have access)

- **APPROACH**

- Ensure high level of popular awareness and understanding
- Crisis plan to mitigate effects of pandemic on Economies, Governance, Basic Needs, Border Movements
- Humanitarian Relief Systems prepared

- **PROCEDURES**

- Protocols developed for use of stockpiles, emergency operations
- Civil soc, NGOs, local government, Private Sector synchronized
- Communications system
- Plans Simulated and Lessons Applied

PANDEMIC VACCINES



-
- Global Influenza Surveillance Network
 - Procedure for identifying candidate strains for seasonal vaccines
 - Seasonal Vaccine: Manufacture, Marketing, Distribution
 - Pre-pandemic and Pandemic Vaccines
 - Stockpiles and accelerated production
 - Systems
 - Perceived Imperfections
 - Regulation and standardization
 - Increasing access for all



Engaging community members

Use Clear Messages





Integrated Approach to Pandemic Prevention, Preparedness and Response

GLOBAL STRATEGY



- *FAO/OiE/WHO/World Bank and Partners' strategy meeting (Geneva November 2005) and review meeting Rome June 2007)*

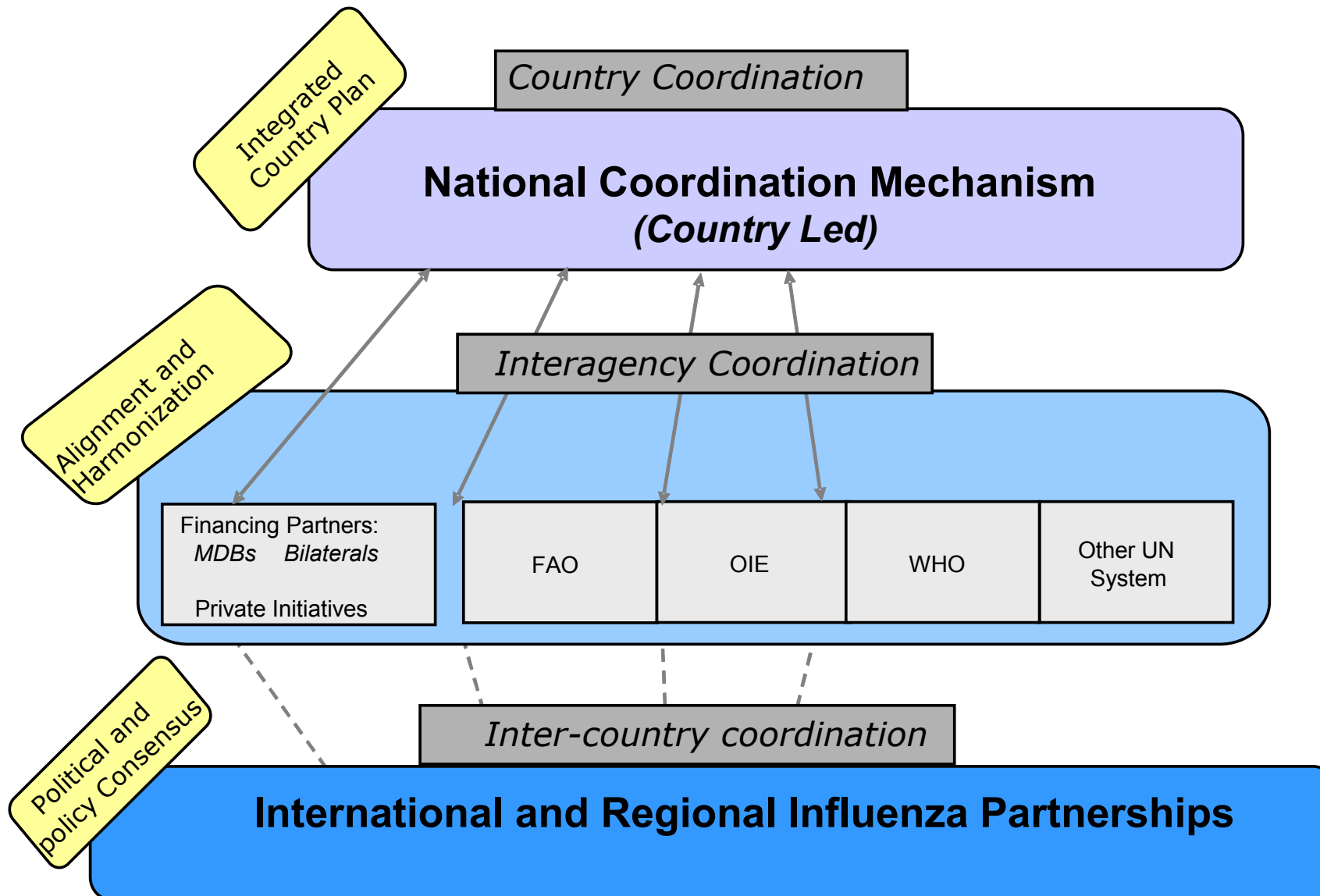
INTERGOVERNMENTAL SUPPORT

- *Financial and political (Beijing and Bamako pledging Conference, Washington, Ottawa, Vienna and Delhi High Level meetings)*

EXTERNAL ASSISTANCE

- *Technical and financial support by specialized and donor agencies with regular strategic reviews*

Coordination at different levels



BUILDING ALLIANCES AND TRUST THROUGH COORDINATION



- **Normal business: Meetings and Statements**
- **Sufficient trust to share information and samples**
- **Agreeing to pursue one strategy and review it at intervals**
- **Achieving Harmony and Avoiding Discord**
- **Seeking Synergy (Better than the sum of the parts) and (ideally)**
- **Working as one (Unity)**

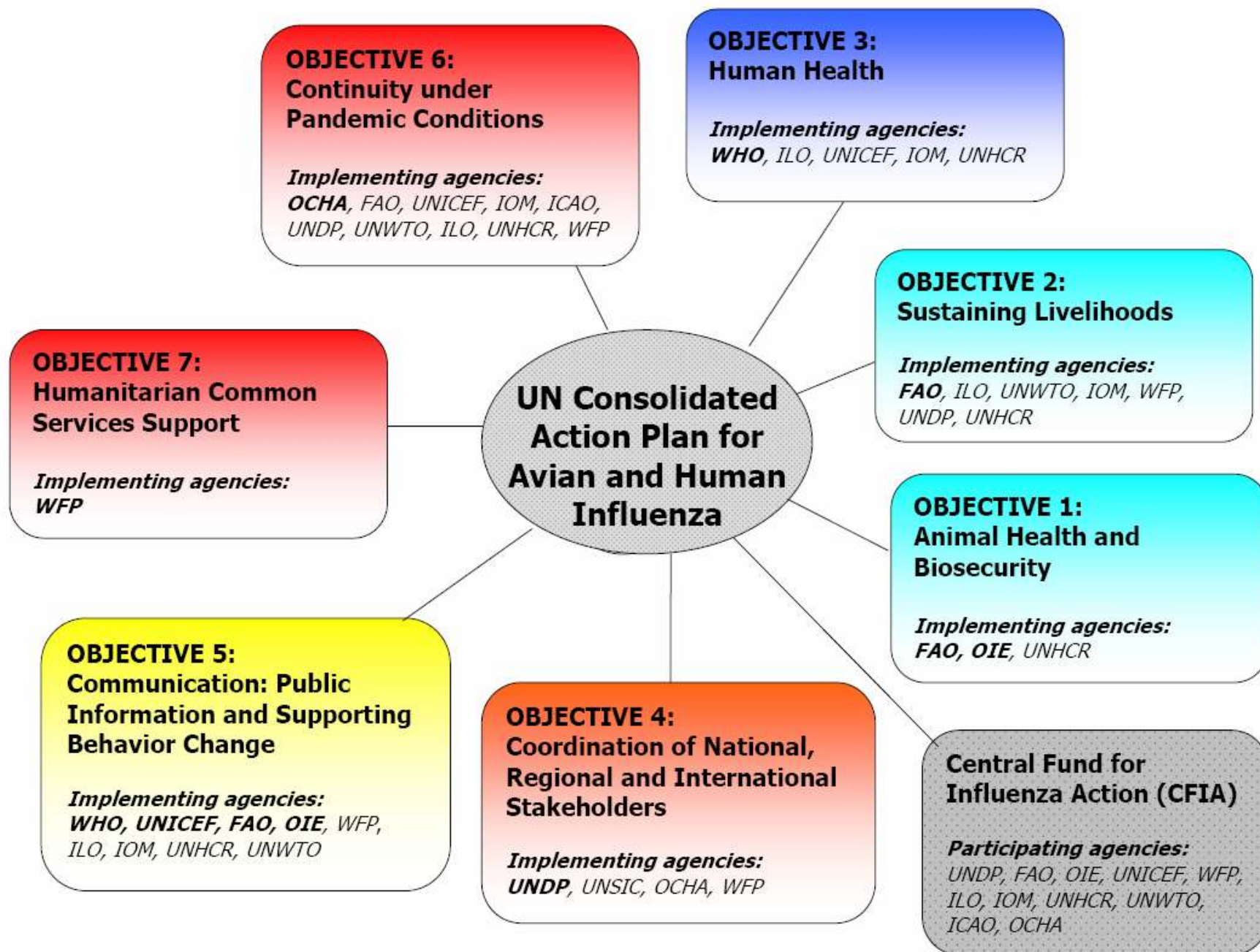


Monitoring Progress

Action on HPAI control and Pandemic Preparedness covers a Broad Agenda

Support for 7 Objectives

- Animal Health and Biosecurity
- Sustaining Livelihoods
- Safeguarding Human Health
- Coordination of National, Regional and International Stakeholders
- Communication; Public Information and Support for Behaviour Change
- Continuity under Pandemic Conditions
- Humanitarian Common Services



Pattern of External Assistance is Ambitious

Multi-sectoral

- Animal and Human Health, Crisis Management, Communication

Multi-stakeholder

- Governments, Donor Agencies, International Agencies, NGOs and Regional Institutions

Multi-faceted

- Political (local, national, regional, global) Financial, Institutional, Technical (norm and standard setting), Scientific (research and development) Media, Global Movement

Multi-levelled

- Local, Country, Regional and Global

Responses to Avian Influenza
and State of Pandemic Readiness

THIRD GLOBAL PROGRESS REPORT

DECEMBER 2007

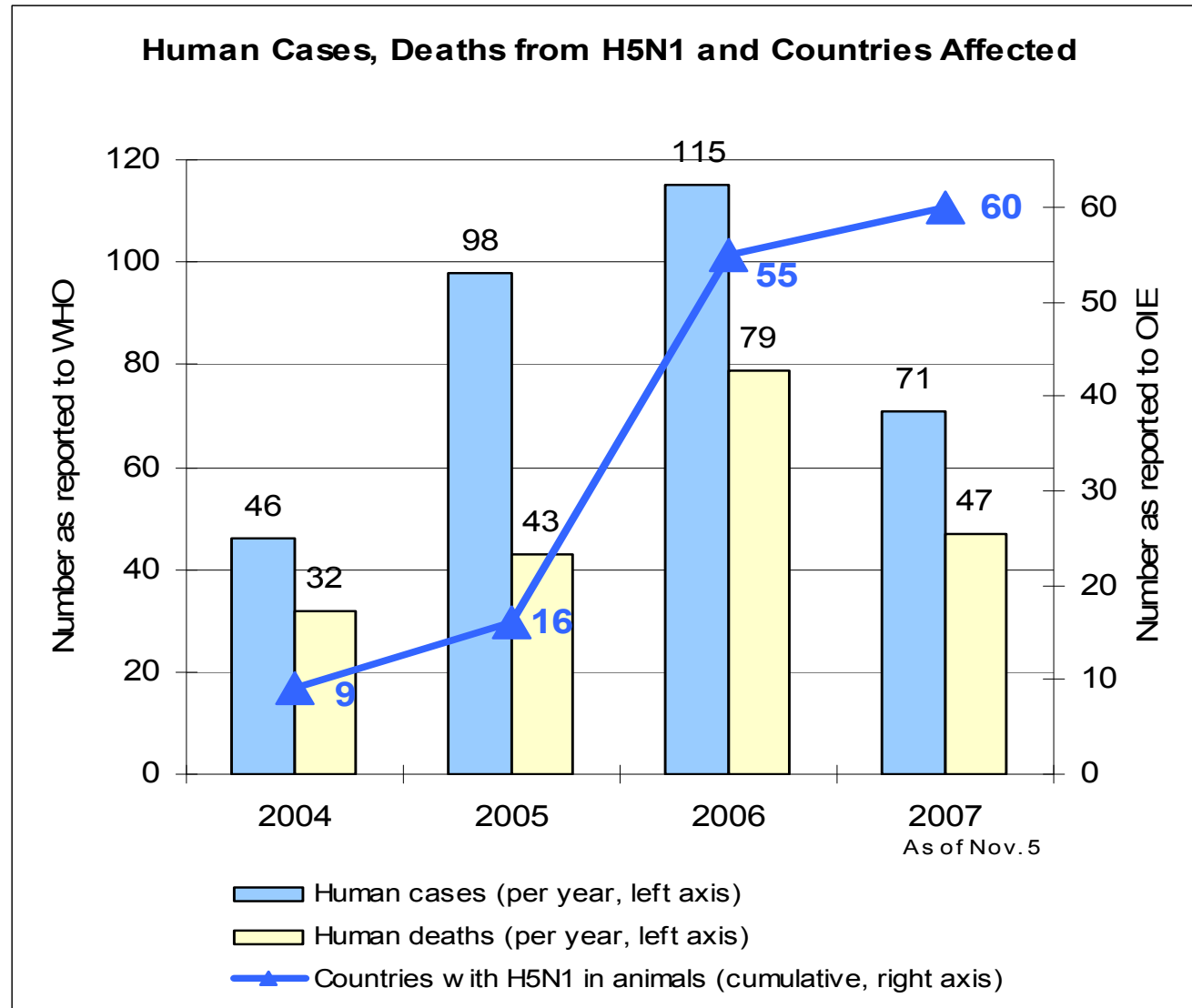


UN System Influenza Coordinator & World Bank

Measuring Progress UN- World Bank: Assessment of Progress and impact of efforts to control Avian influenza and prepare for the next Pandemic

(Based on responses
from 146 countries)

Human Cases, Deaths from H5N1 and Countries Affected



Assessment of Progress (1)



-
- The H5N1 virus is considered enzootic in locations within at least 6 countries
 - Countries report improved capacity to respond to Highly Pathogenic Influenza (HPAI) infection (more rapid and more effective): a movement of hundreds of thousands of people
 - But veterinary capacity in many countries remains insufficient

Assessment of Progress (2)



-
- Reports suggest insufficient coordination between animal and human health surveillance and response networks within most regions
 - Evidence indicates an improvement in human influenza virus diagnostic and surveillance capacity globally (within the context of capacity to implement the International Health Regulations). However, this capacity varies significantly between countries
 - Over 90% of countries report that they have developed pandemic preparedness plans
 - National preparedness for multi-sectoral and multi-level pandemic response is patchy

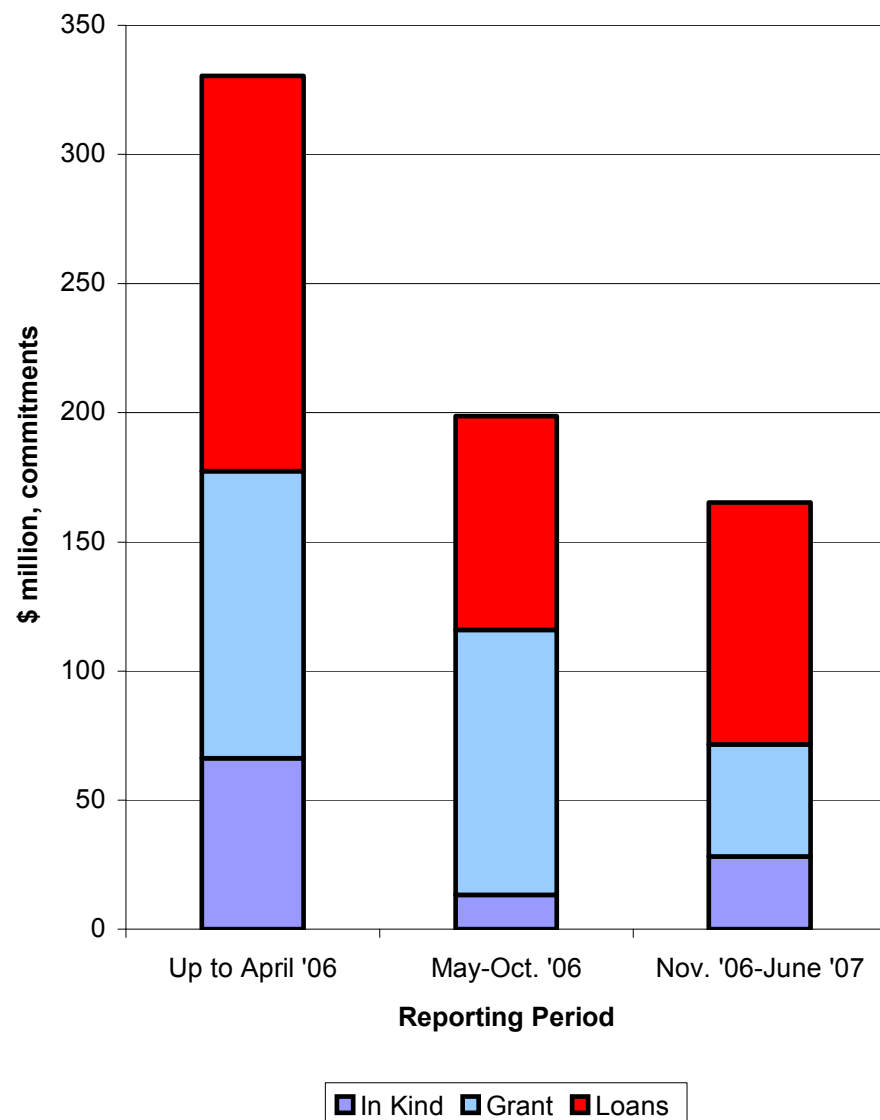
Assessment of Progress (3)



- Few countries have (a) sufficiently tested their plans, (b) included wider social and economic impacts or (c) considered vulnerable groups including migrants. These concerns apply to wealthy and poor countries.
- Humanitarian organizations and Red Cross Movement preparing for a pandemic at local level
- 73% of countries have implemented communication strategies to create awareness around the threat posed by HPAI H5N1 (with significant assistance from UNICEF): awareness does not always translate into behaviour change
- NB some excellent exercises: Australia, APEC, UK



Figure 2.4. Countries Become More Dependent on Loans as Grants Decline



Assistance to countries

Cumulative commitments as of June 30, 2007

In Kind: \$108 m (15% of total)

Grants: \$259 m (37% of total)
- of which \$76m from AHIF&PHRD

Loans/credits: \$339 m (48% of total)

Total: \$706 m

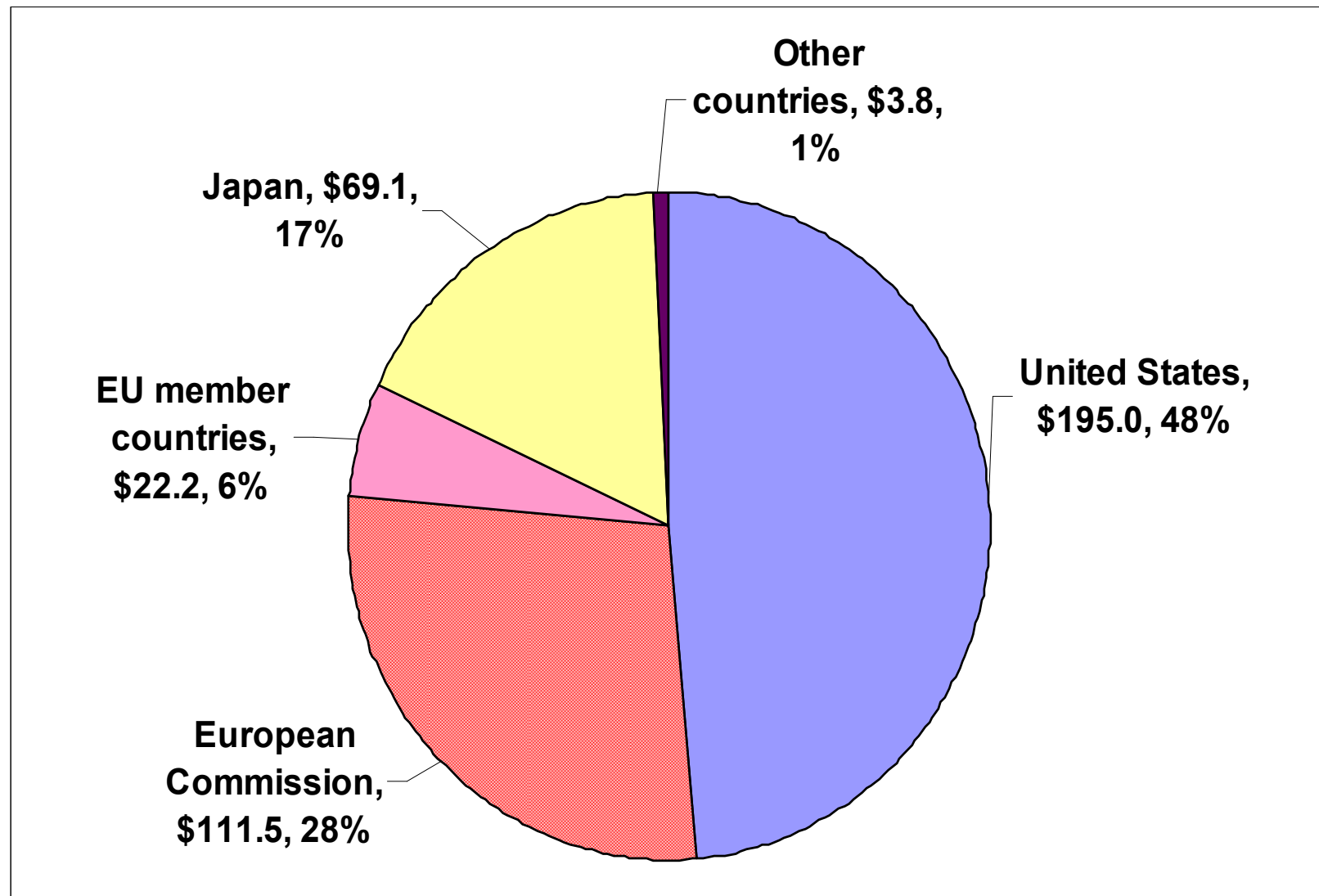
Ministerial Conference New Delhi (Dec 2007)

- More than one hundred countries represented, more than 40 Ministers, more than 700 participants
- Threat of avian influenza better understood, better handled in many countries but ongoing transmission a continuing challenge in more than six nations
- Focus on prevention, rapid response, containment and control of AI through emergency responses in 2005-2007 was appropriate. Must continue

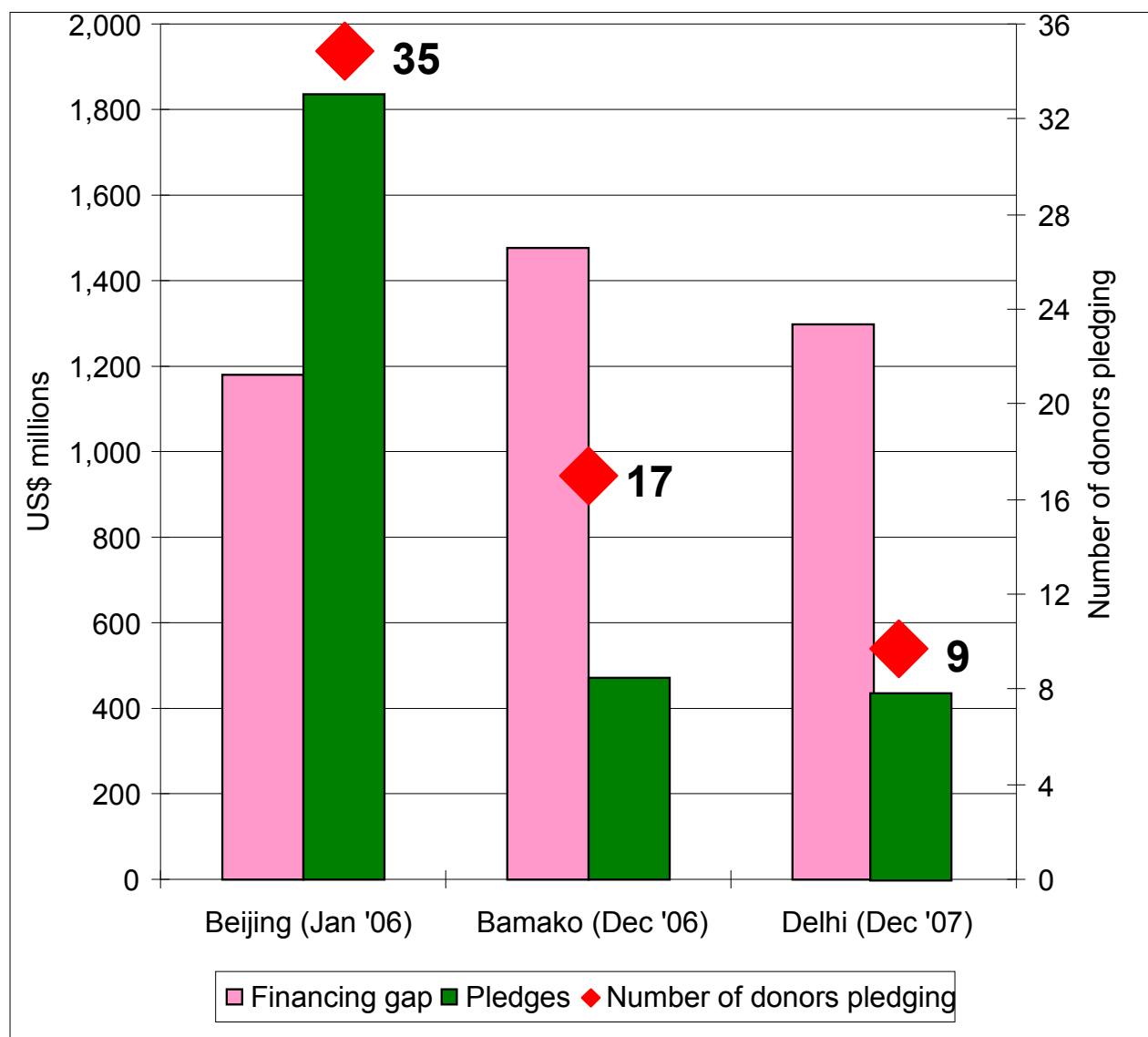
New Delhi Conference (Dec 2007)

- Delhi Road Map has potential benchmarks to help countries chart the way forward, assess their progress and make changes as necessary
- Should be seen as part of longer term “one world one health” response
- Guidance on self-assessment and course correction needed for individual elements in the road map
- Also
 - Need medium- and long-term strengthening of capacity of animal and human health systems and
 - Need broadened (multi-sectoral multi-level multi-country) pandemic preparedness

New AHI Pledges, New Delhi, December 2007 (\$406 million pledged)



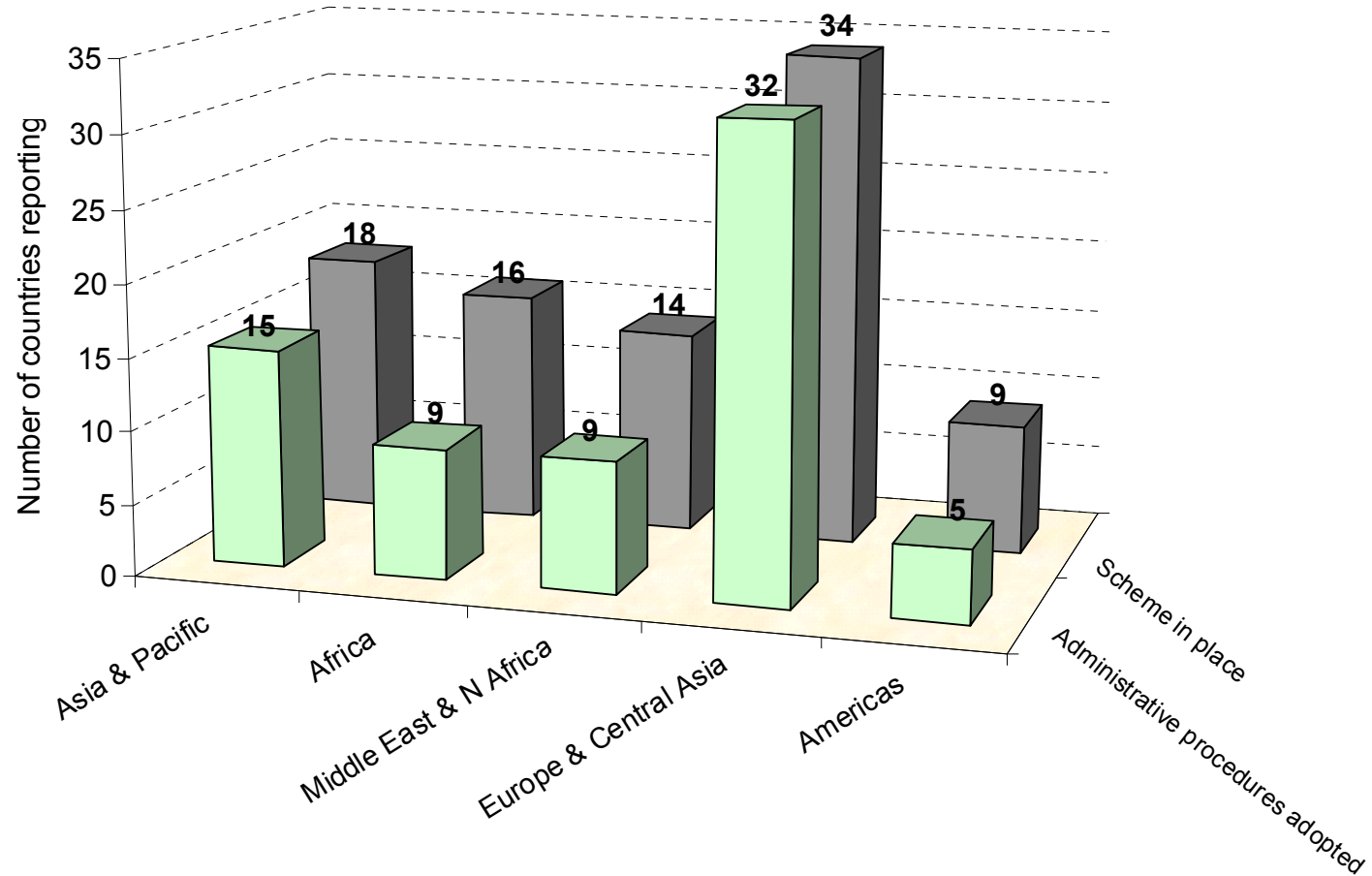
Decline in pledges vs financing gaps



Gap that will remain if resources are unavailable: eg compensation for culling



Africa and the Americas Lag Other Regions in Establishing Compensation Schemes and Many Schemes Are Not Ready for Implementation



Programme Challenges end 2007



1. Goals of pandemic preparedness plans should be health, continuity and security.
2. Nations are dependent on international agencies: are the agencies adequately resourced to assist?
3. Political commitment for operational continuity is strong: How to sustain it?
4. Operational capacity for implementation may be weak at country level. How to build and test capacity for vigilance, identification, investigation and response?
5. Countries with limited resources have particular difficulties.
6. Current emphasis in pandemic plans is on anti-viral medicines (yet non-pharmaceutical inputs may be more useful).
7. Much reliance on health sectors yet other sectors vital for mitigating a severe pandemic.
8. Responsibility to act is at country level...but issues are global in importance.
9. What is the role of regional agencies in programme support ?

Policy Challenges now



1. Work on H5N1 and pandemic threat exposes security lapses.
 2. Need to assess the threats and communicate – continually.
 3. Adapt models to changing reality (using best science).
 4. Beyond H5N1: prevent all animal-human interface pathogens.
 5. Go beyond health: plan for capacity in other sectors.
 6. Stimulate local and provincial action as well as national.
 7. Stimulate global continuity – both wealthy and poor countries.
 8. Ensure government, voluntary, private groups stay engaged.
 9. Get countries to work together – providing samples and data, sharing stockpiles – for global good.
 10. Combine skills in animal, human, food, & environmental health.
 11. Develop capacity to produce effective vaccines quickly.
- Are we talking to (and listening to) each other?

2008 onwards (1)



-
- **A good moment for stocktaking and reflection**
 - **A time of evolution:**
 - **Recognition that animal diseases pose threats to human security on a par with climate change and global war.**
 - **Recognition that more work is needed at the interface between animal, human, environmental and food health.**
 - **Recognition of pandemic as a mega-catastrophe calling for multi-country, multi-sectoral, multi-level responses.**

2008 onwards (2)



- **A time to renew energy and focus**
 - **Strengthening community resilience**
 - **Building solidarity between nations
(inevitable tensions between foreign and domestic policy)**
 - **Convergence of disciplines and
complementarity of actors**
 - **Public-Private-Voluntary partnerships and
global movements**



Thank you.

www.un-influenza.org