
The Global Fight Against Avian Influenza


Lessons for the Global Management
of Health and Environmental Risks and Crises

Aline Leboeuf

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EXECUTIVE SUMMARY

The term “Avian Influenza” (AI) refers both to: 1/ the existing and related avian influenza epizooty and epidemic, and 2/ the possibility of an influenza pandemic, that would result from a mutation of the H5N1 virus.

The issue of AI therefore implies two necessities: 1/ the need to control the existing avian influenza virus and 2/ the need to prepare for the next pandemic.

The reaction to the AI issue has thus articulated itself, over the years, in two movements: 1/ a strong solidarity drive, from the better prepared, to the less prepared and 2/ a “national preparedness drive”, as the majority of countries strove to strengthen their own capacity to respond to an AI outbreak/pandemic. The tension between those two dimensions of the management of AI contributed to the build-up of a strong mobilisation, from very different communities (animal health, human health, environmental health, security, media, private sector, etc.). This process of mobilisation resulted in the emergence of what appears to be, with the benefit of hindsight, a real “global fight against avian influenza”, which reaps significant results, as this report highlights. Such a dynamic may not last forever, however, as a lurking fatigue with the issue seems to be spreading amongst actors, and threatening past and current efforts. The new “One World One Health” agenda could, in this regard, prove to be a necessary option to remobilise actors, and consolidate the outcomes of the fight against AI.

Before highlighting some key lessons from the fight against AI, one should draw some key features of the architecture of the global governance of avian influenza.

Which Global Governance of AI?

- Governing AI at the global level has been a fluid process, as it took some time to structure the large range of actors that had mobilised. Today still, as the agenda One World One Health gains momentum, the exact role played by the different institutions involved in this process might start to shift again.
- States are the key actors, as they raise political momentum at the global level, and as no possible response/control/preparedness is possible without them.

- Intergovernmental Organisations are very important supporting actors in the fight against AI; it is important in this regard to understand their role and limits. If IOs are faced with some problems (i.e. bureaucratic problems, traditional aid issues), they also proved to be extremely innovative.
- The regional level can have a facilitating effect on the global fight against AI. However, strong discrepancies exist between the regional organisations.
- A strong mobilisation was possible thanks to yearly conferences at the high political level; high political support from the national level: continuity of leadership; simulations; a cautious use of the “security” agenda.
- Coordination, which is always a problem at the global level, appeared to be less of a problem here thanks to global, regional, national and institutional coordinators, who had both a high visibility and sufficient time, and used frequent meetings of all stakeholders to insure coordination worked. UNSIC was useful but not very present on the ground; the question of its persistence in 2009 is still open.
- The Global Governance of AI confirms that strengthening existing organisations and coordination mechanisms can prove more efficient than creating new institutions.

LESSONS from a Global Fight:

- One needs a blend of horizontal and vertical approaches to global health issues to ensure that both animal and human health systems and the specific realities of a given diseases are taken cared of.
- Communication is a key factor.
- Surveillance systems are now better, but they can still be improved, and this needs to be done.
- A rapid emergency response requires long term investment. Even fire brigades have structural costs.
- Decision-making in grey environments implying investing time and money in research, but one should accept the fact that there will never be enough knowledge, and that grey decisions will thus have to be taken.
- Global norms are essentials, but they need to be adapted to local settings. Furthermore, a robust system to check on implementation of global norms needs to be established.
- Controlling epizootic will always imply a risk for livelihoods and an increase in poverty levels. Sustainable financial solutions have to be found. Eradication will always be extremely difficult

with complex ecologies and should therefore take place as soon as possible, before the virus spreads.

- The best options to respond to human cases is to strengthen [one] health systems. This implies an increase in the surveillance and response capacity, the distribution of pharmaceutical options, and the surge capacities. Non pharmaceutical options are important, but they cannot replace the medical response.
- Pandemic preparedness is a complex and constant effort. It requires both: 1/ specific health efforts and multisectoral efforts to detect and solve gaps and vulnerabilities (importance of simulations); 2/ the recognition that there is no "zero risk". Indeed, the real issue may be the resilience of the system and its capacity to survive to such a traumatic experience.
- Global Health and the virus-sharing issue would strongly benefit from a reformed WHO sharing system, and more widely a solution has to be found to improve access (included delivery) to drugs and vaccines against emerging diseases of global impact.

The future of AI

Prevention and preparedness efforts are difficult to evaluate. However in terms of surveillance and control, the effects of the fight are positive, and the world seem better prepared now than five years ago to face an AI pandemic. Will this situation last?

AI will remain a problem for some countries where the virus has become endemic and where, as soon as efforts diminish or falter, AI will re-emerge. People are still dying from H5N1. The pandemic risk will last. The fight is not over.

In July 2008, several persons interviewed in Washington D. C. were positive that if Senator Obama were to be elected, more funding would be dedicated for the management of global health issues and health systems. However, the advent of the financial crisis may make health issues appear like less of a priority for many decision-makers.

A new momentum has to be raised, for global health, for "One World One Health", and for AI.

ABBREVIATIONS

AI	Avian Influenza
ALive	Partnership and multi-stakeholder platform for African Livestock Development
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AU-IBAR	African Union Inter-African Bureau for Animal Resources
AUSAID	Australian Government Overseas Aid Program
BSL-3	Biosafety level 3
BSE	Bovine Spongiform Encephalopathy
CIDA	Canadian International Development Agency
CMC/AH	FAO/OIE Animal Health Crisis Management Centre
DFID	Department for International Development
DG SANCO	Directorate General Health and Consumer Affairs
EC	European Commission
ECO	Economic Cooperation Organization
ECDC	European Centre for Prevention and Control
ECTAD	FAO Emergency Centre for Transboundary Animal Diseases
EMPRES	Emergency Prevention System for Transboundary Animal and Plant
FAO	Food and Agriculture Organization of the United Nations
GF-TADs	FAO/OIE Global Framework for Transboundary Animal Disease Control
GISAID	Global Initiative on Sharing Avian Influenza Data
GISN	WHO Global Influenza Surveillance Network
GLEWS	FAO/OIE/WHO Global Early Warning System

GOARN	Global Outbreak Alert and Response Network
GPHIN	Global Public Health Intelligence Network
HPAI	highly pathogenic avian influenza
H5N1	sub-type of influenza virus (H5 haemagglutinin, N1 neuraminidase)
IFAD	International Fund for Agricultural Development
IGO	Intergovernmental Organisation
IHR	International Health Regulations (WHO)
INAP	Integrated National Action Plan
IPAPI	US International Partnership on Avian and Pandemic Influenza
JICA	Japan International Cooperation Agency
MECIDS	Middle East Consortium on Infectious Disease Surveillance-,
MZCP	WHO Mediterranean Zoonoses Control Programme
NGO	Nongovernmental Organisation
NTI	Nuclear Threat Initiative
OCHA	UN Office for the Coordination of Humanitarian Affairs
OFFLU	OIE/FAO Network of Expertise on Avian Influenza
OIE	World Organisation for Animal Health
OWOH	One World One Health
PDSR	Participatory Disease Surveillance and Response (programme)
PIC	UN Pandemic Influenza Contingency
PVS	OIE Evaluation of Performance of Veterinary Services
R&D	Research & Development
RT-PCR	Reverse Transcription Polymerase Chain Reaction (real-time laboratory technique for detecting viral nucleic acid)
SAARC	South Asian Association for Regional Cooperation
SARS	Severe acute respiratory syndrome



SGDN	French “Secrétariat Général de la Défense nationale”
SOP	Standard Operating Procedure
SPS Agreement	WTO Agreement on the Application of Sanitary and Phytosanitary Measures
TADs	Transboundary Animal Diseases
UK	United Kingdom
UNDP	United Nations Development Programme
UNDPI	United Nations Department of Public Information
UNEP	United Nations Environment Programme
UNICEF	United Nations Children’s Fund
US	United States
USAID	United States Agency for International Development
UNSIC	Office of the United Nations System Influenza Coordinator
US CDC	US Centre for Disease Control
WAHID	OIE World Animal Health Information Database
WHO	World Health Organization
WHO/AFRO	World Health Organization Regional Office for Africa
WTO	World Trade Organization

INTRODUCTION

Oh, yes, two years ago there were those big headlines in the media, the big avian influenza scare. I remember it well, because, with my colleagues, we were away during several weeks, and had to eat in restaurants. Each time one of us would eat chicken, we would wish h/her good luck! But I thought this avian influenza thing was over now.¹

As Avian Influenza (AI) partly disappeared from the media, many individuals began to consider that it has stopped being an issue. However, not only birds but also humans are still dying from H5N1 today and, as underlined by David Nabarro, the UN Avian Influenza Coordinator, in a recent press conference: “the threat of an influenza pandemic [is] still the same as it was three or four years ago”.² The fatigue over the AI is real, but it should not serve as a pretext for giving up the efforts and progress made by the international actors to try and respond to the AI risks for human health, and to poultry crisis. Several years after the second emergence of the virus in Hong Kong (in 2003), the fight against AI need to be re-energised. One way to do so is to allow for a better understanding of those efforts, of their achievements and of their limits. In doing so, one can also highlight some lessons to be learned for future global confrontation with emerging zoonoses, or even more largely for the management and prevention of all health and environmental risks and crises.

Indeed, when discussing the set up of a specific global governance mechanism to deal with world food crisis, several international actors, including the French government, toyed with the experience gained from the management of several recent health and environmental crisis, like global warming, biodiversity, HIV/AIDS, and Avian Influenza (AI).³ For example, in the case of AI, the regular International Ministerial Conferences were seen as an interesting governance option to sustain the momentum and the political will at the highest level. Could it be applied to other risks and crisis?

¹ Discussion with V., a French layman, on avian influenza, Paris, 27 October 2008.

² Department of Public Information, News and Media Division, “Press Conference By United Nations Avian Influenza Coordinator”, New York, 21 October 2008, <http://www.un.org/News/briefings/docs/2008/081021_Nabarro.doc.htm>, last accessed 27 October 2008.

³ Interview, Evian, October 2008.

What makes the avian influenza case especially interesting in that respect may not be the astonishing novelty of the global governance options put into place: many options were not actually new, or were developed initially to respond to other crises, to be adapted subsequently to the specifics of AI. In sum, the options put into place were mainly old recipes in new bottles. The novelty of the AI case does not lie either in the mobilisation of a security discourse that directly contributed to the creation of a momentum around the issue, and to its promotion on the global policy agenda. Other health crises, like HIV/AIDS, were also partly “securitized” in order to raise more funding. Rather, the specificity of AI lies in its multifaceted reality.

On the one hand, the management of the AI crisis has implied the response to an actual existing crisis: the avian influenza outbreaks in poultry populations that had a direct impact on the livelihoods of local populations and on poverty levels, and which resulted in limited but deadly avian influenza cases in humans. For many countries, especially in Asia, but also in Africa and Europe, this crisis is very real. It has heavy consequences on the legitimacy of the impacted governments by bringing to the limelight their limits in terms of governance; it endangers a crucial sector of their economy, the poultry sector, and it represents a real, albeit limited in scale, threat to the health and even the lives of their populations. But as most of those countries are developing countries, the response to this crisis followed the very familiar pattern of emergency aid actions, with flows (technical, financial, informational) going from the North to the South, through development agencies mainly (bilateral like USAID, AusAID, DFID, CIDA, JICA, or multilateral like World Bank, EC, UN, etc.).

On the other hand, the AI crisis triggered an important preventive effort from all countries, whatever their “history of contact” with the avian influenza virus, with countries trying to prevent or at least to prepare for the risk of an influenza pandemic that could happen anytime in the coming twenty or thirty years, and could resemble the 1918 influenza pandemic. Such an influenza, according to the more widespread scenarios, would have such a terrible impact on globalised economies and societies that it soon appeared to a growing number of actors as not only a health threat, but also as a multisectoral threat, endangering all sectors – economic, politic, social, etc. – of society. Faced with such a pandemic, developed countries could be as impacted, or even more, as developing ones. All countries may not be equal in the face of the threat⁴, but all have a vested interest in each other’s preparedness level, for a

⁴ We thank Josh Michaud for insisting on the inequalities existing between countries. For more on this debate, see C.J.L. Murray, A.D. Lopez, B. Chin, D. Feehan, K.H. Hill, “Estimation of potential global pandemic influenza mortality on the basis of vital registry data from 1918-20 pandemic: a quantitative analysis”, *The Lancet*, vol. 368, 23/30 December, 2006; A. Burns, D. van der Mensbrugghe, H. Timmer, “Evaluating the Economic Consequences of avian Influenza”, September

well prepared neighbour can mitigate the terrible impact of the pandemic on other countries – for example by slowing down the contamination process and maybe containing it in one given territory. This was the main reason accounting for the exceptional size and scope of the solidarity movement that linked developed countries to developing ones at the time of the crisis, even if, of course, the development and fight against the poverty ethos also played a significant role. Still, pandemic preparedness could take place as a nationally focused, inward-looking process in the North, with a limited input from the outside (norms, best practices discussion, etc.).

The global fight against AI developed at the crossroad of those two movements: as an externally-driven and rather classic solidarity movement from the richer to the less rich, from the more protected to the unprotected, and as a complex of multiple internally-driven efforts for national protection. Those two non integrated movements created a continuous tension within the global fight against AI over its exact definition, with the second movement often being seen as separate from it, except when it involved countries being helped through it. This tension illustrated to some extent the ambivalence of the concept of global health governance, which can be understood in a narrow fashion, as “helping the poor countries’ health governance system” or as “responding to global health risks like pandemics”, but also in a broader one, as a movement to improve the global population’s health in general, since we face, within the globalised system we live in, similar and interlinked problems (insufficient health human resources global market, worldwide pathologies like non communicable diseases, etc.).

As the fight against AI tried to reconcile those two movements, we were able to underline some key tensions emerging in any effort to improve global health governance, and to propose some options to take advantage of them rather than suffer from their spell.

The AI case is also rich in other lessons. As soon as human health and not only animal health became a source of concern, many individuals and institutions started to worry about the epizooty. As the issue was enlarged, in turn, to pandemic preparedness, a whole new range of actors became involved in the policy process. Organizing a smooth cooperation between all those communities of interest soon became an enormous challenge. However, this challenge was to be seen eventually as one of the main success stories of the global fight against AI.

Other challenges common to the management of any global health crisis included:

- The limits of the vertical approach, which implies focusing on one specific illness rather than strengthening the human and animal health systems capacity to deal with all illnesses. For some

2008, <http://siteresources.worldbank.org/EXTAVIANFLU/Resources/EvaluatingAHleconomics_2008.pdf

diseases it is necessary and efficient. However, this approach can lead to a clear waste of resources, as the capacities needed to ensure the distribution of the specific medicines funded by the vertical effort may be lacking, as was seen in the case of the fight against HIV/AIDS)⁵. This was an identified risk with AI, but some mediating solutions were found.

- The issue of communication: how to balance a necessary level of transparency with the need to keep some information apart in order to prevent a panic reaction, and to build an adequate level of trust and confidence from all actors in a process that is based on “learning-by-doing” methods.
- The tension between, on the one hand; an emergency policy mode that is required by the nature of the issue and the type of funding raised; and on the other hand the developmental and more long term mode that was more in keeping with the culture of the main intervening bodies, and was, arguably, more adequate to deal with what were also medium and long term issues (like the development of robust health systems). On a broader perspective, the AI case raised classical issues regarding development work: how to promote ownership for an externally-driven process, how to avoid the more traditional mistakes of development programmes, etc.?

Finally, in keeping with the goal of the Health and Environment Programme of Ifri, this AI case allows us to question the impact of a security approach to global health and environment issues. As expected, this study shows that the security discourse, summoned to justify the mobilisation against the AI outbreak, was very efficient in doing so, and helped raise political will and funding, at least in developed countries. It also contributed to the emergency mode of dealing with the AI crisis and the pandemic risk. However, even if one can observe a “securitization drive”, it is not possible to speak of a successful “securitization”, as the involvement of security actors is not uniform in all countries, limited in some and very strong in others, and as the “threat” discourse remains rather limited in the field, with the exception of some specific arenas (laboratory biosafety concerns for example, pandemic preparedness communities). However, there is a clear understanding that, were the pandemic to arrive, security institutions would play a leading role, so one could say that there is a strong prospect of full securitization in the future.

The first part of this study will propose a digest of the different sides of the fight against avian influenza, so as to give any non-specialist the background knowledge s/he may need to think in a critical way about the way AI has been governed. Regarding its specific form, this part of the report mirrors the superficial easiness of “Frequently Asked Questions” papers, or of those forms that are sometimes offered in

>, last accessed 16 January 2009.

national plans. However, while those FAQs or forms are often there to give clear, black and white answers to complex but simplified questions, our forms have as their key mission to stimulate critical thinking by highlighting the subtle grey zones of our current knowledge. As such, they bring to the foreground the main challenge in any risk management endeavour: making policy in a changing and unsettled environment; taking decisions without knowing whether these decisions will be the adequate ones. In a grey zone, decisions can only be “the best to take regarding the knowledge currently available”, grey decisions. Pursuing this grey world exercise further, we also propose grey policy recommendations for each of the issues exposed in our forms.

In a second part, we go back to the key objectives of our report: make apparent for anyone involved with health and environmental risks some key lessons from the way the global fight against AI has been governed. To do so, we highlight the specific role played by different international actors, and some key governance options that have emerged from the process of dealing with AI. As mentioned earlier, the “new-ness” of the governance options developed in the global fight against AI is limited, but our case study allows us to shed a light on some very interesting lessons regarding global health governance.

This study would not have been possible without long and fascinating interviews with more than 40 stakeholders in Brussels, Djakarta, Geneva, New York, Paris, Rome, and Washington.⁶ It is the result of a research started in July 2008, and ended in November 2008, right after the October Sharm el Sheikh Conference.

⁵ See for example Fanny Chabrol, “Effects of the Securitization of HIV/AIDS in Botswana”, paper presented to the conference “Impacting health, the environment and global governance. The challenges of taking a security approach, Ifri, 26 September 2008.

⁶ We would like to take advantage of this report to thank, once more, all the individuals who accepted to grant us some of their precious time, be it during the research itself, through the interviews, or afterwards, during the peer-review process, during which the draft was circulated and then discussed in an expert peer-review workshop, at Ifri in Paris, on 20 November 2008 (a special mention to S. Elbe, M. Haider, J. Michaud, who could not attend the workshop but nevertheless contributed to the peer-review). We would also like to thank Cécile Grima who made a decisive contribution to the research phase. Without all of them this report would not exist, but the author is the only person responsible for its shortcomings.

FIGHTING AI, A DIGEST

Ian Scoones and Paul Forster, in their very comprehensive report on “The International Response to Highly Pathogenic Avian Influenza”,⁷ consider that three major narratives have irrigated the international response to HPAI: the animal health response, the public health response and the pandemic preparedness response. They also mention three alternative narratives: one “on the causes of the disease and its dynamics”, the second on the “way normative concerns about poverty, livelihoods and equity have been treated” and the third on “questions of access and global governance”. In presenting those different narratives, they underline the complexity and the wide variety of issues, processes and actors covered by the single “AI” term. We propose here to scan some of these issues, going from the multisectoral ones to the specific animal health ones and finally to “human health security”, to adopt, at least partially, the WHO’s terminology. This last section will show how the movement from responding to the human cases of avian influenza, to developing an influenza pandemic response, provided the fertile ground for the development of a critique of the global health system in its present shape.

ON THE HUMAN AND ANIMAL FRONT: MULTISECTORAL ISSUES

We will insist here on several multisectoral issues – i.e. concerning both the animal and human health, and the pandemic preparedness sectors – that we found to be of special importance: should one approach AI through a vertical or horizontal approach, and what does the “One World, one Health” concept offer in this respect? How should we approach the issue of communication? What surveillance system should be developed? How should we balance emergency and development imperatives? What should be the place devoted to research in the global fight against AI? How are norms developed and implemented?

⁷ See Ian Scoones and Paul Forster: I. Scoones, P. Forster, “The International Response to Highly Pathogenic Avian Influenza: Science, Policy and Politics”, *STEPS Working Paper* 10, Brighton, STEPS

FROM A VERTICAL APPROACH TO “ONE WORLD, ONE HEALTH”?

As we started this research, and inspired by the example of the fight against HIV/AIDS and the more general debate in the global health field, we quickly identified a first issue, related to the adoption of a vertical approach to the fight against avian influenza; in other words, an approach focused on a singular disease as opposed to a horizontal approach focused on the improvement, more generally, of health systems that respond to all diseases. The former approach can potentially have an eviction effect, diverting resources away from equally dangerous diseases, or even simply prove to be useless, by generating a piling up of drugs and vaccine in the absence of a health system with sufficient absorptive capacity to distribute them.

Some data collected support this hypothesis. For example, at least one Indonesian researcher acknowledged that the resources he was mobilizing for AI were resources that he used to direct on other human diseases. There are also reports in Indonesia mentioning growing cases of rabies as veterinarians concern themselves more with the fight against the AI.⁸

Of course, one can always argue that an influenza pandemic would have a greater impact on a global scale than a growth in tuberculosis or rabies cases, and that fighting a specific disease requires specific measures, such as access to specific pharmaceuticals. However, if one starts trying to compare each disease's relative importance and priority, one can say that, *de facto*, AI concerns only a few hundred humans today. Who knows if it will be the strain that will mutate in the pandemic virus one is so afraid of? Why should it mobilise so many resources, when other diseases kill millions of human beings? One could then respond, but what if we had reacted in time to the spread of HIV/AIDS and prevented it from becoming pandemic, what if we had not reacted in time to SARS?⁹ And the discussion could go on for a long time.

Rather, one should note that almost all the animal and human health professionals we talked to considered that the fight against AI contributed, if not to the decisive improvement of human health and veterinarian systems, at least to some important improvements, especially in some specific sectors such as surveillance, cf. *infra*, or the care of acute respiratory diseases. As such, it was building on ongoing efforts resulting from other sanitary crisis (SARS, the BSE or mad-cow disease, the avian influenza

Center, 2008, p. 2-3, 33-35, <<http://www.steps-centre.org/PDFs/Avian%20flu%20final%20w%20cover.pdf>>, last accessed 31 October 2008.

⁸ Some new efforts have however been done recently to fight rabies. See the Center for Indonesian Veterinary Analysis (CIVAS), <www.civas.net>, last accessed 30 October 2008.

⁹ One interviewee made this parallel between preventing AI from becoming pandemic and the failure to prevent the spread of HIV/AIDS, interview, New York, August 2008.

outbreak in the Netherlands in 2003, etc.). This process also strengthened the global realisation that many of those systems still were or had become insufficient, and that their improvement, in many countries, was crucially necessary.

In this regard, some did not even see the fight against AI as “vertically oriented”, as its implementation increasingly included specific efforts to strengthen animal and human health systems. The recent strategic approach promoted by the major global agencies (FAO, OIE, WHO, UNSIC, UNICEF and the World Bank), and labelled “One World, One Health”, builds up on the lessons that they see as having emerged from the fight against AI. It proposes some kind of compromise between the vertical and horizontal approaches, acknowledging both that specific diseases requires specific resources, and that targeting specific diseases without supporting a long term capacity building of animal and health systems did not make sense. Indeed, it proposes to enlarge the fight against AI to emerging infectious diseases “with pandemic potential” and “other existing infectious diseases that are transboundary in nature and that have significant socio-economic impacts”.¹⁰ Actions and programmes targeted at one specific disease would still take place and be encouraged, but they would be complemented by vertical efforts to support capacity-building of animal and human health systems – including surveillance, control and pandemic preparedness capacity – and a strategic effort to improve coordination and cross-sectoral learning between the animal health, the human health and the wildlife sector, and programmes targeted at different diseases.

If such an approach is extremely promising, it may however have one crucial drawback, as the focus on AI, as a very specific disease, exerted a very specific attraction for a wide range of actors. It is not obvious that this specific attraction may be enlarged to other emerging diseases, even if they imply a strong pandemic risk or a strong socio-economic impact (cf. *infra*).

¹⁰ FAO, OIE, WHO, UNSIC, UNICEF, the World Bank, “Contributing to One World, One Health. A Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystem Interface”, Consultation document, 14 October 2008, p. 20, < http://un-influenza.org/files/OWOH_14Oct08.pdf>, last accessed 30 October 2008.

COMMUNICATION

Communication has often been framed as one of THE major issues in the management of the AI crisis, like in any other risk/crisis management process. In a globalised and transformed media environment, where rumours and panic can spread easily, crisis and risk management requires an excellent understanding and mastery of communication tools and strategies. Unfortunately, many institutions are not used to having to mobilise such skills, such as the health and veterinary systems in less developed countries, or some international organisations with a technical mandate.¹¹ Even for institutions used to dealing with the communication aspect of any risk/crisis, communication remains a challenge that has to be dealt with in a sustained and improved way. Indeed, as underlined by Ping Yan Lam, from the Government of Hong Kong SAR:

One lesson to learn from previous outbreak crisis is: transparent, open, timely, accurate, consistent and updated information should be conveyed to the public during public health emergencies to gain public trust and gear up their support.¹²

Such a lesson has not always been easy to learn, or to implement. Furthermore, in the case of AI, the communication issue covers very different domains and questions: (1) Communication to the general public and/or to specialised groups, such as poultry producers; health care personnel, (2) Communication at different stages of the crisis, including pre-event risk communication, crisis communication, and post-event communication¹³, (3) Communication related strictly to the bird influenza or to more general pandemic preparedness. The state of existing knowledge was also an issue, as there was to be an agreement on the kind of messages that were to be communicated.

¹¹ One of our source at the WHO considered for example that avian influenza had highlighted the fact that more resources were needed to develop and improve specific communications skills/capacities, both institutionally (communication cells) and among staff members. Concerning the health systems communication capacities, UNICEF is now developing a programme to improve health information systems in several non EU European countries, where the health system is already robust, but maintains a top-down approach to communication ("The President talks to the media"). Interview, Geneva, October 2008.

¹² Ping Y.L, "Avian Influenza and Pandemic Influenza Preparedness in Hong Kong", Review Article, *Annals Academy of Medicine (Singapore)*, vol. 37, n° 6, June 2008, p. 493.

¹³ Such a phased approach is recommended by Ping Yan Lam, *op. cit.*

The transparency requirement

However powerful a state, administrative decisions taken at the Ministry level (and even laws voted at the legislative level) will have a very limited impact if they are not known and applied at all levels. What's more, even if those decisions are fully implemented, a large part of any efficient pandemic preparedness and response strategy will depend on the combined individual decisions of members of the public to respect behavioural guidelines, such as avoiding to join large group meetings, washing hands, or wearing a mask, that cannot be easily enforced by a health police, especially in a democratic state. The will of individuals to implement guidelines will then depend on the way they perceive the institution that is giving those guidelines. If the public trusts the institution, the institution's communication effort will be much more effective, and will have much more authority. To be trusted, communications should be transparent and accurate. Indeed, the risk with limited and biased communication is that, when proved wrong or insufficient, they will create distrust among the public that will affect its perception of future information emanating from the same source.

Keeping the plan secret?

This transparency culture is stronger in some countries than in others. In France, the first pandemic preparedness plan was kept secret. The Secrétariat Général de la Défense nationale (SGDN), a coordination secretariat for national defence issues under the French Prime Minister's authority, developed it and kept it secret, just as it did for all other plans geared towards the protection of national security. One reason for this was that the SGDN wanted to avoid panic reactions; it may also have been that it felt such a plan revealed the vulnerabilities of the French state in the management of such crises. Eventually the plan was finally made public, under the impulse of a growing number of individuals that felt that this was necessary to insure a smooth preparedness process.¹⁴ Once this was done, decision-makers realised that such a process had *de facto* enabled the mobilisation of the private sector (outreach capacity), and especially of those actors that were not part of the traditionally "critical sectors" (i.e. energy, telecommunications and transportation providers). Communication between all stakeholders in the public sector was also greatly facilitated as a result. This experience was thus seen as providing a strong lesson for the management of AI crises.

¹⁴ All Parisian interviewees but two mentioned this secrecy issue.

Scientific data, public data?

In Indonesia, a researcher explained to us that “not [all] scientific data can be interpreted as public data”. As part of his work in the sequencing of H5N1 genomes from Indonesian human cases and of his responsibility in alerting the Minister of Health in the case of the adaptation of the virus to humans or a change in its virulence or resistance, he knew that he could have to keep silent in case of a dramatic evolution of the virus: it was the sole responsibility of the Minister to decide what to do with the information he provided. To “avoid public panic”, “the government asks [him] to limit [his] contacts”, and as a result of this restraint, “so far [they] still trust us”. He added: “science is borderless but has to follow the rules”. As an example of this necessary caution, he mentioned a crisis that happened with Indonesian milk “one year ago”:

[During] a routine or periodical checking of the products of a milk factory [...] a group of scientists was trusted to do this study of samples of milk and tried to calculate bacteria that could contaminate in the milk, [using] international limit (scientific standard). The group obtained the data. [They were] young, first experience. They reported [their results] on the website and not to the Ministry of Health. In Indonesian language. The next week it was in the media. [It created] panic. [Even] CNN [reported it].¹⁵

When asked what he thought of this example, one of our French scientific sources, with experience working in public health for the French government, considered that it should indeed be up to the political level to decide what to do with public health information. He said that it was certainly better if the policy makers decided to communicate in an open and transparent manner with regards to this scientific data. However, he seemed to think that it should not be expected from the scientists to do so in such a sensitive domain, especially as much of the support and the trust of policy makers depends so much on the scientist’s capacity to manage sensitive data.¹⁶

Avoiding the panic

As the French and Indonesian examples show, it may be felt in many countries that avoiding panic reactions is the main objective of any risk/crisis communication strategy. Underestimating or denying the risks may then appear as a useful strategy; but this a short-term strategy, as the events, once acknowledged, may then come as a shock to which no one prepared oneself for, and endanger public

¹⁵ Interview, Jakarta, September 2008.

¹⁶ Interview, Paris, October 2008.

health or even national security. On the other hand, overemphasising the risk and the threat to scare and force people to prepare themselves can have a strongly negative impact, as it leads to panic reactions. The message should state clearly the impending risk and encourage the population to engage in preventive measures, without including extraneous information regarding negative outcomes. As such, the media buzz around avian influenza in 2005/2006 had at times an irrational impact on poultry consumption, and portends how difficult it will be to moderate panic behaviours in the case of an influenza pandemic (raiding of chemists' shops to get antivirals, stockpiling of food, stigmatisation of affected individuals, etc.). Even the routine efforts to encourage companies to prepare business continuity plans sometimes created mini-scares in companies suddenly being told that "when the pandemic comes, 50% of the people in this room will die".¹⁷ Finding the right balance in the way the message is delivered is not an easy endeavour, but is nevertheless essential.

The right message and the right vector for the right audience

Furthermore, communication is not only about keeping people out of the panic mode, or about sending a message that "there is a problem but we are in control", it is also about spurring people to play a role to prevent, prepare for, control or at least mitigate an epidemic. In order to do so, communication is also about "giving answers", spreading good practices, habits, behaviours; or as one source put it "communicate about the threat and change behaviour".¹⁸ The challenge here is then to have a clear idea about what the answers are – the right message, who they should be directed to – the right audience, and what the best way to make them heard and owned is – the right vector.

Devising a message in a cloud of unknown 'knowns' and unknown 'unknowns'.

When any new issue arises, there is always a lot of uncertainty about how to respond, and what should be said about it in the media. As several institutions are quasi-automatically called up by journalists to provide answers, the multiplicity of messages originating from different international, regional, national or even local institutions may create either a cacophony (no clear message can be heard), or an even stronger feeling of uncertainty within the general public, as uncoordinated or even contradictory messages are delivered. With the globalisation of the media, this phenomenon is even more difficult to

¹⁷ Discussion with a jurist from a pharmaceutical company, October 2008. Apparently, this is what the leadership of his company was told during some sort of "pandemic influenza preparedness meeting". Phone lines were then very busy with people trying to check if that was true.

¹⁸ Interview, Geneva, October 2008.

manage, as information circulates very quickly. Thus one issue that soon arose with AI was the necessary development and implementation of a coordinated communication strategy at the regional, national, and global levels.

This resulted in a *de facto* division of labour between the different global agencies involved, which was formalised in 2006. UNICEF managed to carve out a central role for itself within this communication issue, at least towards the general public (UNDPI would also play some role but it has a very limited visibility).¹⁹ It apparently developed, for this specific purpose, specialised expertise in the field of communication, and particularly children vaccination and hygiene campaigns, with the support of targeted funding from the Japanese government. One weakness with the UNICEF's endeavour was that the UNICEF team possessed no technical expertise on AI, although such an expertise was critical in elaborating the message to be delivered to populations. It was informally understood that such expertise would be provided by the technical international agencies – FAO, OIE and WHO –, by means of a coordinated endeavour to devise a simple message, which would be disseminated by UNICEF to populations. It rested, regarding AI prevention, on four key verbs: wash, separate, cook, report.²⁰ Eight key messages were also developed for pandemic preparedness.²¹

The process of adapting the message to the evolving knowledge around AI seems to be quite challenging, as it requires a consensus among all agencies on the key messages to be distributed to the general public. For example, in Indonesia, the message “bury”, or worse, “burn” the ill poultry, which was relayed to the populations, risked preventing the surveillance team from testing the carcasses upon arrival on the site of an outbreak.²² Integrating such feedback from the operational level within the communication message is a timely process because it implies the reaching of an agreement on the new message to be delivered and the re-production of all the communication material – internet websites, leaflets, posters, TV/radio ads, movies, story books for children, etc. – that had already taken some time (and some money) to be produced.

¹⁹ The UNDPPI was mentioned only in one interview, at UNSIC, New York, 2008. Its visibility on the web is also limited: the website www.undpi.org does not even explain what UNDPPI is.

²⁰ WHO/FAO/UNICEF ad-hoc meeting on behavioural interventions for avian influenza risk reduction, “Summary and recommendations”, 14-16 March 2006, <http://www.unicef.org/influenzaresources/files/WHO_FAO_UNICEF_AI_March_2006_adhocsummaryreport.pdf>, last accessed 30 October 2008.

²¹ “Wash, Inform, Stay apart, Etiquette (preparing for the epidemic) & Care, Assess, Rest, Evaluate (Surviving the epidemic)”, WHO/UNICEF Informal discussion on behavioural interventions for the next influenza pandemic, “Summary and recommendations”, 12-14 December 2006, Bangkok, <http://www.unicef.org/influenzaresources/files/WHO_UNICEF_API_Mtg_Bangkok_Dec_06.pdf>, last accessed 30 October 2008.

²² Interview, Jakarta, September 2008.

Targeting diverse audiences

One further problem is that when the message becomes too general, it cannot be applied to a specific situation anymore. For example, the “survive an epidemic” message insists that one should “stay home”, the hypothesis being that antiviral drugs and vaccine will not be available or in sufficient number, and that the health system of the country will not be able to cope, the hospitals contributing to the spread of the epidemic rather than its containment. However, human H5N1 cases in Indonesia have shown that one issue regarding the efficiency of antiviral drugs may be that delay in treatment decreases their efficiency.²³ Thus the message distributed by the Indonesian health authorities could reduce the chances of survival of H5N1 victims.²⁴ In the pre-pandemic phase, encouraging the patients to go to health care facilities immediately after contracting the virus would also contribute to a better surveillance. Access to timely antiviral drugs might be a strong incentive in this regard. The question of whether sufficient stocks exist depends on the country’s capacities to ensure stockpiling and distribution, and on the virulence of the virus – which has an impact on the number of people requiring treatment.

There is also a strong need to agree on the message disseminated to make sure that there are not too many discrepancies between the messages, especially between neighbouring countries. Questions regarding the closing of schools for example need to be consistent between neighbouring countries.²⁵ This said, the development of such key messages should also take into account local specificities, related to the outbreak itself, but also the social, economic and political characteristics of a given country, and their impact on the way the message will be owned and implemented. Such an understanding of the specific situation of a country also implies understanding how the press is perceived by poultry farmers or specific communities, or what specific rumours could impede the efficiency of prevention, surveillance and control programmes. Such research has been pursued, in the case of Indonesian poultry farmers, by anthropologists Siwi Padmawati and Mark Nichter.²⁶

Regarding the targeting of specific audience, a second issue is the distinction between two types of targets: the general public and specific communities. UNICEF was sometimes criticised for spreading messages that were too general and had a limited interest for specific communities having to deal with the disease in poultry or human populations. The UNICEF responded to this criticism by emphasising the

²³ InVS (Institut de veille sanitaire), “Résistance à l’oseltamivir de souches A(H5N1). Asie du Sud-est, Egypte”, 4 juillet 2007, <http://www.invs.sante.fr/international/notes/h5n1_oseltamivir_asie_040707.pdf>, last accessed 30 October 2008.

²⁴ Interview, Jakarta, 12 September 2008.

²⁵ Interview, Paris, October 2008.

²⁶ S. Padmawati, M. Nichter, “Community response to avian flu in Central Java, Indonesia”, *Anthropology and Medicine*, vol. 15, n° 1, April 2008, pp. 31-51.

need for the message to be simple in order to be understood by as large an audience as possible (including backyard poultry breeders), and the specific role of technical organisations, such as WHO, FAO, OIE, in disseminating specialised information and targeting specific groups.²⁷ In this regard, FAO has worked closely with the Ministry of Agriculture and the poultry sectors in Indonesia and other countries. In France and in Indonesia, the Ministries of Health made a special effort to inform and train health professionals in all sectors about avian influenza, in an attempt to promote a quicker response in the case of an outbreak of this disease. Such endeavours are not always as successful as expected.²⁸ A problem that might arise, in turn, in a targeted communication strategy, is the uncoordinated proliferation of advisers and training initiatives, which can limit the efficiency of this communication.²⁹

Using the right vector

This discussion illustrates how crucial, and yet how difficult it is to choose an adequate vector to provide the right message to the right audience. There is a general agreement that the communication efforts that were made in Indonesia were efficient, and anthropologists did note a change in behaviour in 2006. The challenges that arose related more to the way the information provided was interpreted. According to Siwi Padmawati and Mark Nichter,

Women deemed it safer to purchase live birds and have them slaughtered by a butcher for a small fee than to purchase a dressed bird, although contact with a live bird might actually place them at more risk for avian flu.³⁰

A source mentioned that some women, applying thoroughly the “cook” message, actually “cooked the chicken five times”.³¹

Communication is therefore not only about devising the right message for the right audience in order to avoid causing a panic. It is also about finding the right vectors to spread the message and respond in a timely manner to all misinterpretations that may result from problems with the message delivery.

²⁷ Interview, Jakarta, September 2008; interview, Geneva, October 2008.

²⁸ Interview, Jakarta, 12 September 2008; interview Paris in October 2008.

²⁹ Interview, Geneva, October 2008.

³⁰ S. Padmawati, M. Nichter, *op. cit.*, p. 38.

³¹ Interview, Jakarta, September 2008.

SURVEILLANCE

There is a general agreement that animal and human infectious disease surveillance capacity has largely improved as a result of the fight against avian influenza. This area was indeed very quickly recognised as one where more capacity had to be developed. Of course, as always, some challenges are still to be dealt with.

Why improve the surveillance system?

In many countries where the disease is today endemic, the disease became endemic because the existence of the AI virus was not detected, acknowledged or responded to quickly enough. Surveillance systems are crucial but not the only actors contributing to the detection of the disease. National systems, where they belong to or interact with transnational surveillance systems, create a strong incentive for states to acknowledge the emergence of the disease, react to it and control this information before it starts spreading in the transnational surveillance networks – as happened in the case of the SARS outbreak. Time lost to acknowledge an epizooty or epidemic is time lost to mobilise, prepare and control the outbreaks.

Global surveillance, a strong improvement

As a result of efforts taken prior to the fight against AI, there are now more and more surveillance systems at the global level. Some have been developed by international organisations, like the GOARN; some are the result of efforts made by non-governmental organisations to create a platform to exchange data, information and comments between surveillance experts, such as PROMED; others are tools using open-source information drawn from the media, such as GPHIN or HealthMap³², which maps information provided by Internet and the media. Some systems are more active than others, and imply a verification capacity. At a very basic level, this means personal contact with local actors to obtain their version of the event (which may not always be really reliable, depending on the existing level of trust and transparency). At the most developed level it requires a capacity to deploy rapid field evaluation missions to verify clinical symptoms, do epidemiological research, collect samples when possible, and dispose of a

laboratory backup to analyse samples – this is the case of GOARN for example, a tool of WHO that builds on a strong network of national partner institutions. Interesting devices are also the frameworks allowing for systematic exchange of information between two or more organisations, such as the FAO/OIE OFFLU network, or the GLEWS (FAO/OIE/WHO Global Early Warning System). Some interesting systems have also been developed at the regional level, such as the ECDC surveillance work; WHO MZCP Mediterranean Zoonoses Control Programme; or the MECIDS – Middle East Consortium on Infectious Disease Surveillance-, and the Mekong Basin Disease Surveillance Network, two systems supported by the Washington-based NGO NTI – Nuclear Threat Initiative.³³

Those systems (and only a few of them are mentioned here) create a venue for the dissemination of information that may in the end give way to strong public scrutiny and distrust if it shows that countries who have signed the International Health Regulations fail to report grave disease outbreaks and inform and prepare their populations. However, this proliferation of systems is useful only inasmuch as those systems communicate with each other and strengthen existing national surveillance systems rather than pretend to replace them. This problem also exists at the country level, in some countries like France, where a strong and robust health system hides a myriad of institutions with surveillance capacities that can prove reluctant to work together.

At the country level, different approaches to surveillance systems

Using the Indonesian example, we will underline two existing approaches to surveillance systems at country level: the classic comprehensive, robust and top-down approach, and a more participatory bottom-up approach – of course, an ideal system integrates would integrate components of both approaches.

The classic comprehensive, robust and top-down approach

Ideally, “the classic comprehensive, robust and top-down approach” necessitates a very strong system with a strong chain of command that goes from the Ministry level to the village level and possesses:

A field capacity to detect and report diseases in a systematic way. It involves the majority of animal and human health professionals.

³² <www.healthmap.org/en>, last accessed 30 October 2008.

³³ <www.globalhealthandsecurityinitiative.org>, last accessed 30 October 2008.

A central reaction capacity: when an alert arrives, a verification and support team composed of clinicians, epidemiologists, virologists, communication specialists, etc. is sent in the field. Its role will be to provide healthcare support, detect patterns of infection, take precautionary measures to protect the community, and collect samples for diagnosis and research (ideally, when possible, rapid diagnosis in the field).

This central reaction capacity will also ensure that, in accordance with international regulations (WHO-IHR and OIE standards), disease outbreaks that have to be notified are notified to the WHO and/or (for animal diseases) to the OIE World Animal Health Information Database (WAHID). Communication and cooperation with neighbours, or at the regional and global levels, will also strengthen this response process.

In the background, support capacities should cover a strong human healthcare system (specialised hospitals, capacity to provide pharmaceutical options, etc.) as it creates an incentive for detection. In the animal health sector, insurance, compensations, vaccination, strong veterinarian support in the long term are possible incentives.

They should also cover laboratory capacities for diagnosis (case confirmation but also surveillance of the virus evolution), research, and development of new pharmaceutical options (vaccines and drugs). Time is a crucial factor in the management of pandemics, and having to rely only on the capacities of international laboratories whose surge capacity is limited may result in enormous delays, as well as the emergence of technical issues (transport authorisations, respect of the cold chain during transportation, etc.). National or at least regional capacities have to be developed, but they should respect international biosafety and biosecurity norms, and work in a way that promotes an efficient and rapid global surveillance.

Indonesia is a complex country; like the US, or Nigeria, it is a federal state, where health responsibilities are decentralised, but where the issue of health, at least in the human health sector, has a national dimension. Indonesia is also an intermediate state as it has, especially in the Sumatra centre, capacities that mirror those of a developed state, but also very serious poverty and capacity problems, which are typical of developing states. It therefore aims at creating a surveillance system that has all the characteristic of the model presented above, but faces many problems to do so. To mention only the human side of these challenges, as the human health sector is the most developed in Indonesia:

At the field level, access to health care is very unequal. Even if Indonesia is currently making a strong effort to increase access, for example by limiting the cost for poor people, only the most serious cases will be detected in the end, as they finally are directed to hospitals. Even in more developed countries, access to health care facilities involved in detection (often hospitals) can be a problem as some segments of the population are denied access for legal (illegal migrants) or economic reason (no free health care/ salaries not paid when ill), or prefer to go to private practices that are not involved in the

detection system. For that matter, Hong Kong decided to extend its network of detection to private practices³⁴. Indonesia also trains private practitioners and small health care facilities so that they can detect, report and provide first care to AI patients. But in all countries, including the most developed ones like the US or France, efforts should be made to make sure that the excluded do not become the “missing link” in the propagation of tomorrow’s pandemics.

One issue is also the communication capacity between the field and the rest of the chain of command. GPS and internet systems provide very interesting technical solutions but they have a cost (even if a limited one) and imply some level of technical and maintenance know-how. In some areas private companies are brought in the systems as voluntary benefactors, but this may not be a sustainable option everywhere.

In terms of rapid verification and reaction capacity, one problem faced by many developing countries is the problem of physical access to outbreak sites, as sufficient infrastructures such as transportation facilities may be lacking. There is also an issue with experts, as countries rely on a limited pool of international experts for support. Indonesia addressed this issue by putting in place joint animal and human health rapid teams, but progress, like everywhere, can still be made.

Indeed, it seems that Indonesia chose to invest in priority in its laboratory capacities, as its primary surveillance tool. We will go back in more details on this later, but regarding surveillance itself, such a development was positive as it strengthened Indonesian diagnosis and research capacity. On the con- side, it may have impacted the rapid verification and response capacity as efforts to strengthen rapid field diagnosis capacity were resisted as “less valid” than laboratory diagnosis. Indonesia is also famous of course for its refusal to share human samples of H5N1 with WHO after 2007 (cf. infra), thus weakening worldwide surveillance and research capacity. There is no doubt that laboratory capacity developments are required worldwide to support global surveillance efforts, and this explains and legitimises the OIE’s efforts to strengthen the development of laboratories capacities in the South.³⁵ However, such a capacity should not be relied on as the only or primary surveillance tool.

As such an ambitious surveillance system was often difficult to put in place, other options were looked at to compensate its weaknesses:

³⁴ Ping Yan Lam, *op. cit.*, pp. 492-3

³⁵ OIE Certified Laboratory Twinning Projects: <www.oie.int/download/LABREF/A_Guide.pdf>, last accessed 19 January 2009.

A more participatory bottom-up approach?

Such an endeavour took place in Indonesia, regarding the animal side of the disease. The animal health system in Indonesia is much weaker than its human equivalent. The central state has a very limited capacity and public veterinary services have suffered from restructuring programmes promoted by the IMF and the World Bank in the 90s, and more generally from a decreased status in the Indonesian Ministry of Agriculture, where commercial interests have tended to take precedence over public health ones. Furthermore, the policy capacity of the Indonesian state in the poultry sector is very weak, as the state's involvement in this sector is fiercely resisted (for tax evasion reasons, but also for lack of trust). Thus, the Indonesian state has a limited knowledge of the poultry sector; some private veterinarians do not report the AI outbreaks when they are called to deal with them in the commercial sector; in the non-commercial sector contact with the veterinarian system is minimal and there is no incentive to report cases. Faced with this reality, FAO has tried to develop a participatory bottom-up approach, the PDSR (Participatory Disease Surveillance and Response Program), building on the initial PDS model developed for rinderpest control in Africa.³⁶ In May 2008, a network of more than 2000 PDSR officers³⁷ covered a large portion of the territory and supported the work of the 31 provincial level LDCCs (Local disease control center, there are 33 provinces in Indonesia). To gain support at the village level, participatory approaches were adopted, which were more consensual and voluntary in form; and focused on the protection of the village rather than its stigmatisation. As a result of this effort, surveillance efficiency increased and more outbreaks were detected, but the control side of the epizootic remained problematic (cf. infra), and the integration of the commercial poultry sector in this system remains an issue to be solved. Another problem of this system is its sustainability, as its integration into the state system is not perfect³⁸ and as its funding is not guaranteed in the middle term (it is supported by the US, Australia and Japan). As the programme is transformed into a more comprehensive and efficient system focused on very specific provinces, it may lead to a decrease in the surveillance capacity and efficiency. A solution would be to ensure financing of the PDSR effort by the central and local governments, and extend its scope to make

³⁶ Interviews, FAO, Jakarta, September 2008. There used to be two different branches of this programme, PDS and PDR, but they are now integrated.

³⁷ FAO, "Indonesia. Empowering communities to prevent and control avian influenza", Avian Flu: FAO in Action, ECTAD – Emergency Centre for Transboundary Animal Diseases, May 2008, http://www.fao.org/docs/eims/upload//244418/news_faoinaction_may08.pdf, last accessed 31 October 2008.

³⁸ Even if one should note that LDCCs and PDSR officers can be presented as an integral part of the Indonesian Ministry of Agriculture AI control system, as in this figure: Direktorat Jenderal Peternakan Departemen Pertanian RI, "Organizational Structure of Avian Influenza Control of the Ministry of Agriculture", 2007, in "Campaign Management Unit", *PDSR Newsletter*, 4th edition, December 2007 – January 2008, p. 5, < http://www.un.or.id/upload/xdocs/fao_moa_pdsr_newsletter.pdf>, last accessed 31 October 2008.

it a participatory veterinary service for the prevention, detection and control of all animal diseases (to keep the country free from the foot-and-mouth disease and fight against rabies for example). What could then emerge would resemble classic surveillance systems, except that new participatory tools would aim at facilitating the relationship between breeders, the veterinarians and the central and provincial states.

The Challenges

Development of national and global surveillance systems can be impeded by a set of challenges, some of them being:

The cost and therefore the sustainability of such efforts. Even a less ambitious, more participatory surveillance system, with strong regional and international support has a price. The more a national system depends on external support, the less sustainable it will be, even though some level of external support will be key to its development and sustainability;

There is also a human resource problem. Pools of experts are limited. To be up to the task they need sufficient incentives, including financial ones. Involving a sufficient amount of health resources that are not specialised in surveillance efforts is not always an easy task, especially in a lasting way. Specific capacities are required to look for the matchstick lost in a bundle of straw. And with time, there are some risk of a looming fatigue with surveillance.

The filters used for detection narrow the detection capacity. There will always be “detection grey zones” where no health system, no information or interest for any animal or human health issue will enable the outbreak to be detected. As a rule, where there is not much surveillance, there is not a lot of detection, and problems may arise without warning. In Africa not many AI cases have been detected, and it might just be because there is not a sufficient detection initiative.

Incentives for reporting: for individuals or countries to report and contribute to surveillance efforts, incentives are needed, be they positive – better access to care options, to international trade, financial compensation mechanisms, etc.-, or negative – strong impact on livelihoods and human health, etc.

Developing detection capacity when similar diseases create similar clinical symptoms is not always an easy task and requires specific training and diagnosis capacity. This was a problem between AI and the Newcastle disease (Vaccines against Newcastle disease exists and should be used more widely). It may also be a problem in some countries between malaria and other hemorrhagic fevers.

A failure of detection does not always mean a failure of the system. A surveillance system is devised to detect a certain type of problem. If another sort of problem emerges, for which the system does not have the right detection toolbox, it will not be able to detect it. Learning from its mistakes, the system can then use new indicators (such as the number of hospital deaths).



Political action: Even by doing so, if the policy-makers refuse to take into account the alert and to act upon it, any system, however efficient, will be useless. Surveillance systems are no silver bullet against health emergencies; they are useless if they do not result in a successful control of the epidemic.

EMERGENCY VERSUS DEVELOPMENT

The fight against AI required emergency measures to control outbreaks, from the threat, to the risk, to the crisis. This required capacities to respond rapidly to the outbreaks that were not always very developed in international agencies (and in the international system, in general) more used to work with a developmental, long term³⁹, and sometimes very bureaucratic mode. As we will see, such crisis management capacities cannot be improvised; but require a sustained financial and institutional effort, and a clear framework of action.

Building efficient programmes in an emergency mode?

However, as the fight against AI was fought in countries where any control strategy required a long term effort to build up animal and human health systems capacities, short term emergency measures proved to be insufficient on their own. But since the global effort was framed as an emergency effort, most funding was short-term, emergency-type funding. Such funds had to be spent in a rapid way, and were not meant to be kept up in the middle term; they were therefore not adapted to address a medium or long term development effort.

The USAID funding for the Indonesian FAO PDSR programme was such emergency-type funding, which had to be re-negotiated every year.⁴⁰ On the one hand, it allowed for faster, more efficient, less bureaucratic management of the programme. On the other, action was hampered, each year, during the transitional period in which agreement had yet to be re-negotiated at the national level. Hadn't the FAO been able to provide funds to fill in this funding gap in USAID's action, the FAO PDSR programme could have collapsed. Thus financing surveillance and response programmes with emergency funding can have a vulnerabilising effect on such programmes.

Another drawback of the emergency mode of action is that it opens up opportunities for the recycling of old and failed programmes. Material (even laboratory equipment in a specific case we were told about)⁴¹ is sent to the recipient country without prior knowledge of the needs for such material on the ground, or the absorptive capacity of the recipients (in this case, the donor subsequently agreed to send someone to

³⁹ For a very interesting exposition of this tension between emergency requirements and a de facto development culture, see Ian Scoones and Paul Forster: I. Scoones and P. Forster, 2008, *op. cit.*, pp. 2-3, 33-35.

⁴⁰ Interview, Washington D.C., July-August 2008; interview, Jakarta, September 2008.

train the laboratory personnel to use it). Experts or consultants can be sent in a disorganised way, burdening all the management process; they will ask questions and collect data previously collected by local actors, rather than share the expertise that they are supposed to have, and they do not stay long enough to understand the country they are dictating the policies or the INAP (Integrated National Action Plan) to.⁴² One may also question the relevance of a very strong focus on strategic plans when the capacity is lacking to help implement them (to be very provocative, are INAPs the brothers of PRSP, poverty reduction strategy plan?): INAPs are necessary, but if they are not implemented, tested, and improved, they are useless. Of course such failures only represent a small proportion of the global international cooperation effort to fight AI. Furthermore, one should note that some INAPs were the result of an impressive joint effort, provided by a network of organisations. In Africa for example, INAPs received funding from the EU and guidelines by ALive platform⁴³, they were jointly developed by experts from the FAO, OIE, African Union/Interafrican Bureau for animal Resources (AU-IBAR) and World Health Organization Regional Office for Africa (WHO/AFRO), and implemented through a collaboration between ALive and GF-TADS. But when INAPs result from an emergency mode of action, they are not always able to act upon their shortcomings in time. Such failures have to be acknowledged and dealt with in order to avoid them in future global management of health and environment crisis.

Sustained development of rapid reaction capacities

Rather, following the model of the EU, one should provide long term financing and a clear framework of action for emergency capacities to detect, respond and control infectious diseases. In the EU the DG SANCO (Health and Consumption) can respond to animal infectious diseases within the EU in an emergency and timely mode because it has been given the legal and financial framework, as well as the power to do so, and because EU members all have sufficiently robust veterinary systems that can be relied upon. Crisis management is something that one needs to prepare for continuously, not something that can be improvised to respond to emergency needs. Improving the response capacity is a long learning-by-doing process, as the history of the DG SANCO shows: it was set up after the BSE crisis, in 1998, to insure that animal health risks would be taken cared of from a public health perspective at the

⁴¹ Interview, Jakarta, September 2008.

⁴² Personal analysis based on personal views developed during interviews, including in Jakarta, September 2008, and confronted with personal research on development and post conflict issues. I have a lot of respect and admiration for all the consultants and advisors whom I met during this research and none of them belong to this small percentage of consultants who are not up to the task or are just too caught up in the system to compensate for its failings.

⁴³ A partnership and multi-stakeholder platform for African Livestock Development.

EU level (rather than from an agricultural or trade perspective only). And its response capacity has improved with each new animal health crisis.⁴⁴

Even if the international agencies like WHO, OIE and FAO strengthened their emergency response capacity (with GOARN for WHO and the FAO/OIE CMC-AH, Crisis Management Center – Animal Health⁴⁵), it is easy to criticize them for not being rapid, large and efficient enough, as long as they are not given the means to do so. Even if they can always improve their procedures, their response capacity, their efficiency, they can do so only inasmuch as they receive sufficient support and funding from the members to do so. Furthermore, even if such a financial effort was provided, two problems would remain. They would still only be able to provide support to existing national animal and human health systems, and not to replace them, and would be inefficient as soon as the epidemic or epizootic would reach a certain level (except if a strong surge capacity was put in place, but with what human and financial resources?). And they would lack any strong incentive system to force countries to cooperate (unlike DG SANCO with EU Member States).

As with any crisis, in the fight against AI, the relationship between emergency response and long term effort is always a sensitive and difficult one. There is no doubt that responding to transborder diseases requires a rapid reaction capacity to control the outbreaks, but it also implies a long term effort to develop this reaction capacity and to develop the health systems required to make it work. Even firemen have structural costs.

⁴⁴ Interview, Brussels, October 2008.

⁴⁵ See FAO, CMC-AI, "Rapid Response Missions. September 2006 - April 2008", <http://www.fao.org/fileadmin/templates/tc/tce/pdf/CMC-AH_Rapid_Response_Missions_Apr2008.pdf>, last accessed 31 October 2008.

RESEARCH

Often, the fight against AI is narrowed down to a cooperation framework designed to help those countries that need it to prevent, detect, respond and control the influenza virus, and prepare to a coming pandemic through a cross-sectoral effort. A significant part of the effort is often underestimated, or lacking in visibility: the research effort. We will not here give a detailed analysis of all the research done in the AI or related fields, but will only highlight a few facts and issues. Two main and highly visible actors in this field are the EU and the US. The European Commission considers that it has spent 65 millions euros in influenza research projects from 2001 to 2007, plus 40 million euros on “large projects on viral or infectious diseases in general”.⁴⁶ If those two actors have a major influence on AI-related research, many other countries and institutions are contributing to this effort, and their efforts must be appreciated, recognised and acknowledged.

Building a global research strategy, the pro and cons.

One issue that has arisen during the global fight against AI is the multitude of initiatives that at times lacked cohesiveness and coherence, and resulted in duplications and wasted resources. Of course this may also be the case in the research field, as many actors were rushing and battling to be the first to develop new types of vaccines, including the silver bullet vaccine that would protect against any sort of influenza virus (but has not yet been found, sadly). Some actors may have been criticised for their lack of a research strategy that would have contributed to the organisation of the research field, at least at the margin. While the US seem to have had a clear strategy guiding its research grants attribution process, the EU Commission was rather slow to do so, but then realised that even if it had not “written” influenza as one of its specific research strategies, it had already funded interesting projects in this field since 2001.

Having a strategic approach to research has the advantage of making visible the gaps in the research, and thus dedicate special resources to these areas. Should one then try to develop a global research strategy? We think that such an endeavour would be counterproductive if it implied a fully coordinated and organised research effort. As several types of actors contribute to different types of research (WHO was mentioned as a donor for specific research projects by one of the Indonesian researcher we interviewed;

⁴⁶ J. Ptočnik, M. Kyprianou, “Commissioners’ Preface”, in European Commission, *Influenza Research, EU Funded Projects 2001-2007*, 2007, p. 3.

the FAO, amongst others, contributed to interesting research on the AI impact on livelihoods⁴⁷), and in different ways (the EU Commission for example is very efficient at providing the framework for multinational cooperation endeavours, including between institutions from the EU and from developing countries), one can hope that gaps will be identified and at least partly responded to.

Communication rather than coordination

To facilitate this process, good communication links have to be established and active between all stakeholders. Competition is rife, over prestige issues (who will be the first to publish this or this major result?), the future of the institution (need to get the necessary funding to develop and sustain the existence of the research institution), but also business opportunities (development of new pharmaceuticals markets). However, research cannot exist without scientific exchanges, and it is a highly interactive process. Keeping research networks alive in time is key, as is the necessity to keep the doors open between national and international research systems. Of course, any global effort does not have any sense without ongoing and improved research capacities in all countries, but those national research capacities, if left at the periphery of global research efforts, will dry out.

Stronger national research capabilities in all countries contribute to a stronger global research effort

Of course, the Indonesian case is the example of this process. The Indonesian research capacity strongly benefited from its interaction with other research systems, for example in Australia, France or the Netherlands, and all the researchers we met had had some training or experience abroad and were members of several specialised regional, international, or American medicine associations. As such, they had the feeling of being members of strong international networks of peers, and some even saw themselves as the depositaries of a transboundary professional ethic. However, the AI crisis and the issue of virus-sharing had resulted in a very sensitive situation for them, in which their contact with their international peers had to be restricted, and a trust issue had emerged within the scientific community. They regretted this situation but commended the effort of the Indonesian Health Minister to strengthen Indonesian research capacity, and shared the perception that Indonesian research capabilities had been seen as inferior to those of their international counterparts. At least one researcher we met seemed eager to prove that Indonesian researchers had the same capacity level than their international counterparts, and were for example capable of synthesising the H5N1 virus using open-source data on

⁴⁷ J. Hancock, G. Cho, "Assessment of likely impacts of avian influenza on rural poverty reduction in Asia: Responses, impacts and recommendations for IFAD strategy", *IFAD Occasional Papers*, n° 6, 2008.

the virus (as they had no authorisation to access/use the existing human H5N1 samples for research).

Such a desire to be recognised can be frightening, but also calls for respect.

As a member of the Indonesian Health Minister told us:

If we can make our own vaccines, [our own] Tamiflu, we need this high technology. [We do not need] promises, promises. We love action. [The rest] we call it NATO – no action talk only. [Some countries, “not all countries!” say] “We send experts”. [But they] keep asking, asking, not helping. Grants are used to pay experts salaries. Compared to our salaries, [it is] the earth and the moon. The grants are returned back to them. They come to take data. And then [they publish a] paper in Lancet, good journals. We are the ones doing the work. We [just] don’t know how to write English.⁴⁸

Of course, Dr Erna was being provocative consciously, especially considering that she published an article in *The Lancet* with some of her colleagues the month preceding our interview.⁴⁹ But she finely underlines one of the structuring lines of the global fight against AI that is the tension between developed and developing countries over the methods use to manage the crisis. It is not easy for developing countries confronted with the AI virus and having great difficulties controlling it to see their efforts and their specific expertise recognised rather than merely stigmatised as insufficient, and to be treated as passive recipients of an international support that is sometimes not up to the task either.

⁴⁸ Interview, Jakarta, 12 September 2008.

⁴⁹ N. Kandun, E. Tresnaningsih, W.H Purba, V. Lee, G. Samaan, S. Harun, *et al*, “Factors associated with case fatality of human H5N1 virus infections in Indonesia: a case series”, *The Lancet*, vol. 372, n° 9640, pp. 744-749, 30 August 2008.

NORMS AND GUIDELINES: DEVELOPMENT AND IMPLEMENTATION

The issue with the role of foreign experts in developing countries affected by AI hides a larger issue: the creation of global norms and guidelines, and their implementation at the national level. At first glance, foreign experts may be perceived as the pivotal link ensuring the implementation of global norms and guidelines. We were surprised to realise, during our research, that the normative role of WHO and OIE was undisputed, and recognised as essential by most actors. However, discrepancy emerged in the way stakeholders perceived that those norms and guidelines, developed by WHO and OIE, should be implemented. Many seemed to consider that those rules had to be adapted to the local situation, and it was not very clear whether OIE and WHO should have a specific role in controlling the way those norms were implemented. While OIE has developed a very interesting approach to contribute to help its member-states implement the norms they have enacted, it is far from obvious that the WHO is in a position to do so.

Developing norms and guidelines against AI

OIE and WHO are seen, in an indisputable way, as the key normative agencies in the fight against AI. OIE sets the international standards, guidelines and recommendations on animal health and zoonoses that are used as a toolbox to prevent and control avian influenza, and which help define how trade regulations towards AI infected countries have to be implemented. Zoning and compartmentalisation, accompanied by proper surveillance, as recommended by the OIE's Terrestrial Animal Health Code, offer the possibility of limiting trade restrictions to specific affected regions, allowing export to continue in "AI-free compartments". In the EU, these concepts are seen as being extremely important as more and more, some countries consider that the EU is one trade entity only, and so as to distinguish trade export policies towards Spain and France for example.⁵⁰ This rule also bore significance for the relationship between Singapore and Malaysia, as Singapore is heavily dependent on exports of Malaysian poultry goods, and as Malaysia was faced with AI outbreaks in some of its regions. It was thus decided that Singapore would help Malaysia establish AI free compartments in specific regions where strong prevention, surveillance and control measures were implemented.⁵¹ In Indonesia, the establishment of

⁵⁰ Interview, Brussels, October 2008.

⁵¹ H. Keong Leong, C.S. Goh, S. Thai Chew *et al.*, "Prevention and Control of Avian Influenza in Singapore", *Annals Academy of Medicine Singapore*, vol. 37, 2008, pp. 505-506.

such AI free zones was also an objective, and one which seemed of utmost importance considering the need to preserve tourism, in the Bali island particularly.⁵²

As OIE rules are voted by the head of the governmental representative of member countries and territories, who is often the head of the veterinary services, they are perceived as being legitimate both politically, and scientifically/ technically. Furthermore, they are recognised as international standards by the World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement).⁵³

WHO also plays a strong norm-setting role. WHO's approach to norm development is different from OIE's, however. Some of its norms, grouped under the recently expanded IHR (International Health Regulations) category, have been agreed to by all member states, which gives them a solid status and a strong implementation potential. Others norms are softer, and the result of an interactive process between stakeholders and experienced member-states practitioners. Such processes can be long and cumbersome because of the numerous meetings required to reach an agreement/consensus, but they ensure, through their participatory framework, good ownership of the norms by member states' health experts.

⁵² Interviews, Jakarta, September 2008.

⁵³ See "The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) ", <http://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm>, last accessed 19 January 2009.

As soon as there is a crisis, we have a meeting, a videoconference with around twenty worldwide experts to see what we're up to. Not easy. We have a role in policy, we give recommendations to states (how to survive, which treatment for patients). If it is generic, they adapt it. If not, they apply it. That is the case for laboratory guidelines, for the clinical care of H5N1. It takes many hours. We bring together all the doctors who care for the patients. We ask ourselves how, why some died, survived. It is a lot of work, they are few cases. Not enough to be 100% sure. The doctors in the field are the ones who have the information. We generate a dynamic to put together the information. In one country only, like Egypt two years ago, there are too few cases to make conclusions. [...] We meet a lot. It is very important because information could not be accessed without that. We have a clearer vision, all together. We had a meeting in Verona recently to discuss the virus and whether there is an increased pandemic risk. There are a lot of discussion but we need people from the country. In scientific publications, there are only the certitudes. Not the doubts.⁵⁴

On the country level, at least one Indonesian expert that we talked to mentioned that Indonesian doctors also contributed, with their specific field expertise, to the WHO norm setting process,⁵⁵ illustrating the importance of including local knowledge in the constitution of global norms, to insure the quality of the norms but also to contribute to local ownership and implementation. As we will see, however, countries with a higher level of expertise may consider their own SOPs (standard operating procedures) or expertise as superior.

Adapting norms to local situations? To what extent?

Many people we met actually said that norms and guidelines were made by WHO/OIE, and then adapted to the specific local or national situations. But "adaptation" can be done in a more or less liberal way, and the "adapted implementation" actions can, in some cases, be very far from the original norm. Sometimes, what is considered as international standards may not even exist.

Culling, for example, proved to be a very difficult endeavour in Indonesia. Faced with this failure of the transplant of global norms to a local situation, actors from the Ministry of Agriculture and the Jakarta FAO team proposed a strategy of least resistance, a very pragmatic approach that was less sophisticate but

⁵⁴ Interview, WHO, Geneva, October 2008.

⁵⁵ Interview, Jakarta, October 2008.

workable in the existing situation: cull the infected flock and put the village flocks into quarantine during two weeks to detect and contain other potentially infected chickens. Such a solution could gain support from the villagers, by protecting their flocks from being culled or from being infected, but it was perceived as being against "OIE's culling rule".⁵⁶ However, if the OIE recommends the depopulation (or culling) of infected flocks, it does not establish a mandatory radius in which to carry this out. The latter has to be determined by local factors; there is therefore no "OIE's culling rule" as such.⁵⁷ In 2004, in other Asian countries where a culling radius was enforced, its exact size varied greatly.⁵⁸

The implementation of WHO norms varies. On the standard operating procedure (SOPs) for H5N1 patients clinical care, two of our Indonesian sources insisted mainly on the national effort made to develop their own standard procedures for AI. One told us that:

*Medical doctors of Indonesia have more experience than experts from other countries. [However] there is no standard procedures for AI. The treatment is based on experience with other respiratory diseases. Because the number of cases is limited, we are in a process of collecting data to establish standard procedures. In Jakarta there are two hospitals, they do not have exactly the same procedures. But they reach the same conclusion: failure of treatment is due to delay of treatment. [...] WHO has its own procedures. But locally they should be modified. We have our own procedures based on our experience. But WHO is willing to facilitate procedures.*⁵⁹

According to another one:

*The Indonesian government works on a book guideline on how to treat and care patient with AI. We are 100, so many. The Department of Health invites us to discuss and improve our treatments.*⁶⁰

In this process, WHO was presented as having a limited role.

On Laboratories Biosafety regulations, the situation is different depending on whether the laboratory is certified by WHO or not. Regarding the four "biosafety level 3" (BSL-3) laboratories in Indonesia, at least

⁵⁶ Interview, Jakarta, September 2008.

⁵⁷ Interview, Paris, November 2008.

⁵⁸ EMPRES, "Control Measure undertaken in Asia during the crisis", in "Special Issue, Avian Influenza", *EMPRES Transboundary Animal Diseases Bulletin*, n° 25, January-June 2004, p. 27, <[ftp://ftp.fao.org/docrep/fao/007/y5537e/y5537e02.pdf](http://ftp.fao.org/docrep/fao/007/y5537e/y5537e02.pdf)>, last accessed 1 November 2008.

⁵⁹ Interview, Jakarta, September 2008.

⁶⁰ Interview, Jakarta, September 2008.

two have had different ways of approaching biosafety norms, that was the result of specific and differentiated role in the management of AI. In one of them, WHO played a role in assessing the laboratory. The Ministry of Health, having refused to send samples to WHO, had to make sure that Indonesia could nevertheless carry out a laboratory diagnosis of the virus. It thus gave to two research laboratories the role of confirming the human H5N1 diagnosis. According to this source, in one of those laboratories,

in March 2007, a group of WHO scientists from headquarters and South East region [visited] the laboratory to assess its activities and they decided that Indonesia could [also] confirm diagnosis there.⁶¹

The other BSL-3 laboratory was built in 2006 with private funding earmarked for the fight against AI. WHO and US-CDC standards were used, but there was no external control by WHO.

To establish the SOPs in biosafety, biosecurity, a consultant from Singapore was involved. The laboratory needs international accreditation. International standards were used (WHO and CDC). Now we are establishing local standards within a biosafety group for Indonesia. International certification was granted to the laboratory in 2007.⁶²

Strengthening the implementation of OIE and WHO's norms?

OIE and WHO have different capabilities and approaches regarding the verification of the implementation of their norms. In addition to the mandatory disease notification, the OIE also encourages the implementation of regulations according to the OIE standards and offers mediation services in the case of trade disputes between countries. The OIE also offers an interesting new tool to help its member states assess their compliance with international standards and the performance of their infrastructures: the OIE-PVS (Evaluation of Performance of Veterinary Services).⁶³ Such an evaluation, performed at the request of member countries, gives clear indications of where the gaps lie in the implementation of international standards and where efforts should be placed to “upgrade” veterinary services and

⁶¹ Interview, Jakarta, September 2008.

⁶² Interview, Jakarta, September 2008.

⁶³ Interview, Washington D.C., July-August 2008; interview, Paris, October 2008; OIE, “The new tool for the evaluation of performance of Veterinary Services (PVS Tool) using OIE international standards of quality and evaluation”, last updated 10 October 2008, http://www.oie.int/eng/oie/organisation/en_vet_eval_tool.htm, last accessed 1 November 2008; see also: OIE, “OIE Tool for the Evaluation of Performance of Veterinary Services, (OIE PVS Tool)”, 2008,

implement OIE standards. Such a tool is especially valued by development donors, as it gives clear and precise strategic objectives that are easy to transfer into programmes and can build capacity. It is also valued by national veterinary communities, as it provides them with strong support in their own bureaucratic fight against other sectors, within Ministries of Agriculture for example. Furthermore, as OIE establishes the animal health rules that impact trade regulations (for example zoning and compartmentalisation), animal exporting countries have a strong interest in showing respect for those international standards (WTO/SPS Agreement).

Such verification proved to be difficult to put in place by WHO. WHO is a much larger and bureaucratic institution than OIE, and may thus lack verification capacity. More importantly, WHO has an operational mandate along its normative one. Evaluating countries' human health systems could thus prove to be sensitive action, as it would publicise the weaknesses of the country under evaluation, and potentially put in jeopardy the relationship, based on trust, that WHO has with this country. WHO already has a difficult relationship with a country like Indonesia. What would happen if WHO was to publish an evaluation of the Indonesian human health system? For some developing countries, such an evaluation, if it led to more donor investment, could be beneficial. However, if such a process is not applied indiscriminately to all WHO member states, it becomes akin to a development tool, and as such loses its legitimacy. There is also an issue regarding the legitimacy of the norms used for verification, except in the case of IHR, which confers precise normative powers to WHO,⁶⁴ WHO's norms are soft norms, without any enforcement capacity. Human health is a very sensitive question for states, over which they are reluctant to relinquish their sovereign powers. They do so only in very specific areas, where the global dimension of the health risk requires some degree of global regulation and verification. As mentioned by one of our WHO source:

<http://www.oie.int/eng/oie/organisation/EN_OIE%20PVS%20Tool_2008.pdf>, last accessed 19 January 2009.

⁶⁴ On the IHR, see for example: D. P. Fidler, L. O. Gostin, "The New International Health Regulations: An Historic Development for International Law and Public Health", *Journal of Law, Medicine and Ethics*, vol. 34, n. 1, Spring 2006, pp. 85-94.

The role of WHO is not to control each country. It is only a secretariat. Member states decide what should be done. WHO makes recommendations. If the country does not want to do, we have no means to force them. [...] WHO is not a control agency. It has no funding for that. It is the agency of the state members. It is there to serve them. Each year they decide the orientation and finance it. Our role is to serve them. We support countries. But we are not here to control them. Except for the IHR. The member states signed the agreement. They engaged themselves to respect the clauses. We can notify if we estimate that there is a true health problem. We will try to negotiate. But we are not the police. We have no mean to impose something. If a country does not respect the rules, they are stigmatized. [...] To be part of the laboratories network of WHO, the norms are really strict, we verify that they are respected. But we also have a responsibility towards them (we give them training, reagents).

According to another WHO source:

The strength of IHR is that countries see them as a common vehicle. The fundamental thing since SARS is not the abstract idea, it is a very graphic danger and threat. Legal aspects are the least important. One does not go to jail if s/he does not follow [the regulations]. The IHR can help countries who want to improve their situation. It is a strong driver. It brings support. OIE has a reporting system. No threat but a real (economic) interest so countries buy in. It is a long process, a driver to improve veterinary systems. [...]

We provide support when we are asked to provide support. Regarding BSL-3 laboratory, there is a lot of expertise in the world. One can go to them. In general WHO helps to establish standards and helps if asked for. If countries do it another way, it is perfectly normal. [...] In public health, one depends of the buy in of other entities.⁶⁵

Taking such comments further, one could suggest that if member states really agreed on the need for WHO to set up an evaluation process of members' health systems, and to make sure that WHO's norms are implemented, it would be up to states themselves, and not WHO, to launch such an initiative.

⁶⁵ Interview, Geneva, October 2008.

CONTROLLING AI OUTBREAKS ON THE ANIMAL FRONT

Controlling AI outbreaks on the animal front implies the taking of a series of measures and issues which can lead to very passionate and critical debates and discussions. We present here some of the most crucial ones, without however going into the details one could happily find in specialised technical publications: culling and the compensation issue, vaccination, food chain biosecurity, and the epidemiology of the virus in the ecosystem. As in the rest of this report, we use the Indonesian case as a reference case, as Indonesia was the country that raised the most debates and as we concentrated our field research on this specific country.

CULLING AND THE COMPENSATION ISSUE

As a widespread interpretation of OIE norms implied that any detected infected poultry required the culling of all poultry within a given circle around the infected farm, the critical issue, beyond many technical issues concerning the way to kill the birds and dispose of their bodies safely, was how to implement such a regulation when the incentive to do so was critically low. While in Thailand, large poultry exporters had a vested interest in controlling the epizootic to safeguard their access to the EU market, in countries like Indonesia where the market was largely internally oriented, the proper incentives were more difficult to identify and establish: if the poultry was culled, farmers would lose their income. Poultry are often sick, but get eaten just the same. When they die from Newcastle, they are eaten or sold, which reduces the income loss. Why should it be different for AI, since people working with poultry were so few to fall ill? If the poultry is culled, then it cannot be sold or eaten anymore, and all the infected flock, including neighbouring ones, will be killed. Only two incentives, therefore, could really work in such a case: compensation or police authority. Compensation can safeguard the livelihoods of already poor people, and compensate more broadly for the loss of poultry flocks. It also seemed normal to give money to farmers in exchange of the culling, for national public health reasons, of their flocks.

However, compensation proved to be a rather difficult endeavour. Sufficient money was not available for states to deliver to all affected poultry owners. In Indonesia, it was decided that only small poultry owners would get compensation. But as the compensation system proved increasingly complex and inefficient, with the local authorities compensating farmers in very different ways and then being paid back by the

central state,⁶⁶ the small poultry owners had no interest in reporting the disease and having their flocks culled. In the commercial sector, the situation was even worse, as no compensation plan existed.

In such a situation, only the action of the police would seem to be effective. However, managing the AI crisis revealed strong discrepancies between states on the implementing power of their police forces. In Indonesia, the security forces were apparently not called to the front culling line. There was a general agreement among all the persons we interviewed that only consensus and not a police action could convince the farmers to accept culling. As one source told us:

We're not a communist country. Other countries say "A" and people do it. Here say "A" and people do "B, C, D".⁶⁷

The electoral process was also identified as a strong deterrent; in all governance echelons (Central and local), to take a stronger stand. As the same source said: "They need to have a good name for their campaign".

In Egypt, the choice was made to mobilise security services to enforce AI control (in February 2006, "the Council of Minister had requested the assistance of the army")⁶⁸, as shown by Mathieu Fintz in his fascinating research on the Egyptian experience of managing AI. Results were rather poor: the Egyptian people, used to evading police forces, were very agile in escaping controls regarding AI.⁶⁹ Vietnam, on the other hand, was efficient in imposing a police control over the poultry sector. Several sources suggested that its good results might have been achieved at the expense of individual, and particularly farmer, rights, and wondered how replicable such an experience could be, in countries where individual human rights could not be touched.

The efficiency of control measures seems to be supported by efficient rapid field diagnosis tests. Such tests allow the quasi-immediate identification of a disease outbreak as an AI outbreak, thus giving more

⁶⁶ B. Krisnamurti, Executive Secretary of the National Committee for Avian Influenza Control and Pandemic Influenza Preparedness, Government of Indonesia, "INDONESIA, Culling Compensation, Policy and Practice", *Presentation*, Global Development Learning Network, Seminar 3 on Avian and Human Influenza, 13 February 2007, <http://siteresources.worldbank.org/EXTAVIANFLU/Resources/3124440-1172616662239/3500174-1175785722185/GDLNCompensation_Indonesia.pdf>, last accessed 21 January 2008.

⁶⁷ Interview, Jakarta, September 2008.

⁶⁸ M. Fintz, "Emerging Viruses, State of Emergency and the Manufacture of Health Crises in Egypt. Media framing of avian flu and other invisible enemies", in E. Klaus, C. Hassabo (eds.), *Chroniques égyptiennes 2006*, Cairo, Cedej, 2007.

⁶⁹ M. Fintz, 2007, *op. cit.*; M. Fintz, S. Thierno Youla, "Les guerres de la grippe aviaire en Egypte. Le traitement médiatique d'un virus émergent, janvier-mai 2006", *Egypte/Monde Arabe*, n. 4, 2007; Interview with Mathieu Fintz, Paris, Septembre 2006.

time and legitimacy to implement control measures, including culling. Without such a capacity, control measures have to be subordinated to prior laboratory diagnosis confirmation (by then it is often too late to control the spread of the virus), or culling has to be decided as a quasi preventive manner (but then such an operation might be resisted as there are no proofs that the flocks are infected)⁷⁰.

Beyond the police enforcement and compensation options,⁷¹ the third option of insurance exists. However, as reported by OIE, such an option will prove difficult to implement in countries with poor veterinary systems.⁷²

VACCINATION

The second AI control tool discussed in the past four years was vaccination.

*The OIE and FAO technical guidelines recommend that vaccination is one of the legitimate control measures for the disease and should be considered by veterinary authorities along with all other measures. Vaccination can help to bring down levels of infection, thus reducing the risk of transmission to humans and other poultry, and can substantially reduce the socio-economic costs of control.*⁷³

While OIE recommends that no trade restriction be applied to HPAI-vaccinated poultry, as long as its technical guidelines are closely followed, some countries (the EU) still refuse to import vaccinated poultry. This did not prevent some poultry-producers to apply vaccination as a control measure, for example in China, Egypt and Vietnam. Singapore is planning to use emergency vaccination of local

⁷⁰ Interview, Jakarta, September 2008.

⁷¹ See also: The World Bank "Enhancing Control of Highly Pathogenic Avian Influenza in Developing Countries through Compensation" (World Bank, FAO, IPRI, OIE) <http://www.fao.org/docs/eims/upload//217132/gui_hpai_compensation.pdf>, last accessed 19 January 2009.

⁷² Interview, Paris, October 2008. See also: Civic Consulting, 'Prevention and control of animal diseases worldwide: Part III - Pre-feasibility study – Supporting insurance of disease losses', *OIE/World Bank Economic Studies*, 2008, <[http://www.oie.int/eng/OIE-WB_Conference_1007/OIE%20Economic%20Studies/OIE%20-%20Insurance%20products%20\(Part%20III\).pdf](http://www.oie.int/eng/OIE-WB_Conference_1007/OIE%20Economic%20Studies/OIE%20-%20Insurance%20products%20(Part%20III).pdf)>, last accessed 19 January 2009.

⁷³ FAO/OIE, "The Global Strategy for Prevention and Control of H5N1 Highly Pathogenic Avian Influenza - October 2008", p. 32, <<http://www.fao.org/docrep/010/a1145e/a1145e00.htm>>, last accessed 19 January 2009.

poultry farms “if the threat of HPAI is imminent”, and has started to stockpile vaccines.⁷⁴ Vietnam is often regarded as the proof that such vaccination campaigns are a useful control tool. However, recent evolution showed that such a strategy can be costly, that it is difficult to sustain in the long term and that it is useful only as a complement to other control measures.⁷⁵

There are indeed several problems regarding vaccination, the first being its cost. Not all poultry herders can afford to pay for the vaccine and the veterinary services. Some poultry farmers, in Indonesia for example, are afraid of losing their animals if they vaccinate them.⁷⁶ Targeted communication campaigns and an effort to insure a better access to vaccination by poorer poultry farmers (for example with subsidised vaccination campaigns, free stocks of vaccines, or OIE vaccine banks) may be needed in some countries for a vaccination strategy to work.

To be efficient, a vaccination strategy requires a tightly monitored process, in order to avoid the development of asymptomatic AI cases, and the mutation of the virus within vaccinated flocks. A DIVA, i. e. “differentiation of infected from vaccinated animals”, strategy needs to be put in place. Such a verification process is not always easy to implement in a systematic way. In any case, when vaccination is used, an exit strategy should also be considered.

The efficiency of the vaccine may also be questioned, as specific strains of the virus will be more receptive than others. Scandal erupted in Egypt as the strain of the AI vaccine used in the mass vaccination campaign was deemed to be too costly, and responsible for the death, rather than the protection, of poultry flocks. Suspicions of corruption emerged, to which one government expert apparently responded to by declaring that the advice of an FAO expert had been followed (sic).⁷⁷ However, FAO and OIE are currently leading a major effort to test and increase the quality and efficiency of the vaccines.

Vaccination may therefore prove to be a useful strategy to control AI, but it should not be considered as an easy and cheap one. On the contrary, vaccination requires a large know how and a sustained effort that are not easily put in place in all countries. Above all, be it routine, preventive or emergency,

⁷⁴ H. Keong Leong, C. S. Goh, S. Thai Chew, C. Wee Lim, Y. Nuo Lin, S. Foong Chang, H. Hoo Yap, “Prevention and Control of Avian Influenza in Singapore”, *Annals Academy of Medicine Singapore*, vol. 37, 2008, p. 508.

⁷⁵ Interview, Washington D.C., July-August 2008; interview, Jakarta, September 2008.

⁷⁶ S. Padmawati, M. Nichter, 2008, *op. cit.*, p. 40. See this publication for other specific Indonesian details on the vaccination issue: For example, the fact that farmers prefer to vaccinate in the late afternoon, when veterinarians are not anymore available, or the fear that already ill chicken will die from the shock of vaccination, there will be no compensation, creating a net loss for framers.

⁷⁷ M. Fintz, 2007, *op. cit.*, pp. 14-16.

vaccination should be “seen as a tool to maximise the impact of other control measures, especially good biosecurity, and never as the sole method of disease control”.⁷⁸

THE FOOD CHAIN AND BIOSECURITY

Food chain biosecurity may be both easier to put in place and more affordable. However, it has a direct impact on livelihoods and poverty, as it leads to a structural reform of the poultry sector and food chain that can prove extremely costly for a country where poultry greatly contributes to individual incomes.

Food chain biosecurity implies a series of measures, from the most simple to the most elaborate ones.

At the farm/household level, it can be summed up in the single word “separation”. This implies, for example, to separate chickens from human in households; to collect manure and clean chicken’s environment regularly. In commercial farms, contact with poultry living space is regulated (cleaning of people and of trucks coming in and coming out through separated paths) and is differentiated according to different types of action.

At the market level, cleaning days are established to break the contamination circle; live poultry markets can also be banished; etc.

One issue seldom discussed is the issue of live animal transportation, including in Europe where the live market is extremely profitable.⁷⁹ Such journeys increase the risk of contamination. Should they be banned?

Establishing restrictions on the poultry sector is an option chosen by some countries. The first level implies regulating the poultry production sector by making production permits obligatory.⁸⁰ The second level implies the imposition of specific biosafety rules as a requirement for access – incidentally, it also provides a new channel for state control. The third level implies restricting access to such permits. The fourth level is a total ban on poultry production at the national level, a solution that Hong Kong may

⁷⁸ I. Capua, D. J. Alexander, “Avian Influenza vaccines and vaccination in birds”, *Vaccine*, vol. 26S, 2008, p. D70. For more on vaccination, please see: OIE, “Avian Influenza Vaccination”, March 2007, <http://www.oie.int/eng/info_ev/Other%20Files/A_Guidelines%20on%20AI%20vaccination.pdf>, last accessed 19 January 2009; FAO/OIE, “The Global Strategy...”, *op. cit.*

⁷⁹ Interview, Brussels, October 2008.

⁸⁰ Permission can however be sometimes easy to get. “If someone has money, he builds his farm. Permission is easy (sic).”, interview, Jakarta, September 2008.

be heading towards with its “voluntary surrender scheme”.⁸¹ The Egyptian government, while Egypt used to be an export leader, decided to promote the import of refrigerated poultry, regardless of the cold chain capacity in the country.⁸²

The countries that willingly decided to restructure their poultry sector contributed to the stigmatisation of small poultry backyard producers to the benefit of the commercial sector. While poultry breeding had been a long term development strategy to increase the livelihoods of poor people, those structural reforms of the poultry sector as a result of AI made this strategy useless and even suspicious, as the small poultry holders were often tagged as the “missing link”, those whose poor biosafety measures and dangerous closed contact with poultry endangered public health. Women in Egypt also suffered from this stigmatisation, as shown by Mathieu Fintz.⁸³

Another result of AI was the transformation of the global poultry market, as Brazil emerged as a major poultry exporter in the world.⁸⁴ As food chain biosecurity becomes an increasing concern in the world, access to the international market of animal food may increasingly become the privilege of a few countries willing to invest in this sector, and capable of doing it. How can we ensure that developing countries stay in the game?

THE WILD CARD: WILD BIRDS AND THE ECOSYSTEM

Even with the best prevention, surveillance, and control system, managing the AI crisis from the animal side will fail to prevent the spread and the mutation of the virus, and risk the emergence of a highly pathogenic influenza virus for humans, if it stays focused on the poultry sector only, and on chickens especially. One may argue that controlling AI in poultry is the most important aspect, from a pandemic potential and from an impact on livelihoods point of view, but different hosts are important to consider. What epidemiological surveillance and research show is that several animals could be vectors of the virus: cats,⁸⁵ pigs,⁸⁶ blowflies,⁸⁷ the well known wild birds, etc.⁸⁸ Some resistant strains were also found in

⁸¹ P. Yan Lam, *op. cit.*, p. 490.

⁸² Interview with Mathieu Fintz, Paris, September 2008.

⁸³ M. Fintz, 2007, *op. cit.*, p. 10-11.

⁸⁴ *ThePoultrySite News Desk*, “Chicken Exports Reach Historic High”, 26 September 2008, <www.thepoultrysite.com>, last accessed 26 September 2008. We thank Mathieu Fintz for bringing our attention to this detail and for this specific source.

⁸⁵ According to one of our Indonesian source, 20% of the 500 stray cats in Jakarta are infected. Interview, Jakarta, September 2008; cats and dogs H5N1 infection is also mentioned in: Writing Committee of the

manure (and then in fertilizers), and in the water.⁸⁹ As underlined by several Indonesian human health practitioners, “the role of the contaminated environment in the transmission and propagation of H5N1 in humans and animals needs to be more clearly defined.”⁹⁰ Such a strong presence of the virus in the environment may reduce the sustainability of AI control efforts, and result in continuous outbreaks in countries where the virus was thought to have been defeated. Of course this does not justify a reduced effort to limit the virus “load” in poultry, as countries where the virus is endemic in poultry are more likely to contribute to an increased presence of the virus in the environment. However it underlines the difficulty and complexity of the global fight against AI.

The difficulty is increased by the globalisation of poultry exports. Import controls remain a strong and necessary control measure, which may not be highlighted enough, as several outbreaks may be traced to illegal imports, including from infected provinces to provinces trying to establish themselves as “disease-free zones”, like Bali⁹¹.

As AI outbreaks in poultry tend to be considered as contained, with UNSIC and the World Bank assuming that existing surveillance and control strategies have proved their efficiency⁹², some caution may still be required. Indeed many difficulties have been dealt with and many issues have been solved at the field level, and the efforts displayed have had impact, but the situation may not be as rosy yet as many would

Second WHO Consultation on clinical Aspects of Human Infection with Avian Influenza A (H5N1) Virus, “Update on Avian Influenza A (H5N1) Virus Infection in Humans”, *The New England Journal of Medicine*, vol. 358, n° 3, pp. 262.

⁸⁶ M. F. Ducatez, R. G. Webster, R. J. Webby, “Animal influenza epidemiology”, *Vaccine*, vol. 26, Sup. 4, 2008, p. D68.

⁸⁷ K. Sawabe, K. Hoshino, H. Isawa, T. Sasaki, T. Hayashi, Y. Tsuda *et al.* “Detection and Isolation of highly pathogenic H5N1 avian influenza A viruses from blow flies collected in the vicinity of an infected poultry farm in Kyoto, Japan, 2004”, *American Journal of Tropical Medicine Hygiene*, 2006, n° 75, p. 327-332. Quoted by S. Giriputro, R. Sulastri, D. Murniati *et al.*, “Clinical and Epidemiological Features of Patients With Confirmed Avian Influenza Presenting to Sulianti Saroso Infectious Diseases Hospital, Indonesia, 2005-2007”, *Annals Academy of Medicine (Singapore)*, n° 37, 2008, p. 457.

⁸⁸ One interesting initiative in that regard is the Global Avian Influenza Network for Surveillance for wild birds (GAINS). However, no transmission of the virus from those animals to humans has been documented, which explains why limited visibility was given to their potential role as vectors of the virus (except for the pigs).

⁸⁹ 2% of the AI human cases in Indonesia would be due to the use of fertilisers, interview, Jakarta, 12 September 2008. See also E. Tresnaningsih, Director of Vector Born Disease Control, Ministry of Health, Republic of Indonesia, “Avian Influenza Situation in Indonesia, 2008”, *PDF document*, S. Giriputro, R. Sulastri, D. Murniati *et al.*, date, *op. cit.*, p. 457. *op. cit.*, p. 457.

⁹⁰ S. Giriputro, R. Sulastri, D. Murniati *et al.*, 2008, *op. cit.*, p. 457.

⁹¹ Where the “very diligent” police found chickens imported from Java, some of which having H5N1. Interview, Jakarta, 12 September 2008. The special Bali effort and smuggling issue were also mentioned in another interview, Jakarta, September 2008.

like to believe. As underlined by Ian Scoones and Paul Forster, it is not yet obvious that control strategies devised to stop limited outbreaks are fitted to deal with endemic epizooties in developing countries. But beyond that, fighting against influenza, be it avian or not, may require a more comprehensive approach to the virus relationship with its environment, that increases the complexity of the fight against influenza, rather than reducing it. The solution adopted up to now has been a pragmatic, step-by-step one, as the one recommended by one of our source:

AI is so complex to comprehend. There are so many components. Like the movement of manure from all poultry: a real issue. We should avoid all products from being contaminated. But the risk factors are very difficult to see. It is the same for humans. It is extremely complex. So [the only option] is to take this piece first. And then with surveillance one can see what can do, what works.⁹³

Maybe the One World, One Health approach would respond to some of those issues, as it would possibly allow for a more comprehensive and integrated approach between human, animal and environmental health. Whether it will provide solutions for dilemmas like the balance between biosafety of the food chain and protection of poor households livelihoods is however not obvious.

⁹² UN System Influenza Co-ordinator, The World Bank, "Responses to Avian Influenza and State of Pandemic Readiness", *Fourth Global Progress Report*, October 2008.

⁹³ Interview, Jakarta, September 2008.

ON THE HUMAN FRONT: TOWARDS GLOBAL HEALTH SECURITY?

Faced with such a complex AI reality in the poultry sector, and even if human health professionals often insist that “we have to control AI right away at the epicentre, in animals, in poultry”,⁹⁴ most of them were especially concerned with controlling the AI in humans. Furthermore, as more and more became convinced that the virus could not be prevented from mutating and giving birth to a new disastrous pandemic, efforts were made to prepare for such a pandemic and limit, as much as possible, its terrible economic, social and political consequences. As pandemic preparedness became a potent issue, especially for developed countries, some countries faced with AI human cases could feel a bit awkward, feeling that they were insufficiently supported and protected, or worst that their gloomy fate was being exploited to protect others, as the genomes of virus having killed people in developing countries were being used to develop vaccines that only rich people in developed countries could afford to pay. It was at least the case of Indonesia, who decided to stop sharing samples with the rest of the world, including WHO, and this story, however sensitive, has to be discussed, as it lays at the heart of today’s global health governance.

RESPONDING TO THE H5N1 OUTBREAKS IN HUMANS

As of the 10th of September 2008 (the most recent WHO bulletin published to this day), there were 387 laboratory-confirmed human cases of Avian Influenza A/(H5N1), 245 of whom died (63,3%).⁹⁵ In Indonesia, the mortality rate is higher (81,75%), with 112 deaths for 137 human cases. Such a high mortality rate may be slightly overestimated, as only the most severe cases (or at least only the most

⁹⁴ Interview, Jakarta, 12 September 2008.

⁹⁵ WHO, Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO, 10 September 2008, <http://www.who.int/csr/disease/avian_influenza/country/cases_table_2008_09_10/en/index.html>, last accessed 2 November 2008.

symptomatic cases,⁹⁶ depending on the comprehensiveness of the health system) get taken care of. However, the numbers of cases is certainly higher than the number of laboratory confirmed cases, as laboratory diagnosis is always an imperfect science⁹⁷ and confirmation is not always possible. For example, in the Sulianti Saroso Infectious Diseases Hospital, in Indonesia, while there were 296 suspect cases⁹⁸ between September 2005 and December 2007, only 9,1% were laboratory confirmed.⁹⁹

According to Sardikin Giriputro, Rismali Sulastri, Dewi Murniati, et al.:

⁹⁶ For example, Pakistan is reported as having had only 3 confirmed cases; however in the 5 persons cluster from October-November 2007, one was a probable case, and “one was asymptomatic but had laboratory tests indicating infection with influenza A(H5N1)”. WHO, “Human cases of avian influenza A(H5N1) in North-West Frontier Province, Pakistan, October–November 2007”, Weekly epidemiological record, vol. 83, n° 40, 3 October 2008, p. 363, <www.who.int/wer/2008/wer8340.pdf>, last accessed 2 November 2008. However, Ukeyi estimates that “Limited data from case investigations and serosurveys since 2003 suggest that clinically mild disease and asymptomatic H5N1 virus infection is uncommon.”, Timothy M. Uyeki, “Global epidemiology of human infections with highly pathogenic avian influenza A (H5N1) viruses”, *Respirology*, vol. 13, n. s1, 2008, p. S6, <<http://www3.interscience.wiley.com/cgi-bin/fulltext/119415215/PDFSTART>>, last accessed 2 November 2008.

⁹⁷ There are always some serologic windows when detection of the virus proves difficult, as the virus load is reduced but antibodies not yet numerous enough. Not to mention all the technical problems well known of laboratory diagnosis professionals. Interview, Paris, October 2008; interview with a R&D engineer from a diagnosis company, Paris, October 2008.

⁹⁸ A suspect case is :

defined as a patient with a contact history of possible sources of AI in the environment (e.g. poultry-derived fertiliser), including a visit within a week to an animal husbandry, that had an AI outbreak in birds, had contact with a confirmer case of AI in humans during the period of transmission of who had worked in a laboratory that did human or animal specimen processing for suspected AI.

Sardikin Giriputro, Rismali Sulastri, Dewi Murniati et al., “Clinical and Epidemiological Features of Patients With Confirmed Avian Influenza Presenting to Sulianti Saroso Infectious Diseases Hospital, Indonesia, 2005-2007”, *Annals Academy of Medicine (Singapore)*, n° 37, 2008, p. 455, 456.

⁹⁹ One should note that “laboratory confirmed cases” are defined in a slightly different way that in Bulgaria, as the confirmation tests are not exactly the same:

A laboratory confirmed case was defined as a clinically confirmed case [i. e. “a suspect or probable case with acute respiratory disease symptoms such as fever (temperature above 38°C), cough, sore throat or has shortness of breath or difficulty in breathing”] with a positive result on a specific H5N1 virus test done at a [...] (WHO) reference laboratory, either reverse transcription polymerase chain reaction (RT-PCR) positive for H5N1 or a 4-fold rise in H5 antibody titres on 2 serum specimens collected at least 2 weeks apart.

S. Giriputro, R. Sulastri, D. Murniati, et al., *op. cit.*, 2008, p. 455. To compare with the Bulgarian definition, see T. Hadzhiolova, S. Pavlova, R. Kotseva, “Laboratory investigations of the first suspected human cases of infection with avian influenza A(H5N1) virus in Bulgaria”, *Eurosurveillance*, vol. 13, n° 30, 24 July 2008, <www.eurosurveillance.org/ViewArticle.aspx?ArticleId=18938>, last accessed 25 July 2008.

This [low positivity rate among suspect cases] suggests the need to develop more reliable criteria for suspect cases or to a certain extent underdiagnosis, since some cases showed clinical features highly suggestive of viral pneumonia were negative by PCR. The timing of sampling at the later stage in the clinical course of the disease will most likely decrease the sensitivity of the test due to the lower viral load at that time.¹⁰⁰

This problem will surely have been encountered in several of the countries faced with human cases of avian influenza. However, it remains very difficult to obtain reliable aggregated data regarding the global ratios between suspected/clinically confirmed/probable(died before sampling)/laboratory confirmed cases, even if we presume that each surveillance system develops such statistics for internal use.

Understanding the epidemiology of the virus?

The latest official WHO epidemiological record on AI human cases dates back to 2007, and concerns only 2003-2006 cases.¹⁰¹ But the Writing Committee of the Second WHO Consultation on clinical Aspects of Human Infection with AI A (H5N1) Virus provided a very interesting epidemiological review in January 2008.¹⁰² Timothy M. Uyeki¹⁰³ also gives an epidemiological analysis of the human cases (cases reported until end of December 2007), and the recent UNSIC/World Bank gives some limited data of 2008 cases.¹⁰⁴ Specific country-related papers have also been published in scientific medical journals.

These accounts reported human cases in 15 countries and 3 continents, Africa, Asia and Europe.¹⁰⁵ In 2008, the number of cases diminished, compared to previous years (36 cases during the first 8,5 months, versus 88 for the all 2007 and 115 for 2006).¹⁰⁶ Some case clusters were reported, including in 2008, but only those from previous years suggested limited human-to-human transmission, in China, Indonesia,

¹⁰⁰ S. Giriputro, R. Sulastrri, D. Murniati, et al., 2008, *op. cit.*, p. 457.

¹⁰¹ WHO, "Update: WHO-confirmed human cases of avian influenza A(H5N1) infection, 25 November 2003–24 November 2006", *Weekly epidemiological record*, vol. 82, n° 6, 9 February 2007, p. 41-47, <http://www.who.int/wer/2007/wer8206.pdf>, last accessed 2 November 2008. See also: WHO, "Epidemiology of WHO-confirmed human cases of avian influenza A(H5N1) infection", *Weekly epidemiological record*, vol. 81, n° 26, 30 June 2006, <http://www.who.int/wer/wer8126.pdf>, last accessed 2 November 2008.

¹⁰² Writing Committee of the Second WHO Consultation on clinical Aspects of Human Infection with Avian Influenza A (H5N1) Virus, "Update on Avian Influenza A (H5N1) Virus Infection in Humans", *The New England Journal of Medicine*, vol. 358, n° 3, pp. 261-73.

¹⁰³ T. M. Uyeki, "Global epidemiology of human infections with highly pathogenic avian influenza A (H5N1) viruses", *Respirology*, vol. 13, n° 1, 2008, p. S2-S9, <<http://www3.interscience.wiley.com/cgi-bin/fulltext/119415215/PDFSTART>>, last accessed 2 November 2008.

¹⁰⁴ UN System Influenza Co-ordinator, The World Bank, "Responses to...", October 2008, *op. cit.*, p. 10.

¹⁰⁵ UN System Influenza Co-ordinator, The World Bank, "Responses to...", October 2008, *op. cit.*, p. 9.

Pakistan¹⁰⁷ and maybe Vietnam.¹⁰⁸ Such a transmission seems to be favoured by genetic relationships and never justified any change in WHO's alert level.

At least until 2006, the mortality rate seems to have been the highest in patients aged 10-18, and the lowest in patients aged 50 and plus, and in women.¹⁰⁹ In Indonesia, the pattern for all cases until 2008 was however slightly different: the mortality rate was the highest in patients aged 30 to 39 and the lowest in patients under 9. However the age group over 40 had the lowest number of cases (8 cases, 6 deaths), while the age groups 10-19 and 20-29 had the highest number of cases (37 cases each, 30 and 32 deaths).¹¹⁰ The gender distribution of cases seems more balanced in Indonesia than worldwide.¹¹¹

Regarding the mode of transmission, identified risk factors are direct contact with sick or dead poultry:

*Most patients have acquired A (H5N1) infection from poultry inside or outside their houses. Slaughtering, defeathering, or preparing sick poultry for cooking; playing with or holding diseased or dead poultry; handling fighting cocks or ducks that appear to be well; and consuming raw or undercooked poultry products have all been implicated as potential risk factors.*¹¹²

According to the writing Committee of the Second WHO Consultation, globally, for 25% of the patients, "the source of exposure is unclear [...] and environment-to-human transmission remains possible. For some patients, the only identified risk factor was visiting a live poultry-market."¹¹³ The exact proportion of human-to-human transmission remains unclear. In Indonesia the Ministry of Health estimates that 49% of the human cases have been contaminated through direct contact, 37% through environment contact, 2% through fertilizer, and 12% are inconclusive.¹¹⁴

¹⁰⁶ *Ibid.*

¹⁰⁷ UN System Influenza Co-ordinator, The World Bank, "Responses to...", October 2008, *op. cit.*, p. 10; T. M. Uyeki, 2008, *op. cit.*, p. S6; WHO, "Human cases of avian influenza A(H5N1) in North-West Frontier Province, Pakistan, October–November 2007", 2007, *op. cit.*; InVS, "Grippe Aviaire A (H5N1) Cluster Sumatra, Indonésie", 23 May 2008.

¹⁰⁸ Interview, Paris, October 2008.

¹⁰⁹ WHO, "Update: WHO-confirmed human cases...", 2007, *op. cit.*, p. 46.

¹¹⁰ Synthesis based on figures provided by Dr. Erna Tresnaningsih, "Avian Influenza Situation in Indonesia, 2008", *op. cit.*

¹¹¹ Comparison between figures in Dr. E. Tresnaningsih, "Avian Influenza Situation in Indonesia, 2008", power point document, and in WHO, "Update: WHO-confirmed human cases...", 2007, *op. cit.*

¹¹² Writing Committee of the Second WHO Consultation on clinical Aspects of Human Infection with Avian Influenza A (H5N1) Virus, 2008, *op. cit.*, p. 262.

¹¹³ *Ibid.*, p. 263.

¹¹⁴ Dr. E. Tresnaningsih, "Avian Influenza Situation in Indonesia, 2008", power point document.

Taking care of the patients

Even if the number of cases was ultimately limited, providing the patients with the necessary care and avoiding any risk of human-to-human transmission within healthcare facilities was a real challenge for health systems, which was taken up with a certain level of success. One of our source told us:

*I would rather be treated for AI in Indonesia or Turkey than in France, as they have the experience, they are the ones who know how to deal with the virus.*¹¹⁵

On the other side, another Indonesian source was rather cautious about the capacity of Indonesia to deal with (and contain) a highly infectious respiratory disease, and especially the SARS epidemic, and even told us: “[Thank God] SARS did not enter Indonesia!”¹¹⁶

Progress has been done, however, since the SARS epidemic, to prepare to it but mainly to respond to the challenge of AI human cases. 100 hospitals have been supplied with intensive care units (respiratory equipment, diagnosis PCR, isolation).

Rapid diagnosis remains an issue, often underlined in Indonesia,¹¹⁷ and has been responded to through a decision to consider all patients with AI symptoms as AI patients.¹¹⁸ Indonesian laboratory diagnosis capacities have been developed, but they now necessitate a longer confirmation process. They can play a very important role in contributing to the development of drugs and vaccines, and research in general, but their use as first line diagnosis tool may be problematic.

Regarding antiviral drugs, in the context of the discussion on the resistance of the influenza virus to antiviral drugs, Indonesian human health practitioners emphasise that timing of the drug delivery has a direct impact on its efficiency. “The sooner [delivered], the better”. They explain the higher mortality in Indonesia by the longer delay between onset of symptoms and drug delivery.¹¹⁹ Having realised this correlation, and having outlined the fact that most patients do not go to public hospitals first (only 16%) but rather to private clinics (28%), private doctors (18%), private hospital (13%), nurses, midwives (10%)

¹¹⁵ Interview, France, October 2008.

¹¹⁶ Interview, Indonesia, September 2008.

¹¹⁷ S. Giriputro, R. Sulastri, D. Murniati *et al.*, 2008, *op. cit.*, p. 457. Those authors call for “the development of cheap, effective point-of-care tests for H5N1 influenza that are as easy to use as a pregnancy test for example”. Confirmed as a crucial point by one of our Indonesian source. Interview, Jakarta, September 2008.

¹¹⁸ Confirmed by two interviews, Jakarta, September 2008.

¹¹⁹ N. Kandun, E. Tresnaningsih, W.H Purba, V. Lee, G. Samaan, S. Harun, et al, “Factors associated with case fatality of human H5N1 virus infections in Indonesia: a case series”, date, *op. cit.*; S. Giriputro, R. Sulastri, D. Murniati, et al., 2008, *op. cit.*, p. 457; Dr. E. Tresnaningsih, “Avian Influenza Situation in



or other health personnel (15%), as a crucial factor of it, the Indonesian Health Minister, put in place a communication and training strategy to help those non-public health institutions respond in a timely manner to AI human cases.¹²⁰ Possible future AI pandemics will not necessarily be responded to in a similar way; but if they do, adequate crisis management would require the enlargement of influenza pandemic networks to all health personnel.

Indonesia, 2008", power point document. Two of our Indonesian source insisted on this issue. Interviews, Jakarta, September 2008.

¹²⁰ Interview, Jakarta, 12 September 2008.

PANDEMIC PREPAREDNESS

Do we have the capacity to contain an outbreak to a given island in Indonesia? I don't know. I doubt it. We should start with the principle that we will not succeed. There is a sense that if administered very fast [we could manage]. Politically, in terms of billposting [communication], it is important that we show this as a possibility. Maybe I under-estimate WHO's capacities. In Turkey, WHO's mission were certainly useful to inform the population, but Turkey is already structured, strong. Regarding Nigeria, West Africa, I do not know very well. The idea that we'll get rid of the virus at the animal health level, it's very difficult. Despite all the efforts done, it's better to prepare for influenza pandemic by helping prepare [plans]. A certain degree of preparation is useful all the same.¹²¹

If the emergence of a pandemic strain of the AI virus cannot be prevented and contained, all countries in the world will have to face the pandemic. Preparing for such a pandemic therefore soon appeared to be one of the most pressing requirements facing the international community, and gave way, especially in some developed countries like France and the US, to impressive efforts to prepare and plan responses to such a pandemic.¹²² Not all issues, however, have been solved, but progress has been done, as those issues were debated, discussed, and possible responses seriously explored. We will first discuss two issues specifically in the health sector response side: what surge capacity, and what pharmaceutical response capacity? We will then show that the response to the outbreak of the virus was seen as necessitating cross-sectoral preparedness, and that problems specific to such a strategy emerged.

Surge capacity

In the referral hospitals for AI that we visited, there were eight beds in isolation rooms and four beds in ICU (intensive care units) reserved for AI patients. Considering the number of AI patients in Indonesia, and the size of the largest contamination wave (eight patients), such a capacity seems to be sufficient to

¹²¹ Interview, Paris, October 2008.

¹²² Regarding the US, see for example R.J. Whitler, A.S. Monto, "Seasonal and Pandemic Influenza Preparedness: A Global Threat", *The Journal of Infectious Diseases*, vol. 194, 2006, pp. S65-S69; J.L. Geberding, "Pandemic Preparedness: Pigs, Poultry, and People versus Plans, Products, and Practice",

deal with an outbreak in humans similar to those already experienced. The uncertainty concerned the adequacy of such a capacity in the case of a pandemic. In France, according to one French source, there is a consensus that to face such a pandemic, negative pressure rooms would be required, but non exist to this day in Paris or in Lyon, according to him. In a rather fatalist mode, he considered that:

*We will never be ready for a pandemic. The human resources will not be ready. There will be many deaths. The pandemic will boil over existing capacities. We already are under-resourced. What will be done when the health personnel will die? We hope that vaccinations, masks, maintaining people at home will help. But we will remember [the pandemic] forever.*¹²³

While a surprising amount of people tended to consider that France was one of the best prepared countries,¹²⁴ we witnessed there a clear worry, amongst practitioners, about the ability of the health system, in terms of its capacities, to deal with the pandemic. SARS had shown that the health professionals' own health could be more largely impacted by any infectious disease, and the history of managing infectious diseases shows that Hippocrates' oath may not always be persuasive enough to ensure the bravery and professionalism of all health practitioners in times of danger¹²⁵. Even without questioning the professionalism of the health sector, not all health personnel are trained to deal with public health emergencies.¹²⁶ Some have thought of establishing a systematic voluntary pool for health personnel willing to be trained and involved in such efforts, but in France, according to one of our source, it encountered some bureaucratic problems as such an initiative could cause a redefinition of traditional lines of separation between different organisations traditionally involved in public health emergencies.¹²⁷

The Journal of Infectious Diseases, vol. 194, 2006, pp. S77-S81; J.G. Bartlett, "Planning for Avian Influenza", *Annals of Internal Medicine*, vol. 145, 2006, pp. 141-144.

¹²³ Interview, Paris, October 2008.

¹²⁴ It did seem to be more than just an attempt to flatter the ego of the interviewer.

¹²⁵ As brought to our attention by Josh Michaud, this problem seems also to be acute in the United States, where, according to a study from 2005, "nearly half of the local department workers are likely not to report during a pandemic". See R.D. Balicer, S.B. Omer, D.J. Barnett and G.S. Everly Jr, "Local public health worker's perceptions toward responding to an influenza pandemic", *BMC Public Health*, vol. 6, n° 99, 18 April 2006.

¹²⁶ In this respect, some countries may be better prepared than others. A recent survey of Primary-Care Physicians in Singapore indicated that if 95% of them were concerned about the AI pandemic risk for their health, "most (82,5%) accepted the risk and only 33 (11,6%) would consider stopping work." T-Y. Wong, G.C.H. Koh, S.K. Cheong, M. Sundram, K. Koh, S.E. Chia, D. Koh, "A Cross-sectoral Study of Primary-care Physicians in Singapore on Their Concerns and Preparedness for an Avian Influenza Outbreak.", *Annals Academy of Medicine (Singapore)*, vol. 37, pp. 458-464, 2008.

¹²⁷ Interview, Paris, October 2008.

As mentioned by another source in Geneva, one important issue might also be the way modern health systems are managed, along economic guidelines rather than along needs forecasts.¹²⁸ The reduction of costs comes first, especially as it combines with the acute deficit in worldwide human health resources, and such an approach to health system planning can prove counterproductive in the case of pandemic preparedness efforts. As this economic mind frame slowly spreads to the French Armies' health system¹²⁹ (as is already the case in the UK), the traditional support network for the public health system in emergency cases could also be weakened.¹³⁰

Vaccines, drugs for all?

We mentioned the different debates about vaccines and drugs effectiveness. The key issues here are, as the virus mutates: will the virus be resistant to antivirals,¹³¹ how long will prepandemic vaccines be efficient, and how long will it take to develop the right vaccine for the virus? Three pharmaceuticals options have been presented to the general public as key to pandemic preparedness:

Prepandemic vaccination would protect the most vulnerable groups and the key professional groups (health personnel, police, etc.),¹³² as vaccines would not be available in sufficient amounts. The memory of the chaos and panic that took over populations in the US in 2003, as vaccine supplies against influenza were discovered to be insufficient, serves to mitigate the attraction of such an option, particularly when implemented in developing countries. Increasing worldwide vaccine production may help, and this path is currently being followed by WHO, which supports the development of vaccine production capacities in several developing countries, including Indonesia.

Antiviral drugs would be used to treat patients and attempt to contain or at least slow down the spread of the epidemic.¹³³ Here also, the question of supply and distribution¹³⁴ is posed. Regional stockpiling has

¹²⁸ Interview, Geneva, October 2008.

¹²⁹ Interview, Paris, September 2008.

¹³⁰ For a British vision on the surge issue, see Department of Health, "Pandemic influenza. Surge capacity and prioritisation in health services", Draft for comment, 31 October 2008.

¹³¹ See for example "Fatal Oseltamivir-Resistant Influenza Virus Infection", *New England Journal of Medicine*, vol. 359, n° 10, 4 September 2008, pp. 1074-1076.

¹³² The exact composition of those groups is itself a widely discussed ethical issue. As one of our sources seemed to imply that bringing a satisfactory solution to this issue could be required as a conditionality for states to be helped in accessing those vaccines, we wondered what were the ethical norms that underpinned this very troubling position, and especially the evaluation of the response given. Where do the ones giving help draw this ethical and moral superiority over the ones being helped?

¹³³ For more on antiviral drugs, including new drugs development strategies, see for example R.J. Sugrue, B-H. Tan, Dawn S. Y. Yeo, R. Sutejo, "Antiviral Drugs for the Control of Pandemic Influenza Virus", *Annals Academy of Medicine (Singapore)*, vol. 37, 2008, pp. 518-524.

been considered as a solution and was in fact launched in some regions, but some large countries like Indonesia wonder what will be their share of such stocks in the case of a pandemic, considering the size of their population.¹³⁵ Some countries, like France, effectuate stockpiling very effectively, but the renewal of stocks is a costly process that not all countries are in the position to undertake. Indonesia is apparently negotiating the possible production of antiviral drugs by an Indonesian pharmaceutical company.¹³⁶

Regarding the pandemic vaccine, cell-based vaccine production is considered as the most promising research path, as it is hoped that it will reduce the time of vaccine production. Some hope may also lie in the development of a vaccine that could impact any kind of influenza virus. However, such a vaccine remains, to this day, a pipe-dream.¹³⁷

In this context, other options have also to be looked for. One proposed by David S. Fedson, former Director of Medical Affairs of Aventis Pasteur, is to explore the use of other drugs to reduce the lethality of the disease. He considers that some inexpensive generic agents have an impact on influenza, and could be an option not enough looked into.¹³⁸

¹³⁴ One of our Indonesian sources mentioned the issue of distribution, a problem in a globalised pharmaceutical world where all drugs can be bought online, with a strong touch of local humour:

Oseltavimir will not be distributed in the pharmacies, because Indonesian people like pills but not in a good way (they eat it like candy). [If people] can have this easily from pharmacies, people with money will buy and sell it at high prices, and there will be no more drugs for the poor people. We want to prevent resistances.

Interview, Jakarta, September 2008.

Even in France, it was acknowledged by one of our sources that the organisation and establishment of distribution chains for the pre-positioned stocks was a complex task.

¹³⁵ Interview, Jakarta, September 2008.

¹³⁶ Interview, Jakarta, September 2008.

¹³⁷ I. Scoones, P. Forster, *The International Response to Highly Pathogenic Avian Influenza...*, 2008, *op. cit.*, p. 25 (on vaccines and drugs in general, p. 23-25), interview, Washington D.C., July-August 2008; interview, Brussels, October 2008; interview, Paris, October 2008. For more on vaccines, see for example A.W. Hampson, "Vaccines for Pandemic Influenza. The History of our Current Vaccines, their Limitations and the Requirement to Deal with a Pandemic Threat", *Annals Academy of Medicine (Singapore)*, vol. 37, pp. 510-517, 2008; Congress of the United States Congressional Budget Office, "U.S. Policy regarding Pandemic-Influenza Vaccines", CBO Paper, September 2008. Regarding the regulatory issues around pandemic vaccines, see G.K. Gronvall, L.L. Borio, "Removing Barriers to Global Pandemic Influenza Vaccination", *Biosecurity and Bioterrorism*, vol. 4, n° 2, 2006, pp. 168-175.

¹³⁸ D.S. Fedson, "Confronting an influenza pandemic with inexpensive generic agents: can it be done?", *Lancet Infectious Diseases*, vol. 8, September 2008, pp. 571-76; D.S. Fedson, P. Dunnill, "New Approaches to Confronting an Imminent Influenza Pandemic", *The Permanente Journal*, vol. 11, n° 3, Summer 2007, pp. 63-69; D.S. Fedson, P. Dunnill, "Commentary. From Scarcity to Abundance: Pandemic Vaccines and Other Agents for 'Have Not' Countries", *Journal of Public Health Policy*, vol. 28, n° 3, 2007, n. 322-340. See also D. Butler, "Cheaper approaches to flu divide researchers", *Nature*, vol. 448, 30 August 2007, pp. 976-977. This alternative path was mentioned to us by one of our source: Interview, Brussels, October 2008.

Other promising options are non-pharmaceutical-type options, including increasing “the use of masks, social distancing, quarantine, travel restrictions”.¹³⁹ None of these options is perfect. France stockpiles masks, but their distribution in case of emergency will require resources, and it is not sure that people will actually wear them. There are indeed strong cultural and social factors that undermine or strengthen the efficiency of each of those measures. Those social dimensions could evolve very fast in case of a pandemic, as seen in the evolving relation to masks in some Asian countries following the SARS outbreak.¹⁴⁰ Such changes, which may be crucial determining variables of the efficiency of measures, are however difficult to estimate. Even without taking care of these specific social factors, there are strong ongoing debates on the efficiency of each of those non-pharmaceutical options. Is school closure a good preventive measure for example? Recent research on school closures during the 2008 winter influenza season in Hong Kong did not find such measures had a “substantial effect”.¹⁴¹ The impact of such measures may be psychological, rather than medical, as they reassure the populations on the capacity of their governments to “do the right think” to control the outbreak. The problem with such measures is that their legitimacy and adequacy will be undermined by uncoordinated action on part of neighbouring countries. Populations may then be spurred to cherry-pick between measures and countries, a behaviour that could prove extremely problematic in the case of highly contagious diseases, and encourage states to establish drastic measures restricting the movement of populations.

Multisector preparedness planning

As some of the response options to an influenza outbreak proved to be extremely and increasingly complex, realisation dawned that such a type of epidemic had cross-sectoral impacts, and could not be prepared for from a public health perspective only. How would health systems work if essential services, such as the provision of electricity, were interrupted for lack of sufficient personnel, parked at home by a national directive; due to the need to take care of their children in the absence of open schools, or to take care of family members themselves contaminated? How can a country function when its workers cannot get to work because the transport network has been closed down to limit contagion? A number of vulnerabilities that we are not aware of are bound to emerge, as the most basic and taken for granted

¹³⁹ G. Juckett, “Avian Influenza: Preparing for a Pandemic”, *American Family Physician*, vol. 74, p. 783, 2006.

¹⁴⁰ F. Keck, *Rapport de mission sur le dispositif mis en place à Hong Kong pour lutter contre une pandémie de grippe aviare (septembre, décembre 2007)*, <http://www.consulfrance-hongkong.org/IMG/pdf/Rapport_grippe_aviare_F_Keck_publicie_web.pdf>, last accessed 20 January 2009, pp. 3-4.

conditions of our existence start to fail us. Food and gas distribution would have to be organised; social stability would have to be ensured, in the absence of police officers forced to stay home by law, or because they have no means of actually getting to their workplace. Who would pay for the salaries of all the workers forced, by law, to stay home?¹⁴² The state? Their company? Insurance? Where would the money come from? Unpaid, would workers accept to stay home? Classic issues of large emergency management were brought to the forefront, and not easily answered. Solving them required both a strong planning capacity (and therefore foresight capacity) but also a capacity to engage a large range of actors and encourage them to prepare, at their level, their own pandemic preparedness plans. Even if preparedness can never be total, having anticipated the problems and attempted to find solutions, or, even better, having organised simulation exercises to test those solutions and detect further unthought-of vulnerabilities, improves the actual management of the crisis, once there.

Influenza pandemic preparedness was seen by several interviewees in Paris as having had the effect of improving the capacity of the state to manage large public health crisis *in general*, including bioterrorist attacks. As one of our sources told us: “When we prepared for the Millennium bug, we had no bug, but we proved much more efficient in reacting to the huge storm that fell on France in December 99”.¹⁴³ With each crisis, lessons are learned that improve preparation and response to future crises, as well as the general crisis and emergency management capacity of states and specialised agencies. Furthermore, influenza pandemic preparedness was seen as being especially important and potentially enriching because it involved actors from the pandemic preparedness sector, as well as stake-holders not familiar with the bioterrorism preparedness field. As another source told us:

¹⁴¹ B. J. Cowling, E.H.Y. Lau, C.L. H. Lam, C.K.Y. Cheng, J. Kovar, K.H. Chan, et al., “Effects on School Closures, 2008 Winter Influenza Season, Hong Kong”, *Emerging Infectious Diseases*, October 2008 [Epub ahead of print].

¹⁴² X. Pretot, S. Banoun, “L’action de l’Etat en situation de pandémie grippale. Mesures d’ordre juridique”, Ministère de l’Intérieur et de l’aménagement du territoire, Inspection générale de l’administration, rapport n° 06-011-01, January 2006.

¹⁴³ Interview, Paris, October 2008.

The argument is that to prepare for influenza pandemic is to prepare for all pandemics. If the focus is too large [we take the risk of losing momentum]. Influenza pandemic is concrete, realist, highly probable, declassified. If it was bioterrorism, it would be more difficult. The influenza pandemic, everybody can talk about it. If the approach is too general, we will lose the capacity to talk about it.¹⁴⁴

Even if a larger scope of actors could be involved in pandemic preparedness, it was however recognised that small companies and local authorities were difficult to engage in this process.

At the global level, influenza pandemic preparedness was also recognised as being a clear necessity, but all countries did not act upon this necessity in a similar and thorough way. As many funds were tied to the drafting of INAPs (Integrated National Action Plans), sometimes supported by joint missions of experts from WHO, OIE, FAO, most countries did draft those plans. But implementation varied greatly. And the nature of the planning was highly determined by the “history of contact with avian influenza” and SARS. When having to deal with avian and human H5N1 cases, developing countries had less financial and human capacities to invest in pandemic preparedness,¹⁴⁵ and they may have conceived their pandemic preparedness plans as an enlarged version of their own experience in dealing with Human H5N1 cases, encompassing the possibility of a mutation of the virus, and the risk of a pandemic. Developing countries that did not have any “history of contact” with AI could prove less willing to tackle the issue of pandemic preparedness, which did not appear more pressing or as having more priority than other issues on their national agendas. Specific regional situations or donor interests could have the effect of raising the profile of AI in such countries, in which case the animal surveillance and the prevention aspect of AI, rather than the pandemic preparedness one, would most probably be acted upon. Even within the UN agencies, where PIC, UNSIC Pandemic Influenza Contingency, created in October 2006 and attached to OCHA in January 2008, worked as a driver to help each UN agency prepare its business contingency plan, a fatigue with the issue is palpable, and plans are not adapted, tested or updated in an adequate fashion.¹⁴⁶ Pandemic preparedness appears increasingly to demand a sustained effort in time to be

¹⁴⁴ Interview, Paris, 2008.

¹⁴⁵ As noted by Mathieu Fintz, the research results of the avian influenza network he belongs to tend to show that “the countries who have to deal with H5N1 may end up as the least prepared for the sort of influenza pandemic that will finally emerge”. Interview, 25 September 2008. Of course, this comment has to be tempered. Countries as Hong Kong and China have proved that they could learn a lot from the terrible health emergencies they had had to go through, but they also have the resources required to lead a real integrated effort (taking care of the animal side, of the Human H5N1 cases, and preparing for future pandemic). This is not the case of all the countries impacted by avian influenza.

¹⁴⁶ Interview, Geneva, October 2008; UN System Influenza Co-ordinator, The World Bank, “Responses to...”, October 2008, *op. cit.*



effective, and it is thus vulnerable to a loss of momentum. Not seen as an emergency issue anymore, it loses its centrality in everyday operations and is not dealt with anymore in a sufficient and consistent manner. We will go back to this fatigue issue in the last part of this report.

VIRUS-SHARING ISSUE: A NORTH/SOUTH DEBATE?

The trigger narratives

Indonesia used to share all of its information on its avian influenza human cases with WHO, as well as its virus samples with WHO, or more accurately its partner laboratories – in this case according to E.R. Sedyaningsih *et al.* “the WHO Collaborating Center at the US CDC Atlanta (through the Naval Medical Research Unit 2 [NAMRU 2] in Indonesia) and the WHO H5 Reference Laboratory at the Hong Kong University”.¹⁴⁷ In August 2006, Indonesia decided that “all the virus sequence data” in those two laboratory “should be released to the GenBank and simultaneously stopped sending samples abroad for virus confirmation”.¹⁴⁸ Confirmation would hereafter be done in two Indonesian laboratories, the National Institute of Health Research and Development and the Eijkman Institute, as the national laboratory diagnosis capacity had significantly improved.¹⁴⁹ Samples were still sent to WHO’s network “for further risk assessment” and research. In January 2007 all virus sharing stopped,¹⁵⁰ including with other Indonesian laboratories.¹⁵¹

Officially, three justifications are put forward by Indonesia. Endang R. Sedyaningsih, Siti Isfandari, Triono Soendoro, Siti Fadilah Supari, insist on two reasons: following the May 2006 wave of eight cases of human contamination, Indonesia (as well as developing countries and the international community) was stigmatised as being “ill-prepared” and as “withholding” genetic data”, as “none of the sequence data from Indonesia viruses had been deposited in public databases”. As Indonesia attempted to increase the transparency of its management of the virus’ genetic data, it learned “towards the end of 2006 [the existence of] an Australian vaccine company’s plan to develop vaccine against H5N1 virus using a virus strain that Indonesia had provided to the WHO system”.¹⁵² Transparency, though needed to ensure the progress and development of research and pharmaceutical options against AI, could then lead to large profits being made in developed countries at the expense of developing countries, who would find

¹⁴⁷ E.R. Sedyaningsih, S. Isfandari, T. Soendoro, S.F. Supari, “Towards Mutual Trust, Transparency and Equity in Virus Sharing Mechanism: The Avian Influenza Case of Indonesia”, *Annals Academy of Medicine (Singapore)*, vol. 37, p. 485, 2008. *One should note however, that NAMRU-2 is not part of the CDC.*

¹⁴⁸ *Ibid*, p. 485-486.

¹⁴⁹ Interview, Jakarta, September 2008.

¹⁵⁰ E.R. Sedyaningsih, S. Isfandari, T. Soendoro, S.F. Supari, 2008, *op. cit.*, p. 486.

¹⁵¹ Confirmed by three interviews with Indonesian researchers, Jakarta, September 2008.

themselves unable to pay for the vaccines they had directly contributed to develop. How can this dilemma be solved?

A third Indonesian narrative, heard especially in Indonesia, was that this effort from the Indonesian Ministry of Health responded to a strong desire to develop Indonesian laboratory diagnosis and research capacities. This sort of protectionism towards the samples gave a *de facto* monopoly to some laboratories, and a strong incentive for others to develop. A direct consequence of those efforts was the mushrooming of BSL-3 laboratories (we were told that four existed in September, a fifth was apparently being developed). Of course, those laboratories also answered the need for a better follow-up of specific infectious virus strains (including HIV-AIDS), for the development of drugs that were more adapted to the local virology specificities, and for a series of other needs. But they all apparently benefited from the “AI push”, even if none of them was allowed access to the samples for research. Only confirmation of diagnosis and a degree of risk evaluation was authorised. Apparently only one or two laboratories had been given such an authorisation, which could be seen as contradicting the official discourse put forward by the Ministry of Health.¹⁵³

Changing the global health system?

At the crossroad of those three narratives – transparency of the viruses’ genetic data; equity in the global health system to insure that the poor will also benefit from new development in the pharmaceutical field; development of local laboratory diagnosis, research, and production capacities – Indonesia was also asking for a fundamental reshuffling of the WHO sharing system, and more largely of the global health system. To do so, it mobilised traditional non-aligned countries rhetoric, adopted a very confrontational (and at times clearly irrational)¹⁵⁴ discourse towards WHO and the US, and posed as the global Robin Hood, protecting developing countries’ health rights and more widely “global health public goods”.

WHO’s virus-sharing system was presented by Indonesia as enabling and preserving the monopoly of a limited number of laboratories in developed countries. It was also coined as being insufficiently regulated, as its rules could be subject to different interpretations, depending on membership to WHO network, and as non-transparent, as it did not allow for free access to all to genetic data. To prove that Indonesia was

¹⁵² E.R. Sedyaningsih, S. Isfandari, T. Soendoro, S.F. Supari, 2008, *op. cit.*

¹⁵³ This is a personal interpretation of several interviews made in Jakarta. One has to note that all researchers we met were very supportive of the Ministry of Health policy, which was seen as contributing to strengthening Indonesian research capacity.

¹⁵⁴ See for example: *AFP*, “Indonesia’s bird flu warrior takes on the world”, 12 October 2008, <<http://afp.google.com/article/ALeqM5hZwVUAJGlcX8VN0jn0MB98vQb8Gg>>, last accessed 20 January

indeed willing to contribute to worldwide transparency of genetic data, as long as it took place in a regulated environment where the interests of the country where the virus was found were respected, it joined the GISAID platform,¹⁵⁵ and is said to have released some virus genetic data there. Indonesia cannot however release all of its genetic data, as this would cause too great a loss in its bargaining power. At the heart of the problem lies the will of WHO to preserve its monopole on some virus genetic data. The reasons for this are both the risks that the loss of such a monopole, and the subsequent release of information in open-source databanks, would imply in biosecurity terms, and the institutional interests of WHO in developing its own capacities rather than supporting the development of alternative databanks, and in keeping this monopolistic position which gives it privileged access to the pharmaceutical world. On the other side, Indonesia says that it is willing to share samples with WHO, but only if a Material Transfer Agreement (MTA) is signed between WHO and Indonesia, which would regulate exactly what can be done with the shared samples. WHO is apparently reluctant to sign such an agreement, on account of the bureaucratic heaviness of such a solution, and its inequity, if it is not generalised to all countries.

Options?

If there is a strong agreement, even in Indonesia, that samples and genetic data have to be shared, the issue is therefore how. What seems obvious is that any solution has to be global and should integrate all countries, be they Ghana, France, Indonesia, the US or China. The solution also has to be fair and has to allow poor country access to vital drugs and vaccines, without impeding research and development capacities (or else there will be no drugs and vaccines to access to). It also has to find a balance between biosecurity issues and transparency (for example by promoting a strict traceability of knowledge and samples). Delinking the principles and the tools may be an option.

On one hand, the selection of “valid” virus-sharing tools could be more open, and include a limited number of strictly specified tools that could be used in a supplemental way. I.e. all samples and genetic data from agents that may cause a public health emergency of international concern would have to be shared within a reformed and strictly regulated WHO GISN system; such samples could also be sent, if the sharing country/laboratory so wishes, and some specific agents excepted (smallpox), to other public databanks. Except in public databanks where specific internal regulations would hold, the rights of the

2009; Richard Holbrooke, Laurie Garrett, “ ‘Sovereignty’ That Risks Global Health”, *The Washington Post*, 10 August 2008.

¹⁵⁵ On GISAID see P. Bogner, I. Capua, N. J. Cox, D. J. Lipman and others, “A global initiative on sharing avian flu data”, *Nature*, vol. 442, 31 August 2006, p. 981. On GISAID and Indonesia, see the GISAID website: <<http://platform.gisaid.org>>, last accessed 2 November 2008.

sharing countries would be strengthened: all movement, data exchange (including use in publication) and commercial use of the samples and its genetic data would be subject to its agreement. What exactly could be the maximum counterpart for those agreements would be strictly specified by WHO and its members, and the country would be given a specified time limit to respond to the demand of the laboratories (lack of response would be interpreted as an agreement). As in other databanks, other regulations, including highly transparent ones, would hold, and transparent and efficient sharing could still take place, in a much more open fashion.

On the other hand, a specific global system will need to be put in place to support an equal access to vaccines and treatments against those “agents that may cause a public health emergency of international concern”, as defined by IHR. Such a system will allow for both solidarity response to fight poverty, and a better global pandemic preparedness, by increasing the protection of very vulnerable countries and, as a result, of the less vulnerable ones as well. It will also be capable of incentivising the increase in the production, stockpiling and distribution capacities of countries, as well as the funding of R&D programmes, through the opening up of new markets. It will build up on current global efforts to fight avian influenza but also on the global effort to fight HIV/AIDS, and the lessons derived from this endeavour. Naturally, and for such a system to work, WHO would have to be established as its keystone.

Conclusion

The Indonesian position is very specific: the country is highly concerned by the H5N1 crisis, at the heart of the epizootic and of the human cases. It is in a very fragile situation, as it depends on vaccines and drugs produced abroad. At the same time, it has developed and strengthened its own laboratories, research and diagnosis capacities, and shows a strong national will to develop its own pharmaceutical capacity. To achieve this objective, Indonesia has used its bargaining power and framed the debate along a developed/ developing country dividing line. In doing so however, Indonesia has adopted the more traditional tactical position of middle countries who build alliances in the non-aligned movement and try to strengthen their independence towards the superpowers.

Many interviewees agreed that Indonesia had made a point. They often disagreed with the way it had done so, potentially endangering the health of the international community as a whole by refusing to release crucial genetic data on the virus, and by using a very populist and aggressive discourse. The Minister of Health’s reputation abroad is simply terrible. Indonesia managed to force a stalemate on the virus-sharing issue, but the exit options are not yet clearly at sight. How to transform that stalemate in something constructive one can work with in an efficient manner is a serious challenge. Many stakeholders have more interest in delaying resolution than in finding a solution today, considering that the AI threat seems to be decreasing, that GISAID seems to provide an ad hoc but working solution for virus-sharing, and that a fundamental restructuring of the global health sharing system (sharing of the



samples, but also sharing of the drugs and vaccines) is too costly and complex and endeavour to be dealt with in the short term.

As we will now see in a more systematic way, the fight against AI did contribute to some improvement in the management of global health risks and crisis, but it has not resulted yet in a revolution of the virus-sharing system, or of global health governance.

GOVERNING THE FIGHT AGAINST AI

*The international system is well structured. It is a system where each one can take its place with confidence.*¹⁵⁶

The governance of the global fight against AI did not result in a governance revolution, but rather in a series of innovations and improvements that contributed to smoothing the governance process. While some stakeholders did seem to perceive this process as being “well structured”, we consider that, as any global governance process, the governance of the global fight against AI was rather a “chaordic”¹⁵⁷ process, with strong cooperation taking place amidst strong competition logics, bringing together large networks of actors. The exact definition of what has happened is in itself a governance issue, as with the benefit of hindsight, such a definition will solidify or realise the will of some actors to play a leading role in this endeavour. Following a well known pattern, the leading coordinating actors used coordination as a way of ‘organising’ governance, and as such of restricting access to the central arenas of governance to smaller entities. However, as global governance is a fast moving field, and in the case of avian influenza a very complex one, they were not always successful with such an endeavour. Some trends did emerge, however, but the traditional balance of powers was not fundamentally changed.

To understand those governance patterns, one needs to remember that the global fight against AI integrated two fundamental different realities. There was, on one side, a universal concern with pandemic preparedness and the fight against AI. It paradoxically resulted in nationally-led and rather self-centred efforts in many countries, to respond and increase their own preparedness, and this particularly in developed countries and countries directly impacted by the virus. This process progressed with differential speed as a result of specific national “histories of contact” with the disease or with the pandemic risk. For example, if Hong Kong concerned itself with the issue almost immediately in 2003, Indonesia embraced the issue in 2005, as the first human cases were discovered, amidst a cloud of uncertainties about the virus. Momentum then somehow declined. US and France concerned themselves with the disease once it lost its “Asian” image by affecting non-Asian regions of the world. As more and more felt concerned by the epizootic and pandemic risk, the incentive to cooperate increased.

¹⁵⁶ “Le système mondial est bien structuré. C’est un système où chacun peut prendre sa place avec confiance.” Interview, Paris, 2008.

On the other side, and as a corollary of this first process, a global endeavour emerged, largely driven by developed countries and international donor agencies, which took the shape of a development/ solidarity effort. It aimed at helping all countries (but *de facto* developing ones) to prepare and respond to AI outbreaks and the risk of pandemic. However, such an endeavour took time to develop, as it resulted mainly from the spread of the virus to non-Asian countries. For countries affected by the virus since 2003, this endeavour was everything but an emergency response.

This discrepancy between the universality of the risk, of the crisis, which made the global governance of the fight possible, and the tendency to reduce this fight to a northern-driven effort to develop the South is a classic phenomenon in global governance – development tools may sometimes be perceived as a good, to be traded in exchange of the adherence of poorer countries. This pattern caused some turmoil in the case of the global fight against AI, for next to the donor countries and the recipient countries, a third set of actors had to be taken into account. These were the countries which had an interest in cooperating and in having a strong global mobilisation on AI (for example because it would result in more resources in general, including for research and pharmaceutical options), but which did not depend on external help in their management of the disease, and could therefore better defend their specific interests. Furthermore, as donor countries had a vested security interest in investing in their own preparedness, they had to strike a balance between supporting other's efforts, and increasing their own. The global fight against AI could therefore never be reduced to a solidarity effort; this also explains why, by being able to aggregate a variety of interests, actors, and visions, it could raise so much momentum and resources.

In this process of developing and setting up an informal but efficient global system to respond to and control AI, and to prevent and prepare for an influenza pandemic, a multiplayer game could be observed, where national states played a central role, supported by some key intergovernmental organisations, and where regional organisations played a facilitating role, whose impact greatly varied. Furthermore, learning some lessons from this process for the global management of future environmental and health risks and crisis requires us to highlight some key governance options for the sustainability of the momentum and the coordination of actors.

¹⁵⁷ Cf. D. W. Hock, *Birth of the Chaordic Age*, Berrett-Koehler Publishers, San Francisco, 2000.

A MULTIPLAYER GAME

STATES AND NATIONAL ACTORS: THE RAW MATERIAL OF ANY GLOBAL INITIATIVE

While a large literature on global governance emphasises the role of non governmental organisations, our research showed that, even if non-state actors did play a significant role, states remained the key central actor without which the AI issues could not be solved. The role played by states in the global governance of the fight against AI was of two types, and took place at two different levels. For some actors and stakeholders, the “global fight against AI” took place at the global level, where some states worked as the pushing, driving force that attempted to mobilise and organise the fight at the global level, sometimes pushing in divergent directions. Such a push effort at the global level was devised to rally those states that still needed to be pulled into the fight against AI, at the country level. However, for some stakeholders, the “global fight” implied only the sum of all the efforts made by each state at the country level. Whatever the level considered, states mattered.

The ‘push’ effort at the global level

In Washington or in Brussels, the global governance of the fight against AI is perceived in a similar fashion, as a result of the conjugated efforts of the United States and the European Union to create a global momentum around the AI issue, and to organise the international response (creation of UNSIC, development of the World Bank’s Avian and Human Influenza Facility,¹⁵⁸ facilitation of the holding of the Interministerial Conference, provision of support to and from the four technical agencies, FAO, OIE, WHO, UNICEF). The specific role played by each of the two actors, and the relative importance of one or the other, is sometimes discussed. What importance should be given, for example, to the US IPAPI initiative (International Partnership on Avian and Pandemic Influenza)? “Announced [by President Bush] during the United Nations General Assembly in September 2005”, it “first met in Washington D. C., in

¹⁵⁸ As the next report of this programme will specifically debate the use of Trust fund as a governance option, we very partially decided not to insist on this specific device created to provide “grant funding for developing countries in order to help them reduce financing gaps in their avian and human influenza integrated national action plans”. See, the World Bank, Trust Fund Operations, Concessional Finance and Global Partnerships (CFP), “Avian and Human Influenza (AHI) Facility”, no date.

October 2005”, and is presented by the US as the initiative that gave birth to the first of the international conferences that then took place in Beijing, Vienna, Bamako and New Dehli in following years?¹⁵⁹ Some EU members apparently resisted the initiative, and neither the Washington meeting nor IPAPI were often mentioned in our European interviews (Beijing was often presented as the conference that marked the start of the global fight against AI). Another area of disagreement concerns the criteria used to evaluate each actor’s financial contributions.

Such disagreements may have had some impact at the start of the process, but they were settled in time, and the EU and the US now seems have a congruent perception of their role in this global endeavour. However, some minority reports seem to suggest that this consensual vision of the global governance process may be a bit too linear. Every single country has the power to unsettle this global governance system, simply by opting out of it.

Fighting AI on a global scale rather than at the global level: back to the country level.

Despite the existence of such a global endeavour, the global governance of AI was and is understood by many stakeholders as the add-up, on a global scale, of all country-level initiatives. Many Indonesians that we talked to, when asked about the global governance of AI, explained what was happening in Indonesia, and mentioned the role of international actors, in Indonesia, or towards Indonesia, and how it was impacting their own efforts to respond to AI. In France this was also sometimes the case. Is this to be read as some kind of narrow-mindedness, as an incapacity to see beyond the internal affairs level? We do not think so. The specificity of the AI case is that it does not cover, like any other development issue, simply what the developed states are doing to help developing countries, but also what each and every state is doing on a national level to address the AI issue, and how the aggregation of such efforts contributes to the global response to the AI issue. To take an image from the military field, the fight against AI was not just about building an expeditionary capacity to intervene here or there with a professional army; it was about building territorial defences in each country to contain and resist AI invasion. Or rather it was both at the same time, which as Germany defence specialists well know, it not an easy endeavour.

What soon became obvious to all was that such a global response, based on differential capacities and motivations would result in a mosaic of responses and preparedness levels. Five categories of states soon emerged in this regard:

¹⁵⁹ U. S. Department of State, Bureau of Public Affairs, “United States International engagement on Avian and Pandemic Influenza”, 13 May 2008.

A first category of richer countries, not impacted (or only marginally) by the AI virus, and which focused their efforts on pandemic preparedness and assistance – in a more or less efficient way – to the efforts of others through a variety of cooperation devices. For example: EU countries, Japan, the US, Australia, Singapore, etc.¹⁶⁰

A second category of richer countries impacted by the AI virus, and which focused their efforts on pandemic preparedness and assistance to their neighbouring countries. Problems exist but are acknowledged and being dealt with. For example, Hong Kong, (to some extent), China, Thailand, India, etc.

A third category of poorer countries, not impacted by the AI virus, more or less concerned by AI preparedness, but reliant on external help for funding. Without help, no preparedness, no response capacity. For example: Tchad, etc.

A fourth category made up of poorer countries impacted by the AI virus, reliant on external help for funding, and sometimes having a partial approach to the AI issue (focusing on the most urgent matters, such as the human cases, rather than on pandemic preparedness). Without external help or national will, no response is possible in these countries. Having both may also be insufficient. For example: Nigeria, in some ways Vietnam, etc.

A fifth category of “in-between” countries, which do have some capabilities to respond to the epidemic/epizootic, and are therefore only partially dependent on external help, and able to refuse it in certain cases, and see themselves as being capable of managing the situation. Such countries do not necessarily give the AI issue as much importance as other, more concerned, countries, and may not succeed in elaborating a timely response to the AI epizootic, resulting in a public health situation they cannot solve without external help. For example: Indonesia, Egypt, in some ways, China.

Other characteristics that could be taken into account include the type of the country, as democracies and federal countries, or “non-communist” countries, to use an Indonesian expression, appear less able than centralised or authoritarian states to deal with the virus; the implementing capacity of the state – Egypt’s limited capacity to implement strict control of the disease in poultry, even with the use of force, is exemplary in this regard, and brings to light a supplementary set of factors (animal and human health

¹⁶⁰ For more on these different contributions, see for example, in the case of France: DGCID, “Lutte contre la grippe aviaire. Quel engagement de la France ? ”, 2007; DGCID, “La lutte contre la grippe aviaire : bien public mondial et coopération pour le développement”, *Les Notes du Jeudi*, n.° 73, 28 June 2007; in the case of the US: USAID, “USAID Avian Influenza Program, Avian Influenza Behaviour Change and Communications Support Activity”, no date; U.S. Department of State, Bureau of Public Affairs, “United States International Engagement on Avian and Pandemic Influenza”, 13 May 2008.

systems capacities, force of the law, etc.); the “history of contact” of countries – countries having had to face SARS were often better prepared to deal with AI than those who hadn’t. US and France’s crisis management planning tradition also turned out to be a positive asset in organising the pandemic preparedness effort, even if it may prove insufficient once faced with the real pandemic.

All these differences, based on national characteristics, emphasise the importance and role of singular states in the global fight against the virus. One source, with a clear interest in pandemic preparedness, insisted that, in the end, if cooperation between countries could be useful before the pandemic, the question ultimately was what would happen during the pandemic:

soon there was a clear concept that we cannot control the pandemic in one country only, we have to work in the most open and most generous conditions possible. [If there is a pandemic and] only the Northern countries (Europe and US, Australia, etc.) react because we have the medical resources, the social organisation, the collective discipline, the products, and the know-how. And they close the border. And the other (countries)? What will happen to them? It is very well to have an open vision towards international cooperation. But what is important is to know where the contradictory elements are, because that is where the vulnerabilities lie.¹⁶¹

Fighting AI on a global scope, and not only at the global level, implies acknowledging that without states, nothing can be done,¹⁶² but also that states *by themselves* cannot achieve much. Other partners had to be brought into the game to strengthen the global governance process: intergovernmental and regional organisations.

¹⁶¹ Interview, Paris, October 2008.

¹⁶² Lee and Fidler underline this crucial role of governments in the face of global pandemic. K. Lee, D. P. Fidler, “Avian and pandemic influenza: Progress and problems with global health governance”, *Global Public Health*, vol. 2, n° 3, July 2007, pp. 220-230.

INTERGOVERNMENTAL ORGANISATIONS: THE CEMENT TO SUPPORT THE GLOBAL GOVERNANCE PROCESS

The global fight against AI also served to show, again, that intergovernmental organisations played a necessary supporting role to the central action of states. They contributed to consensus building (especially in the case of complex and highly debated technical issues and strategies), information exchange, coordination (cf. *infra*), solidarity (cooperation), etc. Intergovernmental organisations were of course both terribly bureaucratic, inefficient and insufficient, and incredibly necessary, highly praised and impressive in their adaptation and innovation capacity. Not surprisingly, French sources were generally more supportive, and British sources more skeptical and critical, of the work of such entities. Animal health specialists were particularly enthusiastic about the work done by FAO and OIE, while human health specialists emphasised the necessary and useful role of WHO. Bilateral donors were rather critical of such institutions, except when they had a close working relationship with one of them (the World Bank was a case at point, with both support and critic being heard from the donors), and each intergovernmental organization had a story about the others, often sweet, sometimes not. Sources from recipient countries (i.e. Indonesia) were rather positive but always pointed to possible improvements. Most of them mentioned FAO/OIE/WHO but not all, and only some mentioned UNICEF (including once in a rather puzzled way, and with some rather intriguing complot theories about how it had managed to get the AI communication “cake”). UNSIC was not mentioned by all (especially in interviews with technical agencies), but was usually known (not always though, especially in Indonesia).

Experience managing the AI crisis poses the question of whether such IGOs should be strengthened. Is their current role sufficient? Should they have achieved more, especially as they apparently managed to access a large share of the global funding?¹⁶³ Some individuals proposed the creation of a new institution,¹⁶⁴ serving to show that they consider that the current capacities of existing IGOs are insufficient but that the institutional model is the right response. We personally disagree with this vision and would rather endorse the innovative, network-based cooperative frameworks that have emerged during the crisis as the most practical and cost-effective solution (cf. *infra*) to improving possibly lacking capabilities. Indeed, as we progressed in our research, we realised that we initially had a very rigid, vision of the different roles of each organisations, and that the realities of institutional action were actually more

¹⁶³ UN System Influenza Co-ordinator, The World Bank, “Responses to...”, October 2008, *op. cit.*

complex, more fluctuating, and depended largely on the decisions of member states, who could forum-shop between institutions, networks, tools, etc., to find the solution that would serve best their interests. Member states also promoted a certain vision of how those institutions worked and what they were made for, which the given institutions agreed with and supported or responded to by proposing other competing visions. In the end however, it was easy for some states to criticise some institutions for not having capabilities they were not receiving funds for, and easy for the institutions to avoid the critic by emphasising the lack of funding or support. This ongoing debate over the definition and the interpretation of the mandates of actors, while it can be perceived as limiting the capacity for taking action, is actually a rather positive dynamic of adaptation and innovation to a new issue (which calls for new funding, new mandates' adaptation/interpretation).

Therefore, understanding the role of IGOs also implies understanding their capacities, their limitations, their mandates, and the debates regarding the definition/evaluation/interpretation of such mandates. One good example of this, linked back to tensions elucidated earlier, between emergency and development, and the virus-sharing issue, is given by one of our WHO interviewee in Geneva:

¹⁶⁴ I. Scoones and P. Forster, *The International Response to Highly Pathogenic Avian Influenza*, 2008, *op. cit.*, p. 52.

One thinks that WHO is an autonomous organization while in reality it is a large group of countries. To get things done, [it takes time]. On long term issues, it works well. WHO provides a forum for things not discussed somewhere else. [Regarding the] challenge of rapid action, it is difficult. SARS pushed capacities that did not exist before. But there are not enough capacities for all emerging diseases. WHO is no acute response organisation. Responding to those outbreaks requires dialogue between countries. A group like ours is struggling to balance very long term issues and all of the sudden urgent issues. It is difficult to do both. It does not require the same infrastructure. Even GOARN is a challenge. [...] Some organisations are used to it. Regarding WHO, it is not its initial mandate. We are improving [but] control of outbreaks is very expansive. It is better to have a network of contact organisations who can do it better. It is more cost effective. At global level, only WHO can get the buy in from all countries. Our long term work bring us the trust of countries. Without it, it would not be possible to work with the countries.

The debates exposed by Ian Scoones and Paul Forster regarding the evaluation of the role played by each organization (including FAO and UNSIC)¹⁶⁵ are also an illustration of this dynamic. More concretely, having a less rigid vision of the work of international organisations would allow a better understanding of the debates on the exact coordination role played by UNSIC, which will be discussed later on in this report.

Based on our limited research, we personally think that the existing international organisation (including UNSIC) played an incredible, but clearly insufficient part in the global governance endeavour to manage the AI crisis. We consider that this insufficiency, if partly due to the agencies themselves (for example incapacity to develop memorandum of agreements in a timely manner; bureaucratic problems including, within the bigger institutions, internal communication issues), is also the responsibility of states. States cannot rely on the agencies' support to do their work (or else agencies would need much more funding). And states also have a responsibility in finding the right incentives to promote change within IGOs (continually criticising a ongoing process of change and suppressing funding to innovative and promising projects because they are not yet good enough may not be the best incentive for change).

¹⁶⁵ I. Scoones, P. Forster, *The International Response to Highly Pathogenic Avian Influenza*, 2008, *op. cit.*, pp. 56-59.

THE REGIONAL LEVEL: A FACILITATING LEVEL

Finally, one last governance level that we would like to mention is the regional level. A lot seems to be expected from it in the global governance literature, and particularly in some places where the EU model is regarded as an example to follow, such as in Brussels and Paris. Regional organisations have played a facilitating role in the global fight against AI, as they were closer to the states (or at least to their specific realities and needs), and could thus promote data- and experience-sharing between their members, could organise regional simulations, could ensure some sort of cooperation between the less and the most impacted/prepared countries, and could serve as a resources platform (including for drugs). However, between the EU, ASEAN, APEC, SAARC and the African Union, large discrepancies exist.

Even in the EU, often considered as a model of regionalism, there were some doubts regarding the exact role to be played by the EU in case of a pandemic. If its role in the animal field was clear, its role in the human health field was much more uncertain. Member states want to preserve their sovereign power in the field of public health, and are reluctant to delegate any power to the EU level, except in specific domains where the EU is seen as adding value to pre-existing capacities at the national level (epidemiological surveillance by the European Centre for Prevention and Control [ECDC] for example). However, it was strongly felt, at least in France, that the EU level had a stronger role to play in pandemic preparedness, for example in ensuring good communication during the crisis, and in avoiding discrepancies in the access to drugs and vaccines that would lead to population movements.

If such initiatives do make sense, and should be supported in the case of the EU, strengthening regional capacities is advantageous and efficient only where they come as a complement to existing country-level capacities. In the security field, especially in Africa, capacity-building strategies have often focused on the regional level as an option to compensate for weak national capacities. However, history has shown that this worked only inasmuch as the local regional power was ready to contribute to the regional effort (and *de facto* control it), as regional capacities never existed as such. Whether this experience will replicate in the animal or the human health fields is questionable; regional-level action implies, in the case of the fight against AI, a limited rapid intervention capacity (the expeditionary capacity) rather than a strong territorial defence. The first approach can be useful when dealing with limited (and detected) outbreaks, or for the development of specific and large-scale capacities that one could not develop in all countries, and which could be pooled among countries that trust each other in order to limit costs (for example pools of laboratory excellence). This approach will not work with endemic diseases and will not contribute to a radical improvement of surveillance (as it will build on already existing capacities rather than increasing the field detection capacities). Where trust is lacking, such an approach will be useless (see the issue of

ASEAN drug stockpiling as seen from Indonesia). It may therefore make more sense to, first, develop regional exchange networks between existing systems (without any heavy institutional building, only rotating meetings and an exchange database) to build trust, and, second, if the concerned states so desire, to pool some specific capacities that could not be accessed by one country only.

Last but not least, one should never forget that any supplementary level of governance takes its share of resources, be they time, financial, etc., and intensifies on to cooperation issues, as new competition problems may arise, and as it may not always be that clear what is/ should be the exact interplay between the regional and the global levels.

LEARNING FROM SPECIFIC AI GOVERNANCE OPTIONS

Before we conclude this report, we would like to highlight some governance lessons drawn from the global fight against AI. They are of two sorts: how can a lasting international momentum be ensured (launch and prevention of fatigue)? How can cooperation be organised?

MOBILISING A LASTING INTERNATIONAL MOMENTUM

The global fight against AI brings several lessons in this regard:

Organise yearly conferences at a high political level

Having interministerial conferences every year (more often during 2006) greatly contributed to ensure a lasting momentum. It played the role of a yearly high-level meeting point, for which each country (and IGO) had to prepare, to ensure new funding sources (by pledging or showing that more funding was needed), but also to present their current situation and share lessons and strategies. Four such conferences are regularly mentioned: Beijing (January 2006), Bamako (December 2006), New Dehli, (December 2007) and Sharm el Sheick (October 2008), to which Geneva (November 2005), Washington D.C. (October 2005) and Vienna (June 2006) should be added.

Ensure high level political support at the national level

In the US, in Indonesia, and in France, it was underlined that the mobilisation regarding AI/pandemic influenza could not have taken place without a strong mobilisation at the highest political level. The role of the President was underlined in all three countries. The high level position of some AI coordinators was also regarded as having had a very positive impact (for example in France the Coordinator (DILGA) is the Director General for Health, a very high ranking Human health professional, who has direct access

to the Health Minister). In France and in the US, there was however some fear that such a support was diminishing.¹⁶⁶

Ensure continuity of leadership

The role of specific individuals and coordination leaders was sometimes mentioned as having played a central role in the global effort, as they possessed a real strategic vision about what was needed, and stayed in power for a sufficient amount of time to gain real expertise. The short termism of most consultancy missions was shown to result in a degradation of the expertise at the field level: "With avian influenza, after one year in the job someone is an expert."¹⁶⁷

More worryingly, the issue brought forward by many individuals was related to the continuity of an effort relying on some specific personalities. What would ensure that they would be replaced by as highly dedicated individuals?

Organise simulations

The US "Dark Winter" simulation was mentioned in one interview as having been crucial for France, where similar simulation focussing on AI rather than smallpox contributed to demonstrating to a wide audience that pandemic preparedness had to be increased.

Politicising or securitizing the issue?

The fact that AI and especially the influenza pandemic risk was considered as a security issue strongly explains the mobilisation and interest it raised in large and diverse audiences, some of which were more interested in surfing the scare wave to promote their own efforts in the AI field.

To give only one example of such a convincing security discourse:

¹⁶⁶ Even if one American source mentioned that Senator Obama was involved from the very start of the political effort to respond to the influenza pandemic risk. Interview, Washington D. C., July-August 2008.

¹⁶⁷ Interview, Jakarta, September 2008.

At the national level, one issue is maintaining the mobilisation to face the media silence [...] One can reproach us to alarm the citizen. We are in a Cassandra situation (there are other problems, we do not want to think about that) but it is imperative to prepare oneself. Take the example of the Defence, there is no clear identified threat. But we keep an active army even if we are not going to go to war tomorrow. [...] For some countries, the threat is far away, they have to deal with the difficulties of the present. How to face the difficulties of the day and prepare the future? The Defence example is characteristic. There is no country that does not manage to both face the difficulties of the day and maintain an army. Indeed one could compare with the need for a fire brigade capacity. But this is an almost daily need. War is not permanent. [...] But we maintain an army. In the French White Book on Defense, pandemic preparedness is seen as part of national security. It is fully legitimate considering the extent of the possible consequences. It would be similar to a nuclear affair by its impact.¹⁶⁸

Mobilising a security discourse to politicise a crisis/build a momentum to respond to a risk, proved useful and efficient in the avian influenza crisis. However when it entailed securitizing the crisis and mobilising security agencies in an emergency situation requiring the action of the armed forces, the impact was not as convincing, as seen in Egypt. Of course, in the case of a pandemic, the division of labour between civil and security actors would shift, but before it arrives, more results seem to be achievable by technical civilian agencies means.

Fighting the fatigue by enlarging the agenda?

As we already mentioned, the adoption of the One World One Health concept responded to the desire to raise supplementary momentum and stimulate new interest for emerging diseases. Enlarging the agenda could however be perilous, as AI exerts a specific attraction. As a very specific disease, it concerns and involves a wide range of actors. It is not obvious that this specific attraction may be enlarged to other emerging diseases, even if they imply a serious pandemic risk or socio-economic impact

At least in the case of France, and regarding pandemic preparedness, it seems that AI possessed a perfect "attraction balance" as a disease that was not associated with usual bioweapons, and which

¹⁶⁸ Interview, Paris, October 2008. For a thorough discussion of the « security » dimension of AI, see I. Scoones and P. Forster, *The International Response to Highly Pathogenic Avian Influenza...*, *op. cit.*, p. 59-64.



therefore could be discussed openly with a large range of stakeholders (which is not the case of smallpox), but which posed a threat serious enough to justify the pandemic preparedness of this large range of stakeholders. For those actors who had a vested interest in bioterrorism preparedness, AI was therefore a very interesting case to work with.

One option to sustain momentum towards an enlarged agenda may then be to continue to develop new simulation exercises allowing enlarged outreach. They would focus on capabilities gaps and vulnerabilities and aim at reducing them, while ensuring that cooperation routines are reviewed and strengthened, even as dedicated personnel are replaced by other individuals less familiar with the AI issue.

COORDINATING A GLOBAL FIGHT

Coordination is about influence (he who coordinates influences strategies and – theoretically – has a better access to information), but it is also about avoiding redundancy and ensuring that all efforts are going in the right direction. Most of the people involved in the global fight against AI praised the incredible improvement made in the coordination of the efforts, at all levels.

Coordination at the global level

Interestingly, the AI coordinators' position at country level and at the EU level was often undisputed. In one organisation, our emails to contact the individuals involved with AI were systematically to the coordinator, which proved that his position was not contested. As already noted, coordinators were often regarded as bringing an important contribution to the global fight in general, even though a few coordinators had a more fragile and difficult position to hold.

Beyond the “coordinator” role, coordination also took place through the systematic exchange of information through the dedicated network created by the key technical agencies, WHO, OIE and FAO, some of which have already been mentioned earlier regarding surveillance. Those joint mechanisms, networks and efforts contributed to facilitating, on an everyday basis, the strengthening of collaboration between human and animal health agencies. Of course, this did not suppress all competitive dimensions and did not draw clear barriers between each agency's mandate, but at least roles were clearer, and where mandates were too close, a stronger cooperation could be put in place to jointly solve the issue. Joint rapid verification teams for some infectious disease outbreaks were being developed at the time of our research.

Building strategies also allowed for some harmonisation of the human, animal health and pandemic influenza sectors, as they gave all actors some clear papers to refer too. A problem however, as seen with communication strategies, was the relative burden represented by any attempt to adapt such strategies.

Coordination at country level

In Indonesia, UNSIC was not present as a field institution,¹⁶⁹ and there were some concerns about how the cooperation between the agencies was meant to go. Theoretically, cooperation could take place at two levels: the UN resident coordinator and the national government coordination structure. Regarding UN resident coordinators, they sometimes were not very concerned about AI, which seems to have been the case in Indonesia.

Regarding national interagency/interministerial coordination structures, most countries did put a system in place, and they were always regarded as useful. However, on the one hand, it was clear that if UN agencies and bilateral donors wanted to speak with one voice to the national government, they had to coordinate outside of the government coordination structure. *De facto*, such coordination relied on personal contacts and efforts.¹⁷⁰ On the other hand, they were not always of equal efficiency. Sometimes long unsettled turf battles between the Agriculture ministry and the Health ministry prevented the structure from working (or restricted its role to a narrow, even if crucial, communication mandate). At times, the local coordinator just had too many hats to have time to play his/her AI coordinating role.

In France, the AI coordinator put in place a very interesting and systematic coordination structure, organising the “Mardi Grippe” (Tuesday Influenza) meetings every Tuesday, followed by the “Infogrippe” (Influenza Information) meeting, and made sure daily updates on the situation and weekly Sunday chronicles on the influenza pandemic were sent to French stakeholders.¹⁷¹ Such a regularity in coordination meetings did contribute to lasting momentum and to keeping influenza on the government’s agenda. At UNSIC level, such coordinating meetings (including all the UN and non UN agencies “UN+”, “everybody who want to be on it”) used to take place once a month in 2006 and are now taking place every six weeks.¹⁷²

The right timing for coordination to take place smoothly?

If coordination within one government and coordination among international agencies is one thing, coordination between one government and international agencies is another one, where the issue of

¹⁶⁹ The exact story of UNSIC in Indonesia is unclear. There apparently used to be a UNSIC coordinator, but he left. We never managed to contact anyone from UNSIC in Jakarta. Maybe there was some uncertainty at first regarding the coordinating role of UNSIC at the country level, that was then settled by *de facto* stopping field missions, except at the regional level (Bangkok). Interview, Jakarta, September 2008; Geneva, October 2008.

¹⁷⁰ One bilateral donor in Indonesia mentioned for example the role of the USAID person in charge of AI as particularly efficient. Interview, Jakarta, September 2008.

¹⁷¹ Mentioned in two interviews, Paris, October 2008.

timing is crucial. Indonesia is a case in point: a large discrepancy between the agendas of the Indonesian government and the international actors in terms of the level of emergency and priority of the AI crisis had an impact at two levels: donors arrived too late, in 2006, at a moment when the crisis was not seen as being urgent for the government, and they wanted to go too fast, without taking into account the capacities of the government to follow up on the international efforts. This is well explained by one of our sources:

International [actors] moved too fast. [They started] implementing but government partners [were] not ready. Parallel planning from the government [was] not the same. Urgency washed up by 2006 [for Indonesian actors]. [While] international organizations increases funding, parallel the government decreases funding.

Towards a new coordination model?

With the One World One Health concept, the goal is too strengthen coordination not only between animal and human health agencies, partners, sectors, but also within the biodiversity sector. Such an enlarged arena will surely prove even more difficult to manage, and may result in a decreased capacity to adapt strategies to an evolving reality.

Would a new institution be a solution to increase coordination? We do not think so. New institutions only add a new player to the game and make coordination even more troublesome as they try to change the fragile equilibrium existing between other agencies. Distinguishing between technical and strategic institutions is not an effective solution either, as technical agencies are tempted to impact strategies, and as strategic institutions may yield to the temptation of implementing programmes in the field or becoming an administrative bureaucratic layer better at collecting data about what the others are doing than at actually doing anything itself. This was something most international actors were really conscious of when they decided to create UNSIC as a smooth, light, team with a limited mandate (it is supposed to end in 2009). One source insisted that this had been done in response to a very specific vision that resembles the “light footprint” approach first promoted by the UN in Afghanistan:

¹⁷² Interview, New York, August 2008.

We galvanised action in a non bureaucratic way. No secretariat. No staff. [...] We ensure a level of cooperation that serves the purpose of keeping action going. [It is] not UNAIDS. We willingly avoided [that]. Using existing institutions coupled with governmental cooperation.¹⁷³

¹⁷³ Interview, Washington D.C., July-August 2008.

CONCLUSION: A FORESIGHT ATTEMPT

"It is very hard to engage with something that will occur someday but [one] does not know when."¹⁷⁴

Prevention is often harder to evaluate than reaction. If prevention works, the problem will never happen, and one will never know if it was due to the prevention effort, or only to the fact that nothing was going to happen anyways. If the problem does happen, well, one knows that prevention was a useful move in theory but did not work. Was it because it was just not possible to prevent it from happening, or because the efforts were insufficient?

In the case of the AI crisis and of the influenza pandemic risk, evaluating the impact of the global effort proves difficult. On one side less countries were impacted by AI than initially thought, and in the majority of countries where outbreaks did start, they were controlled. Even in Indonesia, the number of reported human cases has largely decreased, and there is no reason anymore to speak of "the Indonesian death of the week". But the virus is now hard to get rid of in some countries where it has become endemic, and it tends to come back in countries where it was thought to have been eradicated. Would the situation be worse today if nothing had been done? Certainly, but worse to what point?

On the other side, regarding the pandemic influenza risk, it is just impossible to say whether the efforts to control the avian influenza outbreaks reduced the risk. There is however, a widespread idea that the world is more prepared today than five years ago to face the pandemic. Will the level of preparedness last? This is far from obvious, as the influenza fatigue slowly washes up the momentum from three years ago. Even today, is it enough? Surely not. What pandemic preparedness revealed is the intrinsic vulnerabilities of a globalised world. The more integrated and more post-modern parts of the world (where ethics and rights tend to matter more than public health and security) will surely be the ones who suffer most from an influenza pandemic, except if they can show the sort of calm resilience that sometimes emerges in times of emergencies in some well-balanced societies. But maybe heading towards such a resilience would require to give up the zero risk, zero threat, zero vulnerabilities that

¹⁷⁴ Interview, Washington D.C., July-August 2008.

sometimes is promoted as an ideal goal. Such a goal will never be achieved. There will be thousands of dead, the shock will be traumatic for all societies, as the youth will be the most heavily impacted, and as the daily routines and certainties about how the world works are shattered.

So what? The word “crisis” in Chinese is said to contain two complementary meanings, danger and... opportunity¹⁷⁵. The way we approach the certitude of a traumatic event like a pandemic influenza will also impact our capacity to survive to it, and to use it as a way to go forward, rather than an inhibiting fear, Angst, about a future that anyways, we will never be able to control.

A foresight outlook: from AI to the next global one health issues

Thinking about the future of the global fight against AI may then require first, to accept that AI, and pandemic influenza may not be controlled, ever. That does not mean that such an endeavour is not worth a try. Only that evaluating the result of the effort by such radical benchmark as “zero cases” is just not reasonable, especially as the avian influenza history is a very old one and will continue to grow older in the future. This will be the case even if we start to better understand and in a more comprehensive way the global epidemiology of the virus, and if, of course, a miracle vaccine against influenza is not developed.

Certainly a radical “eradication” effort, similar to the one against smallpox could be thought about, and would certainly require a huge vaccine research development effort. But it would also require an integrated human/animal/environmental health effort, to take into account the whole ecology of the virus. Success would surely not be guaranteed but could be worth thinking (dreaming?) of, and would require understanding the impact of the influenza disease on its non-human vectors and their environment, and the risks entailed by its eradication.

Without such an eradication endeavour (and success...), influenza will remain a threat for the livelihoods of poultry keepers and farmers. Not only as avian influenza directly targets the flocks, but also as restructuring of the poultry sector favours large industrialised and commercial poultry breeders. As this trend strengthens some exporting countries, it strengthens a model of production that may have had a direct impact in the spread of the disease in the first place through insufficiently regulated exports of ill poultry. Even with increased biosafety measures, the increased contribution of the agro-industries to the feeding of worldwide humans may contribute to increased issues with other sorts of pathogens, like

¹⁷⁵ Z. Peng, “Preparing for the Real Storm during the Calm: A Comparison of the Crisis Preparation Strategies for Pandemic Influenza in China and the U.S.”, *Journal of Homeland Security and Emergency Management*, vol. 5, n° 1, Article 47, 2008, p. 3. Also mentioned by one of our source, interview, Paris, October 2008.

bacteria. As the next biosafety measures (radiation) spread, what is the future of our food and what will be its impact on our global health?

On another level, as the global fight against AI clearly demonstrated the need for increasing investments in human and animal health systems, will the horizontal approach, at last, become widely acknowledged and supported, as a long term investment in global development, but also, above all, in global [one] health security? This trend seems to be growing in momentum, as more and more donors have started acknowledging the need for such an approach. However, it implies very high investments and the temptation may be large to rather develop the “global emergency outbreak brigade” to stop new emerging diseases as they emerge rather than build a large resilient and sustainable capacity at the national levels. As we have tried to show, such a brigade makes sense only as it builds on existing country level capacities. And ideally both approaches should be followed: the “fire brigade” would ensure transparency of the management process of the outbreak at the country level, and contribute to build incentives for rapid response at the state level, while building trust at the global level. The “territorial outbreak defence” (the national health systems) would ensure efficient detection and control of the outbreaks. The resources are however limited so capacities will only grow slowly, every future crisis resulting in more lessons, more experience, more investments and the all system slowly developing in a more resilient and efficient process if the strategic long term vision is not lost in between and has to be rediscovered every time.

Finally, how will the sharing issue evolve? We think that the stalemate will continue, at least until Indonesia has no more human cases to bargain with or enough laboratory capacities to be integrated in the small club of “those who do not depend on external help to insure their health security”. Indonesia however opened up the door to a large critical assessment of the role of the WHO in insuring the respect of the IHR, and more largely to a debate on the transparency of the virus sharing processes and the de facto monopoly of some laboratories. This debate may go on for some time, with a de facto tension between the “old system” that will continue to exist and the group of actors supporting the GISAID approach. An ad-hoc agreement may emerge that would strengthen the differences between the two systems and organise its communication in a more regulated way, by it may also not. Global governance is also a movement of tension between “the acephal empire” and the “networks”. The “empire” would be here a metaphor for a formal governance structure that consolidates the privileges of the most powerful actors in the system (though often nowadays as a counterpart for their contribution to global solidarity and security) but without having one identified “head” or leader. While the “networks” imply informal processes of chaordic cooperation that demand more transparency, more rights, more access, but which can be instrumentalised by other powerful actors who are just eager to modify the governance structure so that it consolidates their own power.



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RECOMMENDATIONS

The health and environment programme of Ifri would like to propose the following recommendations:

Promoting a balanced “One World One Health” response to AI

- There are at least three branches to the fight against avian influenza: controlling the AI epizooty, caring for the H5N1 human patients, and pandemic preparedness. All three are crucial and interconnected. It is difficult but necessary to equally support the three branches. If focusing on existing epizootic and epidemic should not limit the resources available for preparedness, on the other side if a pandemic starts, it will be important to continue efforts to control the epizooty, since it will not stop with the pandemic.
- It is important to keep a role for the pandemic preparedness sector within an enlarged One World One Health network, as it will contribute to an enhanced momentum, and will ensure that One World One Health is not just about solidarity, but also about processes and efforts that are owned by all the members of the international arena, on an equal basis.
- One needs a blend of horizontal and vertical approaches to global health issues, to ensure that both animal and human health systems and the specific realities of a given diseases are taken cared of.
- All countries and “One health” actors should therefore contribute to the strengthening of animal and human health systems. This implies trying to promote a management strategy based on needs forecast rather than economic guidelines. It also implies to recruit, train and provide incentives to new health human resources, including pools of experts. Finally, the ongoing research effort has to continue and build momentum.
- Global and national actors should also strengthen global and national comprehensive surveillance systems so that they integrate not only both a strong “top-down” and an efficient “bottom-up” component but also a large spectrum of diseases (including not only domestic but also wild animals). Efforts should be done to develop/improve communication systems between state surveillance systems and non state surveillance networks (for example with exchange

systems like Episouth¹⁷⁶) and between animal and human surveillance systems. Such an effort will also require an improved diagnostic capacity (especially rapid diagnosis tests), and the strengthening of laboratory capacity, including in the South (for example through OIE type twinning).

- A rapid response capacity must be developed both at the national and the global level. It requires however a long term investment and will complement but not replace strong one health systems.
- Any response to AI requires a strong communication effort that will be transparent, and that will find the right balance between a short term focus on limiting panic, and a long term contribution to behavioural change, i.e. that will use the right message and the right vector for the right audience.

Strengthening the animal front

- Controlling AI outbreaks implies a series of measures that are now well known and well tested out. None of these measures could suffice individually, and all imply specific problems and limits. They should be put in place in a rapid and timely manner, as animal diseases should be eradicated at the source. All of them require a strong political will and a strong state implementing capacity.
 - o Culling is a widespread solution. Ideally, it should be put in place early, so as to limit the number of chickens to be culled. It needs to be compensated for.
 - o Vaccination against AI implies a very strict control procedure. It cannot last forever and requires an exit option. Such a measure needs to be carefully thought out before being put in place. As its use will help improve AI surveillance and develop vaccination habits among poultry breeders, vaccines against Newcastle disease should be widely supported. Stockpiling of animal vaccines at the regional and global level is also an important measure to increase a larger access.
 - o Biosecurity can limit contagion but it is no silver bullet. An effort has to be done to limit its impact on the food market as it can result in the exclusion of the poor from

¹⁷⁶ Network for Communicable Disease Control in Southern Europe and Mediterranean Countries, <<http://www.episouth.org>>

biosecurity measures. It is also important to avoid an increased industrialisation of the food chain and a decreased quality of the food.

- Import control capacity should be strengthened to stop any eggs/chickens imports from AI infected countries/compartments.
- Controlling epizootics will always imply a risk for livelihoods, and for levels of poverty. Sustainable financial solutions have to be found. Eradication will always be extremely difficult when faced with complex virus ecologies.

Towards more global health security

- The best option to prevent and respond to human influenza cases is to strengthen one health systems. This implies increasing surveillance, response capacity, distribution of pharmaceutical options, surge capacities. Non-pharmaceutical options are important, but they cannot replace the medical response.
- In all countries, including the most developed ones like the US or France, efforts should be made to ensure that the excluded and the poor do not become the “missing link” in the propagation of tomorrow’s pandemics, by securing their access to health care.
- Pandemic preparedness is a complex and constant effort. It requires specific health efforts and multisectoral efforts to detect and solve gaps and vulnerabilities (importance of simulations), and to constantly develop, test and adapt coordinated plans (for example between all EU members, the EU, and international organizations). One also needs to recognise that there is no “zero risk”. Indeed, the real issue may be the resilience of the system and its capacity to survive to such a traumatic experience. Ongoing and transparent discussions ahead of the pandemic will ensure that, when it comes, the population will adopt the right behaviour and will accept the decisions taken to protect it.
- Global Health and the virus-sharing issue would strongly benefit from a reformed WHO sharing system, and more widely a solution has to be found to improve access (included delivery) to drugs and vaccines against emerging diseases of global impact. One option is the development of a two-sided system. On the one hand, all samples and genetic data from agents that may cause a public health emergency of international concern would have to be shared within a reformed and strictly regulated WHO GISN system, and their circulation and use would be strictly controlled and limited. On the other, other databanks and regulations, including highly transparent ones, would hold, and transparent and efficient sharing could still take place, in a much more open fashion.

- A specific global system will need to be put in place to support an equal access to vaccines and treatments against those “agents that may cause a public health emergency of international concern”, as defined by IHR. Such a system will allow for both solidarity response to fight poverty, and a better global pandemic preparedness, by increasing the protection of very vulnerable countries and, as a result, of the less vulnerable ones as well. It will also be capable of incentivising the increase in the production, stockpiling and distribution capacities of countries, as well as the funding of R&D programmes, through the opening up of new markets. It will build up on current global efforts to fight avian influenza but also on the global effort to fight HIV/AIDS, and the lessons derived from this endeavour. One key measure will be to develop drugs and vaccines stocks at the regional levels. Naturally, and for such a system to work, WHO would have to be established as its keystone.

Improving the global governance of AI and other global health crisis

- Decision-making in grey environments supposes an investment in research. However, as there will never be enough knowledge, when dealing with complex global health issues, grey decisions have to be taken, and this should be recognised and accepted.
- Global norms are essentials. They need to be adapted to local settings. However, there needs to be a system to verify how they are implemented. Member states of the WHO should agree on the need for WHO to set up an evaluation process of members' health systems. For these evaluations to take place and to be efficient, they should be voluntary and apply to all countries, developed and developing; and country members should finance them as well as the projects aiming at solving the gaps identified by the evaluations. This way, it will be possible to ensure that WHO's norms are implemented.
- The Global Governance of AI confirms that strengthening existing organisations and coordination mechanisms can prove to be more efficient than creating new institutions. As the fight against AI becomes an even more ambitious project, “One World One Health”, the international community should avoid the old temptation of creating a new institution. On the contrary, it should strengthen networking and joint endeavours between existing institutions. It should endorse the innovative, network-based cooperative frameworks that have emerged during the AI crisis as the most practical and cost-effective solution to improve possibly lacking capabilities.
- Regarding the exact role that should be given to the regional level, it is important to first develop regional exchange networks between existing systems (without any heavy institutional building)

to build trust, and, second, if the concerned states so desire, to pool some specific capacities that could not be accessed by one country only.

- It is crucial to ensure a lasting mobilisation around AI and then “One World One Health”. In order to do that, yearly conferences at high political levels should be organised. A lasting high political support from the national level has to be galvanised. The continuity of leadership is crucial. Simulations can prove a very efficient tool. However, one should make a cautious use of the “security” agenda.
- To ensure a good coordination, since such a coordination is crucial for AI and One Health, the global, regional, national and institutional coordinators, need to display a high visibility and lasting engagement. Regular meetings of all stakeholders will have to continue to take place. Expert exchanges and detachments will also contribute to smooth the processes. A UNOWOHC (UN One World One Health Coordinator) could replace UNSIC after its mandate expires in 2009, and would play a useful coordination and mobilisation role as the head of a similarly light team that would gather political momentum for One World One Health in a lasting way, while benefiting from UNSIC experience and lessons learned (keep it small, simple, and modest).

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Not all the persons interviewed appear in this list.

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